

25<sup>th</sup>  
Anniversary  
Conference

14<sup>th</sup>  
Ottawa  
Conference

The assessment of competence

Miami  
2010 

# Assessment of Competence in Medicine and the Healthcare Professions

May 15-19

Hyatt Regency Miami, Florida, USA

## CONFERENCE ABSTRACTS

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14<sup>th</sup> Ottawa Conference co-hosted by:



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# **14<sup>th</sup> Ottawa Conference**

**May 15-19, 2010**

**Miami, USA**

**ABSTRACTS**

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**Ottawa Conference**

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## **SESSION 1 PLENARY    Assessment of competence in the healthcare professions: past, present and future**

### **1 A    The story so far: from village store to supermarket**

Ronald M Harden (AMEE, University of Dundee, 484 Perth Road, Dundee DD2 1LR, United Kingdom)

Over the 25 years since the first Ottawa Conference, globally there have been major changes in assessment practice. There has been a move to more authentic assessment with assessment related to performance in the real world. Assessment has become more transparent, with the expectations of the student made more explicit, in keeping with an outcome or competence based model. There has been a move from 'assessment of learning' to 'assessment for learning', where assessment is part of the teaching and learning process. New domains such as professionalism, attitudes and teamwork have been assessed. Learning outcomes are increasingly assessed across the curriculum in an integrated and coherent fashion rather than in a fragmented manner, course by course. The use of multiple methods of assessment has been used to overcome the problems associated with individual assessment formats. Technology is being used increasingly to improve the efficiency and effectiveness of assessment. Greater activity in the field of assessment has been associated with an increasing professionalism in the area and a recognised scholarship. Finally, as evidenced at this and other meetings and in published work, there is an increasing body of research in the area.

In all of these areas, the Ottawa Conferences since the first one in 1985, have identified good practice, have described new approaches, have highlighted the controversial and have addressed uncomfortable themes or problems where there has been no easy answer.

### **1 B    Assessment of competence in a post-psychometric era**

Brian David Hodges (Wilson Centre for Research in Education, University of Toronto, Toronto, Canada)

Since the 1970s, assessment of competence in the health professions has been dominated by a discourse of psychometrics emanating from North America that emphasizes the conversion of human behaviours to numbers and prioritizes high-stakes, point-in-time sampling and standardization. There have been many positive effects of this approach including increased fairness to test takers and an explosion of research and development of assessment tools and methods. However, some limitations of an overemphasis on the psychometric paradigm are becoming evident. These include loss of clinical authenticity due to over-standardization, separation of learning and testing, decreased feedback as a result of test security and an under-emphasis on tools that are inexpensive, practical and can be used longitudinally in practice settings. Further, as researchers from anthropology, sociology, linguistics and the humanities enter the field of health professional education attention is being brought to the rhetorical, ethical, socialization and power dimensions of assessment. The future will be dominated by competence-based and workplace-based assessment as the locus of competence shift from competence of individuals to competence of teams. This talk explores the implications of these changes for the assessment of competence in a post-psychometric era.

## SESSION 2 SIMULTANEOUS SESSIONS

### 2A Symposium

#### **New challenges in simulation: putting assessment into context**

R Kneebone (Imperial College London, United Kingdom), F Bello (Imperial College London, United Kingdom), D Nestel (Monash University, Australia), Ian Curran (London Deanery, United Kingdom)

Clinical care is complex and non-linear, and effective care depends on the integration of many qualities and skills. Assessment must do justice to this complexity. Simulation offers an attractive complement to workplace-based assessment, but too much emphasis on decontextualised, task-based skills risks missing key elements of real world care. Limitations of current simulation include a lack of realism of simple models, and restricted access to full immersion facilities. This symposium will present two innovative concepts developed by our Imperial group. *Distributed Simulation* refers to lightweight, low-cost yet immersive clinical environments where team-based scenarios can take place within an authentic context, supported by digital video recording and offline remote assessment technology. *Seamless Simulation* uses prosthetics expertise from film and television to create highly compelling hybrids which combine models with real people (played by Simulated Patients).

The symposium will start with a full-team demonstration of a surgical operation within a portable, inflatable operating theatre. After highlighting key concepts, the presenters will locate these innovations within a theoretical framework and summarise them critically. This will act as a springboard for discussion and debate within the symposium, resonating with the wider themes of the conference.

### 2B Oral Presentations Postgraduate Assessment 1

#### 2 B 1

##### **Surgeon or Assistant? Assessing trainee progress from logbook activity. A 15 year analysis**

J Logan, T Sinnett, M Solan (Royal Surrey County Hospital NHS Trust, Egerton Road, Guildford GU2 7XX, United Kingdom)

**Background:** With the NHS committing to a 48 hour working week from August 2009, concern has been aired that theatre time for trainees will be compromised. We set out to discover to what extent changes in administration had affected the proportion of procedures being performed by trainees at the Royal Surrey County Hospital Guildford.

**Summary of work:** Data was obtained from theatre log books for the orthopaedic surgery theatres and the Day Surgery Unit at the Royal Surrey. We recorded the procedure, the first and second surgeon for all operations. We studied the same 2-month period (March and April) at 3-year intervals over a fifteen year period.

**Summary of results:** Overall, the number of procedures performed by trainee surgeons fell by 29% from 319 in 1994 to 228 in 2009. Over the same period, the number of middle grade surgeons increased from 3 in 1994 to 9 in 2009; hence procedures per trainee fell by 76% from 106 in 1994 to 25 in 2009.

**Conclusions:** The number of trauma and orthopaedic procedures being performed by trainee surgeons has declined significantly over the last 15 years.

**Take home message:** This data substantiates the concern that the surgeons of the future will be ill prepared for independent practice.

## 2 B 2

### **Postgraduate education: Training soft-skills in emergency medicine – A pilot course**

S Sopka, J Brockmann, A Pirkl, S Rex, R Rossaint, S Beckers (Section Emergency Medical Care - Department of Anaesthesiology, University Hospital RWTH Aachen University, Pauwelsstr. 30, 52074 Aachen, Germany)

**Background:** In Germany, physicians are an essential part of the preclinical emergency-system. Regulations for their postgraduate education do not define communication skills in the curriculum. We saw the necessity to develop a specialized postgraduate program for training soft-skills in emergency situations.

**Summary of work:** Based on experiences from different specialties, learning objectives were defined for this training course. In the implemented course, scenarios such as acute psychosis, suicidal tendency and “bringing bad news” were compiled and performed by using a standardized procedure including structured video-feedback. A standardized questionnaire with 30 questions in pre-post design was used for evaluation.

**Summary of results:** Seventeen physicians participated in the pilot-courses. All of the physicians imagined themselves in an authentic doctor-patient-interaction and accepted the presented case-scenarios. Video-feedback was helpful for 76% of the participants and 100% considered the feedback of standardized patients as helpful. Fifty-nine percent confirmed that the case-scenarios’ degree of difficulty was adequate. Ninety-four percent felt their day-to-day practice was influenced by the training with standardized-patients.

**Conclusions:** The evaluation confirmed the realized program in terms of content as well as feasibility. Important areas for improvement were detected and further upgrading of the program was encouraged by participants.

**Take home message:** Training soft-skills for emergency situations is well accepted and useful. Additional training programs are planned and will be evaluated.

## 2 B 3

### **Effects of residents’ social background on their stereotypes and relational approaches to patients from different cultures**

C Layat Burn, N V Vu, P R Dasen, A Baroffio (HECVSANTE, Avenue de Beaumont 21, 1011 Lausanne, Switzerland)

**Background:** In medical interviews, physicians' stereotypes towards non-native patients and difficulties in interpersonal relationships are frequent. Moreover, compliance is less than 50% for migrant patients. Communication is central to patient compliance. Communication skills include physicians' awareness of their own stereotypes toward patients. There is little evidence on how physicians' personal background impacts their effectiveness to communicate and relate to migrants.

**Summary of work:** This study evaluated how residents' social background influence their own stereotypes and approaches towards patients from different cultures. Residents encountered Swiss native and migrant standardized patients (SP) trained to portray similar disease, illness experience, socio-economic and educational status. Data were collected and analysed from videotaped SPs encounters, semi-structured interviews, observation checklists and socio-demographic questionnaires (including nationality, mother tongue, political view, professional experience, etc.).

**Summary of results:** Depending on the residents' social-cultural background, the content of their stereotypes were different. Residents were less "patient-centered" with the migrant patient. They indicated that time pressure, lack of feedback and interpersonal relationships distance are the causes.

**Conclusions:** Residents' social background influence their stereotypes and relational approaches to patients from different cultures.

**Take home message:** Residents should be sensitized to their own bias toward patients from different cultures. Medical teaching and assessment should integrate the interpersonal approach and communication with patients from different cultures.

## **2 B 4**

### **The new apprenticeship – an evolving training and triage model for doctors**

M Rickenbach, S Scallan, C Leach, R Locke (Winchester University and Wessex Deanery, Southern House, Sparrow Grove, Otterbourne, Hampshire SO21 2RU, United Kingdom)

**Background:** Reduced hours, shift systems, complexity of treatments, increased workload and vacant posts have put pressure on UK postgraduate medical education. New models are required to provide education tailored to the learner whilst utilising the wider team.

**Summary of work:** An innovative educational model in the setting of primary care nurse and doctor triage has been designed and applied within the foundation year. This provides an increasing level of experience and clinical challenge tailored to the individual's level of ability.

**Summary of results:** The trainee starts with an experienced triage nurse seeing minor illness, then links with a doctor seeing more complex cases, before working with the nurse handling telephone assessment and then working with the doctor seeing any illness that presents. At each stage, the trainee moves through an apprentice cycle starting with 1) observation, 2) participation, 3) management of patients and 4) independent practice. Trainees enter and leave the placement at the level of their ability.

**Conclusions:** This model of primary care triage provides education for doctors with stepwise apprenticeship utilising the skills of the wider team.

**Take home message:** Utilise the whole training environment and all opportunities that present. The trainee can work with the professional group that provides patient care related to their level of experience.

## 2 B 5

### **Trainee doctors' views on Work Based Assessments: are they just a tick box exercise?**

T Bindal, D Wall, H Goodyear (West Midlands Deanery, St Chads Court, 213 Hagley Road, Edgbaston, Birmingham B16 9RG, United Kingdom)

**Background:** In August 2007, run-through specialty training and workplace based assessments (WBAs) were introduced for UK junior doctors. This study explores whether WBAs have been successfully integrated into paediatric training programmes.

**Summary of work:** The UK regional 21-item questionnaire was distributed to paediatric trainees.

**Summary of results:** Eighty-seven percent (130/150) of trainees responded. Reliability of the study was good (Cronbach's alpha 0.813). Ninety-two percent (119/130) of trainees knew how to conduct WBAs, but only 14% (18/130) felt confident that WBAs were a true reflection of their capabilities. A majority (80%) found them not useful in training. A common problem was finding assessors, experienced by 85%. A third of assessments were done retrospectively. All trainees received feedback but advice on future improvement was given to only a third. In addition, free text comments stated WBAs were stressful and just a tick box exercise.

**Conclusions:** Trainees have provided useful feedback on WBAs. Ongoing work on implementation needs to include additional training especially on the value of WBAs in assessing competencies and assessors having protected time in their job plans for WBAs.

**Take home message:** A cultural change is needed for trainees to feel that WBAs are not just a tick box exercise but a useful educational tool for learning.

## 2 B 6

### **Wayne State University University Graduate Medical Education Performance Measurement and Management System**

W Wiese-Rometsch, I Guerra-Lopez, H Kromrei (Wayne State University School of Medicine, Dept. of Graduate Medical Education, 540 E. Canfield, Detroit, MI 48201, United States)

**Background:** Utilizing a systems approach to strategically plan and manage educational efforts results in making data driven decisions for performance assessment and improvement. We created a Graduate Medical Education (GME) Performance Measurement and Management System (PMMS), a conceptual model for total quality management.

**Summary of work:** We established a multi-disciplinary team with expertise in Clinical Practice, Residency Program Administration, Performance Improvement and Evaluation. Collaboration led to the development of a model comprised of six performance domains: Education, Accreditation, Communication, Management & Continuous Improvement, Leadership, and Evaluation. Domain selection was based on requirements of internal and external regulatory agencies, extant data review, and experience overseeing the performance of 55 Wayne State University residency programs.

**Summary of results:** The GME PMMS informs the design, development, implementation, and evaluation of educational initiatives at the Institutional, Program, Faculty, and Resident Levels. Multiple interventions emerged from this model, including the Program Performance Portfolio, a GME Institutional Portfolio, and a GME Leadership Model.

**Conclusions:** Evaluation and assessment in GME should be part of a comprehensive, systematic plan for performance management and improvement. The PMMS provides a framework for planning and managing multiple level of GME performance.

**Take home message:** Creating a conceptual model is a necessary step for developing a systematic approach to planning, assessing, and managing GME performance.

## 2 B 7

### **An Audit of Choice Week – An education tool to help junior trainees choose their career pathway**

T Sinnett, L Fisk, H Wilson, M Solan (The Royal Surrey Count Hospital, Egerton Road, Guildford, GU2 7XX Surrey, United Kingdom)

**Background:** Modernising Medical Careers<sup>1</sup> introduced The Foundation Programme in 2005, to bridge the gap between medical school and higher training.<sup>2</sup> A “Taster” scheme, to aid careers planning, was made available to second year trainees only months before Specialty Training applications. We recognised that this was “too little, too late”. We introduced a regular Choice Week for first year trainees (FY1s) to broaden experience in good time to choose a career path.

**Summary of work:** The choice week diaries of 3 consecutive sets of FY1s were audited to see if the time was used appropriately and whether there was adequate consultant supervision.

**Summary of results:** Initially the range of experiences, although broad, was poorly planned. We improved this by increasing consultant supervisor involvement. Consultants are now required to approve proposed activity. The use of Choice Week time has become much more focused.

**Conclusions:** Without input from supervisors, the trainees’ time during Choice Weeks may not be well spent. Approval of planned activities and a formal diary to document this is recommended.

**Take home message:** Choice Week is an important tool for junior trainees, giving them the opportunity to experience different fields. This is essential, since medical training now affords less opportunity to change direction.

<sup>1</sup><http://www.mmc.nhs.uk/>

<sup>2</sup><http://www.foundationprogramme.nhs.uk/>

## 2C Oral Presentations Assessing Communication Skills

### 2 C 1

#### **The PIL-project: Teaching and assessing doctor/patient communication by designing Patient Information Leaflets**

R Weiss (University of Cape Town, Private Bag Rondebosch, Cape Town 7701, South Africa)

**Background:** In managing chronic disease, a major challenge is that of patient compliance to lifestyle modification and medication. Because patients come from socially-diverse backgrounds, healthcare counseling is often misunderstood, inappropriate for the patient's circumstances or too generic. Undergraduate medical students need to learn how to individualize patient education.

**Summary of work:** Students participate in a Design workshop, and then design, produce and use a patient information leaflet (PIL) for a particular target audience. After feedback from their patients, they write a reflective critique on the process, motivating their design choices, content and ethical considerations. Data from student PILs and reflections was used to develop a rubric for formative assessment (guided self-critique) and summative assessment (score-sheet for assessor triangulation).

**Summary of results:** Results suggest that in the process of PIL design and self-critique, medical students become sensitized to the socio-linguistic and cultural factors that could either hinder or maximize patient cooperation and empowerment.

**Conclusions:** While the PIL-project uses the pamphlet as multimodal artifact, the process of 'conscious design' represents a way of developing medical students' communication and counseling skills.

**Take home message:** Learning the principles of Design is a useful if unconventional component of an undergraduate medical curriculum.

### 2 C 2

#### **Peer assessment of medical students' oral communications skills**

B Maheux, A Gilbert (University of Montreal Faculty of Medicine, CP 6128, Succursale Centre-ville, Montréal H3C 3J7, Canada)

**Background:** Mastering oral communication skills is important for health care professionals.

**Summary of work:** In the course of their clerkship in community medicine, students present what they have learnt from their field experience. After each presentation, peers ( $\approx 60$ ) are asked to assess anonymously, through televoting, whether the presentation was exceptional, very good, average, more or less convincing, or insufficient. Peer evaluations of all student presentations are transmitted to students using a code known only to presenters and are taken into account in the faculty's final assessment of students' oral communications skills.

**Summary of results:** There are several advantages to this approach. First, it improves the validity and reliability of the faculty's final assessments of students' communication skills. It also allows students to get feedback from their peers on how they performed and how their presentation ranked compared with other presentations ( $\approx 25$ ). Finally, knowing they will get quantitative assessments from their peers also enhances the quality of students' presentations.

**Conclusions:** Peer assessment of oral communication skills using televoting is effective in improving the validity and reliability of assessments and the quality of students' presentations.

### 2 C 3

#### **Teaching crisis intervention to medical students – when is the best timing?**

ZH Perry, Z Boussiba, A Rosenblatt, A Biderman, G Meiri (The Moshe Prywes Center for Medical Education, Ben-Gurion University of the Negev, P.O.B. 651, Beer-Sheva 84105, Israel)

**Background:** Physicians often need to convey bad news to patients, although research has shown they find this difficult to do. We created a clinical workshop that teaches these skills to medical students. We were not sure of the best timing for conducting this course – at the pre-clinical phase or at a more experienced phase closer to the end of their studies.

**Summary of work:** We decided to give the program to 6th year medical students, and compare their interest and satisfaction from the program with the data we had on 2nd year medical students.

**Summary of results:** In most instances, the differences were a feeling of greater competence in the 6th year medical students, even though they lacked any formal education in this area. An objective scale of measuring response to conveying bad news showed that 2nd year students were better.

**Conclusions:** We suggest a solution to these puzzling results, as well as give a recommendation for the best timing to teach these issues in medical school.

**Take home message:** It is better to start teaching how to convey bad news to pre-clinical years students, due to their enthusiasm and openness to new ideas.

### 2 C 4

#### **A case-based instructional model and performance assessment of Osteopathic Resident competency**

J Hamstra, B Arcos (Nova Southeastern University College of Osteopathic Medicine, 3200 S. University Drive, Davie 33328-2018, United States)

**Background:** Since 2004, Family and Internal Medicine residents have participated in workshops at NSU-COM reviewing Osteopathic Manipulative Treatment (OMT) in preparation for board exams. In 2008, instruction was changed to a case-based approach to also prepare residents for future medical practice.

**Summary of work:** This instructional model includes a non-musculoskeletal case for which residents develop an osteopathic treatment plan (pre-test); followed by an interactive discussion exploring patient perspectives and professionalism issues; table practice of OMT; and documentation, coding and billing of the encounter. It addresses competency in OMT, medical knowledge, patient care, professionalism, communication, and systems-based practice. Diagnostic/treatment plans, coding, and billing are qualitatively assessed for each case using a case-specific rubric. A post-test is administered one month after instruction.

**Summary of results:** With over 90 residents participating since 2008, mean scores on all post-tests (10 cases) were significantly higher.

**Conclusions:** This model significantly increases residents' ability to generate osteopathic treatment plans and allows for the measurable demonstration of resident competency.

**Take home message:** This proven model takes residents through a complete patient encounter becoming a powerful tool for assessing performance and competency in multiple domains while residents are doing medicine.

## 2 C 5

### **Improving efficiency of undergraduate student nursing psychomotor skill competency testing**

MB Maguire, S Horn, C Brown (Kennesaw State University, WellStar School of Nursing, 1000 Chastain Road, Building 016, Kennesaw 30144, United States)

**Background:** In an effort to improve efficiency of nursing skills lab resources and to increase the breadth of skills tested by first semester Bachelor level student nurses (NURS 3209) of the WellStar School of Nursing at Kennesaw State University has implemented a new testing construct to meet these needs. The previous testing format allowed for one skill out of five to be demonstrated from start to finish in 30 minutes before one examiner. This testing approach was time consuming and resulted in testing to continue throughout all weeks of the student's clinical rotations.

**Summary of work:** The new testing strategy requires three consecutive days of testing to complete assessment of all students enrolled in NURS 3209. This testing consists of four skill stations with random tasks related to each station. Students have five minutes per station task to successfully complete the assigned duty before an examiner.

**Summary of results:** This new testing design improves efficiency of faculty as well as lab resources and ensures that students participating in patient care in acute care settings have demonstrated competency in psychomotor skills.

**Conclusions:** Improved utilization of lab resources allows for nursing students to participate in one three hour clinical simulation experience.

**Take home message:** Successful competency testing prior to patient care activities improves patient safety and increases student confidence.

## 2 C 6

### **Do children get upset as patients in clinical examinations?**

A Davies Muir, T Lissauer, S Newell, G Muir (The Royal College of Paediatrics and Child Health, 5-11 Theobalds Road, London WC1X 8SH, United Kingdom)

**Background:** Real patients provide authenticity in clinical examinations. This is key to validity in paediatrics. There is little information on child participation, raising ethical concerns. Examinations should be a positive experience for children who volunteer. We report negative experiences in MRCPC (Membership of the Royal College of Paediatrics and Child Health).

**Summary of work:** All children and families are invited to feedback. One thousand-sixteen audit questionnaires from parents and children were analysed. Two raters coded qualitative data on upset; quantitative data was used to summarise experiences.

**Summary of results:** Over 90% of children and parents enjoyed taking part. In 8%, upset was reported, of which 79% were children  $\leq$  5 years old. Upset was due to: timing issues (46%), stress or distress with the situation (e.g. "did not like being touched") (20%); upset with the consultation (e.g. "one candidate not very socially adept") (11%).

**Conclusions:** To avert upset, younger children should not be kept waiting, and suitable toys and activities provided. Training of examiners and assistants should include prevention and awareness of upset in children and avoidance strategies.

**Take home message:** Feedback should be sought from volunteer real patients. Children's needs should be specifically considered to avoid upset in examinations.

## 2 C 7

### **Capturing the essence of developing endovascular expertise for the construction of a global assessment instrument**

B. Bech, L Lönn, TV Schroeder, C Ringsted (Center for Clinical Education, Teilmum 5404 Rigshospitalet, Copenhagen University Hospital, The Capital Region of Denmark, Copenhagen DK-2100, Denmark)

**Background:** Simulator metrics as endovascular assessment instruments have poor construct validity. We aimed at constructing a novel global rating scale that captures the development of endovascular expertise.

**Summary of work:** The instrument was developed by collecting information from three sources: theories on skills learning and development of expertise, review of prior literature on assessment instruments, and task analysis of clinicians with different levels of endovascular experience performing simulated procedures. Expert interventional radiologists (>10 years, N=4) and trainees (median 4 months, N=3) were included.

**Summary of results:** A global rating scale SAVE (Structured Assessment of endoVascular Expertise) was synthesized by triangulation of information. By this process, we identified overall categories related to quality of performance: pre-procedural planning and preparation; clinical reasoning; imagery and adaptation during performance; and communication with the patient and use of assistance. The new instrument comprises 29 items related to these categories as well as basic knowledge and technical skills.

**Conclusions:** The new assessment instrument related to far more complex cognitive skills than technical ability. Further research is required to study this scale for validity and reliability.

**Take home message:** In addition to assessment of basic knowledge and technical skills of surgical procedures, complex cognitive skills should also be evaluated.

## 2D Oral Presentations Setting up an OSCE

### 2 D 1

#### **A final clinical examination combining OSLER and OSCE formats with a sequential design**

J Cookson, G Fagan, A Mohsen, J McKendree, J Crossley (Hull York Medical School and Sheffield Medical School UK, University of York, York YO10 5DD, United Kingdom)

**Background:** The Objective Structured Clinical Examination (OSCE) can be highly reliable but its validity is more doubtful. Real patients are not often used because they are difficult to standardise. Short discrete tasks unrelated to each other may not replicate real life and may drive learning inappropriately. Alternatives are the Objective Structured Long Examination Record (OSLER) or the mini-CEX. The number of encounters needed for reasonable reliability is probably between 6 and 10. This may make them impractical.

**Summary of work:** In this system all candidates see 4 real patients and 6 OSCE stations. Those entirely satisfactory are not examined further. The remainder, normally about a third of the class, see 4 more patients and 6 stations.

**Summary of results:** Results are based on 8 patients and 12 stations. Examiners grade candidates in 5 domains. Lower grades are awarded 'penalty points'. There are two thresholds, based on accumulation of points to identify those returning for the longer examination and those who have failed the whole examination.

**Conclusions:** Resources are concentrated at the pass-fail interface and are useful in professional examinations where a competency threshold is required.

**Take home message:** The system of 'penalty points' means that candidates can make some errors but not too many. Good performance on other stations cannot help and it is non-compensatory.

### 2 D 2

#### **A pilot assessment of oral case presentation skills in a high-stakes OSCE for fourth-year medical students**

R Mangrulkar, J Lukela, M Hernandez, K Poszywak, L Gruppen (University of Michigan Medical School, 300 North Ingalls Building, Room 7C11 Box 0429, Ann Arbor 48109-0429, United States)

**Background:** Oral case presentations (OCPs) are critical to effective professional communication, but debate remains on methods to evaluate their quality. We developed and piloted a station within our summative OSCE to measure this skill.

**Summary of work:** Thirty-four 4th-year medical students delivered a videotaped 5-minute OCP in 1 of 3 formats (to a faculty observer, a "standardized" faculty member (SFM), or a camera) after encountering an SPI with chest pain. Each OCP was independently scored by 2 trained faculty raters, using an 11-item checklist focused on (1) critical elements from the history, (2) rationale for the differential diagnosis and plan, and (3) communication.

**Summary of results:** Students scores ranged from 18% to 91%, mean score 66 (SD=13), with higher scores in communication compared to history and differential ( $p<0.05$ ). Inter-observer agreement was 81.6%, lower on items requiring greater judgment (72.1% vs. 87.0% for all other items,  $p<0.05$ ).

**Conclusions:** Our pilot assessment of OCP captured meaningful aspects of student performance of this skill, detected various deficits and is moderately reliable with training.

**Take home message:** Assessment of OCPs as they are presented to standardized faculty can be a reliable, valid method to measure this critical skill, but requires rater training.

## 2 D 3

### **Standardisation of the case template and criteria for marking OSCE stations**

H Jacobs, T SenGupta (James Cook University School of Medicine & Dentistry, Mackay Base Hospital, Bridge Rd, Mackay 4740, North Queensland, Australia)

**Background:** Examinations at the end of Year 5 of the 6 year MBBS programme consist of a MCQ/EMQ paper, a written key feature paper and an OSCE. Over the last 2 years the OSCE has been subject to considerable review and improvement.

**Summary of work:** Processes for developing and staging the OSCE were revised. Documentation describing individual stations and assessment sheets describing criteria for marking were revised. Consistency of role-play and assessment by simulated patients and examiners were addressed through training before the OSCE and a post-exam feedback meeting with examiners.

**Summary of results:** Consistent documentation across the School provides a template for the case descriptions/resources required and assessment sheets with in-built marking standards and criteria. Marking sheets provide simple descriptors for examiners that are converted to numerical grades after the exam. This, together with the training/feedback provided to exam participants has increased the consistency of marking and case delivery.

**Conclusions:** The revisions implemented have provided valuable quality assurance for the School and improved both the efficiency and consistency of the exam.

**Take home message:** Attention to preparation of OSCE and training examiners/role players simplifies both the development of the OSCE and the task for assessors during the exam.

## 2 D 4

### **Stability of standards in a high stakes OSCE**

PH Harasym, F Munshi, TC Tsai (I-Shou University Medical College, 8 E-Da Road, Yanchau Sheng, Kaohsiung 824, Taiwan)

**Background:** Standard 15 of the NOCA standards states that no examinee shall be disadvantaged by writing an exam at a different time/year. Thus, the content sampled should be the equivalent, the difficulty of the exam and standards should be equivalent, and the same outcome/decision made over repeated examinations. The purpose of this study was to examine the stability of decisions made on an OSCE examinations administered from 2006-2009.

**Summary of work:** A 20-station OSCE was administered to approximately 50 candidates each of 4 years. The data was analyzed using Multi-Faceted Rasch Modeling. Five facets were identified: candidate, year, station, station type, and examiner. All facets were placed onto a common scale for comparison and all repeating facets in each year were properly coded.

**Summary of results:** The facets were found to be highly reliable: candidate (0.91), year (0.98), Station (0.98), Station type (0.97), and Examiner (0.93). Of concern, was the variation in standards set from year to year that did not stay in step with the difficulty of the overall OSCE exam in a given year. In addition, many candidate scores were altered by the large variation in examiner leniency/stringency.

**Conclusions:** Approximately 14% of the candidates' outcomes would have shifted by removing the stringency/leniency effect from candidate scores.

**Take home message:** Ongoing attention is required to stabilize standards on high stakes OSCES and keep them in step with exam difficulty.

## 2 D 5

### **Using difficulty indicators to create comparable Objective Structured Clinical Examinations (OSCE) test forms**

S Smee, C St-Onge, I Bartman (Medical Council of Canada, 2283 St. Laurent Blvd, Ottawa K1G 5A2, Canada)

**Background:** When OSCEs have multiple administrations, it is common to use more than one test form to prevent overexposure of stations. Ideally the forms are equated so that performances from each are comparable. However, equating is challenging. Content may be updated, restrictions may limit station re-use, and the expertise available for statistical equating may be limited. Under these circumstances, administrators will ensure content across forms is similar by selecting stations according to skill, discipline, body system and patient demographics. This study describes and tests difficulty indicators that act as further aids for constructing comparable test forms.

**Summary of work:** Once test forms are created, means, standard deviations and cut scores from each station's last administration are averaged. If differences exist, stations are exchanged between forms until the differences are minimized. Using data from a high-stakes OSCE, the predicted differences for each of two years were compared with the actual differences to assess the usefulness of this approach.

**Summary of results:** In 2008, differences between estimated and actual difficulties were small: Mean=2.21%, SD=1.57% and cut score=2.40%. Comparisons for 2009 will also be reported.

**Conclusion and Take home message:** Using past performance indicators from stations is helpful in creating comparable test forms and is worth considering when stations are re-used across multiple test forms.

## 2 D 6

### **Multiple assessments in Objective Structured Clinical Exams (OSCEs): differential utility for differential expertise?**

S Fanourgiakis, M Young, G Norman (Centre for Medical Education, McGill University, Montreal H3A 1A3, Canada)

**Background:** Most OSCEs use multiple evaluation tools, however, little research has investigated the role of multiple evaluations across differential levels of expertise. This study investigated the efficiency and added benefit of multiple evaluation tools.

**Summary of work:** Twenty clerks and 4 residents participated in a nine-station research OSCE. Participants were evaluated by a standardized patient (SP) and an expert evaluator (EE) using: a global rating (7-point scale), a checklist (varied by station), and a pass/fail scale (clear pass, borderline pass, borderline fail, clear fail). Correlation coefficients between each scale were created (for SPs and EEs) and compared using an ANOVA, where type of evaluator (SP versus EE) was the comparison of interest.

**Summary of results:** Evaluations of checklist and global ratings, checklist and pass/fail, and global ratings and pass/fail ratings were all more highly correlated for expert evaluators than standardized patients (coefficients of .61 versus .45 for checklist and global ( $p<0.05$ ), .62 versus .47 for checklist and pass/fail ( $p<0.05$ ), and .82 versus .68 for global and pass/fail ( $p<0.01$ ) for SPs and EEs respectively).

**Conclusions:** Significantly higher between scale correlations in expert evaluators suggests a cross-scale halo effect, and may suggest that there is little added benefit of multiple scales for expert evaluators. Lower cross-scale correlations for SP evaluators suggests additional benefit of additional scales for less clinically expert populations.

**Take home message:** Fewer scales for expert populations could increase evaluation efficiency and decrease redundancy.

## 2 D 7

### **The development of the interprofessional objective structured clinical examination (iOSCE) assessment tool**

B Simmons, S Wagner, E Egan-Lee, M Esdaile, L Baker, S Reeves (University of Toronto & Sunnybrook Health Sciences Centre, 76 Grenville St, Toronto, ON M5S 1B2, Canada)

**Background:** Despite the broad adoption of IPE across a number of educational institutions, there continues to be little focus on the development and implementation of sound assessment strategies.

**Summary of work:** Development of the iOSCE utilized an anonymous consensus building approach with input from interprofessional leaders in 9 of the 10 health sciences programs in the IPE program at the University of Toronto ( $n=24$ ) to determine appropriate IPE scenarios.

**Summary of results:** Ten clinical scenarios were deemed suitable for development into interprofessional objective structured clinical examination (iOSCE) stations. Five of those stations were chosen for inclusion in the first iteration of the iOSCE, which included five interprofessional teams. The OSCE methodologies used to produce a sound assessment of interprofessional knowledge, skills, behaviours and attitudes and initial results of the first pilot will be reported. These results will be discussed related to the evaluation of the iOSCE and how useful this assessment methodology may be in IPE.

**Conclusions:** Assessment of IPE is essential if teams are considered to be useful. Further piloting of this tool is essential to demonstrate its educational impact and utility.

**Take home message:** Assessment of IPE is crucial to ensure that students are developing the competencies outlined in their curriculum.

## 2 D 8

### **Evaluating approaches to eliciting and grading the patient note: Implications for assessment of clinical reasoning**

L Tewksbury, C Gillespie, T Ark, L Taffel, A Kalet (NYU School of Medicine, NYHHS VA Hospital, 423 E 23rd Street, 15th Floor North, #15028AN, New York 10010, United States)

**Background:** The merits of different rubrics for eliciting and evaluating clinical reasoning (CR) are not well-established.

**Summary of work:** Two different note and grading formats were randomly assigned to 176 3rd-year medical students after one case in an OSCE. Note 1 (n=98) used the USMLE format; the grading rubric assessed organization, pertinent positive and negatives, consistency, and overall CR. Note 2 (n=76) had students list evidence for/against the top 3 diagnoses; the grading rubric assessed quality of evidence and overall CR. Differences in reliability, results, and relationships among domains were assessed.

**Summary of results:** Reliability (internal consistency) of CR scores across the OSCE was enhanced with Note 2. CR ratings were lower for Note 1 than Note 2 ( $p < .001$ ). More students listed  $>2$  appropriate diagnoses in Note 2 (36%) compared with 21% of students in Note 1 ( $p < .02$ ). Components of the grading rubric explained more variance in overall CR in Note 2 (61.6%) vs Note 1 (22.7%).

**Conclusions:** The note format may elicit different aspects and/or varying quality of CR. Using evidence for/against each diagnosis produced overall ratings more completely explained by the rubric's constituent elements.

**Take home messages:** More research is needed to explore how the way we elicit and evaluate CR affects our understanding of this complex skill.

## 2E Oral Presentations Competency-based Assessment 1

### 2 E 1

#### **A proposed technical framework for competence assessment and management**

R Scott, TG Willett, V Smothers (Department of Veterans Affairs, VA Medical Center, 4100 W Third St, Dayton, OH 45428, United States)

**Background:** The use of outcome and competency frameworks is a growing part of healthcare education and maintenance of certification. Currently, there is no standard technical infrastructure for representing these competencies for assessment and management.

**Summary of work:** The MedBiquitous Competency Working Group has developed a proposal for a competency environment that would allow a competency framework to be used as a backbone for education and performance management, enabling:

- National organizations to electronically publish their outcome/competency frameworks;
- Learners and educators to search for learning/assessment resources addressing a particular competency;
- Educators to determine where specific competencies are addressed in a curriculum;
- Boards and hospitals to track and manage competency data for the professional;
- Administrators to map one competency framework to another.

**Summary of results:** To date the Working Group has developed a draft specification for the framework. Results of an educator survey as well as the group's progress in implementing the framework to accomplish the goals above will be detailed.

**Conclusions:** A standard technical specification is achievable and useful.

**Take home message:** A standard format for competency frameworks could make it easier to link competencies to the curriculum and to assessment data, enabling better competence and assessment management.

## 2 E 2

### **A new vision of competency-based medical education and definition of competence**

JR Frank for the International CBME Collaborators (Royal College of Physicians and Surgeons of Canada, 774 Echo Drive, Ottawa K1S 5N8, Canada)

**Background:** Competency-based medical education (CBME) is an emerging movement in the health professions, but suffers from numerous heterogeneous perspectives and definitions that limit the advancement of the field.

**Summary of work:** We describe a unique international collaborative initiative to: 1) review the world's literature related to CBME, 2) identify controversies related to CBME that need clarification, 3) explore future directions for CBME, and 4) propose a new set of consensus definitions related to CBME and competence that would serve educators in moving the field forward. A systematic review of the CBME literature identified authors who have contributed to defining CBME. Other participants were nominated by the authors. Overall 20 participants were recruited from 4 continents to participate in a 12-month process that included teleconferences, online discussion, focused essay submissions, and a three-day international summit.

**Summary of results:** The process developed a refined vision for CBME in the health professions, and proposed new definitions for important terms including: competency-based medical education, competency, progression of competence, competence, and dyscompetence.

**Conclusions and Take home messages:** This international collaboration has proposed new definitions of CBME and competence that may change our understanding of medical education.

## 2 E 3

### **Leadership training in the undergraduate medical curriculum - analysis and perceptions from five medical schools**

J Ker, I Down, J Shaw, G Mires (University of Dundee, Institute of Health Skills and Education, Clinical Skills Centre, Ninewells Hospital and Medical School, Dundee DD1 9SY, United Kingdom)

**Background:** The Medical Leadership Competency Framework (MLCF)<sup>1</sup> has been developed in the UK in recognition of the need to harness the leadership qualities of the medical profession to deliver effective and efficient health care<sup>2</sup>. The shared leadership framework identifies five domains. Competences have been developed and agreed for each at the levels of undergraduate, postgraduate and continuing professional development.

**Summary of work:** At undergraduate level two studies were undertaken, one to analyse the MLCF in relation to the Scottish doctor document 3 and secondly to identify perceptions about the leadership framework across the five Scottish medical schools.

**Summary of results:** The MLCF maps very closely to the Scottish Doctor. Perceptions varied across the Scottish schools in relation to the relevance of the framework. Finding relevant examples to demonstrate competencies in the domains of setting direction and transforming services were challenging.

**Conclusions:** Leadership competencies as described by the five domains of Medical Leadership Competency Framework, are present in the undergraduate curriculum. Consensus was that leadership skills need to be more explicit in the curriculum. Students identified relevance in all 5 domains in relation to the curricular programme.

**Take home message:** Leadership competences need to be more explicit in the undergraduate curriculum.

## 2 E 4

### **Across and Down: Using a vertical and horizontal review process to complete a new competency-based objective crossword puzzle**

L Boyd, C Nichols, D Turnbull, R Nesbit, A Albritton (Medical College of Georgia, 1259 Laney Walker Blvd, Augusta 30912, United States)

**Background:** As regional campuses are being developed, it became evident that competency-based objectives were needed so that all sites would have the same set of competencies and outcomes assessments.

**Summary of work:** A broad-based committee was hand selected to ensure diverse representation from the community of educators. Competency-based objectives were developed over one year, and then a detailed analysis of the current curriculum and outcomes assessments were matched with the new objectives. The process included vertical review (each individual course) and horizontal review (each competency across the entire curriculum).

**Summary of results:** While there were only a few new competencies not covered in the existing curriculum, detailed review revealed some inappropriate assessment methods and inadequate breadth of competencies covered in a given course.

**Conclusions:** Both vertical and horizontal review of competencies is essential for adequate integration of new competency-based objectives.

**Take home messages:** Carefully selected committee is essential. Broad representation is important (e.g. basic and clinical science, students, residents, patients, course directors and residency faculty). Vertical review provides outside consultation for course director, leading to creative ideas for assessment and teaching. Horizontal review ensures a variety of assessment techniques for each competency, therefore enhancing validity

## 2 E 5

### **Developing a national examination model for nurses: Indonesian National Nurses Association Initiative**

Masfuri, H Aziz, Mustikasari (University of Indonesia, Respati Indonesia University, FIK UI Depok Campus. Jakarta 16421, Indonesia)

**Background:** The need for a national examination to measure competency is essential to improve nursing care quality and to give feedback to the nursing education standard of practice.

**Summary of work:** The 226 competency list was validated by many nurses' backgrounds. A Delphi process with expert nurses was conducted and discovered the core competencies, concluding 12 core competencies from the list. Then, representative experts from provinces developed the blue print for a comprehensive examination model. Items were developed by experience nurses and teachers, recommended by the nurses association and then the items were reviewed by experts.

**Summary of results:** The 24 item writers developed 300 MCQ questions and 150 items passed the standard. The expert created 30 more items to meet the blue print. The first Pilot study was conducted with 240 participants. Temporarily, the validity was 81% and the reliability was 0.78.

**Conclusions:** Validity and reliability coefficients of the instrument could change with more participants as the study is still running this year.

**Take home messages:** Developing expert capacity to establish standardized nursing test is essential since Indonesia has no regulatory body to measure the graduates' competency. However, the instrument model for licensure or certification examinations has to meet psychometric standard before proposing it to the government.

## 2 E 6

### **An experimental grading system by competences**

W Navarrete, A Cecilia Wright (Pontificia Universidad Católica de Chile, Alameda 340, Santiago 8331150, Chile)

**Background:** Currently, competences guides the teaching-learning process and therefore we have a system that allows us to qualify according to the achievement of these competencies by students.

**Summary of work:** This work rated the student performance in OSCE examinations using the Grading System By Competences (GSBC). This method gives scores to students only on skills that have achieved a minimum performance set by the teacher. The review's final grade is calculated on the basis of the sum of scores and the number of performances achieved.

**Summary of results:** We calculated the grades of 4,700 students between 2001 and 2008. Seventy percent of grades increased, 20% of grades were lowered and 10% maintained their grade. Three percent raised their disapproving grade to a passing one, while 10% went from being approved to being disapproved. The discrimination index ranged from 0.44 to 0.76.

**Conclusions:** The GSBC provides a means to increase the grade of students who have achieved greater number of competences, clarification of the grades about the passing level. The GSBC can increase the levels of discrimination but is a criterion-referenced assessment.

**Take home messages:** It is important to have a grading system that accurately reflects the achievements of students; the GSBC has demonstrated to be successful.

## 2 E 7

### **Using entrustable professional activities to guide curriculum development**

P Boyce, M Davies, P McEvoy, C Spratt (University of Sydney, Department of Psychological Medicine, Westmead Hospital, Sydney 2006, Australia)

**Background:** The Royal Australian and New Zealand College of Psychiatrists (the College) is undertaking an ambitious curriculum reform project. We have adopted the Royal College of Physicians and Surgeons of Canada's (RCPSC) highly regarded CanMEDS model.

**Summary of work:** We report on survey findings that identified entrustable professional activities (EPAs) and our developing strategy to integrate EPAs into the curriculum.

**Summary of results:** We surveyed Fellows to identify clinical activities that a trainee concluding Year 1 should be able to carry out independently to assist us in identifying our EPAs. Results indicated high levels of agreement about activities identified as mandatory for trainees to demonstrate competency prior to subspecialty training. This was particularly true for core medical features of psychiatry including initiating a patient on medication, admitting and discharging a patient and assessment.

**Conclusions:** The paper illustrates how EPAs may provide a useful way to operationalise the integration of the CanMEDS roles and competencies into our curriculum.

**Take home messages:** The integration of CanMEDS into existing curricula poses considerable challenges. We must be innovative and adopt pedagogical strategies to generate valid, reliable assessments of ecological validity in complex environments. EPAs may potentially enhance curriculum renewal in models of competency-based education.

## 2F Oral Presentations Psychometrics of Assessment

### 2 F 1

#### **Construct validity of students' continuous assessment form used at Aga Khan University**

S K Ali, S Sadaf, L Biag, H Zafar (Aga Khan University, Stadium Road, P.O.Box 3500, Karachi 74800, Pakistan)

**Background:** A behaviorally anchored Students Continuous Assessment Form (SCAF) is used to assess and document the students' performance during clerkships for certification of successful completion. The purpose of this study is to gather evidence of construct validity of the SCAF based on data gathered from two disciplines.

**Summary of work:** Eighty-three completed SCAFs from Surgery and Family Medicine were analysed using SPSS 16 and LISREL 8. Exploratory Factor analysis of SCAF data from Family Medicine yielded a four factor solution which explained 63% of the variance. The four factors were: 1 - Intellectual skills, 2 - communication skills, 3 - Professional and personal skills and 4 – responsibility. The four factor solution was then applied to the SCAF data from Surgery to get the Comparative Fit Index (CFI).

**Summary of results:** The cronbach's alpha reliability of the instrument was .708 for Surgery and 0.795 for family medicine. The LISREL GFI for the SEQ model applied to the Surgery SCAF was .870 and CFI was .851 with RMSEA at .086. The model used 11 out of 12 variables measured as one variable did not load on to any factor.

**Conclusions:** The study provides evidence for the reliability and validity of the SCAF scores across two disciplines with varied clinical competencies.

**Take home messages:** The AKU SCAF measures the constructs deemed important for a clinically competent medical student.

## 2 F 2

### **Validity in surgical simulation assessment literature: right idea, old framework**

JR Korndorffer Jr, SJ Kasten, SM Downing (Tulane University School of Medicine, 1430 Tulane Ave, SL-22, Department of Surgery, New Orleans LA 70112, United States)

**Background:** Assessment methods and theory continue to evolve in the general education literature. Nowhere is this more evident than in the framework of validity methods and concepts. The consensus standards of the AERA, APA, and NCME have changed from "types of validity" (criterion, construct, content) and "valid instruments" to a concept of identifying evidence for the validity of results and the use of those results. The purpose of this study is to evaluate the surgical simulation literature for the adoption of the consensus standards.

**Summary of work:** The validation effort in laparoscopic simulator assessment was evaluated. A Medline search using the terms validity and laparoscopic between 1996 and 2008 yielded 192 citations. Abstracts were reviewed resulting in 47 studies for analysis.

**Summary of results:** Validation studies evaluated 21 different simulators. Twenty-three percent adhere, in part, to the new consensus standards for validity. One hundred percent use the old framework of types of validity including 75% construct, 38% face, and 11% content validity.

**Conclusions:** Widespread use of the currently accepted framework for validity is lacking in the simulation literature.

**Take home message:** Surgical educators must remain current and begin to investigate assessments within the contemporary framework of validity to avoid improper judgments of performance.

## 2 F 3

### **Construct validity of humanistic clinical skills: a multitrait-multimethod matrix analysis using confirmatory factor analysis**

W L Roberts, M Solomon, E Langenau (National Board of Osteopathic Medical Examiners, Inc., 101 W. Elm Street, Suite 150, Conshohocken 19428, United States)

**Background:** The extent of convergent and discriminate validity of humanistic clinical skills measured by a medical licensure performance examination using a multitrait-multimethod confirmatory factor analysis framework was tested.

**Summary of work:** Two hundred and twenty-seven third- and fourth-year undergraduate osteopathic medical students in the 2007-2008 testing cycle were randomly sampled. Construct validity of the Global Patient Assessment Tool (GPAT), designed to assess professionalism, interpersonal relationship, and doctor-patient communication was tested under two measurement methods: standard examination ratings and peer performance ratings of the same examinee. Two concurrent validity factors (data gathering and written patient notes) were included.

**Summary of results:** Convergent validity was supported under the two methods of scoring. Moderate-to-strong correlations among trait factors indicated weak discriminate validity. A method effect was indicated. Relationships with data gathering and written documentation indicated the GPAT measures a separate construct.

**Conclusions:** Evidence of construct validity for the GPAT indicate scores should be interpreted as measuring a construct of humanistic clinical skills consisting of homogenous indicators of professionalism, interpersonal relationship, and physician-patient communication.

**Take home messages:** Findings are consistent with the interpretation and use of the GPAT and the clinical skills literature important to medical licensure.

## 2 F 4

### **Construct validity of OSCE stations used for assessing International Medical Graduates at the Alberta International Medical Graduate Program**

L Baig, C Violato (Alberta International Medical Graduate Program, G212, Health Sciences Centre, The University of Calgary, 3330 Hospital Drive N.W., Calgary T2N 4N1, Canada)

**Background:** To assess the construct validity of OSCE stations using structural equation modeling.

**Summary of work:** International medical graduates (IMGs) were assessed on the same 6 OSCE stations in 2007 (n = 191) and 2008 (n = 236). Exploratory factor analysis for the 2007 stations yielded a five factor solution: Heart and Lungs, Problem-solving, Locomotor System, Emergency Management, and Psychosocial Skills. This five factor model was tested on the 2008 OSCE stations.

**Summary of results:** Alpha reliabilities of the OSCEs exceeded .90 and the  $\text{Ep}^2 > .70$ . The LISREL Goodness of Fit Index (GFI) for the 5-factor model applied to the 2008 stations was .836 with RMSEA at .102. The stations assessing history and counseling skills related to psychosocial illnesses loaded together, history, physical exam and management of heart and lung diseases loaded together.

**Conclusions:** The clinical skills are contextual in OSCEs assessing them. Exam items should be from a broad range of medical problems. The good fit of the model provides evidence of construct validity for the OSCE assessment.

**Take home message:** The table of specifications for OSCEs should include a wide range of medical problems and clinical skills such as history taking, physical examination, counseling, diagnoses and management.

## 2 F 5

### **Application of item analysis in medical education**

MJ Chen, PY Pai, W Chen, B Huang (China Medical University, 91, Shueh-Shih Road, Taichung 404, Taiwan)

**Background:** Item analysis is used to ensure the validity of a test. The Classic Test Theory (CTT) and the Item Response Theory (IRT) are two main item analysis theories. This study reviewed and compared advantages and disadvantages of CTT and IRT in screening out problematic test items. Expert opinion and student feedback were also considered before removal of problematic items. The study aimed to develop an item analysis procedure to ensure classroom test validity.

**Summary of work:** Eighty-six sixth-year medical students answered a newly developed authentic medical test composed of 48 multiple-choice questions.

**Summary of results:** The Cronbach's Alpha of the responses to all 48 items in the test was 0.55. Using IRT, 4 items were deleted and the alpha increased to 0.57. Using CTT, 24 items were deleted and the alpha increased to 0.70. Using IRT and CTT as well as expert opinion, 21 items were deleted and the alpha increased to 0.71.

**Conclusions:** Both CTT and IRT help to increase the test reliability. Compared to IRT, CTT is more effective at increasing the test reliability. Moreover, expert opinion and student feedback offer valuable suggestions for item selection.

**Take home message:** Based on CTT, expert opinion and student feedback is the most suitable procedure for item selection in classroom tests.

## 2 F 6

### **More meaning for Script Concordance Test scores**

B Charlin, R Gagnon, S Lubarsky, C Lambert, S Meterissian, C Chalk, J Goudreau, C van der Vleuten (University of Montreal, CPASS, CP 6128, Succ. Centre Ville, Montreal H3C 3J7, Canada)

**Background:** The Script Concordance Test (SCT) assesses clinical data interpretation skills. SCT scores are meant to measure the degree of concordance between the performance of examinees and that of the reference panel. Raw test scores have a meaning only if panel's mean and SD are concurrently provided. The goal of this report is to present a method for reporting scores that standardizes panel mean and SD, allowing examinees to immediately gauge their performance relative to panel members.

**Summary of work:** Test raw scores are converted into a scale in which the panel mean is set as the value of reference, and the standard deviation (SD) of the panel serves as a yardstick by which examinee performance is measured.

**Summary of results:** The effect of this transformation on four data sets obtained from SCTs in radio-oncology, surgery, neurology and nursing is discussed.

**Conclusions:** This method permits a more intuitive interpretation of SCT scores. We recommend reporting SCT scores with the mean and SD of panel scores set at standard scores of 80 and 5, respectively.

## 2 F 7

### **The analysis of the qualities of the assessment items used in the performance tests by using Item Response Theory**

M Miyamoto, Y Mori, T Kubota, H Yoneda, K Suzuki (Education Center, Osaka Medical College, 2-7 Daigakumaci, Takatsukisi 569 8686, Japan)

**Background:** According to scenario specificity, it is difficult to evaluate the property of each assessment item used in an OSCE. Commonly used parameters are necessary to compare items of each scenario.

**Summary of work:** The OSCEs have been performed from 2006 through 2008. The numbers of the candidates were 208 for “abdominal pain” and 196 for “abdominal distension”. Each scenario contained 45 items including 20 for medical interview and 25 for physical examination. Most of the items were common. Categorical Factor Analysis supposing one latent factor has been done. We calculated the values of discrimination and difficulty, and chose the IRT-available items.

**Summary of results:** The IRT-available items were easy with the average difficulty of -0.224 for “abdominal pain” and -2.016 for “abdominal distension”. The IRT-available items were different between these scenarios. The general rating scales were also measuring the same latent factor.

**Conclusions:** Analyzing each item quality by IRT is useful for evaluation of scenario quality. Determination and equation of the parameters of the items make it possible to compare the scenarios and examinees over years and occasions.

**Take home messages:** Vertical and horizontal equation of these parameters is useful to evaluate item and examinees over multiple occasions and years.

## 2G Oral Presentations Assessment of Progression Across the Professions

### 2 G 1

#### **The transfer of communication skills: From undergraduate medical training to post-qualification practice**

J Hart, KL Howe, ML Forman, S Collins (University of Manchester, Manchester Medical School, Stopford Building, Oxford Rd, Manchester M13 9PL, United Kingdom)

**Background:** Studies have recognised that communication skills learning is not always transferred to the workplace. This study investigated the skills of junior doctors and related their competencies retrospectively to their undergraduate training, to ascertain whether any particular method of communication skills training facilitated transfer more effectively than others.

**Summary of work:** One hundred five real patient consultations (35 doctors providing 3 consultations each) were blind-rated for the doctors’ abilities to use key skills, gather/share information and respond to patient concerns (using a validated scale).

**Summary of results:** The majority of the sample were competent communicators. Undergraduate training had a significant effect upon postgraduate competence. Comprehensive, regular, small group teaching sessions corresponded to the highest scores on all sections of communication. Informal and lecture based methods of undergraduate teaching correlated to less competent communication.

**Conclusions:** This study has shown that comprehensive training at the undergraduate level enhances skills displayed post qualification. Interactive comprehensive training of 8-12 hours per year, transfers most effectively to higher rated communication.

**Take home messages:** This study confirms the benefits of training in communication at an undergraduate level. More communication training post-qualification may be of worth, to increase and maintain skill level.

## 2 G 2

### **Competencies in Australian medical education - integrating across the continuum**

A Carmichael (University of Tasmania, Office of the Dean, Clinical School, 43 Collins St, Hobart 7000, Australia)

**Background:** Vertical integration of medical education in Australia is complicated because multiple organisations are responsible for 3 distinct phases. The Medical school phase requires graduates to acquire 40 attributes of the Australian Medical Council's Medical Graduate Profile (MGP). In the intern year, the Australian Curriculum Framework for Junior Doctors (ACFJD) specifies the achievement of some 240 attributes. Vocational training, taking a further 5-10 years, is controlled by 13 Colleges managing 22 educational programs with varying outcome and assessment measures.

**Summary of work:** An Australian Medical Deans project to map competencies at the conclusion of the first phase will be presented. The next phase will link these graduate competencies to those defined within the ACFJD 240 attributes and then to those in the specialty vocational training programs.

**Summary of results:** Debate persists about the extent to which competencies can be defined and assessed for higher order skills and behaviours such as clinical reasoning and judgment, as opposed to knowledge and physical skills.

**Conclusions and Take home message:** The identification of competencies, initially for agreed attributes, is an essential step to vertically integrate medical education, facilitate more streamlined progression during training, including shorter duration of programs, recognition of prior learning and more effective use of finite clinical training resources.

## 2 G 3

### **Results of the use of a competency tracking system to monitor student performance from day one**

M Davison (Oklahoma State University Center for Health Sciences, 1111 West 17th Street, Tulsa 74107, United States)

**Background:** Assessment of students' competencies is a timely and important issue in medical education. Many institutions assess competencies in individual courses but a system to assess competencies through the curriculum is needed.

**Summary of work:** A competency tracking system was developed to align the American Osteopathic Association's core competencies to learning objectives, activities, and evaluations in all medical courses and required clerkships. A second year medical course piloted the use of the system in identifying students with problems. Key metrics were used to determine student deficiency in the medical knowledge competency.

**Summary of results:** Our competency tracking system has practical utility: (1) defining exactly what a student should look like and at what level through the curriculum, (2) internal review based on up-to-date, non-static information, (3) communication among faculty and clerkship directors (4) early student remediation and (5) instant reporting to administrators and accrediting bodies.

**Conclusions:** A competency tracking system can be a dynamic portal for all faculty, clerkship directors, and administrators to support consistency in the curriculum, evaluate student performance, and identify problem areas for students earlier.

**Take home message:** This presentation will alert other medical educators to options they may pursue with their institutions regarding the tracking of medical competencies.

## 2 G 4

### **Typologies of exam performance across the medical degree course**

P Lambe, K Mattick, J Archer, K Mattick, T Vallance, D Bristow (Peninsula College of Medicine and Dentistry, C409 Portland Square University of Plymouth Drake Circus, Plymouth PL4 8AA, United Kingdom)

**Background and Summary of work:** We have used latent class analysis to examine the likelihood of poor examination performance across an undergraduate medical degree course.

**Summary of results:** The analysis identified three 'typologies' of student performance in progress tests of applied medical knowledge using measures of students' prior academic achievement and interview rating at time of course entry. The 'best performing' students were characterised by a high probability grade A at A-level chemistry, and lower probabilities of being in the bottom quartile of UCAS tariff score and score in a structured admissions interview. The 'poorer performing' students by a low probability of grade A in A-level chemistry, a high probability of being in the bottom quartile of UCAS tariff score, and a high probability of only one science subject at A-level.

**Conclusions and Take home message:** The approach enables post-hoc analysis of latent class assignment with a wider demographic and educational data. Importantly the approach has the potential to empirically inform the refinement of the selection process and ability to predict the need for tailored provision of support for student learning

## 2 G 5

### Using repeated testing as a program evaluation method

L Hansen, E Simanton (Sanford School of Medicine of The University of South Dakota, 1400 S. 22nd Street, Sioux Falls, SD 57105-1570, United States)

**Background:** Learning of important information is only valuable to the degree that you remember what you have learned. Learning methods that provide greater long-term retention should be encouraged. Studies have documented information retention levels within specific medical school disciplines. It is possible that curriculum design may also impact learning. Logically one would expect that learning that takes place over a longer period of time would also be retained over a longer period of time.

**Summary of work:** Fourth-year student volunteers at Sanford School of Medicine, University of South Dakota took some shelf exams from courses they had taken in third year and randomly selected items from basic science courses. Performance was compared between the initial testing and 4th year performance.

**Summary of results:** Long-term (> year) retention rates were much higher in courses with longer (>4 months) duration and more integration.

**Conclusions:** Students are more likely to retain information taught over a longer period of time and in an integrated way.

**Take home messages:** Learning should be long-term and integrated rather than concentrated blocks.

## 2 G 6

### Retention knowledge tests for students of medical schools

J Mokry, S Franova, E Halasova, P Cingel, D Mistuna (Jessenius Faculty of Medicine, Comenius University, Zaborskeho 2, Martin 036 45, Slovakia)

**Background:** Based on effort for continual improvement of education and its outcome at medical schools, the three medical schools in Slovakia decided to prepare and perform tests to find out the actual situation in retention of knowledge among their students.

**Summary of work:** The tests with 80 questions (level I and level II) were performed by 3<sup>rd</sup> year students and 6<sup>th</sup> year students, respectively. All tests were different by randomized selection of questions and the students filled them anonymously. For studying the educational progress, results from academic years 2008/2009 and 2009/2010 were compared.

**Summary of results:** The average students' participation in all the tests was in both years more than 80.0%. The performances were less than 60.0 %, both in Slovak and English speaking students.

**Conclusions:** Regular and long-term repeating the tests is necessary to compare the progress in education. Furthermore, comparison among subjects intra-faculty as well as among faculties is possible, promoting the needs of harmonization of their curricula.

**Take home message:** Regular testing of medical students could be a useful tool for comparing the progress in education as well as differences among medical schools.

Supported by grant KEGA 3/6207/08.

## 2 G 7

### **Using the Standard Error of Measurement (SEM) to change a pass-fail algorithm in an integrated MBBS programme**

L Crane, F Schaeffer, Y Pannach, T Sen Gupta (James Cook University, School of Medicine and Dentistry, 4811 Townsville, Australia)

**Background:** The James Cook University MBBS programme has developed an evidence-based approach to assessment that reinforces the integrated nature of the curriculum. A major focus has been review of the pass-fail algorithm in each year of the programme.

**Summary of work:** The previous pass-fail algorithm, which required minimum scores on each paper and each 'subject' was complex, non-integrated and subject to anomalies. Performance data, longitudinal tracking of student results and defining borderline zones using the Standard Error of Measurement were used as an evidence base to revise and validate a new progression algorithm.

**Summary of results:** A new, integrated algorithm has been developed which requires students to satisfactorily complete on-course and examination elements of assessment. Consideration of the evidence convinced a diverse group of subject specialists, even those who were previously strong proponents of students being required to obtain a minimum score in each individual subject area, of the rigor of the new algorithm.

**Conclusions:** Revision of the pass-fail algorithm ensures that the emphasis given to integration in the curriculum and individual assessment tasks is reflected in progression decisions.

**Take home messages:** Major changes to assessment principles can be implemented if the approach to change is evidence-based and demonstrably rigorous.

## 2H Oral Presentations Assessing Professionalism 1

### 2 H 1

#### **General skill trainings contribute in causing erosion in student empathy**

SB Rachmad, Hariyanto (Medical School of Brawijaya University, Jl Veteran Malang, Malang 65145, Indonesia)

**Background:** The course director of MSBU provides 8 weeks of intensive communication and clinical skill training before students enter their clinical rotations. The communication skill teaching is given in different sessions separated from other clinical skill training. Empathy has been considered to play pivotal role in physician communication skills and professional behavior. We conducted a program evaluation to assess communication teaching outcomes by evaluating the student empathy with JSPE and comparing it with OSCE scores.

**Summary of work:** The JSPE questionnaires were distributed to 120 students before the training started and after the final OSCE examination. The JSPE scores were compared to the OSCE individual score. Focus group discussion was conducted afterward to clarify the result of examination and the JSPE score.

**Summary of results:** There was no significant difference in student empathy measured by JSPE after 8 weeks intensive skill training ( $p>0.005$ ). There was decreasing tendency from pre- to posttest score. The focus group discussion revealed that the lack of behavior content on the checklist and the lack of real patient encounters contributed to the JSPE posttest score.

**Conclusions:** The communication skill training that is separated to the clinical skill does not affect student empathy measured by JSPE.

**Take home message:** The formative assessment conducted by clinical instructor using checklist containing professional behavior exhibits will have greater impact to student empathy.

## 2 H 2

### **A regulator's view of medical student assessment**

A Reid (New South Wales Medical Board, PO Box 104, Gladesville 1675, NSW, Australia)

**Background:** Assessment of medical students has traditionally focussed more on academic progress than on the production of graduates who demonstrate the professionalism and resilience generally expected of a medical practitioner.

**Summary of work:** The New South Wales Medical Board registers 32,000 medical practitioners and all medical students studying in NSW. It is the Board's experience that medical faculties find it much more difficult to deal with issues of professional conduct, character and impairment than to deal with academic progress and achievement. As a result, medical regulators are left to deal with the consequences of the entry of individuals into the medical workforce whose behaviour or impairment render them unsuitable or problematic members of the profession.

**Summary of results:** Having invested four to six years in training, most graduates have expectations of a career in medicine, yet for some graduates this may not be desirable or achievable. If it is not possible to redirect such students during their training, then at the very least, their expectations should be managed, in conjunction with the regulator that will oversee their professional career.

**Conclusion and Take home message:** This paper will report on a number of such cases, the efforts that have been made to address these issues and the lessons for both faculties and regulators.

## 2 H 3

### **The 'knowledge gap' and the effects of the hidden curriculum on preclinical students' levels of empathy**

B Michalec (University of Delaware, Department of Sociology, Smith 309, 18 Amstel Ave, Newark 19716, United States)

**Background:** Medical training creates a knowledge "gap" between doctors and patients. It can be argued that this gap is exacerbated by aspects of the explicit and hidden curricula of medical training and stifles medical students' levels of empathy.

**Summary of work:** Ten first-year and 10 second-year students were interviewed regarding their experiences and perceptions of their medical training. Observations of first-year and second-year classes, labs, small groups, and ceremonies were conducted during the course of the academic year. Interview and observation data were analyzed using a multi-step coding process.

**Summary of results:** Due to academic responsibilities (explicit curriculum) preclinical students report that they physically and emotionally distance themselves from those outside of medical training. Students express that the "teaching" of the superiority of medical knowledge over lay person knowledge (hidden curriculum) further intensifies this distancing.

**Conclusions:** Because empathy is rooted in the ability and willingness to connect with others, it can be assumed that the knowledge gap and the effects of the hidden curriculum could be depressing preclinical students' levels of empathy.

**Take home message:** To hinder the depletion of empathy in medical students, less emphasis should be put on the superiority of clinical knowledge during preclinical training.

## 2 H 4

### **The influence of medical education on the personal qualities and moral reasoning**

KI Tsou<sup>1,2</sup>, SL Cho<sup>1</sup>, CS Lin<sup>1</sup>, MT Tsai<sup>1</sup>, HC Wu<sup>3</sup>, MS Hsieh<sup>4</sup>, CH Lin<sup>5</sup>, D Powis<sup>6</sup>, M Bore<sup>6</sup>, D Munro<sup>6</sup> (<sup>1</sup>Fu Jen Catholic University; <sup>2</sup>Cardinal Tien Hospital; <sup>3</sup>China Medical School, <sup>4</sup>Taipei Medical University; <sup>5</sup>National Cheng Kung University, Taiwan; <sup>6</sup>University of Newcastle, Australia; No. 510 Chung-Cheng Rd, Hsin-Chuang City, Taipei County 24205, Taiwan)

**Background:** Medical education is expected to be able to cultivate students' good personal qualities and professionalism, especially moral character and empathic behavior. In this study, we assessed progress in moral orientation and personal qualities in medical students. Medical education in Taiwan is a seven-year undergraduate program.

**Summary of work:** Three cohorts of medical students (1st, 3rd and 5<sup>th</sup>-year) from 4 medical schools were invited to join this study and each group was followed longitudinally for 2 years. They were asked to complete the Mojac scale (measure libertarian-dual-communitarian moral orientation) and NACE scale (measure involved-detached personality trait) of the PQA ([www.pqa.net.au](http://www.pqa.net.au)), at the beginning and the end of the 2 study-year. These 2 tools had good internal reliability, test-retest reliability and construct validity among Taiwan medical students.

**Summary of results:** Two hundred seventy-one, 117 and 67 medical students completed the questionnaires, respectively. Over the first 2-year period, there were significant decreases in the Mojac (more libertarian) and NACE scores (more detached). For the sub-scores of NACE, a significant decrease in the Empathy score and an increase in the Aloofness and Narcissism scores were also observed. During the second 2-year period, only a significant increase in the Narcissism score was noted. Over the two clinical years, no significant difference in any of the variables evaluated was observed.

**Conclusions:** This study observed a change toward libertarian moral orientation and detached personality trait during medical education, mostly during the first two years.

**Take home message:** Profound changes to enhance humanity and moral consideration during medical education should be emphasized.

## 2 H 5

### **Assessment of professionalism in the context of small group teaching**

S Coull, F Muir (University of Dundee, Tayside Centre for General Practice, The Mackenzie Building, Kirsty Semple Way, Dundee DD2 4BF, United Kingdom)

**Background:** As part of the community programme at Dundee University Medical School, students in years 1 to 3 of the medical course attend small group teaching in General Practices. Teaching is delivered by a pair of tutors to groups of ten students one afternoon per week. A formative assessment process is used based on the familiar concepts of knowledge, skills and attitudes but feedback from tutors showed the attitudes form, designed to look at professionalism, did not meet their needs.

**Summary of work:** Using a modified Delphi technique we developed a 'Professional Attributes' form with our tutors. Tutors grade students against seven criteria and provide written feedback. These tutors, who provide continuity of teaching to the same groups, independently assess various aspects of professionalism over the 3 year period.

**Summary of results:** Preliminary findings suggest that feedback from tutors is positive. A full evaluation will be carried out at the end of this academic year.

**Conclusions:** The form provides useful information to the student, highlighting the importance of professionalism and areas of concern can be explored at an early stage in their career.

**Take home message:** The Professional Attributes form is relevant, context specific and should improve the reliability of what can be a subjective score.

## 2 H 6

### **Using peer and self assessment to develop professionalism**

DCM Taylor (University of Liverpool, School of Medical Education, Cedar House, Ashton Street, Liverpool L69 3GE, United Kingdom)

**Background:** Professionalism is one of the elements that underlie competence, but it is very difficult to assess. Over a number of years we have come to an understanding of three main constructs of professionalism from the student perspective: competence, personal qualities and interpersonal relationships.

**Summary of work:** Based on factor analysis of a Q-sort study, and textual analysis of a series of focus groups, an instrument has been devised that allows self- and peer-assessment of each of the three domains. This has been validated with groups of students and practising clinicians.

**Summary of results:** The instrument invites the participant to complete two Likert scales for each of 20 items. One Likert scale has the descriptor "This describes me/my colleague" (5 points ranging from "hardly ever" to "always") and the other "At this stage in my career this is..." (5 points ranging from "not important" to "essential"). The items include elements such as "altruism", "Blowing the whistle if necessary", "Knowing the limits of professional competence" and "technically competent". Comparing the two scales draws attention to areas of concern.

**Conclusion and Take home message:** The strength of the method is that it allows the students and Faculty to see where standards are falling below what is expected, and therefore where intervention might be needed.

## 2 H 7

### **Evaluation of empathy in third-year medical students by Standardized Patients during an Objective Structured Clinical Examination**

B Pettitt, B Michal, W Branch, B Holton, S Santen (Emory University School of Medicine, 1364 Clifton Road NE, Suite H118, Georgia Atlanta 30322, United States)

**Background:** We hypothesized that MS scores on “empathy items” in SP OSCE checklists would correlate to their scores on standard empathy scales (ES).

**Summary of work:** Prior to OSCE completion, 66 MS completed the Jefferson Physician Empathy Scale (JPE), Balanced Emotional Empathy Scale (BEES), and Davis Interpersonal Reactivity Index (IRI) Scale. The SP checklist of 7/8 stations included two “empathy items” from a global rating instrument (GRI) and the Master Interview Rating Scale (MIRS). ES scores were compared to item scores for each station.

**Summary of results:** ES scores correlated with each other (JPE vs IRI  $r = 0.35$ , BEES vs IRI  $0.44$ , JPE vs BEES  $0.50$ ). MIRS scores for 7 cases didn’t correlate with MS scores on BEES ( $r = -0.1$  to  $0.26$ ), JPE ( $r = -0.02$  to  $0.17$ ) or IRI ( $r = -0.07$  to  $0.21$ ). GRI scores for 6 cases didn’t correlate with BEES ( $r = -0.22$  to  $0.2$ ), JPE ( $r = -0.09$  to  $0.19$ ) or IRI ( $r = -.24$  to  $0.16$ ). In 1 case (counseling a parent on child’s receiving HPV vaccine) GRI correlated to BEES ( $r = 0.34$ ).

**Conclusions:** MS performance on ES and empathic behaviors during OSCE were poorly correlated.

**Take home messages:** Correlation between performance on ES and empathic behavior measured by SPs during OSCE needs further study.

## 2 H 8

### **Standardized patient assessment of medical student professionalism during OSCE is predictive of professionalism during medical school**

J Khan, J Schneider, J Geodken, K Kinlaw, E Brownfield, M Sohn, S Santen (Emory University School of Medicine, 292 Riverford Way, Lawrenceville 30043, United States)

**Background:** Professionalism is an important competency of medical education. Unprofessional behavior during medical school has been associated with disciplinary action among practicing physicians. We assessed the ability of clinical faculty and standardized patients (SP) to predict unprofessional behavior during medical school.

**Summary of work:** Promotion Committee (PC) minutes from 2006 to 2009 for a single medical student class were reviewed to identify students with professionalism or academic problems. These students' mean global professionalism scores (MGPS) from faculty and SP evaluators of third-year OSCEs were compared to the MGPS of students without similarly noted professionalism or academic problems.

**Summary of results:** One hundred-seven students were reviewed. PC identified 24 students with professionalism and 34 students with academic problems. OCSE MGPS by faculty for students with professionalism problems was not significantly different from students without professionalism problems (7.2 and 7.3 respectively,  $p > 0.05$ ). SP MGPS for students with professionalism problems was significantly lower than MGPS for students without professionalism problems (7.6 and 7.4,  $p < 0.05$ ). For students with academic problems, there was not difference in the MGPS.

**Conclusions:** SPs scored students with unprofessional behavior lower than other students in 3rd- year OSCE, whereas clinical faculty did not.

**Take home message:** A standardize approach to evaluation of professionalism is warranted.

## 2I Oral Presentations Selection for Specialty Training

### 2 I 1

#### **Selector training for interviews: development and evaluation of an e-learning tool**

M Kerrin, F Patterson (Work Psychology Group, 15 Wheeler Gate, Nottingham NG1 2NA, United Kingdom)

**Background:** Research demonstrates that training of selectors significantly influences the reliability and validity of selection. However, within the medical context, attendance at traditional training sessions is difficult for physicians. This study reports on the development and evaluation of an e-learning tool designed to enhance the interviewer skills of physicians involved in the selection of specialist trainees in the UK.

**Summary of work:** The e-learning tool content incorporated a mixture of elements (video clips, learning reviews) based around advanced skills for interviewing. An evaluation questionnaire (24 items) assessed perceived usefulness, ease of use, knowledge gain and application of knowledge & skills.

**Summary of results:** A total of 855 evaluation questionnaires were completed. In overview, the results showed reactions to the e-learning tool to be positive with content reported as relevant, appropriate, and positive reports of future use of the tool.

**Conclusions:** Using e-learning in the training of selectors for interviews provided a cost-efficient way at developing and refreshing interviewing skills. The evaluation illustrates this approach is applicable for specialties seeking solutions to selector training.

**Take home message:** The e-learning tool for selector training has been an effective and cost-efficient way to support large scale interviewer skills training of physicians.

## 2 | 2

### **Selection methods for Foundation Programme: A literature review**

M Campbell, J Illing, C Kergon, N Thompson, B Burford, G Morrow, P Crampton, A Haig, J Spencer (Northern Deanery, 10-12 Framlington Place, Newcastle-upon-Tyne NE2 4AB, United Kingdom)

**Background:** The Northern Deanery Research Team conducted a systematic literature review on selection methods for Foundation Programme, commissioned by the UK Medical Schools Council.

**Summary of work:** A search of published literature on selection in a clinical context produced 13,642 'hits'. After duplicates and irrelevant articles were eliminated, 910 abstracts were read to ensure they met criteria (clinical domain, related to selection, primary data, English language, peer-reviewed). Full papers were read for 359 articles. Of these, 190 were regarded as particularly relevant and reviewed in detail. Selection methods reviewed included: interviews, multiple mini interviews (MMIs), national examinations, academic grades, standardised tests, non-cognitive tests, personal statements, and assessment centres. Each method was assessed with regard to validity, reliability, and user reactions.

**Summary of results:** Strengths and weaknesses of each method were summarised. For example, the validity and reliability of interviews varied considerably across studies, but were generally better with increased structure. MMIs emerged as reliable and valid measures of non-cognitive attributes, but were labour intensive to develop. Exams and grades tended to predict later academic performance but not clinical practice.

**Conclusions and Take home messages:** Selection methods vary with respect to their validity, reliability and user reactions. A combination of several methods may offer the best solution.

## 2 | 3

### **A predictive validity study to evaluate selection methods for training in General Practice**

F Patterson, V Carr, B Irish, R Price (Work Psychology Group & GP National Recruitment Office, Nottingham NG91AG, United Kingdom)

**Background:** This paper is the first to report on a long-term predictive validation of a new national selection system for postgraduate training in General Practice. Initial research using job analysis produced a valid model of selection criteria. These criteria are assessed in the selection system comprising (1) short listing via two machine-marked tests (a clinical problem-solving test (CPS) & situational judgement test (SJT) to assess non-clinical domains (e.g. empathy)) and (2) a selection centre comprising simulation, group & written exercises.

**Summary of work:** We used a longitudinal design tracking candidates over 3 years to evaluate the success of the selection methods in predicting of end-of-training competence at the licensing exam (comprising an applied knowledge test and a 12-station clinical skills OSCE). We compared selection scores with end-of-training exam performance for a sample of 2,550 trainees.

**Summary of results:** Each selection method (CPS, SJT, selection centre) has strong independent predictive validity. The selection centre provides significant incremental validity over and above the short-listing tests for predicting interpersonal job performance dimensions (empathy, communication). A combination of all three methods provides the best overall prediction.

**Conclusions and Take home message:** The GP selection system represents a significant innovation beyond the use of traditional application form and interview selection methods.

## 2 | 4

### **UK Foundation Programme recruitment and selection: the evolution**

D Gallen, C Moore (UK Foundation Programme Office, Regus House, Falcon Drive, Cardiff CF10 4RU, United Kingdom)

**Background:** The Foundation Programme was introduced in 2005 using a common application form to rank medical students for placement in foundation schools. The process of selection has evolved; using a combined selection tool of white-space questions and a medical school academic quartile ranking.

**Summary of work:** In 2005, a single online application form was piloted. In 2006, an online form was rolled out across the UK. In 2007, questions on the form were mapped to the person specification with common scoring criteria for the questions. Scorers were trained and scores calibrated across the country. In 2008, a clinical skills assessment was added for applicants out of medical school for more than two years. In 2009 and 2010, recruitment built on previous successes; improving scoring criteria and advice to medical students, and changed the mix of questions.

**Summary of results:** Ninety percent of applicants are allocated to their first choice foundation school and the applicant satisfaction survey results have improved year on year.

**Conclusions:** A yearly review of the current system has enhanced the selection process with high user satisfaction and acceptability.

**Take home messages:** A combined selection tool has been successful, but recruitment and selection methods must constantly evolve and improve to ensure the continued satisfaction of medical students, faculty and employers.

## 2 | 5

### **Using situational judgements tests (SJTs) of non-cognitive skills in specialty selection; implications for policy in all medical specialties**

A Carr, B Irish, D Rowley, T Gale, F Patterson (Department of Health England, Department of Health England, Skipton House, London SE1 6LH, United Kingdom)

**Background:** Situational Judgement Tests (SJTs) are an increasingly popular method of selection for evaluating non-cognitive skills across many high stakes settings. This paper examines the validity of SJTs for use across different medical specialties in UK postgraduate selection. The results are used to inform future policy development for using SJTs in selection for all medical specialties.

**Summary of work:** Three independent studies focusing on the design and validation of specialty-specific SJTs for non-cognitive skills (eg. integrity, team involvement, situation awareness) were conducted. The specialties studied are; (1) General Practice: (N=6,350); (2) Surgery: (N=385) and (3) Acute Specialties (N=350).

**Summary of results:** Results from each study consistently show each SJT to have good reliability and validity (face, content, criterion-related). There were significant differences in the priorities for non-cognitive skills for each specialty, reflecting differences in the SJT test specification for each specialty.

**Conclusions:** Implications for future policy when developing SJT methodologies within medical or other high stakes selection contexts is presented.

**Take home message:** SJTs are a reliable and valid selection methodology for postgraduate training across all specialties.

## 2 | 6

### **Simulation for high stakes assessment; selection to Anaesthesia training posts 2007-2009**

T Gale, P Sice, M Roberts, I Anderson (Directorate of Anaesthesia, Plymouth Hospitals NHS Trust, Derriford Rd, Plymouth PL6 8DH, United Kingdom)

**Background:** Simulation has been used as part of a multimodal selection centre for recruitment of anaesthetists in the SW Peninsula Deanery, UK since 2007.

**Summary of work:** Simulation scenarios were of 10 minutes duration and standardised using: 1) pre-programmed trends and handlers; 2) strict instructions for 2 nurses in role play; 3) identical briefings. The simulation station was set up in 2 remote areas from our dedicated Simulation Suite using Laerdal SimMan and standard clinical equipment. Candidates were scored by 2 independent assessors testing non-technical skills (situation awareness, working under pressure and teamwork).

**Summary of results:** Two hundred eighty-eight candidates were assessed over 3 years. Distribution of scores has been widely consistent at all levels of entry to Anaesthesia for the period of the study:

Table 1: Mean and SD of Simulation Station scores by year and grade.

Year	Grade	N	Mean	SD
2007	Year 1	31	23.9	5.6
	Year 2	71	24.3	5.6
	Year 3	41	23.3	5.5
2008	Year 1	47	24.8	6.6
	Year 2	25	20.6	5.0
	Year 3	9	23.1	4.5
2009	Year 1	64	23.8	5.7
	ALL	288	23.7	5.8

Measures of face validity, internal reliability and predictive validity have all been extremely encouraging. Problems with SimMan software/hardware were minor and rare.

**Conclusions/Take home message:** Simulation as part of a selection centre process for recruitment to anaesthesia training posts performs well in terms of consistency, internal reliability and validity.

## 2 I 7

### **Development of a situational judgement test for selecting surgeons in the UK**

V Carr, F Patterson, D Rowley, M Kerrin, L Faulkes (Work Psychology Group, 15 Wheeler Gate, Nottingham NG1 2NA, United Kingdom)

**Background:** Recent evidence from UK General Practice demonstrates that Situational Judgement Tests (SJTs) can provide an effective selection methodology for postgraduate specialty training. We report on the development of the first SJT designed specifically for selecting candidates into surgical training.

**Summary of work:** The SJT focuses on non-clinical selection criteria (integrity, judgement under pressure, leadership, decision making). Items are developed by trained subject matter experts to ensure content validity. An initial pilot was completed alongside selection interviews by 397 candidates from 7 UK regions. A second pilot was conducted with 125 candidates attending professional surgical examinations.

**Summary of results:** In both pilots, the SJT showed encouraging initial reliability and differentiated between candidates. Item analysis found over half of pilot items performed well psychometrically. Most candidates rated the SJT as relevant, appropriate and fair. SJT scores were positively correlated with examination scores, with candidates who passed the examination scoring significantly better on the SJT than those who failed.

**Conclusions:** These initial results provide further evidence that SJTs may prove effective selection instruments for postgraduate training across a range of specialties. This has significant implications for development of selection methodology for postgraduate training, especially in assessing non-clinical domains.

**Take home message:** SJTs can provide an effective selection methodology for postgraduate specialty training.

## 2 J Workshop

### **Enhancing written exams – key features items**

M Nayer, S Glover Takahashi (University of Toronto, 500 University Avenue, 8th Floor, Toronto M5G 1V7, Canada)

**Background:** Assessment is a critical component of any education program. Multiple-choice questions (MCQ) are frequently used in classroom tests as they provide reliable test scores, and scoring is simple, accurate and objective. A wide sampling of content can be covered in a short period of time. The challenge with MCQ items is that they are often focused on rote knowledge and comprehension rather than analysis, synthesis or evaluation of information. Key Feature items focus the questions more on clinical vignettes and tease out clinical problem solving ability. A key feature item focuses on a difficult step in the process or a step where an error is most likely to occur – in other words, the key feature(s) of the case. Focusing on the key feature helps discriminate among candidates with varying degrees of knowledge.

**Intended outcomes:** Learners will be able to develop key feature items to use in their own assessments.

**Structure:** Discussion and audience participation will be integrated into the presentation. A key-feature template will be provided and explained. This template will assist item-writers in developing key-features items. Participants will have the opportunity to a Key Feature item during the workshop.

**Intended audience:** Faculty involved in developing written test for learners.

**Level of workshop:** Intermediate (a basic knowledge of item-writing principles is a benefit).

## 2 K Workshop

### **Developmental and competency performance assessment: evaluation tools to assess competency and beyond throughout medical education training**

A Fornari, E Korin, M Duggan, M Polisar (Hofstra School of Medicine in partnership with NS-LIJ Health System, 125 Community Drive, Great Neck NY 11021, United States)

**Background:** In response to the ACGME Outcomes Project aligning residency education and competency based evaluation processes, medical education programs adopting the competencies were required to rethink their assessment tools and align the six competencies with performance of trainees. These assessments need to be behaviorally anchored to allow clinical education faculty to observe behaviors and determine if the trainee is meeting expectations for their year of training and identify specific behaviors supporting their judgment. This workshop will present a framework for competency-based developmental assessment, which progresses through a defined training period in the continuum of medical education.

**Structure:** A mini introduction of the educational framework, using two competencies (interpersonal and professionalism skills), followed by an active process where participants will begin to develop assessment tools that apply core developmental assessment principles to their medical education focus. We will conclude with faculty' role plays using "tools in development" to give feedback to a learner to assess if their tool informs competency-based development of the learner.

**Intended audience:** The audience is faculty and medical educators working with learners across the continuum of medical education open to engaging on developing meaningful assessment strategies leading to quality trainees who have acquired behaviors required for the next level of training.

## 2 L Workshop

### **Methodological, practical and ethical issues in conducting RCTs of interventions in undergraduate curricula**

R Jones, J Rymer (Kings College London, Departments of General Practice and Primary Care and Obstetrics and Gynaecology, 5 Lambeth Walk, London SE11 6SP, United Kingdom)

**Background:** Educational innovation and curricular change should, as far as possible, be based on evidence gathered in a range of settings. Randomised controlled trials (RCTs) of educational interventions may sometimes be an appropriate source of such evidence.

**Intended outcomes:** Participants will obtain an appreciation of the value and limitations of conducting RCTs in undergraduate educational settings, including issues such as educational equipoise, informed consent, equity and generalisability of findings.

**Structure:** Brief introductory presentations based on relevant literature and personal research experience, followed by group discussion on pre-specified/emergent themes and feedback

**Intended audience:** Clinical and non-clinical undergraduate medical educators and researchers

**Level:** Appropriate for all levels of delegates

## **2 M Workshop**

### **Designing and assessing Global Health Education (GHE)**

CZ Margolis, L Mellman, J Encandela, L Konopasek (Medical School for International Health in Collaboration (MSIH) with Columbia University Medical Center, Faculty of Health Sciences, Ben Gurion University, Beer Sheva 84105, Israel)

**Background:** Over 30 years, there has been a linear increase in medical student electives outside of the US. At least 25% of US students do international electives. Although many U.S. medical schools offer GH tracks, there is little consensus about educational objectives, teaching and evaluation methods for international experiences. MSIH has developed a GH Curriculum Design Tool (CDT) based on its four year, required, evaluated curriculum in GH that culminates in a 2 month rotation in a developing country. A 2008 Bellagio conference made recommendations in five areas: definition of GH; competencies; guidelines for distant rotations; establishing interinstitutional relations; assessment.

**Intended outcomes:** Participants will use the Bellagio recommendations and the GH CDT to design or review critically GHE programs at their own institutions.

**Structure:** 25 min: Review: the state of GHE; Bellagio recommendations; GH CDT (includes goal setting, planning, operationalizing and assessment, with an emphasis on combined qualitative and quantitative techniques). 35 min: supervised work singly and in groups. 30 min: 5 six minute participant presentations.

**Intended audience:** Students or faculty interested in designing or reviewing critically GHE programs.

**Level of workshop:** Familiarity with educational planning and assessment. Strong interest in GHE at undergraduate or graduate level.

## 2 N Workshop

### **How much does clinical faculty teach? The use of indicators of educational effort**

M Ipsen, B Eika, O Thorlacius-Ussing, P Charles (Aalborg Hospital and Center for Medical Education, Aarhus University, Brendstrupgaardsvej 102, byg, B, Aarhus N DK-8200, Denmark)

**Background:** The resident training in hospitals is provided by clinical faculty, and their educational effort is central for optimal resident training. However, in association to productivity measurements of research and patient service, the educational effort of teachers is less measured and thus less visible. We identified twelve indicators of educational effort in order to increase the visibility of the educational effort. The twelve indicators relate to educational issues of: quantity, quality, and departmental resources for educational effort. The indicators are measurable and applicable in the departments, and they are comparable to American standards. An implementation study revealed that measuring educational effort increase the awareness of clinical education.

**Intended outcomes:** At the end of the workshop the participants will 1) understand the use of indicators of educational effort, and 2) be able to construct relevant indicators.

**Structure:** After a short introduction to the history of measuring educational effort, the participants will reflect on and then discuss relevant applications for indicators at their own institutions. In plenum we will discuss the benefits and possible drawbacks of teacher assessment performed in this manner.

**Intended audience:** Clinical teachers, education support staff, curriculum planners, managers and deans.

**Level of workshop:** Intermediate to high.

## 2 O Workshop

### **Using multimedia in faculty development in multicultural education**

P Ross, M Lybson, A Kumagai (University of Michigan Medical School, 1500 E. Medical Center Drive, D4202 Medical Professional Building, Ann Arbor 48109-5718, United States)

**Background:** Training medical students to address health care disparities involves, not only education regarding evidence of such disparities, but also the fostering of a critical awareness of the impact of assumptions and biases on physician-patient interactions. In preparation for teaching in these areas, it is essential that the instructors themselves reflect on their own biases, values, and perspectives and model the types of discussions they will facilitate. This faculty development workshop uses excerpts from the Academy Award-winning movie, "Crash," to encourage reflection and discussion on teaching for social justice.

**Intended outcomes:** To broaden participants' critical awareness of challenges involved in teaching about issues of race, gender, class, and power in health care; to enhance skills in facilitating such discussions; to increase one's understanding of dynamics of small groups involving diverse learners, and improve skills in fostering learning environments which encourage critical reflection.

**Structure:** Four selected scenes from "Crash" will be used to stimulate reflection and discussion. Techniques, such as paired and group discussions, role play, and a "fishbowl" exercise, will be used to

explore perspectives, biases, and assumptions in order to better facilitate student learning.

**Intended audience:** Medical School Faculty.

**Level of workshop:** Novice-Expert.

## **2 P 1 Mini-Workshop**

### **Evaluating learning within the simulated environment - putting it into practice**

B Green, A Velinor, S Wilson, R Doel, A Green, A Ball, D Wycherley, A Halligan, M Whitten (UCL Elizabeth Garrett Anderson Institute for Women's Health, 2nd Floor North, 250 Euston Road, London NW1 2PG, United Kingdom)

**Background:** High-fidelity simulation training requires a process of evaluation of learning to be incorporated in order to fully address training needs analysis within the clinical setting. This workshop will demonstrate and explore the process of developing and implementing online evaluation tools to assess simulated learning.

**Intended outcomes:** Understanding of key practical issues relating to development of online tools to support training needs analysis. Understanding of practical issues relating to implementation of a simulated training programme.

**Structure:** Demonstration and small group discussion on how to identify training needs. Demonstration of an online training needs analysis tool. Video presentation of simulated training. Breakout groups to explore (1) how to implement - development, piloting, evaluation and implementation; (2) requirements for incorporation into simulated training - expertise, setting, evaluation process; (3) translation into clinical workplace evaluation - potential for the future.

**Intended audience:** Trainers, educators, clinical practice facilitators, trainees.

**Level of workshop:** All.

## **2 P 2 Mini-Workshop**

### **External quality assuring assessments: experience and enhancements**

ML Denney, R Wakeford, S Williams (University of Cambridge, CRAMET - Centre for Research on Assessment in Medical Education and Training, Dept of Social and Developmental Psychology, Free School Lane, Cambridge CB2 3RQ, United Kingdom)

**Background:** To obtain a dispassionate opinion of the robustness and quality of their assessment programmes, UK medical, dental and veterinary assessment bodies are starting to obtain external quality assurance (QA) reviews. Members of our team have been involved in QA of 20 different assessments, mostly postgraduate but some undergraduate. For undergraduate assessments, external examiners are often inadequately resourced to identify weaknesses, and postgraduate bodies are only now starting to use external QA (EQA).

**Content:** This practical workshop will share and discuss how to enhance our approaches, using two main techniques—statistical analysis of assessment data and on-site visits—leading to reports combining the qualitative and quantitative. We will: discuss with participants what institutions want and need from EQA; share our protocols for collecting information, and invite improvements; and present anonymised case studies and examples of EQA reports. We will also describe – informally - some of our more unexpected experiences. We will invite participation in role-played discussions, showing examples of the advantages and difficulties of providing institutions with EQA. We will summarise the ideas and developments proposed, and feed these back with our example materials to participants afterwards.

**Intended audience:** This workshop is for those who are considering obtaining (or providing) EQA.

## 2 Q 1 Mini-Workshop

### **Portfolio as an assessment tool**

S Elango (International Medical University, Centre for Medical Education, 126.Jalan 19/155B, Bukit Jalil, Kuala Lumpur 57000, Malaysia)

Portfolios offer the flexibility to demonstrate professional development and ongoing competence. Portfolio facilitates assessment of integrated and complex abilities and takes account of the level and context of learning. Portfolio can be used both for formative and summative assessments. International Medical University has been using Portfolio as a learning and assessment tool for its final year medical students for more than 10 years. The workshop will be designed with a short presentation, group work and interactive discussions. The intended outcomes of the workshop will be to show how portfolio can be used as an assessment tool and the various domains of competency which can be assessed. The workshop also will guide the participants how portfolio can be used for formative /summative assessment and issues in using portfolio as an assessment tool.

## 2 Q 2 Mini-Workshop

### **Using Emotional Intelligence to increase self-awareness and support professional development**

A Tavabie, A Koczwara (Kent Surrey & Sussex Deanery and Work Psychology Group, 7 Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** Emotional Intelligence (EI) stems from earlier theories that propose there are multiple intelligences, including a distinct intellectual capacity to understand and manage others. Previous research indicates well-designed and tailored EI interventions can benefit aspects of job performance with developmental activities enhancing both confidence and competence in managing interpersonal situations. Building on our previous experience of providing such interventions within a medical context, this workshop will introduce the concept of EI and use this to enhance participants' self-awareness and consider how one can effectively use this to support others' professional development.

**Intended outcomes:** Participants will 1) Understand the concept of EI and theory it is based on; 2) Have the opportunity to complete their own personalised EI profile free of charge; 3) Reflect upon their own emotions and the impact these have on self and others; 4) Experience a number of interactive exercises to explore EI; 5) Consider ways to apply EI at work.

**Structure:** During the workshop, we will use a variety of instructional methods including group presentation, small group practice, facilitated discussions and individual reflection.

**Intended audience:** All involved in medical education.

**Level of workshop:** All.

## 2 R 1 Mini-Workshop

### **Assessing patient safety competencies during clerkship using standardized patient based OSCE**

R Daud-Gallotti, L Zambom, ILC Tibério (University of São Paulo School of Medicine, Av Dr Arnaldo, 455, São Paulo 01246-902, Brazil)

**Background:** Recently, Patient Safety (PS) concerns have called the attention of medical educators. Education is considered an essential tool to reinforce teamwork and system approach, in which errors are used as opportunities to learn with. Although the first encounter with medical errors (ME) usually occurs during clerkship, most students consider they have been insufficiently trained in safe practices during medical graduation. A valid and reliable assessment of PS outcomes does have to be also incorporated. OSCE is considered a powerful tool in evaluating PS competencies, since it takes place in risk free environment, it incorporate human error approach, ME recognition and disclosure, patient-centred care, and communication/interpersonal skill and provides a valuable feedback. Nevertheless, OSCE is seldom incorporated as an educational strategy to assess PS competencies during clerkship.

**Intended outcomes:** Elaborate and simulate a PS-OSCE, focusing on ME recognition and disclosure, communication skills, team work and patient centred care.

**Structure:** Opening: 10 minutes; introductory remarks regarding PS program and assessment during clerkship: 20 minutes; hands-on activities preparing a PS station (30 minutes) and simulating (20 minutes). Final discussion: 10 minutes.

**Intended audience:** Medical educators, students, physicians, nurses.

**Level of workshop:** All.

## 2 R 2 Mini-Workshop

### **Navigating the path toward pre-clerkship competency-based assessment**

K Mack, S Masters, H Dan-Cohen, A Azzam (University of California, Berkeley / University of California San Francisco, 1401 Fifth Avenue, San Francisco, CA 94122, United States)

**Background:** Competency-based assessment measures, though broadly understood and usually endorsed by medical education faculty, can prove to be a challenging transition for students in the pre-clerkship phase of training. The underlying issues which challenge learners in this paradigm shift are complex and often poorly characterized. Students and educators describe both institutional and individual elements which, if unaddressed, can seriously slow a program's move toward competency-based assessment.

**Intended outcomes:** Participants will (1) Be able to describe 3 factors can affect the rate of change toward competency-based assessment (2) Will constructed a graphic representation of their own institutional readiness for their next toward adoption of assessment of competencies.

**Structure:** Participants will complete an inventory designed to identify the extent to which their current program has adopted a competency-based frame into the learning environment. Models for institutional change and their relevance to this shift in assessment focus will be presented. Members will then work in groups to map their own (or others') institutional challenges while learning from others in the room how such challenges were successfully addressed.

**Intended audience:** Curriculum leaders and faculty who are involved in pre-clerkship assessment and educational policy.

**Level of workshop:** All.

## 2 S Posters

## Portfolios and Written Assessment

### 2 S 1

#### **Portfolio assessment: the early feedback from the resident's perspective**

WP Ho, GS Lien (Taipei Medical University-Wan Fang Hospital, 111, Hsing-Long Rd. Sec. 3, Taipei 116, Taiwan)

**Background:** Portfolio was firstly introduced in the resident training program at Taipei Medical University-Wan Fang Hospital in January 2008. All residents were encouraged to develop portfolio for assessment of achievement in ACGME six core competencies.

**Summary of work:** The purpose of this paper is to report on the qualitative findings derived from interviews with residents who undertook to compile a portfolio. Taipei Medical University-Wan Fang Hospital was the first hospital to introduce portfolio assessment in resident training program in Taiwan. Not only residents but also mentors were new to portfolio.

**Summary of results:** Residents agree that portfolios help them to understand their ability in clinical practice and promote their self-evaluation of learning. Compiling of portfolios is time-consuming, demanding and very difficult in collecting practice documents. Since it is not a requirement in board examination the trainee will not treat it as a priority.

**Conclusion:** The key issues for compiling portfolio are lack of skills for developing a personal learning plan and difficulty in matching the ACGME six core competences with their clinical practice documents. The findings of our study conclude that education for developing portfolios for residents and mentors is very important.

**Take home messages:** To maximizing the effect of portfolio assessment, they should be integrated in training assessment.

## 2 S 2

### **Development of a portfolio of assessment for a multi-professional masters level musculoskeletal trauma module: a challenge in itself!**

D Prescott, F Cowell, B Narayan (The University of Liverpool, School of Health Sciences, Thompson Yates Building, Brownlow Hill, Liverpool L69 3GB, United Kingdom)

**Background:** The United Kingdom (UK) health care system has undergone significant changes over the past decade in the way that care is delivered (Department of Health (DoH), 2000). A key aim has been to modernise health care provision and promote development of capability in the workforce with emphasis on inter-professional learning (Skinner, 2007).

**Summary of work:** In 2009, The University of Liverpool in collaboration with clinical stakeholders developed a multi-professional masters level musculoskeletal trauma module suitable for medics, allied health professionals and nurses. A means of assessment was required that was fit for purpose across different disciplines, but which retained academic rigour. After consultation a portfolio format was decided upon to meet regulatory body and profession specific requirements (DoH, 2004). The portfolio consisted of a critical reflection on development based on the module learning outcomes and supporting documentary evidence of competence.

**Summary of results:** Assessment portfolios were submitted for four different professional groups. Module evaluation indicated they are an appropriate vehicle to assess achievement of module learning outcomes and profession specific competence.

**Conclusion:** In this context portfolio assessment met the requirements of all stakeholders.

**Take home messages:** Portfolio assessment should be considered for multi-professional groups. Shared learning is an essential pre-requisite for healthcare systems which are reliant upon effective team working.

## 2 S 3

### **Reflexive portfolio with feedback: developing the competence of the medical student for reflecting on their performance in clinical practice**

S Gannam S, ML Bourroul, APS Ferrer, D Ballester (University Hospital, Department of Pediatrics, School of Medicine, University of São Paulo, Avenida Professor Lineu Prestes, 2565, São Paulo 05508-900, Brazil)

**Background:** A growing concern in medical schools is the capacitation of students to reflect and critically review their own performance.

**Summary of work:** At the beginning of the medical internship, during the course of ambulatory pediatrics, a reflexive portfolio with feedback was introduced as an educational intervention to develop the competence for reflecting on medical practice. Each student should describe the consultations that he/she had performed and reflect on their skills, focusing in the doctor-patient relationship and the problems encountered. At every meeting the portfolios were read by the supervisor and discussed with each student.

**Summary of results:** At first, most of the students had difficulties and showed resistance in making the portfolios. Later, it was observed an increase in their ability to reflect on their performance and a

decrease in their resistance. The reflections which were initially only on biomedical issues, shifted to include questions about the limits of the medical practice, difficulties in addressing social issues and inability to communicate with parents and child.

**Conclusion:** The reflexive portfolio with feedback facilitates the development of the competence of students for reflecting on their practice.

**Take home message:** Teaching methods as such are needed in the curriculum of medical schools.

## 2 S 4

### **Evaluation in Mozambique of acquired competences in medicine**

BA de F Manuel, M Ismail, TH Fernandes (FM-UEM, Maputo, Mozambique)

**Background:** With the worldwide spread of student-centered methodologies, the Faculty of Medicine of Eduardo Mondlane University (FM-UEM) changed the curriculum to a PBL method. Assessment has to be accurate, reliable, feasible and delivered timely.

**Summary of work:** A strong effort is made to accomplish all recommendations for recognized methods of assessment, however presently facing difficulties concerning learning environment and teacher's resistance. This poster describes assessment methods in FM-UEM, impact on learning, acceptability to teachers and students, constrains of implementation and how the Faculty intends to accomplish the teaching and learning goals, while fulfilling its vision and mission.

**Summary of results:** Assessment at this faculty was changed to competence, the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individuals and communities. Using written exercises and multisource assessments, the following were adopted: Auto evaluation; Peer evaluation; Self-assessments; Portfolios; Tutor's or instructor's evaluation; Progressive test; Block evaluation; Evaluation based on the clinical competences, using the Objective Structured Clinical Examination.

**Conclusion and Take home message:** In the 5th and 6th years, evaluation is adapted to the acquired clinical competences in clerkships.

## 2 S 5

### **Trainee doctors' views of the Annual Review of Competence Progression**

H M Goodyear, T Bindal, D Wall (West Midlands Workforce Deanery, St Chad's Court, 213 Hagley Road, Birmingham B16 9RG, United Kingdom)

**Background:** An annual review of competence progression (ARCP) is mandatory for UK specialty trainees. In 2009, we undertook this electronically without the trainee present reviewing E Portfolio, work-based assessments (WBAs), multisource feedback and supervisors reports.

**Summary of work:** Semi-structured interviews of 21 Paediatric trainees from specialty training years 2-6.

**Summary of results:** Seven key themes emerged. 1) Adverse comments about IT and E Portfolio; 2) Consultants being unavailable for WBAs or not trained ; 3) Consultants not being computer literate; 4) ARCP difficulties, misunderstanding evidence required and preference for a face to face meeting; 5)

Paediatric curriculum issues with trainees unsure if this part of E Portfolio needed to be completed; 6) ARCP feedback viewed negatively especially the online form; 7) Positive comments from half of the trainees who valued regional review of progress.

**Conclusions:** It access problems, consultants not being trained in use of E Portfolio/ WBAs and trainees' lack of knowledge caused dissatisfaction about the ARCP process. However, regional review of progress was valued.

**Take home messages:** Reliable IT access to E Portfolio, trained consultant supervisors and more information about the process for trainees are needed to make ARCPs meaningful to trainees.

## 2 S 6

### **Assessing reflections – best practice**

Kalyani Premkumar (College of Medicine, University of Saskatchewan, Saskatoon SK S7N 5E5, Canada)

**Background:** Reflection is a cyclical, integrated, continuous process where individuals think about and evaluate their experience to reach a new understanding. It promotes critical thinking and a deep approach to learning and is considered an essential competence in professional training. While many agree that reflective practice can and should be taught, there is much debate on how it should be evaluated and how specific the instructions for reflective assignments. In our College, reflections are a part of assessments in a number of situations and a variety of evaluation methods are used. The poster will provide evidence from literature on strategies for writing instructions for reflective assignments and evaluating reflections. Examples of how reflections have been evaluated in literature and in our medical school will be shared.

## 2 S 7

### **Do scenario features, in test items designed to measure higher cognition, relate to undergraduate medical student performance? A retrospective analysis**

A Owen, G Byrne, on behalf of the UMAP Partners, and University of Manchester (UMAP, University of Manchester, ATR4 1st Floor Education & Research Centre, UHSM, Southmoor Road, Manchester M23 9LT, United Kingdom)

**Background:** The assessment literature provides much advice on item design to minimise cues advantaging the 'testwise'. The effect of scenario features within MCQs intending to measure higher cognition, are less clear.

**Summary of work:** Taking a null hypothesis approach we contend that neither scenario: 1) size; 2) readability; 3) quantitative data load (QDL) will significantly correlate with scores: a) on final exams (FEs; 996 items, 18 final exams, multi-school); b) from progress tests (PTs; 4119 items, 10 progress tests, years 1-4, single-school). All data from the Universities Medical Assessment Partnership (UMAP). UMAP develops, quality assures, and shares, items to measure higher cognition.

**Summary of results:** Insufficient evidence was found to reject the null hypothesis for readability. Importance of size was replaced by QDL across successively senior PT scores. Uncomplicated QDL correlated with performance in junior PT scores. FE and seniors' PT scores correlated significantly with complex QDL.

**Conclusion:** Our results indicate that item performance is associated, on a small scale, with QDL and size. Readability is not.

**Take home message:** How scenarios causally influence cognition remains unclear. We suggest that experimental methods, measuring cognitive processes, will better investigate validity as needed where items claim to measure cognition.

## **2 T Posters Simulation and Simulated Patients**

### **2 T 1**

#### **Use of human simulators and clinical trainers to measure student clinical competency in nurse practitioner programs**

E Jones, L Kennedy-Malone (The University of North Carolina at Greensboro, School of Nursing, PO Box 26710, Greensboro 27282, United States)

**Background:** Systematically assessing nurse practitioner students using modified objective structured clinical examinations (OSCEs) have become a means of measuring clinical competency of students throughout the nurse practitioner program. Faculty are often challenged to design simulations of common health conditions that students most likely encounter upon graduation but may have had limited experience in the actual clinical setting.

**Summary of work:** In this presentation, faculty will discuss options in designing OSCEs that include the use of human patient simulators and various anatomical clinical trainers. Short video vignettes of OSCEs using a human patient simulator, lung auscultator and cardiac auscultator trainer will be shown. Faculty will also discuss the option of using a pelvic simulator model and a microscope to develop an OSCE for a gynecologic situation. Suggestions for developing case study using anatomical simulators and human patient actors will be included.

**Take home message:** Combining standardized patients with human simulators and anatomical clinical trainers enhances the ability of faculty to measure clinical competency.

### **2 T 2**

#### **Defining 'best practice' in the use of simulation (computer enhanced manikins) in assessment - a framework for future developments**

K Khan, S Tolhurst Cleaver, T Pattison, M Sherwood (Manchester Medical School, Lancashire Teaching Hospitals Foundation Trust, Stopford Building, Oxford Road, Manchester M13 9PT, United Kingdom)

**Background:** 'Educational Governance' requires a definition of 'Best Practice' in the use of simulation in assessments. To the best of our knowledge this is the first paper addressing this issue by reviewing the literature on the conventional and contemporary frameworks of assessment.

**Summary of work:** A comprehensive review of the literature was done to define the gold standards for an ideal assessment tool. Simulation was mapped against these standards, to define the 'Best Practice' for the use of simulation in assessment and provide this as a framework for future developments.

**Summary of results:** While simulation is being used both as a formative and summative assessment tool, there is a lack of the definition of 'best practice' in the current literature. Based on our work we

recommend simulation to be used in a 'Longitudinal Assessment of Performance' using a 'Bayesian' model for summative purposes. This marks a shift from the current application of psychometric model of assessment to simulation.

**Conclusions:** Formative assessments drive learning and a series of such assessments on simulators can be used in a probabilistic model to predict future performance. This will overcome the problems of application of psychometric model to summative assessments using simulators.

**Take home message:** Bayesian model provides a viable alternative to Psychometric model of assessments on simulators.

## 2 T 3

### **Construct validity of PROMPT birthing simulator**

M Maagaard<sup>1</sup>, M Johansen<sup>1</sup>, CR Larsen<sup>1</sup>, B Ottesen<sup>1</sup>, C Ringsted<sup>2</sup>, JL Soerensen<sup>1</sup> (The Juliane Marie Centre for Children, Women and Reproduction, Copenhagen University Hospital Rigshospitalet, Denmark; <sup>2</sup>Centre of Clinical Education, Copenhagen University Hospital Rigshospitalet, Denmark, Copenhagen 2100, Denmark)

**Background:** High fidelity simulators are now being implemented in obstetrics training programmes. The advantages of these simulators are still unanswered. In order to measure the effect of simulation-training there is a need for valid assessment tools. "Construct validity refers to too which extend the simulator system is testing the trait it is constructed to test"<sup>1</sup>. The aim of this study is to assess the construct validity of the PROMPT birthing simulator<sup>2</sup> in order to find out whether the electronic data obtained from the simulator can be used to differentiate between proficiency level of doctors in two clinical settings.

**Summary of work:** Design: a descriptive observational study. 2 groups of 10 in each: novices (trainees) and senior consultants. The participants were all tested in management of shoulder dystocia and ventouse delivery. Assessment of performance were evaluated by blinded experts through video evaluations using a validated checklist and from electronic data obtained from the simulator. Construct validity of the PROMPT birthing simulator is gained by comparing the checklist result against the electronic data from the PROMPT birthing simulator.

**Summary of results:** Results from the study will be ready at the conference. All tests are done.

**Conclusion:** A conclusion on the construct validity of the PROMPT birthing simulator will be presented at the conference.

**Take home messages:** How important it is to test validity before using a simulator in a training programme.

<sup>1</sup>Cook DA, Beckman TJ. Current concepts in validity and reliability for psychometric instruments: theory and application. Am J Med 2006 Feb;119(2):166-16.

<sup>2</sup><http://www.limbsandthings.com>

## 2 T 4

### 'Blowing up the barriers': Validation of a new simulation environment

E Kassab, D King, S Arora, N Sevdalis, F Bello, J KyawTun, K Ahmed, B Vadhvana (Imperial College, St Mary's Campus, Department of Biosurgery and Surgical Technology, South Wharf Road, London W2 1BL, United Kingdom)

**Background:** Despite the usefulness of high-fidelity medical simulations, there remain issues with access and costs. Distributed Simulation (DS) offers a low-cost, portable, inflatable surgical environment, providing widened access to realistic simulation (including video-based debriefing facilities). The aim of this study was to determine face and content validity of the DS environment.

**Summary of work:** Surgeons completed a laparoscopic cholecystectomy (LC) using a porcine model contextualised with a surgical team in the DS setting. Evaluation methods consisted of questionnaires and detailed post-simulation interviews with participating surgeons.

**Summary of results:** 10 trainee surgeons (<50 LC) and 10 experts (>50 LC) completed 20 simulations. Experience ranged from 1-12 years. Face validity of DS was rated as 4.9 (SD=0.61) and content validity as 4.9 (SD= 0.44) on a 6-point scale (1=not at all realistic to 6=completely realistic).

**Conclusions:** The DS environment has face and content validity and can thus offer a valid, low cost and portable training and assessment tool for surgeons.

**Take home messages:** High fidelity medical simulation to train and assess surgeons is limited by cost and access. DS is an innovative concept which offers a valid, portable yet self-contained facility which can be made widely available.

## 2 T 5

### Simulation and "Tomorrow's Doctors": mapping the undergraduate curriculum

S Tolhurst-Cleaver, AT Pattison, M Sherwood, K Khan (University of Manchester, Oxford Road, Manchester M13 9PL, United Kingdom)

**Background:** The recently published document "Tomorrow's Doctors" defines outcomes for UK Undergraduate Medical Education. This includes the use of simulation as an educational tool. Previous work has shown simulation to be most effective when integrated into the curriculum.

**Summary of work:** Lancashire Teaching Hospitals NHS Trust contains a healthcare simulation facility, used for the delivery of simulation to undergraduate medical students at the University of Manchester. We mapped our existing simulation scenarios to outcomes described in "Tomorrow's Doctors".

**Summary of results:** We identified all the potential learning objectives for our simulation scenarios and mapped these directly to outcomes from "Tomorrow's Doctors". We also identified learning outcomes relevant to different stages of undergraduate training so that the same scenarios could be adapted with alternative emphasis depending on learning needs.

**Conclusions:** Simulation scenarios can be mapped to specific learning outcomes as identified in "Tomorrow's Doctors". This demonstrates how simulation may be integrated in to a curriculum thus making it more effective as a tool for learning.

**Take home messages:** Simulation as an educational tool fits many of the recommendations for medical education detailed in "Tomorrow's Doctors". Simulated scenarios can be mapped directly to learning outcomes from "Tomorrow's Doctors". Different learning outcomes can be emphasised to tailor scenarios to individual learning needs.

## 2 T 6

### **The impact of simulator training in procedures on confidence levels and readiness to learn**

LA Cooper, J Gravlee (University of Florida, College of Medicine, Chapman Education Center, CG-78, P.O. Box 100213, Gainesville 32606, United States)

**Background:** Procedural skills are important, yet proficiency depends on incidental exposure. We developed and evaluated a two-week fourth-year elective to teach procedures using simulators.

**Summary of work:** Course participants and a comparison group of non-participants rated their confidence to perform targeted procedures, the number of times they had assisted/performed these procedures, training satisfaction, and confidence for internship. Confidence ratings used an 11-point scale. Qualitative data was collected using semi-structured interviews and open-ended responses to survey questions. Pre-post confidence ratings were compared using dependent samples t-tests. Confidence ratings of participants and non-participants were compared using Wilcoxon exact p-values. Spearman correlations between experience and confidence were computed.

**Summary of results:** There was a significant difference in overall confidence between participants (pre-course) and non-participants. Average pre-post confidence gains were significant for 13 of 16 procedures. Effect sizes ranged from  $d = .52$  to  $2.67$ . Relationships between experience and confidence ranged from  $r_s = .21$  to  $.75$ . Qualitative data suggests students valued simulator training because it (a) leveled the playing field, (b) allowed a step-by-step approach to procedures, (c) facilitated repetition, and (d) enhanced muscle memory.

**Conclusions and Take home message:** Although confidence may not translate into competence, increased readiness-to-learn and take initiative when opportunities present themselves may be a more realistic goal for this elective.

## 2 T 7

### **More is better: enhanced training of medical students does increase student confidence**

DM Schocken, F Slone, DD Schocken (University of South Florida College of Medicine, Center for Advanced Clinical Learning, 12901 Bruce B Downs Blvd, MDC Box 97, Tampa FL 33612, United States)

**Background:** Advanced Cardiac Life Saving (ACLS) training is a core competency in medical school. ACLS covers competencies that include CPR, drug therapy, teamwork, communication and leadership skills. Student retention of ACLS algorithms fall precipitously without practice. Students express lack of confidence in real emergent settings. This study was to determine a way to increase students' retention and confidence during these settings.

**Summary of work:** 120 rising third year medical students completed ACLS training. The training included immersive practice on high-fidelity manikins. Following extensive practice, the students completed the ACLS requirements. Each student completed a pre and post test and three and six month follow-up surveys. A practical assessment was embedded at end of year three.

**Summary of results:** 115 students initially passed ACLS. 65 students successfully completed the practical assessment at year's end. This was an increase of 35% over previous year's review of skills.

**Conclusions:** The transition to an immersive ACLS training has increased student retention of the algorithms and confidence in participation of emergent resuscitation.

**Take home messages:** ACLS is core training. Immersive lab training helps increase a student's retention as well as confidence. Successfully participating in the emergent resuscitation can help make them better trainees in the future.

## 2T8

### **Simulation to train Residents in cognitive error and reflection**

Robin R Hemphill, Sally A Santen, Jason Liebrecht (Emory University, 531 Ashbury Circle, Annex, Suite N340, Atlanta 30322, United States)

**Background:** Simulation in medical education has blossomed because it allows the learner a safe arena in which to make mistakes. However, there is little in the literature that addresses how simulation might give the learner a clear framework of the types of cognitive errors or the biases that increase the risk of making errors. Without such an understanding learners may have difficulty deconstructing why they made a mistake. While residents may still learn from the encounter that lead to the error, the learning point may be weighted too strongly toward the single patient encounter rather than heuristic or bias that could be transferred to other encounters.

**Summary of work:** Lectures have been developed introducing medical error and bias. Focus has now been on the development of trial simulation cases that incorporate uncertainty and risk for error as well as debriefing strategies so the learner understands why they either made, or avoided, an error.

**Ongoing challenges:** Gaining agreement on what constitutes an error and development of outcomes measures to determine whether the learner has changed behavior.

**Take home messages:** Simulation provides a safe environment for correction of medical errors and debriefing to increase transfer of understanding of heuristics and biases

## 2 T 9

### **Low cost, high yield: Simulation of obstetric emergencies for family medicine resident training**

SR Magee, M Nothnagle (Brown University Family Medicine Residency, 111 Brewster St, Pawtucket, RI 02860, United States)

**Background:** Treatment decisions in obstetrics must be made without hesitation, as potentially life-threatening consequences exist for inaccurate orders or wrong decisions. Multiple studies have demonstrated the effectiveness of simulation in clinical education, but costs can be prohibitive.

**Summary of work:** Ten family medicine residents participated in two unannounced simulated obstetrical emergencies, postpartum hemorrhage (PPH) and preeclampsia. The low-cost simulation used trained faculty actors and inexpensive disposable equipment and was followed by immediate verbal feedback. Ten similar residents served as a comparison group. All residents completed a brief written test assessing knowledge of managing obstetric emergencies at baseline. Six months later, all participants were reassessed using a case-based oral exam and the same written test.

**Summary of results:** Baseline knowledge of PPH and preeclampsia management was similar in both groups. Residents who participated in the simulation had significantly higher scores on the oral exam, and improved scores on the post test for PPH but not preeclampsia.

**Conclusions:** Formative assessment using verbal feedback after low-cost simulated obstetric emergencies appears to improve knowledge of management of postpartum hemorrhage and preeclampsia.

**Take home messages:** Low cost simulation with verbal feedback is a useful tool in teaching residents to manage obstetric emergencies.

## 2 T 10

### **The use of laywomen to teach breast history and examination**

L Chappell, A Chase, J Marsden, J Rymer (Department of Women's Health, Guy's and St Thomas' Hospital, 10th Floor, North Wing, St Thomas' Hospital, Lambeth Palace Road, London SE1 7EH, United Kingdom)

**Background:** Students learn to assess breast lumps in busy clinics. Previously we taught laywomen (Gynaecology teaching associates–GTAs) to teach students to perform pelvic exams and those taught by GTAs performed better than peers who had not received this teaching. The aim was to train laywomen (Breast Teaching Associates-BTAs) to teach students to take a breast history and perform examination

**Summary of work:** A breast surgeon delivered training in breast history and examination to the current GTAs. The BTA teaching was piloted on junior doctors and BTAs were assessed to ensure they were competent in delivering and assessing technical and communication skills. Two cohorts of students doing their Reproductive+Sexual Health term were compared. The first was exposed to traditional “breast teaching” and assessed by an OSCE at the beginning and end of term. The second had an additional teaching session by the BTAs at the beginning of the RSH block

**Summary of results:** Significant differences between 1st and 2nd OSCE scores between the two cohorts in history taking ( $p < 0.001$ ), examination ( $p = 0.004$ ) and total score ( $p = 0.001$ ) but not in communication ( $p = 0.88$ )

**Conclusions and take home messages:** Lay women teaching students how to take a breast history and perform a breast exam is superior to traditional teaching when assessed by an OSCE

## 2 T 11

### **Junior medical students strongly support the use of simulated patients to teach female pelvic examinations: a report from a large UK medical school**

K Barry, JV Parle, DJ Morley, MJ Calvert, S Irani (University of Birmingham, Interactive Studies Unit & Healthcare Development Unit, School of Health and Population Sciences, College of Medical and Dental Sciences, Edgbaston, Birmingham B15 2TT, United Kingdom)

**Background:** Gynaecological Teaching Associates (GTAs) are used to teach pelvic examinations (PEs) around the world but not the UK. We have investigated the acceptability of using GTAs in a UK Medical School with a culturally diverse population and asked the students to rate the GTAs as teacher.

**Summary of work:** 239 undergraduate medical students (40% male) in 3rd year. 30% ethnic minority. Teaching session: 1 GTA, 1 co-facilitator (non-clinical); Format: Introduction with students (n=4) exploring students concerns; DVD showing PE on patient; demonstration by GTA on manikin; students practice on manikin; students examine GTA with feedback from GTA. Modified Gynaecological Examination Distress Questionnaire (GyExDQ) with 4 point Likert scale, covering students' comfort with abdominal and pelvic examinations, rating of GTA as teacher. Free-text comments in 4 areas.

**Summary of results:** Qualitative results overwhelmingly positive. Inspecting external female genitalia scores rose from 1.14 to 2.22 for males and from 1.36 to 2.22 for females. This trend continued for the other examination points.

**Conclusions:** We have demonstrated that using GTAs to teach PEs with medical students in a large UK undergraduate medical school is strongly supported by the students.

**Take home messages:** GTA recruitment to the programme is difficult – the acceptability of this format of teaching must become more widespread within the UK.

## 2 T 12

### **Turn rehearsal into show: SP-resource management is beneficial for large cohort teaching and assessment**

I Preusche, M Wagner-Menghin, M Schmidts (Medical University of Vienna, Vienna, Austria)

**Background:** Providing SPs for training and assessing history taking is effective, but resource intensive. Is it feasible to use video material obtained during SP-based training to derive marks for summative assessment?

**Summary of work:** In 2008, 694 second year students were offered either to perform their history taking skills with SPs in front of the examiners, or to show a prerecorded performance (created during free practice time with SPs) as basis of grading. The advantages of the “best video” mode and the equivalence to the live performance mode are analyzed.

**Summary of results:** 49% chose the “best video” option, shifting the SP's workload from the examination to the free practice time. The live performance leads to more fail decisions ( $\chi^2= 5.987$ ,  $df=1$ ,  $p=.014$ ,  $ES = \phi_{corr}=.688$ ; large effect size); however, the total of fail decisions is marginal ( $n = 13$ ), even for a low-stakes examination.

**Conclusion:** The “best video” mode has organizational and educational advantages, also resulting in better outcomes. However, the frames of pass/fail decisions have to be adapted (e.g. by revision of rating instruments or standard settings).

**Take home message:** The “best video” mode is attractive for students, resulting also in better outcome and optimized use of SP-resources.

## **2 U Posters International Dimensions of Assessment; and International Medical Graduates (IMGs)**

### **2 U 1**

#### **Improving medical communication and clinical skills of International Medical Graduates: Effectiveness of a clinically relevant educational program**

D Watt, C Violato, D Lake, L Baig (University of Calgary, Department Community Health Sciences, Faculty of Medicine, 3330 Hospital Drive, NW, Calgary, Alberta T2N 4N1, Canada)

**Background:** To assess the efficacy of a 16 week, intensive, full-time medical communication and clinical skills educational program – Medical Communication Assessment Project (M-CAP) – at the University of Calgary and Alberta for improving medical communication, clinical skills and professionalism of international medical graduates (IMGs). The M-CAP employs an 8 week didactic course (language instructors, standardized clinical case scenarios) and an 8 week supervised clinical placement.

**Summary of work:** In Study 1, 39 IMGs (mean age = 35.6) and in Study 2, 235 IMGs (mean age = 39.2) participated. A pre- post-test design and a comparison group analysis on OSCE data employing multivariate analysis of variance (MANOVA) were employed.

**Summary of results:** The findings show that the participants in the M-CAP program have 1) very large gains in language proficiency (listening and speaking, reading and writing), and 2) high ratings on scales from the practicum physicians. The between group analyses showed that M-CAP participants outperformed the non M-CAP participants on clinical skills and professionalism.

**Conclusion:** IMGs who participated in a clinically relevant educational program improved their English language proficiency, clinical skills and professionalism.

**Take home messages:** Systematic clinically relevant educational programs can improve IMGs skills for medical practice in a host country.

### **2 U 2**

#### **Relearning as a medical student: Outcome performance of International Medical Graduates (IMGs)**

A-M MacLellan, C Brailovsky, S Leboeuf, F Miller, E Prigent (Collège des médecins du Québec, 2170 René-Lévesque Ouest, Montréal, QC H3H 2T8, Canada)

**Background:** The overall success rate of IMGs in entering independent practice after completing residency training in Québec, Canada, is about 60%. This presentation reviews the performance during residency and at Family Medicine (FM) certification examinations of IMGs who return to medical school (often at clinical clerkship level) rather than entering directly in a postgraduate training program.

**Summary of work:** Over 80 files of IMGs who went back to a medical school and obtained a MD in Québec were reviewed. Success in residency training and at certification examinations was recorded and analyzed.

**Summary of results:** The average time for IMGs to complete the residency training in FM was 23,9 months compared to 24,7 for the CMGs. The success rate for IMGs at the FM certification examination

(first attempt) was 96,5 % compared to 93,1 % for CMGs. Several hypotheses will be discussed as to why IMGs succeed better through this pathway.

**Conclusion:** IMGs who graduate with a Québec medical degree complete their FM residency and certification examinations at a comparable level to CMGs.

**Take home message:** Reentering medical school, often at a clerkship level, is one of the solutions to improve the success rate of IMGs in entering independent practice.

## 2 U 3

### **A theory-based support model to help Australian PRIMGs to pass their AMC clinical exam: ROMBO**

S Malek, J Chesters (Monash University Department of Rural and Indigenous Health, 3 Ollerton Avenue, Moe 3825, Australia)

**Background:** Australia suffers from shortages of locally-trained doctors available to work in certain disciplines and regions. Hiring of international medical graduates (IMGs) is ongoing. Accurate data on permanent resident IMGs (PRIMGs) is unavailable. The Australian Medical Council (AMC) regulates PRIMGs' accreditation through written (MCQ) and practical (Clinical) exams. The literature suggests that clinical exam performance of some developing country PRIMGs is unsatisfactory and is worsening. This failure to gain registration reduces the number of doctors able to practice rurally.

**Summary of work:** We have researched the only accessible PRIMGs-cohort [N=321, n=198 (62%)], the 2004 (and 2007) Commonwealth funded 'RACGP-PROTD' database of the Royal Australian College of General Practitioners (RACGP).

**Summary of results:** The respondents were unhappy with the current support available. They reported needing: a structured one year training course run in rural places, a detailed feedback system as part of that model and, clinical skills gained through real patient exposure.

**Conclusions:** We felt that a theory-based (Andragogy) inter-professional course (i.e. ROMBO) could help train MCQ qualified PRIMGs to achieve full registration using pre-approved rural health care facilities. This pilot might need to include scholarships or medically-related jobs.

**Take home message:** Accredited PRIMGs are an untapped source of manpower for addressing rural shortages and ensuring the best patient care possible.

## 2 U 4

### **Global health perceptions - an opportunity gained or opportunity lost**

M Surgenor, P Yeates, A Redmond, G Byrne (University Hospital of South Manchester NHS Foundation Trust, UHSM Education Academy, 1st Floor ERC Building, Southmoor Road Wythenshawe, Manchester M23 9LT, United Kingdom)

**Background:** University of South Manchester NHS Foundation Trust has a Global Health Link with Gulu University Faculty of Medicine and Gulu Regional Referral Hospital Uganda, which aims to support medical education and service development. To support recruitment to the project we wished to explore what factors influenced the decision to participate made by those staff who volunteered. Research Question: What factors were perceived to have helped or hindered participants' decision to volunteer?

**Summary of work:** We performed a documentary analysis of staff diaries completed during their placement in Gulu and semi-structured interviews after return to the UK. Staff including doctors, midwives nurses, management and educationalists, recorded their experience of participating in a programme in a resource poor, post conflict environment. Interviews were audio recorded and transcribed. This is a qualitative study using inductive thematic analysis of transcribed audio data and dairy texts.

**Summary of results:** Description of these perceptions will be presented.

**Conclusions:** The potential for these perceived ideas to be modified to improve recruitment to the scheme will be considered.

**Take home messages:** For links with third world institutions to be sustained, understanding of the potential benefits and difficulties to participation in such links is useful.

## 2 U 5

### **Introducing the UK Foundation Programme in Malta**

C Moore, B Langham, S Carney (UK Foundation Programme Office, Regus House, Falcon Drive, Cardiff CF10 4RU, United Kingdom)

**Background:** Many Maltese doctors undertake specialty training in the UK. Following changes to the entry requirements for specialty training in 2007, a large number of Maltese graduates began to leave earlier in their training to undertake the Foundation Programme in the UK. In 2008/9, 79% of the Maltese graduating class applied to the UK Foundation Programme potentially leaving Malta's healthcare service seriously under-staffed.

**Summary of work:** The Maltese healthcare service requested help from the Department of Health (DH) to introduce the Foundation Programme. DH commissioned the UK Foundation Programme Office (UKFPO) to provide technical expertise including: establishing governance arrangements, agreeing processes for quality assurance, training faculty, engaging stakeholders and a readiness assessment.

**Summary of results:** The Malta Foundation School was affiliated to the UKFPO in July 2009. 75% of the graduating class have chosen to remain in Malta to undertake their Foundation training. Those doctors who successfully complete the Foundation Programme in Malta will be recognised equally with those who undertook the programme in the UK and will be able to access specialty training on that basis.

**Conclusions:** Whilst this has proved technically possible, the implications of an affiliated foundation school outside the UK are still being evaluated.

**Take home messages:** Exporting a training programme in its entirety to another country is complex and difficult, but can ultimately be successful.

## 2 U 6

### **German medical students in their final-year: Differences between clerkships in Germany and abroad**

M Simon, H Stasch, S Sudmann, S Beckers, S Sopka, W Dott (Medical Faculty RWTH Aachen University, Pauwelsstrasse 30, Aachen 52074, Germany)

**Background:** Requirements for German Undergraduate Medical Education state, that students after five years of medical school have to complete a practical year, consisting of full-time clerkships (16 weeks each in Internal Medicine, Surgery and elective discipline). Barring the aim to get work-experience, students expect better education in practical skills while studying abroad, especially overseas. In fact, RWTH Aachen University encourages its students to spend parts of this final-year abroad, and numerous do so (approx. 100 p.a.).

**Summary of work:** Final-year education was evaluated by questionnaire (5-point likert-scale; 1=best, 5=worst) and analysed in respect of location.

**Summary of results:** Results of this evaluation show discrepancies: Overall rating: Abroad (A)  $1.8 \pm 0.2$ ; n=102), Germany (G)  $2.3 \pm 0.1$ ; n=343). In some items differences are obvious (e.g. practical training (A:  $1.7 \pm 0.24$ ; G:  $2.2 \pm 0.08$ ) patient treatment (A:  $2.2 \pm 0.1$ ; G:  $2.7 \pm 0.1$ ). In other points education seems to be equal (e.g. enough time to take part in extra courses (A:  $1.7 \pm 0.2$ ; G:  $1.8 \pm 0.1$ ) or time to take patient-history (A:  $1.7 \pm 0.2$ ; G:  $1.8 \pm 0.1$ ).

**Conclusions and take home messages:** Training of practical skills and how to behave as a doctor are better taught abroad. The offer of extra-courses respectively the time to take part in these seems to be equal.

## 2 U 7

### **The impact of clinical rotation in USA on specialty preferences of Indian medical students**

RK Yalamanchili, M Brezenski, K Nalleballe, A Pakanati, M Jasti, P Bere (Osmania Medical College, 301 Sri Rama sai Residency Rd # 6, Lakshmi nagar Colony Saidabad colony, Hyderabad 500059, India)

**Background:** The purpose of this study was to evaluate the influence of Clinical rotation in USA on specialty preference for Indian medical students.

**Summary of work:** A survey questionnaire was mailed to about 191 Indian medical students who participated in Clinical Clerkships & Clinical Observerships in various hospitals in USA in the year 2007 & 2008. The questionnaire asked the students to evaluate various aspects of Clinical rotation in USA , which influenced their specialty preferences.

**Summary of results:** A total of 168 Indian medical students responded. Most Clinical rotations (94%) had impact on specialty preference for Indian medical students. Many medical students felt that having clinical experience in USA is worth for all the expenditure, and they were satisfied with the rotation. However, the greatest influence on specialty choice came first from the experiences of the clinical rotation (90%) and second from the challenge and intellectual content of the specialty, followed by the influence of faculty members and technological advances in the specialty. For large majority of them, who had made the decision prior to start of clinical rotation, experiences of the rotation strengthened their decision.

**Conclusion and take home message:** These findings suggest that the medical student's experiences in the Clinical rotations in USA have a significant impact on their specialty choice.

## 2 U 8

### **Improving medical literacy skills through simulation**

Cathy Smith<sup>1,3</sup>, Lynn Russell<sup>3</sup>, Stan Rogal<sup>1,2,3</sup>, Lorena Dobbie<sup>2,3</sup>, Kevin Hobbs<sup>2,3</sup>, Jacquie Jacobs<sup>2,3</sup> (<sup>1</sup>Dept. of Family and Community Medicine, <sup>2</sup>Standardized Patient Program, <sup>3</sup>Faculty of Medicine, University of Toronto, Canada)

**Rationale:** International Medical Graduates (IMGs) identify medically specific language and cultural differences as barriers for entry into training programs, irrespective of scores on general language testing. This difference between social and occupation-specific literacy is evident, but rarely formally addressed. We describe a pilot project making extensive use of simulation to provide IMGs with intensive training in medical literacy.

**Methodology:** This 40-hour, learner-centred, experiential curriculum utilizing simulation is designed for IMGs with English as a second language. The Canadian Language Benchmark system was applied to create realistic simulated scenarios that increase in difficulty as the course progresses. Teaching modalities include large group simulation/discussion, reflective exercises, out-of-class reading and writing assignments, and individual practice with specially trained simulated patient/educators who provide immediate feedback about communication and language using strategies specifically developed for this course. This offers IMGs rich opportunities to process, discuss, retry and refine skills. A validated assessment of reading, writing, speaking and listening, and pre and post communication assessments measure level of and change in literacy skills. IMGs completing the course are tracked to determine success in entry into professional programs.

**Results:** Five iterations (n=85) have been completed. Statistical analysis of pre/post assessment of communication shows significant improvement ( $p > .001$ ) was accomplished within this short, but intensive course. Approximately 40% of those applying from iterations one and two were accepted into residency training programs.

**Conclusions:** Concentrated use of simulation focused on occupation-specific language training plays a major role in the success of this intensive, short course in improving medical literacy skills.

## 2 U 9

### **International collaboration in curriculum design and delivery: the University of Sydney-King Saud Bin Abdulaziz University For Health Sciences experience**

M Magzoub, Y Al Eissa, I Al Alwan, V Terry, C Roberts (King Saud bin Abdulaziz University for Health Sciences, P.O.Box 22490, Riyadh 11426, Saudi Arabia)

**Background:** The USyd initiated a four-year graduate entry medical program which is problem-based, integrated and community-oriented, using a clinical reasoning model and integral e-Learning resources. Several Universities from around the world including the Middle East, South Africa, Australia and Europe have adopted this program for either a new curriculum or extensive revision. The USyd curriculum has been adapted to fit the local situation and realities in each particular context. KSAU-HS is among these universities. The idea of exporting a curriculum which is mainly designed to work in a particular environment to be implemented in another environment is considered as one of the model of curriculum design. This is an area in which there is little published research. The aim of this presentation is to present this experience of the delivery, implementation and evaluation in a systematic manner.

**Summary of work:** The experiences of two participating institutions in the collaboration will be delivered along with a conceptual framework for this approach of curriculum design.

**Summary of results:** The two participating institutions are satisfied with this collaboration. A model of how to transfer and receive a curriculum will be presented.

**Conclusion:** Adapting a curriculum as starting point or following reform is found to be a successful experience

**Take home messages:** A successful implementation of this model requires continuous communication and evaluation to fit local situations.

## SESSION 3 SIMULTANEOUS SESSIONS

### 3 A Symposium

**National examination at the end of undergraduate medical training: How do some European countries address and implement the concept of qualification of medical graduates for residency training?**

NV Vu (University of Geneva, Switzerland), R Bonvin (University of Lausanne, Switzerland), C Schirlo (University of Zurich, Switzerland), EG Hahn (University of Witten-Herdecke, Germany), D Maillard (University of Paris, France), D Pestiaux (Catholic University of Louvain, Brussels, Belgium)

The utility of a National or European licensure examination was discussed in a recent issue of Medical Teacher<sup>1</sup> and at the 2008 AMEE (Association of Medical Education in Europe) meeting. It was proposed that “taking a European perspective ...seems much more desirable, albeit complicated, than reinventing the wheel at all the national levels”. While most European countries do not presently have a national examination system, a few do have such a system although its uses vary from country to country. In the context of considering a national or even a European licensing examination, it is constructive and useful to review those systems which have been in place. The purpose of this symposium is to describe each country respective national examination system by indicating: 1. Its aims and purposes; 2. The responsible organization of the system; 3. The examination psychometric properties; 4. The uses of the examination results; 5. Whether and to what extent the national examination system is related to the country medical faculty examinations? 6. The observed and unanticipated consequences (positive and negative) of the national examination system on medical institutions, examinees, and residency choices and training.

Discussions will focus on how each country addresses the above issues as well as the strategies it would consider to respond to the pros and cons of the system within the context of the country and Europe.

<sup>1</sup>Medical Teacher, 31, 2009.

### 3 B Oral Presentations Postgraduate Assessment 2

#### 3 B 1

**Curriculum mapping to enhance assessments - can this be achieved? A route map from KSS Deanery, UK - for ACCS programme**

S Mukherjee, K Kelleher (Kent, Surrey and Sussex Deanery, 7 Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** Acute Care Common Stem (ACCS) programme is a two year core training programme which includes Acute medicine, Emergency medicine and Anaesthetics/intensive care. We describe a proposed process of curriculum mapping for ACCS to include curriculum delivery, teaching and assessment.

**Summary of work:** ACCS programme for 44 trainees is delivered through nine hospitals. Curriculum delivery and monitoring is through Local Faculty Groups(LFG) which report to ACCS School. Teaching and

training is through regional/local courses, self directed learning and work based assessments(WBA). Regular appraisals and feedback is provided and quality assurance and progress monitored by visits and Annual Review of Competency progression(ARCP).

**Summary of results:** Each LFG has a designated Consultant Education advisor who acts as a resource for faculty development and educational feedback. The project would cover a period of nine months to include: 1) Initial diagnostics looking at teaching programme, Work-based Assessment (WBA) and quality of WBA; 2) Triangulating this with curriculum, exam success, teaching evaluation and cross reference of learning opportunities with assessment blueprint of PMETB; 3) Monitoring assessment progress of trainees and correlating with ARCP outcome.

**Conclusion and Take home message:** This will help the ACCS school to prepare both the trainees and faculty in better curriculum delivery, improving quality of assessments and satisfactory outcomes in ARCP.

### 3 B 2

#### **Initial test of competency for new anaesthetic trainees - Can this be achieved in a shorter period of time? “Targetted training” experience from a UK training unit**

K Mukherjee (Medway NHS Foundation Trust, Windmill Road, Gillingham, Kent ME7 5NY, United Kingdom)

**Background:** New trainees in Anaesthesia need to achieve Initial Test Of Competency(ITOC) within three months before they work unsupervised. Our experience of “Targetted training” to deliver ITOC in a shorter time period is described.

**Summary of work:** The process included: 1) Induction and feedback meetings with Educational Supervisors; 2) A range of essential topics, which include the knowledge and skills to be acquired before ITOC, are taught by Consultant trainers and trainees are signed off; 3) Targetted skills teaching for airway maintenance, invasive procedures and equipment training; 4) Acute pain teaching by multidisciplinary team; 5) Study day on Transport of critically ill patients; 6) Shadowing the on call team after 4 weeks; 7) Trainees’ feedback regarding their readiness and any gaps in their skills/knowledge; 8) ITOC are signed off after full assessment.

**Summary of results:** Seven new trainees were trained in the last 2 years. Six of these completed ITOC between 6-9 weeks(median 7.5 weeks). There was excellent feedback from trainees and supervisors.

**Conclusions:** Targetted training helped to reduce the time taken for achievement of ITOC by 3-4 weeks.

**Take home message:** Targetted training helped to achieve ITOC within a shorter time period. This will help EWTD delivery in anaesthetics training units.

### 3 B 3

#### **Clinical skills training offers sustained benefits for foundation doctors - mixed methods analysis of knowledge and perceived competence**

G Tunnicliffe, S Lambden (Imperial College London, St Mary's Hospital, Praed St, London W2 1NY, United Kingdom)

**Background:** The effectiveness of a Clinical Skills course undertaken by doctors in the first 4 weeks of postgraduate year 1 and 2 (PGY1 and PGY2) was assessed.

**Summary of work:** Participants completed multiple choice question (MCQ) papers and Likert Surveys of perceived competence before, at the end of and 2 months after clinical skills courses. For comparison a group of PGY2 doctors who had their initial skills training 2 months after the study group undertook pre-course assessment.

**Summary of results:** MCQ: The mean MCQ scores of both groups showed significant improvement following the course, PGY1s (n=22) from 73.5% to 79.5% (95% CI 2.9% - 9.2% p<0.05). At 2 months, PGY2 doctors maintained statistically significant improvement over their pre-training scores (p=0.0025) and over those who had gained experiential learning alone (p=0.0152). Competence: PGY2 doctors showed improvement in 4 of 6 skill areas which was sustained at the 2 month analysis. The experiential learning group had pre-training scores at 2 months consistent with those of the study group before their training.

**Conclusions:** Early clinical skills training offers sustained benefits when compared to experiential learning.

**Take home message:** We suggest that clinical skills training sessions should form part of standard training for recently qualified doctors.

### 3 B 4

#### **Does performance on MCQ and free response written tests vary differentially by candidate gender and ethnicity? So can choice of 'test modality' be discriminatory?**

ML Denney, R Wakeford (University of Cambridge, CRAMET: Centre for Research in Assessment for Medical Education and Training, Department of Social and Developmental Psychology, Free School Lane, Cambridge CB2 3RQ, United Kingdom)

**Background:** There is pressure on UK examining bodies (EBs) to abandon free-response written tests for MCQs. There is (separate) concern of underperformance by ethnic/gender-defined groups.

**Summary of work:** We studied pass-rates of 2510 trainees (UK graduates, not International), whites and S Asians, taking two tests concurrently in a postgraduate examination (MRCGP)--an MCQ paper and a free-response short-answer paper (SAQ). We report pass-fail outcomes on each by candidates' gender and ethnicity.

**Summary of results:** There were significant outcome differences by gender and ethnicity, overall, and between ethnic/gender subgroups. Overall, women did better than men, and White candidates performed better than Asian candidates; Asian women and men performed similarly. As between the two tests, we found interactions between testing modality and ethnic group and gender. Sub-group fail rates were significantly different between the tests, too. Relatively, the MCQ favoured white men, the SAQ favouring white women and Asians.

**Conclusions:** Using either test separately, or both, would have produced different outcomes, in terms of pass-rate by gender and ethnicity.

**Take home messages:** Some EBs limit written tests to computer-marked MCQ format. This might run counter to their (UK) legal obligation 'to promote fairness'. EBs should use more than one type of written test.

### 3 B 5

#### **Numbers of procedures needed for a cardiologist to reach proficiency in coronary angiography**

SBEW Råder, E Jørgensen, L Lönn, C Ringsted (Centre for Clinical Education, Faculty of Health Sciences, University of Copenhagen, Capital Region of Denmark, University Hospital, Rigshospitalet, Blegdamsvej 9, 2100 Copenhagen, Denmark)

**Background:** We aimed to assess the number of coronary angiography (CA) procedures needed to train a cardiologist to proficiency.

**Summary of work:** Procedure time, fluoroscopy time, dose area product (DAP), and contrast media volume were analyzed in 4200 CAs, and performance curves of seven trainees were compared to those of seven interventional cardiologists.

**Summary of results:** After 300 procedures trainees' mean (SD) procedure time, fluoroscopy time, DAP, and contrast media volume were: 19 (9) minutes, 4 (3) minutes, 43 (23) Gy $\text{cm}^2$ , and 104 (32) mL, respectively, and significantly higher compared to experts' performance 14 (7) minutes, 3 (2) minutes, 32 (19) Gy $\text{cm}^2$ , and 87 (30) mL, ( $p < 0.001$  for all parameters). The number of procedures needed, for the trainee to reach recommended reference levels could be estimated to 228 and 361, for DAP and use of contrast media, respectively. To approach the level of the experts, trainees would need 399 and 607 procedures, respectively.

**Conclusions:** Estimates based on performance curves of readily available surrogate parameters of trainees' proficiency in CA show higher requirements than usually recommended in training programmes due to large individual differences.

**Take home messages:** Performance curves might be useful in monitoring trainees' development of competence.

### 3 B 6

#### **Physicians reentering the workforce: their retraining and assessment**

N Varjavand, C Johnson (Drexel University College of Medicine, 2900 Queen Lane, Medical Education, 2nd floor, room 221, Philadelphia, United States)

**Background:** Historically, little retraining and assessment has been required of clinically inactive physicians wishing to return to practice. This is changing dramatically. In 2006, Drexel University College of Medicine redesigned our successful retraining/reentry program, targeting the needs of today's returning physicians.

**Summary of work:** Two program modules were created. One, structured on-site preceptorship in various subspecialties allows trainees to develop a program based on their needs within the context of a structured curriculum. Trainees are assessed via various formats: standardized multiple choice questions (MCQs), standardized patient OSCEs, virtual diagnostic assessment cases, presentations, discussions on rounds, and professionalism. Our second module, on-line Medical Update Curriculum and Assessment, uses distance-learning didactic curriculum with MCQs and standardized exams for assessment.

**Summary of results:** From 11/ 2006 to 8/2009, 32 physicians successfully completed and ten are currently enrolled in the Refresher/Reentry Course. Since completion of the program, 29 trainees succeeded in updating their clinical skills, reinstating their medical license, obtaining employment and securing admission to residencies.

**Conclusion and Take home messages:** Physician reentry courses which use retraining and assessment will update medical knowledge, refresh clinical skills and improve the confidence of inactive physicians seeking reentry to medical practice. Our program may serve as a model for others.

### 3 C Oral Presentations Mini-CEX

#### 3 C 1

#### **The implementation of a mobile problem specific electronic CEX for assessing directly observed student-patient encounters**

G Ferenchick, J Foreback, B Towfiq, K Kavanaugh, D Solomon, A Mohmand (Michigan State University, Division of General Medicine, Department of Medicine, B 334 Clinical Center, East Lansing, MI 48824, United States)

**Background:** Strategies for facilitating the direct observation and assessment of medical students' clinical competencies are a pressing need.

**Summary of work:** We developed an electronic, mobile, problem-specific clinical evaluation tool (eCEX) and assessed its feasibility in recording competencies among 56 students during an 8 week clerkship. We further assessed a grading incentive, comparing the number of observed student-patient encounters reported by eCEX students compared to 56 non-eCEX students.

**Summary of results:** Regarding feasibility, eCEX students completed 10 or more directly observed encounters with 129 different physician evaluators. More than 75% of surveyed students and faculty agreed the eCEX helped them understand the specific targets of the assessment. Faculty agreed the eCEX improved their assessments (74.7%) and their feedback (88.7%). Most faculty (84.2%) agreed that it was easy to incorporate the eCEX into their workday. Regarding the grading incentive, eCEX students reported an average of 7.7 (+/- 8.3) separate focused history observations, and 11.5 (+/- 11.3) focused physical exam observations compared to 4.6 (+/- 3.9) and 6.9 (+/- 7.4) respectively among non-eCEX students, ( $p < 0.05$ ).

**Conclusions/Take home message:** Use of the eCEX was feasible and was associated with important educational outcomes. Furthermore, a grading incentive increased the number of directly observed student-patient encounters.

### 3 C 2

#### **Do faculty clinical skills correlate with their ratings of residents' clinical skills during standardized patient encounters?**

J Kogan, L Conforti, B Hess, E Holmboe (University of Pennsylvania School of Medicine, 3701 Market Street, Suite 640, Philadelphia, Pennsylvania 19104, United States)

**Background:** Factors underlying suboptimal quality of faculty assessments of medical trainees' clinical skills are poorly understood. Whether faculty's own clinical skills influence their rating behaviors is unknown. We hypothesized faculty with better clinical skills would be more stringent rating residents' clinical skills.

**Summary of work:** Forty three internal medicine faculty (12 institutions) completed 8 standardized patient (SP) scenarios. SPs rated history, physical examination, and counseling skills and "patient" satisfaction. Faculty watched videos of scripted residents in 4 SP scenarios and rated each resident using the mini-CEX.

**Summary of results:** Controlling for precepting experience, faculty's own history skills correlated with their ratings of residents across 5 of 7 mini-CEX competencies ( $r = .31$  to  $.52$ ;  $p < .05$ ), whereas physical exam skills correlated only with ratings of residents' exam skills ( $r = .39$ ;  $p < .05$ ). Faculty's "patient" satisfaction ratings were inversely correlated with their mini-CEX ratings of residents' exam, and organizational skills ( $r = -.32$  and  $-.33$ ,  $p < .05$ ).

**Conclusions:** Faculty with higher rated history and physical exam skills rated more lenient while those with higher SP satisfaction ratings were more stringent. Whether faculty with higher patient satisfaction ratings preferentially attend to encounter process versus content merits research.

**Take home message:** Faculty's own clinical skills may impact their assessment of residents' clinical skills.

### 3 C 3

#### **Assessing clinical competence: Implementation of a Mini-CEX adaptation in a pediatric training program**

J Urman, A Grosman, G Urman, S Folgueral, A Alves de Lima (Department of maternal child health, Maimonides University, Buenos Aires Cardiovascular Institute, Felipe Vallese 326, 1414 Ciudad Autonoma de Buenos Aires, Argentina)

**Background:** Mini-CEX proved useful in assessing residents in real practice scenarios.

**Summary of work:** We adapted the traditional Mini-CEX for use in pediatric patients. In this study we analyzed 275 observations (September 2007 - August 2009) in 52 residents by 25 previously trained examiners. Participants' satisfaction was assessed by a survey.

**Summary of results:** The observation settings were outpatient (emergency and well child care) 56%, in ward 35% and neonatology (rooming-in) 9%. The mean number of observations per resident was 5.2, whereas 69% had 4 or more. Each examiner observed a mean of 6.7 students. The complexity of patient problems was rated as low in 64% of the encounters, moderate in 31% and only 2% rated high. Patients' diagnoses were mainly "Health supervision visit" (36%) and "Respiratory problem" (22.9%). Data gathering was the most frequent focus reported, followed by counseling in outpatient settings and diagnosis in in ward patients.

**Conclusions:** Most observations took place in healthy, outpatient children and involved counseling. Residents' overall performance was satisfactory. This new format was accepted by all participants.

**Take home messages:** Observations and feedback in various pediatric settings with a broad range of problems are possible.

### 3 C 4

#### **Lack of association between emotional intelligence and faculty ratings**

E Holmboe, B Hess, L Conforti, J Kogan (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia, Pennsylvania 19106, United States)

**Background:** Emotion is believed to affect how faculty assess resident clinical performance. While measures of emotional intelligence (EI) have been associated with better clinical performance, few studies have investigated how EI affects the rating of residents' clinical skills via direct observation.

**Summary of work:** Forty-four faculty from 13 internal medicine programs completed the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). Using a miniCEX, faculty rated videos of four unique scripted patient encounters, including one resident breaking bad news and another resident with brusque interpersonal skills. Four MSCEIT branch scores (perceiving, using, understanding, and managing emotions) were correlated with faculty ratings on the seven domains of the miniCEX (med interview, physical exam, humanism, clinical judgment, counseling, organization and overall competence).

**Summary of results:** None of the four MSCEIT scores correlated with any of the miniCEX ratings ( r range = - .14 to .21, all ps > .05).

**Conclusions:** In a controlled setting, a validated measure of EI showed no relationship to faculty rating behavior on the miniCEX, raising further questions about the role and effect of emotional intelligence in faculty assessment of trainees.

**Take home message:** Emotional intelligence did not appear to have a major impact on faculty assessment in this controlled study.

### 3 C 5

#### **The use of Mini-CEX in a new nursing programme**

L English, G Koutoukidis, D Kiegaldie, BC Jolly (Holmesglen Institute, Moorabbin Campus, 488 South Rd, Kingston 3189, Australia)

**Background:** There has been a tradition of workplace assessment in nursing education for many years. However the degree of structure in such assessments, and their amenability to psychometric analysis has been variable.

**Summary of work:** This paper reports on the development, implementation and evaluation of a mini-cex for first year bachelor degree nurses in a new program. The data on the cohort were collected between October 2009 and January 2010. Analysis using generalisability theory, on individual records, after appropriate assessor (clinical educator) training, has identified the reliability of such assessments. In addition, a new element of the mini-cex, targeted at underpinning knowledge supporting the clinical encounter, was evaluated.

**Summary of results:** At this stage the analysis of data is not yet complete. The results will be presented at the Conference.

### 3 D Oral Presentations OSCE Case Studies 1

#### 3 D 1

#### **The OsceSIM – an online formative assessment tool to aid preparation for Objective Structured Clinical Examinations (OSCE)**

M S Rashid, D Gore, O Sobowale (Stockport NHS Foundation Trust, Stepping Hill Hospital, Poplar Grove, Hazel Grove, Stockport SK2 7JE, United Kingdom)

**Background:** OSCEs are used by all 32 medical schools in the UK as a form of assessment of clinical competence. Formative assessment has been shown to aid preparation and improve performance in clinical examinations.

**Summary of work:** We developed an online OSCE-simulation software, the OsceSIM. The OsceSIM is a formative assessment tool designed to aid OSCE preparation for final year medical students at the University of Manchester. It included 100 mock OSCE stations in 5 categories: History-taking, Examinations, Spotters/Data interpretation, Communication skills/Ethics and Prescribing/Death certification. Students were able to store and monitor their performance in each category of OSCE stations.

**Summary of results:** One hundred three final year medical students were recruited. The OsceSIM was used to varying degrees prior to their final OSCE. Eighty-four percent stated they found it had a positive effect on their examination preparation. Eighty-one percent stated the OsceSIM aided small group peer-assisted learning. Ninety percent said they would recommend its use to other students. Eighty-nine percent stated that feedback from the OsceSIM scores helped guide their examination preparation.

**Conclusions and Take home messages:** The OsceSIM provided a structure for peer-to-peer formative assessment and feedback for medical students preparing for an OSCE. It was consequently well received as a useful tool in preparing for clinical examinations.

### 3 D 2

#### **Preparing for the OSCE: Evaluation of a stress management training intervention**

J Butt, K Forrest, I Maynard, B Nicholson (Academic Unit of Anaesthesia, University of Leeds and Centre of Sport & Exercise Science, Sheffield Hallam University, Great George Street, Leeds LS1 3EX, United Kingdom)

**Background:** It is well documented that pressure situations can increase anxiety and have a debilitating influence on performance. This study investigated the effectiveness of a stress management training intervention on students' anxiety, self confidence, and perceived performance in the OSCE.

**Summary of work:** A 6-week multimodal stress management intervention was delivered to 4th year UK medical students (n=20). A modified competitive state anxiety questionnaire (CSAI-2md) was administered pre and post intervention, and measured cognitive anxiety, somatic anxiety, and self-confidence in terms of both intensity and direction. The intervention included applied relaxation, systematic desensitisation, cognitive restructuring, coping mechanisms, and building self-confidence.

**Summary of results:** Both cognitive and somatic anxiety levels significantly decreased pre to post intervention, while self-confidence increased. Results also revealed that directional interpretation of anxiety symptoms were perceived as less debilitating toward performance in the upcoming OSCE. Students provided more positive ratings on a subjective self-performance scale relative to their previous OSCE performances.

**Conclusions:** The multimodal intervention was effective in decreasing students' anxiety and increasing their self confidence prior to taking the OSCE.

**Take home message:** Mental skills training can equip students with coping strategies to manage the demands experienced in examination and other pressure situations.

### 3 D 3

#### **Timely feedback and OSCE. Possibilities and meanings**

VR Bollela, C Rego, F Neman, E Dórea, JLM Machado (Universidade Cidade de São Paulo (UNICID), Rua Cesario Galeno 448, Tatuapé, São Paulo 03071-000, Brazil)

**Background:** OSCE are basically used as summative assessment method. We have one OSCE/year, and two of them occur during the internship (5th and 6th year). The OSCE has 6 stations, lasting 6 minutes/each.

**Summary of work:** Working with 2 groups of students, we trained evaluators to provide timely feedback by the end of each OSCE station. Students had 5 minutes to do the task and the evaluator 1 minute to give feedback. At the end of the 6 stations, students answered a questionnaire with 2 open-ended questions: “Did you receive feedback after finishing each station?” “Would you like to receive feedback in future OSCEs?” “Please Comment.”

**Summary of results:** Out of a total of 48 5<sup>th</sup>-year students, 45 (94%) said they’ve received feedback, and out of 47 6<sup>th</sup>-year students, 38 (80%) received feedback. Ninety-six percent (80 out of 83) said they would like to receive feedback regularly. Qualitative analysis of the answers showed eight nuclear themes: 1-minimize stress; 2- guide learning; 3-increase self-confidence; 4-Meaningful learning; 5-excellent; 6-Relevant; 7-guide clinical reasoning; 8-match assessment with learning objectives.

**Conclusions:** Students perceived feedback as a relevant strategy to guide learning, adding a formative component to OSCE.

**Take home messages:** Providing timely feedback is feasible and helpful during the OSCE.

### 3 D 4

#### **The Australian College of Rural and Remote Medicine (ACRRM) Fellowship program: A new era in rural and remote medicine training**

T Sen Gupta, S Margolis, D Prideaux, J Smith, M Cowie, T Wilkinson (Australian College of Rural and Remote Medicine, Level 4, 410 Queen Street, Brisbane, Qld 4000, Australia)

**Background:** The Australian College of Rural and Remote Medicine (ACRRM) provides an approved pathway for training and vocational recognition in rural medicine. The program recognizes rural doctors provide holistic, focussed, continuing care responsive to community’s needs, often with limited and/or remote access to services and resources.

**Summary of work:** ACRRM registrars undertake a ‘programmatic model’ of formative and summative assessment in a rural/remote context. Detailed feedback to registrars and supervisors enriches the learning experience. This presentation describes the development and delivery of assessment process and associated challenges. Two important issues were: assessment of the rural/remote context – how is rural/remote medicine different? – and designing assessment to be undertaken in rural and remote locations.

**Summary of results:** Innovative approaches included use of workplace assessments including the mini clinical evaluation exercise and multi-source feedback; web-based multiple choice questions; and the StAMPS (Structured Assessment Using Multiple Patient Scenarios) examination using videoconferencing to deliver an OSCE-style examination with the examiners centrally located and candidates in their home communities.

**Conclusions:** ACRRM has developed and delivered the world's first postgraduate licensing examination in rural medicine over four examination cycles from 2008.

**Take home messages:** Rurally focused assessment can be developed and delivered to candidates in rural/remote locations.

### 3 D 5

#### **Assessment of prescribing skills in undergraduate medical students in fourth year of training**

M Spooner, F Meagher, RT Brady, J Strawbridge, J Kelly, NG McElvaney (Department of Medicine, Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Beaumont, Dublin D9, Ireland)

**Background:** Medication errors comprise a considerable component of patient morbidity and mortality. The objective of this study was to objectively determine the prescribing competence of undergraduate medical students.

**Summary of work:** Fourth-year medical students were assessed in a 21-station OSCE. The examination was performed 4 times during the academic year, with a total of 247 students were assessed. Two sittings of the assessment were randomised to include a prescribing task in each station. The remaining two assessments included clinical theory in place of prescribing.

**Summary of results:** The mean score across all stations in the assessments including prescribing was 41+/- 5.66, compared to a mean score of 72+/- 4.45 in the assessments without prescribing questions ( $p < 0.05$ ). Sub-analysis of the prescribing questions demonstrated that among the incorrect responses, 36% chose an inappropriate medication, 43% prescribed an incorrect dosage, 43% an incorrect route and 46% an incorrect frequency.

**Conclusions:** There is need for vertical and horizontal integration of prescribing teaching.

**Take home message:** Prescribing competence continues to be sub-optimal in undergraduate medical students.

### 3 D 6

#### **Checklists or global ratings, experts or standardized patients: Evidence of reliability from a BEME systematic review on the OSCE**

Madalena Patricio<sup>1</sup>, Miguel Julião<sup>1</sup>, Filipa Fareleira<sup>1</sup>, Meredith Young<sup>2</sup>, Geoffrey Norman<sup>3</sup>, António Vaz Carneiro<sup>1</sup> (<sup>1</sup>Centre for Evidence Based Medicine, Faculty of Medicine University of Lisbon, Portugal; <sup>2</sup>Department of Psychology, Neuroscience and Behaviour, McMaster University, Canada; <sup>3</sup>Department of Clinical Epidemiology and Biostatistics, McMaster University, Canada)

**Background:** The Objective Structured Clinical Examination (OSCE) has experienced an explosion of use, which has rarely been accompanied by systematic investigation. Issues frequently discussed in the literature include the use of checklists or global ratings as evaluation tools, and the use of expert or standardized patients as evaluators.

**Summary of work:** A BEME systematic review was undertaken to identify the OSCE reliability in undergraduate medical education. From the 1062 studies 94 contained data on average inter-station reliability. We investigated reliability for checklist versus global ratings, and standardized patients versus expert examiners.

**Summary of results:** The global ratings showed consistently higher inter-station reliability than checklists. There was no difference between SP and expert evaluators for average inter-station reliability using checklists. SPs had slightly higher inter-station reliability than experts when global ratings were used ( $t(17)=3.16, p<.05$ ).

**Conclusions:** Higher average inter-station reliability was found when global ratings were used. The concern that SPs will not be as reliable as examiners particularly when using global ratings is not supported by the current results.

**Take home messages:** These results should assist evaluators when designing OSCEs, and encourage the use of global ratings and the co-ordinated use of standardized patients and expert evaluators.

### 3 E Oral Presentations Competency-based Assessment 2

#### 3 E 1

##### **Real world assessment: a model using a common metric (ACGME Competencies) to assess curricular preparation for Residency**

E CichoskiKelly, J Yu (University of Vermont College of Medicine, Courtyard at Given N110, Burlington 05405, United States)

**Background:** This follow-up study was the first time University of Vermont College of Medicine graduates were surveyed regarding their curricular experiences with the new Vermont Integrated Curriculum (VIC) after one year of post-graduate training. This investigation assessed graduates' perceived preparedness of both the VIC guiding principles as well as the ACGME guidelines to provide information in the implementation and modification of future curricula.

**Summary of work:** Derived from the ACGME competencies, an anonymous questionnaire was distributed amongst UVM graduates of the class of 2007 upon completion of their intern year to assess intern perceived preparedness related to the guiding principles of the VIC and the ACGME guidelines.

**Summary of results:** The majority of respondents (46% response rate) “strongly agreed,” or “agreed” that the VIC had prepared them with regard to the guiding principles. The majority of interns felt “more prepared,” or “as prepared” than their peers with regards to the ACGME guidelines.

**Conclusions:** The VIC adequately prepared the graduates of 2007 for their role as first-year interns.

**Take home messages:** ACGME guidelines serves as a valuable tool in assessing whether a medical curriculum has adequately prepared their graduates for “real world” experiences and could serve as a common metric as among medical schools hoping to gain insight on their curriculum.

### 3 E 2

#### **Professional Competences Accreditation Programme in the Public Health System of Andalusia**

A Almuedo, P Brea, A Rojas, M Ceballos, R Salguero, M Periañez, A Torres (Andalusian Agency for Healthcare Quality, Augusto Peyré nº1 3rd floor, Seville 41020, Spain)

**Background:** The Andalusian Agency for Healthcare Quality (Spain) developed a Professional Competence Accreditation Programme.

**Summary of work:** The purpose of this presentation is to describe the Professional Competences Accreditation Programme. This programme is a competence-based management tool. More than 500 professionals and representatives of Scientific Societies constituted Technical Advisory Committees. There is one Committee for each discipline or speciality, and each one has developed its own Manual of Competences. Accreditation is a voluntary process through which professionals revise their own practice, demonstrating a certain level of competence, which they had previously, or which they have achieved during this process. Accreditation process has 3 phases: Application, Self-assessment and Recognition and certification.

**Summary of results:** The total number of healthcare professionals covered by the Accreditation Model is >40,000. The breakdown is as follows: 1) Healthcare specialties: 65; 2) Professional groups: 11; 3) Professionals in the self-evaluation phase: 7,273; 4) Professionals who have completed the accreditation process: 1,277.

**Conclusions:** The Professional Competences Accreditation Programme is based on the analysis of real healthcare practice. One thousand, one hundred healthcare professionals from the Public Health System of Andalusia have completed the accreditation process, achieving some level of accreditation.

**Take home messages:** The Professional Competences Accreditation Programme acknowledges best practices and allows the identification of improvement areas that promote the continuous professional development of healthcare professionals.

### 3 E 3

#### **Implementing the Competency-Based Achievement System (CBAS) for assessment in an Emergency Medicine-Family Medicine Residency Program**

D Nichols, K Peterson, S Ross, I Steiner, M Donoff, P Humphries (Emergency Medicine-Family Medicine Residency Program, Department of Family Medicine, University of Alberta, 205 College Plaza, Edmonton, Alberta T6G 2C8, Canada)

**Background:** Medical education is moving towards a competency-based framework. The challenge lies in how to measure competency. Our Emergency Medicine (EM) program chose to adopt the Competency-Based Achievement System (CBAS) developed by the University of Alberta Family Medicine Program.

**Summary of work:** As a pilot site for CBAS, we changed our daily feedback forms and end-of rotation evaluations to reflect the CBAS principles of formative feedback. We found changes were required to make the CBAS process work in an EM environment.

**Summary of results:** Pilot data (1st 3 months) reveals the following findings about using CBAS in Emergency Medicine: 1) Faculty Development is the biggest challenge to implementation – in particular, preceptors are resistant to feedback that is formative only. They would prefer to make generic 'gestalt' comments, and mostly in domains of medical knowledge and procedural skills; 2) Feedback as guided by the principles of the CBAS process provides valuable data for guiding the completion of meaningful end-of-rotation evaluations; 3) Learners report that CBAS increases the feedback they receive, and guides their learning effectively.

**Conclusions:** CBAS is a useful tool to guide the learning and evaluation of residents in an EM program.

**Take home messages:** Competency-based assessment based on formative feedback is effective.

### 3 E 4

#### **Competency assessment of Resident Physicians - 2 year experience**

WJ Cairney, JM Finley, S Garner, T Lynd (Western University/Opti – West Educational Consortium, 309 East Second Street, Pomona, California 91766, United States)

**Background:** Assessment of Core Competency Domains is a requirement of postdoctoral residency (GME) training in the US in both ACGME and AOA programs. Though the NBME and NBOME evaluate medical students preparedness for entry to GME programs, many institutions and GME leaders struggle to accomplish authentic assessment that ensures evaluation of a particular competency, protects patients, and provides effective feedback to a developing professional learner – the resident physician.

**Summary of work:** One hundred seventy-six R1 and R2 resident physicians from 4 Teaching Hospitals were assessed using an OSCE for competency in the domains of; Patient Care, Professionalism and Interpersonal and Communication Skills. Resident levels OSCE tools included – delivering difficult/bad news/obtaining DNR order; patients refusing to undergo treatment for religious reasons; and obtaining informed consent. 176 residents were evaluated between 2007 and 2009.

**Summary of results:** Most residents demonstrated competency in assessed domains. Professionalism and Interpersonal/Communication domains correlated whereas Patient Care did not. A wide variability of competency was demonstrated and did not correlate with year of training.

**Conclusions and Take home messages:** In a cohort of R1 and R2 resident physicians OSCE is an effective tool to ensure appropriate development of necessary competency in Professionalism, Patient Care and Interpersonal and Communication Skills. OSCE assessment should be incorporated in Resident assessment.

### 3 E 5

#### **Improving learner assessment: evaluating what we value**

M Ainsworth, G Asimakis, A Frye, J Rowen, S Lieberman (University of Texas Medical Branch School of Medicine, 301 University Boulevard, Galveston, Texas 77555, United States)

**Background:** Credible assessment requires aligning goals and instruction with evaluation methods. We sought to more explicitly identify learner skills and behaviors we value and match assessments to achieve these outcomes.

**Summary of work:** To match our goals of problem-solving over recall, multiple-choice question exams were revised to emphasize higher-order questions. Establishing secure exams allows re-use of questions with superior statistics. Providing similar practice exams with faculty feedback allays student concerns about content and structure. Active participation, discussion and problem-solving are enhanced by six hours/week of small-group problem-based learning in year 1 and 2 courses. Team-based learning in some clerkships reinforces the importance of group contributions. Clinical skills, formally assessed in a year 4 standardized patient-based examination, are reinforced through an introductory skills week prior to clerkships, and a formative exercise at the midpoint of the clerkship year. The importance of professional behavior is stressed through the use of Early Concern Notes.

**Summary of results:** Our assessment methods emphasize skills we value in problem-solving, group participation, and clinical skills development. Emphasis on professionalism stresses support and growth rather than punishment.

**Conclusions:** The quality of knowledge and clinical skill-based assessments, and their alignment with the real-world skills we value in graduates has been enhanced. By implementing a consistent approach across courses and clerkships, we have been able to sustain this approach toward skills assessment, and increase the credibility of assessment in the minds of students.

**Take home messages:** Aligning curriculum goals, instruction, and assessment has improved our school's educational environment.

### 3 E 6

#### Exploring competencies Finnish Physicians need in their work

T Litmanen, K Patja (Pro Medico, P.O.Box 49, Helsinki, FIN-00501, Finland)

**Background:** Competence consists of range of skills, knowledge and attitudes that physicians use in their work. Different models for defining competency areas have been introduced. The goal of this study was to explore how Finnish physicians perceive the need for different competency areas in their work.

**Summary of work:** Data for this study were collected in a national questionnaire administered by the Finnish Medical Association (response rate= 60%; N=10 624). The competencies were derived from the CanMEDS framework (seven areas) and administered in eleven items focusing on different aspects of competence. The participants were asked to assess how much they needed different competencies in their work.

**Summary of results:** Factor analysis identified three broad competency dimensions: (1) Medical knowledge and professionalism, (2) Management skills and (3) Interpersonal skills. Evaluations about how much different areas were needed varied according to work assignment and age, reflecting occupational status and amount of work experience.

**Conclusions:** The results complied with the framework provided by CanMEDS, but the factor analysis compressed the seven areas in to three broader dimensions. This study suggests that different positions require different competencies from physicians. Therefore, if physicians are assessed, they should be assessed in accordance with their work.

### 3 F Oral Presentations Simulation-based Assessment 1

#### 3 F 1

##### Does participating in the 'Harvey' (the cardiac patient simulator) peer-assisted learning scheme benefit the attendees?

MA Rodrigues, JCL Rodrigues, CA Parisinos, VG Lim, KAA Fox, M Denvir (Royal Infirmary of Edinburgh & University of Edinburgh, Scotland, 8/4 Sienna Gardens, Edinburgh EH9 1PG, United Kingdom)

**Background:** 'Harvey' is a cardiac patient simulator. Third-year medical students at Edinburgh University can attend extra-curricular 'Harvey' tutorials, during their Cardiovascular module, led by trained 4<sup>th</sup>-year peer-tutors. We present data showing the effect of participating in the scheme on tutees' performance in formal undergraduate examinations.

**Summary of work:** One hundred seventeen 3<sup>rd</sup>-year students attended 36 peer-led 'Harvey' tutorials during 2008-2009. With consent and ethics approval, anonymous University examination marks for tutorial attendees were compared with marks of 120 students who decided not attend any 'Harvey' tutorials.

**Summary of results:** 'Harvey' tutorial attendees performed significantly better in the official undergraduate end-of-module Cardiology examination, compared to non-attendees (81.8+/-0.62% vs. 79.7+/-0.73% P=0.029). No significant differences in end-of-module performances were observed between these 2 cohorts in any of the other 3rd year modules where peer-led schemes do not exist.

**Conclusions:** Attendance at our 'Harvey' peer-led tutorials correlates with objective academic benefits to 3rd year undergraduates. The lack of difference between attendees/non-attendees in other modules, with no peer-assisted learning schemes, may suggest this benefit is related directly to our scheme, rather than a self-selected cohort phenomenon.

**Take home messages:** The 'Harvey' peer-assisted learning scheme appears to be a useful adjunct to traditional bedside teaching.

### 3 F 2

#### **Enhancing the teaching and assessment of digital rectal examination using a novel simulator and task analysis**

N Low-Beer, T Kinnison, S Baillie, F Bello, A Di Marco, R Kneebone, J Higham (Centre for Medical Education Research, Imperial College, Faculty of Medicine, South Kensington Campus, Sir Alexander Fleming Building, London SW7 2AZ, United Kingdom)

**Background:** Traditional teaching of digital rectal examination (DRE) is by visual demonstration and verbal description. However, the examination involves internal finger movements that cannot be visualised, and many teachers cannot accurately articulate how they perform it.

**Summary of work:** A 'cut-away' DRE model with integrated camera allowed visualisation of internal finger movements. A tripod-mounted camera provided an external view. Twenty clinicians demonstrated DRE on the simulator, describing their actions as though teaching a student. Their spoken commentary (transcribed voice recordings) and observed behaviour (internal and external camera videos) were analysed. A checklist of steps was agreed through an iterative process involving 4 of the clinicians, all experienced teachers.

**Summary of results:** DRE was deconstructed into 49 steps. Of the 20 clinicians, mean percentage of verbalised and visualised steps was 29% (range 14-59) and 43% (range 29-61), respectively. Three of the 9 steps involving internal movements could be identified only from the internal camera video.

**Conclusions:** Using task analysis and a novel DRE simulator we identified steps that would have been omitted during traditional teaching

**Take home messages:** Task analysis using a 'cut-away' DRE simulator allows expert practice to be deconstructed, providing a framework for teaching and assessment

### 3 F 3

#### **Possibilities of assessment via the Mobile Clinical Skills Unit for Scotland**

J Ker, C Laird, D Rowney, D Sedgwick, N Maran, R McIntosh, P Nicoll, J Stevenson, J Morse, S Thompson (Clinical Skills Managed Educational Network (and University of Dundee/Ninewells Hospital); BASICS Scotland; Paediatric Retrievals Service, Edinburgh Sick Kids, NHS Lothian; NHS Highland; , Scottish Clinical Simulation Centre Stirling, NHS Forth Valley; Borders General Hospital, NHS Borders; Remote and Rural Healthcare Education Alliance; RRHEAL, Clinical Skills Managed Educational, Network (and University of Aberdeen/ARI); Mobile Unit, Clinical Skills Managed Educational Network, United Kingdom)

**Background:** As part of the Scottish Clinical Skills Strategy, NHS Education for Scotland funded a Mobile Clinical Skills Unit for delivery of multi-professional skills education, and assessment of healthcare practitioners in remote/rural areas of Scotland, for a pilot period from January 2009 to December 2010.

**Summary of work:** Education programmes are led by hosts at remote/rural venues where the unit is stationed. Assessment in a simulated setting is now possible in remote areas, and several options for assessment are being explored through the pilot. Simulated practice is assessed on the unit, using video de-briefing where appropriate. The impact of the education on the participant's practice is assessed by self-reporting.

**Summary of results:** In its first eight months the unit completed 2-3 week visits to ten venues. Over 800 healthcare practitioners have taken part in education on the unit. Early results are encouraging.

**Conclusions:** Using a multi-agency approach, the mobile unit enables individual and whole-team assessment in remote/rural areas, offering a solution to interruption of service delivery where the team are required to be off-site for assessment at the same time.

**Take home messages:** Assessment is possible anywhere at a convenient time using a mobile facility.

### 3 F 4

#### **Feasibility of High Fidelity Video Assisted Real Time Simulation (VARS) in the undergraduate curriculum: measuring competence in acute pediatric emergencies**

E Coolen, J Draaisma, M Hogeveen, T Antonius, C Lommen, J Loeffen (Radboud University Medical Centre Nijmegen, Department of Pediatrics, Postbus 9101, 6500 HB Nijmegen, Netherlands)

**Background:** VARS training offers the possibility of developing competence in acute medicine in a realistic and safe environment. We investigated the feasibility of the VARS model, and compared it with educational methods like Problem Based Learning (PBL), and Pediatric Advanced Life Support (PALS).

**Summary of work:** Forty-five 5<sup>th</sup>-year medical students were randomized for three educational methods; PBL, PALS and VARS. Students were assessed by a multiple choice questionnaire (MCQ) and by a scenario test prior to study entrance. Subsequently, all three groups followed a group specific one-day course on acute pediatrics. After intervention, students were evaluated with a MCQ and two standardized simulations. Scenario performance was recorded on video for scoring by two blinded investigators.

**Summary of results:** The MCQ results improved significantly ( $p < 0.001$ ) without differences between educational groups. The VARS-group showed significantly ( $p < 0.05$ ) higher scores on both post-intervention scenarios concerning structure and time.

**Conclusions:** VARS is feasible for training undergraduate students. It helps students to acquire a structured and timely performance during emergency scenarios. VARS has no additional effect on the acquisition of knowledge.

**Take home message:** VARS-training is a useful tool in teaching and measuring the integrated use of clinical knowledge and skills in acute medicine.

### 3 F 5

#### **Simulation based performance assessment in National Registration Exams for Nurse Specialists**

O Eisenberg, H Fighel, A Ziv (National Institute for Testing and Evaluation (NITE), Jerusalem, Israel)

**Background:** Until 2008, Israeli nurse specialists' (NS) registration mandated a year-long specialty course followed by a Multiple Choice Test (MCT). In recognition of the need to add performance measures to the registration process, a Simulation-Based-Test (SBT) was developed to replace the MCT. The new SBT measures proficiencies in clinical skills, clinical reasoning and decision making.

**Summary of work:** Teams of NS, simulation experts, and psychometricians developed SBTs, for 13 different nursing specialties. Tests included 10-11 SBT stations and one short MCT station. SBT utilized simulators and SPs, debriefing stations and video-based case-analysis. NS, experts in the respective clinical fields, were trained as raters, and rated examinees on structured scoring forms.

**Summary of results:** Total of 632 nurses were tested. Analyses, for each test, included score distributions, item difficulty, inter-rater agreement, inter-station correlations, face validity and test psychometrics when possible (limited sometimes by small Ns). Main results will be reported.

**Take home message:** The test is a unique initiative to assess the relevant competencies for NS. To our knowledge, there is no similar model of NS certification worldwide. It can pave the way for other health regulatory bodies to consider moving towards a more accountable certification and registry in health professions.

### 3 G Oral Presentations The Progress Test

#### 3 G 1

##### **Dutch Radiology Progress Test: knowledge learning curve in radiology residents**

CJ Ravesloot, ThJ ten Cate, FJA Beek, C Haaring, JPJ van Schaik (University Medical Center Utrecht, Heidelberglaan 100, 3584 CX Utrecht, Netherlands)

**Background:** For the development of expertise in postgraduate medical education an extensive knowledge database is essential. To monitor this, radiology residents in The Netherlands take the Dutch Radiology Progress Test (DRPT) twice a year. We evaluated the performance of residents on the DRPT in the past 6 years.

**Summary of work:** Results of 13 tests from 2003 till 2009 were analysed. Linear regression analysis and ANOVA were used to test performance differences as a function of length of training. Reliability was measured with Cronbach's  $\alpha$ .

**Summary of results:** Data were available for 560 residents from 26 different training programs (3170 test results). Reliabilities were high (Cronbach's  $\alpha$  around 0.9). A high increase in the performance on the DRPT is seen in the first three years of residency. After the third year no significant difference in performance could be measured on most tests across years.

**Conclusions:** Knowledge acquisition in radiology residency as measured with the DRPT mainly occurs early in residency. After the third year this process seems to stabilize.

**Take home messages:** The DRPT is a reliable knowledge test in radiology residency and is a valuable tool for monitoring residents at least in their first three years of training.

### 3 G 2

**Using the cumulative deviation method for cross-institutional benchmarking in Berlin progress test**  
S Schaubert, S Hanfler, Z M Nouns (Charité - Universitätsmedizin Berlin, Charitéplatz 1, Assessment/Progress Test, Berlin 10117, Germany)

**Background:** Berlin progress test is carried out at 12 faculties in German speaking countries. Our aim was to use Muijtjens et al.'s (2007, 2008) method for cross-institutional comparisons based on Berlin progress test data.

**Summary of work:** We adopted Muijtjens et al.'s method and applied it to data of the Berlin progress test. Comparisons of single-point benchmarking and longitudinal benchmarking were also carried out.

**Summary of results:** The cumulative deviation method has some major advantages. First, it is more reliable than single-point benchmarking as it integrates information from consecutive tests. Second, noise from point-to-point variation is reduced hence interpretation of differences is eased. But in order to avoid misinterpretation of comparisons strong assumptions about the student-cohorts have to be made.

**Conclusions:** The cumulative deviation method is a valuable strategy in cross-institutional benchmarking even within larger numbers of universities to be compared. Nonetheless a major difference between the Maastricht and the Berlin progress test is their summative respectively formative nature. As a result there may arise some statistical problems for calculation of significance tests and effect sizes.

**Take home message:** Muijtjens cumulative deviation method can successfully be applied to data from other progress tests.

### 3 G 3

**Better estimation of progress test scores: A new approach using Bayesian statistics**  
C Ricketts, R Moyeed (Peninsula College of Medicine & Dentistry, University of Plymouth, Plymouth PL4 8AA, United Kingdom)

**Background:** Progress Tests give a continuous measure of a student's growth of knowledge. However, the result at each test instance is subject to measurement error from a variety of sources. Previous tests contain useful information which might be used to reduce this error.

**Summary of work:** We have developed a new method of estimating the test score of an individual candidate and the standard error of measurement on each progress test occasion. At each test instance the candidate's current score is combined with prior information from their previous scores using a Bayesian approach. Adjustments are made for knowledge growth and test difficulty.

**Summary of results:** The results show reasonable smoothing of test scores and a reduction in measurement error of about 30%.

**Conclusions:** A Bayesian approach to estimating progress test scores is feasible and has good statistical properties. The method is simple to apply to large cohorts of students and frequent tests.

**Take home messages:** It is possible to reduce the standard error of measurement of progress test scores using previous test results in a Bayesian framework.

### 3 G 4

**Progress test: King Saud Bin Abdulaziz University for Health Sciences experience**

I Al Alwan, M Al Moamary, A Al Kushi, H Tamim, A Hajeer, ME Magzoub (College of Medicine, King Saud bin Abdulaziz University for Health Sciences, P.O.Box 22490, Riyadh 11426, Saudi Arabia)

**Background:** Progress test focuses on cognitive domain and outcome knowledge physicians are supposed to have at a time of graduation. Progress test is used mainly for formative purposes at our College of Medicine, KSAU-HS. The objectives of our study are to evaluate student's acquisition and retention of basic and clinical knowledge and to identify gaps in our curriculum.

**Summary of work:** Two different USMLE-based progress tests were done over the past three years: Basic Medical Sciences, started in 2007, held annually, with 180 MCQs. The second test is a clinical-based test, started in 2008.

**Summary of results:** There was correlation between result of each exam and student's GPA more clear with senior students. For example, in 2007, correlation coefficient was 0.593, 0.497, 0.146. for year 4, 3 and 2 respectively. Both basic sciences and integrated clinical progress tests identified progress of each student. Basic based progress test showed consistent low score for Pharmacology, Biochemistry and Behavioral Sciences.

**Conclusions:** Our experience showed that progress test is a reliable method as well as reasonable method for formative assessment and giving constructive feedback. In addition, it identified the strength as well as gaps in our curriculum.

**Take home messages:** Progress test is recommended for schools using similar curriculum

### 3 G 5

#### **Progress testing of basic science application during a clinical competency-based curriculum pilot**

RB Stansfield, LD Gruppen, C Ricketts, R Mangrulkar (University of Michigan Department of Medical Education, 1500 E. Medical Ctr. Dr., Ann Arbor, MI 48109, United States)

**Background:** In a clinical competency-based curriculum, assessment of students' basic science knowledge is important. During a feasibility pilot of such a curriculum, six students acquired basic science knowledge about three clinical domains (renal failure, trauma, hyperglycemia) from clinical encounters with real patients as well as traditional learning resources.

**Summary of work:** Multiple choice items used for progress tests at Penninsula Medical School were assembled into three 50 item tests, administered online at 2-week intervals. Items used clinical scenarios to test knowledge in the 3 domains plus a control domain (infectious disease). Complete item and answers were provided after each test as formative feedback.

**Summary of results:** Tests were difficult (mean topic scores from 32% to 80%). Repeated items were easier (80%) than novel items (58%). Scores on items that specifically addressed learning objectives improved, though not statistically significantly.

**Conclusions:** Brief progress tests are feasible assessments of student learning, though the reliability is a concern in this pilot.

**Take home messages:** Short progress tests may not be the most sensitive way to evaluate basic science knowledge in a clinical competence curriculum. Longer or more focused tests given at longer intervals may be more sensitive to knowledge application abilities acquired during training.

### 3 H Oral Presentations Assessing Professionalism 2

#### 3 H 1

##### **Student assessment of faculty professionalism - from concept to reality**

R Cruess, S Cruess, M Young, J Pickering, S Todhunter, Y Steinert (McGill University, Center for Medical Education, 1110 Pine Ave. W, Montreal, QC H3A 1A3, Canada)

**Background:** The promotion of professional behavior in medical students and residents is often limited by unprofessional behavior observed in faculty members. There is no validated tool to evaluate faculty professionalism.

**Summary of work:** Using several sources, 34 desirable behaviors in clinical teachers were identified. Students and medical educators rated their importance and the resulting form contained 16 items. Using this form, 94 fourth year medical students rated 20 faculty members.

**Summary of results:** One hundred ninety-two forms were returned. Mean scores ranged from 2.43 to 2.80 (maximum rating: 3.0). Factor analysis identified three factors: interprofessional behavior; professional integrity; personal accountability. Reliability of a single faculty evaluation was 0.15. A minimum of 23 student evaluations per faculty member were required to reach a reliability coefficient of 0.80.

This form was incorporated into an electronic form for evaluating faculty professionalism which students were required to complete prior to obtain their grades. Preliminary results of this large-scale implementation will be presented.

**Conclusions:** An assessment tool was developed with input from students and faculty. It appears to be reliable and has resulted in faculty-wide assessment of professionalism in clinical teachers.

**Take home message:** Student assessment of faculty professionalism appears to be feasible. Validation of the electronic form is a necessary next step.

### 3 H 2

#### **Understanding how clinical preceptors assess and act upon medical students' professional attitudes and behaviour: difficulties, conflicts and inconsistencies**

P Burns (University of Manchester, Manchester Medical School, Stopford Building, Oxford Road, Manchester M13 9PT, United Kingdom)

**Background:** Regulatory bodies and medical schools are increasingly concerned by the assessment of professionalism. However, it is a young discipline with a developing evidence base.

**Summary of work:** Seventeen clinical tutors from primary and secondary care took part in either a focus group or semi-structured interviews to explore thoughts around this area, continuing until saturation was reached. A grounded theory approach was used to describe the phenomena observed.

**Summary of results:** Tutors used various markers to identify students with attitudinal problems with an emphasis was on finding problems. Behaviours were not taken at face value but triggered feelings of unease when this did not match the tutors own standards, leading to further investigation. A duty of care to patients and the student ensured tutors addressed unsatisfactory behaviour. Tutors doubt the validity of their judgements and standards.

**Conclusions:** The assessment of medical student attitudes and behaviour is subjective, complex and difficult for clinical tutors. This results in inconsistency in assessment, conflicts and concerns in the tutor about whether their assessment is valid. Unclear and changing definitions of professionalism compound this.

**Take home messages:** Guidance and training for assessors is essential to protect students from unfair assessments and patients from unfit doctors.

### 3 H 3

#### **One size fits all? An institutional approach to tailor professionalism curriculum**

M Ho, K Yu (National Taiwan University College of Medicine, No. 1, Ren-Ai Road, Section 1, 100 Taipei, Taiwan)

**Background:** Professionalism has become accreditation standards for both undergraduate and graduate medical education in most English-speaking countries and is gradually disseminated to other countries. However, professionalism is a social construct. This study describes how a Taiwanese medical school develops a professionalism curriculum with consideration of social context.

**Summary of work:** First, we used nominal group technique (NGT) to gather professional competencies valued by various stakeholders of medical education. Second, we reviewed the literature and compared our NGT results. Third, an expert committee chose a framework for professionalism grounded in our institutional values and informed by the NGT results and the literature. Fourth, we developed longitudinal curriculum and assessment program accordingly.

**Summary of results:** Ninety-one people participated in 12 nominal groups. Every participant in each group nominated competencies they valued in medical professionals. Then they voted the most important five competencies. An expert panel chose a framework including the top-ranked NGT results. The framework taking shape of the historical Medical Humanities Building in our medical school informed the curriculum development.

**Conclusions and Take home message:** Professionalism encompasses a wide array of competencies. Institutions could adopt the approach described in this paper to establish professionalism curriculum which fits their institutional values and tradition.

### 3 H 4

#### **Assessment of Professionalism: What are we trying to assess?**

A Kuper, S Sovran, J Maniate, P Karazivan, B Hodges (The Wilson Centre for Research in Education, University of Toronto, 200 Elizabeth Street, 1E5-565, Toronto, Ontario M5G 2C4, Canada)

**Background:** Assessing professionalism necessitates a shared understanding of the competency being assessed. There have been multiple explicit and implicit definitions of medical professionalism in the literature. We sought to understand continuities and changes in these definitions and their implications for assessing professionalism.

**Summary of work:** We performed a comprehensive database search of the medical and medical education literature since 1945, identifying over 500 articles in English pertaining to medical professionalism. We conducted a discourse analysis of these texts within a historical framework, focussing on identifying definitions of professionalism within their authors' social/cultural contexts.

**Summary of results:** Definitions of professionalism changed substantially over time. Multiple definitions, with differing key features, existed (and still exist) concurrently. These definitions can be related to socio-cultural factors affecting individual physicians and the medical profession. However, most authors, including those discussing assessment, treated professionalism as unitary, fixed and self-evident.

**Conclusions:** Definitions of professionalism are constantly changing; multiple definitions still exist in different contexts. This is not reflected in most of the literature about assessing professionalism. It will be difficult to reconcile traditional psychometrically-based assessment with a competency as mutable as professionalism.

**Take home messages:** Attempts at assessing professionalism must take into account its ever-changing, contextual nature.

### 3 H 5

#### **Defining specific outcomes within a charter for medical professionalism**

R Delpont, M van Rooyen, C Krüger, RR du Preez, G Pickworth, I van Huyssteen, I Treadwell, M Kruger (University of Pretoria, School of Medicine, Skills Laboratory, P O Box 667, Pretoria 0001, South Africa)

**Background:** Aspects relating to professionalism in pre-graduate Medicine were previously defined within nine “Golden Threads”. Although outcomes were formulated and embedded in the curriculum for the threads, the need for more comprehensible and explicit professional standards became increasingly evident. The Charter for Medical Professionalism was thus developed as reference document within the local context.

**Summary of work:** Thematic analysis and content analysis by recursive abstraction were employed and the “Golden Threads”, the ‘University of Pretoria Pledge for Medical Students’ and guidelines for medical professionalism developed by other institutions and professional bodies were used as resources. Lecturer and student feedback on the charter was sourced in a survey and appropriate changes were made.

**Summary of results:** Professional competence, Ethical Values and Personal Attributes were defined as charter themes and specific outcomes and assessment criteria were developed for each theme.

**Conclusions:** Re-defining and validating all outcomes relating to professionalism appears to be of great value. With the Charter as guide less time will be spent to define relevant subject-specific outcomes with the related assessment criteria. Consistency in the assessment of professionalism is also anticipated.

**Take home message:** Developing a Charter for professionalism brings you back to the drawing board.

### 3 H 6

#### **Teaching professionalism in medical education and health care - is there a need? How do we achieve? A pilot study undertaken at DAPM RV Dental College, Bangalore, India**

G.Bhagyalakshmi, K S Nagesh, Y N Rohini (DAPM RV Dental College, CA-37, DAPM RV Dental College Campus quarters, 24th main, J.P.Nagar-1st phase, 560078 Bangalore, India)

**Background:** This study was undertaken to assess and analyze the awareness and perceptions of the term Professionalism in medical education and healthcare, at various levels of the delivery system of the same. The responses obtained were supposed to answer the questions posed in the title of study.

**Summary of work:** A questionnaire consisting of relevant queries was prepared and distributed to the Management of the Institution, Head of the Institution, Heads of the departments, Faculty, Postgraduate students, Residents, Undergraduate students and willing patients.

**Summary of results:** Most of the feedback from all levels felt that there is a need to teach and practice professionalism in order to nourish sanctity, maintain uniformity and improve efficacy in the field. However the need for a uniform curriculum was also addressed with a suggestion that the relevant faculty start teaching the students from 1st year of the course itself. Role modeling was voted the best way to teach.

**Conclusions and take home message:** There is an immediate need for developing a curriculum at international level to teach professionalism in medical education and healthcare. In order to maintain global uniformity, there is a need to set up an international forum that functions and governs all aspects of teaching professionalism to medical students including a globalised curriculum. It was opined that the same can be achieved by keeping in mind the results of studies from medical schools of all participating nations. It was highly recommended that primary studies on the subject concerned should be conducted at all regional and national medical schools before presenting the views to the international forum for further progress in the desired direction.

### 3 I Oral Presentations Selection Using Mini-Interview

#### 3 I 1

#### **Introducing a writing station in a Multiple-Mini Interview (MMI) circuit: how do students perform who identify as disadvantaged?**

S Uijtdehaage, L H Doyle (David Geffen School of Medicine, UCLA, 60-051 Center for Health Sciences, Box 951722, Los Angeles 90017, United States)

**Background:** To evaluate non-cognitive attributes of applicants to a new medical school leadership program we implemented the MMI protocol. We included a writing station to assess written communication skills, an important attribute of effective leadership. Applicants had eight minutes to compose an essay describing an experience with medically underserved populations. Such a writing exercise, however, may adversely affect scores for students with disadvantaged backgrounds.

**Summary of work:** Seventy-six applicants of whom 56 with disadvantaged backgrounds participated in a twelve-station MMI, including a writing station. One assessor scored the essays using predefined criteria. We studied the relationship between the writing station score and MCAT scores, disadvantage status, and other demographic variables of the applicant.

**Summary of results:** The writing station score correlated moderately with MCAT writing sample scores ( $r=0.322$ ,  $P=0.005$ ). Mann-Whitney tests showed that disadvantaged students scored lower ( $P=0.036$ ) and had lower word count ( $P=0.010$ ) compared to other applicants. No differences were found between native and non-native speakers.

**Conclusions:** An MMI station that assesses written communication skills may depress overall MMI scores for applicants with disadvantaged backgrounds.

**Take home messages:** Careful consideration is needed as to how a writing station is included in the overall evaluation of applicants who identify as disadvantaged.

### 3 | 2

#### **Selecting for Professionalism: Curricular outcome blueprinted multiple mini-interviews select different students than traditional interviews for medical school admission**

S Razack, S Faremo, F Drolet, L Snell, J Wiseman, J Pickering (McGill University, Lady Meredith House, 1110 Avenue des Pins Ouest, # 205, Montreal, Quebec H3A 1A3, Canada)

**Background:** Medical degree program renewal at McGill University has resulted in the innovative Physicianship curriculum, with defined professional behavioral outcomes for graduates. In selection for entry into medical school, we piloted simulation-based Multiple Mini-Interviews (MMI) explicitly based upon the defined professional attributes from the Physicianship curriculum, and compared this to traditional interviews that had been in use for medical student selection for many years.

**Summary of work:** One hundred candidates applying to McGill University Medical School underwent the Physicianship MMI and simultaneous traditional interviews. The Physicianship MMI was designed through an explicit process of linking defined professional attributes (curricular outcomes) to qualities assessed at admission (curricular inputs).

**Summary of results:** Comparison of traditional interview scores to Physicianship MMI scores showed no significant correlation (Pearson correlation coefficient 0.13). A Physicianship MMI blueprint resulted from the explicit process of aligning curricular inputs to outcomes.

**Conclusions:** Our new Physicianship MMI, explicitly blueprinted to defined professional attributes in our graduates, selects different students for entry into medical school than do traditional interviews.

**Take home messages:** Explicit alignment of student selection to curricular outcomes through selection tool blueprinting is a timely idea in outcomes based education, which may change the composition of the classes entering medical school.

### 3 | 3

#### **Is Multiple Mini Interviews (MMI) a better way to select interns?**

S K Pinjani, T Chawla, K Siddiqui, M Umar, and the internship group (Aga Khan University, Stadium Road, PO Box 3500, Karachi 74800, Pakistan)

**Background:** Interns' selection at AKU is a two stage process of MCQ test and an interview with two faculty members. Written test is a requirement as candidates apply from all over Pakistan. One hundred eighty candidates are interviewed over a two-week period, with each faculty spending between 5 to 8 hours.

**Summary of work:** In order to standardize the process, candidates participated in seven structured, 7-minute stations on the same day with three parallel circuits. Stations were designed on the basis of job description. Faculty were briefed beforehand. The feedback was sought from the candidates and examiners at the end of the MMI.

**Summary of results:** MCQ test and MMI did not show significant correlations. The area under the ROC curve was 0.87 +/- 0.029, 0.93 +/- 0.022 and 0.89 +/- 0.027 for MMI, MCQs and Total of both respectively. Sensitivity of the MMI at AKU cut off of 62.5 percent was 79% and for MCQ at 40 percent was 82%. MMI clearly differentiated between top, middle and lower group as compared to MCQs which could only differentiate between top and middle group.

**Conclusions:** The test was acceptable to candidates and examiners, as of being fair with same questions and elaborated keys.

**Take home messages:** MMI designed appropriately, is a better screening option for internship selection.

### 3 | 4

#### **Should candidates' scores be adjusted for the hawk or dovishness of interviewers in a Multiple-Mini-Interview?**

C Roberts, I Rothnie, N Zoanetti (Office of Postgraduate Medical Education, Sydney Medical School, University of Sydney, Sydney, NSW 2006, Australia)

**Background:** There are significant levels of variation in candidates' Multi-Mini-Interview (MMI) scores due to interviewer related factors. Multi-Facet Rasch Modelling (MFRM) has the capability of both identifying these sources of error and adjusting for them within a measurement model that may be fairer to candidates.

**Summary of work:** A variance components analysis estimated sources of measurement error using FACETS software. Fair average scores for the effect of judge leniency/stringency and question difficulty were calculated and adjusted rankings of candidates were modelled.

**Summary of results:** The decisions of 207 interviewers with 686 candidates had an acceptable fit to the MFRM model. If one candidate was assessed by one interviewer on one MMI question, 19.1 % of the variance was due to candidate ability, and 8.9 % was due to judge stringency. If adjustments were made to candidates' raw scores for interviewer stringency and question difficulty, 12% of candidates would have a significant change in their ranking for selection into the program.

**Conclusions:** Interviewers differ in their hawkishness/dovishness, which appears to be a stable characteristic.

**Take home message:** MFRM provides a recommendable way of adjusting candidate scores for the hawkishness/dovishness of whichever interviewers they saw or difficulty of questions they were asked.

### 3 J Workshop

#### **How to use a holistic (non-checklisted) scoring schedule in a high stakes assessment context**

CM Wiskin (The University of Birmingham, School of Health and Population Sciences, Edgbaston, Birmingham B15 2TT, United Kingdom)

**Background:** This workshop gives participants the opportunity to try a holistic scoring schedule developed in the UK. We moved away from checklist-scoring, on the basis that this methodology does not capture quality of performance for competencies such as clinical communication and professional attitude. A 4-year study scrutinised the consistency of this method and found it internally consistent. Using descriptive, discursive bandings necessarily requires subjectivity. We argue that in terms of outcome this is a trustworthy method, which sits well with the growing move away from traditional 'skills based' learning.

**Intended outcomes:** By the end of this workshop participants will: • Have been introduced to a holistic scoring schedule devised by medical linguists; • Understand (and have discussed) the rationale for holistic scoring; • Have developed/practiced skills in scoring a 'live' simulation; • Have increased confidence in scoring and discussing non-clinical competencies (such as communication and professional behaviour).

**Structure:** An interactive plenary is offered, to position theory, followed by video examples and simulation to explore scoring in practice and generate discussion about rater-reliability.

**Intended audience:** Those who assess (or will shortly be assessing) live interactions in a health care setting are welcome.

### 3 K Workshop

#### **Transformational leadership: assessing to build competency**

Diana Swihart (Bay Pines VA Healthcare System, Magnet Program, United States)

**Background:** How do you teach one to lead? Competence in leadership is generally developed over time and through mentorships that focus on the sociopolitical tasks and aspects of leading or managing. Transformational (servant) leadership builds relationships that offer meaning and hope as a core to success and the key to genuinely great leaders in complex adaptive healthcare environments. Positional power is used to create opportunity and alternatives so that others may choose and build autonomy. This program will define transformational leadership and discuss the assessment and application of situational principles to build competency in present and future leaders.

**Intended outcomes:** 1. Engage learners in assessing their own approaches to leadership; 2. Discuss methods to build assessment and competency verification in transformational leadership into curriculum for interprofessional students for present and future healthcare settings.

**Structure:** Interactive Lecture with Powerpoint Presentation

**Intended audience:** Deans, Curriculum Designers/Planners, Teachers, and Student Leaders

**Level of workshop:** Healthcare and Specialty Training in Leadership: Introductory

### 3 L Workshop

#### **Authoring Virtual Patients for assessing competency**

James McGee, Nancy Posel, Marc Triola, Susan Albright, David Fleizser (University of Pittsburgh School of Medicine, 205B Mezzanine Level, Scaife Hall, 3550 Terrace St, Pittsburgh, PA 15261, United States)

**Background:** Virtual Patients (VP) are interactive computer-based clinical simulations for education, training and assessment. They are recognized as a scalable and easily distributed technology that contextualizes assessment of clinical reasoning, fills gaps in clinical experience and enables deliberate practice in a comprehensive patient care scenario. New web-based software lets educators develop their own VPs that help students (a) develop analytic, evidence-based critical reasoning and problem-solving skills, (b) apply and synthesize knowledge, and (c) facilitate formative, self, and summative assessment of complex case management.

**Structure:** This workshop will use a template-driven ‘hands-on’ approach to introduce healthcare educators to virtual patient case authoring. Starting on paper and progressing to whiteboards and then on-line modalities, and using their own laptop computers, participants will create and ultimately publish a VP case. Participants will: 1. Develop a clinical scenario that assesses one or more clinical competencies; 2. Integrate and publish a prototype VP using an on-line authoring application; 3. Review and assess their case with other workshop participants.

**Intended audience:** This workshop is intended for both clinical and non-clinical healthcare educators interested in creating virtual patient cases for all levels of training and specialities.

**Level of workshop:** Prior knowledge of VPs or authoring applications is not required.

### 3 M Workshop

#### **Effectiveness and cost: how much should we spend on selection for specialty training?**

C Brown, H Thomas, I Davison, J Grant, T Qiu (University of Birmingham, Edgbaston, Birmingham B12 2TT, United Kingdom)

**Background:** There is considerable diversity in selection processes for specialty training used across specialities and countries. Amid expectations that more of the competencies, required for success in training are assessed, there is greater need to balance effectiveness against cost. Using a model of

selection utility based on predictive validity, this workshop will explore the cost-effectiveness of different selection processes.

**Intended outcomes:** 1. Understand the individual components of the selection utility model; 2. Explore how selection utility is affected by the nature of the selection process employed; 3. Take away a method for estimating the cost-effectiveness of a selection process.

**Structure:** • Introduction to selection utility (15 mins); • Generation of an “ingredients” list and unit costs for each ingredient as a group (15 mins); • Discussion of predictive validity and group elicitation of variation in training performance across applicants (15 mins); • Small group work to populate the utility model for three example selection processes (20 mins); • Comparison and discussion of results (15 mins); • Evaluation of the model (10 mins).

**Intended audience:** Participants interested in selection processes for health professionals.

**Level of workshop:** All – a basic level of mathematics would be helpful.

### 3 N Workshop

**Improve outcomes measurement in compliance with ACCME’s Updated Accreditation Criteria**  
D Dietze (Improve CME, LLC, 21202 E. Excelsior Ave., Queen Creek, Arizona 85142, United States)

**Background:** ACCME’s Updated Accreditation Criteria require that CME providers measure changes in physician competence, performance, or patient outcomes for each activity. Approximately 33% of 170 CME providers receiving accreditation decisions in November 2008, March and July 2009 were non-compliant with the relevant criterion. Implementing practical and compliant measurement approaches has been a challenge for many CME providers.

**Intended outcomes:** Participants will: a) have an increased awareness of ACCME definitions, measurement criteria, and examples of compliant measurement of competence, performance, and patient outcomes, b) identify areas for improvement in their current outcomes measurement based on completing an organizational self-assessment worksheet, and c) commit to an increased use of evidence-based compliant strategies for measuring CME outcomes.

**Structure:** A combination of didactic lecture with integrated time for Q&A, individual work including self-reflection and organizational self-assessment, and small group discussions will facilitate learning. Real-world examples of compliant measurement methods and results will be discussed, with opportunities for participants to share their best practices and describe their planned improvements.

**Intended audience:** Individuals who might improve the quality of accredited CME by improving the quality of the educational measurement associated with it.

**Level of workshop:** For those with limited to intermediate knowledge and experience in CME.

### 3 O Workshop

#### **Collegial conflict: judgments, assumptions and professionalism**

K Knickle, N McNaughton (Standardized Patient Program, University of Toronto, 200 Elizabeth Street, 1 Eaton South, Room 565, Toronto, Ontario M5G2C4, Canada)

**Background:** The professional's complex mélange of required skills and abilities necessitates a high degree of individual self-integration and awareness. Who we are as practitioners affects our professional peer relationships, the resolution process and its outcome. The professionalism of each individual is a through line in our daily interactions with others. The choice to approach or avoid conflict is inextricably linked to our experience, confidence and perceived competence in resolving conflict.

**Intended outcomes:** Participants will: •Reflect on one's own response to conflict; •Examine the personal and professional issues that precipitate conflict; •Gain greater understanding of peer related judgments and assumptions; •Observe and debrief a simulated collegial conflict; •Gain knowledge of the complex communication skills required in approaching, addressing and resolving challenging collegial conflict.

**Structure:** Using attribution as a theoretical framework participants will: •Engage in interactive exercises promoting reflection and exchange of ideas; •Problem solving exercises; •Observe a collegial dispute simulation; •Question and answer opportunities.

**Intended audience:** This experiential session is intended for professional practitioners, faculty and educators across all health care disciplines, interested in resolving collegial conflict within their professional settings.

**Level of workshop:** The workshop will be useful and accessible to participants from beginner through to advanced levels.

### 3 P Workshop

#### **Academic and behavioral problems in trainees in academic medicine - preventive and remedial approaches**

Ewa Szumacher, Kathy Mah, Renate Bradley, Elen Moyo (Sunnybrook Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto; and The Michener & University of Toronto Medical Radiation Sciences Program, 2075 Bayview Ave., Toronto, Ontario M4N 3M5, Canada)

**Background:** Students in academic programs can encounter significant academic and behavioral difficulties. Authors of the workshop will share preventive and remedial strategies / interventions to help students overcome a range of difficulties. This is based on the authors' experiences as members of the Program Review Committee of the Medical Radiation Sciences Program, at the University of Toronto.

**Intended outcomes:** 1. Determine common causes of academic difficulty for students in academic programs (theory and evidence); 2. Differentiate between enablers and barriers to successful remedial education; 3. Identify benefits of a "student-centered" approach to the development of remediation

plans; 4. Determine the effectiveness of remediation processes and strategies implemented based on the experiences of the MRS Program; 5. Discuss strategies applicable to non-remediable students.

**Structure:** The format of the workshop will be primarily interactive, with participants sharing their experiences with students in academic difficulty. Actual case studies will allow small working groups to develop remediation plans for students with different academic problems. Participants will also have opportunities to develop remedial plans for students encountering difficulties within their own professional context.

**Intended audience:** Medical educators who assess students' performances, undergraduate and postgraduate tutors, all medical educators.

**Level of workshop:** All.

### 3 Q Workshop

#### **The value of multi-source feedback and reflection tools for learning within the simulation environment**

M Bearman, L Molloy, D Nestel, B Jolly (CMHSE and GMS, Monash University, Building 2 Level 1, 270 Ferntree Gully Rd, Notting Hill, Melbourne 3168, Australia)

**Background:** This workshop will explore the value of two clinical education feedback and reflection tools with respect to learning through simulation. Multi-source feedback, where a practitioner and self-nominated peers assess the practitioner's performance using standardised rating forms, enables clinicians to compare how they see their own practice with their colleagues' perspectives. Learning needs analysis focuses a learner's reflection on strengths and deficits and generates meaningful and targeted personal learning goals. Data derived from both of these tools, in conjunction with skilled facilitation techniques such as a face-to-face 'learning conference' can optimise learning within a simulation experience.

**Intended outcomes:** After completing this workshop, participants should be able to: • Locate commonly available multi-source feedback (MSF) tools; • Tailor a learning needs analysis form for use within a specific simulated environment; • Describe the benefit and challenges associated with using MSF and learning needs analysis; • Practice using feedback and reflection principles.

**Structure:** This workshop consists of group exercises and discussions, interspersed with presentations on theory of feedback as well as specific examples of use in simulation.

**Intended audience:** For those interested in enhancing learning through feedback tools, particularly with simulation.

**Level:** Novices to MSF and learning needs analysis.

### 3 R Workshop

#### **“With all due diligence”: measuring conscientiousness in complex settings**

JC McLachlan, G Finn, M Sawdon (Durham University, School of Medicine and Health, Holliday Building, Stockton-on-Tees TS17 6BH, United Kingdom)

**Background:** Early concerns about professionalism are a risk factor for later disciplinary proceedings. We have previously shown that conscientiousness is valid and reliable as a measure as a significant component of professionalism, in that students and trainees who are conscientious in routine tasks are likely to be independently rated as professional by staff and peers. Measuring conscientiousness is objective, inexpensive, and occurs over many occasions. We are extending conscientiousness measures to a range of other health care disciplines, and settings.

**Intended outcomes:** To enable colleagues in other health care disciplines and in post graduate settings to develop and implement a conscientiousness measure suitable to their particular environment, and demonstrate how to subsequently evaluate it for reliability and validity.

**Structure:** After a brief introduction to the data in undergraduate settings, participants will be provided with exemplars of conscientiousness measures in other disciplines and divided into discipline groups to develop conscientiousness instruments suitable to their own particular setting. As a group we will consider these individual instruments, and then explore the necessary data collection required to determine validity and reliability.

**Intended audience:** Colleagues who are interested in measuring professionalism in a variety of health settings.

**Level of workshop:** Intermediate.

### 3 S Posters

#### **Technology-based Assessment and Learning**

##### 3 S 1

#### **Blended practical e-assessment**

H Grossman, V Grossman (The University of Melbourne, Pathology Department, Medical Centre, Grattan Street, Parkville 3010, Australia)

**Background:** The last decade has seen rapid changes with regard to practical class teaching and learning with a trend towards blended learning, i.e. a combination of computer-based and conventional, laboratory-based class work.

**Summary of work:** This paper outlines the development of a model of computer-based summative assessment suitable for multidisciplinary practical courses. The format could be readily adapted to assess blended learning.

**Summary of results:** Students were asked to compare this form of e-assessment with the traditional flag-race format using a 1 – 5 Likert scale. They agreed that the examination material presented on the

computer was easy to access ( $4.5 \pm 0.7$ ) and as easy to visually interpret ( $4.5 \pm 0.7$ ). Many commented that the computer-based assessment was fairer and less stressful.

**Conclusions:** Computers allow the use of a variety of material, including high quality images, diagrams, numerical and graphical data, etc., which can be presented in a form that matches the material presented in the practical classes. The examination format can readily be adapted to include appropriate real, rather than virtual assessment tasks, such as diagnostic challenges.

**Take home messages:** In tertiary education, assessment should match the learning objectives and the students' mode of learning.

### 3 S 2

#### **Innovative assessment in a technology enhanced solution to acute pain management**

P Kirk, J Benson, P Donnelly, D Gallen (Cardiff University School of Postgraduate Medical and Dental Education, 9th Floor, Neuadd Meirionydd, Heath Park, Cardiff CF14 4YS, United Kingdom)

**Background:** In Wales, U.K., the Postgraduate Deanery E. Learning Unit (ELU) works with medical consultants to provide electronic solutions to training, providing targeted resources available at a pace, place and time to suit the identified needs of the learner.

**Summary of work:** A steering group of medical specialists, web technologists and educationalists was set up to develop an e-learning package focused on acute pain management. The package is template driven allowing addition of new case scenarios. Two scenarios exist currently; 'Post Operative Pain' and 'Patient Controlled Analgesia (PCA)'. The work simulates a ward environment and provides tools for evaluating, managing and concluding a pain consultation. Assessment is formative and summative with targeted feedback.

**Summary of results:** The package is complete and about to go out for evaluation. This will inform an iterative amendment cycle to further improve the quality of the package.

**Conclusions:** A scenario based template with integrated formative, and summative assessment, provides an excellent model for 'future proofing'. It is relatively easy to add further cases via a word document.

**Take home messages:** A template approach provides significant benefits; an initial can extend initial development time, but saves time and resources in the long term. The template will be freely available to conference attendees.

### 3 S 3

#### **Emergency management: eLearning as immediate response to a West Nile virus outbreak in Italy**

B Alessandrini, S D'Albenzio, M Turrini, L Valerij, M Moretti, O Pediconi, M L Callegari, R Lelli (Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Campo Boario, Teramo 64100, Italy)

**Background:** In August 2008 a West Nile virus outbreak occurred in north-east Italy, involving humans, birds, and horses. The disease clinical signs were almost unknown by official veterinarians, being it reported in this country only once, in 1998. The National Reference Centre for Exotic Diseases of Animals gave an immediate response, delivering an eLearning course on West Nile Disease to 453 Italian official veterinarians, after 40 days from the first case. The purpose of this paper is to assess if consistent

learning needs due to an emergency situation can affect learning achievements, emotional approach to eLearning, confidence with methodologies.

**Summary of work:** A number of variables such as problems encountered, perceived advantages, limits of eLearning, use of self- and collaborative learning, supportive tools, learning environment, were examined.

**Summary of results:** Many variables were assessed more positively after the course experience and data arising from the tracking system confirmed the learner perceptions. Difficulties encountered decreased from 39 to 17%, confidence with web applications improved for 76% of participants. Tutor-supported self-learning resulted very effective, collaborative learning showed some weaknesses.

**Conclusion and take home message:** When learning needs are perceived very clearly, health professionals are conscious of the opportunities offered by eLearning and catch the opportunities offered. The social dimension anyway, still represents an improvable area: more detailed planning of collaborative activities and better comprehension of their dynamics, role and expected outcomes were identified as possible solutions.

### 3 S 4

#### **A machine marked test for recruitment and selection into core specialty training programmes in the Acute Specialties**

A Carr, T Gale, I Anderson, F Patterson, M Roberts, V Carr, G Crossingham, P Davies, H Lam, P Sice, J Langton (Directorate of Anaesthesia, Theatres and Pain Management, Plymouth Hospitals NHS Trust, Derriford Hospital, Derriford Rd, Plymouth PL6 8DH, United Kingdom)

**Background:** Many doctors are selected into core training (CT1) in Acute Specialties (anaesthesia and the acute care common stem, ACCS) without previous experience of working in these specialties. Selection must assess aptitude and trainability for posts. Selection into UK General Practice involves a Machine Marked Test (MMT) with Clinical Problem Solving (CPS) and questions on the management of Professional Dilemmas (Situational Judgement Test, SJT). This study reports preliminary results on a pilot bespoke MMT for selection into acute specialties.

**Summary of work:** In 2009, applicants in 3 deaneries sat a MMT comprising CPS and SJT papers. We report on its reliability, validity, acceptability and correlation with selection variables (shortlisting and interview scores).

**Summary of results:** The response rate was 60% (131/218 applications). The CPS achieved an internal reliability of  $\alpha=0.69$  and the SJT  $\alpha=0.79$ . When corrected for test length (Spearman-Brown formula) the CPS items achieved  $\alpha=0.77$  with  $\alpha=0.81$  for the SJT. The CPS and SJT correlated with candidates' interview scores (Pearson's  $r=0.51$  and  $r=0.47$ ) but not shortlisting scores ( $r=0.01$  &  $r=0.08$ ). Gender or age did not affect MMT score. The MMT achieved lower candidate ratings for 'Relevance', 'Fairness' and 'Opportunity to Demonstrate Ability' than other selection elements

**Conclusions and Take home messages:** Preliminary findings suggest the MMT useful for selection doctors into core training in the acute specialties. Current shortlisting processes and the MMT may be assessing different candidate attributes.

### 3 S 5

#### **Assessment of usage of an online educational resource**

S Berry, [K Warzecha](#), S Verma (Dept of Medical Oncology, Toronto Sunnybrook Odette Cancer Centre, 2075 Bayview Ave. T2, Toronto M4N 3M5, Canada)

**Background:** Based on a formal Needs Assessment, the OncologyEducation.com website was launched in 2007 to fulfil the informational needs of Canadian Medical Oncology staff and trainees.

**Summary of work:** Data from June 2007 to September 2009 for OncologyEducation.com was collected using Google Analytics to identify usage trends. Analysis of data was performed to describe actual usage of the site and how it aligned with the original Needs Assessment.

**Summary of results:** There have been over 22,000 visits and over 107,000 page views, from 117 countries since the launch. The top six requested items for an oncology education website, according to the Needs Assessment, were conferences, medical website links, CME events, key updates by disease site, key journal articles, and clinical trials. The 6 most viewed sections on OncologyEducation.com are: key updates by disease site, conferences, Canadian Oncologist Database, fellowship information, job postings, and treatment summaries/guidelines.

**Conclusion:** Two of the most viewed pages on the website were ranked as highly necessary according to the Needs Assessment. Four other highly ranked needs were among the least frequently viewed sections on the site.

**Take home message:** While website usage is a reflection of the constantly changing needs of oncology health care professionals, a formal needs assessment may not predict future website usage and ongoing assessment of users' needs is required.

### 3 S 6

#### **How do we assess learning within the high-fidelity simulated environment? Evaluation of an online training needs analysis tool for use within simulated obstetric emergency training**

B Green, A Velinor, S Wilson, R Doel, A Green, A Ball, D Wycherley, A Halligan, [M Whitten](#) (UCL Elizabeth Garrett Anderson Institute for Women's Health, 2nd Floor North, 250 Euston Road, London NW1 2PG, United Kingdom)

**Background:** Analysis of serious untoward incidents within obstetrics highlights the need for staff to be skilled and competent in the prompt recognition and management of patients at risk of rapid clinical deterioration. High-fidelity simulation training can be used to support multiprofessional teamworking in clinical practice. Training needs analysis for individuals and teams requires an evaluation process to be incorporated into simulated training programmes.

**Summary of work:** An online scenario-based assessment tool was developed to assess key knowledge goals relating to recognition and management of the patient at risk of deterioration. This was linked to clinical guidelines for management of massive obstetric haemorrhage. 28 staff (obstetricians and midwives) piloted the online tool during October 2009, immediately prior to and after participation in a high-fidelity simulated training session on postpartum haemorrhage.

**Summary of results:** Individual training needs were identified in the pre-scenario assessment for all participants. Participation in simulation training resulted in a measurable improvement in post-scenario

scores relating to decision-making skills, teamwork and communication. Participants evaluated the online process as user-friendly and fit-for-purpose.

**Conclusions:** Online assessment can enable training teams to identify individual training needs and to successfully evaluate the impact of high-fidelity simulation training within the acute maternity setting.

### 3 S 7

#### **Experience with an audience response system in supporting clinical supervisor training**

J Kirtley, A Stanley, R Powell, S Carr, G French (University Hospitals of Leicester, Education Support Unit, Clinical Education Centre, Jarvis Building, Leicester Royal Infirmary, Infirmary Square, Leicester LE1 5WW, United Kingdom)

**Background:** Since 2008, the UK Postgraduate Medical Education and Training require all clinical supervisors with responsibility for doctors in training to meet the minimum standards outlined in the Generic Standards for Training document. We developed a curriculum for supervisor training that was delivered as a one day course for senior medical staff.

**Summary of work:** The course content included sessions on structures, roles and processes in postgraduate medical education and assessment (ARCP), and dealing with trainees in difficulty. The sessions were evaluated by 339 senior medical staff using an audience response system (ARS) that helped to stimulate debate amongst delegates and encourage individuals to give their responses to challenging scenarios.

**Summary of results:** There was a significant change in self-rated understanding of how postgraduate medical education was structured ( $p < 0.001$ ) at the end of the course. Trainees in difficulty and ARCP sessions were highly valued. Responses to particular vignettes suggest that some supervisors require further training.

**Conclusions and take home messages:** Getting supervisors to engage and interact during the course enables them to recognise gaps in their understanding. Using technology to enhance interactivity also enables organisers to ensure courses continue to meet the needs of their attendees.

### 3 S 8

#### **Attitudes and behaviors of dental undergraduate students towards computer aided learning**

R Alserour, M Seefeldt (King Saud bin Abdulaziz University for Health Sciences, College of Medicine, Riyadh 11428, Saudi Arabia)

**Background:** At the present time, dental schools around the world have started to utilize computers and the internet widely in their education environment due to the huge growth in dental Informatics. This paper aims to examine the attitudes and behavior of undergraduate dental student of Riyadh College of Dentistry and Pharmacology (RCDP) towards e-learning.

**Summary of methods:** A 37. item questionnaire was developed by using different literature sources. The questionnaire is divided into five section, ( demographic data, student's background, about computer uses, student's experience with the college web-site in term of quality and accessibility, students main uses of the college web-site and, student's feeling and thinking about CAL future applications).

**Summary of results:** In this study the students positively perceived their CAL program even with its simple form, and moreover, they overcome any lack of information by creating their own sites, which is a very creative solution.

**Conclusion:** Better constructed CAL programs should be developed and delivered to the students. Further, more research should be done to identify what dental subjects are more suitable for CAL.

**Take home messages:** Teams of subject matter experts, curriculum developers, information technologists, and web-page designers are needed both to develop programs and to follow-up regularly students' performance and perceptions.

### 3 S 9

#### **Evaluation of e-Learning: Using the AEIOU score**

A Khaimook (Hatyai Medical Education Centre, Hatyai Hospital, Hatyai 90110, Thailand)

**Background:** Within this decade, e-learning has become a popular term in the field of instructional media. With a wide variety of e-learning from a simple e-book, videoclip, interactive module to the most sophisticated high fidelity simulator or virtual reality, the most crucial part is "does it work effectively based on the educational principles?".

**Summary of work:** The AEIOU Score was designed to measure 5 aspects of e-learning i.e. A; Active learning, E; Engagement, I; Teacher-student communication, O; Objective and U; Student communication. Each aspect has 5 scores from 0 to 4 therefore the full score is 20 and the minimum score is 0. Twenty-seven fourth-year medical students at Medical Education Center, Hatyai Hospital are trained to use this score for this pilot study. Three selected e-learning for scoring are 1. Hand injury module 2. Normal labour videoclip and 3. Basic Ophthalmology Module.

**Summary of results:** The AEIOU score shows good internal consistency (Cronbach's alpha = 0.847). The mean score of each module are 11.00(3.28), 7.28(4.78), 10.68(3.41) respectively with significant difference among each group at  $p < 0.001$  by t-test.

**Conclusions and Take home messages:** This study shows promising result for using the AEIOU score to evaluate e-learning. This score is simple, easy to use and we can compare one e-learning to another. Based on the educational principles it can give an e-learning maker some guidance.

### 3 S 10

#### **An analysis/assessment of the effectiveness of 'Self Study Module' with the help of prerecorded video lecture in undergraduate medical education**

A Basu (St Matthews University School of Medicine, Leeward III, Regatta Office Park, West Bay Road, SMB, Grand Cayman 30992, Cayman Islands)

**Background:** Medical science imposes continuous pressure on students to learn the subject quickly and efficiently. Didactic lectures often limit their ability to flourish their mind. To encourage students to develop an analytical mind while studying text books, we introduced 'self 'study in our curriculum. We provided them with short complimentary prerecorded video lectures.

**Summary of work:** I recorded and edited lectures at office with available software. Duration of each lecture: 10 or 30 minutes/block. An anonymous survey was conducted at the end of the semester to get

a feedback from these students. We asked a total of 29 questions, out them 10 were from self study materials.

**Summary of results:** 48% students felt that this module helped them. 58% student took help from fellow students or faculty. 81% offered help to fellow students. 76% used the complementary video. 56% read text books. 56% used internet, 56 % used diagrams and 50% quizzed each other. 58% answer correctly when asked question form material taught in class 4 month later.

**Conclusions and Take home messages:** This dual method is an effective teaching tool. Students' retention of knowledge is slightly better. Implementation of this module required students to read text books, educating them about collaboration, time management, organization and planning.

### 3 S 11

#### **A novel approach to auscultation for training and assessment**

G Tunncliffe, R Kneebone (St Mary's Hospital, Praed Street, London W2 1NY, United Kingdom)

**Background:** Simulation with mannequins offers opportunities for training and assessment in a safe environment but lacks the realism of a human encounter. Standardised patients offer a dimension of interpersonal realism but rarely have clinical signs of illness.

**Summary of work:** The VentriloScope uses a wireless transmitter to transmit authentic sounds to a stethoscope-mounted receiver allowing a standardised patient (SP) to activate auscultatory signs during a clinical encounter. This study aims to investigate whether the device has face validity and how the device can be employed in education. 18 volunteer physicians took part in 3 clinical scenarios of "the breathless patient" which employed a SP and the VentriloScope. All doctors were then interviewed and data were analysed using standard qualitative methods.

**Summary of results:** Overall responses were positive. 94% advocated that the VentriloScope be used for training doctors. Detailed evaluation of the strengths and limitations of this technique will be presented.

**Conclusions:** This study established the face validity of the VentriloScope and identifies possible uses for this device within whole patient encounters.

**Take home messages:** The use of standardised patients has limitations such as the lack of clinical signs. The VentriloScope may provide a potential solution for some of these limitations.

### 3 S 12

#### **Use of self assessment to compare the impact of online educational technology (blogs and wikis) on learning among native and non-native English speakers**

R Goldman, A Cohen (Cambridge Health Alliance, Harvard Medical School, Cambridge, MA, United States)

**Background:** Blogs or wikis were used to promote student participation and to facilitate different learning styles for a large (60-70 students) public health school course in environmental health.

**Summary of work:** The course, held six times since 2006, used seminar blog once, class blog three times and class wiki twice. Students completed anonymous poll surveys concerning the impact of the educational technology on their learning.

**Summary of results:** A total of 213 students responded in six surveys and 58 (27%) were non-native speakers. Non-native speakers reported less experience with online technology than native (32% vs. 49%). More non-native speakers reported that participation in the blog or wiki enhanced their learning "quite a bit" of core course material (44% vs. 23%) and of other environmental health topics (60% vs. 33%). Student responses prompted changes to the blogs and wikis used in subsequent courses.

**Conclusions:** Non-native speakers reported greater impact on their learning from participating in educational online technology than native English speakers.

**Take-home messages:** On-line educational technology such as blogs and wikis may be useful in expanding the learning environment, addressing different learning needs and enhancing learning among non-native speakers. Student self assessment surveys were useful in monitoring student reactions to the introduction of new educational technology and providing ideas for improvement.

### 3 S 13

#### **The practical application of on line educational tools to the Surgical Clerkship: a user's guide to WISE-MD**

MA Hopkins, [H Keane](#) (NYU School of Medicine, 550 First Avenue, Coles 202, New York, NY 10016, United States)

The Web Initiative for Surgical Education of Medical Doctors (WISE-MD) is a project used to design, construct and implement a cutting-edge program based on the diagnosis and treatment of common surgically related diseases. These online learning modules utilize sound educational theory and the latest instructional technologies to produce a new standard in clinical medical education. Leaders from the New York University School of Medicine, the American College of Surgeons and the Association for Surgical Education are collaborating to develop 25 web-based modules for integration into the surgical clerkship curricula for third year medical students throughout North America and overseas. The initiative was conceived to address the problems in teaching surgery to medical students stemming from the many changes in healthcare delivery. The modules are designed to both detail the clinical aspects of the disease, as well as the patient-physician interactions particular to the condition, with a focus on professionalism and patient care.

Running congruent to module production, there is also a NLM R01-funded study (led by Principal Investigator Adina Kalet, MD) that looks at a multi-institutional randomized trial of the educational outcomes of WISE-MD. This study is taking place at seven collaborating institutions where consenting students are exposed to various enhancements of WISE-MD that have previously been tested in local subtrials. These trials include changing the interface of the modules, implementing an interactive abdominal exam in the Appendicitis module, and including various emotional features. The data collected from each school is being used to both validate WISE-MD and lead to its further development.

There are currently 13 modules that are available online for students and the modules have been incorporated into the surgical curriculum of 34 medical schools nationwide. New to the project is the release of self-assessment questions, which are a series of multiple choice, matching, category, and rank questions that appear at the end of each section of the module.

### 3 T Posters Feedback and Self-Assessment

#### 3 T 1

##### **Effective feedback in clerkships**

J Bloomfield, C Benaglio, A Valenzuela (Clínica Alemana-Universidad del Desarrollo, Las Condes Av 12438 Lo Barnechea, Santiago 7710162, Chile)

**Background:** Feedback is one of the most powerful tools in the learning process. Nevertheless, faculties aren't aware of its worth, don't know how to give it and don't do it.

**Summary of work:** We designed a project consisting of two mini-workshops in a small group session: Feed Back and Briefing and Debriefing. Both were done in a clinical setting to clinical teachers. Participants were expected to learn how to give the feed back to students and give it.

**Summary of results:-** 104 faculties attended workshops; - 78.6 % of them started to give feedback after the workshop; - Formal feedback was introduced in the program of 3 courses; - Students began to ask for feedback to their teachers; - 70% of Interns received feedback; 85% were able to identify an unachieved objective and improve it; 100 % recognised it usefulness and think that feedback will be useful for their future clerkships; - all students that didn't receive feedback, felt at a disadvantage against their classmates.

**Conclusion:** Tutors and students recognize the benefit of feedback in clerkships as a tool to improve their performance.

**Take home message:** Faculty development is the core for effective feedback during clerkship.

#### 3 T 2

##### **Giving feedback in clinical environment: what is going on in the real world?**

S Visioli, L Montagna, S Oldani, A Spinelli, L Zannini, M Roncalli, M Montorsi, M Albini, A Scherpbier (Istituto Clinico Humanitas - University of Milan - University of Maastricht, via Manzoni 113, BLD 7, School of Medicine, Rozzano Milan 20089, Italy)

**Background:** Giving and receiving feedback is a core competence in clinical learning. The ability to give formative feedback is fundamental in order to create a positive learning environment.

**Summary of work:** The study aimed to investigate: the typology of feedback and the feedback skills exhibit by clinical teachers. During two consecutive academic years (2007-2008 / 2008-2009) four specifically trained observers reported on a structured grid 109 formative feedback moments given by 11 clinical teachers to 64 students of the third-year course of Medicine.

**Summary of results:** In 98% of the cases feedback was grounded on direct observation of students' performance The most frequent was "mixed" (52%), followed by "positive" (24%) and "sandwich" 20% feedback; only 4% were "negative" feedback. In giving feedback, teachers suggested "areas that need to be improved" (82%, most utilized skills); "strong points" and "weak points" of students' performances were seldom elucidated (65% and 60% respectively).

**Conclusion:** Giving feedback is primarily intended by teachers as a strategy to communicate what students should improve, not only what went wrong. Nevertheless, teachers tend to forget elucidating students strong and weak points of their performances.

**Take home message:** To improve their clinical teaching, educators should clearly communicate the weak and strong points of their performance when they give feedback.

### 3 T 3

#### **Video review for neurology resident skills assessment**

RS Laughlin, D Cook (Mayo Clinic Rochester, 200 First Street SW, Rochester 55905, United States)

**Background:** Discontinuation of the oral Neurology certifying exam makes clinical assessment increasingly important in U.S. residency programs. Aim: Determine the effect of videotaping residents on clinical skills and feedback quality.

**Summary of work:** Our PGY2 residents complete a rotation dedicated to improving history and examination skills. Faculty members observe residents during patient interviews in week 1 and week 4, score performance using a 5-point scale, and provide feedback. During the first year of implementation, faculty observed residents in the room (live observation). During the following two years, interviews were videotaped and reviewed after the patient left. Faculty and videotaped residents completed a post-rotation questionnaire.

**Summary of results:** Performance scores during week 1 were 4.3 for live observation (N=9 residents) and 3.9 for videotaped review (N=17), and during week 4 were 4.6 vs 4.1. Of 15 completed videotaped resident questionnaires, 12 (80%) felt that they received more concrete feedback than they would have without video review. Faculty and resident free-text comments suggested that video observation was less stressful than live observation and facilitated more reliable assessment.

**Conclusions:** Clinical performance ratings were similar using live and videotaped observation. Residents and faculty perceive that videotaping might improve feedback.

**Take home message:** Videotaping resident-patient interactions might facilitate resident assessment and feedback.

### 3 T 4

#### **The role of student self-assessment in a formative assessment of students' clinical skills**

C Bernat, J Christner (University of Michigan Medical School, 1135 Catherine St., 3960B Taubman Medical Library, Ann Arbor 48103, United States)

**Background:** Medical students who participate in self-regulated learning and self-assessment are more likely to develop the cognitive skills required of a practicing physician, such as critical thinking and problem solving through analysis, synthesis and evaluation.

**Summary of work:** Our institution has developed a comprehensive formative clinical assessment requiring students to execute two complete clinical encounters that are entirely observed and formatively assessed by a faculty preceptor. Students are required to self-assess based on perceptions of their performance prior to reflective feedback discussions with their Standardized Patient Instructor and faculty preceptor. Additionally, between the two clinical encounters, students are required to

review the video of their performance and complete a second self-assessment based on their observations. A final self-assessment is completed after the second clinical encounter.

**Summary of results:** Data collection for this project is still ongoing (completion mid-November 2009). We hypothesize that student self-assessments are more accurate as compared to SPI and faculty assessments after reviewing their own performance on video.

**Conclusions:** We expect that students will more accurately self-assess after the video self-review process.

**Take home messages:** Self-assessment is a vital component of medical education and working with students to achieve higher levels of self-awareness, reflection and accuracy will work to ensure this is as fruitful a process as possible.

### 3 T 5

#### **Early professional identity development through student self-assessment of core competency behaviors**

C DiLullo, RM Kriebel (Philadelphia College of Osteopathic Medicine, 4170 City Avenue, Philadelphia 19131, United States)

**Background:** Development of "professional identity" through assessment of core competencies has been underway in clinical undergraduate and post-graduate medical training for the past decade. Concurrently integration of clinical and basic science education in undergraduate medical training has been evolving.

**Summary of work:** To fully integrate medical training, a process to assimilate core competency development alongside clinical and basic science undergraduate education has been devised. Prior to matriculation first year medical students were provided a required online exercise that was reviewed in faculty facilitated small group sessions during the first week of classes. At the end of the first term students were asked to complete a novel thirty-three question instrument designed for self-assessment of behaviors related to core competencies and self-reflection of their "professional identity".

**Summary of results:** Responses indicated many trends including limited use of journal literature in information acquisition and significant use of standardized patient encounter assessments as critical feedback in professional development. Student comments reveal they found the process of self-reflection helpful in refining their "professional identity".

**Conclusion and take home message:** Data suggests that early student self-reflection on core competencies provides valuable information regarding individual student populations that can bring to light areas in which additional guidance would lead to enhancement of the process of student "professional identity" development.

### 3 T 6

#### **Your medical school does care! An evaluation of academic appraisal for 3rd year medical students**

A Grant, A Anstey, L Morris (PCAPH, Cardiff University, 3rd Floor, Neuadd Meirionydd, Heath Park, Cardiff CF14 4XN, United Kingdom)

**Background:** In a UK medical school with an annual intake of 300 (mainly undergraduate) many students make no effort to contact their personal tutor while expressing dissatisfaction that no member of school staff knows them as an individual. Moreover, many student difficulties relating to learning come to light only very late in the five-year undergraduate programme.

**Summary of work:** In 2009/2010 300 all third year students will have an appraisal with a faculty member. Students will prepare a reflective evaluation of their progress to date listing strengths and weaknesses. With the appraiser they will use this to develop a learning plan for the forthcoming year. Participation will be a condition of progression to fourth year. Each student will complete an online evaluation made up of a combination of multiple choice, Likert scale and free text responses after their responses.

**Summary of results:** Early student reaction to appraisal from students have been very positive.

**Conclusions and take home message:** Student appraisal offers a method of making one-to-one contact with every student in a large medical school.

### 3 T 7

#### **Factors influencing self assessment in multisource feedback**

C Brown, P Stark, J Crossley (University of Sheffield, Sheffield Children's Hospital, Western Bank, Sheffield S10 2TH, United Kingdom)

**Background:** Multisource feedback (MSF) is common and can provide wide-ranging valuable feedback for doctors on their performance. The process usually involves self-assessment. There is frequently a discrepancy between doctors' self-assessments and the ratings that others give them using MSF. The factors influencing self-assessments are unknown. Increased understanding of these factors may help supervisors provide better feedback to doctors. This may potentially improve clinical care as doctors may more readily accept the feedback received and utilise it more constructively.

**Summary of work:** A qualitative study, using semi-structured interviews alongside a think aloud methodology, has been completed. Doctors involved include foundation trainees, psychiatry and paediatric speciality trainees, general practitioners and consultants.

**Summary of results:** Factors influencing self-assessments have been found to include strategy, specific incidents, comparison, feedback, and personal viewpoint and development. Importantly the factors differ at different stages of education.

**Conclusions:** If assessment is to have meaning these factors should not be ignored by commissioners of education and assessment and nor by those who deliver feedback.

**Take home messages:** A range of factors are involved in the self-assessments made by doctors and these are likely to be important in the utilisation of feedback by doctors.

### 3 T 8

#### **The miscalibration effect in self and peer assessment: The case of radiologists and pathologists/laboratory medicine physicians**

C Violato, J Lockyer, H Fidler (University of Calgary, Medical Education and Research Unit, Department of Community Health Sciences, Faculty of Medicine, 3330 Hospital Drive NW, Calgary, AB, T2N 4N1, Canada)

**Background:** To determine whether there is a discrepancy between self and peer assessments for laboratory medicine and radiology physicians in clinical domains (clinical competence, collegiality, professional development, educational leadership and professional behavior).

**Summary of work:** We employed a total sample of 291 physicians specializing in investigative medicine (pathologists/laboratory medicine physicians (P/LMP), n =101; radiologists, n = 190). Each physician had data from an identical self and 8 peer (38 or 39 item/4 clinical domains) assessment. A total of 2,097 peer and 291 self assessments were available. Physicians were classified into quartiles based on mean assessment peer data and compared with self-assessment data.

**Summary of results:** The analyses showed that self and peer assessment profiles were consistent across specialties and domains. Physicians assessed in the lowest and highest quartiles (i.e., < 25th and >75th) by colleagues tended to rate themselves 25 – 35 percentiles higher and lower than peers, respectively.

**Conclusion:** Normal psychological processes that maintain ego integrity as identified in metacognitive, cognitive dissonance, and social comparison theories may explain the miscalibration.

**Take home messages:** Self-directed learning for physicians, residents and students where valid self-assessment and monitoring are critical, requires accurate, systematic and frequent feedback from peers or objective measures.

### 3 T 9

#### **Internal assessment a better predictor of success**

U Gaur (The University of the West Indies, Cave Hill Campus, Barbados)

**Background:** Assessment plays an integral role in helping educationist. There are various methods of assessment. All methods of assessment have strengths and intrinsic flaws. Educators also face the challenge of developing tools for the assessment of qualities such as professionalism, teamwork, and expertise that have been difficult to define and quantify. The introduction of continuous assessment plan has improved the performance of student in the final examination by providing a feedback to them during the academic period. It is difficult to judge the hard work of student by one of two examinations.

**Summary of work:** The present studies were done to assess and compare the performance of 1st professional student studied under the two teaching and assessment curriculum. The students were broadly divided in two groups under the category of old and new scheme. The major difference was the percentage of the internal assessment assigned in the new scheme.

**Summary of results:** According to the new scheme student scoring less than fifty percent as internal assessment were not allowed to appear in the final examinations.

**Conclusion and take home message:** The internal assessment gives each student a quick feed to improve. The students are well prepared for the final examination. The system helps in reducing the number of failures in the final examination.

### 3 T 10

#### **Assessment of competence in medical students in Iran: a field intervention experiment**

Y Aryazand, J Shajari (Islamic Azad University – Karaj Faculty of Veterinary Medicine, Falran University of Medical Science, Tehran, Iran)

**Background:** Community needs is supposed to be considered in current medical education in Iran. The aim of this study was to assess the competency of medical students to responsibility of community needs.

**Summary of work:** This study was done during academic year 2008-2009. at 6 community health centers (CHC) in rural and urban areas in west of Tehran. in depth interviews and some focus groups were carried out among referral patients from CHC to develop a valid and reliable questionnaire. This questionnaire consisted of 25 questions in three domains. We employed this questionnaire by interns as a self-assessment tool to identify the gap between medical students' acquired competencies and community needs.

**Summary of results:** By this self-assessment, interns found that they adopted disease-oriented approach rather than patient-oriented approach. they were inadequate in management of common diseases. it was also shown that they could not acquire sufficient communication skills.

**Conclusions:** It is concluded that medical schools in Iran have not been capable to train competent students to manage community health needs.

**Take-home message:** Iranian medical curriculum has not been integrated with community needs.

### 3 T 11

#### **Self assessment with visual analog scale (VAS) questionnaire by the first medical graduated students from medical education centre of Somdejphrajaotaksinmaharaj Hospital**

Nipawan Sriratanavut (Somdejphrajoataksinmaharaj Medical Education Center, 295 Paholyothin Road T. Rahang A.Muang, Tak 63000, Thailand)

**Background:** Medical Education Centre (MEC) of Somdejphrajaotaksinmaharaj Hospital is the smallest MEC in Thailand. There were 8 clinical medical students of the fourth year of Naresuan university, who enroll first at MEC of Somdejphrajaotaksinmaharaj Hospital in April, 2005 and they were graduated in March, 2008. About the confidence level of the first graduated students is the very interesting point for the smallest MEC.

**Summary of work:** The method for assess the confidence level in the questionnaire was developed from visual analog scale (VAS), which was the pain scale assessment method. The self assessment by the first graduated students was done immediately in March, 2008 and repeated again when they past the real situation in their original affiliation hospital in December, 2008. The obtained data was analyzed by mean and percentage.

**Summary of results:** The confidence level of all the first graduated students showed higher than 6 from 10 in all items both first and second assessment. The mean score in the first assessment is lower than the second assessment in all items too.

**Conclusions:** The first graduated students of MEC of Somdejphrajoataksinmaharaj Hospital had the confidence in proper performances for the good doctor in the original affiliation hospital.

**Take home message:** The easy way for assess the students is the attention of the teacher not the size of the institution.

### 3 T 12

#### **Student understanding of self-directed learning theory is key to success**

B Amies, G Byrne, T Dornan (University of Manchester, ATR4, 1st floor ERC, University Hospital of South Manchester, Southmoor Road, Manchester M23 9LT, United Kingdom)

**Background:** PBL schools tend to receive better student satisfaction than traditional schools. However there are reports of students reacting negatively to the requirement of independent learning at medical school. The aim of this study was to investigate student attitudes to PBL and self-directed learning (SDL) in a clinical curriculum.

**Summary of work:** Thirty-two year 4 Medical students took part in focus groups, which were analysed using an iterative thematic analysis.

**Summary of results:** Students held some negative attitudes to certain aspects of the curriculum. They felt that they were insufficiently supported by the faculty and they did not seem to self-direct effectively. Students' complaints were largely based upon negative interpretations of the curricular structure. For example, the curriculum is designed to avoid generating external motivation, resulting in complaints of insufficient pressure from the Medical School. Negative attitudes were generated that undermined the morale and motivation that SDL relies upon.

**Conclusions:** A philosophical difference in approaches to teaching exists between students and faculty, which may compromise learning. Using qualitative and quantitative methods, we are exploring links between satisfaction, motivation, SDL and examination performance.

**Take home messages:** Students should understand the reasons behind the faculty's endorsement of SDL in order to help improve independent learning.

### 3 U Posters Around the World

#### 3 U 1

##### **Advantages of isolated distance learning and support in Australia**

S Cooper, N Lamb (Northern Territory General Practice Education Ltd, PO Box u179, Charles Darwin University 0815, Australia)

**Background:** Northern Territory General Practice Education Ltd (NTGPE) runs a Prevocational General Practice Placements Program in Indigenous Health.

**Summary of work:** Participants come to the Northern Territory from other states within Australia from large teaching hospitals. During their placement they will live and work in some of the most isolated Aboriginal communities. Our challenge was to provide a well supported learning environment without face to face support of NTGPE. Achieved by: • Orientation: cultural / medical aspects of living and working remote; • Pre / post self assessed skills assessment on common skills required in general practice; • Learning appraisals conducted pre / post placement, on domains of GP, giving supervisor's scope for educational plans; • Weekly teleconferences provide opportunities for educational sessions / case sharing. Fantastic for tracking doctors wellbeing; • Case log books completed listing cases, treatment and areas of improvement.

**Summary of results:** Remote placements provide a fantastic opportunity for on the job training which can be reflected through the improvement in pre and post appraisals and JD confidence.

**Conclusion:** Statistical data over an 18 month period has achieved results in distance learning and support.

**Take home message:** Distance is not a barrier to providing a well supported placement with ongoing educational opportunities

### 3 U 2

#### **Developing a national curriculum for healthcare science: lessons from a complex professional environment**

M Pearson, G Manning, S Heard, S Hill (Department of Health, Modernising Scientific Careers, New Kings Beam House, 22 Upper Ground, London SE1 9BW, United Kingdom)

**Background:** In the UK, the Modernising Scientific Careers [MSC] programme is defining a new career pathway and, for the first time, a national curriculum for the healthcare science workforce. This educational change programme is seeking to introduce consistent national standards into a highly complex professional context.

**Summary of work:** MSC has adopted a "co-production" model, combining government direction with professional participation in the definition of new curricula, intended to equip the future scientific workforce to deliver modern, high quality patient-centred care. National policy is explicitly seeking to erode disciplinary boundaries by introducing new rotational training programmes, involving several cognate disciplines.

**Summary of results:** Qualitative data will be presented on the risks, benefits and lessons of this ambitious programme. The definition and co-ordination of academic and workplace learning will be described, and the assessment of equivalence across the career pathway to, to support widening participation and progression.

**Conclusions:** Building on lessons learnt from medical education, this major modernisation programme has the potential to inform a global approach to the education and training of the non medical healthcare science workforce.

**Take home messages:** A systematic approach to the education and training of the diverse and complex healthcare science workforce can be achieved.

### 3 U 3

**Advances in curriculum: The National Consortium for Multicultural Education for Health Professionals**  
O Carter-Pokras (National Consortium for Multicultural Education for Health Professionals, United States)

A collaborative effort of 18 US medical schools funded by the National Heart, Lung and Blood Institute, the National Consortium for Multicultural Education for Health Professionals is a new research initiative to develop and evaluate cultural competency and health disparities curriculum for medical students, physicians and other health care professionals. This poster will describe resources developed by consortium members, as well as strategies, challenges, and tactics for curricula change. Common barriers and challenges identified by PIs were: finding administrative and leadership support, sustaining the momentum, continued funding, finding curricular space, accessing and engaging communities, and lack of education research methodology skills. Solutions identified included engaging stakeholders, project-sharing across schools, advocacy and active participation in committees and community, and seeking sustainable funding. All Consortium PIs reported new curricular products and extensive dissemination efforts outside their own institutions, and noted that they were more productive working together than working alone. The Consortium model has added benefits for curricular innovation and dissemination for cultural competence education to address health disparities. Lessons learned may be applicable to other educational innovation efforts. More information can be found on the Consortium's website: <http://culturalmeded.stanford.edu/>

### 3 U 4

**Project ECHO: a partnership between academic specialists and community providers that works**  
S Arora, S Kalishman, G Murata, K Thornton, M Komaromy, C Fassler, W Pak, J Brown (University of New Mexico School of Medicine, MSC 08 4550, Department of Internal Medicine/UME, 1 University of New Mexico, Albuquerque, New Mexico 87131, United States)

**Background:** In medically underserved communities, patients and their providers are challenged by the prevalence of chronic, complex disease. Project ECHO links specialists and community providers through case-based, iterative, co-managed care in chronic disease workplace education enabled through technology in a new collaborative model of care.

**Summary of work:** Project ECHO supports 16- weekly, telehealth clinics focused on different chronic diseased. Community providers present patients from their practices to academic specialists; specialists provide guidance, feedback and support. Specialists are available to providers 24/7 for consultation.

**Summary of results:** Fifty-five New Mexico community clinics are connected with Project ECHO's 16 telehealth clinics in co-management of patients with chronic complex diseases such as diabetes, Hepatitis C, chronic pain, psychiatric and substance use disorders. Outcomes demonstrate community providers' self efficacy, learning, and changing roles in their clinics, and patient care equivalent to academic specialists for Hepatitis C patients. The model is being replicated in two academic health centers.

**Conclusions:** Project ECHO enables providers in rural and underserved communities to learn and apply state of the art chronic disease care to patients they co-manage with specialists while becoming local experts at their sites.

**Take home messages:** Access to quality care for patients with chronic diseases in rural and underserved communities can be greatly enhanced through committed partnerships between academic health centers and community providers in new models of care.

### 3 U 5

#### **Evaluation of methods of assessment for Dubai Medical College students at different stages**

Mohamed Galal El-Din Ahmed, DMC Faculty Members (Dubai Medical College for Girls, P.O.Box 20170, Dubai, United Arab Emirates)

**Background:** An ideal student assessment should serve multiple functions. Besides grading student performance, the assessment should be able to provide a measure of institutional standards, and as well as provide feedback on the educational system and the educators.

**Summary of work:** Our study involved analysis of the student assessment tools in Dubai Medical College (DMC). The objective of this study was appraisal of the institutional standards of academic excellence, and according to results of this appraisal to influence the strategic planning of DMC. This study was multi-faceted so as to assess the overall impact of DMC in producing high-caliber doctors for the region. This study encompassed analyses of admission process, college exams and graduate performance.

**Summary of results:** The results of this research showed strong correlation of admission test of DMC with student performance at DMC, written exam and viva showed high discriminatory value in student assessment, good correlation between preclinical and clinical exam results, clinical exam results correlate with graduate performance as interns, and finally our graduate performance is similar to performance of other graduates working in Dubai.

**Conclusion and take home message:** We believe the design of our research is a strong tool to assess an educational institute's successful realization of its Mission, and the thereafter cascading objectives.

### 3 U 6

#### **Curriculum evaluation before and after the Bologna reform of the study of General medicine at Faculty of Medicine, University of Maribor, Slovenia**

I Krajnc, M Oroz Cresnar (Faculty of Medicine, University of Maribor, Slomskov trg 15, Maribor 2000, Slovenia)

**Background:** Study programme General medicine, implemented by our faculty, is relatively new programme, since first students were enrolled in 2004/05. It consists of lectures, seminars, PBL, laboratory and clinical work and most important, praktikum in 6th year of study. The programme for this regulated profession lasts 6 years and has 360 ECTS. After it is completed, students will obtain the title M.D. First diplomants are expected in June 2010. The weakness in present programme is too many lectures which due to our legislation are not obligatory and therefore the main purpose – to pass knowledge to students – is not achieved.

**Summary of work/Summary of results:** Due to Bologna reform and our legislation we had to reform the study programme. Besides updating of content and wider range of electives more emphasis was given on seminars which represent now 40 % of study obligations. First enrollment in 2009/10, diplomants expected in 2014/2015.

**Conclusions:** Yet there are not significant differences between both programmes (because study of medicine educates for regulated profession), in reformed programme students are supposed to do much more work individually to fulfill the requirements of the study and be better trained to future challenges.

**Take home messages:** The real evaluation of both curriculums will be possible after we have the first diplomants of both study programmes on the labour market.

### 3 U 7

#### **From guinea pigs to professional medics**

S Reddy (University of KwaZulu-Natal, Private Bag 7, Congella, Durban 4037, South Africa)

**Background:** The study traces the clinical experiences of the first cohort of medical students during a problem-based learning medical curriculum, internship and community service.

**Summary of work:** Phenomenography was used as a qualitative research methodology within the interpretive paradigm to understand the qualitatively different ways in which the students 'experienced', 'conceptualised', 'perceived', and 'understood' the phenomenon (clinical aspects of the PBL curriculum and subsequent clinical environments). The sample of fifteen were selected to parallel UKZN's admission policy. In-depth interviews were conducted and transcribed verbatim.

**Summary of results:** Categories of description were used to classify the conceptions of the phenomenon. The following sentences were perceived as reflecting their conception of being the first cohort: " They called us guinea pigs. It wasn't our fault that we were in the new curriculum. We just wanted to become good doctors." The categories were then expressed as an outcome space. Each category was linked to the literature on PBL against a theoretical framing of the Professional Entity.

**Conclusion:** Themes such as power and authority, marginalisation and alienation within a professional practice emerged from the outcome space. This questions the appropriateness of the methodology.

**Take home message:** A shift in epistemology into critical theory may be required to explore the themes to unpack the experiences.

### 3 U 8

#### **Policy and program development of the national board examination for Indonesian medical doctors**

S Wonodirekso, I Setiawan, D Agustian, M, Ghozali, SP Dewi, TH Achmad (Joint Committee of National Board Examination for Indonesian Medical Doctor, Jl. Dr. GSSY Ratulangie, Jakarta 10350, Indonesia)

**Background:** National Medical Board of Examination for Indonesia (NMBEI) has been organized by a joint committee representing the Indonesian Medical College and the Indonesian medical education association. Following its two-year implementation, policy and program development should be highlighted and evaluated further to analyze the process.

**Summary of work:** Anonymous self-administered questionnaire involving faculties (46 respondents) and the participants (2,181 respondents) was analyzed descriptively. In addition, quarterly organizational forum took place for strategic decision.

**Summary of results:** Around 65% of faculties perceived insufficient the current examination written examination method form. Similar perception was also made by the participants (34%). However, most of participants (66%) appreciated the items as comprehensive clinical competence assessment. As all medical schools have implemented clinical skills program, there was high demand on the OSCE implementation (93.5%).

**Conclusion and take home message:** Further data concluded the need for revised overall management policy in term of institution, introduction of paper-less written examination, multi-level item bank administration and integrated dual role of examination as output standardization and competence certification. Latest policy will be beneficial for school mapping, remediation process for re-taker and administrative effectiveness.

### 3 U 9

#### **Evolution of traditional Chinese medicine education in Taiwan**

SC Liao, W Chen, MJ Chen, JG Lian (China Medical University, 91, Shueh-Shih Road, Taichung 404, Taiwan)

**Background:** Chinese Medical (CM) education in Taiwan began as a skill passed on from master to apprentice. It wasn't until 1958 that China Medical University first established a Chinese Medicine department, sixty years after the formalization of Western Medical education. We will discuss the CM education evolution in Taiwan and future struggles it may be facing.

**Summary of work:** Historical and literature review.

**Summary of results:** CM education has evolved from only apprenticeship teaching to being solely university education. Therefore four exams are now constricted to only one. Difficulties faced by CM education include the shortage of faculty and clinical teaching hospitals and government restrictions on the use of Western Medicine instruments and approaches in CM diagnosis. Also, those who graduate with both medical licenses can only choose one specialization to practice.

**Conclusions:** CM education development in Taiwan is similar to the way that Western medicine developed. But Chinese Medicine movement is hindered by government restrictions. Chinese Medicine and Western Medicine also has very much overlapped teaching materials but because of restrictions in approaches, this may lower the students' interest during their education.

**Take home message:** How Chinese Medicine can retain its own uniqueness within the future revolution and conglomeration of medical fields is a key component in its future development.

### 3 U 10

#### **Effect of PBL implementation: students' perspective**

Q Wang, Y Lu (Medical Education Research Unit, Shanghai Medical College, Fudan University, 138 Yixueyuan Road, Shanghai 200032, People's Republic of China)

**Background:** Based upon its available teaching resources and conditions, a parallel PBL session has been developed and implemented at Shanghai Medical College, Fudan University as a supplementary part of its existing MD curriculum.

**Summary of work:** To investigate the effect of PBL implementation and obtain evidence of outcomes for further adjustment and ongoing modification, students' perspective has been collected by questionnaires delivered to them before and after their PBL experience, which involved cognitive level about PBL approach, expectation and satisfaction about the implementation, opinions and comments on cases and tutors, and self-reported competence improvement. Both quantitative and qualitative data were collected and analyzed.

**Summary of results:** Positive feedback has been got and the majority of the students rated the PBL adoption as being useful and beneficial for fostering their multiple competences. Confusion and maladjustment still existed among some of the students.

**Conclusions:** Learners' perception is the direct and helpful evidence for educators and curriculum designers making decisions and conducting adjustment in educational reforms.

**Take home messages:** Students' involvement in curriculum evaluation is crucial for high quality medical Education.

### 3 U 11

#### **A study of various methodologies of teaching in the medical curriculum with reference to Rajah Muthiah medical college, Annamalai university**

P Viswanathan, MS Zafar, AJ William Felix, N Chidambaram, M Ramanathan, R Tippoo, V Anandhi (Annamalai University, Medical Education Unit, Faculty of Medicine; Distance Education; Department of Community Medicine, Tamilnadu 608 022, India)

**Background:** Traditionally, the teachers in the medical colleges follow the didactic format for teaching and occasionally they supplement their teaching with Audio-Visual aids. There are also activity based teaching and learning to some extent in the form of practical classes and clinical classes. But of late, the Medical Council of India, New Delhi, India insists that there need to be a change in the teaching and other forms of teaching / learning like integrated lectures. Activity based learning, Seminar / Symposium, Group dynamics, Workshops, etc., are to be adopted. The objective of the present study is to identify which type of teaching methodology is preferred by the students. The students who pursue the MBBS on campus programme in the Rajah Muthiah Medical College of the Annamalai University gave their opinion.

**Summary of work:** The study was conducted during 2008 from January to May. The students from I year, I clinical year, pre-final year and CRRIs were encouraged to fill up a pre-structured questionnaire.

**Summary of results:** The data collected were studied and analyzed.

### 3 U 12

#### **Development of the quality assurance system at the medical faculty university of Nis Serbia**

Dusica Pavlovic, Milan Visnjic, Dobrila Stankovic-Djordjevic, Ivana Stojanovic (Faculty of Medicine, University of Nis Serbia, Nis 18000, Serbia)

**Background:** Development of quality assurance system at the Medical Faculty University of Nis started with the reform of Serbian higher education system and is part of the push to join the European higher education area (HEA). All higher education institutions in the Republic of Serbia and their respective

study programs shall be subject to the procedure for accreditation. The accreditation of all our study programs and HEI -Medical Faculty were finished 2008.

**Summary of work:** The Center for Monitoring, Assurance, Improvement, and Development of Quality of Study Programs, Teaching and Research was established at the session of the Assembly for Education and Science, Faculty of Medicine University of Niš, on 2005.

**Summary of results:** Multi-level harmonization of the activities of the Center commissions and work-groups results In the self-evaluation reports on study programs and working conditions in all study groups, adopted by the Board for Science and Education of the Faculty twice a year (after I and II semesters) and Available at internet site of the Faculty.

**Conclusion and take home message:** The QA system is now tightly linked to Medical Faculty management as integral part of the institution's strategic work in the CV reform process.

### 3 U 13

#### **Toward social accountability of medical education in Iran**

Abbass Entezari, Nader Momtazmanesh, Arash Khojasteh, Bahram Einollahi (EDC, Ministry Of Health & Medical Education, 7th floor, Educational Development Center, MOHME, Falamak Ave, Tehran 1467664961, Iran)

**Background:** For response to the rapid changes of health needs, Iranian scientists were proposed a comprehensive strategy that includes education, clinical service and research. Among the solutions proposed in the 1985, medical education was integrated into health care service provision as the main strategy.

**Summary of work:** After integration, ministry of health and medical education supervised all educational activities, researches and service provisions of medical schools and universities of medical sciences and health services were born. Therefore the education component would include a continuum of community related activities throughout undergraduate education and residency and simply placing students in a community setting as part of the curriculum was not a sufficient response to the challenge of social accountability in medical education.

**Summary of results:** Main potential achievements of this strategy in Iran are enlargement of educational settings, PHC rotations for all undergraduate medical students, curriculum content changing due to national health priorities, promotion of examination systems for professional competence, Periodic national comprehensive, and continuity of learning throughout life by CME law, training of faculty members in educational development centers, increased emphasis on promotion of health, prevention of disease and risk management approaches, cooperation between community health services and other relevant bodies in joint policy development, program planning, implementation and review were been encouraged and facilitated in the Ministry of Health and Medical Education.

**Conclusions and take home message:** Integration of medical education into health service delivery system plays an important role to community health promotion and improvement of medical schools in all aspects of social accountability.

## SESSION 4 SIMULTANEOUS SESSIONS

### 4A Symposium

#### **New Opportunities in the Assessment of Continuing Medical Education (CME)**

DT Dietze (Improve CME, Queen Creek, USA); S Singer (Accreditation Council for Continuing Medical Education, Chicago, USA), JT Balmer (University of Virginia School of Medicine, Charlottesville, USA), RE Hawkins (American Board of Medical Specialties, Chicago, USA)

The US CME system is a network of professionals and organizations that plan/conduct CME activities in a variety of formats. CME is an essential approach to address ABMS Maintenance of Certification™ requirements, which focus on assessment and performance improvement. CME professionals are struggling to assess changes in competence, performance and patient outcomes in compliance with ACCME criteria, and to accumulate evidence supporting the effectiveness of CME as a strategic asset in improving practice, quality, and patient outcomes. The CME community has a great need to partner with assessment professionals, such as those at the Ottawa Conference, to help redefine CME effectiveness, build research literature, and enhance the valuation of CME by healthcare stakeholders. Participants will: a) have an increased awareness of ACCME assessment criteria and ABMS Maintenance of Certification™ requirements, b) evaluate the deficiencies of CME professionals/organizations in the assessment of changes in competence, performance, and patient outcomes, and c) identify opportunities/strategies for applying their assessment expertise within the CME community for mutually beneficial relationships that enhance healthcare professional performance and patient outcomes.

### 4B Oral Presentations Portfolio Assessment in Postgraduate Education

#### 4 B 1

#### **To what extent is engagement of junior doctors with ePortfolio influenced by the organisational guidance provided?**

K Beggs, T Brown, A Haig, C Tochel (NHS Education for Scotland, 11 Hill Square, Edinburgh EH8 9DR, United Kingdom)

**Background:** The NES ePortfolio has been used to support the 2-year Foundation Programme in medicine across the UK since 2006. The guidance and ‘direction’ provided to foundation doctors from their Postgraduate Deanery (organisational culture) varies enormously; some are explicit about requirements and ePortfolio use while others are less directive. This analysis explores the extent to which the use of the ePortfolio varies between two regions with similar trainee numbers, but with contrasting approaches to guiding ePortfolio use.

**Summary of work:** Type and number of clinical assessments submitted, engagement with educational/reflective logs and interactive curriculum use in a 12-month period were compared between two deaneries of similar size but with contrasting organisational cultures – one providing explicit guidance and regular monitoring; the other providing less structured guidance throughout the year. Patterns of use in different specialties were also explored to establish the influence of cultural norms within the day to day working environment on ePortfolio use.

**Summary of results:** Preliminary results suggest both quality and quantity of information submitted to the ePortfolio vary considerably across different organisational cultures, with variations in frequency and depth of use reflecting different Deanery approaches.

**Conclusions and Take home messages:** This analysis provides quantitative evidence of the extent to which engagement of junior doctors with ePortfolio is influenced by organisational guidance.

#### 4 B 2

##### **Variations in linking of assessments to training curriculum items is observed across geographical locations in a UK-wide medical ePortfolio system**

T R P Brown, C Tochel, K Beggs, A Haig (NES ePortfolio, NHS Education for Scotland, The Lister, 11 Hill Square, Edinburgh EH8 9DR, United Kingdom)

**Background:** The NES ePortfolio is a web-based system used by training doctors in the UK to allow them to store assessments as evidence towards achieving professional competence. One significant advantage of an electronic portfolio system is the ability for trainees to link evidence to curricula competencies.

**Summary of work:** The linking patterns of trainees during their first 2 years of clinical training were analysed.

**Summary of results:** Results indicate that of the 235000 links made by 5600 trainees: (i) nationally, the type of assessment tools were predominately linked to appropriate curricula categories, (ii) the extent of linking differed between first and second years of training, and (iii) there are significant geographical variations of the number of trainees' forms and how many links trainees made. Results suggest that trainees who actively link assessment evidence to their curriculum do so in an appropriately directed manner. However, the extent to which trainees use the linking process is variable and would also indicate that the usage of the NES ePortfolio is influenced by local factors such as training/guidance, teaching methods, and physical locality.

**Conclusions and take home message:** A national ePortfolio system, although largely homogenous in function, is subject to variations in use indicating that the system can support both models where linking is encouraged, and where linking is not seen as central to the learning process.

#### 4 B 3

##### **What we have learned from an interim review of trainee ePortfolios in the Kent, Surrey and Sussex School of Surgery**

J Joyce, H Scott, P Shaw, E Sharp, M Solan, D Gerrard (School of Surgery, KSS Deanery, 7 Bermondsey St, Southwark, London SE1 2DD, United Kingdom)

**Background:** Evaluation following a new national curriculum for Surgical training in the UK showed most trainers were concerned that this would develop into a "tick-box" exercise and trainees would progress even if they were considered unsuitable. We piloted an Interim Review (IR). We found that the Trainer's reported feedback on trainees, in fact correlated well with all other metrics analysed: Workplaced Based Assesments (WBA), Logbook activity, level of supervision and evidence of audit & publications.

**Summary of work:** A researcher attended IRs for 67% of trainees in KSS, conducted face-to-face interviews and gathered data from all trainee's ePortfolios.

**Summary of results:** Sixty-five percent of trainees had inadequate numbers of WBA's with 7% of trainees who showed a good mixture of consultant and others for sign off. Trainees with the greatest number of WBAs had the highest logbook activity, most favourable descriptions by their Educational Supervisors and strongest evidence of audit & publications.

**Conclusions:** As the new surgical training model beds in, the use of the Portfolio tools correlates well with trainer feedback. Our School recommends that 60% of WBA's are signed off by consultants.

**Take home message:** The outcome of this review facilitates a targeted action plan for future faculty development as well as ongoing quality management of training.

#### **4 B 4**

##### **A new approach to annual trainee reviews**

AG Dewhurst (KSS Deanery, Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** In the UK, there is now a requirement for a formal annual review of the progress of trainee's competence, using a variety of evidence, mapped explicitly to an approved curriculum. Trainees in Internal Medicine use an e-portfolio to record this evidence. These trainees are managed by Local Faculty Groups (LFG) reporting to specialty schools, responsible for their overall management.

**Summary of work:** We report the annual quality management system to review the progress of each trainee. This combines LFG reports, e-portfolio reviews and supervisor's reports. 65 trainees were reviewed in 3 hours by 4 reviewers.

**Summary of results:** We found that for the great majority of trainees there was adequate evidence of satisfactory progress. The remainder had insufficient assessments or unsatisfactory reports and required additional experience.

**Conclusions:** This new approach was time efficient, robust and ensured that trainee engagement (or not) in the assessment processes, particularly in the workplace, was at the core of their annual assessment. The LFG reports provided additional evidence of trainee progress, strengthening the validity of the conclusions.

**Take home messages:** A combination of workplace-based assessments, supervisor's reports and LFG evidence can be efficiently analysed using an e-portfolio system thus facilitating regular reviews of large numbers of trainees in an improved system of quality control.

#### 4 B 5

##### **Validity study of workplace-based portfolio-assessment via a Delphi procedure at Medical School, University of Antwerp, Belgium)**

N Michels, J Denekens, E Driessen, L Bossaert, L Van Gaal, B De Winter (University of Antwerp, Faculty of Medicine, Skills Lab, Campus Drie Eiken, R3.14, Universiteitsplein 1, 2610 Antwerp, Belgium)

**Background:** Portfolios can be used to assess competences at the workplace. As there exist no validated checklist to check whether the targeted assessed competences are represented in the portfolio-content, we aimed to construct a validation-checklist.

**Summary of work:** A literature search on “Portfolio and Validity” was performed. Secondly, a Delphi-study was carried out to translate the described CanMEDSroles into a checklist with regard to portfolio-assessment. 30 experts (portfolio and educational specialists) were engaged to score the key competences per CanMEDSrole on relevance (6-point Likert-scale) and to comment on the content and formulation of the key competences.

**Summary of results:** Both Delphi-rounds had a high response rate (83%, n=30, respectively 92%, n=25). Although all competences were scored as relevant, a lot of remarks were suggested concerning the lack of concrete, transparent and applicable definitions of the key competences for the purpose of portfolio-assessment.

**Conclusions:** Relevance of CanMEDSroles and key competences is confirmed. Nevertheless, descriptions have to be more applicable for assessment. A new validation-checklist will be constructed, defining CanMEDSroles into concrete learning outcomes.

**Take home message:** Competences as described in the CanMEDS are not sufficient for portfolio-assessment and have to be translated in concrete learning outcomes which can be validated.

#### 4C Oral Presentations Planning an Assessment

##### 4 C 1

##### **Design principles for programmes of assessment**

J Dijkstra, CPM van der Vleuten, LWT Schuwirth (Maastricht University, Faculty of Health, Medicine and Life Sciences, Department of Educational Development and Research, P.O. Box 616, 6200 MD Maastricht, Netherlands)

**Background:** Research on assessment quality often results in quality criteria. However this does not provide guidelines for design. For instance the criterion: assessment should be reliable, does not inform us how to realize this.

**Summary of work:** After drawing up a design framework for assessment programmes consisting of five dimensions (Dijkstra et al., 2009), the underlying study reports on a wiki to support a Delphi procedure to reach consensus among ten experts on concrete design principles for each dimension of the framework. The procedure is divided in 3 phases; first brainstorming to elicit ideas, followed by discussion to strengthen the formulation and achieve robustness, and finally fine-tuning the principles.

**Summary of results:** Since this project is ongoing (until April 2010), currently we only have preliminary results. The majority of the entries in the wiki are linked to the more practical dimensions on collecting and combining information, and supporting assessment (e.g. achieving reliability, conducting item review). Less design principles are formulated for long term planning of assessment, such as research and development, or external review. This was not unexpected since the former is more directly linked to visible assessment practices than the latter.

**Conclusions and Take home messages:** The formulated design principles are intended to support assessment developers to establish high-quality assessment programmes.

Dijkstra J, Van der Vleuten C.P.M., Schuwirth L.W.T. (2009). A new framework for designing programmes of assessment. *Advances in Health Sciences Education*, Published online in advance 10 October 2009.

#### 4 C 2

##### **Expanding the role and remodeling the practice of pharmacy technicians in Canada: Impact on the development on a job analysis and Certification Examination**

J Pugsley, C O Byrne, L Quero-Munoz (The Pharmacy Examining Board of Canada, 717 Church Street, M4W 2M4 Toronto, Canada)

**Background:** The Pharmacy Examining Board of Canada (PEBC) developed a certification process for Pharmacy Technicians (PTs) at entry to practice, based on a new national competency profile and expanded scope of practice. Certified and registered PTs would be accountable for the accuracy of medication compounding, dispensing and distribution in pharmacies and institutions.

**Summary of work:** PEBC developed a blueprint and a two-part examination to assess readiness to assume the expanded scope of PT practice. In the absence of practitioners involved in an emerging scope of practice and of regulatory standards to delineate the expectations and limitations of these practitioners, PEBC assembled visionary professional focus groups to conduct a job analysis and develop the examination blueprint and content.

**Summary of results:** All competencies were deemed relevant but some were deemed less critical. The examination blueprint included a multiple choice examination and an OSCE-like examination. The blueprint and content were developed to assess candidates' readiness to perform critical roles and functions in the expanded scope of practice. Questions about what a PT could do vs what should be referred to the pharmacist affected development of content and scoring criteria.

**Conclusions and Take home messages:** Focus groups are effective for job analyses and development of certification examination content and consensus building as a profession evolves.

#### 4 C 3

##### **Technical challenges on the assessment of medical professionals for the Andalusian Public Healthcare System**

J Guerrero Garcia, R Cano Diaz, G Puerta Cardelles, J Escalona Rueda (Fundacion IAVANTE, Marie Curie 16. Floor 1, Edificio Possibilia 2005, Parque Tecnologico de Andalucia, 29590 Campanillas - Malaga, Spain)

**Background:** When facing the assesment of 4000 healthcare professionals in two months using multimedia tests, robotic simulations inside operating-rooms, and real surgical actuations over different models, one organization faces a number of different hardware, network, software, logistics, security and safety challenges.

**Summary of work:** We sought to provide clarification to the following challenges: 1) how to configure and keep 70 examination workstations up and running in every possible condition; 2) how to minimize startup and inter-test timings; 3) how to assure the digital and physical security during examination; 4) how to present every possible kind of multimedia content to the candidates; 5) how to keep a record of multimedia tests or surgical operations while preserving anonimity.

**Summary of results:** This paper presents some of the technical solutions adopted by Fundación IAVANTE in order to solve all those challenges in an innovative way: installation and automatic configuration of the workstation, automation of startup and rebooting, multimedia test design, development and network distribution to the workstations, encryption and persistency of the results, screen privacy, on-screen non-return points and printing, wireless photograph identification and printing inside the operating rooms.

**Conclusions and Take home message:** The solutions presented do not rely on any single commercial product, and are easily replicable for any assesment having similar needs.

#### 4 C 4

##### **Assessment of medical crisis team leadership**

V Kramer, A Friedenbergr, E Bonura, C Gillespie, R Smith, K Felner, B Kaufman (NYU School of Medicine Division of Pulmonary and Critical Care Medicine, 550 First Avenue, NBV-7N24, New York 10016, United States)

**Background:** Residents feel unprepared to manage crisis situations where leadership skills are essential. Tools for assessing leadership in such situations are needed.

**Summary of work:** We searched the literature and identified seven core domains of medical crisis leadership (communication, decision-making, implementation, resource management, situational awareness, teamwork, workload management) and created a 29-item behaviorally-anchored checklist for use in a simulated crisis. A three-point scale was used (“not done,” “partly done,” or “well done”). Leadership performance was assessed globally as being “poor,” “average,” or “good.” Twenty-two residents were rated on their videotaped performance in a simulated medical crisis.

**Summary of results:** Internal consistency was 0.91. Mean % items “well done” differed significantly by whether globally rated as “poor” (17%, SD 14%), “average” (30%; SD 12%), or “good” (56%; SD 6%) ( $p < 0.001$ ). Individual domain scores also varied by global rating. Overall mean % of leadership skills rated as “well done” was 35% (SD 19%), confirming the perceived need for leadership training.

**Conclusions:** Preliminary data provide support for the reliability and validity of the leadership skills checklist. Checklist scores were associated with global ratings. Overall, residents did not perform well.

**Take home messages:** We will use this checklist to measure the effect of a training program to improve medical crisis team leadership.

#### 4 C 5

##### **The practice analysis as the foundation for exam development**

S Arbet (National Commission on Certification of Physician Assistants, 12000 Findley Rd., Ste. 200, Duluth 30022, United States)

**Background:** When based on a scientific analysis of professional practice, licensure and certification exams are grounded in a solid foundation of what practitioners are actually doing. Using a 2009 practice analysis conducted by the U.S.’s National Commission on Certification of Physician Assistants as a case study, during this session, participants will learn how to prepare for, conduct and apply the results of a practice analysis study. Session leaders will also provide information on how often practice analyses should be conducted and various methods that can be used effectively.

**Summary of work:** As of this writing, NCCPA’s practice analysis study is in progress, involving a focus group, survey design, online survey administration, analysis, and decision. All certified PAs are invited to participate in the survey. The practice analysis study will be completed prior to the Ottawa Conference.

**Summary of results:** This study will yield data on how PA practice has changed since the last practice analysis (conducted in 2004-2005).

**Conclusions and Take home messages:** Participants will learn how to prepare for, conduct and apply the results of a practice analysis study. Session leaders will also provide information on how often practice analyses should be conducted and various methods that can be used effectively.

#### 4 C 6

##### **Item reduction and test precision**

L Shen, F Li (National Board of Osteopathic Medical Examiners, 8765 West Higgins Road, Suite 200, Chicago 60631, United States)

**Background:** COMLEX is a three-Level licensing exam program for U.S. osteopathic physicians. Currently, each Level has 350 items, and the statistical qualities for each Level are strong. To make the exams more efficient, COMLEX is exploring the possibility of reducing the number of items to 300. Inevitably, item reduction will reduce the precision of the test. The purpose of this study was to investigate how the measurement quality would change if the exams contain 50 fewer items.

**Summary of work:** A data simulation technique was applied to compare existing 350-item forms with corresponding random subsets of 300 items for the following criteria: 1) test information at cut score; 2) measurement error at cut score; 3) pass/fail misclassification rate. Each comparison included 1000 randomly-sampled examinees and three existing forms with low, medium and high test information.

**Summary of results:** The results show that, with 300 items, the test information at the cut score would reduce by about 12% but would still be sufficient, the measurement error at the cut point would increase by .01, and the misclassification rates would increase by less than 0.4%.

**Coinclusions and Take home message:** The results suggest that the changes in test quality due to item reduction would be minimal and 300-item COMLEX examinations will remain statistically robust.

## **4D Oral Presentations OSCE Case Studies 2**

### **4 D 1**

#### **OSCE to evaluate clinical skills**

A Gandhi (Clinical School, Johor Bahru, School of Medicine & Health Sciences, Monash University, Sunway campus, JKR 1235, Bukit Azah, 81200 Johor Bahru, Malaysia)

**Background:** The aim of medical education is to nurture a good clinician with good skills in history taking and clinical examination. Our aim was to evaluate the role of Clinical Skills Lab in imparting skills and to evaluate OSCE as a means to evaluate the skills learned by the students.

**Summary of work:** The present study was conducted on 70 students One group (Control Group) of 32 students have completed the surgical rotation of 8 weeks without exposure to CSL while the other group (Study Group) of 38 students had started their surgical rotation and a morning session of 4 hours was conducted at the CSL once a week. At the end of 8 weeks, both groups of students were assessed using the same set of OSCE.

**Summary of results:** Overall, 22 students (31.4%) could achieve 50% or more marks; 11.4% of the students achieved a score higher or equal to 20 and all of them were from the skilled group. Within the skilled group, the number of students who passed and failed are equal. Within the control group, the majority of students (90.6%) failed.

**Conclusions:** The use of a clinical skills centre has potential benefits for students, including the provision of a safe environment in which to learn and practice skills before using them in the real clinical setting.

**Take home message:** Clinical skills centers provide a setting for structured learning with feedback as well as assessment of competence.

#### 4 D 2

##### **The use of the post encounter SOAP note to assess clinical reasoning: Survey by the Clinical Consortium of the Associated Medical Schools of New York (AMSNY)**

J Brown, J Koestler, S Krackov, F Milan, H Pohl, L Tewksbury (Associated Medical Schools of NY, 1270 Ave of the Americas, Suite 606, New York, NY 10020, United States)

**Background:** Clinical reasoning is an essential skill for the practice of medicine, but development of valid and reliable assessment tools has lagged. Standardized performance-based exams (OSCEs) provide the opportunity to assess clinical reasoning through the post-encounter patient note. This format is used in the USMLE Step 2CS and COMLEX PE exams. Little has been published about their validity in assessing clinical reasoning.

**Summary of work:** We distributed a survey to AMSNY member schools to determine their practices with regard to this topic.

**Summary of results:** All 15 member schools responded to the survey. Eighty percent have a multi-station performance-based exam following core clerkships in which students write a note. The majority use the USMLE or similar patient note format; 59% grade the notes. Grades count toward pass/fail decisions in 33%. A majority of notes are graded by faculty.

**Conclusions:** Our survey findings may reflect a national trend. The common use of the USMLE-type format in the NYS schools presents an opportunity for further study.

**Take home messages:** Using an alternative format for grading the patient note developed by NYU, we plan to study the validity of this format across NYS schools.

#### 4 D 3

##### **Harnessing the impact of a natural disaster to improve clinical skills feedback and assessment**

M Ainsworth, K Szauter, G Shokar, J Rowen, A Mercado (University of Texas Medical Branch, 301 University Blvd, Galveston, TX 77555-0410, United States)

**Background:** Our institution struggled to broadly engage clerkship disciplines in clinical skills feedback and assessment exercises. Although we had three clerkship-based objective structured clinical examinations (OSCEs) and a final-year interdisciplinary assessment, engagement of non-primary care disciplines was limited.

**Summary of work:** A natural disaster (Hurricane Ike) in 2008 resulted in temporary relocation of many students to satellite campuses, making multiple clerkship OSCEs impractical. The school adapted by creating a single multi-disciplinary formative OSCE at mid-year when students return to the home campus, and by expanding the scope of the final-year OSCE. Both exercises include objectives from the discontinued primary-care clerkship OSCEs and the previously non-participatory disciplines of Obstetrics/Gynecology, Psychiatry, and Surgery.

**Summary of results:** Despite the disruption and loss of resources, the new formative and summative OSCEs were practical to implement, and provided meaningful opportunities to engage previously non-participatory disciplines. Student performance on case challenges that were used in both pre- and post-disaster final-year exercises was unchanged.

**Conclusions:** Despite geographic dispersion of students and loss of program resources, the institution was able to re-engineer the use of formative and summative OSCEs to maintain its educational priorities.

**Take home messages:** Adversity can present new educational opportunities when previous paradigms are disrupted.

#### 4 D 4

##### **Assessment of moral reasoning skills by OSCE**

K Kinlaw, E Brownfield, D Ander, A Webb, A Otsuki, S Santen (Emory University Center for Ethics and School of Medicine, 1531 Dickey Drive, Atlanta 30322, United States)

**Background:** Reports of the incorporation of ethical dimensions in OSCEs are limited in the literature. Embedding ethical issues in a SP encounter provides an opportunity for assessing core competencies in moral reasoning and professionalism as well as interpersonal communication skills.

**Summary of work:** One hundred five medical students completing core clinical clerkships participated in a multi-station OSCE, including one case addressing ethical issues when family requests that medical information not be disclosed to the patient. SPs/Faculty assessed specific clinical skills by checklist and provided a global rating on moral reasoning.

**Summary of results:** The student ability checklist included: eliciting the family member's concerns about giving the patient pending medical information (92% were successful); attempting to understand family member's awareness of what patient would prefer to know about diagnosis (87%); sharing his/her view about telling the patient medical diagnosis (90%); stating the patient would be asked about her preference regarding diagnosis information (82%). 78% were rated 7/10 or higher on global moral reasoning.

**Conclusions:** The majority of students are able to demonstrate actions concordant with good moral reasoning, however fewer students achieved all desired behaviors.

**Take home messages:** It may be feasible to incorporate ethical concerns and assessment in an OSCE.

#### 4 D 5

##### **Clinical skills training in primary care settings improves perception of preparedness for clinical rotations without impacting on skills assessment**

D Widyardana, G D Majoor, A J J A Scherpbier (Dept. of Medical Education & Skills Laboratory, Fac.of Medicine, Gadjah Mada University, Yogyakarta, Indonesia; Institute for Education, Medical Program, Faculty of Health, Medicine & Life Sciences, Maastricht University, Maastricht 55281, The Netherlands)

**Background:** Early clinical exposure of medical students is supposed to improve preparation for prospective clinical rotations. Hence, students prepared exclusively in a skills laboratory were compared with peers for whom part of their skills training programme was substituted by training in a primary health centre (PHC).

**Summary of work:** Over a 5-week period 153 fourth-year (pre-clinical) medical students trained clinical skills exclusively in a skills lab; 59 of their peers received a mixed programme of laboratory trainings and practice in PHC. Students' perception of preparedness and clinical skills achievement were assessed through the Preparation for Hospital Practice Questionnaire (PHPQ) and a 9-station OSCE exam.

**Summary of results:** Students taking the mixed programme felt significantly better prepared for clinical rotations than exclusively skills lab-trained peers. Mean OSCE scores of both groups did not differ significantly. Students' preparedness scores did not correlate with their General Point Average (GPA) and OSCE scores.

**Conclusions:** Adding clinical skills training in a PHC setting to skills lab trainings improved students' perception of preparedness for clinical rotations. However, this mixed programme did not improve students' clinical and academic performance.

**Take home message:** Early clinical encounters may improve students' perception of preparedness for clinical rotations. However, tangible impact on clinical and academic performance remains to be demonstrated.

#### 4 D 6

##### **Communication may not be effectively assessed as a global skill**

J Liebzeit, J Abramson, L Bernstein, D Ander, C Coralli, S Santen (Emory University School of Medicine, 597 Pelham Rd NE, Atlanta GA 30324, United States)

Background: Interpersonal and communication skills are a key component of patient care, and have been identified as a "core competency" in need of assessment. Objective structured clinical examinations (OSCE) are widely used in medical schools to assess student performance, and data suggests that global assessment of communication via OSCE is valid and reliable.

Summary of work: 120 rising fourth-year medical students were evaluated with an 8 station OSCE; communication skills were evaluated within the cases using a global rating scale by both faculty and standardized patients (SP); 2 cases were SP-evaluated only. SPs also utilized a Master Interview Rating Scale (MIRS) to evaluate communication skills on 7 cases. Case content varied, including disclosing bad news and counseling substance-abusing adolescents. Spearman rank correlations were calculated to quantify the relationship between students' communications skills in different patient cases.

Summary of results: Pairwise correlations between communications scores on different cases were low-to moderate, ranging from 0.1 to 0.43 for faculty global scores, SP global scores and MIRS scores.

Conclusions: Global assessment of communication for individual students, evaluated by both faculty and standardized patients, does not correlate across cases.

Take-home messages: Communication assessment varies across cases; communication may not be a global skill.

## 4 E Workshop

### Developing test specifications for valid assessments

AM King, M Margolis, H Pohl, DP Wagner (National Board of Medical Examiners, 3750 Market Street, Philadelphia 19104, United States)

**Background:** Using detailed specifications to guide test development activities is viewed as state of the art in assessment. Test specifications ensure that evaluation instruments correspond to the curriculum, include important topics, measure intended skills, and provide students with meaningful feedback. Test specifications provide administrators, instructors, and students with a common framework for understanding the cognitive and behavioral skills expected of students.

**Intended outcomes:** Understand the importance and uses of test specifications; Understand the relationship between curriculum objectives and test specifications; Identify key test specifications for tests of cognitive knowledge and assessments of clinical skills; Evaluate the quality of a test specification.

**Structure:** The workshop is divided into three parts: 1) lecture and discussion of handouts; 2) small-group exercise; and 3) summarize and evaluate the workshop. During the small-group exercise, participants will develop a test specification for:(a) End-of-year assessment of knowledge gained during basic medical sciences course; or(b) assessment of clinical skills for a course, clerkship, or rotation.

**Intended audience:** Instructors and medical educators involved in curriculum design or student assessment.

**Level of workshop:** Beginner and Intermediate.

## 4F Oral Presentations Simulation-based Assessment 2

### 4 F 1

#### Improving assessment in interprofessional healthcare education using high fidelity simulation

M Traynor, J Murray, M Stewart (School of Nursing and Midwifery, Queen's University Belfast, N Ireland, Belfast BT9 7BL, United Kingdom)

**Background:** To ensure that the education frameworks of the various healthcare professions, which determine the knowledge, skills and attitudes necessary to become, and maintain status as, a practitioner is embedded in the undergraduate curriculum, the Queen's University Belfast, Centre for Excellence in Interprofessional Education have developed interprofessional education programmes in the areas of emergency medicine and nursing using high fidelity simulation.

**Summary of work:** An interprofessional education group was established and common learning outcomes were used to inform the development of an interprofessional simulation workshop.

**Summary of results:** Questionnaires were obtained from 352 students. Four domains emerged from the data: 1) Acquisition of clinical knowledge and skills; 2) Patient safety and risk assessment; 3) Development of Interprofessional skills, and 4) Role awareness.

**Conclusions:** Overall key findings from the evaluation of the IPE simulation workshops revealed highly significant changes in three domain areas, i.e. patient safety and risk assessment, development of interpersonal skills and role awareness.

**Take home messages:** Interprofessional simulation education prepares students to be skilful clinical team workers. Interprofessional simulation workshops can contribute to the assessment of professionalism. Interprofessional simulation workshops are resource intensive and require a large team of trained facilitators.

#### 4 F 2

##### **i-OSTE: “interprofessional Objective Structured Teaching Experience” integrating high-fidelity-simulation**

SK Beckers, M Skorning, D Rörtgen, S Bergrath, JC Brokmann, B Gillmann (AIXTRA – Centre for Training in Medical Education, Medical Faculty RWTH Aachen University, Wendlingweg 2, D-52074 Aachen, Germany)

**Background:** Benefits of simulation are widely accepted, but courses require highly-staffed facilities, medical supplies, and human resources. Against the background of a cost-benefit-relation an innovative teaching model was developed to combine skill- and high-fidelity-simulation training.

**Summary of work:** Standardized case scenarios for STEMI and Traumatic Brain Injury were designed and tested by experts. Scoring items representing guidelines-based diagnostic and therapeutic skills were defined, for skill-training intraosseous access, airway-management, pediatric life support, thoracic drainage and “BOA” rescue method were selected. They were arranged with simulation and debriefing sessions adapted to the assessment method “Objective Structured Clinical Examination” for interprofessional teams (2 paramedics & 1 prehospital emergency physician).

**Summary of results:** All teams were able to run through scenarios with standardized settings, vitals, parameters, briefings, patients’ answers and complications on High-fidelity-simulators. Overall 29 teams took part: 29 EMS-physicians (62% male; age 36.6±6.9 years; EMS-experience: 3.4±3.4 years); 58 paramedics (22.4% female, age 30.9±7.4 years; EMS-experience: 8.8±6.1 years. Simulation sessions were highlighted as favorite by 47%, overall rating 1.39±0.45 (6-point-likert-scale, 1=best).

**Conclusions:** Evaluation demonstrates feasibility of an evidence-based approach using high-fidelity-simulation paired with standardized learning objectives for skill-training.

**Take home messages:** i-OSTE is a feasible approach using high-fidelity-simulation for interprofessional training in prehospital setting.

#### 4 F 3

##### **Integrated interprofessional clinical simulation in critical care: focusing on patient safety**

Peter Jaye, [Elaine Gill](#), Libby Thomas, Bernadette O'Neill, Sally Richardson, Emily Crocker, Jayne Slonina, Carol Fordham Clark, Sam Bassett, Jane Sandall (King's Partners: Academic Health and Science Centre (AHSC), The Division of Medical Education, King's College London Medical School, Clinical Communication Unit, Shepherd's House, Guy's Hospital, London Bridge, London SE1 9RT, United Kingdom)

**Background:** Clinical simulated teaching is highly recommended as a method of learning and assessment of clinical competence, especially in acute and critical care.

**Summary of work:** Integrated clinical simulation using low and high fidelity manikins with simulated patients and clinical communication offered as interprofessional training and assessment in clinical care and patient management. The study includes final year medical, nursing, midwifery students and recently qualified health professionals offering an example of collaborative practice and education. The approach aims to address the recognised problems in current medical training and lack of training in team working, crisis management, and clinical communication.

**Summary of results:** Raw data adds to the evidence that well structured clinical simulation teaching is superior to traditional methods of clinical competence acquisition and random opportunism alone. Moreover, the likelihood of achieved behavioural change in practice is evidenced. (More detailed analysis included in the presentation.)

**Conclusions:** Organising the delivery of an integrated programme requires faculty to deliver teaching and assessment, trained technician support and is manpower intensive. The long-term value added results for learners and patients far outweighs initial cost.

**Take home messages:** Comprehensive integration in clinical simulation that includes team and patient interactions it is superior to the current training models. More importantly affecting behavioural change and attitudes regarding patient safety in practice is an achievable aim.

#### 4 F 4

##### **Analysis death disclosure skills in emergency medicine residents using hybrid simulation for mastery and self-reflection**

[D Salzman](#), M Gisoni, S Eller, [J Vozenilek](#) (Northwestern University, Feinberg School of Medicine, 303 E Chicago Ave, Ward 1-003, Chicago 60611 IL, United States)

**Background:** Emergency medicine (EM) physicians are routinely confronted with the challenging task of delivering death notifications to surviving family members. Hobgood et al (2005) developed a protocol to deliver death notification. The evaluation of this communication skill is complicated and opportunities for direct feedback are limited. This study attempted to determine the pre-intervention death disclosure competency EM residents using the previously published assessment tool and a hybrid simulation.

**Summary of work:** A convenience sample of 40 EM residents were enrolled in this IRB-approved study. Each resident participated in the simulated unsuccessful resuscitation of a high fidelity simulated patient. The residents were instructed to notify the "patient's" "spouse"--a standardized patient (SP). The SP interaction was videotaped and scored using the GRIEVING algorithm (Hobgood). Residents also evaluated their encounter.

**Summary of results:** EM residents demonstrated low baseline scores despite level of training and presumed increased clinical exposure. Average score 58.8 percent (range 27.5-82.7%). Level of training (clinical experience) did not predict a higher score.

**Conclusions and Take home message:** EM residents at varying stages of training have variable baseline skills required to adequately perform death disclosure. An intervention using a mastery model for this non-technical skill is proposed.

#### 4 F 5

##### **Simulation in Assessment: A Best Evidence Medical Education (BEME) Systematic Review**

RJ Scalese SB Issenberg, WC McGaghie, E Petrusa (University of Miami Gordon Center for Research in Medical Education, PO Box 016960 (D-41), Miami, Florida 33101, United States)

**Background:** Use of simulation technology for competency assessment has increased dramatically in the past decade. An earlier BEME systematic review explored the features/uses of high-fidelity simulations that lead to effective learning across a range of content areas. The current review focuses on how these technologies may be used to assess learners' achievement of outcomes in various domains of competence.

**Summary of work:** We systematically reviewed the literature published from 1948 through 2009 using six electronic databases: MEDLINE, CINAHL, EMBASE, PsycINFO, ERIC, and Scopus. Search terms included keywords related to assessment, simulation, and various healthcare professions, training levels and learning outcomes. We excluded review articles and purely descriptive papers, but as an inclusion criterion, we required articles to describe use of at least one simulation *device* (which could be integrated with computers, as in some virtual reality trainers, or as a "hybrid" simulation combined with a standardized patient). We further focused the review by identifying those simulation-based assessments with impact at the highest levels in the Kirkpatrick hierarchy. Using a standardized protocol, at least two coders independently extracted data from eligible references, which were then analyzed using qualitative data synthesis.

**Summary of results:** Preliminary data will be presented.

**Conclusions:** Programmability of simulators and control of the testing environment contribute to the generally good reliability of simulation-based assessments, but development of objective outcome measures and training of raters are areas requiring careful attention to minimize measurement variance. There is evidence to support the validity of inferences drawn from simulation-based assessments, particularly at the lower "learning" levels of the Kirkpatrick hierarchy. Evidence is more limited to support predictive validity or consequential validity with impact at higher Kirkpatrick levels.

**Take home messages:** Further research in the area of simulation-based assessment should focus on clarifying: what measurement instruments are best used in conjunction with what types of simulation

and/or to assess what domains of competence; how best to train raters for examinations employing simulations; and how to measure outcomes that will have greater impact on individual learners, patients and society.

## **4G Oral Presentations The Student in Difficulty**

### **4 G 1**

#### **Enabling factors leading nurse mentors to the decision to fail their student**

K Drew (NHS Tayside, Practice Education Facilitators, Level 9 Estate Corridor, Ninewells Hospital, Dundee DD1 9SY, United Kingdom)

**Background:** Much research has examined the difficulties mentors experience with failing students (Scholes and Albarran 2005, Hrobsky and Kersbergen 2002) including Duffy's (2003) work exploring why mentors failed to fail their nursing students. The view taken here was to explore those factors enabling mentors to fail their students.

**Summary of work:** Four focus groups were held consisting of a diversity of pre-registration nursing mentors who were asked to explore the factors influencing them to fail their students.

**Summary of results:** Three main factors emerged: 1) Teamwork – mentors working within a supportive team were able to gain confirmation for their decision to fail; 2) Support – mentors were able to access support from colleagues, Practice Education Facilitators or their associated University, and; 3) Mentor Strength – the mentor's determination and belief in their decision.

**Conclusions:** Where mentors were supported and had confirmation of their decision to fail, the student would be failed. In learning environments where there was antagonism or poor teamwork the decision to fail the student was dependent on the strength and determination of the mentor.

**Take home messages:** Nurse mentors need confirmation of their decision regarding student competence in order to follow through and fail the student. Nurse mentors in unsupportive learning environments experience increased difficulty failing students.

### **4 G 2**

#### **Remediating students with poor clinical skills performance: Who are they and what can we do for them?**

A Kalet, L Tewksbury, C Gillespie, J Hyland-Bruno, L Taffel (New York University School of Medicine, 550 First Avenue, Old Bellevue C/D 401, New York 10016, United States)

**Background:** Despite great progress identifying students with weak clinical skills there is little guidance on how to effectively remediate them nor reliable ways to predict the utility of intervening.

**Summary of work:** We have developed a program to remediate medical students who failed a required 10-station Objective Structured Clinical Exam (OSCE) designed to assess competencies taught in required clerkships. The process begins with a detailed review of the OSCE data including videotapes, a student self-assessment and a focused education "history". An initial diagnostic schema guides the development and implementation of an individualized remediation plan, which leads to a "make-up" OSCE they must pass in order to graduate.

**Summary of results:** We describe the competence patterns, identified issues, remediation strategies, resources used and short-term outcomes for 45 students remediated. Using case studies we will highlight implications of our work for curriculum and evaluation and the need for research.

**Conclusions:** It is our initial experience that students who fail the OSCE are a diverse group with a range of remediable, learning, interpersonal skill, knowledge deficit, professionalism/attitude and psychological issues previously poorly characterized.

**Take home messages:** A detailed framework for understanding and benchmarking clinical incompetence is needed to guide medical education policy, practice, ethics and research.

#### **4 G 3**

##### **A model to identify and characterize students at risk of failure at medical school**

K Stegers-Jager, G Baars, T Splinter (Erasmus MC - Institute of Medical Education and Research, PO Box 2040, Office Gk 744, 3000 CA Rotterdam, Netherlands)

**Background:** Not all students manage the transition to medical school successfully. In order to be able to develop adequate interventions to remediate students at risk of failure during their first year or to refer them to another study, our aim was to identify and characterize them.

**Summary of work:** Using logistic regression we developed a prognostic model to predict retrospectively whether 1,795 students from five consecutive cohorts, would complete the first-year curriculum within two years. Predicting variables included students' GPA, number of credits, number of exams taken, exam success rate and pre admission variables such as age and high-school GPA.

**Summary of results:** With the predicting variables "failure on at least one of the first three exams (out of 10)" and "failure on exam 4 and 5" we were able to classify correctly 90.0% of the students. Specificity and sensitivity of the model were 64.2% and 94.0% respectively. Two types of students-at-risk seem to emerge: 1) students with low participation rate and little success and 2) students with high participation rate and little success.

**Conclusions/Take home message:** Pre-admission variables and data on study behaviour and study performance can help to identify and characterize students-at-risk. Differences between these students should be taken into account when designing interventions.

#### **4 G 4**

##### **Factors associated with dropping out of medical school: a literature review**

LD O'Neill, B Wallstedt, B Eika, J Hartvigsen (University of Southern Denmark, Campusvej 55, 230 M Odense, Denmark)

**Background:** Considerable resources are spent on medical school selection and the competition for places is usually fierce. Dropping out must therefore be the worst possible performance outcome in medical education. What do we know about factors associated with dropping out of medical school?

**Summary of work:** A systematic critical literature review of the international peer-reviewed research literature on medical education is ongoing. Inclusion criteria are: Study population=medical students, outcome=dropout, follow up period=minimum 1 year, study designs=cohort/case-control/experimental. An experienced research librarian performed a primary search of the databases PubMed, ERIC, PsycINFO and Embase in April 2009. Studies are reviewed and quality appraised on 6 domains of potential bias in prognostic type studies, namely: study participation, study attrition, prognostic factor measurement, confounder measurement and account, outcome measurements, and analysis.<sup>1</sup>

**Summary of results:** The primary search resulted in 625 records of which 84 appeared relevant after screening abstracts/titles. Initial results indicate that only a few (pro tem~9) studies use regression type analysis. The majority of studies are simple group comparisons of attrition rates, most with insufficient control of confounding. Very few studies examine school/curriculum related factors associated with attrition.

<sup>1</sup>Hayden JA, Côté P, Bombardier C. Evaluation of the quality of prognosis studies in systematic reviews. *Ann Int Med.* 2006;144(6): 427-37.

#### 4 G 5

##### **Perceived stress, sources and severity of stress among medical undergraduates in a Pakistani Medical School**

M Shah, S Hasan, S Malik, CT Sreeramareddy (CMH Lahore Medical College, Abdur Rahman Road, Cantt, 54000 Lahore, Pakistan)

**Background:** Recently, there is a growing concern about stress during undergraduate medical training. However, studies about the same are lacking in Pakistan.

**Summary of work:** A cross-sectional, questionnaire-based survey was carried out among undergraduate medical students. Perceived stress was assessed using perceived stress scale. A 33-item questionnaire was used to assess sources of stress and their severity.

**Summary of results:** The overall response rate was 80.5% (161 out of 200 students). The overall mean perceived stress was significantly higher among female students. By logistic regression analysis, stressed cases were associated with occurrence of psychosocial and academic related stressors. The most common sources of stress were related to academic and psychosocial concerns. There was a negative but insignificant correlation between perceived stress and academic performance.

**Conclusions:** Though a higher level of perceived stress was reported by the students it was not correlated with their self-reported academic performance. Most frequently occurring sources of stress were related to academic and psychosocial domains and were significantly associated with stressed cases.

**Take home messages:** Stress and psychological morbidity occurs frequently in our setting. The college authorities need to address these issues to improve the student's academic performance and general well-being.

## 4H Oral Presentations Assessing Professionalism 3

### 4 H 1

#### **Exploring medical professionalism at undergraduate level: a generalisability analysis**

L Coombes, G Pagliuca, C Ricketts (Peninsula College of Medicine and Dentistry, University of Plymouth, Plymouth PL4 8AA, United Kingdom)

**Background:** The evaluation of medical professionalism has been at the centre of considerable attention. One of the main problems that measuring professionalism poses is how to define an adequate number of judgments (reliability problem) and what sort of factors these judgments would underline (validity problem).

**Summary of work:** Peninsula Medical School currently collects a number of professionalism judgements for each student during their studies. We carried out Generalisability analyses to assess the number needed to achieve an adequate level of reliability, and a factor analysis to explore the underlying factor structure.

**Summary of results:** Our results show that a small reduction in the number of judgments does not have a profound effect on the reliability of the assessment, and that most judgments can be clustered in one of a series of dimensions, indicating good construct validity.

**Conclusions:** This study presented a rational way of determining an optimal number of professional judgments to achieve an adequate level of reliability and of exploring the construct validity of the assessment.

**Take home message:** Measuring medical professionalism poses a series of challenges to medical professionals. This is the first study conducted with a large number of undergraduate medical students that tries to address the reliability and validity of this type of assessment.

### 4 H 2

#### **Professionalism Mini-Evaluation Exercise (P-MEX) for evaluating medical residents: a result of two consecutive year survey in Japan**

Y Tsugawa, S Ohbu, Y Tokuda, T Ohkubo, R Cruess, S Cruess, T Fukui (St. Luke's International Hospital, 9-1 Akashi-cho Chuo-ku, 104-0044 Tokyo, Japan)

**Background:** The Professionalism Mini-Evaluation Exercise (P-MEX) is a tool for assessing medical professionalism developed, tested for reliability and validated in Canada. Its validity and reliability are yet to be verified in other countries.

**Summary of work:** We translated P-MEX into Japanese and demonstrated its validity and reliability among Japanese senior residents. A total of 184 P-MEX were completed on 23 senior residents in 2008 (8 forms per resident), and 320 P-MEX forms were completed on 32 senior residents in 2009 (10 forms per resident).

**Summary of results:** Results indicated good content and construct validity in 2008. A confirmatory factor analysis revealed that factor loadings ranged from 0.58 to 0.96, indicating good construct validity except for one item (P12). A decision study showed confidence intervals sufficiently narrow with as few as 10 evaluations. Data obtained in 2009 are currently under analysis.

**Conclusions:** Our study demonstrated good evidence of adequate reliability and validity of the P-MEX for the assessment of professionalism among Japanese residents. A multi-institute study is currently in progress in Japan.

**Take home messages:** P-MEX is valid and reliable tool for evaluating medical professionalism, demonstrated in Canada and Japan. P-MEX can become a universal professionalism evaluation tool worldwide.

#### 4 H 3

##### **Creating a national resident policy on professionalism for residents in Canada**

A Toren, K Kanwal, H Gulati, J Maniate (The Canadian Association of Interns and Residents, 151 Slater Street, Suite 412, Ottawa, ON K1P 5H3, Canada)

**Background:** Professionalism is inherent in the practice of medicine, in ensuring appropriate patient care and in the maintenance of standards of competency. Within residency training, professionalism must also encompass the multiple roles residents' play as front-line workers, learners and teachers. CAIR has undertaken the development of a national resident policy on professionalism which seeks to better define what professionalism means for residents and the principles by which residents must be guided by. The objective of this project was to review and summarize the current literature on professionalism, as an initial step in developing the aforementioned policy.

**Summary of work:** A focused literature search was undertaken in July 2009. Fifty-eight references were retrieved with 20 of these reviewer nominated.

**Summary of results:** Over the past decade, there has been a shift from lengthy 'editorial' style comments on professionalism, to 'practical' implementation of such ideas. Contemporary issues such as duty hours and a lack of role models have been identified as potential challenges to implementing an effective professionalism policy.

**Conclusions:** The review of the literature has highlighted several challenges that may require addressing before an effective policy is drafted.

**Take home message:** Professionalism in residency training is critical to the future of the profession. Current ideas on professionalism need to adapt to remain relevant.

#### 4 H 4

##### **Developmental performance assessment: a resident evaluation form assessing competency for professionalism**

A Fornari, E Korin, M Polisar, M Duggan (Hofstra School of Medicine in partnership with NS-LIJ Health System, 125 Community Drive, Great Neck, New York 11021, United States)

**Background:** To align residency education and assessment measurements within a competency-based framework, the residency program revised their professionalism assessment form used to evaluate residents.

**Summary of work:** Based on a literature review, focused on assessment of professionalism, a seven point scale ranging from “too little to too much” as the trajectory of anchored behaviors was agreed upon by faculty. Challenges during the development of the tool included defining specific categories and meaningful dimensions that correlate with the basic premises of the training curriculum. Distinguishing developmental milestones over three years of training for this competency and defining anchors to reliably evaluate and support this developmental approach to assessment was a difficult yet educational task for faculty.

**Summary of results:** This presentation will describe the process to develop a behaviorally anchored professionalism assessment tool to assess resident progress and performance. Resident and faculty qualitative feedback on using the developmental competency based form during formative reviews will be shared. The outcome was an assessment tool for a competency that is challenging to measure.

**Conclusions and Take home message:** A collaborative effort among residency faculty contributed to a quality educational environment reflective of learner and faculty needs. The behaviorally anchored professionalism assessment form will be shared with participants.

#### 4 H 5

#### **Assessing the ability of medical students to identify and reflect on end of life decision-making at the bedside**

A Rubinow (Hadassah Hebrew University Medical Center, Ein Kerem, Jerusalem 92110, Israel)

**Background:** Teaching clinical ethics and professionalism to medical students and assessing whether relevant concepts can be learned and applied at the bedside is a major challenge in medical education. Particularly daunting is the students' early confrontation with end-of-life decision-making and dealing with death. Our objective was to assess whether students can analyse and reflect on ethical and professional dilemmas related to end-of-life decision-making.

**Summary of work:** Following a 35-hour course in clinical ethics, fourth-year students began their first clinical rotation on a general medical ward. After eight weeks, each student was required to submit in writing the description of a patient where an ethical/professional problem was identified, discuss the conflicting ethical principles and suggest way(s) to resolve the dilemma. The students presented their patients to peers (20 students) and a facilitator.

**Summary of results:** Between 2001-2009, 450 students have submitted relevant case studies. 94 students (21%) described a patient confronting imminent death and reflected on the ethical and professional issues they observed at the bedside. Topics included advance directives, healthcare proxies, living wills, withholding and withdrawing life support, decision-making capacity and dementia, legal, religious and cultural considerations, truth-telling, confidentiality, triage, futility, ageism and family/caregiver disputes. The presentations were insightful and demonstrated mature moral reasoning.

**Conclusions and Take home message:** Ethics and professionalism can be taught and the learning assessed. Students are able to identify, describe, demonstrate and reflect on complex ethical dilemmas at the end-of -life.

## 4I Oral Presentations Selection for Admission to Medicine

### 4 I 1

#### **Piloting film clips in undergraduate admissions procedures**

Carolyn Johnston (King's College London School of Medicine, Room 418 Shepherd's House, Guy's Campus, London SE1 1UL, United Kingdom)

**Background:** 'The Doctor' powerfully illustrates themes of ethics and communication. Two clips from the film were piloted for admissions to the Extended Medical Degree Programme at King's College School of Medicine.

**Summary of work:** This was a 5 minute station. Two clips in Real Player format were shown to a group of 12 current students. The students were then 'interviewed' individually about their reflections on the film clips. Most students identified ethical dilemmas although some were unclear about what was being asked of them.

**Summary of results:** On reflection the main issues regarding the effective use of film clips were: 1) having the right equipment; 2) the appropriate length of the film clip(s), language, subtitles, student sensitive issues; 3) clear instructions to the students about what they were expected to do; 4) allocation of marks, standardisation, non leading questions. There was a wide spread of student marks in assessment and the interviewers and students liked this format.

**Conclusions:** Film clips can be used effectively in admissions interviews provided that they are selected carefully to illustrate appropriate themes.

**Take home messages:** The identification of key issues in use of film clips can be used as a basis to broaden out their application, for example in teaching and assessment of ethics and law.

### 4 I 2

#### **Improving uniformity in medical school admissions – an audit of the admissions process**

N Afonso, D Yargeau, S Norman, P Bridge (Wayne State University School of Medicine, 320 E.Canfield, Suite 222, Detroit MI 48201, United States)

**Background:** The aim of the medical school admissions committee is to select applicants who are going to be successful both as students and as future clinicians. The process is expected to be fair and based on both cognitive and non-cognitive merit.

**Summary of work:** The purpose of this study was to assess the level of agreement in rating the non-cognitive attributes from the application materials and the interview process. We hypothesized that this exercise would identify issues of concern, foster a discussion around applicant attributes and develop a collective understanding of variations and result in a reduction of variability in assessment of the non-cognitive criteria.

**Summary of results:** The process for development of a system to audit the process of selection of student for medical school is described.

**Conclusions:** This exercise helped the committee develop a collective understanding of variations and resulted in a reduction of variability in assessment of the applicants during the admissions process.

**Take home messages:** As admission committee continue to grapple with selection criteria, the process for selecting student in the fairest way need to be evaluated on an ongoing basis to ensure a uniform frame of reference.

#### 4 | 3

##### **Reliability of standardized essay for admissions**

K Hecker, C Violato (3330 Hospital Drive NW, Calgary, Alberta T2N 4N1, Canada)

**Background:** The reliability and validity of essays for admissions requires investigation. We explored the reliability of a structured essay station in the 2009 admission process at the University of Calgary, Faculty of Veterinary Medicine.

**Summary of work:** Each applicant wrote a one hour supervised essay (750 words). Essays were rated independently by two randomly assigned raters (n = 16). Raters scored essays on 4 items, each on a 5 point anchored scale. Nine essays were scored by all raters to perform a D-study.

**Summary of results:** One hundred three applicants (female = 80.6%; mean age = 23.05 years, sd = 3.96) participated. Generalizability analysis resulted in a coefficient  $E_p^2 = 0.55$ . A D-study indicated that 3 raters and 4 items produces  $E_p^2 = 0.68$ . Essay score correlated with interview score ( $r = 0.30$ ,  $p < 0.01$ ) but not with GPA ( $r = .05$ ,  $p = n.s.$ ).

**Conclusions:** Overall reliability was adequate and higher than what has been reported for unsupervised written submissions. Results from the D-study suggest that 3 raters with 4 items provide adequate reliability. Correlations with interviews and GPA provide evidence of validity.

**Take home messages:** A timed essay with a clear scoring protocol results in adequate reliability and some validity.

#### 4 | 4

##### **The reliability of 17 behavioral stations used for medical school admissions, validated against derived generalizability estimates appearing in the literature**

N Gafni<sup>1</sup>, A Moshinsky<sup>1</sup>, O Eisenberg<sup>1</sup>, A Ziv<sup>2</sup>, David Zigler<sup>1</sup> (<sup>1</sup>National Institute for Testing and Evaluation (NITE), Jerusalem Israel; <sup>2</sup>The Israel Center for Medical Simulation (MSR), P.O.B. 26015, Jerusalem 91260, Israel)

**Background:** An admissions program based on the non-cognitive attributes of candidates was proposed by several Israeli medical schools.

**Summary of work:** Two versions of Assessment Center (AC) were developed, each comprising two questionnaires and eight to nine behavioral stations (BS) for measuring various non-cognitive attributes. The MOR AC is implemented at three medical schools and MIRKAM at a fourth. Only the BS section differs from MOR to MIRKAM. In MOR it includes simulation stations, debriefing stations, a structured interview and group stations, while in MIRKAM it consists of eight structured mini-interviews. Both versions have been operational since 2006. Since then, 1479 examinees applied to more than one university and therefore participated in both ACs (filling in the questionnaires only once each year), giving us a unique opportunity to examine the internal consistency and test-retest reliability of a combined score based on 17 BSs.

**Summary of results:** The Cronbach alpha estimates were 0.81, for the 17 BSs and 0.84-0.85 for the entire AC (including the questionnaires). The test-retest correlations for 135 examinees who participated in both ACs twice were 0.58 for the BSs only, and 0.65 overall.

**Conclusions and Take home messages:** The internal consistency reliability of a score based on 17 stations and validated against generalizability estimates that appear in the literature meets the accepted psychometric standards for high stakes tests. The test-retest reliability is less conclusive but still reasonable.

#### 4 | 5

##### **Selecting rural background students for medicine: the Australian experience**

G Laven, I Chapman, J Newbury, R Faull, B Karaffa, S Baillie (The University of Adelaide, Discipline of Rural Health, SpencerGulf Rural Health School, School of Population Health and Clinical Practice, Faculty of Health Sciences, Adelaide 5005, Australia)

**Background:** The recruitment and retention of medical practitioners to rural areas is an ongoing challenge not restricted to Australia. Policy responses have included a change to the selection of medical students (i.e. rural background students). Australian policy now mandates that 25% of students with a rural background commence medical studies each year via a 'one size fits all' policy.

**Summary of work:** We carried out a review of how Australian medical schools select students with rural backgrounds for their medical programs to meet the policy target of 25%.

**Summary of results:** Australian universities currently have adopted a variety of differing approaches to achieving this target with varying individual success. These approaches are summarised in this presentation.

**Conclusions:** The success of each university in recruiting rural background students is as varied as the proportion of the Australian population living in rural areas across our States and Territories.

**Take home messages:** This review questions the value of 'one size fits all' policies across Australia to increase the number of students from underrepresented rural areas studying medicine.

## 4 J Workshop

### **Clinical assessment in the health professions: facilitating learning through the assessment process**

M Dalton, B Jolly, E Molloy (Griffith University, School of Physiotherapy and Exercise Science, Gold Coast Campus, Gold Coast 4222, Australia)

**Background:** Epstein (2007) argues that the method employed to assess competence or performance, should provide insight into actual performance (what the student does habitually when not observed) as well as the capacity to adapt to change, find, apply and generate new knowledge and demonstrate understanding of health service systems. This workshop will examine assessment of clinical performance in the workplace setting, including underpinning pedagogical drivers, current tools in use, and facilitators and barriers to application.

**Intended outcomes:** On completion of the workshop participants will appreciate: • The role and language of clinical assessment; • Strengths and weaknesses of current clinical assessment practices and instruments; • The influence of cognitive and emotional biases in clinical assessment; • How to achieve best practice in performance based assessments in health settings.

**Structure:** The evidence-based workshop will include: i) background literature relevant to clinical assessment delivered in interactive lecture/discussion format and ii) a practical component requiring application of the principles of best practice in clinical assessment. The practical component will include observation of student performance via DVD followed by rating of the student's performance by the participants using instruments developed for use within medicine, physiotherapy and other health professions. Consensus in marking and setting standards for work-based assessments will also be discussed.

**Intended audience:** Health professionals involved in workplace assessment of learners/trainees.

**Level of workshop:** Those with limited experience in assessment of learners in clinical practice.

## 4 K Workshop

### **Bioethics assessment modules**

S Brien, J Gordon, C Campbell (Royal College of Physicians and Surgeons of Canada, 774 Echo Drive, Ottawa K1S 5N8, Canada)

**Background:** In 2003, the accreditation committee of the Royal College of Physicians and Surgeons of Canada developed a comprehensive document that defined the bioethical knowledge, skills and attitudes that must be integrated into the post graduate educational objectives.

A curriculum of case based studies was designed and recently revised to include fifty themes and five introductory primers. In an effort to encourage both practicing specialists and residents to utilize the case based content on the web site, five of the modules were translated into web based assessment programs. To encourage both resident, educators and practicing physicians to participate in an assessment program, the modules were directly linked to their MAINPORT account ( the RCPSC's e-learning portfolios) allowing automatic collection and documentation of credits.

**Intended outcomes:** • Describe value of the RCPSC online bioethics resources; • Explain the role of the self administered assessment modules; • Discuss opportunities to integrate the on-line curriculum into the teaching of the CanMEDs competencies.

**Structure:** The workshop will utilize the online curriculum and web-based, avatar populated modules to demonstrate how to translate knowledge content into an interactive assessment module and model the utilization of modules that can be use for both individual and group learning.

**Intended audience:** Educators with an interest in the assessment of bioethics across the spectrum of life long learning.

**Level of workshop:** Intermediate.

#### **4 L Workshop**

##### **The social, economic, cultural and political dimensions of professionalism: Practical implications for health professional training**

A Atkinson, S Bernstein, T Martimianakis (Department of Paediatrics, University of Toronto, Hospital for Sick Children, 255 University Ave, Black Wing, Room 1-1447, Toronto, ON M5G 1X8, Canada)

**Background:** Professionalism is considered an important competency yet our field is still struggling with how to best define, teach and assess it. This workshop will move beyond a consideration of professionalism as an individual competency to describe the social, economic, cultural and political dimensions of this construct. We will introduce a framework designed to animate the individual and systemic dimensions of professionalism using common clinical scenarios. Discussion will focus on ways that participants may draw on the theoretical approaches introduced to inform teaching and assessment of professionalism in their home institutions.

**Intended outcome:** By the end of this workshop participants will be able to: • describe several theoretical approaches for understanding the social, economic, cultural and political dimensions of professionalism; • apply these approaches to common clinical scenarios; • discuss the implications for teaching and assessing professionalism.

**Structure:** • Didactic and interactive activities in large and small groups; • Reflective exercises promoting exchange of ideas; • Problem solving exercises.

**Intended audience:** Intended for individuals involved with researching, teaching and/or assessing professionalism in a health professional context.

**Level of workshop:** Beginner.

## 4 M Workshop

### **Maximizing Standardized Patient (SP) feedback in OSCEs**

A Errichetti, E Kachur, S Parish, M van de Ridder, C Schwartz, S Zabar (New York College of Osteopathic Medicine, Northern Boulevard, Old Westbury, NY 11568, United States)

**Background:** The instructional value of OSCEs is recognized widely. Trainees learn from practicing skills and from getting performance feedback. Often SPs are expected to share performance information and personal reactions, either as sole feedback provider or in collaboration with a faculty/teacher observer. To maximize their impact they often need to be professionalized as teachers and learn skills such as creating a safe learning environment, helping learners assess themselves, wording the feedback in a way that promotes processing and transfer. This workshop will explore theoretical and practical issues related to SP feedback. A companion workshop will focus on faculty/teacher feedback.

**Intended outcomes:** 1. Identify key characteristics of effective SP feedback and debriefing; 2. Create SP training plans; 3. Express more confidence in preparing SPs for feedback tasks.

**Structure:** 5 min Welcome/Orientation; 15 min SP Feedback and Debriefing Opportunities and Challenges (large group brainstorming); 10 min Theoretical Frameworks and Literature Review (mini-lecture); 15 min SP Feedback Quality Control Rating Forms (introduction of instruments); 35 min Post-Encounter SP Feedback to Individual Learners (video reviews, performance ratings, SP training plans, small and large group discussions); 10 min Summary Exercise (large group take-home-point sharing).

**Intended audience:** Teachers, administrators, researchers.

**Level of workshop:** Intermediate to advanced.

## 4 N Workshop

### **Assessment of the millennial trainee: How can we check our bias at the door?**

J Mahoney, K Richardson-Nassif (University of Pittsburgh School of Medicine and University of Vermont College of Medicine, Office of Medical Education, M-211 Scaife Hall, 3550 Terrace Street, Pittsburgh, PA 15261, United States)

**Background:** This session will focus on assessment of the millennial generation by non-millennial faculty. Existing assessments and evaluations are predicated on values and standards rooted in an earlier era where the attitude might have been “we work until the work is done”. Today's trainees may opt to work only until it is time to stop working, for regulatory compliance or for a comfortable lifestyle. These differences in values and in daily functioning can impair effective assessment and result in highly disruptive clashes. This workshop will focus on how to fairly assess our students and avoid missteps.

**Intended outcomes:** To help faculty: understand the unique characteristics of today's trainees; develop approaches to improve the relevance and effectiveness of student evaluation; design strategies to prepare millennials to succeed as they work with colleagues who will be assessing them from a baby boomer perspective.

**Structure:** Reflection exercise on participants' own attitudes and prototypical generational definitions; Overview of literature on generational differences; Discussion of video cases demonstrating aspects of differing generational perspectives. Themes: work ethic-life balance; professional behavior; interpersonal communications; Discussion of specific evaluation challenges; approaches to overcoming these challenges; summary discussions.

**Intended audience:** Medical educators, trainees, clinicians who work with millennials.

**Level:** Beginner/Intermediate.

## 4 O Workshop

### Teaching Professionalism and the Social Contract - an International perspective

S Cruess, R Cruess (McGill University, Center for Medical Education, 1110 Pine Ave. W., Montréal, QC H3A 1A3, Canada)

**Background:** Professionalism is the basis of medicine's relationship to society, which most observers call a "social contract". The social contract serves as the basis for society's expectations of medicine and medicine's of society. How professionalism is expressed differs between countries and cultures because of differences in their social contracts. An example: the social contract in the United States, which does not have universal health care, is different from that of its neighbor, Canada, which does. When professionalism is taught, it should be related to the national social contract.

**Intended outcomes:** Participants should understand the concept of the social contract, its relationship to professionalism, and the advantages of teaching professionalism in this context. Each will be asked to outline societal and medical expectations for their country.

**Structure:** The nature of the social contract and its relationship to professionalism will be presented. Attendees will be asked to work with participants from their own country in outlining their national social contract and how it can best be taught, reporting their findings to the larger group. The international character of the meeting should make this discussion instructive.

**Intended audience:** Deans, Associate Deans, Directors of Undergraduate and Post Graduate Programs, Medical Educators.

**Level of workshop:** All levels.

## 4 P Workshop

### Occupational concerns in simulation

J M Sandella, E E Langenau, D Montrey, L Gallagher (NBOME, 101 W Elm Street, Suite 150, Conshohocken, PA 19428, United States)

**Background:** Standardized Patients (SPs) are now widely used in health professions education and are exposed to various occupational hazards related to repetitive physical exam maneuvers. In 2004, the incidence of injuries and illnesses was nearly 6 per 100 workers in the Education and Health Services

Industry (U.S. Department of Labor, <http://www.bls.gov/iif/>). For one test session of the Comprehensive Osteopathic Medical Licensing Examination Level 2-Performance Evaluation (COMLEX-USA Level 2-PE), an SP participates in 12 encounters with repetitive physical examinations and osteopathic manipulative treatment, unique to this examination. The National Board of Osteopathic Medical Examiners (NBOME) has developed a program to address SP safety, including medical screening, injury and illness prevention, incident reporting (the “Stop” Phrase), and the Industrial Athlete Program.

**Intended outcomes:** 1. Identify occupational hazards SPs may encounter; 2. Learn about existing programs which address SP safety; 3. Develop strategies for addressing SP safety.

**Structure:** 1. Immersion exercise- SP/student portrayals; 2. Facilitated large groups- discuss the immersion experience and identify potential SP safety concerns; 3. Small workgroups- identify challenges and develop strategies for addressing concerns; 4. Share experiences with SP occupational hazards and safety.

**Intended audience:** Those working with standardized patients in various settings.

**Level of workshop:** All levels.

#### **4 Q Workshop**

##### **Assessment of students and residents with performance problems**

DL Klamen, N Roberts (Southern Illinois University School of Medicine, 801 N. Rutledge, PO Box 19622, Springfield, Illinois 62794, United States)

**Background:** Clinical performance assessment can take many forms - direct observation, chart review, oral presentations, multiple choice questions, OSCEs and standardized patient exams. However, once a performance deficit is found, educators are often at a loss to specifically identify the nature of the problem or assign anything more than a generic attempt at remediation. The workshop presenters, using 30 years of performance data from a surgical residency program and 5 years of results of a senior clinical skills exam for medical students, have developed a diagnostic rubric for those with performance problems, as well as specific suggestions for remediation depending upon the nature of the problem.

**Intended outcomes:** Participants will be able to: 1) Name at least 3 reasons students and residents can be deficient in the clinical performance arena; 2) Use a diagnostic rubric to identify the nature of a clinical performance problem; 3) List at least 3 remediation methods for improving a clinical performance deficit.

**Structure:** 5 min. introduction, 25 min. presentation, 25 min. case analysis and discussion, 25 min. case (#2) analysis and discussion, 10 min. summary/wrapup.

**Intended audience/Level of workshop:** All those who work with students and residents with clinical performance problems. This is a practical workshop at an intermediate level.

## 4 R Workshop

### **Current concepts in validity and reliability: building the validity argument for educational assessments**

DA Cook, TJ Beckman (Mayo Clinic College of Medicine, Div. of General Internal Medicine, 200 First St SW, Rochester, MN 55905, United States)

**Background:** How do we know that the results of an educational assessment (knowledge test, clinical observation, survey, etc) are meaningful? Answer: the scores must be reliable and valid. The paradigm for validity has evolved such that the unitary model of construct validity has replaced the fractionated model of face, content, and criterion validity. Construct validity, in turn, is established through a persuasive validity argument. This workshop will review a step-wise approach to developing the validity argument for educational assessments. Using practical cases and examples from our own research we will illustrate how to structure the validity argument using five sources of evidence: content, response process, internal structure, relations to other variables, and consequences. We will also discuss the critical relationship between reliability and validity, and review various methods to measure reliability.

**Intended outcomes:** Participants will be able to a) differentiate five sources of validity evidence; b) plan the development and evaluation of a hypothetical assessment instrument; c) critically appraise the validity of an existing instrument's scores; and d) contrast different methods for measuring reliability.

**Structure:** Highly interactive combination of didactics, discussion, and hands-on exercises  
Intended audience: All educators and researchers who assess learners (nearly everyone!).

**Level of workshop:** Beginner/intermediate.

## 4 S Posters Improving the Quality of Assessment

### 4 S 1

#### **The versatility of the Ebel method for content validation**

L M Z Lafave, M R Lafave (Mount Royal University, 4825 Mount Royal Gate SW, Calgary T3E 6K6, Canada)

**Background:** The purpose of this abstract is to outline the versatility of the Ebel method as it relates to content validation of health measurement scales. "Content validity is the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose" (Haynes et al, 1995, pg. 239). Streiner and Norman (2003) argue that content validity and methods of establishing content validity should be the same whether one is employing a traditional definition and use of it with educational testing or with the development of health measurement scale.

**Summary of work:** Various content validation approaches exist, however expert opinion is a common step amongst all of them (DeVellis, 2003). The Ebel method has been historically employed to set minimal standards and content validate performance based assessments by capturing expert opinion (Cantor, 1989; Violato et al, 2003).

**Summary of results:** The Ebel method has been successfully adapted from its original purpose to content validate a variety of health measurement scales (Lafave, Lafave and Nordstrom, 2008; Butterwick et al, 2009; Lafave and Lafave, 2009).

**Conclusion and take home message:** The success of these multiple and variant uses of the modified Ebel method speak to its versatility in content validation.

#### 4 S 2

##### **Non content expert examiner in a clinical examination**

S Elango, KY Loh, RC Jutti, N Sivalingam (International Medical University, Clinical School, Jalan Rasah, Seremban, Negeri Sembilan 70300, Malaysia)

**Background:** The objective of this study is to measure the inter examiner rater reliability, to see if the introduction of a paired content expert examiners and a non content expert third examiner enhances the fairness of the clinical examination.

**Summary of work:** The Part 2 of the Final MBBS examination in our University is conducted at the end of Semester 10, which consists of a Clinical Long Case Examination and defense of the portfolio they have compiled over the six months of senior clerkship. Ninety eight students took the long case clinical examination held in 2008. Each candidate is assigned one long case for evaluation, which could be medical based or surgical based. The examiners were given anchored performance criteria, to grade the students on different competencies. The students were rated from 0 to 5.

**Summary of results:** The mean score of Non content expert examiner was significantly higher than the other two examiners. The paired t test was done to get the inter rater difference in mean score between examiners and was  $p=0.001$  between content and non content examiners.

**Conclusions and take home messages:** The non content expert examiner's have a 'moderation effect' in the assessment of the candidates' nullifying the effect of stringency and perhaps have an impact on leniency

#### 4 S 3

##### **Selection and recruitment of evaluators in surgical assessment**

J Oestergaard, CR Larsen, T Grantcharov, B Ottesen, JL Soerensen (Rigshospitalet, University Hospital of Copenhagen, Gynaecological department, afs. 4221, Blegdamsvej 9, Copenhagen 2100, Denmark)

**Background:** The aim of this study was to investigate at which educational level a doctor is able to assess a laparoscopic operation on the basis on a validated assessment scale 'Objective Structured Assessment of Laparoscopic Salpingectomy' (OSA-LS) (Larsen CR et al. BJOG 2008). Furthermore we investigated whether inexperienced evaluators could assess as well as a gold standard assessment.

**Summary of work:** Eight 4th year residents and ten senior consultants in gynaecology received three videotaped laparoscopic operations (salpingectomies) to assess on the basis on OSA-LS. These three operations were on different educational levels: novice, intermediate and expert. The gold standard assessment was calculated as a mean score of assessments from two expert assessors with a minimum of 50 assessments each.

**Summary of results:** Data showed that the two groups were equally good at assessing the three operations. Compared to the gold standard assessments, only the intermediate operation was significant. In the novice and the expert operation, the two groups did not meet the gold standard assessment. One and two sample Wilcoxon test was used.

**Conclusion:** 4th year residents and senior consultants are equally good at assessing videotaped laparoscopic operations on the basis of an assessment scale. They are not as good as a gold standard.

**Take home message:** Doctors on different educational levels can assess laparoscopic operations.

#### 4 S 4

##### **Application of the Angoff standard setting method to a colonoscopy performance checklist**

L Bistriz (University of Alberta, Royal Alexandra Hospital, Room 331, Community Service Centre, 10240 Kingsway Ave, Edmonton, Alberta T5H 3V9, Canada)

**Background:** Colonoscopy performance has traditionally been evaluated using a procedure log or subjective global performance ratings. These methods are inappropriate for a mastery learning endoscopic skills curriculum.

**Summary of work:** A group of 8 expert endoscopists applied the Angoff “borderline student” standard setting method to determine an appropriate cut score for novice endoscopists transitioning from a colonoscopy simulator to live colonoscopy in a mastery based curriculum.

**Summary of results:** The average cut score after the first round of discussion was 8.9/14 (range 5.5-12). The second round cut score was 8.6/14 (range 5-12). Six gastroenterology fellows in a mastery based colonoscopy skills course had average scores for three simulated colonoscopy modules of 8.83/14 (range 7.0-12.0) at the pre-test. Only 1 fellow met the predefined cut score at the pre-test. After simulator practice and a 2 day Introduction to Endoscopy course, post-test scores averaged 13.5/14 (range 12.8-13.8), with all fellows meeting the cut score.

**Conclusions:** An acceptable mastery criterion was developed via the Angoff method and successfully applied to novice endoscopists.

**Take home messages:** Expert endoscopists were able to develop a criterion standard for colonoscopy performance using the Angoff method. Future studies will need to link this cut score to live colonoscopy.

#### 4 S 5

##### **Setting a fair performance standard for competent care of hypertensive patients**

BJ Hess, W Weng, LA Lynn, ES Holmboe, RS Lipner (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia 19106, United States)

**Background:** Many stakeholders believe assessing physicians’ practice performance is essential for improving quality. However, little research has focused on how to set fair performance standards using evidence-based measures by which physicians could be held accountable for public reporting.

**Summary of work:** The ABIM Hypertension Practice Improvement Module® was used to collect data from ten clinical and two patient experience measures. Eight internist/subspecialist experts applied the Angoff method to judge how minimally-competent physicians would perform on individual measures. Experts then rated each measure’s relative importance; the Dunn-Rankin method was applied to establish scoring weights for the final composite measure.

**Summary of results:** 657 physicians abstracted 20,131 charts and received 18,706 patient surveys. Composite measure scores were reliable (.94) and normally distributed. The expert panel successfully established reasonable performance criteria and scoring weights, yielding a standard of 42.50 out of 100 points, which classified 4.1% of physicians as incompetent. Decision consistency on competence was high (.97); Group declared incompetent had distinct characteristics, providing some validity evidence.

**Conclusions:** The standard-setting method yielded a credible and defensible minimum competency standard whose outcome was reasonable and reproducible.

**Take-home message:** Competence of practicing physicians can be reliably assessed using patient-care data, and a fair performance standard can be determined.

#### 4 S 6

##### **A multidisciplinary comparison of musculoskeletal evaluation standards using established performance-based examinations: a question of validity!**

Mark R Lafave, Denise Chan, Nicholas Mohtadi (Mount Royal University, 4825 Mount Royal Gate SW, Calgary T3E 6K6, Canada)

**Background:** Orthopedic or musculoskeletal (MSK) injury evaluation of patients is a skill shared by many professions: medical physicians, athletic therapists, physiotherapists, chiropractors to name a few. Regardless of the practitioner title, all of them share a common goal; to evaluate and diagnose a patient's injury as accurately as possible and subsequently prescribe the best method of treatment.

**Summary of work:** A small (n = 2) comparison of two testing methods for two professions (athletic therapy and sport medicine in Canada) was completed and reported.

**Summary of results:** Anecdotally, the descriptive data suggests a trend that was confirmed by the authors' suspicions: the two testing methods (and thus professions) appear to be using variant methods to evaluate practitioner competence. Moreover, the standards of practice which are reflected in the subject testing methods employed appear different.

**Conclusion and take home message:** Patient care should be patient-centered and not practitioner-centered to achieve the best, long term outcomes. It is critical that multidisciplinary standards be developed to best treat patients with musculoskeletal injuries.

#### 4 S 7

##### **Differential Facet Functioning in COMLEX**

F Li, L Shen (National Board of Osteopathic Medical Examiners, 8765 West Higgins Road, Suite 200, Chicago 60631, United States)

**Background:** Test fairness is one of the essential requirements for all medical licensing examinations, including Comprehensive Osteopathic Medical Licensing Examinations (COMLEX). Differential Item Functioning (DIF) analysis on individual items is a common approach to detect biased items. However, it is not efficient for examinations with a large number of items, such as 350-item COMLEX examinations.

**Summary of work:** In this study, we first detected gender differential functioning at the content category level by using the Different Facet Functioning (DFF) approach, which is an extension of the Rasch Facet model. Content categories with significant DFF then received further DIF analysis for the

items in those categories. The COMLEX Level 2 examination form selected had 512 examinees, with 50.78% female and 49.22% male. The response data was fit to the DFF model.

**Summary of results:** COMLEX is designed along two dimensions: nine medical problem topics and six physician tasks. The results indicate that all six physician tasks don't show DFF. Of the nine medical problem topics, two topics had significant DFF. Further DIF analysis on individual items of those two topics identified specific items with gender bias.

**Conclusion and take home message:** This study demonstrates that differential functioning analysis at the facet level can be a pre-screening tool for more efficient DIF analysis.

#### 4 S 8

##### **Use of the Rasch model in the development of an instrument to assess clinical performance**

M Dalton, J Keating, M Davidson (Griffith University, School of Physiotherapy and Exercise Science, Gold Coast Campus, Queensland, Gold Coast 4222, Australia)

**Background:** Valid, reliable and practical assessment procedures are important for meaningful summative assessment of the clinical performance of students of the health professions. The Assessment of Physiotherapy Practice (APP) was developed to standardise evaluation of clinical competence of physiotherapy students in Australia and New Zealand.

**Summary of work:** A total of 747 APP assessments were conducted on physiotherapy students from nine universities in Australia and New Zealand. Qualitative methods including surveys, focus groups and interviews were employed to assess clinicians' views on the utility of the instrument.

**Summary of results:** Analysis showed overall fit of the data to the Rasch model. The difficulty of the items was well matched to the abilities of the persons being assessed and the 5-level rating scale performed as expected. Analysis demonstrated excellent person separation (0.92), little disordering of the thresholds and no evidence of differential item functioning for gender, age, clinical area, or educator experience.

**Conclusions:** Rasch analysis and qualitative data supported the viability of the APP as a measure of clinical competence which is practical for use within complex clinical environments.

**Take home messages:** The APP demonstrates that not only is assessment within the authentic clinical context desirable but, despite the well documented difficulties associated with assessment of performance, it is achievable.

#### 4 S 9

##### **Assessing participation in PBL using corpus analysis**

C Haines, R Dennick (Medical Education Unit, Medical School, University of Nottingham, Nottingham NG7 2UH, United Kingdom)

**Background:** To our knowledge, no-one has employed corpus analysis on transcripts of PBL sessions. We transcribed audio and video from PBL sessions from students at the University of Nottingham, in Derby, where it is used for the initial 18 months of a medical degree. In the first session they define their questions and learning objectives; in the second they teach each other what they have learned; in the third session they process additional clinical data and reach.

**Summary of work:** This study presents the corpus analysis for one 5 hour cycle of PBL. It evaluates the relative contributions of each student in terms of: participation, use of technical terminology, questioning and reasoning. The contribution of the facilitator has also been analysed.

**Summary of results:** Marked differences are shown between the contributions of different students in terms of their participation in discussion, the frequency of their use of technical terminology, questioning and reasoning. The relationship between the facilitator's interventions and the student participation allows us to develop criteria for evaluating the effectiveness of PBL and to give feedback to the group.

**Conclusions and take home message:** Corpus analysis can be used to evaluate the effectiveness of PBL discourse. This may enhance student learning and improve facilitator skills.

#### **4 S 10**

##### **Building professional competency of clinical teachers – A common understanding of how to apply academic theory in practice**

H Diack, A Tavabie (Kent, Surrey and Sussex General Practice Deanery, 7 Bermondsey Street, London SE1 2DD, United Kingdom)

An external evaluation of the clinical teacher faculty in KSS has shown positive outcomes for those who learnt with and from peers and undertake academic study. This led us to develop a framework which supports the professional development of clinical teachers by: (1) Reflection on performance including supervision, assessment of learners and clinical governance processes using a self-evaluation as part of the re-accreditation process; (2) Engagement in learning sets; (3) Reflection on development through peer appraisal; (4) Application of peer feedback to develop required competencies; (5) Undertaking a Masters Programme delivered locally and aligned to and complementary to KSS quality assurance process. The poster will (1) Describe the competency framework; (2) Reflect on the strategy to support the professional development through formative approaches; (3) Critically reflect on the process of developing quality assurance processes which link to re-accreditation with academic quality assurance processes. We will share our process and invite discourse on experience across contrasting medical education systems.

#### **4 S 11**

##### **Standard setting for script concordance tests using a modified Nedelsky approach**

A Linn, A Tonkin, H Kildea (University of Adelaide, Medicine Learning and Teaching Unit, University of Adelaide, Adelaide 5005, Australia)

**Background:** Script concordance testing (SCT) is an increasingly utilized method of assessment of clinical reasoning in the context of uncertainty. Standard setting for this method has proven a complex and challenging task, but one of great importance given its increasing application in higher education examinations.

**Summary of work:** A SCT of 45 questions was created for second and third year medical students at the University of Adelaide and was administered to 14 panelists to derive a scoring key. A group of three clinical educators reviewed the questions independent of the panel and considered the responses of a "minimally competent student" in a modified Nedelsky approach. A standard pass mark was calculated.

**Summary of results:** The modified Nedelsky approach was logistically feasible but provided a lower than expected pass mark in comparison with other currently utilised standard setting approaches including norm-referenced (based on cohort performance) and criterion-referenced (based on a predetermined cut-point below the reference panel mean score).

**Conclusions:** Script concordance testing is an increasingly utilized assessment modality and a modified Nedelsky approach may be appropriate for standard setting.

**Take home messages:** A new approach to standard setting of script concordance tests is proposed based on a modified Nedelsky method.

#### 4 S 12

##### **Survey guessing parameter in MCQ tests by IRT Model in Mashad University of Medical Sciences in Iran 2009**

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**Background:** The purpose of this study was comparing minimum pass level of two tests with and without use of guessing parameter. With IRT model we can estimate guessing parameter of tests. In classical test theory versus IRT, we are not able to estimate guessing parameter of tests.

**Summary of work:** In this study we estimated guessing parameter of two tests 60 items (Physiology and Pharmacology). We estimated guessing parameter in all items by Winsteps software.

Summary of result: The results of analysis revealed that guessing parameter in two groups was high. We found 14 percent of pharmacology and 17 percent of physiology group couldn't pass this course if guessing parameter interfered. Without of this factor they passed their test. With calculation guessing parameter and removing items with high guessing parameter and calculating and minimum pass level again in two groups they couldn't pass it.

**Conclusion:** With removing of guessing parameter of items and again scoring of tests %15 students could fail. Finally, a part of student's score related to guessing parameter in MCQ.

**Take home messages:** With this method we can compute tests' guessing parameter and then remove effect of guessing from tests and minimum pass level too. Guessing parameter in multiple choice questions can give better estimates of an examinee's guessing in contrast with classical test theory.

#### 4 T Posters The Student

##### 4 T 1

##### **A methodological proposal to strengthen students' social and performance support**

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**Background:** There has been considerable progress in assessing competence in medicine over the last 25 years. Students needing support and performance remediation during the graduation process has

been a great concern. This work proposes a methodological approach to support students at risk of social isolation and/or bad attainment.

**Summary of work:** A systematic approach is presented allying the sociogram, positive deviant students and “students as teachers” strategies.

**Summary of results:** Understanding learning as highly influenced by social interaction and enhanced by peer collaboration, a sociogram provides information about interaction with peers performing identification of existent social networks, recognizing those needing support and risking bad performance. With this tool, throughout the course, those students keeping excellent performance, even when the majority of students in class is not so good - the “positive-deviants” - could be invited to be trained to help those with difficulties.

**Conclusions:** This approach, reinforcing the social network and the skills of positive-deviants, could have a positive impact in students’ learning and social life, but is still to be tested.

**Take home message:** If the alliance of sociogram, positive-deviant students and “students as teachers” strategies may improve students’ performance and social network, why not testing it?

#### 4 T 2

##### **Personality, non-cognitive factors and medical specialty preference among first-year Mexican medical students**

A Alcorta-Garza, J F González-Guerrero, S Tavitás-Herrera, A M Salinas-Martínez, J Áncer-Rodríguez, M Hojat (Juan F. González-Guerrero, CUCC, Medicine School and "José E. González" University Hospital, UANL, Madero y Gonzalitos s/n, Mitras Centro, Monterrey NL 66260, Mexico)

**Background:** We explored if preference for a medical specialty differed by personality or non-cognitive factors among first year Mexican medical students.

**Summary of work:** Study participants consisted of 1,947 first year matriculants at the School of Medicine of the University of the State of Nuevo León, Mexico. Personality measures included Empathy, Impulsive Sensation Seeking, Neuroticism-Anxiety, Aggression-Hostility, Sociability and Activity; and non-cognitive measures were Loneliness, Self-esteem, Extroversion and Depression. Specialty preference was answered on a 4-point Likert-type scale (1=first option and 4=fourth option), then only first choice answer was used for analysis. GLM univariate analysis was performed for comparing means as well as Tukey post-hoc tests for multiple comparisons.

**Summary of results:** Non-primary care based specialties were the most common first option (44.2%), followed by surgical based specialties (30.3%), primary care based specialties (19.0%), and hospital based specialties (6.5%). Students strongly interested in hospital based specialties registered higher Neuroticism-Anxiety ( $p \leq 0.001$ ), Depression ( $p \leq 0.04$ ), and lower Activity ( $p \leq 0.05$ ).

**Conclusion and take home message:** . Non-cognitive factors and personality affect the preference for type of medical specialty in the future.

#### 4 T 3

##### **Using students' professional development plans as a basis for assessing reflective learning**

L Naismith (McGill University, 3700 McTavish Street, Room 614, Montreal, QC H3A 1Y2, Canada)

**Background:** Situated within the broader context of demonstrating professionalism amongst doctors in the UK, this study investigated the self-selected professional development activities of medical students as a first step towards building a framework for assessing reflective learning.

**Summary of work:** Grounded theory was used to develop a descriptive model of the activities that featured in the personal development plans (PDPs) of final year undergraduate medical students. Thirty-three PDPs were analysed in terms of document structure; activity categories and properties; and feedback provided by the assessors.

**Summary of results:** A total of 102 activities with 9 common properties were classified into 9 categories. These activities addressed 3 main learning objectives: preparation for PRHO/FY1 year, career development and preparation for assessment. Feedback provided to the students tended to be cursory. Links between learning needs and selected activities were not well articulated.

**Conclusions:** This study has contributed an evidence-base for the types of professional development activities self-selected by students at one medical school in the UK. The utility of using students' personal development plans to assess reflective learning appears to be limited.

**Take home messages:** The personal development plans of final year medical students provide limited evidence for reflective learning.

#### 4 T 4

##### **Perception of psychosomatic harmonisation in medical and psychology students**

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**Background:** The medical education to day more and more widely uses in educational process of achievement of diagnostic methods and scientific knowledge. However interdisciplinary barriers in teaching of medical knowledge remain essential. In a certain measure it is connected with specificity of methodical receptions in different fields of knowledge.

**Summary of work:** Within 3 years we spent studying of perception by students by clinical psychologists and physicians of the original concept "St.-Petersburg regenerative pyramid". The concept is developed by authors with use of representations of psychology, immunology, microbiology and the regeneration theory. Data from students gathered by means of specially developed interview to the account of individual psychological tests.

**Summary of results:** The received results testify, that 67 % of students of medical professions have appeared ready to understand the offered psychosomatic models and have shown readiness to use the obtained data in practical activities. Among students of psychologists 42 % of respondents have shown similar interest only.

**Conclusion and take home message:** Results testify, that at same results of psychological tests at students of different sciences, concerning in health of the person, different readiness for use of psychosomatic models in clinical practice is observed. The possible reasons for distinctions are analyzed

#### 4 T 5

##### **Training medical students in motivational interviewing**

A Gilbert, B Maheux, P Berthiaume (Chaire d'enseignement Lucie et André Chagnon, Faculty of Medicine, Université de Montréal, CP 6128, Succursale Centre-ville, Montréal H3C 3J7, Canada)

**Background:** Motivational interviewing is a useful intervention strategy that outperforms traditional advice giving in the management of lifestyle problems and diseases.

**Summary of work:** Training begins with a 2-hour interactive session with medical students about motivational interviewing, followed by a practical session involving patient-actors. Groups of 4 students complete a round of 4 stations, each related to a specific phase in changing lifestyle habits. One by one, students conduct a 10-minute interview while the other 3 students and the supervisor note down their observations using a chart for each habit. At the end of the interview, the patient-actor gives his or her feedback, and the student's peers and supervisor present their observations.

**Summary of results:** There are several advantages to this approach. First, the student conducting the interview benefits from the patient-actor's feedback concerning the impact of the interview on motivation to change. Also, to present their observations, peers have to be attentive to specific elements of the interview, which facilitates their learning. Finally, the supervisor's expertise in motivational interviewing enhances the discussion.

**Conclusion and take home message:** Use of patient-actors combined with peer observations is an effective pedagogical approach to teach motivational interviewing to medical students .

#### 4 T 6

##### **Keeping students' motivation during clinical clerkship: being fed up or shrewd?**

M Yamawaki, Y Tanaka (Tokyo Medical & Dental University, Yushima 1-5-45, Bunkyo-ku, Tokyo 113-8519, Japan)

**Background:** Motivation is the activation of goal-oriented behavior and the most critical element needed for learners. This study researches on students' attitude in the clinical clerkship over time from the viewpoint of learner's motivation.

**Summary of work:** Eighty-two students and seventy-six clerkship tutors in our hospital completed a questionnaire probing areas relating clinical clerkship in 2007 to 2008 in Tokyo Medical & Dental University over time. The questionnaire included satisfaction levels, stress experienced, degree of motivation and time spent on learning/teaching activities. Statistical analysis was performed by ANOVA.

**Summary of results:** Active participation to clerkship, studying hours and overall satisfaction for clinical clerkship was significantly decreased with the time course ( $p < 0.01$ ). In addition they feel that tutors' motivation to clerkship was decreased over time ( $p < 0.01$ ). From the viewpoint of tutors they agreed that student participation decrease over time ( $p < 0.05$ ); however, tutors' attitude to clerkship did not change significantly.

**Conclusions:** Our findings indicate that students' motivation to clerkship decrease over time. Both student and tutor factors are considered as a reason for this decline.

**Take home messages:** Clerkship curriculum should be planned to maintain intrinsic motivation to learn.

#### 4 T 7

##### **Medical students' learning preferences**

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**Background:** The research of quality in medical education requires the characterization of medical students' learning preferences and styles. This study pretends to identify and characterize the learning preferences of students and describe their types of learners in three medical schools, with traditional curricula in different geographical areas.

**Summary of work:** A cross-section study was developed in the University of Zaragoza-UZ, Spain, University of San Francisco Xavier of Chuquisaca-USFX, Bolivia and University of Chile-UCH, Chile. Canfield Learning Styles Inventory-CLSI was applied to the students during 2007-2008. It was calculated the sample mean ( $\mu$ ) and standard deviation (SD) for domains of categories.

**Summary of results:** The results obtained in the different categories revealed that students from the three medical schools preferred the "detail" (USFX  $\mu$ =9.04, UCH  $\mu$ =11.88 and UZ  $\mu$ =12.46) and the "organization" of classes or courses (UCH  $\mu$ =10.48, 11.81 in USFX and UZ  $\mu$ =12.91). All of them preferred working with "people" (USFX  $\mu$ =12.07, UCH  $\mu$ =12.55 and UZ  $\mu$ =13.01) and with "direct experience" as learning mode (UZ  $\mu$ =12.97, UCH  $\mu$ =13.11 and USFX  $\mu$ =14.05). They had a high expectation to pass the current course. More than 50% of the students preferred "neutral" type.

**Conclusions and take-home messages:** The profile of these students should encourage to lecturers to carry out their teaching and to students to develop their strengths and overcome their weaknesses.

#### 4 T 8

##### **Level of glycemia influences cognitive learning in medical students**

E Tito Ortega (Universidad Peruana Los Andes, Huancayo, Perú)

**Summary of work:** The effect of the level of glycemia in the process of learning of students of human medicine from "Universidad Peruana Los Andes" (UPLA university from Huancayo) has been studied. The academic performance was correlated with the glycemia levels in the bodies of the students of human medicine of the subject of gynecology and obstetrics, taking the methodological design of samples of material equivalent to a sample of ten students. Four learning sessions were carried out, each lasting three hours. Before the start of each session and after the same, samples of blood were taken. The conceptual, procedural and attitudinal content were assessed.

**Summary of results:** The level of glycemia influences cognitive learning (F=21, 83), procedural (F=23, 85) and attitudinal (F=23, 42). A highly significant correlation ( $r=0,844$ ) was obtained between level of glycemia and conceptual performance ( $P<0, 01$ ); ( $r=0,830$ ); between the level of glycemia and procedural performance ( $r=0,855$ ); and also between the level of glycemia and attitudinal performance ( $P<0, 01$ ).

**Conclusions:** The results show that glycemia has measurable effects in the process of learning throughout capabilities in students of human medicine.

#### 4 T 9

##### **Nursing students' preferred learning style**

S Salehi (Nursing School, Islamic Azad University, Khorasgan Branch, Iran)

**Background:** Learning style is the processing of information and comprehension. If teachers present contents in a style that matches a student's preferred learning style, academic performance and success will improve and promote.

**Summary of work:** The study is a descriptive analytical research. The aim is determine of Nursing Students' Preferred Learning Styles Nursing Students completed a questionnaire formulated to assess learning styles. Analysis of variance was used to investigate the possible relationship between learning cycle and student's grades in the curriculum. Cross tabulation was used to test for a relationship between learning style and student academic year of study in the curriculum.

**Summary of results:** 294 students received the Kolb LSI questionnaire. The data demonstrated that juniors preferred a converger learning style and the senior students were in the abstract conceptualization cycle of learning.

**Conclusion and take home message:** The junior and senior students appear to prefer the stage of learning involving thinking and problem analysis. When a group of students demonstrate a preference for particular learning style teachers can develop their curriculum along their learning style

#### 4 T 10

##### **Studying the reasons for educational failing of medical students in Medical University of Kerman-Iran**

F Rafiezadeh (Medical University of Kerman, Continuing Medical Education, Kerman, Iran)

**Background:** Failing medical students is a very important subject in medicine. If it was not controlled it would cause a slump in the number of future doctors which is directly related to the health of community and patients. This study has been done in order to examine the reasons for educational failing of medical students in medical university of Kerman in 2004.

**Summary of work:** In this study, which includes all medical students who entered university from 1996 to 2002, students are divided in base of average and constitution terms into two groups of successful and not successful. The total number of students in the questionnaire study was 629 and from these students 339 persons were successful and 210 were not successful. Data were analysed by SPSS software.

**Summary of results:** The space between diploma and university entries in more than 64% of unsuccessful students was more than 1 year and about 77% of successful students was less than 2 years. More than 77.7% of successful students had their own house and 67.7% of unsuccessful students used to live in university. About 32.2% of unsuccessful students and only 8% of successful students had an extra job. 53.5% of unsuccessful students didn't have a fixed schedule for studying. 49.1% of unsuccessful students were married and 17.1% of successful students were married.

**Conclusion and take home message:** The reasons for educational failing in medical students is very important and it requires an exact general modern schedule.

#### **4 U Posters Competency-based Assessment**

##### **4 U 1**

#### **CanMEDS, General Competencies, Evaluation Objectives, et al.: Reconciling the varied ways of viewing competency with the day-to-day task of assessing what residents are doing in the workplace**

S Ross, M Donoff, I Steiner, P Humphries (Department of Family Medicine, University of Alberta, 205 College Plaza, Edmonton, Alberta T6G 2C8, Canada)

**Background:** Medical education programs are striving for workable competency-based assessment systems. The challenge is “How do we assess competency?” An emerging obstacle is “How do we define competencies?”

**Summary of work:** We reviewed existing literature on definitions of competencies. Our research question was: How do the varied competency frameworks: 1) clarify to residents the concept of “competencies”; 2) provide a structure for meaningful in-training evaluation; and 3) allow residents to see how the discrete assessed knowledge and skills in the workplace translate to “competencies”.

**Summary of results:** The “right” way to define competencies is a contentious issue in medical education. A variety of guidelines and frameworks exist, each approaching competencies at a different “grain size”, from global “roles” to task-specific examples of individual procedural skills.

**Conclusions:** We recommend a new approach: consider the grain size of frameworks and guidelines when talking about competencies. Learners and preceptors can benefit from having very specific examples of discrete skills and knowledge for assessment. They can further benefit from the perspective provided by concepts of how those finer focus skills fit into the roles and responsibilities of a practicing physician.

**Take home messages:** The differing definitions of competencies can be reconciled by examining how their perspectives benefit the learning of residents.

##### **4 U 2**

#### **A new model for collaborative health care - a University of Manitoba initiative for the development of a Physician Assistant education program in Canada**

M-K Chan, N Berrington, W P Fleisher (University of Manitoba, Winnipeg, Manitoba, Canada)

**Background:** The physician assistant [PA] represents a “mid-level” healthcare provider, with the knowledge and skills to undertake delegated medical services (in collaboration with their supervising physician and the healthcare team) and provides a model increasingly used to help meet the demand for quality healthcare around the world.

**Summary of work and Results:** The University of Manitoba developed a 26-month generalist PA program with an option for further enhanced skills training upon completion of the core years; graduates will be ‘polyvalent’/generalist PAs with diverse capacities who will work in primary or subspecialty care. To address these capacities, The Royal College of Physicians and Surgeons of Canada’s

CanMEDS framework and the College of Family Physicians of Canada's Four Principles of Family Medicine were utilized to inform the educational objectives. The program is aligned with the Canadian Association of Physician Assistants' "National Competency Profile", and to meet the Canadian Medical Association's Conjoint Accreditation Standards.

**Conclusions and Take home messages:** A new collaborative educational and service healthcare model is presented and the curriculum development, implementation and evaluation for a physician assistant education program are described. The Four Principles of Family Medicine along with the CanMEDS competencies are utilised to inform the educational objectives and to promote these educational frameworks to our learners and teachers.

#### 4 U 3

##### **Measuring Resident progress: competency milestones in Internal Medicine**

Kelly Caverzagie, Eva Aagaard, Michael Green, Eric Holmboe, Cynthia Smith, Davoren Chick (Henry Ford Hospital, Department of Internal Medicine, Division of Hospitalist Medicine, Detroit, Michigan, United States)

**Background:** The implementation of the ACGME Outcomes Project, including the six Core Competencies, signaled a transition to competency-based education and training (CBET) for graduate medical education. The goal of CBET is for trainees to demonstrate achievement of educational outcomes necessary for advancement.

**Summary of work:** The ACGME and ABIM convened a task force of internal medicine educators and stakeholders, who created a comprehensive set of developmental milestones using the ACGME competencies as their framework. Each milestone was framed as an observable behavior in order to facilitate the criterion-based assessment of competence and to promote understanding and recognition of expected behaviors by both trainees and faculty. The task force sought feedback on the utility of the milestones via a direct survey of program directors and graduating trainees, through a national workshop and from collaborative groups.

**Summary of results:** A total of 251 respondents have completed the milestones survey and numerous others have participated in workshops where formative feedback was provided. Program directors and trainees feel the milestones help them to better understand the expected behaviors of a competent trainee ready to enter into independent practice. They also feel that they have the potential to provide both a platform for the meaningful assessment of trainee competence and a mechanism to identify trainees who are not appropriately progressing towards competence in order to begin early remediation. The milestones may also provide a starting point for curricular revision and evaluation system reform. There is a need for continued engagement of internal medicine stakeholders and feedback is still being solicited. Leadership from the ACGME and ABIM continue to be engaged in the milestones process.

#### 4 U 4

##### **Competency mapping in quality management of Foundation Training**

L Wentworth, S Bhat, J Ruddlesdin, P Baker (North Western Deanery, 4th Floor, Barlow House, Minshull Street, Manchester M1 3DZ, United Kingdom)

**Background:** Knowledge-driven traditional medical training models no longer meet modern political and societal demands. Competency-based curricula are dominant, focusing on outcomes in terms of

application of knowledge and acquisition of competencies. Curricular competencies are normally considered by inference from the host speciality. The aim of this exercise was to analyse, individual posts for training outcomes.

**Summary of work:** A mapping process of Foundation curriculum competencies was designed. Data was gathered in terms of competencies using red/amber/green judgements for each post.

**Summary of results:** 40% had problems. Occasional non-returns from individual posts left gaps in tracks' records, but did not, in practice, disrupt the process. Problem competency include: Nutrition; Complaints handling; Joint aspiration; Central venous line insertion; Lumbar puncture. Post submissions, no correspondence was needed on any programme about clarification or re-arrangements.

**Conclusion:** The process had a significant formative effect on programmes as well as assessing outcomes. Suspect tracks were identified, allowing programme directors to ensure deficiencies are compensated by targeted training, simulation or planned teaching.

**Take home messages:** Development of competency based training is a complex, multi-step process. Different steps are responsibility of different parties in the UK and some are incomplete. Only rigorous overall evaluation of the process itself will assess whether this approach is producing good training.

#### 4 U 5

##### **Centralized assessment of core competencies at multiple institutions**

D Wagner, M Lypson, I Philibert, M Short (Michigan State University College of Human Medicine, A102 East Fee Hall, East Lansing 48824, United States)

**Background:** Baseline assessment of intern core competencies is consistent with mandates of the Accreditation Council for Graduate Medical Education, and similar principles are applicable to mandates of other accrediting and credentialing bodies. Examples of successful centralized assessments exist, and utilize a variety of simulation strategies including standardized patients, standardized family members or health care team members, partial task trainers, full-body mannequins and computer applications, often together in hybrid stations. Successful centralized assessments at multiple institutions and their use to improve trainee performance and curricular planning will be described. They are characterized by efficient use of centralized educational and monetary resources. Lessons learned and critical principles of the planning and implementation of these will be shared.

#### 4 U 6

##### **Curriculum content – epidemiology guiding its development and assessment**

VR Boilella, SRP Souza, JLM Machado, JE Vieira (Universidade Cidade de São Paulo - UNICID, Rua Cesário Galeno, 448/475, Sao Paulo 03071-000, Brazil)

**Background:** Epidemiology may help decision makers to address the challenge of content guidelines in Medical Schools.

**Summary of work:** The mortality (OBT) and morbidity (MRB) were considered respectively from the summary death and Disability-Adjusted Life Year (WHO). The score construct used morbidity and mortality probabilities:  $Score = \sqrt{P(MRB) \times P(OBT)}$  – eq1; Database rate distribution assumed as normal provides a Z number:  $Z(MRB) = (MRB - \text{mean}(MRB)) / SD(MRB)$  – eq2; Given Z value for each disease, the cumulated probability is:  $P(MRB) = \int (1/\sqrt{2\pi}) \times \exp(-z^2/2)$  – eq3; Equations 2 and 3

apply to mortality (OBT) as well. Three countries were selected, United Kingdom (UK), Brazil (BR), and Rwanda (RW) (higher to lower level database).

**Summary of results:** The first quartile listed 71, 78 and 76 conditions for UK, BR and RW. Considering the 20 most prevalent conditions, there were only 2 matches among the countries (self-inflicted injuries and epilepsy). Five conditions matched for UK and BR, 4 between BR and RW, and 3 for UK and RW.

**Conclusion:** The literature on curriculum design rarely discusses content. The frequency of registered health conditions supported the identification of themes that may be mastered and may suggest topics to guide student assessment.

**Take home messages:** Epidemiology may guide curriculum assessment themes.

#### 4 U 7

##### **Training needs identification tool based on competences assessment**

M Perianez-Vega, V Reyes-Alcázar, A Torres-Olivera (Andalusian Agency for Healthcare Quality, c/ Augusto Peyré nº1 Edificio Olalla - 3ª planta, Seville 41020, Spain)

**Background:** The study has been developed at the Andalusian Agency for Health Care Quality (Spain), an organization focused to improve healthcare quality.

**Summary of work:** The accreditation standards for continuous training identify items related to the usefulness of training in terms of competences acquisition and its impact on professional development. A training proposal was designed based on Professional Competence Accreditation Programme. This training proposal includes competences for any healthcare professional. The design allows the construction of competences maps tailored to each profile, identifying the level of initial achievement and prioritized route to reach the highest level. The training cycle was drawn: self-assessment worksheet, roadmap and post-training evaluation. Different access profiles were also defined: training chief, functional unit responsible and healthcare professional.

**Summary of results:** The tool for training needs identification based on competences assessment was designed in web environment and allows building recommended training plans, taking into account previous training levels and whether competence is essential or desirable.

**Conclusions:** The tool for detection of training needs based on competencies assessment improves the development of individual training routes.

**Take home messages:** This study represents a significant support tool for the continuous improvement cycle of the professional competence accreditation scheme.

#### 4 U 8

##### **Heptagonal model: A conceptual model generated by outcome-based assessment in Iran**

J Shajari, Y Aryazand (Iran Medical University, Hemat Highway, Faculty of Medicine, Iran Medical University, Tehran 1986743811, Iran)

**Background:** Multiprofessional health care education is one of the significant issues in the third millennium. Since the existing medical education system in Iran is considering this point, we aimed to generate a conceptual model by outcome-based assessment in Iran.

**Summary of work:** Based on literature review and outcome assessment of medical education students, eighty nine components (items) were extracted. The opinions of sixty five experts in medical education in Iran were asked by a valid and reliable questionnaire about the existing situation of graduate medical education systems based on 89 identified items. The findings were analyzed by path analysis.

**Summary of results:** By factor analysis a model consisting of seven dimensions has been developed. Dimensions included: Social accountability, Art of medicine, Flexibility to change, Meta communication, Proactivity, Integration and Interactive technology.

**Conclusion:** This conceptual model can be applied by the policy makers to reform medical education at national level.

**Take home message:** Heptagonal model could be used as a sound model for reform in medical education in Iran.

## **SESSION 5 PLENARY Perspectives on Assessment of Competence**

### **5 A Careful what you wish for: resolving uncertainty in the assessment of competence**

Sioban Nelson (Dean and Professor of Nursing, Lawrence S. Bloomberg Faculty of Nursing, University of Toronto, Health Sciences Building, 155 College Street, Suite 130, Toronto, M5T 1P8 Canada)

This lecture examines a series of perspectives on the assessment of competence in both nursing and health professional practice more generally. Tracing key issues from regulation to simulation, it raises critical questions to be considered by all those who evaluate practice.

### **5 B The elephant in the dark: assessing lawyer competence**

Michael P Malloy (Distinguished Professor and Scholar at the University of the Pacific McGeorge School of Law, 3200 Fifth Avenue, Sacramento 95817, United States)

This presentation examines current approaches to competence assessment in the legal profession. Contemporary study of the objectives and techniques of professional legal education is delineated by two significant markers – the 1992 MacCrate Report, issued by the ABA, and the Carnegie Foundation’s 2007 study, *Educating Lawyers*. The first alerted the profession and the academy to the relative lack of integrated and continuous professional skills training within the law schools. The second revealed that, fifteen years after MacCrate, advances in skills and competence training and assessment in legal education remain incremental and disjointed. Almost continuously from the issuance of the MacCrate Report, however, empirical studies, experimentation, and professional developments have pushed forward in the search for more effective approaches to professional education and assessment of lawyer competence. Admittedly, it is still the case that students graduating from most accredited U.S. law schools are not required to take any clinical courses. Aside from the qualifying bar exam at the beginning of their professional career (and continuing legal education (CLE) requirements in many states), their competence in even basic professional skills is never formally tested once they leave law school. As a result, the MacCrate Report’s desire for an “educational continuum” in skills education – running through law school and into the profession – has not been fully achieved. Nevertheless, innovative approaches to skills training and competence assessment have been advancing through the scholarly literature, in pilot programs at specific law schools, and in changes in professional standards and procedures. The legal academy and the bar have clearly moved beyond the “point of entry” (single bar exam) approach to the assessment of lawyer competence and are exploring an array of possible supplements and alternatives – expanded clinical and experiential courses in law school, “practice components” in the bar exam, enhanced CLE requirements, and specialist certification. The presentation considers the extent to which these developments satisfy the goal of an “educational continuum” in competence assessment, and argues for further innovation: adapting incremental licensure from the medical education model, and requiring renewable bar admission along the lines of the board certification model.

## SESSION 6 SIMULTANEOUS SESSIONS

### 6 A Symposium Work-based Assessment

J Beard (University of Sheffield, United Kingdom), J Crossley (University of Sheffield, United Kingdom), K Eva (McMaster University, Ottawa, Canada), B Jolly (Monash University, Melbourne, Australia), J Norcini (FAIMER, Philadelphia, USA)

This symposium will be of interest to all those involved in the implementation of Workplace Based Assessment. The focus will be on the assessment of doctors in postgraduate training, but many of the principles apply equally to the assessment of student doctors. Workplace Based Assessment (WBA) has become an integral part of most competence-based postgraduate medical curricula. Many WBA tools have been created and implemented with little or no evidence for their utility, i.e. reliability, validity, acceptability and cost. This has led to WBA being viewed with suspicion by many doctors as an unnecessary tick-box exercise.

A panel of international experts will discuss a range of issues about WBA including: The role of WBA in a curriculum – what is the purpose and can there be dual use? The design of WBA – are the current tools fit for purpose and can they be improved? The timing and frequency of WBA – when and how often should it be undertaken? Making time for assessment – does it impact on service and what is the cost? Selection of assessors - can anyone be an assessor and what training is required? Giving feedback after an assessment – what is the best method?

After a series of short presentations from the experts, the audience will have ample opportunity to question the panel. We hope that by the end of the symposium, a consensus on some of the issues above will have been achieved.

### 6 B Oral Presentations Portfolio Assessment in Undergraduate Education

#### 6 B 1

#### **Faculty reflections on the implementation of Sociocultural ePortfolio Assessment Tool**

RL Perlman, PT Ross, J Christner, ML Lypson (University of Michigan Health System, 2600 Green Road #150, MI Ann Arbor, United States)

**Background:** The University of Michigan Medical School developed an ePortfolio assessment tool to electronically warehouse artifacts demonstrating student achievement of sociocultural learning objectives. Fourteen faculty educators established standards of instructions and scoring rubric to standardized assessment measures of student's development. Faculty were required to participate in training sessions to develop skills necessary to critically assess students' reflective essays and provide meaningful feedback via the new system.

**Summary of work:** One focus group with 12 faculty and 2 in-depth interviews were held to investigate the effectiveness of the eportfolio system & explore faculty's experiences on implementing the eportfolio.

**Summary of results:** Analysis revealed strong feelings in support of an assessment tool that provided students with the means to connect the dots and provide a vehicle for mentored reflection. Faculty expressed the importance of providing physicians with training in the area of education assessment as faculty experienced extreme variability in students' writing abilities.

**Conclusions and Take home messages:** The development of a longitudinal assessment tool is an effective method for assessing student learning and ensuring that curricular objectives are achieved. It is also important to involve faculty in the implementation phases of development and provide them with training in areas in which they may lack expertise.

## **6 B 2**

### **Design, implementation and validation of the Royal College of Surgeons in Ireland E-Portfolio: a comprehensive educational aid**

AM Collins, PF Ridgway, M Spooner, E Clarke, C Doody, ADK Hill (Department of Surgery, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin 9, Ireland)

**Background:** A bespoke student electronic aide, the Royal College of Surgeons in Ireland E-Portfolio, was introduced in the 2008–2009 academic year.

**Summary of work:** A randomized controlled trial was designed to evaluate the E-Portfolio for face validity compared to the paper logbook, and its efficiency in the documentation of patient encounters and competency achievement. Prospective studies were performed to examine the role of assessment.

**Summary of results:** Four Hundred five medical students participated. Questionnaire assessment demonstrated face validity. E-Portfolio users rated nine features significantly higher than logbook users rated the logbook: benefit, relevance convenience, security, accessibility, assistance in planning and organization of learning, assistance in identification of curriculum requirements and likelihood of referring to data again [ $p = 0.001, 0.001, 0.031, 0.001, 0.043, 0.001, 0.001, 0.002, 0.001$ , Mann Whitney U (MWU)]. The E-Portfolio had a motivating effect; users recorded more competencies than their logbook counterparts (median: 8 versus 5;  $p = 0.044$ , MWU). A moderate correlation was demonstrated between E-Portfolio assessment and performance in high-stakes examinations. Spearman's correlation coefficient: 0.383,  $p = 0.001$ .

**Conclusions:** The E-Portfolio increased the efficiency of data transfer and stimulated enhancements in course work completion.

**Take home messages:** The E-Portfolio is a valid educational tool and may have a role in assessment of knowledge base.

### 6 B 3

#### **Portfolio as an assessment tool in Biochemistry among first year medical students of UERMMMCI College of Medicine**

MA Villamor, SM Mendoza, M Magat, A Alba, L Reyes, L Balcueva, M Mendoza (UERMMMCI College of Medicine, Barangay Dona Imelda, Aurora Blvd., 1013 Quezon City, Philippines)

**Background:** Biochemistry has been observed to be a difficult subject among medical students. To help the first year medical students with the subject, the faculty of the Department of Biochemistry pursued a meaningful learning approach as the portfolio. This study attempted to establish a relationship between the student-generated portfolios and performance in a cognitive test; and correlation between students' perceptions on the portfolio and portfolio scores.

**Summary of work:** Participants included 30 students who generated 5 portfolios each. The portfolios were evaluated based on a rubric by 7 Biochemistry faculty. Pearson r was used to determine the correlation between the variables.

**Summary of results:** No significant correlation between the portfolio scores and cognitive test scores was shown. However, a moderate negative correlation between the overall perceptions of the students and portfolio scores was obtained.

**Conclusion and Take home message:** An absence of correlation between portfolio scores and cognitive test scores was established. However, the students with high appreciation of the portfolio showed low scores in the portfolio. The authors believed that the portfolio can enhance the learning of Biochemistry and tried to substantiate the role of the portfolio in the study of Biochemistry. However, the results were contrary to the expectations of the authors.

### 6 B 4

#### **Reflexive portfolio: a tool to identify learning needs and promote critical appraisal?**

ML Bourroul, S Gannam, APS Ferrer, D Scaramuzzi, D Ballester (University Hospital, Department of Pediatrics, School of Medicine, University of São Paulo, Avenida Professor Lineu Prestes, 2565, 05508-900 São Paulo, Brazil)

**Background:** Pedagogical techniques that encourage reflective thinking of the student lead to a professional who acts in a critical and not merely a technical way.

**Summary of work:** To this end, each student at the course of ambulatory pediatrics at the beginning of the medical internship held a portfolio of his/her patients, with summaries and reflections about the consultations. The portfolios were read and discussed by a supervisor individually at each encounter.

**Summary of results:** Most students declared having no knowledge about important topics of Pediatrics; inexperience in history taking and interview techniques and presented specific questions about the limits of the role of pediatrician and about therapeutics. They justified their difficulties by problems in doctor-patient relationship, blaming the parents for the poor quality of information obtained and the child/adolescent for his/her no participation in the consultation.

**Conclusions:** The portfolio was a reflective process that helped to identify learning needs and subsidized individualized discussions, enhancing the teaching-learning process. It became evident that although the students identify their difficulties they blame the child and his parents for them.

**Take home messages:** The use of the portfolio is an effective tool for promoting critical appraisal and the identification of learning needs.

## 6 B 5

### **Developing an open source eportfolio in medical and healthcare education**

N Ramluchumun, T Poulton, J Ibison (St George's University of London, Centre for Medical and Healthcare Education, Cranmer Terrace, London SW17 0RE, United Kingdom)

**Background:** An open source eportfolio, ePet, has been successfully implemented as a toolkit to facilitate medical and healthcare students to reflect on their development of academic, professional and clinical skills. The integration process of the eportfolio with existing infrastructure of the institution and evaluation results will be discussed.

**Summary of work:** The eportfolio implementation involves work at two levels: technical and pedagogical. The flexible nature of ePet makes it easier to integrate with the institution learning environments and to enhance for fast evolving requirements of the users.

**Summary of results:** ePet has been further developed to provide students with facilities such as templates for reflecting on educational performance and reflective practice assignment for clinical placement. The institution is also using eportfolios as a form of online assessment and as evidence for continuous professional development.

**Conclusions:** This submission outlines experience of integrating and customising open source eportfolio, without major changes to the core, to meet new requirements from staff and students. Results of evaluation and experience of using open source tools will be presented.

**Take home messages:** The high level of configurability of open source eportfolio facilitates customising it for different curricular stage to capture the immediacy of student learning experience.

## 6 C Oral Presentations Assessment of Teams

### 6 C 1

#### **Developing and evaluating an instrument to measure teamwork**

J Weller, R Frengley, B Shulruf, B Jolly, J Torrie, K Henderson (University of Auckland, Centre for Medical and Health Sciences Education, Faculty of Medical and Health Sciences, PO Box 92019, 1142 Auckland, New Zealand)

**Background:** Teamwork failures contribute to adverse events causing patient harm. Establishing and maintaining a team, and managing the tasks is an active process. Medical education largely ignores teamwork competencies. However, lack of robust instruments to measure teamwork limits evaluation of interventions to improve it.

**Summary of work:** We aimed to develop and validate a teamwork measurement instrument. From existing literature, we developed an instrument, then used it to score videotaped simulations until raters agreed the final 21 items, were comprehensive, comprehensible and observable. Forty intensive care teams participated in four simulated emergencies, all videotaped, randomised and then rated by three trained assessors. We analysed scores using Generalisability Theory, exploratory factor analysis, measured performance over time and interviewed assessors on item performance.

**Summary of results:** G co-efficients  $> 0.7$  were obtained for overall performance and some individual items. Variance components and interview data provided insight into individual item performance. Exploratory factor analysis confirmed items grouped into themes. Significantly improved performance over time supported construct validity. Items predicting overall performance were identified.

**Conclusions and Take home messages:** The instrument performed well as did many individual items. Information on low reliability items was used to further develop the instrument which can then be used to robustly evaluate interventions to improve teamwork in healthcare.

## 6 C 2

### **Assessing and improving team performance through in-situ simulation**

J Holl, W Hamman, W Eppich, D Woods, R Rozenfeld, O Ross, A Torricelli (Northwestern University Institute for Healthcare Studies, 750 N. Lake Shore Dr, 10th Floor, Chicago 60622, United States)

**Background:** “In-situ” simulation, using methods adopted from the air-carrier industry, offers a unique approach to evaluate teamwork and communication in the clinical environment. The AHRQ-funded Risk Informed In-Situ Simulation for Pediatric Emergency Transfers project evaluates this methodology’s capacity to effectively expand team training beyond awareness to the performance phase.

**Summary of work:** Pediatric emergency department transfer simulation scenarios were developed by a multidisciplinary clinical team. Scenarios include common healthcare distracters and “triggers” designed to elicit teamwork roles and behaviors. The in-situ simulations are video-recorded, coded for teamwork behaviors and roles and used as a tool to facilitate a debriefing focused on improving team skills.

**Summary of results:** Data gathering includes pre-post evaluations of institutional safety culture and teamwork skills. Additional outcomes measures include the identification of failures of operational processes and systems (e.g., tube system breakdowns, lack of standardization in medication nomenclature).

**Conclusions:** Risk-informed in-situ simulation will be evaluated as a method to effectively assess and improve healthcare teamwork and communication as well as to identify unrecognized systems and process failures.

**Take home messages:** Use of simulation scenarios conducted in the learning environment of healthcare units will improve communication, increase risk awareness and effectively assess healthcare professionals’ team performance.

### 6 C 3

#### **Assessing teamwork and leadership skills of medical students using high-fidelity simulation**

M Money, H O'Sullivan, A Guha, S Mercer (Centre of Excellence in Teaching and Learning, School of Medical Education, Faculty of Medicine, University of Liverpool, Cedar House, Ashton Street Liverpool, L69 3GE, United Kingdom)

**Background:** In “Tommorow’s Doctors” the United Kingdom (UK) General Medical Council (GMC) details the need for medical students to demonstrate leadership and teamwork skills (GMC, 2009). The GMC also requires UK medical schools to develop assessment methods, which demonstrate that these skills are being taught and learnt to a satisfactory standard.

**Summary of work:** We designed a 15-minute simulation scenario to test teamwork and leadership skills by incorporating specific junctures requiring application of these skills. 17 final year medical students individually participated in the scenario.

**Summary of results:** We are in the process of analysing the video recordings of the scenarios using an assessment proforma which we developed using established assessment techniques and results from an earlier focus group study with the same cohort of students.

**Conclusions:** We hypothesize that it is possible to assess specific elements of teamwork and leadership using a standardised scenario in a high-fidelity simulator. This will allow formative assessment and feedback on the specific elements. We envision the use of this technique for summative assessment of teamwork and leadership skills as components of professionalism.

**Take home messages:** High-fidelity simulation is a potential tool for the standardised assessment of components of professionalism including leadership and teamwork.

### 6 C 4

#### **Multidisciplinary theatre team simulation training to improve patient safety**

Indu Sockalingam, S Wilson (Lister Hospital, Department of Anaesthesia, Stevenage SG1 4AB, United Kingdom)

**Background:** Simulation training is a vital part of building safer healthcare, and it is recommended that human factors training should be an integral part of training to enhance patient safety<sup>1</sup>. Human errors negatively impact patient outcomes and are exacerbated during crisis situations when there is an acute decline in patient stability, necessitating urgent interventions and effective team performance.

We set up a pilot study to determine the participants’ views about the strengths and weaknesses of simulation training for theatre teams to improve their non technical skills during crisis situations.

**Summary of work:** Forty-seven participants of anaesthetists, theatre/anaesthetic/recovery nurses participated in acute crises scenarios in teams. Fully facilitated feedback was provided at the end of each scenario to include task management, team working, situation awareness and decision making. Data was collected on a 5 point Likert score pre/post questionnaire and interviews. We introduced 2 communication tools, the SBAR and the 2 challenge rule.

**Summary of Results and Conclusions:** All felt that this was a valuable learning opportunity and thought simulation courses should be available for all staff from their discipline. The majority felt that they would change their practice, and this has helped them to practise more safely. Further results will be presented.

<sup>1</sup>Chief Medical Officer, 150 years of the Annual report of the Chief Medical Officer, L. Donaldson, Editor. 2009, Department of Health: London.

## 6 C 5

### **Designing and validating a toolkit of interprofessional education tools: the process, products; and possibilities**

C MacDonald, D Archibald, L Casimiro, D Trumpower, B Craig, W Jelly (University of Ottawa, 145 Jean Jacques Lussier, University of Ottawa, Ottawa K1N6N5, Canada)

**Background:** This paper addresses some of the most important unresolved issues of interdisciplinary education (IPE) for healthcare. The tool kit (available in both English and French) includes (a) a program evaluation survey based on the W(e)Learn framework (MacDonald et al, 2009), (2) a survey to assess changes in attitudes and behaviour and (3) a team and (4) learner exemplar and companion contract.

**Summary of work:** Developing the instruments involved several meetings over a one year period with a team of educators, statisticians, researchers and subject matter experts (SMEs). All items on each instrument were carefully scrutinized for meaning, language interpretation, and relevance. The four instruments were emailed to participants in October 2009 with a list of criteria that needed to be met to be involved in the study.

**Summary of results:** The instruments were used in a variety of IPE courses and programs across Canada, the US, New Zealand and the UK. Data was collected in all programs to further refine the instruments for validity.

**Conclusions:** The systems, processes, and instruments created and tested in can be used as quality standards and increase the likelihood that IPE experiences are planned and delivered effectively.

**Take home messages:** This project addresses the following IPE needs: • a variety of IPE evaluation tools and outcome measures; • validated evaluation tools; • support for evaluating IPE in order to continue to improve healthcare education and synthesizing and implementing this knowledge at the point of care.

## 6 C 6

### **Studying different student categories' experiences of an interprofessional clinical course using Contextual Activity Sampling System (CASS)**

S Ponzer, H Lachmann, U-B Johansson, K Karlgren (Karolinska Institutet, Dept. of Clinical Science and Education, Södersjukhuset, Danderyd Hospital; Dept. of LIME, Nobelsväg 5, 17177 Stockholm, Sweden)

**Background:** Collaboration between professions is an important prerequisite in health care. An interprofessional course where students work together has shown to provide good clinical practice regarding training in the own profession and learning more about other professions. Positive experiences have an impact on individual development but are difficult to study using traditional data collection methods, i.e. post-course questionnaires asking students to generalize about their experiences in retrospect.

**Summary of work:** This study aimed to investigate if the Contextual Activity Sampling System (CASS), using a query tool and 3G mobile devices, for collecting process and context sensitive data is of value when studying the students' everyday activities and experiences of teamwork across time. The data collection was carried out during a 2-week clinical interprofessional course.

**Summary of results:** The CASS method seemed to provide valuable data for course design. The preliminary results indicate a relationship between activities and ratings of challenge and competence.

**Conclusions:** Continued refinement of the CASS may further stimulate students' reflection on their practices.

**Take home messages:** Novel methods, such as the CASS, which uses mobile devices to provide contextualized data of within-person changes across time, might be useful for studying on-going practices.

## 6 C 7

### **Relationships of power: implications for interprofessional education and practice**

L Baker, E Egan, T Martimianakis, S Reeves (Centre for Faculty Development, University of Toronto, St. Michael's Hospital, 30 Bond St., Toronto, ON M5B 1W8, Canada)

**Background:** Interprofessional education (IPE) contributes to the enhancement of communication and practice among health care providers, optimizing participation in clinical decision making and improving the delivery of care. Yet, little is known about how relations of power affect IPE activities.

**Summary of work:** Drawing on data from the evaluation of a large multi-site IPE initiative, 62 semi-structured interviews were analyzed inductively for emergent themes and deductively for patterns relating to Witz's Occupational Closure Model (1992) to explore relations of power.

**Summary of results:** While all health professional groups were engaged in the IPE process to some extent, their motivations and levels of engagement were linked to their respective professionalization projects. Physicians regarded IPE initiatives as a potential threat to their professional status, while non-medical professionals, saw IPE as an opportunity to counter the dominance of medicine and improve their standing in the health professional division of labour.

**Conclusions:** IPE while structured on notions of collaboration and team practice can have the reverse affect of increasing competition amongst professions.

**Take home messages:** The power relations that underpin IPE need to be studied further to understand the implications for the design, delivery and assessment of IPE activities.

## **6 D Oral Presentations Simulated Patients**

### **6 D 1**

#### **Relationship between standardized patient checklist item accuracy and level of performing arts background experience**

E Langenau, D Montrey, C Dyer, W Roberts, J Sandella (National Board of Osteopathic Medical Examiners, 101 West Elm Street, Suite 150, Conshohocken 19428, United States)

**Background:** Variation in Standardized Patients' (SPs) amount of performance background or acting experience could potentially affect the accuracy of their recordings of examinee performance on a high stakes clinical skills examination. The purpose is to investigate if SPs with and without extensive performance experience complete history and physical checklists with the same level of accuracy.

**Summary of work:** As a representative sample of SPs for the Comprehensive Osteopathic Medical Licensing Exam Level 2-Performance Evaluation, 49 SPs voluntarily completed a survey containing questions about their theatrical performance experience and training, educational background, employment history, and time spent on various extracurricular activities. A second wave of ratings (videotape review) from the 2008-2009 testing cycle, 37815 encounters, was compared with SP live standard examination ratings. Discrepancy scores served as measures of data gathering checklist accuracy.

**Summary of results:** Among the variables analyzed, there was no significant difference between performers and non-performers on average data gathering checklist accuracy for history items,  $t(74) = 1.343$ ,  $p = .184$ . Performers had slightly higher mean accuracy scores for physical exam items,  $t(74) = 2.874$ ,  $p = .005$ .

**Conclusion and Take home message:** Results support that SPs with and without performance experience may complete physical exam checklists with varying levels of accuracy.

### **6 D 2**

#### **Baseline assessment of incoming medical students' communication skills: The NYU C21 Baseline OSCE**

C Gillespie, K Hanley, J Adams, S Zabar, A Kalet (New York University School of Medicine, 550 1st Avenue, New York 10016, United States)

**Background:** Little is known about the communication skills students bring to medical school and such skills are usually not assessed until well into the curriculum.

**Summary of work:** As part of a broader curricular reform effort, all incoming medical students ( $n=165$ ) participated in a 3-station Standardized Patient (SP) Examination within the first 2 weeks. SPs assessed students' communication skills and patient-centeredness. Students also wrote patient notes and completed a post-examination questionnaire.

**Summary of results:** Students were positive about the experience, saying that it reinforced their decision to become a physician, helped them pinpoint what they need to learn clinically, and gave them a framework for integrating basic science knowledge. Students' self-assessment of their communication skills was associated with SPs' checklist ratings for relationship development but not for information gathering and patient education. Students' baseline communication scores (% well done) showed greater statistical dispersion than end of 3rd-year student scores on an 8-station OSCE using the same checklist.

**Conclusions:** Initial assessment of communication skills will help set the baseline against which to measure progressive mastery as well as the impact of medical school.

**Take home messages:** An early focus on core clinical skills like communication may help reinforce the importance of these skills and encourage students' self-directed learning and development of competence.

### 6 D 3

#### **The value of actors to continuing professional development for GP trainers and appraisers**

Johnny Lyon-Maris, Samantha Scallan, Kerry Ball, Peter Burrows, Eileen Gorrod (Wessex School of General Practice, NESG, UK, Southampton Patch, GP Education Unit, Mailpoint 10, Southampton University Hospital Trust, Tremona Road, Southampton SO16 6YD, United Kingdom)

**Background:** Actors have been used for many years in the training and formative development of doctors, as well as playing a key role in their summative assessment. They also contribute to CPD, especially in communication skills enhancement. In each of these areas, actors generally play the role of patient, not doctor. In this project, actors took the role of doctor, playing GP registrars in difficulty and challenging GP appraisees.

**Summary of work:** An experimental workshop (Lyon-Maris and Burrows (2009)) set the scene for the present work and reported the approach used for briefing the actors, preparing the facilitators, testing early scenarios and developing a process. The process was then piloted in two training days with GP trainers and appraisers. Observational data was collected at each event, along with oral and written feedback from participants. The data were then analysed to provide an evaluation of the usefulness of the approach and method.

**Summary of results:** Both the appraisers and trainers found the sessions relevant, useful, and valuable, as well as uncomfortable and challenging. The process allowed them insight into how they managed communication in difficult and challenging situations, and to experiment with alternative strategies.

**Conclusions and Take home messages:** The communication will present detailed results of the evaluation and next steps.

#### 6 D 4

##### **Knowledge acquisition of patient safety competences: evaluation using a standardised-patient based OSCE**

IC Tibério, LS Zambon, MA Martins, IT Velasco, R Daud-Gallotti (University of São Paulo School of Medicine, Rua Dr Enéas de Carvalho Aguiar, 255, ICHC, Room 5023, 05403-000 São Paulo, Brazil)

**Background:** Patient Safety (PS) is a new field of healthcare that should be discussed with medical students. Evaluation of the acquisition and retention of these contents is crucial. OSCE is a powerful tool for evaluating PS-skills.

**Summary of work:** To determine the clerkship-students-performance in two consecutive years using an OSCE PS-station, emphasizing physician-patient-relationship (PPR) issues and medical-error (ME) recognition and disclosure, after a formal PS-program. Standardised-patient based OSCE station was applied in 2008 and 2009 for the same clerkship-students (in 5th and 6th year of medical school). PS-checklist, completed by standardised-patients, was divided in 2 domains: ME recognition/disclosure and PPR-issues.

**Summary of results:** Internal consistency was 0.91. Mean % items “well done” differed significantly by whether globally rated as “poor” (17%, SD 14%), “average” (30%; SD 12%), or “good” (56%; SD 6%) ( $p < 0.001$ ). Individual domain scores also varied by global rating. Overall mean % of leadership skills rated as “well done” was 35% (SD 19%), confirming the perceived need for leadership training.

**Conclusions:** Preliminary data provide support for the reliability and validity of the leadership skills checklist. Checklist scores were associated with global ratings. Overall, residents did not perform well.

**Take home messages:** We will use this checklist to measure the effect of a training program to improve medical crisis team leadership.

#### 6 D 5

##### **Effect of number of cases simulated by white standardized patients on total examination scores**

J Shatzer, J Colliver, R Zaeske, MC Beach (Vanderbilt University School of Medicine, 3402 MRB IV, Nashville, TN 37232, United States)

**Background:** Ethnicity of examinees and standardized patients (SPs) has been an issue for performance-based examinations since their inception (AAMC Consensus Conference, 1992). The few studies conducted have produced varied and weak effects. However, the studies were conducted at the case-level; the effect of ethnicity on total scores has not been addressed.

**Summary of work:** We examined the effect on total scores of the number of cases in which a White SP simulated the case. An SP examination was administered to 197 third-year medical students. White and African-American SPs simulated four cases in the examination. For each examinee, we determined the number of case encounters simulated by a White SP and examined the relationship between number of White SP case encounters and total 4-case score. Students encountered from 0 to 4 White SPs on the cases studied.

**Summary of results:** Scores for history, physical, and overall increased with each additional White SP case – about 2.5 to 4.0 percentage points (SD = 6.0). Rates of increase were not significantly different for White and African-American students, and White and African-American students performed at the same level.

**Conclusion and Take home message:** Further study is required to determine the possible source(s) that may account for our results.

#### 6 D 6

##### **Defining expert-based performance for off-pump coronary artery bypass surgery**

S Cristancho, F Moussa, A Dubrowski (SickKids Learning Institute, 525 Avenue Road, Room 600, Toronto M5G 2L3, Canada)

**Background:** Correlating critical decision points with specific surgical steps would help educators to devise standard competency. This can be achieved by objectively identifying “standards of practice” derived from experts. This presentation will outline an approach to derive expert-based criteria for intraoperative performance assessment.

**Summary of work:** Using a case study design, we applied the Motor-and-Cognitive-Modeling-Diagram (MCMD) to the Off-Pump Coronary Artery Bypass surgery (OPCAB) to decompose the procedure into individual tasks and to quantify baseline performance characteristics of an expert in terms of: Range of average scores per task, Frequency of correctly performed tasks, Strength of task connections (indicating preferred pathways).

**Summary of results:** An in-vivo MCMD was developed for the OPCAB surgery. Using 4 videotaped procedures from one expert, we identified 7 tasks, 14 subtasks, and 7 decision points where path deviations are likely to occur during standard executions of the procedure. Next we will test the validity and reliability of our method.

**Conclusions:** We have demonstrated the feasibility of using the MCMD to identify the tasks routes performed by an expert during standard OPCAB procedures as the baseline for quantifying expert performance-based criteria for intraoperative assessment.

**Take home message:** The MCMD method is useful and practical for setting expert-based performance standards.

#### 6 D 7

##### **Assessing residents’ competence in two contexts: Standardized patient exams and unannounced standardized patient visits**

S Zabar, C Gillespie, K Hanley, A Burgess (New York University School of Medicine, Primary Care Internal Medicine Residency Training Program, 550 First Avenue, New York 10016, United States)

**Background:** Standardized patients can be used to assess performance in examination or actual clinical practice settings. Little is known about how performance may vary across these two critically different contexts.

**Summary of work:** PGY1 (n=8) and PGY3 (n=7) residents saw four Unannounced SPs (USP) over 6-months in their urban outpatient clinic after completing a 10-station exam (OSCE) involving a set of similar patient education/counseling cases. Communication skills, satisfaction and activation were assessed by SPs using the same behaviorally-anchored checklist.

**Summary of results:** Internal consistency was acceptable. (Cronbach's alpha .65 - .89). On average, communication scores (% of items "well done") did not differ, OSCE (67%, SD 12%) and USP (70%, SD=12%), but they did for patient satisfaction (66% vs 78%, p=.04) and patient activation (26% vs 47%; p=.005). Most residents' ranks among their peers were similar when compared between assessment contexts, however several had marked differences (USP>OSCE; OSCE>USP). PGY level and time appear to be associated with differences.

**Conclusions:** Overall communication skills are similar in examination and clinical settings. The realism of USPs may enhance residents' patient centeredness and activation skills. OSCE validity may vary for individual residents.

**Take home messages:** OSCEs effectively measure core clinical capabilities but USPs may be better suited to assessing complex patient-centered care in context.

## 6 D 8

### **Strategies for refining the process and improving the outcome of the standardization of standardized patient performance for a national pharmacy OSCE**

C O'Byrne, C Smith, J Pugsley, L J Quero Muñoz (Pharmacy Examining Board of Canada, 717 Church Street, Toronto M4W 2M4, Canada)

**Background:** Research has shown the PEBC's OSCE to be defensible for certification decisions. To further enhance consistency and reduce variability in SP performance, PEBC refined current strategies and developed new training tools for the Fall 2009 exam. Typically, this exam involves fewer sites and therefore this process served as a pilot.

**Summary of work:** Over the last year, PEBC has initiated refinements to the training process that was informed by conversations with trainers and randomly chosen, direct observations of trainings and SPs on exam day, both live and taped. Refinements included making explicit expected training outcomes through the creation of a systematic trainer protocol. Innovations included creating an "Exam Readiness Checklist" that all involved in the training process were responsible for completing to ensure SP exam readiness.

**Summary of results:** Initial observations indicate a benefit from these refinements and innovations. Results of further investigations will be presented at the conference.

**Conclusions:** Explicit training strategies and specifically designed tools positively impacted on training outcomes and increased the consistency of trainer and SP performance. Lessons learned will be shared with the entire PEBC training team for the spring exam.

**Take home message:** Standardization is enhanced by explicit strategies and tools.

## 6 E Oral Presentations Undergraduate Assessment Across the World

### 6 E 1

#### **Insights from the Future of Medical Education in Canada Project: Challenges and opportunities for the assessment processes of Licensing Bodies**

N Busing, J Rosenfield, J Rourke (The Association of Faculties of Medicine of Canada, 265 Carling Avenue, Suite 800, Ottawa K1S 2E1, Canada)

**Background:** The Future of Medical Education in Canada (FMEC) project was spearheaded by the Association of Faculties of Medicine of Canada (AFMC) and conducted a comprehensive review of how the education programs leading to the MD degree in Canada can best respond to society's evolving needs.

**Summary of work:** The process of data gathering and analysis included a comprehensive environmental scan, an extensive literature review, and national key stakeholder interviews. Other key activities that fed into the research included national meetings with a panel of experts, a young leaders' forum, a data needs and access group, and international consultations with medical education innovators.

**Summary of results:** Ten recommendations emerged: Address Individual and Community Needs; Enhance Admissions Processes; Build on the Scientific Basis of Medicine; Promote Prevention and Public Health; Address the Hidden Curriculum; Diversify Learning Contexts; Value Generalism; Advance Inter- and Intra-professional Practice; Adopt a Competency-Based Approach and Foster Medical Leadership.

**Conclusions:** Each of these recommendations has significant implications for evaluation, and dialogue with the national licensing bodies regarding changes in assessment needed has already commenced.

**Take home messages:** The FMEC Collective Vision is a prescription for transformative change in MD education programs and assessment of graduates.

### 6 E 2

#### **Distributed curriculum does not impact student performance on NBME**

D Blouin, G Dagnone (Queen's University, 76 Stuart St, Kingston, ON K7L 2V7, Canada)

**Background:** Over the last 4 years, Queen's University has been increasingly distributing its clinical undergraduate education in the core disciplines (medicine, surgery, psychiatry, pediatrics) to community centers. Faculty members at the mother-institution and students expressed concerns that the distribution of the clinical experience would negatively impact performance on the NBME. We sought to compare for each discipline the end-of-clinical-rotation NBME performance of students trained in the community vs. at the academic institution.

**Summary of work:** NBME performances were compared using the Mann-Whitney test. When more than one community offered a clinical experience for the same discipline, all groups were compared using the median method.

**Summary of results:** From 2007 to 2009, a total of 176 to 187 students took individual components of the test. 21(12%) of the 176 students who took the Medicine test completed their Medicine rotation in the community; the numbers are 56/178(31%) for Surgery, 81/186(44%) for Psychiatry, and 35/187(19%) for Pediatrics. None of the differences between the groups of community-trained and institution-trained students was significant.

**Conclusions:** Students clinically trained in communities perform as well on the NBME as those trained at the mother-institution.

**Take home message:** A distributed curriculum does not negatively impact student performance on the NBME.

### 6 E 3

#### **Evaluation of a student-led USMLE Step 1 review course**

A Alcamo, A Davids, D Way, J Lynn, D Vandre (The Ohio State University College of Medicine, 243 Meiling Hall, 370 W. 9th Ave., Columbus, Ohio 43210, United States)

**Background:** Medical students use various strategies to prepare for the Step 1 Examination including: commercial products, and peer advice. While studies have shown that commercial coaching courses do little to improve Step 1 performance, little is known about the impact of a peer-designed and administered preparation course.

**Summary of work:** A peer-led Step 1 preparation course was offered to sophomore medical students once per week from September-April. Students typically take Step 1 by June 30. The content of the course paralleled the medical school curriculum. Two months post exam, students were surveyed about their preparation strategies and whether they participated in the peer-led course. Comparisons of Step 1 Scores between course participants and non-participants were made using a One-way ANCOVA. Pre-existing differences between groups were controlled using Total MCAT Score.

**Summary of results:** The peer-led course participants performed significantly better on Step 1 than the non-participants, with statistical control. Survey data, including qualitative comments are being analyzed further to explain results.

**Conclusions and Take home message:** A preparation program designed by peers with Step 1 experience was beneficial in helping students prepare for their first Step 1 attempt. Students used and valued commercial prep products over materials from their medical school courses.

#### 6 E 4

##### **Do medical students taking USMLE Step 2CK later in the academic year do better or worse? It depends on how you look at it**

S Haist, D Swanson, D Bucak, A Sawhill, K Holtzman, M Cuddy, G Dillon (National Board of Medical Examiners, 3750 Market St., Philadelphia 19104-3102, United States)

**Background:** Most United States (US) medical students take USMLE Step 1 between mid-May and mid-July of their second year. Students vary when they take Step 2CK. Step 1 performance may influence when students take Step 2CK. Those with high Step 1 scores may delay taking Step 2CK; they may fear lower scores could adversely affect residency placement. Lower Step 1 scores may induce students to take Step 2CK earlier to enhance residency placement. This study investigated whether Step 2CK timing translates into differential performance.

**Summary of work:** First attempt Step 1 and Step 2CK scores were assembled for all students graduating in 2006-2008. Means and SDs by test administration month were calculated. Regression analyses were run predicting Step 2CK scores from Step 1 scores and month Step 2CK was administered.

**Summary of results:** Step 2CK scores based on Step 1 scores varied substantially by month administered for US medical students. Step 1 scores under predicted Step 2CK scores by up to 7 points early in the academic year and over predicted by up to 8 points late in the year.

**Conclusions:** The relationship between Step 1 and Step 2CK performance is mediated by when Step 2CK is taken by US students.

**Take home message:** Step 2CK timing affects US student scores.

#### 6 E 5

##### **Japanese medical license examination assesses broad but lower-order thinking**

M Tagawa (Center for Innovation in Medical and Dental Education, Graduate School of Medical and Dental Sciences, Kagoshima University, 8-35-1 Sakuragaoka, Kagoshima 890-8544, Japan)

**Background:** The national examination for medical practice (NEMP) at the end of undergraduate medical education is the only licensure system allowing graduates to work as Japanese medical practitioners.

**Summary of work:** The NEMP blueprint and 500 multiple choice questions used in 2009 were analyzed to clarify the content areas, cognitive level of assessment, and test format, and compared with USMLE step 2 CK (US2).

**Summary of results:** Sixty items (12%), not classified into US2 categories, covered knowledge of anatomy and medical sciences, physical examination and communication, public health maintenance and preventive medicine, nursing system, legal medicine, environmental hygiene, and common sense. Three scoring categories had 48 (48%), 2 (1%), and 199 (99.5%) items using cases, 13 (13%), 63 (31.5%), and 0 items with unfocused stems, and 42 (42%), 173 (86.5%), and 0 items assessing recall knowledge.

**Conclusions:** The NEMP assessed broad knowledge, which the Japanese public and social system require. Half of the items assess recall knowledge, contrasting with US2, which uses cases and assesses higher-order thinking. The NEMP construct might influence all Japanese undergraduate medical education.

**Take home message:** The NEMP is the highest-stake examination in Japanese medical education, and the current test policy and format need improvement.

## 6 E 6

### **The quality of centralized assessment system at King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia**

I Al Alwan, ME Magzoub (King Saud bin Abdulaziz University for Health Sciences, College of Medicine, PO Box 22490, MC 3130, Riyadh 11426, Saudi Arabia)

**Background:** The College of Medicine, KSAU\_HS uses a PBL graduate and web-based curriculum. All faculty are requested to contribute to high quality items production including MCQs, OSCE, etc. The College established an assessment unit for central control of all assessment activities. These activities include: 1) Faculty development; 2) Blue printing; 3) Item writing; 4) Item selection; 5) Exam conduction; 6) Psychometric analysis; 7) Items review; and 8) Items storage. The aim of this study is to solicit the quality of the assessment system.

**Summary of work:** Indicators for quality of items were rated prospectively through the last three years. These indicators include psychometric and number of item flaws. A qualitative focus group was conducted with faculty who are involved in assessment unit activities to ascertain their views on the effectiveness of this unit.

**Summary of results:** Psychometric results showed remarkable improvement in all psychometric indicators through the last three years. Faculty agreed that the unit significantly contributed to the validity, accuracy and organization of the assessment, teamwork building and sharing of experiences among faculty and increased their skills in writing high quality items.

**Conclusion and Take home messages:** Central control of assessment through establishing strong assessment unit is expected to help in significantly improving the quality of assessment.

## 6 E 7

### **National Board Examination for medical doctor downgraded the accreditation status of medical school in Indonesia**

I Setiawan, SP Dewi, D Agustian, TH Achmad (Written Examination Division, Joint Committee for National Competence Examination of Medical Doctor, Jl. Raya Bandung-Sumedang KM 21 Jatinangor, Sumedang 45363, Indonesia)

**Background:** National competence examination for medical doctor in Indonesia has been organized for two consecutive years complying the Indonesian Act about Medical Practice. Involvement of the medical institution in this process reflected the importance of this high-stake examination for school mapping and evaluation.

**Summary of work:** This study has been conducted to gauge the concordance between examination results and accreditation status of the medical schools. Accreditation status was obtained from the data available as free access in the accreditation body website. The examination results were analyzed and categorized into three subgroups following those of accreditation status.

**Summary of results:** The results showed that in general the percentage of the schools with category very good and good (47% and 38%, respectively) according to accreditation status shrunk into good and fair (38% and 26% respectively). However, the fair medical schools showed more positive trend towards improvement compared to the good and very good group. Further analysis revealed phenomenon of regionalization and possible input quality as the reason of worse status in term of examination results in the very good and good accredited medical schools.

**Conclusion and Take home message:** The examination result categorization downgraded the accreditation status. Proper action to improve the accreditation and examination process is needed to enhance concordance effect of both evaluation systems in the future.

## 6 E 8

**Comparison of blueprint and item-bank of National Examination of Medical Competency in Indonesia**  
S Dewi, I Setiawan, D Agustian, TH Achmad, M Ghozali, S Wonodirekso, Yulherina, R Wikenigrum (Joint Committee for National Competence Examination of Medical Doctor, Jl. Samratulangi No. 29, Jakarta 10340, Indonesia)

**Background:** National Examination of Medical Competency has been conducted for the past two years. Representation of institution, medical doctor association, ministry of health and association of family doctor designed the blueprint based on standard of competency. This then distributed to all medical institutions for item development using multiple-choice questions. These items were kept in item-bank that selected randomly for question book. Several criteria never achieved the expected number. This study evaluated the blueprint and item-bank that represented medical curriculum. There were seven criteria in blueprint; standard of competencies, organ-based, disease process, recall-reasoning, thinking process, health service, and type of patient with balance numbers. This blueprint was compared with the item-bank.

**Summary of results:** The bank has more items in patient management while the blueprint said the application of medical science. There were more items on infection disease, diagnosis, cognitive and individual patient than in blueprint. Only two criteria; recall-reasoning and organ-based matched with the blueprint. This result visualized the medical curriculum. This result showed medical curriculum focused on knowledge and management of patient as individually.

**Conclusion and Take home message:** There should be improvement on medical curriculum and new strategy to accommodate items based on blueprint.

## 6 F Oral Presentations Standard Setting

### 6 F 1

**Accuracy of and confidence in OSCE pass-fail decisions: the effect of number of station and anecdote**  
M Tweed, WM Hay, T Wilkinson, M Thompson-Fawcett (University of Otago Wellington, School of Medicine & Health Sciences, PO Box 7343, Wellington 6242, New Zealand)

**Background:** Decisions on consultations skills should be made on aggregated information. How do assessors act on such data?

**Summary of work:** Staff were shown authentic anonymised medical undergraduates' scores for an increasing numbers of OSCE stations and interviewed regarding pass-fail decisions and degree of confidence. After the tenth station, they were given anecdotal discordant information.

**Summary of results:** Thirty-five staff did this for a mean of 5.9 candidates. Accuracy was defined from the actual decision of the Board of Examiners and also from the participants' consensus. For a student whose scores were above pass threshold for all stations the mean level of confidence in a pass increased, across the 10 stations, from 80% to 90%. For the students that failed the most stations the level of confidence in fail varied between 70% and 80%. Staff overconfidence was greatest for performance close to pass-fail threshold. Anecdotal information changed 12% of decisions.

**Conclusions:** Difficult decisions are associated with overconfidence. Assessors are more comfortable and confident passing rather than failing students. Assessors will alter decisions based on less reliable but persuasive information.

**Take home messages:** Assessors will err towards a pass. For some staff anecdotal information can be more influential than aggregated data.

### 6 F 2

**Comparison of borderline and borderline regression methods in setting standard for an OSCE with small number of candidates**

S Elango, KY Loh, RC Jutti, M Chandratilake, N Lee (International Medical University, Jalan Rasah, 70300 Seremban, Malaysia)

**Background:** Borderline and borderline regression methods have been used often for setting standards for OSCE.

**Summary of work:** In this study, we compared the utility of the two methods in determining the pass mark of small group of candidates. The pass mark of 83 medical undergraduates in a sixteen-station OSCE was determined by using borderline and borderline regression methods.

**Summary of results:** The borderline regression method proposed a slightly higher pass-mark compared to borderline method, which, however, was not statistically significant ( $p > 0.05$ ). The stability of the two methods determined by the Shapiro Wilks' statistics showed similar patterns. Both methods performed similarly across items with an acceptable range of difficulty and discrimination indices.

**Conclusions:** Both methods can be applied reliably in OSCEs with candidates less than 100. Borderline regression method takes into consideration all the categories (fail, borderline, pass and distinction) in setting pass marks. Borderline method takes lesser time than borderline regression method as the former requires less statistical analyses. However, when the number of candidates is < 100, the pass-mark proposed by borderline method may not be accurate.

**Take home message:** When both statistical and practical issues are considered, borderline regression method seems to be better method of setting standards for OSCEs with small number of candidates.

### 6 F 3

#### **Using resistant-lines as a method of setting OSCE pass-scores**

D Harley, M Sagle, M Dennett (University of Alberta, 2-126 HRIF East, Edmonton T6G 2E1, Canada)

**Background:** The OSCE is a commonly used performance based assessment tool that provides an objective measure of clinical competency. When OSCEs are used as part of an evaluation process, determining valid pass-scores become germane. Several methods of standard setting have been applied to medical school OSCEs. Although the Borderline Regression method seems to be emerging as the method of choice, results have been inconclusive. This method involves linear regression and requires several key assumptions to be met. If the assumptions are not met, the inferences drawn are suspect. Fitting a resistant-line is a non-parametric method of curve fitting that can be used to set pass-scores.

**Summary of work:** In this study the pass-scores based on resistant-lines are compared to those set by the borderline regression method. An eight-station OSCE was administered to the 134 graduating medical students at the University of Alberta. Pass-scores were determined for each station.

**Summary of results:** Different approaches to standard setting result in differing pass-scores. When the regression assumptions are satisfied, pass-scores are similar. When the data have outliers or long tails pass-scores are less similar suggesting that those determined by the resistant-line method may be more reliable.

**Conclusions and Take home message:** Further study is required to determine the best method of setting pass-scores for OSCEs.

### 6 F 4

#### **Standard setting methods for an Objective Structured Clinical Examination**

X Triviño (Pontificia Universidad Católica de Chile, Escuela de Medicina, Centro de Educación Médica, Noruega 6595 Dpto 1804 Las Condes, Santiago 000, Chile)

**Background:** Standard-setting methods and pass/fail decision identifies passing students, those who demonstrate a specified level of achievement. This is crucial for clinical performance tests. The purpose of this study was to compare three different standard-setting methods for an undergraduate Internal Medicine OSCE, Angoff, Contrasting Groups and Holistic.

**Summary of work:** One hundred seven students were assessed by a 10-station OSCE, with standardized patients, 24 faculty raters and an expert panel. Traditional Angoff and Contrasting Groups methods were modified to determine the cut scores. Several evaluative characteristics were examined.

**Summar of results:** Based on Angoff, the cut score obtained was 60.5% with passing rate of 90.7%. Based on Contrasting Groups, the cut score obtained was 57.3% with passing rate of 95.3%. Based on Holistic, with cut score of 60%, the passing rate was 91.6%.

**Conclusions:** All of them are acceptable and reasonable; however the value is not sufficient. Quality indices and sources of validity support to select Modified Angoff method.

**Take Home Messages:** An important decision to be made in developing the assessment procedure is the method used to specify the passing score. The responsibility to assure the competency level of medical students must guide a suitable standard setting methodology to certify a safe and effective medical practice.

## 6 F 5

### **Assessing the precision of the judgements made by Standard Setting Panels**

M Stevenson, A Gilliland, M Boohan (Queen's University Belfast, Centre for Medical Education, 73 University Road, Belfast BT7 1NN, United Kingdom)

**Background:** The Modified Ebel method is used to standard set 100 item MCQ and EMQ assessments taken by first and second year medical students at QUB.

**Summary of work:** Statistical analysed was undertaken to assess the accuracy of the judgements made by standard setting panels. Item by item results were compiled for Year 2 Semester 2, 2008 and Year 2 Semester 1, 2009 assessments. Summary statistics by item including proportion of candidates selecting the correct answer, point biserial correlation between the specific question, overall performance and upper minus lower tertile discrimination were computed.

**Summary of results:** A general linear model with no trend restriction and proportion of students gaining the correct answer as dependent variable was employed. Results showed that examiners could discriminate between items of easy and medium difficulty, but not between medium and hard items. Extent discrimination on the perceived importance of items was poor, with a near though not statistically significant difference between acceptable and important and no discrimination between important and essential. Difficulty, importance and a dummy variable allowing for differences between exams accounted for only 10% of the total variation in the dependent variable.

**Conclusions:** For these assessments standard setters had difficulty accurately predicting the performance of candidates.

**Take home messages:** Standard setters may require additional training.

## 6 F 6

### **Conditional pass facilitates action on professionalism and aligns assessment to learning**

T J Wilkinson, M J Tweed, J McKenzie, A Ali, J Rudland, A Egan (University of Otago, C/- Princess Margaret Hospital, P O Box 800, Christchurch 8014, New Zealand)

**Background:** Much work has been undertaken on assessment tools, but relatively less on systems to support those assessments. We describe a system that helps act on "subthreshold" concerns where individual assessments provide insufficient evidence to make decisions. Some schools use "borderline" in such cases.

**Summary of work:** Over the last 4 years, we have moved beyond use of “borderline” to “conditional pass”. Assessors state the evidence that would be needed to help make a progress decision. This is supported by standards based assessment and student progress meetings.

**Summary of results:** For 74% of students no issues were identified, for 14% just one and for 12% more than one. The odds ratio of failing on the basis of professionalism was 17.2, compared with 3.2 for knowledge. Under the old system, nearly all failures were related to knowledge.

**Conclusions:** The conditions arising automatically inform both staff and students about the subsequent learning that is needed. It has allowed us to act defensively on problems with professionalism.

**Take home messages:** This assessment system: 1) aligns assessment with learning; 2) keeps a paper trail; 3) facilitates action on subthreshold concerns; 4) has highlighted deficits in professionalism that were previously not acted on.

## 6 F 7

### **Comparison between absolute and relative standard setting methods - is there a happy medium?**

JWM Chow, G Levin, D Winterbourne (St George's, University of London, Cranmer Terrace, London SW17 0RE, United Kingdom)

**Background:** Criterion-referenced standard setting methods are desirable, especially in high-stake assessments designed to test competency in professionals. These are transparent and take test difficulty into account but are time-consuming. To make assessment more efficient, we sought a transparent method that takes test difficulty into consideration and is cost-effective.

**Summary of work:** We modelled passmarks and pass rates of over 40 written assessments sat by 4 cohorts of students using a norm-referenced method, with the 95th percentile as the internal determinant of test difficulty (Cohen's method). We compared the passmarks and pass rates derived by Cohen's method with the actual passmarks and pass rates set using the Ebel or Angoff criterion-referenced methods.

**Summary of results:** Passmarks set by Cohen's method were such that the pass rates were not dissimilar to the actual pass rates.

**Conclusions:** Using a norm-reference method, with the 95th percentile as the internal determinant of test difficulty, we derived passmarks and pass rates similar to that deduced by criterion-referenced standard setting methods.

**Take home message:** A relative method of standard setting that takes test difficulty into account can achieve results similar to those achieved by criterion-referenced methods with significant resource savings.

## 6 F 8

### **Do standard setters predict accurately across all domains of knowledge?**

A Sturrock, A Wilson, H Potts (Academic Centre for Medical Education, 4th floor Holborn Union Building, Archway Campus, Highgate Hill, London N19 5LW, United Kingdom)

**Background:** UCL medical school standard sets knowledge tests using the Angoff method in which standard setters predict the percentage of borderline students that they expect to answer the question correctly. We evaluated how well our standard setters predicted the performance of the borderline group across 8 domains of knowledge.

**Summary of work:** We categorised each item by knowledge domain e.g. diagnosis, management. From our cohort (n=380) we defined the borderline group as students whose overall knowledge test mark in finals was the standard set mark $\pm$ 5% (n=33). We compared the actual percentage scored by the borderline group to the standard set mark for each knowledge domain.

**Summary of results:** Within the 8 domains, the borderline group of students performed significantly better ( $p < 0.001$ ) than the standard setter's prediction in two categories (diagnosis and epidemiology), constituting 35% of the total questions. There were no differences in any of the other domains.

**Conclusions:** Our analysis shows that our standard setters are able to predict the performance of the borderline group in most domains of knowledge however significantly underestimate their performance in diagnosis related questions.

**Take home messages:** By auditing standard setting, we can now provide feedback and guidance to current and future standard setters.

## 6 G Oral Presentations The Trainee in Difficulty

### 6 G 1

#### **Three year outcome of trainees in difficulty in a UK Foundation School**

DA Black, M Terry, J Welch (Kent, Surrey and Sussex Postgraduate Deanery for Medical and Dental Education, 7 Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** The South Thames Foundation School manages the first two years of training after undergraduate medical education in the South East of England.

**Summary of work:** During the 2008/9 academic session, the School managed 1577 trainees across 19 main clinical sites. There is a well established formal process for managing trainees in difficulty with the most complex cases systematically discussed and managed by a single multi-disciplinary committee. We report 4550 trainee-year outcomes.

**Summary of results:** Over the 3 years the activity of the committee and the outcome for trainees was stable; between 4.3% and 5.4% of trainees identified with significant difficulties. Over the 3 years a total of 16 doctors have withdrawn from Foundation training. 1% of year one doctors and less than 1% of year two doctors need to repeat the whole year. Mental and physical health problems are common. Conduct issues, although small in number, are being reported more often. Graduates from non-UK Medical Schools entering the programme are twice as likely to be referred as a trainee in difficulty.

**Conclusions and Take home message:** Serious training problems are rare but often complex requiring a multi-disciplinary approach including occupational health. The data on overseas doctors need to be better understood so that appropriate assessment and support can be provided

## 6 G 2

### **Workplace based assessments (WPBA) and Foundation trainees in difficulty**

S Bhat, C Mitchell, A Herbert, P Baker (North Western Deanery, Barlow House, Minshull Street, Manchester M1 3DZ, United Kingdom)

**Background:** WPBA and feedback are central pillars of foundation training. The reliability of multiple WPBA methods (mini-PAT, CEX, DOPS, CbD) is highly relevant as they are used to provide evidence of competence, in order to progress to higher training.

**Summary of work:** The study evaluates the use of WPBA scores to distinguish doctors with training difficulties. FT in the North Western Deanery uses an e-Portfolio containing all completed WPBAs. All scores submitted by trainees on the four types of assessment from August 2005 - April 2009 were extracted and anonymised. Records of trainees felt to be in difficulty due to health, conduct or performance problems were tagged and identifiers removed before logistic regression to identify correlations between scores and 'in difficulty' status.

**Summary of results:** Our study shows that scores in WBAs are not a useful or reliable way of detecting trainees in difficulty.

**Conclusions:** There is some evidence of an association between lower mean CBD and Mini-CEX scores with performance difficulties; however this correlation is too weak to suggest that these scores could be used as a diagnostic tool for this type of problem.

**Take home messages:** WBAs are a formative process. They should not be relied upon as certifying the elusive concept of competence or to predict lack of competence.

## 6 G 3

### **The introduction of a managed approach to 'trainees in difficulty' in hospital based specialist training programmes in the Postgraduate Deanery for Kent, Surrey and Sussex (KSS)**

K Kelleher, on behalf of KSS Deanery (Postgraduate Deanery for Kent, Surrey and Sussex (KSS), 7 Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** It is a recognised fact that small, but significant, numbers of trainees can encounter difficulties in terms of curriculum coverage during their programme.

**Summary of work:** We describe the evolution of a managed process for trainees in difficulty requiring remediation and assistance in specialist training programmes. This work built on the previous two years experience of a similar process in Foundation programmes, beginning with the first phase of Modernising Medical Careers (MMC) in 2005.

**Summary of results:** We summarise the numbers and the themes which define the ‘difficulty’ of the specialist trainees managed by a tripartite trainee in difficulty process. Highlighted themes are the lack of engagement in formal programme delivery especially Work Placed Based Assessments (WPBAs), and locating the time for both the trainer and trainee. The tripartite process begins at the Local Education Provider (LEP) hospital level, and moves through the School Committee structure to the central Deanery ‘Trainees in Difficulty Committee’. We report on the remediation achieved against themes relating to causation of trainee in difficulty, and the complexity of communication relating to individual cases in this tripartite method.

**Conclusions:** We describe the introduction of a managed trainee in difficulty approach to Higher Specialist trainees.

**Take home messages:** A systematic managed approach to trainees in difficulty enables a satisfactory resolution in a resource intensive process.

#### **6 G 4**

##### **Workplace based assessments (WPBA) – patterns of use by doctors with training difficulties**

C Mitchell, S Bhat, A Herbert, P Baker (North Western Deanery, 4th Floor, Barlow House, Minshull Street, Manchester M1 3DZ, United Kingdom)

**Background:** The manner in which WPBAs (mini-PAT, CEX, DOPS, CbD) are used by trainees in difficulty could yield insight into their training needs.

**Summary of work:** Multiple quantitative variables entered by trainees on the four types of assessments from August 2005 - April 2009 were extracted, anonymised, and summary measures calculated. Free-text variables were manually categorised. Records of trainees found to be in difficulty due to health, conduct or performance problems were tagged and anonymised before statistical analysis.

**Summary of results:** Relevant differences exist between doctors ‘in difficulty’ and those not for several variables including difficulty level, clinical setting, and assessor level. For example, they were more likely to rate the difficulty of an assessed procedure as high (median percentage of assessments 42.4% vs. 26.9%). However, when such variables were included in a logistic regression model, the corresponding odds ratios indicated weak associations.

**Conclusion and Take home message:** There are notable associations between ‘in difficulty’ status and patterns of WPBA use. Low sensitivity and specificity of the optimal model deters practical prospective testing of these associations as an ‘Early Warning Score’, for early identification. Our work suggests that trainees in difficulty are using WPBAs differently, and sets the agenda for further research into why such differences occur.

## 6 G 5

### **Does the Transfer of information (ToI) process identify Foundation Doctors (FD) with additional training needs?**

M Parry, C Hutchings, M Terry, J Welch, D Black (South Thames Foundation School, Sherman Education Centre, 4th Floor, Southwark Wing, Guy's Hospital, Great Maze Pond, London SE1 9RT, United Kingdom)

**Background:** The Transfer of Information (ToI) process is a supportive system within the UK Foundation Programme<sup>1</sup> allowing FD's to highlight issues which may be relevant to their training and of significance to patient safety. We looked at how successful this process is at identifying FDs who may require additional support within the South Thames Foundation School (STFS).<sup>2</sup>

**Summary of work:** We reviewed all of the ToI forms submitted by F1 trainees prior to entry into Foundation Year 2. The Kent, Surrey and Sussex Deanery (KSS)<sup>3</sup> Trainee in Difficulty (TiD) database was then cross-checked to identify FDs already receiving support.

**Summary of results:** In total 820 ToI forms were completed. 683 contained standard demographic data, 137 contained additional information, of these 91 contained significant data. Cross-checking the TiD database revealed that 16.4% of the 91 were already on the TiD list and 83.6% were not. Virtually all existing TiDs were identified by the ToI process.

**Conclusions:** The ToI process helps to identify FDs who may have issues relevant to their training. This enables the STFS to provide additional support for these doctors and limits potential patient safety issues. Further work is needed to assess if self-reporting and self-reflection by the FDs may result in under reporting of important information.

**Take home message:** Self-reporting by FDs of ToI data is a useful process to help identify issues relevant to their training.

<sup>1</sup>[www.foundationprogramme.nhs.uk](http://www.foundationprogramme.nhs.uk)

<sup>2</sup>[www.stfs.org.uk](http://www.stfs.org.uk)

<sup>3</sup>[www.kssdeanery.org](http://www.kssdeanery.org)

## 6 G 6

### **Illness in Foundation trainees in difficulty: a need for early detection**

D Ahearn, S Bhat, B Dalton, P Baker (North Western Deanery, 4th Floor, Barlow House, Minshull Street, Manchester M1 3DZ, United Kingdom)

**Background:** The transition from student to professional comes at an eventful time of life for most doctors. With compulsory appraisals, work-based assessments and a culture of reflection, it is hoped that foundation trainees in difficulty are identified at an early stage.

**Summary of work:** Data was gathered on trainees recruited to the North Western Foundation School (UK), currently over 1100 trainees at any one time, in 2007-2009.

**Summary of results:** One hundred twenty-three trainees 123 were in difficulty (4.1% of the school). The mean age was 28.3 years, the male to female ratio was 1:2.4, and the trainign levels were: 38 - FY1 (66%) and 19 - FY2 (33%) . Fifty-seven were due to illness (46% of the doctors in difficulty, 1.9% of the whole school). Forty-three (75%) were predominantly due to mental illness, 14 (25%) physical illness. Multiple problems coincided in some cases.

**Conclusions:** Mental illness was the most likely cause of ill-health. These figures are way below known prevalence. Doctors may be ill but not impaired, still able to work and therefore go unnoticed. Severe illness is being masked.

**Take home messages:** The stress of training may be a precursor to mental ill-health and suicide,although a multi-factorial etiology is likely. Ill-health should not be neglected as a cause of underperformance. Early detection is vital.

## 6 G 7

### **Quantitative and qualitative aspects of burnout in medical Residents: a 4-year longitudinal study**

E Durante, S Carrió, A Eymann, F Augustovski, M Figari, O Blanco (Hospital Italiano de Buenos Aires, Juan D. Perón 4272, Buenos Aires 1199, Argentina)

**Background:** Several studies report high resident burnout (BO) rates in different settings, but quantitative and qualitative data in Latin-America is lacking.

**Summary of work:** We designed a follow- up study of medical residents in a large University Hospital in Argentina. All residents were invited to complete a locally validated version of the Maslach Burnout Inventory from 2006 to 2009. Response rates in every occasion were higher than 60% out of approximately 290 residents per year. The 2006- entering cohort was followed during the entire program (4 years). Global BO prevalences were 0.35 (2006), 0.42 (2007), 0.37 (2008) and 0.27 (2009), and 2006- entering cohort BO prevalences were 0.31 (2006), 0.38 (2007), 0.44 (2008) and 0.30 (2009), respectively.

**Summary of results:** We found no differences in BO prevalence by gender, age, surgical vs. non-surgical residencies or in the cohort. Several associations between BO and institutional characteristics and clinical supervision were found. The qualitative research revealed physical and emotional exhaustion and stress caused by excessive workload, mismatch between the “huge” responsibility they assume and rewards, interference with personal life, ambiguity of roles between professional and trainee and lack of autonomy.

**Conclusions and Take home message:** Our results are consistent with findings in the literature. We found no consistent trend of BO over time.

## 6 G 8

### **The alarming prevalence of burnout: A false alarm?**

Jerry A Colliver, Melinda J Conlee (Southern Illinois University School of Medicine, 913 N. Rutledge Street, Room # 2103, Mail Code: 9623, Springfield, Illinois 62794-9623, United States)

**Background:** Burnout in medical students, residents, and physicians has been researched extensively. Based on those studies, a recent editorial stated, “there is an alarming prevalence of burnout”; and another said, “approximately 1 of every 3 physicians is experiencing burnout at any given time”. But how is “burnout” defined in these studies, and what exactly does “prevalence of burnout” refer to?

**Summary of work:** We examined these issues to determine whether the alarm about burnout and its prevalence is warranted by this body of research. Specifically, we reviewed the instrument commonly used in this research – the Maslach Burnout Inventory (MBI) – and the findings of the burnout studies.

**Summary of results:** Surprisingly, we found the definition of burnout is norm-based, such that examinees with scores in upper third of normative sample are defined as burned out – which explains why studies have found prevalence around 33%. We also found that the anchors corresponding to the norm-based cutoffs seemed too low to define burnout, which would tend to inflate the estimates of prevalence. A summary/review of recent studies of burnout will be presented to illustrate all of these points, and evidence of validity of MBI will be considered.

**Conclusion and Take home message:** The alarm about burnout and its prevalence seems unfounded.

## 6 H Oral Presentations Feedback

### 6 H 1

#### **Medical students’ perceptions and experiences of feedback: a mixed methods inquiry**

J Tai, E Molloy, B Jolly (Centre for Medical and Health Sciences Education, Monash University, Level 1, Building 2, 270 Ferntree Gully Road, Notting Hill 3168, Australia)

**Background:** Previous studies on medical students’ perceptions of feedback in clinical settings demonstrated that students are often dissatisfied with feedback provision. Similar results have been found at our medical school, where medical students rated feedback related items less positively than other items on course evaluation questionnaires, and compared to students from other disciplines.

**Summary of work:** This research aimed to elucidate reasons for these perceptions of feedback in the clinical environment through an iterative, mixed-methods approach. A focus group was conducted to capture a broad overview of students’ feedback experiences. Subsequently, a questionnaire was developed and administered to medical students in their first clinical year, which collected information about sources, types and perceptions of feedback.

**Summary of results:** Students identified feedback to be of suboptimal quantity and quality. Insufficient time, formal feedback structures, follow-up and recording of feedback contributed to clinicians’ inability to deliver balanced, constructive feedback. Over 70% of students at both survey points reported receiving feedback 2-3 times a week or less.

**Conclusion and Take home message:** Medical students in this study perceive feedback in the clinical setting to be inadequate for their needs. We will discuss how feedback could be improved through student-targeted measures (upskilling students in feedback solicitation and engagement), rather than focussing solely on feedback givers.

## 6 H 2

### **Why students don't ask for feedback and why teachers don't give it**

M Magzoub, M Moamary, I Alwan ([Hanan Al Kadri](#) presenter) (College of Medicine, King Saud bin Abdulaziz University for Health Sciences, P.O.Box 22490, Riyadh 11426, Saudi Arabia)

**Background:** Feedback is a major component of learning and has a powerful educational interventions. It has a very significant impact on student achievements. Unfortunately feedback is not well utilized in assessing and teaching of clinical competence. Many factors are hindering the proper utilization of feedback. This study aims at identifying these barriers as perceived by both teachers and clinical students at the College of Medicine KSAU-HS.

**Summary of work:** A qualitative study which involve one focus group of students and one focus group of clinical teachers to find an answer to the basic question of why students don't ask for feedback and why teachers don't give it. A thematic method were used to analyze the data.

**Summary of results:** Many factors were identified by both students and teachers which include lack of training, fear of negative feedback, personalized feedback, when and how to ask for feedback, poor past experience and cultural factors.

**Conclusions:** Identifying the barriers for feedback will help both students and clinical teachers to utilize feedback properly to introduce the required impact on learning of clinical competence.

**Take home message:** Qualitative method is appropriate to identify barriers. Identifying barriers will help in setting the appropriate intervention to train both students and teachers in proper use of constructive feedback to enhance learning in the clinical years.

## 6 H 3

### **Influence of feedback order on students' self-efficacy, satisfaction, performance and transfer**

JMM van de Ridder, C Wieman, KM Stokking, ThJ ten Cate (Albert Schweitzer Hospital, Leerhuis, Albert Schweitzerplaats 25, 3318 AT Dordrecht, Netherlands)

**Background:** Feedback guidelines often contain statements on the order of feedback provision. It is common practice to begin with good points (Positive (P)) followed by points for improvement (Negative (N)). The research question for this study is: what is the effect of feedback order (PN versus NP) on medical students' satisfaction, self-efficacy, clinical skills performance and transfer?

**Summary of work:** Students (n=69) performed a clinical skill and received feedback in PN or NP order. After receiving feedback, students performed the clinical skill again, and repeated it after three weeks. Dependent variables were questionnaire-based satisfaction ( $\alpha=.83$ ), self-efficacy measured with visual analogue scales, video recordings of a repeated performance analyzed by two raters (Pearson's  $r=.94$ ), and the solving of diagnostic problems on standardized patients. Results were statistically analyzed using T-test and ANCOVA. Results are reported on the group with a complete data set (n=46).

**Summary of results:** No statistical difference was observed for self-efficacy, performance and transfer. A statistically significant difference was observed ( $p < 0.02$ ) for satisfaction. Students who received feedback in a PN sequence were more satisfied (partial  $\eta^2 = 0.13$ ).

**Take home message:** Feedback order only influenced students' satisfaction: a PN order of feedback tends to foster a positive attitude in students even if performance is unaffected.

#### 6 H 4

##### **How effective is teacher observation using a structured feedback form in providing a formative assessment of trainee physicians' teaching skills in formal teaching sessions?**

WB Wade, DW Parry, JR Booth, GJ Johnson (Royal College of Physicians, 11 St Andrews Place, London NW1 4LE, United Kingdom)

**Background:** The development of teaching skills is identified as mandatory in the postgraduate curricula for physicians in the UK. However, no existing trainee assessments are tailored towards assessing or providing feedback on teaching skills.

**Summary of work:** The Education Department at the Royal College of Physicians developed a Teaching Observation tool for an observer to give critical, constructive feedback to a trainee following a formal teaching session (hence not intended for 'bedside' teaching), and to provide objective evidence of a trainee's teaching skills. The tool was piloted amongst volunteer physicians in Higher Training.

**Summary of results:** One hundred forty-eight Teaching Observation encounters were undertaken, by 130 assessors and 75 trainees. The mean duration of each observation and feedback was 43 minutes and 12 minutes respectively. Trainee and observer feedback felt strongly that the exercise was useful and effective for future teaching session planning, and was quite straightforward to undertake. The considerable value of feedback in informing the development of teaching skills was highlighted by both trainees and assessors.

**Conclusion and Take home messages:** The Teaching Observation is an effective and popular tool for providing structured feedback on the teaching performance of a physician in training, and provides objective evidence of a trainee's competence in delivering formal teaching sessions as one component of an integrated assessment system.

#### 6 H 5

##### **Case of the Month: Using personalised feedback via the virtual learning environment (VLE): medical students' perceptions**

S Rowett, D Gill, W Coppola (School of Life and Medical Sciences, UCL, Gower Street, London WC1E 6XA, United Kingdom)

**Background:** Case of the Month is a multimedia interactive resource hosted on the VLE at UCL Medical School, based around a series of cases that highlight key professional skills, and integrate these with core clinical problems from the final year syllabus. The entire final year-group, almost 400 students, engaged with the learning tasks in each case. They submitted their work online for marking and personalised feedback. There is no actual relationship: the student-teacher dyad exists only via the VLE. This is a labour intensive task but the authors believe the educational quality of such VLE activities rests on the quality and timeliness of feedback (Maclellan, 2001, Wojtas, 1998).

**Summary of work:** Three focus groups with participating students and one focus group with virtual tutors were conducted after five cases had been completed by the students and five sets of feedback given by tutors.

**Summary of results:** The results of the study will be presented.

**Conclusions and Take home messages:** Other data regarding the use of the VLE in preparation for practice suggested it is viable and acceptable to students when they are geographically dispersed. This study explores the students' and tutors' perspectives and provides pointers to course designers regarding the importance and purposes of the individualized feedback and how students used that feedback to direct future learning.

## 6 H 6

### **Assessment feedback: Cracking the code**

J MacDonald, L Allery, L Pugsley (Cardiff University, School of Postgraduate Medical & Dental Education, Neuadd Meirionnydd, Heath Park, Cardiff CF14 4YS, United Kingdom)

**Background:** Feedback on assessments is an extremely important aspect of learning and teaching but is often an area where assessors receive little or no training. Although engagement with peer review in recent years has increased, it usually involves peer observation of teaching sessions rather than other components such as feedback on assessment.

**Summary of work:** Within the Postgraduate Deanery in Wales UK, we focussed on this important aspect of assessment and developed peer review sessions in order to code and analyse feedback to students. All written feedback was considered and sampled for detailed coding and analysis using Brown and Glover's coding system.

**Summary of results:** This analysis highlighted difference between assessors in terms of the type of comments contained within feedback and highlighted the need for clarity of the purpose of feedback. Following the analysis, each assessor had an overview of their feedback patterns and could identify where these differed from other assessors.

**Conclusions:** Analysis and pattern identification facilitate decisions regarding development requirements in assessment feedback.

**Take home messages:** Coding and analysis of assessment feedback provides insight into individual patterns and can greatly improve the value of feedback given to learners.

## 6 H 7

### **Feedback: A perennial challenge**

D Delva, J Sargeant, T Matheson (Dalhousie University, Clinical Research Centre, 5849 University Avenue, Halifax B3H 4H7, Canada)

**Background:** The quality and effectiveness of feedback are questioned throughout medical education. We wished to assess the perceived effectiveness of a faculty workshop.

**Summary of work:** We administered matched resident and faculty questionnaires before and 3 months after the day-long faculty workshop. Questions addressed feedback practice and perceptions of effectiveness. Analyses compared pre-post scores, faculty/resident scores and content analysis of open responses.

**Summary of results:** Sixty faculty attended and highly rated the workshop. Faculty response rates were 70% (40) pre-workshop, 47% (27) post with nineteen matched responses. Resident responses (unmatched) were 45% (145/430) pre-workshop, 62% (267/430) post. Resident scores did not change significantly post workshop. Faculty scored themselves more highly than residents on all items. The top three items were ranked consistently pre and post workshop. Faculty perceived significant improvement on four items post-workshop. Residents commented on varied quality, late and vague feedback. Faculty concerns pre-workshop were: the challenges of giving negative feedback and completing the ITER; post-workshop: finding time to observe and provide feedback, and less concern giving negative feedback.

**Conclusions and Take home messages:** Faculty perceptions of some feedback skills were improved post-workshop but residents did not perceive any differences in feedback after 3 months. Gaps exist between the perceptions of residents and faculty on effective feedback.

## 6 H 8

**Engineering innovations for assessment of procedural skills: the instrumented surgical instrument**  
SJ Hamstra, NC Perkins, RB Gillespie, TJ Armstrong, AC Frischknecht, SK Kasten, RM Minter (University of Ottawa, Academy for Innovation in Medical Education, Suite 2211 - Roger Guindon Hall, 451 Smyth Road, Ottawa K1H 8M5, Ontario, Canada)

**Background:** Much learning for suturing occurs during unsupervised practice without feedback or during actual procedures in the pressure of the clinical environment. If available, objective comparisons to expert performance could provide formative feedback to enhance unsupervised practice.

**Summary of work:** We have developed objective skills assessments using recent innovations in engineering, including miniaturization of microprocessor-based position sensors and automated image analysis. In this study, we focus on suturing as a process by tracking needle driver motion during placement of a running suture with embedded microelectromechanical sensors, and examine the final product using automated image analysis.

**Summary of results:** Differences between surgeons and novices were found for: total rotation during push (Effect Size=1.0), bite size (ES=1.5), bite size-to-travel ratio (ES=1.7), and time per stitch (ES=1.8). Consistency of stitch orientation, lateral travel and stitch start angle showed no differences between groups.

**Conclusions:** Simple technical skills can be reliably parsed into a series of actions based on output from the micro motion sensors. Final product can be objectively assessed using automated image analysis.

**Take home messages:** Motion tracking of the surgical instrument and automated image analysis could be used to objectively assess performance of trainees, and provide formative feedback to extend individualized coaching.

## 6 I Oral Presentations Faculty Development

### 6 I 1

#### **Helping to develop the professional educator: Models of professionalism and reflection as part of the Professional Reflective Enrichment Tool (PRET)**

K Ball, M Rickenbach (NHS Education South Central, Southern House, Otterbourne, Winchester SO21 2RU, United Kingdom)

**Background:** Postgraduate medical education is pressurised and requires professional educators who invest time in improvement of local educational practice. This project set out to enhance the work of professional educators using reflection on practice based scenarios.

**Summary of work:** As part of her PhD thesis, Kerry Ball brought together definitions of professionalism and reflection and developed the Professional Reflective Enrichment Tool to enhance the professional role of educators. This was applied as a practical tool within the educational setting of one Postgraduate Deanery in England

**Summary of results:** The model for professionalism, model for reflection and practice based scenarios were developed from the literature, surveys of educators and an iterative process. The resultant Professional Reflective Enrichment Tool (PRET) was piloted, assessed for validity and reliability, with kappa score of 0.81, and applied to fifty three medical educators across one deanery with positive evaluation.

**Conclusions:** This tool, and the three stage model of reflection on practice based scenarios, has a practical application in the clinical setting to help develop the professionalism of educators

**Take home messages:** The PRET tool, which uses a reflective model, and practice based scenarios, can help develop educators in both medical education and other educational spheres

### 6 I 2

#### **The introduction of an interactive training for OSCE examiners: preliminary results**

R Daud-Gallotti, A I Mitre, B H C Tess, C Q Grassiotto, H B Carvalho, L Lopes, L Y S Yamakami, J L Sgroi, R S Poggetti, R P V Francisco, V Zamboni, V H K Koch, L Yu, I F C Tibério (University of São Paulo School of Medicine, Av Dr Arnaldo, 455, São Paulo 01246-902 - São Paulo, Brazil)

**Background:** The presence of significant variability among OSCE-examiners has called the attention of medical literature recently.

**Summary of work:** To determine the examiners' performance during a training session with two videotaped OSCE-stations. In November 2009, a pilot interactive training for OSCE-examiners was introduced. This training included two videotaped stations (Internal-Medicine(IM) and Preventive-Medicine(PM) scenarios), both with a faulty and a correct version. Initially, examiners attended the faulty versions and completed the checklists (IM-checklist:28 items and PM-checklist:7 items). The IM and PM stations faulty-versions included 20 and 7 flaws, respectively. The correct versions were presented and discussed. The examiners' performance and their satisfaction were determined.

**Summary of results:** The pilot training was applied to 40 examiners, 35 returned the completed checklist (84.5%). Regarding IM and PM faulty-versions, examiners identified respectively (mean±SD; minimum-maximum value) 20.11±3.98;11-26 flaws and 4.86±1.06;3-6 flaws. Examiners satisfaction regarding the training-process was 96%.

**Conclusions:** Although examiners presented a satisfactory performance in identifying the videotaped-station flaws, variability was detected and discussed. This training process was highly rated by examiners.

**Take home messages:** This interactive training enabled the identification and discussion of the strengths and weaknesses in the examiners' performance. Examiners' training is essential for the improvement of OSCE evaluation.

### 6 | 3

#### **Experiences from a one-day certification of MSF facilitators**

GV Eriksen, J Seeberg, B Malling, BB Nielsen (Aarhus University Hospital, Skejby, Section for Anthropology and Ethnography, Dept of Anthropology, Archaeology and Linguistics, University of Aarhus, 8200 Aarhus N, Denmark)

**Background:** Multi-source feedback (MSF) has been implemented worldwide in postgraduate medical education, often without educating the facilitators in the coaching skills so important for feedback facilitators. The aim of this study was to explore facilitators' confidence in giving feedback after a one-day certification.

**Summary of work:** Feedback facilitators participated in a one-day course on giving feedback on a MSF report. Included in the course was a MSF process for the facilitator and an offer to have their first feedback supervised by an experienced MSF facilitator. Structured and semi-structured interviews were conducted after 3-4 months. Results were analyzed using a narrative approach.

**Summary of results:** In total, 16 feedback facilitators were included in the study. The facilitators recognized and accepted the need for certification and judged personal MSF as an essential element of the education. Overall the feedback facilitators did not feel confident during their first feedback session. However, only three feedback facilitators requested supervision of their first feedback. They all valued the supervision highly.

**Conclusions and Take home messages:** A one day certification program including self-experienced MSF is not considered as appropriate by the facilitators. Further studies are needed to explore if supervision of the first feedback will contribute to feedback facilitators' confidence.

### 6 | 4

#### **Assessing faculty development initiatives designed to promote leadership in medical education**

Y Steinert, L Naismith, K Mann (McGill University, 1110 Pine Avenue West, Montréal H3A 1A3, QC, Canada)

**Background:** The Best Evidence Medical Education (BEME) collaboration seeks to develop evidence-based guidelines for practice and research. To further these goals, we conducted a systematic review of faculty development initiatives that promote leadership in medical education.

**Summary of work:** A comprehensive search yielded 530 abstracts; 44 were selected for further analysis. Selection criteria included: a focus on leadership, a target population of basic science or clinical faculty in all areas of medicine, and evaluation findings beyond satisfaction data.

**Summary of results:** Categories of interventions included: explicit leadership training; longitudinal programs with leadership as an expected outcome; and career development. Program content and instructional methods varied widely. Fifty-three percent of the studies used self-report questionnaires as the primary method of data collection; 16% used interviews; and 21% used multiple methods. Frequently reported outcomes, classified using Kirkpatrick's hierarchy, included modifications of knowledge or skill (63%) and self-reported behavioral changes (68%). Half of the studies included a definition of leadership.

**Conclusions:** The literature reports many leadership training interventions with positive outcomes. Future initiatives may benefit from an explicit framework of leadership competencies and more rigorous evaluation studies.

**Take home messages:** Leadership training initiatives can be enhanced by systematically assessing and identifying best practices in the literature.

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**A web-based tool to improve faculty assessment of trainees' clinical competency and quality of patient care**

SG Reddy, ES Holmboe (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia 19106, United States)

**Background:** Direct observation by faculty of trainees caring for patients, coupled with timely feedback, helps trainees improve their clinical skills and ensure patients receive safe, high-quality care in teaching programs. However, faculty fail to observe trainees consistently or with sufficient frequency. The American Board of Internal Medicine developed the web-based Clinical Supervision Practice Improvement Module (CS PIM), which incorporates a Mini-Clinical Evaluation Exercise (Mini-CEX) and an audit of the trainee's medical note tied to the observation.

**Summary of work:** We examined completed CS PIM and feedback survey data.

**Summary of results:** To date, 234 preceptors completed over 2,000 assessments for medical students, residents and fellows. Mini-CEX ratings ranged from 1-9, but 70% fell between a rating of 6-8. Ninety-three percent of faculty reported that the module facilitated their observation skills, 90% made changes in their evaluation strategies, 86% changed how they provide feedback to trainees and 40% changed their own clinical practice.

**Conclusions:** A unique web-based tool combining a Mini-CEX and focused audit led to meaningful changes in assessment behavior and clinical care by faculty.

**Take home messages:** The CS PIM helps faculty improve the quality of the assessment processes and assess the quality of care provided by their trainees.

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**Identification of difficulties and flaws in academic writing about assessment**

A Del Rio, A Centeno (Faculty of Biomedical Sciences, Austral University, Av Juan Peron 1500, Pilar B1625AHJ, Argentina)

**Background:** Academic writing is infrequently taught in medical schools in our context, and it is common that medical educators ask for specific training in this area.

**Summary of work:** The objective of this communication is to describe what medical educators are writing about, and to identify those aspects that were insufficiently or erroneously addressed with more frequency. We reviewed 172 abstracts related to evaluation and assessment presented at two argentinean conferences in Medical Education. We categorised the themes and analysed context, objectives, methods, results and conclusions, and the relation between them. We registered comments on validity, reliability, impact, and overall quality of the presentation.

**Summary of results:** The most common deficits were clarity of the presentation (38%), not meeting the objectives (12%), methods and objectives inappropriately related (10%), and conclusions unrelated to results (16%). Impact of the research presented, and comments on validity and reliability were consistently absent (over 90%).

**Conclusions:** Relating objectives, methods, results, and conclusions were the most common flaws in abstract writing. Redaction difficulties were common too.

**Take home message:** Academic writing needs to be improved. These results will help the design of future training programs for medical educators.

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**The College of Human Medicine Competence Committee: validation becomes value-added**

D Wagner, B Mavis, R Henry (College of Human Medicine, Michigan State University, A102 East Fee Hall, East Lansing, Michigan 48824, United States)

**Background:** The College of Human Medicine is developing a comprehensive assessment system, and the newly-summative Year 3 Care of Patients OSCE is its lynchpin. An expert group of educators, the Competence Committee, developed a standard-setting and validation process that yielded unexpectedly rich data and faculty-development rewards.

**Summary of work:** To validate standardized patient checklist decisions, the Competence Committee reviewed videotapes of failed students using our literature-based Performance-Problems Worksheet. They also made specific suggestions for remediation for each student case. This data was analyzed and presented to our clerkship governance committee.

**Summary of results:** 1) The SP checklist results were validated; 2) We created an evidence-base for curricular change; 3) We created an evidence-base for remediation planning; 4) Awareness of student performance problems improved; 5) Motivation to undertake clerkship change increased.

**Conclusions:** The Competence Committee process yielded a great deal more than validated checklists, informing curricular change and remediation planning. Participating faculty understood student, curricular, and systems problems better and were galvanized to explore needed clerkship changes.

**Take home messages:** The Competence Committee process, guided by our Performance Problems Worksheet, transformed a validation exercise into an evidence base for remediation planning and curricular renewal, and created faculty change agents.

## 6 J Workshop

### **Assessing the written communication skills of medical school graduates**

T Rebbecchi, J Boulet (Educational Commission for Foreign Medical Graduates/Clinical Skills Evaluation Collaboration, 3750 Market Street, 2nd Floor, Philadelphia 19104, United States)

**Background:** The ability of physicians to communicate with other healthcare workers, especially in writing, is a fundamental skill. In 1998, the Educational Commission for Foreign Medical Graduates (ECFMG) began administering a clinical skills assessment (CSA) as part of the certification requirements for graduates of international medical schools. Included within the CSA was a post encounter patient note (PN) exercise. The output from the PN exercise was scored holistically by physician raters.

**Intended outcomes:** Participants will have an understanding of how a holistic evaluation of written patient summaries can provide reliable and valid assessment scores. Participants will become familiar with the development of rating scales and associated scoring criteria.

**Structure:** Following a review of the content of a typical standardized patient case, and the general guidelines for holistic rating, participants will develop applicable holistic scoring criteria. These 'performance standards' will be based on the presenting patient complaint and what, ideally, should be documented. Several written notes will then be reviewed and rated based on the proposed rubric and scoring guidelines. These ratings will be tabulated and discussed.

**Intended audience:** Medical educators responsible for the assessment and evaluation of medical students and/or graduates.

**Level of workshop:** Intermediate.

## 6 K Workshop

### **Improving the quality of Direct Observation - new Insights**

ES Holmboe, JR Kogan (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia 19106, United States)

**Background:** Assessment of trainees' clinical skills via direct observation by faculty is vitally important for trainee development and promotion decisions; however, the quality of faculty assessment remains suboptimal. More effective approaches to faculty development in direct observation are urgently needed, and this past year a multifaceted study investigating the role of faculty's own competence, emotion and experiences has uncovered key factors that should be built into future faculty development. This workshop will utilize this new research to help workshop participants develop new approaches to faculty development in direct observation, and assessment of and feedback about clinical

skills.

**Intended outcomes:** 1. Recognize key factors among faculty that affect the quality of their direct observation; 2. Discuss and explore new models of faculty development based on recent research findings; 3. Improved participant skills in observation and evaluation of clinical skills.

**Structure:** Interactive workshop with use of videotapes, small group exercises, group discussion, and brief presentations, including lessons learned from the study and guidance on how to implement faculty development in direct observation at the home institution.

**Intended audience:** Educators involved in the observation and evaluation of clinical skills of undergraduate and graduate medical trainees.

**Level of workshop:** Moderate complexity.

## 6 L Workshop

### **e-Mentoring of learning achievement in medical training**

K Beggs, K Ho, P Nicoll, M Watson (NHS Education for Scotland, 11 Hill Square, Edinburgh EH8 9DR, United Kingdom)

**Background:** Advances in technology can support remote and rural placements and education in medicine. However, infrastructure required to make best use of new technologies is often underestimated. The challenge of maintaining equity of access to support and materials for trainees in geographically dispersed programmes are being addressed in the Highlands and Islands (Scotland) and British Columbia (Canada). This workshop will focus on three innovative e-mentoring initiatives:-

- The use of the ePortfolio to support 'distance' mentoring (by training programme directors and deanery staff);
- the RE4CH programme of distributed education - sustaining high standards of both professional practice and remote and rural service delivery;
- using audio-visual capture to illustrate and then evaluate practice by remote mentors/assessors.

**Intended outcomes:** At the end of the workshop participants will be able to:-

- Describe how innovative technologies can be applied by geographically dispersed trainees;
- Identify potential changes to practice that could facilitate e-mentoring;
- Recommend organisational improvements that could increase effectiveness of e-mentoring for remote trainees.

**Structure:** Presentations and facilitated discussion.

**Intended audience:** Anyone with an interest in mentoring, skills assessment, ePortfolios, remote and rural education; undergraduate, postgraduate and ongoing professional development

**Level of workshop:** This workshop is suitable for anyone involved in medical training; no prior experience required.

## 6 M Workshop

### **Maximizing faculty/teacher feedback in OSCEs**

E Kachur, A Errichetti, S Parish, M van de Ridder, C Schwartz, S Zabar (Medical Education Development, 201 East 21st Street, Suite 2E, New York, NY 10010, United States)

**Background:** The instructional value of OSCEs is recognized widely. Trainees learn from practicing skills and from getting performance feedback. Faculty observers can have a significant impact on learners if they create a safe learning environment, engage learners at the right level, focus and dose the performance information correctly, and use language that enhances understanding and promotes change. Especially under time pressure optimizing feedback can be challenging. This workshop will explore theoretical and practical issues related to faculty feedback. A companion workshop will focus on Standardized Patient feedback.

**Intended outcomes:** 1. Identify key characteristics of effective feedback and debriefing; 2. Express more confidence in own ability to provide feedback and debrief; 3. Discuss how to prepare faculty/teachers for feedback tasks.

**Structure:** 5 min Welcome/Orientation; 15 min Faculty Feedback and Debriefing Opportunities and Challenges (large group brainstorming); 10 min Theoretical Frameworks and Literature Review (mini-lecture); 10 min Feedback & Debriefing Rating Form (introduction of instrument); 40 min Post-Encounter/Task Feedback to Individual Learners (video review, small group role play exercise, giving feedback-on-feedback with rating form, large group discussion); 10 min Summary Exercise (large group sharing of individual take-home-points).

**Intended audience:** Teachers, administrators, researchers.

**Level of workshop:** Intermediate to advanced.

## 6 N Workshop

### **Using cultural competence to improve the assessment and supervision of international medical graduates**

J Miralles, H T Nguyen, J Wenzel (JM&A, Suite 102 E, First Floor 282-284 Collins St, Melbourne 3000, Australia)

**Background:** The supervision of international medical graduates IMG seeks to monitor and support the IMG throughout the introductory period of working within a new healthcare setting. The supervision period establishes a culture of continuous learning and professional development, fundamental to medical practice in the new healthcare system. Performance review and feedback are integral to supervision. Feedback should describe the strengths of the IMG, areas that need development, and strategies that the IMG might employ to improve performance. Inherent in the relationship is the cross-cultural interaction and the potential for cross-cultural misunderstanding when giving feedback.

**Intended outcomes:** After completing this workshop the participants will: 1. know their cultural preferences; 2. recognise behaviours indicating a cultural preferences and; 3. apply a range of strategies

to improve supervision and assessment.

**Structure:** The workshop will be interactive and use real-life case studies: • Introduction to an explanatory cultural framework to analyse IMG behaviour in the consultation and supervisory space; • Assessing cultural preferences using case scenarios (paper based/video) relating to IMG behaviour in the consultation and the supervisory space. These will be used to explore why these behaviours occur and how supervisors can address these issues; • Strategies in providing effective feedback  
Discussion of effective feedback amongst the workshop participants in light of the above cultural issues will allow the participants to gain insights into strategies for effective feedback in the cross cultural learning environment.

**Intended audience:** Educators and supervisors

## 6 O Workshop

### **Assessment of difficult competencies**

SA Santen, A Otsuki, L Boyd, K Kinlaw, A Albritton (Emory School of Medicine; Medical College of Georgia, Emory School of Medicine MS-1020-004-1AJ, 1648 Pierce Drive, Suite 453, Atlanta, GA 30322, United States)

**Background:** Residencies and medical schools are designing new curriculums and they include broader competencies, such as, life long learning, moral reasoning, professionalism, communication, and patient centeredness. Teaching such competencies is hard enough; but the problem becomes how do we assess these difficult competencies? What is the reliability and validity of these measurements?

**Intended outcomes:** Participants will share their novel ideas and struggles regarding the measurement of difficult competencies and will be able to take home new strategies for assessment. They will understand some of the research evidence supporting assessment of difficult competencies.

**Structure:** The format for this workshop will be interactive, drawing upon learning principles using active learning and small group discussions. The presenters and participants will pull upon experience and theory to provide practical strategies assessment of difficult competencies. 1. Introduction; 2. Facilitated discussion - identify what competencies the group is struggling to measure; 3. Didactic section-the research on assessment of the difficult competencies; 4. Group work divided by topic (moral reasoning, professionalism, life long learning, etc); 5. Didactic: reliability and validity; 6. Group work: how to improve reliability and validity; 7. Report back; 8. Action plan.

**Intended audience:** medical school and residency faculty.

**Level of workshop:** all levels.

## 6 P 1 Mini-Workshop

### How to make a rubric (Workshop in Spanish)

A C Wright (Pontificia Universidad Católica de Chile, Alameda 340, Santiago 8331010, Chile)

**Background:** Rubrics are very important to assess the competences of the students in different levels of the teaching-learning process. This tool make possible to give specific feedback to students in formative assessment and to and grade students according to their performance in summative assessment.

**Intended outcomes:** At the end of the workshop participants will be able to: Value the rubric as a valid assessing instrument; Make a rubric in groups; Present the rubric to the large group.

**Structure:** The workshop will be developed in Spanish and will be structured with three activities: a short presentation (15 minutes), a workshop were participants in groups will make a rubric (45 minutes), the presentation of rubrics to de large group (25 minutes) using transparencies or flipchart. Written material will be delivered to support group work and for subsequent implementation.

**Intended audience:** Medical educators from Spanish-speaking countries who participates in clinical teaching.

**Level of workshop:** Basic level.

## 6 P 2 Mini-Workshop

### Exam item-writing workshop

N Hammerbacher (National Commission on Certification of Physician Assistants, 12000 Findley Rd., Ste. 200, Duluth 30022, United States)

**Background:** Developing valid and reliable exams begins with the item-writing process. Developing items or questions for high-stakes examinations requires particular expertise and skill.

**Intended outcomes and structure:** With guidance from a senior exam editor from the U.S.'s National Commission on Certification of Physician Assistants, during this workshop, participants will receive instruction on item development. The workshop will conclude with a mock item review session during which participants will gain insight into the item review and editing process.

**Intended audience:** This workshop is intended for those involved in the development of exams and/or the recruitment or training of test writers.

**Level of workshop:** Intermediate.

## 6 Q 1 Mini-Workshop

### **Novel use of hybrid Standardized Patient (SP)/High Fidelity Simulation in teaching critical care pediatric core competencies**

DM Schocken, B Peckler, L Haubner (University of South Florida College of Medicine, Center for Advanced Clinical Learning, 12901 Bruce B Downs Blvd, MDC Box 54, Tampa, FL 33612, United States)

**Background:** Simulation allows the student learners to be placed in a situation where they are asked to make management decisions that are above their current skill level.

**Intended outcomes:** This session was designed to review the use of the confederate and experienced standardized patient (SP) combined with the high-fidelity simulators in the critical care pediatric setting. The use of the SPs provides the essential mode of communications between the patient and the confederate that allows the students to enter into the simulation and demonstrate their knowledge, skills and attitudes as they would in the clinical setting.

**Structure:** The opportunity to have course participants actively participate in this case review as well as demonstrate the use of these cases will give each course participant something to share as a tool for assessment of these competencies: Introduction – 5 min; Background – 10 min; Discussion of the hybrid case scenarios – 15 min; Demonstration of case scenarios – 10 min; Discussion of the Debrief – 10 min; Demonstration of the Debrief – 10 min; Discussion on evaluation of scenarios – 15 min; Development of future cases – 10 min; Wrap up and conclusion – 5 min.

**Intended audience:** Undergraduate Medical Educators and Graduate Medical Educators.

**Level of workshop:** All course participants.

## 6 Q 2 Mini-Workshop

### **Authoring Virtual Patients for assessing competency**

N Posej, JB McGee, D Fleiszer, M Triola, S Albright (McGill University, The Lady Meredith House, 1110 Pine Avenue West, Suite 18, Montreal H3A 1A3, Canada)

**Background:** Virtual Patients (VP) are interactive computer-based clinical simulations for education, training and assessment. They are recognized as a scalable and easily distributed technology that contextualizes assessment of clinical reasoning, fills gaps in clinical experience and enables deliberate practice in a comprehensive patient care scenario. New web-based software lets educators develop their own VPs that help students (a) develop analytic, evidence-based critical reasoning and problem-solving skills, (b) apply and synthesize knowledge, and (c) facilitate formative, self, and summative assessment of complex case management.

**Structure:** This workshop will use a template-driven 'hands-on' approach to introduce healthcare educators to virtual patient case authoring. Starting on paper and progressing to whiteboards and then on-line modalities, and using their own laptop computers, participants will create and ultimately publish a VP case. Participants will: 1. Develop a clinical scenario that assesses one or more clinical

competencies; 2. Integrate and publish a prototype VP using an on-line authoring application; 3. Review and assess their case with other workshop participants.

**Intended audience:** This workshop is intended for both clinical and non-clinical healthcare educators interested in creating virtual patient cases for all levels of training and specialities.

**Level of workshop:** Prior knowledge of VPs or authoring applications is not required.

## 6 R 1 Mini-Workshop

### **Refresher programs to return to clinical practice: How old docs learn new tricks?**

F Goulet, R Ladouceur, M Dupre, R Gagnon, S Martineau, P-O Gingras (College des Medecins du Quebec, 2170 Rene-Levesque west, Montreal H3H 2T8, Canada)

**Rationale/Background:** There are many reasons for physicians to cease their practice: to raise a family, illness, pursuit of an alternative career, retirement, etc. How can we help those who wish to resume their practice? The Collège des médecins du Québec (CMQ), the medical licensing authority in Quebec, has developed strategies designed for physicians returning after more than 4 years. Returning to clinical practice is possible. For older physicians (> 60 years) and those who interrupted their practice for more than 10 years, the venture proves more difficult.

**Intended outcomes:** Participants will be able to: Describe different approaches to help physicians planning their return to clinical practice; Discuss challenges and pitfalls for the physicians and their supervisors during the clinical educational program; Discuss the clinical evaluation of physicians returning to clinical practice; Be informed about data presented by the CMQ.

**Instructional method:** During the workshop: Participants will determine the challenges and pitfalls for the supervisor and the trainee. With scenarios presenting physicians involved in a process to return to practice, participants will propose educational programs and evaluation tools taking in account their specific needs and limits. Data collected between 1998 and 2009 will be presented on the number of programs, type, length and results of the retraining.

**Intended audience:** Physicians, health professionals and administrators working in medical or health professional regulatory authorities.

**Level of workshop:** Advanced workshop.

## 6 R 2 Mini-Workshop

### **Using structured assessment in return to work and induction programmes**

B Lewis (Dept Postgraduate Medicine and Dentistry NW Deanery, Barlow House, Minshull St, Manchester M1 3DZ, United Kingdom)

**Background:** Medical, cross border migration, return to work and remediation of performance issues are all key areas of development for health service providers. The UK has a standardised assessment system

for EU migrants and Return to work doctors. These are based on the systems and processes used for selection into GP Specialty training and the assessment processes leading to final qualifications for independent practice.

**Content:** The workshop will discuss the processes in place, application of these processes for doctors in need of remediation of performance and facilitate discussion of systems in other health services. In particular the application of these processes for doctors with performance difficulties and the delivery of structured remediation programmes will provide a rich theme for discussion and shared experience especially on the applicability of these tools in assessing experienced practitioners and the support needed by doctors undertaking remedial placements.

**Target audience:** Doctors and educators involved in re-licensing, performance assessment and remediation.

## **6 S Posters Competencies Required of a Doctor**

### **6 S 1**

#### **Assessment of medical research competency in residence**

S Saranrittichai (Khon Kaen Hospital, Sreechant Road, Muang distric, Khon Kaen Province 40000, Thailand)

**Background:** This study was a part of research curriculum development project set up for routine to research for medical residence. The aim was to assess medical research competency with residences in Khon Kaen hospital, Thailand.

**Summary of work:** A total of 47 residences were provides self administered questionnaires for data collecting and followed by in-depth interview for detailed clarification. Data were analyzed by using percentage and content analysis.

**Summary of results:** Most residences had never done research. Some used to be research assistance and did observation on research projects, but all realize that research is important. The competences needed for doing research were: finding out research problems faced in daily working, applying the implementation for solving problems, analyzing results, and writing for getting published. Problems of doing research during residence were: a burden of workload and time limitation. Medical residences ask for helping from mentors during doing research.

**Conclusion:** We need to enhance high level of research competency for residences by integrating research problems into clinical practice with the support from staff mentors.

**Take home messages:** Research curriculum need to be set up and organized during working in clinical settings for residences and staff mentors throughout the whole research process simultaneously.

## 6 S 2

### **Assessment of research projects in a medical curriculum**

H Tamim, M Zamakhshary, M Magzoub (King Abdul Aziz University for Health Sciences, Riyadh 11426, Saudi Arabia)

**Background:** Involvement of students in research is a challenging academic activity in all medical schools. Development of a good assessment tool for research projects is a continuous challenge to medical educators. The objective is to present our experience on developing a reliable and valid assessment tool for students' research projects.

**Summary of work:** We have developed an assessment tool for medical students pertaining to their research projects. The tool includes all contents of scientific research. Moreover, the tool assesses students' projects including oral presentation and written report. In addition we have investigated student satisfaction on this experience.

**Summary of results:** The content validity of our instrument was found to be comprehensive covering all aspects of research. In addition, inter-rater reliability was found to be at acceptable level. Students were satisfied about their performance and many projects ended in scientific publications and presentations in national and international conferences.

**Conclusion and take home message:** Reliable and valid assessment of student research projects is essential in enhancing learning of the students.

## 6 S 3

### **Developing education in medical handover – How to define, improve and disseminate best practice**

CF Macdougall<sup>1</sup>, RE Klaber<sup>2</sup> (<sup>1</sup>Warwick Medical School, The University of Warwick, Coventry CV4 7AL; <sup>2</sup>Imperial College Healthcare NHS Trust, London, United Kingdom)

**Background:** Changes to hospital practice in the UK and elsewhere have resulted in more doctors working fewer hours. This reduces clinical continuity and requires frequent handovers. Previously published handover work focuses on clinical risk management, but handover is also an essential educational opportunity.

**Summary of work:** We worked with 89 experienced teaching paediatricians (in 16 groups) attending the UK Royal College of Paediatrics and Child Health Paediatric Educators' Programme<sup>1</sup>. Each group considered six key areas of handover covering delivery, teaching and assessment. We collated outputs on flip charts along with contemporaneous observer notes. Data was reduced, displayed, verified and themes defined using a structured iterative approach with member checking and achievement of theoretical saturation.

**Summary of results and Conclusions:** Key themes were; enthusing those participants initially unconvinced of the educational role of handover; the importance of a departmental ethos of valuing education; clarity of purpose as reflected in practice and imbedding of appropriate and supportive feedback. We also collated and disseminate good practice exemplars.

**Take home messages:** Handover is key to modern practice. Although limited by time, it represents a major educational opportunity that can be maximised by appropriate intervention.

<sup>1</sup> Murdoch-Eaton et al, Ozzawa 2008. Melbourne (Australia)

## 6 S 4

### **Assessment of public health skills: the PREPARE model**

MBM Soethout (VU University medical center Amsterdam, Department of public and occupational health, Van der Boechorststraat 7, Amsterdam 1081BT, Netherlands)

**Background:** During the clerkships, students are confronted with different patients with their various different problems. They learn to solve these problems by means of problem-solving skills. However, these skills mainly focus on clinical problems, and less attention is paid to public health problems, in which prevention and advice are the most important aspects.

**Summary of work:** An instrument was developed in which students are taught in a structured way to solve public health problems. This so called PREPARE-model integrates, step-wise the skills that are related to communication (presentation of the problem), analysing the determinants of the problem (relevance for public health), presenting the evidence of the effectiveness of interventions (evidence), choosing a certain preventive action and advising the different parties involved (prevention and advice), recognizing the need for registration (registration) and the applying feedback mechanisms after the action has taken place (evaluation).

**Summary of results:** Evaluation by students shows that the model gives a good structure for analyzing public health problems.

**Conclusion:** Public Health skills are improved by the introduction of a model to analyse public health problems on a structured way.

**Take home message:** The PREPARE-model is an instrument for assessment of public health skills.

## 6 S 5

### **An Objective Structured Assessment of Technical and Interpretative Echocardiography Skills (OSATIES)**

D Guldbrand Nielsen, O Gøtzsche, B Eika (Center for Medical Education, University of Aarhus, INCUBA Science Park Skejby, Brendstrupgaarsvej 102, Aarhus N DK-8200, Denmark)

**Background:** Transthoracic echocardiography (TTE) skills have traditionally been assessed by experience defined as number of procedures or by unstructured observation. However, literature shows that neither technical nor interpretative proficiency in TTE is related to these measures. The aim of this study is to develop an Objective Structured Assessment of Technical and Interpretative Echocardiography Skills (OSATIES).

**Summary of work:** Forty-five physicians (15 novices, 15 intermediates and 15 experts) were evaluated on technical and interpretation skills. Participants scanned a standardized patient and recorded pre-defined TTE images. Two experts then evaluated the images on a checklist. Participants also interpreted a common and clinically significant TTE case by completing a checklist on possible pathologies and making a description of TTE findings. Subsequently the experts rated the descriptions on a global rating scale.

**Summary of results:** The OSATIES was validated by face, content and construct validity. The test was also checked for reliability focusing on the ability to differentiate between groups of doctors.

**Conclusion:** The OSATIES has shown face and content validity. The validation process is ongoing to ensure construct validity and reliability.

**Take home message:** It is possible to develop a valid objective assessment tool to evaluate physicians' technical and interpretative proficiency in TTE.

## 6 S 6

### **Impact of a new lifestyle counselling educational program on medical students' knowledge and lifestyle**

MF Langlois, MP Marquis, MF Hivert, C Brown, F Langlois, AC Carpentier, M Xhignesse (Faculté de médecine et des sciences de la santé, Université de Sherbrooke, Division of Endocrinology, 3001, 12th Avenue North, Sherbrooke, Qc J1H 5N4, Canada)

**Background:** The Université de Sherbrooke recently instituted an educational program in the MD curriculum to train students to perform lifestyle counselling. The first two years include a general introductory session and 13 thematic small-group sessions as well as auto-monitoring of lifestyle and anthropometric measures. The purpose of this study is to assess the program's impact on medical students' knowledge and lifestyle.

**Summary of work:** Most students from the 2008 cohort receiving the new program (n=195/204) and a sample from the 2007 cohort (acting as controls; n=42/188) participated. A questionnaire assessing lifestyle was completed at the beginning of each academic year. Knowledge was assessed using written examinations.

**Summary of results:** After the first year, the 2008 cohort increased their fruit/vegetable consumption (from 5.3 to 6.5/day vs. 6.0 to 5.6/day for controls;  $P < 0.0001$ ) and had better knowledge (score 86.1% vs. 60.2% for controls;  $P < 0.0001$ ). Nonetheless, they decreased their physical activity level (from 30 to 20 min/day vs. 30 to 30 min/day for controls;  $P < 0.05$ ).

**Conclusions and take home message:** Students receiving the program showed improved nutrition and lifestyle counselling-related knowledge despite a decrease in physical activity level. The program may better prepare medical students to adopt healthy lifestyles and improve lifestyle counselling to future patients.

## 6 S 7

### **Does the way medical trainees justify medical knowledge matter for the concurrent validity of different tests of medical competence?**

A Roex, G Clarebout, J Degryse (K.U.Leuven, Kapucijnenvoer 33, Blok J, bus 7001, Leuven 3000, Belgium)

**Background:** Correlations between different tests of medical competence have recurrently been low to moderate. Individuals' beliefs about the nature and the justification of knowledge (epistemological beliefs, EB) are known to influence learning and the way we process information. The aim of this study was to investigate whether taking into account the way medical trainees justify medical knowledge can help us to interpret the correlations between their scores on 4 different tests in their final certification examination.

**Summary of work:** Medical trainees (n=117) participated to an oral examination, an OSCE, a written test, received a clerkship evaluation and filled in an EB questionnaire. Analyses (correlations, ANOVA,

Kruskal-Wallis) were performed on the whole group of trainees, and on categories of trainees based on their EB scores (dualistic scores (<P25), rather dualistic scores (P25-P50), rather sophisticated scores (P50-P75) and sophisticated scores (>P75).

**Summary of results:** Trainees with rather dualistic beliefs had moderate to strong significantly correlating scores (0.448 to 0.537) on the different tests. Trainees from the other groups had not. EB did not influence the scores on the tests.

**Conclusions:** Trainees with rather dualistic beliefs showed greater consistency to changing testing demands than trainees with (more) sophisticated beliefs. Taking individuals' EB into account might provide a more accurate view on the criterion validity of different assessment methods.

**Take home messages:** Taking individuals' EB into account might provide a more accurate view on the criterion validity of different assessment methods.

## 6 S 8

### **Development of an instrument to assess knowledge in exercise tolerance testing**

J Watts, J Furgerson (San Antonio Uniformed Services Health Education Consortium, 3851 Roger Brooke Dr., Fort Sam Houston 78234, United States)

**Background:** Information obtained from the graded exercise tolerance test provides diagnostic and prognostic information that are critical in managing patients' with known or suspected cardiovascular disease. Knowledge is one component of overall clinical competence.

**Summary of work:** The purpose of this study was to develop an assessment instrument to ascertain knowledge of graded exercise tolerance testing. We constructed a thirty question multiple choice exam testing the facts, concepts, and principles associated with the performance of stress testing.

**Summary of results:** Our cohort consisted of 39 medical students, internal medicine residents, cardiology fellows and staff physicians. The assessment instrument was able to discriminate between training level in a predictable fashion with a high degree of internal consistency ( $\alpha > 0.7$ ). Additionally, participants who performed < 50 exercise tests scored significantly lower than those participants who performed > 50 exercise tests ( $p < .001$ ).

**Conclusions:** We were able to demonstrate evidence for construct validity of a knowledge assessment instrument, and have provided initial objective evidence supporting ACC/AHA/ACP-ASIM recommendation that providers should complete at least 50 supervised exercise treadmill tests prior to independent test performance.

**Take home messages:** Determination of clinical competence requires multifaceted assessment. Instruments should be developed to assess the knowledge component of clinical competence in exercise stress testing

## 6 S 9

### **Education interventions improve medical students' attitudes toward screening patients for sexual assault**

MC Duerson, LA Cooper, JM Milone, MA Burg, RR Pauly (University of Florida, Associate Vice President Health Affairs, Equity and Diversity, PO Box 100014, 1600 SW Archer Road, Room H-101, Gainesville 32610-0014, United States)

**Background:** Research shows that despite the importance of identification and treatment of sexual assault victims, few physicians routinely screen. In addition to time limitations of the medical encounter and lack of formal training in sexual assault screening, attitudes toward screening could explain physicians' resistance to screen.

**Summary of work:** Our study surveyed University of Florida second-year medical students' attitudes on routine screening of both male and female patients for a history of sexual abuse using two scales, Rape Myth Acceptance (RMA) and Attitudes Toward Screening (ATS) prior to and following educational interventions. Educational intervention included a lecture and panel discussion by experts in the field of sexual abuse. Students interviewed standardized patients portraying male and female sexual assault victims.

**Summary of results:** For both RMA and ATS scales, lower scores indicate more positive attitudes. Dependent samples t-tests showed a statistically significant decrement in both mean RMA scores (post – pre = 4.01,  $t = -13.13$ ,  $p < .0001$ ,  $ES = 1.43$ ) and mean ATS scores (post – pre = -4.40,  $t = -9.29$ ,  $p < .0001$ ,  $ES = 1.04$ ) following the educational intervention.

**Conclusion and take home message:** These results show our described educational intervention improves medical students' attitudes toward screening for sexual assault history and reduces their acceptance of rape myths.

## 6 S 10

### **Experiences of a workplace-based Masters programme in delivery of non-clinical skills to registrars in geriatric medicine: a qualitative study**

L Wileman, A Pattison, J Fox, A Abbas, S Bhat, P Baker (North Western Deanery, 4th Floor, Barlow House, Minshull Street, Manchester M1 3DZ, United Kingdom)

**Background:** Consultants' responsibilities extend beyond clinical work. Previous studies have found new consultants feel well prepared for their clinical roles, but insufficiently trained in non-clinical skills.

**Summary of work:** Geriatric Medicine specialty trainees in the North Western deanery are enrolled on a Masters Programme that includes modules in management, teaching, ethics and law. Ten semi-structured interviews were performed with new consultants exploring their experiences of training in non-clinical skills.

**Summary of results:** PROVIDING STRUCTURE - The Masters programme raised awareness of non-clinical skills and was viewed positively as a framework upon which to build. MANAGEMENT - Management theory was highly regarded but its application in practice was probably insufficient. A mismatch exists between management experience as a trainee and the burden as a consultant. SELF-DIRECTION - Practical experience in non-clinical areas remains largely self-directed and ad hoc with no formal assessment outside of the Masters programme.

**Conclusion:** Management experience as a trainee remained under-represented and did not reflect the needs of new consultants. A Masters programme does, however provide a helpful structure for the development of non-clinical skills, but theory should be consolidated with practical experiences.

**Take home messages:** A Masters programme can provide a good framework for delivering non-clinical training in geriatric medicine.

## 6 S 11

**Comparison of critical thinking among first and last trimester Postgraduate (MSc) midwifery students**  
ST Mirmolaei, H Shabani, GH Babaei, Z Abdehagh (Nursing and Midwifery Faculty of Tehran University of Medical sciences, Nursing and Midwifery Faculty, East Nosrat (Mirkhani) st., Tohid sq., Tehran 1419733171, Iran)

**Background:** A midwife should be able to make vital decisions based on her knowledge and skills in emergency situations. She can reach correct decisions by using critical thinking that she has learned it.

**Summary of work:** In this cross-sectional, descriptive-comparative study we compared critical thinking of the first and last trimester post graduate (M Sc) midwifery students of 3 Medical Sciences Universities of Tehran. We applied California critical thinking skills test (form B) for 36 students in order to measure level of student's critical thinking. Data were analyzed by statistical tests (ANOVA, t test and Pearson correlation coefficient).

**Summary of results:** There was significant difference between total critical thinking scores of first and last trimester students in Tehran University of medical sciences ( $P=0.01$ ). No significant difference was found between total critical thinking scores of first and last trimester students in Shahid Beheshti and Iran universities of medical sciences. Merely, inference and deductive skills were higher in first trimester students in Iran University of medical sciences ( $P<0.05$ ).

**Conclusion:** Despite importance of critical thinking, enough attention is not being paid to it during the educational course in all of our universities.

**Take home message:** It is essential to utilize new strategies and active learning methods for teaching of critical thinking.

## 6 S 12

**Identification and measurement of research competences of professionals involved in healthcare quality and accreditation**

B Sotillos-González, V Reyes-Alcázar, A Torres-Olivera (Andalusian Agency for Healthcare Quality , c/ Augusto Peyré nº1 Edificio Olalla - 3ª planta, Seville 41020, Spain)

**Background:** There was little information about research skills in surveyors from the Andalusian Agency for Healthcare Quality, (Spain).

**Summary of work:** Objective: to analyse surveyors' research skills. Methodology: self-assessment survey ( $n=30$ ) about research skills, capability and activity. Main Variables: Research capability: research-related functions and proficiency in management of documental resources. Research activity: training,

attendance to congresses, participation in international studies, research roles, scientific productivity.  
Timeframe: November 2008-February 2009

**Summary of results:** High variability of research potential among surveyors. Research capabilities with higher scores: information searching (100%), writing up contents for a mother tongue congress (90.3%), data collection and analysis (80.6%). Research capabilities that need to be strengthened: scientific writing (48.4%), oral presentations in foreign languages (38.7%). Participants make more contributions to congresses held in their own country (90.3%) than abroad (41.9%).

**Conclusions:** Improvement areas in research skills were identified. The study helped participants to take consciousness about the importance of research in accreditation bodies. The study was a useful way for starting to design the research strategy in the Andalusian Agency for Healthcare Quality.

**Take home messages:** Making research about healthcare quality implies to identify and develop specific competences.

## **6 T Posters Curriculum Evaluation 1**

### **6 T 1**

#### **Medical students' perceptions of education in safeguarding children**

Y Ioannou, J Richardson, D Gill, K Woolf, C Fertleman (L Etheridge to present) (The Whittington Hospital NHS Trust, Magdala Avenue, London N19 5NF, United Kingdom)

**Background:** Child maltreatment is a significant health and social problem. There are increasing efforts to improve training in safeguarding children for health professionals. Newly qualified doctors need to be aware of safeguarding procedures, so improving education in this subject is a priority.

**Summary of work:** We conducted a qualitative study inviting medical students to participate in focus group discussions. We explored their views on safeguarding children and how best to teach the subject.

**Summary of results:** A great emphasis was placed on emotional aspects of the subject, the uncertainty of the student role and concerns about managing emotions that might be experienced. They discussed ways of improving learning about safeguarding children, notably the need for greater support and supervision from experienced professionals.

**Conclusions:** The findings have guided new strategies to improve the education in safeguarding children for medical students. These will serve to increase doctors' knowledge and awareness at earlier stages of training. Ongoing training at postgraduate level will better enable doctors to safeguard children.

**Take home messages:** Medical students place great emphasis on emotional aspects of learning about safeguarding children. Greater support and supervision from experienced professionals could aid their learning in this difficult subject.

## 6 T 2

### **Program evaluation using student self-assessment**

K Trinder, M D'Eon (University of Saskatchewan, College of Medicine, Room B103 Health Sciences Building 107 Wiggins Road, Saskatoon S7N 5E5, Canada)

**Background:** A tool to identify areas of strength and weakness with the undergraduate program was developed using grouped student self-assessments.

**Summary of work:** Sixty-four objectives worded in the form of questions were administered to students immediately prior to beginning clerkship (N=49) and upon completing clerkship (N=27). Students were asked to rate the extent to which they felt they achieved each objective: 1) currently and 2) on their first day of medical school.

**Summary of results:** Independent-samples t-tests were conducted to measure statistically significant changes. Results indicate that post-clerkship students rate their increase in abilities higher than pre-clerkship students on the general objective ( $t(47)=-3.93$ ,  $p=.000$ ) and the categories of Physician as Medical Expert ( $t(47)=-2.64$ ,  $p=.011$ ), Communicator ( $t(48)=-3.35$ ,  $p=.002$ ), Health Advocate ( $t(50)=-4.02$ ,  $p=.000$ ), Collaborator ( $t(50)=-2.71$ ,  $p=.009$ ), and Resource Manager ( $t(48)=-3.40$ ,  $p=.001$ ). No significant differences were found for the categories Learner/Scholar/Scientist and Person. All categories were found to be internally consistent (Cronbach's  $\alpha > .70$ ).

**Conclusions:** Post-clerkship students reported greater increases on many objectives, demonstrating known-groups validity for the instrument.

**Take home messages:** Grouped student self-assessments may be useful for evaluating undergraduate medical education programs.

## 6 T 3

### **Assessment of an evidence-based medicine course in medical students: a randomized controlled trial**

M Sánchez-Mendiola, L Kieffer-Escobar, S Marín-Beltrán (National Autonomous University of Mexico Faculty of Medicine, Facultad de Medicina UNAM, Secretaría de Educación Médica. 3er Piso. Edif. B., Ave. Universidad 3000. CU. Col. Copilco, Del. Coyoacán, Mexico City, D.F. 04510, Mexico)

**Background:** Evidence-Based Medicine (EBM) is increasingly recognized as a core competency of physicians, but there are few reports of EBM educational interventions in developing countries. The study is a controlled trial of an EBM course in medical students in a Mexican medical school.

**Summary of work:** The intervention was a one-semester EBM course in the 5th year of medical school. The study design was a randomized controlled trial for the 5th year class, and a quasi-experimental with static-groups comparison for the 4th and 6th year groups. Outcomes were compared in the 5th year half-group that finished the course with the 5th year half-group without the course, the 4th year students without the course and the 6th year group that took the course one year earlier. Assessment was done with two instruments: Taylor's questionnaire, and a summative 100 multiple-choice question test developed for the medical school's course.

**Summary of results:** 289 Medical students were assessed. There was an increase in critical appraisal skills confidence, attitude and knowledge scores after the intervention, which was maintained one year later. The effect size was large (Cohen's  $d > 0.8$ ) for all outcomes.

**Conclusions:** There was an increase in EBM attitudes, knowledge and self-reported skills after the EBM educational intervention, and this positive effect persisted one year after the course.

**Take home messages:** An educationally effective EBM course can be developed and implemented in a developing country medical school.

#### 6 T 4

##### **Longitudinal assessment: What's the value added?**

L Anderson, M Woods, E Mylona, L Perkowski (University of Minnesota Medical School, 420 Delaware Street S.E., MMC 293, Minneapolis 55455, United States)

**Background:** A longitudinal assessment system has the potential to add significant value to both teaching and learning in medical education. It is through the combined use of longitudinal assessment data, skilled faculty facilitation, and meaningful learning opportunities that an optimal environment for learning can be achieved. Longitudinal assessment shows great potential for analyzing the progress of both knowledge and clinical practice at the undergraduate and graduate levels.

By linking both the longitudinal assessment data and additional educational data over time, we have the ability to create a database that provides a powerful tool for academic management. This gives academic bodies the ability to help individuals monitor progress over time and also allows the institutions themselves to monitor their overall achievement; thus giving both a micro and macroscopic view of progress. Longitudinal assessments have the potential to give information linked to outcome requirements both for individuals and for accrediting purposes.

**Summary of work:** The authors will complete a systematic review of the literature and a sampling of websites supplemented by consultation with key experts in the area of curriculum development and assessment.

**Summary of results, conclusion and take home message:** A summary of the literature and provide a compendium of those aspects of longitudinal assessments that are value added to an institution. These critical variables will be used to show where the research and practice of longitudinal assessment should go next.

#### 6 T 5

##### **Doctors or technicians: Assessing the quality of medical education**

T Hassan (Cyberjaya University College of Medical Sciences, Unit 2, Street Mall 2, Cyberjaya 63000, Malaysia)

**Background:** Medical education institutions usually adapt industrial quality management models that mainly measure the quality of the process of a program but not the quality of the product.

**Summary of work:** Literature review to identify and analyze the impact of industrial and educational quality management models on medical education.

**Summary of results:** Industrial quality management models use performance indicators to assess their process improvement efforts. Researchers suggest that the performance indicators used in educational

institutions may only measure their fiscal efficiency without measuring the quality of the educational experience of the students.

**Conclusions:** Industrial quality management models can only measure the training component in terms of competencies. Educational component is usually difficult to assess. This could facilitate the training of technicians instead of educated doctors. A holistic model of quality in higher education must be identified and implemented.

**Take home messages:** Quality of medical education should be assessed by measuring the impact of quality improvement procedures in terms of academic performance and patient outcome. Industrial quality models should focus on academic support services and processes while educational quality models should be introduced in parallel to focus on educational standards and products.

## 6 T 6

### **Evaluation of the effectiveness of The Village: An innovative teaching strategy**

S Memmer, L Howe (Clemson University School of Nursing, College of Health, Education, and Human Development, 412 Edwards Hall, Clemson 29634, United States)

**Background:** Research indicates nurses and employers feel newly graduated nurses are not adequately prepared for medication administration in the clinical setting. Few studies have examined the use of teaching/learning strategies to find strategies to improve comprehension and preparedness for practice.

**Summary of work:** The use of an innovative teaching strategy entitled “The Village”, which integrates problem-based learning, case studies, and open discussion to facilitate learning of pharmacotherapeutic nursing interventions, was compared to the use of a traditional lecture format on standardized test scores of junior level BSN students.

**Summary of results:** An independent t-test was used to compare the means of student scores from a national normalized computer-based test of pharmacology to determine the significance between the two groups. The test scores of the students taught using The Village were significantly higher (significance = 0.0005) than the scores of the students who were taught pharmacotherapeutics without this teaching strategy ( $t=4.895$ ,  $df=161$ , mean difference=-5.033).

**Conclusions:** “The Village” is new teaching strategy that proved beneficial in improving students’ scores on a national standardized test.

**Take home messages:** Participants will receive an instructor’s copy of The Village to encourage the use of this approach across curricula to engage students and make knowledge applicable

## 6 T 7

### **Clinical competency and productivity as a predictor of academic success in undergraduate pediatric dentistry**

G Dahllöf, M Barr Agholme, B Wondimu, L Barman (Karolinska Institutet, Department of dental medicine, Division of pediatric dentistry, POB 4064, Huddinge SE-141 04 Huddinge, Sweden)

**Background:** The correlation between clinical competency and written final exam grades has previously been show to be weak. In dentistry, students have to take own responsibility for organizing their clinical activities.

**Summary of work:** A total of 225 students, mean age of 26.9±5.2 years were assessed during a one year course with two sessions a week. A comprehensive evaluation of every session focused on factors as biomedical knowledge, professional behaviour, patient examination and communication skills as well as performing technical procedures. The written exam is given at the end of the course and consists of short answer questions and essay questions.

**Summary of results:** In average, the students provided comprehensive preventive and therapeutic treatment to 15.8±4.2 patients. There was a statistically significant positive correlation ( $p=0.0165$ ) between the number of comprehensively treated patients and theoretical examination results. We also found a significant correlation between the assessment of clinical competency and the examination results.

**Conclusions:** Students who had the capacity to organise their clinical sessions in an optimal way have more opportunities to meet patients, perform more procedures and also receive more feedback from their teachers.

**Take home messages:** Clinical productivity and clinical competence are significantly correlated to performance on theoretical examination results.

## 6 T 8

### **Utilizing graphic mapping data to facilitate curricular evaluation**

G Armayor, S Leonard (Nova Southeastern University, College of Pharmacy, 3200 South University Drive, Ft. Lauderdale, Florida 33328, United States)

**Background:** Nova Southeastern University's College of Pharmacy curricular map was developed to serve as the centerpiece for curricular evaluation and improvement.

**Summary of work:** Over a 4-month period, 42 courses in the Doctor of Pharmacy curriculum were mapped to the college's educational outcomes. The mapping procedure involved analysis of course material followed by conjoint semi-structured interviews with course faculty. Data collected per course outcome included learning opportunities and assessment measures utilized.

**Summary of results:** Nearly 1,000 variables and 10,000 discrete rows of data were collected. Graphic representations of curricular data were created using bar charts and stacked area graphs relating the learning opportunities to the educational outcomes. The graphs were used to answer two key questions for stakeholders--Are there outcomes that are not being taught in the curriculum? Are outcomes being taught in a sequential, progressive manner? The graphs facilitated the identification of overall curricular holes and sequencing misalignments among course.

**Conclusions:** Graphs can be created to facilitate the interpretation of curricular mapping data and answer key questions regarding deficiencies/redundancy or sequencing in a curriculum.

**Take home messages:** Curricular maps are effective tools for curricular evaluation and revision.

## 6 T 9

### **The use of a multi-modal evaluation protocol for clerkship quality enhancement**

A Jeger, L Goldstein, D Meinberg, B Friedman (New York College of Osteopathic Medicine, Office of Clinical Education, New York, United States)

**Background:** Given the diversity of Hospitals, Ambulatory Clinics, and preceptors for our 600 3rd and 4th year students, quality assurance remains a major challenge. There is an "unevenness" among training sites with regard to clinical experiences, educational activities, and student engagement.

Utilizing poster format, samples of all components of the Multi-Modal Evaluation Protocol will be demonstrated, and participants will be able to visualize the information gathered, how it is "weaved", and the utilization of the information for clerkship quality enhancement.

## 6 T 10

### **A new distributed undergraduate curriculum: Linking evaluation and research**

J Sargeant, J Steeves, K Mann, D Delva (Dalhousie University, Halifax, Canada)

**Background:** Similar to many North American medical schools, ours is extending to a campus several hundred miles away with the first class admitted in the fall 2010. The Evaluation Working Group is responsible for ensuring that the curriculum and its implementation are comparable across sites. The purpose of this session is to share our evaluation plan and identify research questions arising from distributed medical education.

**Summary of work:** Broad tasks include evaluating the new distributed curriculum, its implementation, and its longitudinal impact. We are implementing a plan which includes capturing existing evaluation data, identifying needs for additional data, and compiling a list of emerging research questions.

**Summary of results:** This is a work-in-progress. As we are identifying specific data to determine curriculum comparability across sites, broader research questions arise; e.g. - how do we determine the "comparability" of learning cultures and environments at different sites? Are there differences in the characteristics of students who apply to each site which might influence their progress?

**Conclusions:** While program evaluation is separate from research, it can lead to and inform research questions.

**Take home messages:** Distributed medical education provides the opportunity to collaboratively identify and respond to common research questions.

## 6 T 11

### **Distributed learning for international medical graduates in rural Victoria, Australia**

D Nestel, A Wright, C Haigh, M Regan, I Sunderji, P Vijayakumar, C Smith (Gippsland Medical School, Monash University, Northways Road, Churchill 3842, Australia)

**Background:** International medical graduates (IMGs) make a substantial contribution to rural medical workforces. The GIPSIE program was designed to provide educational support to IMGs across a large geographical region and to build capacity in provision of rural medical education.

**Summary of work:** GIPSIE is a distributed educational program. Five sessions were held over three months featuring practice-based scenarios, simulation and other experiential activities with continuous

formative assessments. GIPSIE was underpinned by a website offering diverse learning resources. Evaluation consisted of pre- and post-program multisource feedback (MSF) and post-program questionnaires and interviews to explore participants' responses.

**Summary of results:** Fifteen participants completed GIPSIE and rated the program highly, especially simulation-based activities, clinical expert sessions and online assessments. Suggestions were made to improve the website. Participants' reported increased knowledge, skills and professionalism. Although MSF showed no changes, developments were reported in free text comments.

**Conclusions:** IMGs rated the GIPSIE program highly meeting a range of professional development needs. Future work needs to focus on transfer of learning to the workplace. The website provided a satisfactory platform to promote learning networks.

**Take home messages:** Develop website and promote learning network; Simulation-based activities were highly valued; MSF informed program content.

## 6 T 12

### **Clinical teachers' views about barriers to communication skills training for medical students in Mashhad Iran**

M Yavari, A Emadzadeh, S Eric Krauss (Abdul-Lateef Abdullah) (Mashhad University of Medical Sciences, Education Development Center (EDC), Daneshgah street, Mashhad 91389-13131, Iran)

**Background:** Despite the wealth of literature surrounding communication skills training to medical students, perceived barriers within medical education in Iran exist that severely limit communication skills training in practice. This study aimed to address these barriers at the Mashhad medical school. The overall objective of the study was to explore and investigate the clinical teachers' views and experiences with respect to the current status of communication skills training in one major medical school.

**Summary of work:** A qualitative study was carried out using semi structured interviews and a focus group discussion to explore clinical teachers' views about barriers of communication skills training to medical students. All interviews were audio-taped and transcribed verbatim. Thematic analysis was performed to identify major themes.

**Summary of results:** The findings demonstrate that there is a deep concern about the barriers of communication skills training among clinical teachers. Both positive and negative attitudes towards these barriers were revealed. Three themes emerged from the analysis: a) Style of medical communication in Iran is authoritarian and more focused on a disease- oriented approach. B) Religion issues have a profound effect on communication skills training. C) Insufficient faculty income can lead to less attention for educational issues.

**Conclusion and take home message:** The findings indicate that there is a need to formally integrate communication skills into the medical curriculum due to sensitive ethnic and religious issues. Further research is required to validate these findings. Recommendations and limitations of the study are discussed.

## 6 T 13

### **A study of the nursing education efficiency from the perspectives of the Isfahan Nursing School graduates'**

S Salehi, F Taleghani (Isfahan Medical Sciences University, Nursing and Midwifery Research Center, Isfahan, Iran)

**Background:** One of the important aspects of the efficiency of the educational system is judgment about the effect of the system output in meeting the environmental needs. This study aims at investigating the nursing educational system through studying the status of the graduates and their viewpoints regarding education in the nursing school.

**Summary of work:** This study is a descriptive analytical research. The sample of this study were 100 graduates nurses.

**Summary of results:** The average of the points in the section related to professional growth and improvement were 2.13 and  $\pm 0.36$ . Satisfaction with the obtained educational experiences showed 2.08 and  $\pm 0.48$ . Achievement of the educational objectives 1.95 and  $\pm 0.51$  and finally individual improvement were found to be 2.70 and  $\pm 0.35$ .

**Conclusions take home message:** As for the achievement of the educational objectives the results do not show a satisfactory index. On the basis of the results found in this study, certain changes are recommended to be made in the educational system.

## 6 U Posters

### **Postgraduate Education 1**

#### 6 U 1

### **The New Faculty Pathway to ABIM Certification Pilot Program**

J Adiletto, W lobst, S Hood, E Holmboe (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia, PA 19106, United States)

**Background:** The New Faculty Pathway Pilot Program is a modified pathway for physicians to attain ABIM certification. Eligible candidates must be full-time faculty in a training program approved by either the Liaison Committee on Medical Education (LCME) or the Accreditation Council for Graduate Medical Education (ACGME); have completed three years of verified internal medicine training abroad (non-U.S. or Canadian training); provide letters of support from the Chair of Medicine and the Internal Medicine Program Director abroad; and complete approved ABIM Maintenance of Certification self-assessment products.

**Summary of work:** August 2008, ABIM began pilot recruitment. Nineteen participants are enrolled in the pilot program.

**Summary of results:** Six of the 19 pilot participants took the 2009 ABIM initial Internal Medicine Certification Examination, and 2 of 6 failed.

**Conclusions:** Early results indicate that pilot participants experience difficulty passing the ABIM certification exam. While the numbers are small, the pilot pass rate is significantly lower than the 92% pass rate for traditional first time exam takers.

**Take home messages:** While New Faculty Pathway Pilot Program participants are successful academic internists, passing the certifying exam still requires significant preparation. Further study is required to better understand the characteristics and skills of nontraditional candidates seeking ABIM certification.

## 6 U 2

### **Assessment of intern competence in management of on-call scenarios**

M Spooner, RT Brady, SJ O'Neill, NG McElvaney (Department of Medicine Royal College of Surgeons in Ireland, Education and Research Centre, Beaumont Hospital, Beaumont, Dublin D9, Ireland)

**Background:** Assessment of intern competence has traditionally been performed via subjective evaluations from supervisors and mentors. In 2009, Beaumont Hospital piloted the first pre-registration postgraduate assessment for interns.

**Summary of work:** All interns working in Beaumont Hospital were assessed (n=67). The examination comprised a clinical OSCE and online written assessment comprised of EMQs and MCQs. All assessment tools focused on evaluating competence of commonly encountered intern duties, specifically in management of on-call scenarios, prescription writing and coordination of takeover of care.

**Summary of results:** Regarding on-call scenarios, a majority of students were able to correctly manage hypertension following stroke (63%), assessment of falls (75%), post operative pain management (65%), neutropaenic sepsis (63%) and hyperkalaemia (56%). However, appropriate management of common emergencies such as hypoglycemia (29%), identification of septic patients (37%) and pre-operative hypertension (19%) was less optimal. Overall scores in safe prescribing were significantly lower particularly in legal prescribing (8%), prescribing science (35%), and palliative prescribing (22%). The main problem identified in coordination of takeover of care was handover of inappropriate tasks.

**Conclusion and Take home message:** Interns are reasonably prepared for commonly encountered on-call scenarios but prescribing competence is a cause for concern.

Takeover of patient care also needs to be formally addressed within the undergraduate curriculum.

## 6 U 3

### **Preparing UK trainee psychiatrists for postgraduate examinations**

CA Vassilas, G Berrisford (Birmingham and Solihull Mental Health Foundation Trust, Ashcroft Unit, The Moorings, Hockley, Birmingham B29 7HU, United Kingdom)

**Background:** Before UK postgraduate psychiatric trainees can take their professional examination, the Membership of the Royal College of Psychiatrists (MRCPsych), it is mandatory that they attend a preparatory course over a period of two or three years. These so called MRCPsych Courses are organised by local training programmes. Hitherto relatively little was known about the extent and nature of these courses.

**Summary of work:** A questionnaire was devised in order to obtain key information about the running of individual MRCPsych Courses. Each course in the UK was identified and the questionnaire sent to the Course Organiser.

**Summary of results:** 30 Courses were identified responsible for a total of 1581 trainees. A large diversity across the country in nearly all areas of content and delivery of courses, including: cost; number of hours

of teaching; size of course and organisation, was found. There was poor implementation of patient and carer involvement.

**Take home messages:** Suggested ways to improve the running of these courses include: An exchange of information amongst the Courses; A database of Courses available; Uniformity in the appointment of those in charge of the course; Using e-learning; The Royal College of Psychiatrists is ideally placed to co-ordinate these improvements.

#### 6 U 4

##### **Assessment outcomes for the first postgraduate psychiatry training program in the United Arab Emirates**

O Osman, A AlRahoomi (Faculty of Medicine and Health Sciences, United Arab Emirates University, P.O. Box 17666, Al-Ain, Abu Dhabi 000000, United Arab Emirates)

**Background:** The United Arab Emirates is a dynamic Gulf country with a population of approximately 5 millions. It is a federation of 7 states (Emirates). This study describes the outcome of the National psychiatry residency training program. This 4 years program was developed by the United Arab Emirates University (UAEU) and was implemented nationwide.

**Summary of work:** This is a descriptive study for the assessment of structure and functions of the UAE National Program for training in psychiatry. The 4 year cumulative data from the program was analyzed.

**Summary of results:** A total of 19 residents were sponsored by several health care providers in different Emirates. They were first assessed for their knowledge, skills and attitudes before joining the program. Three have just completed the training and passed the qualifying exit exam (Arab Board of Psychiatry). Results showed that Graduates from the program assumed leadership role in different components of the mental health services in this region. This has consequently widened the network for program support. It has also strengthened the advocacy for Psychiatric and mental health cause in the country.

**Conclusions:** The first UAE national postgraduate Program for psychiatry residency training has achieved its objectives by increasing the number of national specialists in psychiatry (by three folds). These graduates immediately assumed leadership role to further develop the field.

**Take home message:** Developing specialist training program is of strategic importance to guarantee the continuity and progress of service delivery in the field of psychiatry.

#### 6 U 5

##### **An extra six months in primary care in the early years of training for general practice: the views of trainers and trainees on how to make the most of this post**

D Gibbons, S Scallan, S Newton (Wessex School of General Practice, NESc, UK, Mid-Wessex Patch, Primary Healthcare Education, The University of Winchester, Sparkford Road, Winchester SO22 4NR, United Kingdom)

**Background:** Recent changes in three year specialty vocational training for general practice in the UK now apportion training to 18 months each in hospital and general practice. This additional 6 months in general practice has given rise to a degree of uncertainty amongst trainers and trainees as to how best to use this extra time.

**Summary of work:** Interviews with a purposive sample of trainers and trainees will be used to identify how the time is spent and whether it differs from the experience gained during traditional registrar (ST3) year of training. The research will address the following questions, amongst others: The views of trainers and trainees on the structure of the post and the balance of experience; The nature and level of clinical supervision, educational support and peer learning opportunities, and how this differs to the hospital experience; Views on the 'readiness' of trainees to sit components of the nMRCGP exam at this earlier stage of their training; and The reflections of trainees on their learning.

**Summary of results:** The aim of the communication will be to report the findings of the project within the context of the wider literature.

**Conclusions and take home messages:** The research will consider how to optimise the additional time spent in general practice.

## 6 U 6

### **Confidence attitude and skills of Family Medicine Residents in evidence-based medicine (EBM): Pilot test of instruments**

C Bernard, E Shaw, M Howard, D Borts (McMaster University, Department of Family Medicine, 175 Longwood Rd, S. Ste 201A, Hamilton L8P 0A1, Canada)

**Background:** There are many approaches to teaching EBM, but many have not been evaluated for their impact on skills.

**Summary of work:** To evaluate the effectiveness of EBM teaching we developed a confidence and attitude survey, and adapted a skills assessment (Tudiver F, 2009) for pilot-testing. The skills assessment required residents to ask a clinical question, search for evidence, then state and justify the answer.

**Summary of results:** McMaster University has approximately 120 residents in geographically distributed sites. Residents participate in EBM tutorials either in blocks or longitudinally throughout the program. The pilot test was done with six block and seven longitudinal residents. Confidence identifying components of a clinical question and assessing bias was high (mean scores 4.1 to 4.2 on a 5-point scale), and confidence using Pubmed or OVID and understanding statistics was lower (mean scores 3.5 to 3.6). Most residents (69%) strongly agreed that they would use EBM to support lifelong learning, while the remainder was uncertain or disagreed. All residents searched Pubmed/OVID and/or Cochrane database, among other sources, in the skills assessment. Scoring of this component is underway and will be presented.

**Conclusions take home message:** The instruments were clear, feasible and provided useful responses for planning a larger study.

## 6 U 7

### **Mind Mapping in General Practice: exploring the development of learning with GP trainees**

S Kibble, S Scallan, C Leach, J Lyon-Maris, S Wilson, R Odbert (Wessex School of General Practice, NES, UK, Southampton Patch, GP Education Unit, Mailpoint 10, Southampton University Hospital Trust, Tremona Road, Southampton SO16 6YD, United Kingdom)

**Background:** There is much debate as to the role and relevance of time spent in general practice to the development of GP trainees in the UK. Much of what is known is drawn from the feedback of trainees as

to the usefulness of attachments. There is a pressing need to refocus research to move on from considering trainee placement feedback on time spent training for general practice, to instead explore other aspects of learning in order to deepen understandings about the role of posts in the development of clinical thinking skills.

**Summary of work:** The aim of this project is to begin to address the need for a more detailed understanding of the impact of spending time in general practice on the development of clinical thinking skills amongst trainees. The objectives are to identify change and development in clinical thinking about a scenario amongst participants over a four month period, and differences in thinking (if any) about a clinical scenario exhibited by trainees. The project involves foundation, GPST year 1, 2 and 3 trainees.

**Summary of results:** The communication will present results from the project and their implication for learning in general practice.

**Conclusions and Take home message:** Insight into changes in clinical thinking over three years training for general practice.

## 6 U 8

### **Calling the usual suspects; the reasons surgeons become involved in postgraduate education**

HJ Scott, E Sharp, M Solan, D Gerrard, P Shaw (School of Surgery, KSS Deanery, London, United Kingdom)

**Background:** The reasons surgeons become involved in education are unknown. This study was set up to investigate what motivating factors have influenced them.

**Summary of work:** This narrative inquiry qualitative study used open conversations. The participants were Consultant Trainers. The datum from conversations was analysed using grounded theory and narrative analysis.

**Summary of results:** In the first study of its kind in surgery, conversations were broken down into categories which were broken down into themes. These have elucidated the reasons why the participant surgeons became involved in education. Their reasons included the importance of role models; the need for lifelong learning for professional satisfaction; altruistic feelings towards the trainees; the need to improve on the experiences they had in their training, and the importance of communication skills.

**Conclusions:** A novel research model for studying the motivational factors influencing surgeons to become involved in postgraduate surgical education has been developed. With the development of Specialty Schools, particular surgeons will need to dedicate time to surgical education. Research of this nature is likely to identify and direct particularly committed individuals to roles in surgical education.

**Take-home message:** For the first time, the motivating factors which have made surgeons become interested in surgical education have been identified.

## 6 U 9

### **Experiences of family medicine residents in primary care obstetrics groups**

S Koppula<sup>1</sup>, JB Brown<sup>2</sup>, JM Jordan<sup>2</sup> (<sup>1</sup>Department of Family Medicine, University of Alberta, <sup>2</sup>Department of Family Medicine, University of Western Ontario, Canada)

**Background:** Family physicians' participation in obstetrics is declining. Experiences during family medicine residency affect decisions to practice maternity. Historically, learners have encountered negative influences, discouraging obstetrical careers. Family physicians practicing maternity in Edmonton, Canada are exposing residents to innovative obstetrical care systems to encourage future obstetrics practice.

**Summary of work:** This study explored the experiences of family medicine residents, at University of Alberta Urban Family Medicine program, participating in Primary Care Obstetrics rotations. Using qualitative approaches, focus groups were conducted. Data were audiotaped and transcribed verbatim. Independent and team analysis was iterative and interpretive.

**Summary of results:** Residents described positive experiences on Primary Care Obstetrics rotations, including positive "fulcrum points" influencing them toward a maternity career. They identified preferred elements of obstetrical group care. Negative experiences, including negative "fulcrum points" were described, relating to inherent obstetrics factors.

**Conclusions:** Positive resident experiences on Primary Care Obstetrics rotations were encouraging. Residents regarded preceptors as role models and favoured group care. Despite persistent concerns, positive experiences could inspire residents toward an obstetrical career.

**Take home messages:** Group primary care obstetrics is promising to address withdrawal of family physicians from maternity. Exposing residents to such systems has potential to encourage careers in obstetrical care.

## 6 U 10

### **Evaluation of out-patient experience in the early years of GP specialty training: preliminary findings**

A Longley, C Wedderburn (Wessex School of General Practice, NESCC, UK, Dorset Patch, GP Centre, 6th Floor Royal London House, Bournemouth University, Lansdowne Campus, Bournemouth BH1 3LT, United Kingdom)

**Background:** Since August 2008, GP Vocational Training in the UK has comprised 18 months each in hospital and general practice. This allows an additional 6 months general practice experience, which may occur in year 1 or 2 of training.

**Summary of work:** This innovative pilot scheme provided ST1 trainees a day a week of protected learning in an organised programme of outpatient and community clinics. Specialties included were GUM, urology and community paediatrics, all of which have not before been part of core GP experience. At each clinic trainees were required to complete a worksheet with their clinical supervisor. This was attached to the e-portfolio along with a log entry. This served both to document the trainee's learning and also their attendance at the clinic.

**Summary of results:** Preliminary findings show that trainees highly value the programme of clinics. Meeting GP-focused learning needs early on was found to boost confidence, especially as learning log

entries were linked to the GP curriculum statements. Informal feedback from GP trainers and consultants has been positive.

**Conclusions and take home messages:** Well structured time in community and outpatient clinics is highly valued by trainees and can allow them to record timely and relevant learning portfolio entries linked to the GP curriculum statements.

## SESSION 7 SIMULTANEOUS SESSIONS

### 7A Symposium Accreditation and Credentialing

ME Mancini (Chairperson, Certification, Accreditation, and Technology and Standards Committee, Society for Simulation in Healthcare (SSH), University of Texas at Arlington, USA); M Paterson (President, SSH, Cincinnati Children's Hospital Medical Center USA); E Sinz (Past President, SSH, Penn State Hershey Medical Center, USA); W Eppich (Chair, International Affiliations Committee, SSH, Northwestern University, USA)

With an increasing worldwide focus on patient safety, numerous healthcare professional, regulatory, and accrediting organizations have become interested in the accreditation of simulation centers/programs and the credentialing of individuals associated with simulation. The Society for Simulation in Healthcare (SSH) was established in 2004 to represent the rapidly growing group of educators and researchers who utilize a variety of simulation techniques for education, testing, and research in health care. The membership, now over 2,000, represents a broad-based, multi-disciplinary, multi-specialty, international society with ties to all medical specialties, nursing, allied health paramedical personnel, and industry united by a desire to improve performance and reduce errors in patient care using all types of simulation including task trainers, human patient simulators, virtual reality, and standardized patients.

To further its mission, the Society has developed programs to accredit simulation programs and certify simulation educators. In this Symposium, participants will review the current state of two new SSH programs.

- SSH Simulation in Healthcare Accreditation Program
- SSH Simulation in Healthcare Certification Program

Using an Audience Response System, participants will discuss the need for accreditation and certification as well as the best methods for accomplishing the goals of assuring quality in healthcare simulation programs and recognition of expertise in healthcare simulation education.

### 7 B Oral Presentations Work-based Assessment 1

#### 7 B 1

#### **The case-based discussion: An effective assessment of physicians in medical specialist training in the UK**

JR Booth, GJ Johnson, J Crossley, WB Wade (Royal College of Physicians, 11 St Andrews Place, London NW1 4LE, United Kingdom)

**Background:** The Case-based Discussion (CbD) is a workplace-based assessment intended to assess a trainee's clinical reasoning, planning, decision-making and understanding of a case. It has been used in the UK's Foundation Programme since 2005. The Education Department of the Royal College of Physicians has undertaken a pilot of an adapted CbD to establish its utility as an assessment for physicians in Higher Training in terms of its validity, reliability, educational impact and feasibility.

**Summary of work:** One hundred sixteen specialist Trainees from a broad range of sub-specialties volunteered to undertake the CbD assessments. Generalisability theory was used to estimate the reliability coefficient of the CbD. Specific qualitative feedback was sought on the other features of the utility of the CbD via comments on the forms and a questionnaire. Further work is underway to measure the effectiveness on reliability of use of anchor statements.

**Summary of results:** Two hundred thirty-one CbDs were undertaken and they took less than 20 minutes on the vast majority of occasions. For a reliability coefficient of 0.7, 10 CbDs need to be undertaken. Factor analysis of the scores provided evidence of validity, and the qualitative feedback showed that the tool is feasible and popular with significant benefits of educational impact.

**Conclusions and Take home messages:** Use of CbD results in significant educational impact and is feasible to use as part of an integrated assessment strategy. The reliability of the CbD in its current form limits its use to that of a formative assessment. The paper will describe the effectiveness of the use of anchor statements on reliability.

## 7 B 2

### **Comparison of workplace based assessment methods in anaesthesia**

P Davies, T Gale, P Sice, M Roberts, G Crossingham, H Lam (South West School of Anaesthesia, Directorate of Anaesthesia, Plymouth Hospitals NHS Trust, Derriford Rd, PL6 8DH Plymouth, United Kingdom)

**Background:** The mini-clinical evaluation exercise has been validated for assessment of Foundation Doctors as a workplace based assessment (WBA) tool in the UK. However this tool has shown more variation in scores due to raters than candidates when used for assessing anaesthetic trainees<sup>1</sup>.

**Summary of work:** We compared two methods of specialty specific WBA over 2 years of training: 1) Specialty specific In Theatre Assessments (ITAs) of non-technical skills demonstrated with key index cases 2) Scores derived from trainees' Annual Review of Competence Progression (ARCP) from multiple consultant assessments of performance during the year. All departments within the SW School of Anaesthesia underwent training using video-benchmarking of the tools used for ITA assessment.

**Summary of results:** Video-benchmarking for the ITA increased reliability between raters and demonstrated a strong learning effect using 3 videos of varying performance. Both the ITA and ARCP assessments demonstrated good internal reliability (Cronbach's Alpha = 0.87 vs. 0.89). The ITA suffered from a ceiling effect (mean = 44.8 out of 48, SD = 3.4) while the ARCP score achieved a better spread amongst the trainees (mean = 83.4 out of 100, SD = 6.9).

**Conclusions:** Video-benchmarking leads to improved standards of assessment demonstrated by improved inter-rater agreement.

**Take home message:** Assessment of non-technical skills in the workplace achieves good internal reliability. Assessors should be exposed to benchmarking performance before introducing any new WBA.

<sup>1</sup>Weller JM et al. Mini-clinical evaluation exercise in anaesthesia training. BJA 2009 May;102 (5):633-41

### 7 B 3

#### **Assessing health systems' clinical supervision capacity: Provision of workplace based supervision, assessment and feedback for medical students and junior doctors**

B Bird, B Sutton, B Jolly, B McGrath (Monash University, Centre for Medical and Health Sciences Education, Building 2, Level 1, 270 Ferntree Gully Road, 3168 Notting Hill, Australia)

**Background:** The capacity of health systems to provide quality clinical medical supervision, assessment and feedback is unknown. Our partnership set out to determine: 1) The extent of current clinical supervision and supervisory loads at Southern Health and other Victorian hospitals; 2) A framework and strategies to build supervisory capacity.

**Summary of work:** Data was gathered using four related anonymous questionnaires adapted from a validated UK instrument<sup>1</sup> and targeted to different cohorts e.g. Senior Medical Staff (SMS) to medical students. We collected quantitative and qualitative responses about clinically based supervision, assessment and feedback from both supervisor and supervisee perspectives. Data was analysed using PASW Statistics and thematic analysis. Ethics approval was obtained.

**Summary of results:** Cohort respondent rates varied between 11% and 67% for Southern Health (N = 465). All cohorts agreed on the purposes of supervision. A gap analysis of 'supervision/ feedback/ assessment' given and received showed a significant difference between SMS and junior medical staff. The Victoria wide study results will be reported at the Conference.

**Conclusion and Take home message:** Effective clinical supervision requires a coordinated framework which allows dedicated time for supervision, competency based supervisor training, and long term approaches that involve vertical integration and state and national buy-in.

<sup>1</sup>Grant J., Kilminster, S., Jolly, B. & Cottrell, D. (2000) JCEM Open University, UK.

### 7 B 4

#### **Assessing educational activity in the operating theatre**

J Bezemer, A Cope, G Kress, R Kneebone (Imperial College London, St Mary's Hospital, 10th Floor, QEQM Building, South Wharf Road, W2 NY1 London, United Kingdom)

**Background:** The operating theatre is a rich, complex yet under-researched setting for educational activity. Surgical trainers' judgments about their trainees' perceived competence inform decisions about how much participation to allow in clinical work. However, little is known about how these 'informal' workplace evaluations are made.

**Summary of work:** Detailed observation of a multiprofessional clinical workplace (the operating theatres of a major UK teaching hospital) investigated surgeons, anaesthetists, nurses and operating department practitioners with varying degrees of experience. Behaviour was observed during 75 general surgical operations and analysed using a detailed ethnographic approach.

**Summary of results:** Both verbal and non-verbal forms of assessment were identified during the moment-to-moment interaction between trainers and trainees. A provisional analysis of these complex behaviours will be presented.

**Conclusions:** Formative assessment in the workplace is common practice in operating theatres. Assessment can be 'overt' and 'explicit' when expressed through talk, but also 'covert' and 'hidden' when articulated through hand movement and other forms of non-verbal communication. Forms of assessment are unequally distributed among the professional groups working in theatres.

**Take home messages:** Assessment of competence of clinical trainees involves not only standardized tests but is an integral part of continuous workplace based learning.

## 7 B 5

### **Non-Technical Operative Skills of Surgeons (NOTSS): A useful method which complements assessments of technical skills**

J Marriott<sup>1</sup>, J Crossley<sup>2</sup>, H Purdie<sup>3</sup>, J Beard<sup>4</sup> (<sup>1</sup>Department of Reproductive and Developmental Medicine, Jessop Wing, University of Sheffield, <sup>2</sup>Academic Unit of Medical Education, University of Sheffield, <sup>3</sup>Clinical Research Facility, Royal Hallamshire Hospital, Sheffield, <sup>4</sup>Department of Surgery, University of Sheffield, Sheffield, United Kingdom)

**Background:** Work-based Assessment methods within UK surgical training programmes have focused on technical skills. Non-technical skills (e.g. communication, situational awareness, decision making and leadership) should underpin technical proficiency, given their critical role in performance and patient safety. NOTSS has been developed to assess such non-technical skills ([www.abdn.ac.uk/iprc/notss](http://www.abdn.ac.uk/iprc/notss)).

**Summary of work:** We evaluated the validity and reliability of NOTSS. Trainees (n=85) in 6 surgical specialties were assessed performing common operations (n=437). Six hundred Ninety-five assessments were provided by 56 anaesthetists, 39 scrub nurses and 3 independent assessors.

**Summary of results:** Construct and concurrent validity is shown by strong correlations with duration and level of specialty training, procedural experience and assessment of technical skill. Internal structure is also valid. Reliability (G >0.8) can be achieved using 6 assessors for the same procedure and 8 assessors for a mix of procedures. Assessor designation (anaesthetist vs. scrub nurse vs. independent assessor ratings) does not affect the score.

**Conclusions:** NOTSS demonstrates validity and reliability using feasible samples of assessors in the operating room. Non-surgical assessors are able to rate the non-technical skills of surgeons.

**Take home message:** NOTSS is a robust and feasible WBA method which complements existing assessments of technical skill.

## 7 B 6

### **Getting the language right: judgement scales and workplace-based assessment**

GJ Johnson, JR Booth, J Crossley, WB Wade (Royal College of Physicians, 11 St Andrews Place, NW1 4LE London, United Kingdom)

**Background:** The Acute Care Assessment Tool (ACAT) is a workplace-based instrument that allows peers or supervisors to judge a medical trainee's performance during a period of practice of Acute Medicine such as a night shift. Previous work has shown the ACAT to have significant educational impact, feasibility and validity, but a substantial number of assessments were needed to ensure reliability.

**Summary of work:** A small pilot study (74 assessments, performed by 31 trainees and 51 assessors) compared the reliability of assessments made with a modified judgement scale on the 'overall' component with reference data. The conventional scale asks whether the trainee has performed as expected for their level of training (6-points). The modified scale asks what level of independence the trainee has reached (6-points) because this language is more consummate with supervision judgements. Whilst the scale for the 'overall' section is different across the two versions, the 'item' scales are the same across both versions and act as a control.

**Summary of results:** The conventional scale requires 12 assessments to reach  $G=0.7$  (control 10 assessments). The modified scale requires 3 assessments to reach  $G=0.7$  (control 5 assessments). The control arm difference shows that the small pilot cohort is performing differently from the reference group. However, even after adjustment, the modified scale significantly outperforms the conventional scale.

**Take home messages:** The language of assessment judgements may affect the reliability of the assessment. A larger analysis to corroborate these findings is intended in ACAT and other WPBA.

## **7C Oral Presentations Technology 1**

### **7 C 1**

#### **Evaluation of a web-based tool to assess clinical teaching**

N Gardiner, S Cotterill, S Corbett, K Cich, J Metcalf, K Griswold, D McGuigan, J Spencer, R Berger, J R Barton (Northumbria Healthcare NHS Foundation Trust, North Tyneside General Hospital, Rake Lane, North Shields, NE29 8NH Tyne and Wear, United Kingdom)

**Background:** A 38 item checklist of behaviours observed during a single clinical teaching episode was developed to provide feedback from all those present.

**Summary of work:** Clinical teachers and two or more trainees or observers can now enter scores directly into a web-based programme within two weeks of a teaching session. Scores are categorised using the cognitive apprenticeship model. Graphical feedback compares teachers' self ratings with aggregated scores from trainees or observers. Norm referenced scores allow comparison with peers. The programme is designed to ensure confidentiality and security. We have trialled the programme with clinical teachers in the UK Northern Deanery, and the School of Medicine and Biomedical Sciences at the University at Buffalo, USA, and interviewed a selected sample to evaluate the process and feedback.

**Summary of results:** Themes emerging from qualitative analysis of interviews in the UK and US will be presented. Initial findings suggest the checklist has reminded clinical teachers of best practice and will be useful to evidence evaluation of teaching for instance for UK PMETB trainer standards, evaluation and appraisal, or applications for membership or fellowship to the Academy of Medical Educators.

**Conclusions:** The programme provides clinical teachers with useful formative feedback.

**Take home messages:** This is an accessible programme to evaluate clinical teaching.

## 7 C 2

### **Delivery and assessment of a clinical presentation curriculum using an online educational delivery system**

OT Wendel, R Pavlick, M Genuis (AT Still University School of Osteopathic Medicine in Arizona, 5850 East Still Circle, 85206 Mesa, United States)

**Background:** The students at the School of Osteopathic Medicine in Arizona (SOMA) begin clinical training around the nation during their second year. This has precipitated the need for delivering coursework at various sites distant from the Mesa campus.

**Summary of work:** SOMA developed an educational delivery system (EDS) designed to integrate basic and clinical sciences into its Clinical Presentation (CP) curriculum. The EDS displays each CP as a scheme which promotes inductive reasoning as a method of problem solving. The knowledge within each portion of the scheme is organized in a series of tabbed panels visible on a single screen providing students with an overview of the topics, a clinical worksheet and a set of objectives and learning exercises that facilitates student mastery of the relevant information.

**Summary of results:** Scores on objective exams have demonstrated that student performance in courses utilizing the EDS are comparable to those not using the EDS. Surveys of student attitudes were completed and reflected very positively on organization of the topics, access to information and ease of use.

#### **Conclusions and Take home messages:**

Early assessment of the EDS has demonstrated that medical students at a distance are able to master content equal to a traditional classroom format.

## 7 C 3

### **Practising medicine in a virtual world**

E Conradi, S Kavia, L Woodham, T Bakrania, K Boardman, T Poulton (St George's University of London, Cranmer Terrace, SW17 0RE London, United Kingdom)

**Background:** St George's University of London (SGUL) have developed and delivered Problem-based Learning scenarios within a multi-user virtual environment for Paramedic students. The scenarios require students to assess their knowledge of what to do in an emergency situation, and use it to generate learning objectives. SGUL have now built on the outcomes from this study to create virtual world scenarios for the medical curricula.

**Summary of work:** PBL scenarios have been created within the virtual world 'Second Life'. Students work in small groups to assess, manage and treat a patient who presents to them at 'their' GP surgery. The scenario requires only limited familiarity of the virtual world environment, concentrating instead on the application of the students' medical knowledge to drive the scenario forward.

**Summary of results:** The scenarios have been evaluated by the end users (both students and tutors), and a summary of the key findings will be presented.

**Conclusions:** Virtual world environments help to place the user within the context of their vocation, putting them in the active role of the doctor, allowing them to rehearse competencies in a safe, responsive environment. Further impact of immersive environments on learner and tutor engagement will be discussed.

**Take home messages:** Innovations in technology allow learning to take place in more interactive, non-linear and immersive settings than traditional paper-based approaches.

#### 7 C 4

**Assessment for e-learning: meta-planning shows that medical students value interactivity, assessment and feedback as key features of a web-based simulation technology for creating virtual patients**

RS Patel, FT Wilson, J McKimm, S Bonas, S Petersen, SJ Carr (John Walls Renal Unit, University Hospitals of Leicester NHS Trust, Leicester General Hospital, Gwendolen Road, Leicester LE5 4PW, United Kingdom)

**Background:** E-learning is increasingly used as part of university education programs with a vast range of learning technologies available. With high investment, such technologies must meet student learning needs and not be simply information repositories. In designing a new web-based virtual patient resource, we wanted to explore students' perceptions of key learning features. 50 medical students were invited to ten focus group discussions to identify these qualities, and arrange them in order of priority.

**Summary of work:** Three stage meta-planning involved asking students to individually identify 4 qualities; then collectively to arrange their suggestions into categories, and then to individually prioritize the categories.

**Summary of results:** Students identified 15 categories of qualities that the new technology should feature. The highest priorities from both individual and group preferences indicated an appreciation that e-learning should include self-assessment (through interactivity), formal assessment and feedback.

**Conclusions:** Students recognize that learning through multimedia and simulation requires them to engage interactively with a resource and that assessment and feedback are integral to effective learning.

**Take home message:** Meta-planning is a useful tool for gaining student input into design of e-learning resources and indicates that students value and recognize the importance of assessment to learning.

#### 7 C 5

**The development of an electronic web-based folder to support competency-based assessment**

M Chiodo, M Donoff, S Ross, I Steiner, P Humphries (Department of Family Medicine, University of Alberta, 205 College Plaza, T6G 2C8 Edmonton, Alberta, Canada)

**Background:** In developing our Family Medicine Residency Program's competency-based assessment framework (CBAS), our users stressed the importance of having a web-based method for entering and organizing documented formative feedback. In response, we developed an "electronic dashboard" (eCBAS) as a custom configuration of Microsoft SharePoint.

**Summary of work:** Our eCBAS development process was designed as a research project. Data was collected on all feedback for each iteration of eCBAS. Data collection was through questionnaires, open discussions at workshops, and focus groups. The reasons for each change were documented throughout the development of the eCBAS, and reviewed with users each time a change was introduced.

**Summary of results:** Faculty development and resident training around using eCBAS was the most prevalent feedback. Clarification of the language used in the eCBAS fields was found to be very important. Residents consistently want the system to be more didactic and like a checklist.

**Conclusions:** Change management was facilitated by showing that the development team was open to suggestions. The development team needs to continue to monitor user experiences and adjust eCBAS accordingly.

**Take home messages:** User feedback is essential when incorporating technology into educational innovation. An interface that is not intuitive to users will not be used.

## 7 C 6

### **Assessing medical student professionalism and communication skills via responses to simulated electronic mail (Email)**

J Christner, B Stansfield, J Schiller, A Madenci, P Keefer (University of Michigan, Department of Pediatrics, 1500 E. Medical Center Drive, D3249 MPB, Box 5718, 48109 Ann Arbor, United States)

**Background:** Physician-patient communication is an essential skill taught to medical students. Communication skills are taught by a variety of methods, including formal training sessions, modeling and interacting with both actual and simulated patients. However, email communication with patients is becoming more common as patient demand for it increases.

**Summary of work:** We developed four hypothetical emails from a parent and a rubric to grade student responses to these emails. During the pediatric rotation, students respond to one of these emails where a parent expresses concern, anger or confusion about their child's medical care. A faculty member then leads a discussion about key components of a high quality email response. Students are sent two subsequent simulated emails with the final response used as a component of their final clerkship grade.

**Summary of results:** Performance improved from the first to third cases ( $p < .0001$ ). Performance does not change as students progress further in their clinical year suggesting that email communication techniques are a unique skill taught in our clerkship.

**Conclusion/Take home message:** Communicating with patients via email in an effective manner is not intuitive. It is feasible to institute responses to a simulated email in a clinical clerkship as an assessment tool.

## 7D Oral Presentations Training for Self-Assessment

### 7 D 1

#### **Videotape review of standardized patient interviews develops students self-assessment skills**

Kathleen Hanley (NYU School of Medicine, Old Bellevue C and D Building D 401, NY 10025 New York, United States)

**Background:** Videotape review (VTR) of standardized patient (SP) interviews is a commonly used teaching modality. We explored the relationship of repeated self- evaluation on development of interviewing expertise.

**Summary of work:** After each of two videotaped SP interviews, students viewed themselves individually and completed a detailed worksheet. They subsequently reviewed a segment in small-group seminar. We assessed the quality of students' self- assessments and their relationship to students' SP-rated interviewing skills over time.

**Summary of results:** Independently assessed quality of self-assessment improved significantly from the 1st to the 2nd VTR ( $p < .05$ ). The interviewing skills of students who reported learning "something or a lot" increased while communication scores for those who learned "a little" declined ( $p < .05$ ). Associations between the quality of initial self-assessment and communication scores over 3 time points time demonstrated an expertise reversal effect: higher quality self-assessment was associated with steeper declines in scores at baseline and 1st follow-up and then with steeper increases from 1st to 2nd follow-up.

**Conclusions:** Quality of students' self-assessments improved over time. Higher quality self-assessment was initially associated with a decline in communication scores then with a substantial increase.

**Take home messages:** Videotape reviews can enable students to more accurately assess and therefore improve their own communication skills, although that impact may take time.

### 7 D 2

#### **Informing self-assessment in clinical learning: Sources of data and facilitation**

J Sargeant, J Lockyer, K Mann, E Loney, H Armson, T Dornan, E Holmboe, C van der Vleuten, B Chesluk (Dalhousie University, Rm C-106, 5849 University Ave, Halifax, Nova Scotia B3H 4H7, Canada)

**Background:** Undergraduate and postgraduate medical education programs are introducing structured activities to facilitate learners' self-assessment and self-directed learning; e.g., portfolios, personal learning plans, chart audit, multi-source feedback. This study explored learners' use of both formal and informal activities to inform their self-assessment and factors which influenced the usefulness of each.

**Summary of work:** In this qualitative study we selected 3 UGME and 2 PGME programs in 4 countries based upon the rigour of formal self-assessment activities, and invited learners to participate in focus groups. Focus groups were audiotaped, transcribed and analysed iteratively using principles of grounded theory.

**Summary of results:** Learners (n=85) described variable use of structured activities (e.g., portfolios, personal learning plans) to inform their self-assessment. Some found such activities enhanced reflection and self-assessment, others found them unhelpful, artificial and prone to ritualization. Learners reported receiving inadequate formative feedback from supervisors.

**Conclusions:** Effectiveness of formal and informal assessment and teaching strategies to inform learners' self-assessment is variable. There are no generally effective stand-alone strategies; effectiveness depends upon facilitation and context.

**Take home messages:** Learners require authentic and meaningful learning activities with feedback to inform self-assessment. Self-assessment is not a solo activity and requires external information and guidance.

### 7 D 3

#### **Effect of training on students' self assessment practice**

H Al Kadri, M Al Moamary, C Roberts, M Magzoub, H Al Takroni, C van der Vleuten (King Saud Bin Abdulaziz University for Health Sciences, College of Medicine, Po Box 57374, Riyadh 11574, Saudi Arabia)

**Background:** Recently, several concerns have been recognized about the utility of the self-assessment of clinical competence by students. Our research objective was to assess the impact of both faculty development and orientation of the students on their self-assessment strategies.

**Summary of work:** The study was conducted at King Saud Bin Abdulaziz University for Health Sciences, College of Medicine, Riyadh Saudi Arabia. Students practice self-assessment during their clerkship clinical attachments prior to undertaking summative assessment. They receive staff feedback on their results, and clerkship performance compared to their self assessments. Semi-structured individual interviews were performed before and after mini-workshops for students and clinical tutors on "self-assessment and giving and receiving feedback". Data was analyzed thematically.

**Summary of results:** We performed 13 individual semi-structured interviews prior to the workshops followed by a further eleven interviews afterwards. Students expressed perceptions of their self-assessment processes and strategies. Students acted as "mark hunters" focusing on influencing their supervisor's summative assessment. They tended to overestimate themselves and use the assessment strategically ignoring the feedback on their real assessment. Faculty training on feedback and students awareness on self assessment did not change students' perception and strategies when they self-assess.

**Conclusions:** Training on self-assessment and orientation on the value of feedback did not change students strategies used when they self-assess.

**Take home message:** Self assessment can be miss-informative for students even after focused training. The force of the summative strategy is too imposing. Further research is required to investigate how students can incorporate the feedback they receive into more accurate self-assessments.

#### 7 D 4

##### **Formative assessment of clinical competence: Scoring rubric as a tool for development of self-assessment skill**

DQ Nguyen, JF Gobeil, M Mahone (University of Montreal, CHUM-St Luc, 1058 St Denis, Montreal-Quebec J4X 2S5, Canada)

**Background:** Self-assessment skills are essential for maintaining competency, but how best to help residents develop this capacity is uncertain. The Authentic Assessment Approach suggests using complex assessment situations, a scoring rubric as a global rating scale, and in-depth feedback to develop self-assessment skills.

**Summary of work:** “Formative Assessment of Clinical Performance” (Form-ACP) is a modified Mini-CEX, where an evaluative scoring rubric composed of 9 clinical task-items and 4 levels of performance standards is used by both resident and teacher. Twenty-five residents were followed over three years with two Form-ACP sessions per six-month period. Feedback involved interactive discussions concerning discrepancies between resident’s and teacher’s assessments. This study examines the evolution of these discrepancies.

**Summary of results:** The scale has a Cronbach's alpha of 0.82 & 0.87 (by teachers & residents). The correlation coefficients of resident’s and teacher’s assessments in the first year ranged between –0.169 and 0.35, and increase to 0.01 to 0.60 in the third year. At the trial’s outset, none of the items had a significant correlation, but at its conclusion five items achieve a p level correlation of 0.05.

**Conclusion and Take home message:** Our results suggest that a scoring rubric combined with comprehensive feedback may help residents in improving their self-assessment ability.

#### 7 D 5

##### **The impact of feedback and personality upon students' ability to self-assess skills, attributes and aptitudes**

GM Finn, MA Sawdon (Durham University, School of Medicine and Health, Queen's Campus, University Boulevard, Thornaby-on-Tees TS17 6BH, United Kingdom)

**Background:** We demonstrate the phenomenon of ‘incompetent and unaware’ in a real world setting.

**Summary of work:** Medical students (193) participated in a self-assessment exercise, requiring predictions of exam grade in 3 domains; knowledge, skills, and behaviours. The exercise was completed 3 times; immediately after January exams, one week after January exams and immediately after May exams. Feedback on assessment ability was given between January and May. Personality type was correlated with self-assessment ability. Students assessed the Conscientiousness Index (CI) scores of themselves and peers.

**Summary of results:** Failing students over predicted their exam performance. Merit students under-assessed performance, and pass students accurately self-assessed. Students’ ability to self-assess was not improved after a week of contemplation. Feedback improved failing students’ ability to self-assess but had no impact upon under-assessing merit students. Students were unable to predict their CI scores, but were able to assess peers’ scores. Ability to self-assess was not related to personality type.

**Conclusions:** Ability to self-assess was consistent across physical skills and cognitive aptitudes, but not attributes (conscientiousness).

**Take home messages:** Failing students can become more self-aware with respect to exam performance if they are given appropriate feedback. Self-awareness is crucial for success; students need more guidance on this.

## 7 D 6

### **Self-explanation to foster self-awareness?**

C St-Onge, M Chamberland, J Setrakian, L Bergeron, L Lanthier, A Bourget (Université de Sherbrooke, 3001 12e Avenue Nord, Sherbrooke (QC) J1H 5N4, Canada)

**Background:** Physicians' require the ability to self-assess in a life-long learning perspective. However, studies have demonstrated the difficulty to do so. Self-awareness is necessary to appropriately self-assess. Could a learning strategy aimed at increasing the comprehension of a concept favour self-awareness? Self-explanation is a learning strategy that, for example, requires individuals to identify the gaps in their knowledge while solving problems.

**Summary of work:** A study was conducted to measure the influence of self-explanation on clinical reasoning. During a first meeting, two groups of students solved clinical cases from a familiar theme and an unfamiliar theme (one group did self-explanation). A week later, all students were asked to solve cases on these themes. At the end of that activity, they assessed their confidence level on a 10-point scale.

**Summary of results:** Self-explanation students performed significantly better on the familiar cases and were also more confident with this theme (5 vs. 6.5; p.05).

**Conclusions:** The confidence level, for the self-explanation group, reflects more appropriately their performance on the cases.

**Take home messages:** Self-explanation seems to foster better self-awareness.

## 7E Oral Presentations Assessment in Undergraduate Education

### 7 E 1

#### **When the teaching and the assessment are connected**

Amina Sadik (Touro University Nevada, College of Osteopathic Medicine, Henderson NV 89014, United States)

**Background:** Novel assessment mechanisms for a new medical biochemistry course were implemented, with the goal of demonstrating that learners exhibit improved information retention and better clinical reasoning skills when connections between basic sciences and clinical relevance are established early.

**Summary of work:** The 12-week course included learning objectives and performance indicators emphasizing connections between assessment and teaching. Lecture hours were reduced and replaced with these components: end of week workshops; two multiple-choice quizzes per workshop; a concept map graded using a rubric; two summative exams.

**Summary of results:** The entire class passed, with > 74% of students earning grades of “A” or “B”. Anonymous course evaluation results were positive, particularly with regards to use of concept mapping for knowledge visualization. Students rated the grading rubric as fair.

**Conclusions and Take home messages:** Methods used were successful in teaching and evaluating student knowledge of biochemistry. Medical students benefit from early exposure to connections between basic sciences and clinical applications. Emphasis on the association between teaching and assessment is critical. Formative and summative assessments are important teaching tools, since students learn from mistakes on these. Concept mapping evaluated with a rubric is a fair and efficient tool for visualization of student learning.

## 7 E 2

### **Impact of disrupted clerkship experiences on clinical skills examination performance**

K Szauter, M Ainsworth, A Frye, J Rowen, N Zhang (University of Texas Medical Branch, 301 University Blvd, Galveston, Texas 77555-0420, United States)

**Background:** In September 2008, Hurricane Ike forced the evacuation of Galveston Island and devastated our primary medical campus. Within one week, medical schools throughout Texas accommodated our students for clerkships. Students rotated at distant sites; moving between cities and host schools for the remaining academic year. We questioned whether the disruptions to their clerkship year would impact clinical skills examination (CSE) performance.

**Summary of work:** Our CSE is an eight-station standardized patient-based assessment taken early in year-4. Students are scored on skills related to interview, physical examination, communication, documentation, and physical findings (simulators). We determined the number of clerkship locations/host schools for each student and correlated this with CSE scores. We also compared class wide CSE performance to students from the prior year.

**Summary of results:** Clerkship/CSE data was available for 166 students. The average number of clerkship cities was 3 (range 1-5) and host schools was 2 (range 1-4). There was no association between the number of schools/cities and CSE performance. CSE performance for the “disrupted” class was comparable to students in the prior year.

**Conclusions:** Despite major disruptions to their clinical clerkship year, student performance on the CSE was not impacted.

**Take home messages:** Students adapt their learning during high stress situations.

## 7 E 3

### **Design of an assessment program for an undergraduate veterinary master curriculum**

GJ Bok, LFH Theyse, NJ Rietbroek, H Brommer, CPM van der Vleuten, P Van Beukelen, ADC Jaarsma (Faculty of Veterinary Medicine, Utrecht University, Yalelaan 1, 3584 CL Utrecht, Netherlands)

**Background:** Over the years, assessment literature has mainly focused on individual measurement instruments and their psychometric properties. More recently, a shift can be seen towards designing assessment programs, in which a purposeful arrangement of instruments is required for measuring medical competence as a whole.<sup>1,2</sup> Design principles of such an assessment program are proposed.<sup>1</sup>

**Summary of work:** A taskforce designed an assessment program for the newly developed undergraduate veterinary master curriculum at the Faculty of Veterinary Medicine, Utrecht University, which will start September 2010. Focus lay on determining: • goals for assessment; • what needs to be tested to gain data about students' competence; • what data from different instruments (quantitative and qualitative) needs to be collected and how this information can be combined and valued; • acceptability of the outlines by early involvement of stakeholders and policymakers.

**Summary of results:** Important first steps are made towards an integrative assessment program according to theory-based design principles. Other principles, such as supporting and documenting the program need to be addressed in the near future. When in action, monitoring and improving the program are essential.

**Conclusions and Take home messages:** A framework for designing assessment programs: nothing more practical than a good theory!

<sup>1</sup>Dijkstra J., Van der Vleuten C.P.M., Schuwirth L.W. A new framework for designing programmes of assessment. *Adv. Health Sci. Educ. Theory Pract.* 2009, Oct 10

<sup>2</sup>Van der Vleuten C.P.M., Schuwirth L.W. Assessing professional competence: from methods to programmes. *Med. Educ.* 2005;39:309-17.

#### 7 E 4

##### **Paramedic graduate attributes: using exploratory factor analysis to professionalise paramedic curriculum**

B Williams, A Onsmann, T Brown (Monash University, Department of Community Emergency Health & Paramedic Practice, Frankston 3199, Australia)

**Background:** A number of causes for the Australian paramedic discipline's current tenuous position have been identified. Amongst these are the lack of national registration and regulation and the inconsistencies surrounding the accreditation of the various training programs and courses. This has led to non-standardised curricula and consequent uncertainty as to whether graduates are meeting industry needs.

**Summary of work:** Nearly four thousand questionnaires concerning 47 possible graduate attributes were posted to paramedic college members around Australia. Participants were asked to rate the importance of each using a 5-point Likert scale. Principal Component Analysis that included Orthogonal Varimax Rotation was applied to identify the valid factors.

**Summary of results:** Questionnaires completed by 872 people showed that the best fit from the data generated a 5-factor graduate attribute solution. Factor 1: Professional Behaviour; Factor 2: Scientific Approach to Patient Care; Factor 3: Patient Interaction and Welfare; Factor 4: Collaboration and Teamwork; Factor 5: Commitment to Professional and Health Care Outcomes

**Conclusions:** It seems apparent that to stabilise and strengthen the paramedic sector, it needs to progress towards a recognised professional status. One key driver for that progress will be the translation of industry-agreed professional characteristics into training courses' graduate attributes.

**Take home messages:** It is the mutual support and reference between practice and training that offers the paramedic discipline the means for normalising and maintaining professional standards.

## 7 E 5

### **The role of national medical competence examination in capacity building of Indonesian medical education**

M Ghozali, PD Sari, Setiawan, D Agustian, TH Achmad (Joint Committee for National Competence Examination of Medical Doctor, Jalan GSSJ Samratulangi No. 29, Jakarta 10340, Indonesia)

**Background:** For the past two years, National Competence Examination (NCE) of medical doctor has been conducted in Indonesia. This high stake examination uses multiple-choice-questions to evaluate clinical reasoning. To fulfill number of items, regular faculty training is conducted. This training is participated by representative faculties from all medical institutions. The participants brought 100 items to be reviewed in this two-days workshop. This study tended to evaluate effectiveness and impact of this training.

**Summary of work:** At the end of the workshop, participants filled in evaluation form using Likert Scale about their perception on training methods, facilitators, and impacts on themselves and their institution. The results were analyzed and percentages.

**Summary of result:** Since the beginning of NCE implementation, seven workshops were conducted participated by 282 faculties from 33 institutions. From total items, 7075 items were accepted. Participants thought the trainings were designed appropriately, methods used were appropriate and their competencies in developing and reviewing items were improved.

**Conclusion and Take home message:** This result visualized aptitude in item development based on standard of competency. Beside number of items, capacity building was other main issues in development of medical education since that the participants would be agents of change in assessment field in their institutions. Key word: capacity building, item development

## 7 E 6

### **Preparedness for prescribing. A study involving three UK medical schools**

C Kergon, J Illing, G Morrow, B Burford, J Spencer, E Peile, C Davies, B Baldauf, M Allen, N Johnson, J Morrison (NHS North East, Northern Deanery, 10-12 Framlington Place, Newcastle upon Tyne NE2 4AB, United Kingdom)

**Background:** A study was carried out to explore variations in the preparedness of medical graduates of three UK medical schools. One of the main themes explored was preparedness for prescribing.

**Summary of work:** The primary sample was drawn from new graduates of three UK medical schools entering Foundation Year 1 (F1) (Intern), who were interviewed three times: at the end of their final year, after 4 and 12 months (n=65). A questionnaire was conducted with this cohort prior to starting F1 (n=480). Qualitative triangulating data was collected from nearly 100 clinicians. Interviews informed a triangulating questionnaire completed by members of clinical teams and pharmacists who worked with F1s. Safe prescribing assessment data was also examined.

**Summary of results:** The primary sample and questionnaire data highlighted graduates entering F1 felt under-prepared for prescribing. However there was improvement over the F1 year through practical experience and support. Weaknesses were identified both in the pharmacological knowledge underpinning prescribing, and the practical elements of calculating dosage, writing up scripts and drug sheets. Triangulating data reinforced primary sample findings. While there was some that F1s were prepared for prescribing, the pharmacists did identify severe gaps. Participants reported learning in an applied setting would be helpful and increase confidence in prescribing. No clear differences were found in preparedness to prescribe between graduates of the three medical schools.

**Conclusion and Take home message:** There is a need to address perceived weaknesses in prescribing by supporting the development of ward-based teaching of prescribing as a skilled procedure.

## **7 F Oral Presentations Assessing the Education Environment**

### **7 F 1**

#### **Assessing the learning environment in a distributed medical education program**

A Towle, S Rusticus, C Lovato (University of British Columbia, Gordon & Leslie Diamond Health Care Centre, 2775 Laurel Street, 11th Floor, Vancouver V5Z 1M9, Canada)

**Background:** Following Rosenbaum et al's work (2007) we examined reliability and validity of a learning environment survey within a distributed medical education program. Learning environment was measured using a survey containing the 17-item modified Medical School Learning Environment Scale (MSLES), as well as items on student connections and activities involvement.

**Summary of work:** Exploratory factor analysis examined the generalizability of the MSLES factor structure in a sample of students at University of British Columbia's distributed campuses. Coefficient alphas were calculated for each factor identified. We adapted survey items related to student connections and activities involvement. A pilot study was conducted to examine validity of these revisions.

**Summary of results:** Instead of the reported seven MSLES dimensions (e.g., positive student-student interactions, negative student-student interactions), results of our factor analysis revealed a five-factor solution. Coefficient alphas were .66 to .85. Pilot study results indicated that qualitative changes to student connections and activities items were appropriate.

**Conclusions:** Results support the use of the MSLES for characterizing learning environments in distributed campuses, with some modifications to improve reliability and validity.

**Take home messages:** The MSLES, with some modifications, permits characterization of learning environments across the distributed campuses of a medical school.

### **7 F 2**

#### **Differences in student perception of education environment in traditional vs team-based learning approaches to basic science education**

S Cook, C Grochowski, D Engle, SH Goh (Duke-NUS Graduate Medical School, 8 College Road, Singapore 169857, Singapore)

**Background:** Duke-National University of Singapore Graduate Medical School (Duke-NUS) and Duke University School of Medicine (Duke) have same basic science curriculum but use different pedagogy (team-based learning (TBL) versus traditional lecture/tutorial, respectively). Purpose was to explore student perceptions of educational environment using Dundee Ready Educational Environment Measure (DREEM) 1.

**Summary of work:** First year medical students (Duke-NUS n=26, Duke n=100) administered DREEM survey following four basic sciences courses. Survey provides an overall score, 5 subscale scores (Learning, Teaching, Academics, Atmosphere, Social), and 48 individual item scores. ANOVA and T-tests were used to make comparisons between courses and schools.

**Summary of results:** Average response was 83% Duke-NUS, 38% Duke. Teaching, Atmosphere, & Social, subscales were generally higher for Duke while Learning & Academics higher for Duke-NUS. On individual items, Duke-NUS was generally higher on student participation, long-term learning, problem-solving, relevance to medicine. Duke was higher on relaxed atmosphere, timing, not irritating teachers, social life and teachers' knowledge.

**Conclusions:** DREEM survey detected differences in student perceptions aligned with the goals and expectations of a TBL environment.

**Take home message:** TBL is viewed as a lot of work and cutting into their social life by Duke-NUS students, but that is compensated by more active and relevant learning environment.

### 7 F 3

#### **Serial assessment of the undergraduate clinical learning environment shows educational climate changes and differences**

N Alviar (National Teacher Training Center for the Health Professions University of the Philippines Manila, 3/F Joaquin Gonzales Hall, Padre Faura corner Maria Orosa Streets, Ermita District, Manila 1000, Philippines)

**Background:** The various clinical departments of Ospital ng Maynila (Manila Hospital), a city government-funded secondary level hospital, have served as the undergraduate clinical learning environment of the senior medical students of the Pamantasan ng Lungsod ng Maynila (University of the City of Manila) for more than twenty years. However, it is not known how the educational climate in the facility is perceived.

**Summary of work:** The Dundee Ready Education Environment Measure (DREEM) was administered to the final-year medical students at the end of the first, second, and sixth month of the rotating clerkship year.

**Summary of results:** Global and subscale DREEM scores consistently reflected more positive than negative perceptions of the educational environment of the hospital during all three points of the clerkship year. However, variations were noted across departments over time, including a striking positive-to-negative shift of perceptions of one department between the first and second month. Recurrent areas of concern were perceptions of teachers (who were constantly viewed as authoritarian), atmosphere (not well time-tabled), and social self-perceptions (too tired to enjoy the course).

**Conclusions:** Clinical learning climates differ over time and across departments even within the same institution.

**Take home message:** Multiple assessments of the educational environment should be done periodically within the academic year.

#### 7 F 4

##### **Perceptions of graduating medical students toward their educational environment in Riyadh, Saudi Arabia**

A Zawawi, M Elzubeir (King Saud Bin Abdulaziz University for Health Sciences, PO Box 18101, Riyadh 11415, Saudi Arabia)

**Background:** There is growing concern about conventional modes of teaching medicine. The literature indicates that several medical schools have converted their curricula to Problem Based Learning. We aim to measure the educational environment, in two different medical schools. The purpose of this study was to identify and compare the overall perceptions of the educational environment by graduating medical students in PBL and traditional curricula.

**Summary of work:** The Dundee Ready Education Environment Measure Inventory (DREEM) was selected to measure and compare the educational environments in King Saud University and King Saud Bin Abdul-Aziz University for Health Sciences, Riyadh, Saudi Arabia.

**Summary of results:** The total score of KSU (100/200) was lower than KSAU-HS (131/200) ( $p < 0.05$ ), and similar to that of other traditional schools KSAU-HS student scores were significantly higher in a number of sub-domains such as students' perceptions of learning, academic self-perception and perception of the atmosphere ( $p < 0.05$ ).

**Conclusions:** There are strong positive student perceptions of the PBL educational environment compared to student perceptions in a traditional curriculum.

**Take home message:** Results of this study should be used to guide curriculum development and improvement of the learning environment in health professions education institutions, particularly in the case of traditional schools.

#### 7 F 5

##### **DREEMing for a better medical education environment in Pakistan**

JS Khan, S Tabasum, UK Yousafzai (University of Health Sciences, Khayaban-e-Jamia Punjab, Lahore 54600, Pakistan)

**Background:** The main purpose of this study was to identify differences, if any, in the Medical Education Climate between the Private and Public Medical Colleges in Punjab, Pakistan and gather recommendations from students on measures that could improve this environment.

**Summary of work:** Mixed Quantitative and Qualitative Prospective Study was conducted in 2008-2009 on 1612 MBBS Final Year Medical Students of Private and Public Medical Colleges. Stratified Random Sampling was done to ensure representation of both Sectors. Dundee Ready Education Environment Measure (DREEM) was used to assimilate Quantitative Data and a 10-item Questionnaire was used to accumulate Qualitative Data. t-test and chi-square Test were used to analyze Quantitative Data. Common themes were identified in the Qualitative Data.

**Summary of results:** Analysis of Qualitative Data indicated a number of Examination, Curriculum, Teaching Methodology, Teacher and Peer related Stressors without discrimination in students of both Private and Public Sectors. Solutions by students focused on improving co-ordination between Institutions and University and, developing and delivering Clinically & Community-Centered, Problem-Based Education using indigenous appropriate Teaching Methodologies.

**Conclusions:** No difference in the Medical Education Climate of Private and Public Medical Education Sectors was identified, but, the Environment is less than Ideal.

**Take home message:** Pakistan needs to shift the onus of Medical Education from Teacher-Centered Didactic Approach to a more Student-Centered Self-Learning Strategy.

## 7 F 6

### **The first step to making a teaching hospital teach better: establishing a benchmark for educational quality**

J Currie, C Koppel, S Singh, M Lupton (Chelsea and Westminster Hospital NHS Foundation Trust, 369 Fulham Road, London SW10 9NH, United Kingdom)

**Background:** Like many teaching hospitals affiliated to large undergraduate and postgraduate institutions, our hospital delivers a significant proportion of student education. However, an individual hospital's specific contribution to training is hidden in the central institutional measures of performance including student assessment. Yet improvement requires evaluation. We sought to identify which elements of the local educational programme should be assessed and the tools necessary to measure them.

**Summary of work:** Using national quality assurance guidelines (GMC and PMETB), learner feedback (Student Online Evaluation, National Student Survey) and direct observation, we identified 3 key elements for assessment: 1) educational environment; 2) resources and allocation; 3) communication and relationships. These key elements were then assessed using validated tools for assessment of the educational environment (DREEM and PHEEM), piloted focused questionnaires, structured interviews and feedback sessions involving learners, teachers and administrators.

**Summary of results:** Feedback, support and timetabling were identified as requiring improvement. Teaching resources were mapped identifying deficient co-ordination between hospital departments. Inefficient communication was identified as responsible for a measurable waste of resources.

**Conclusion and Take home message:** By identifying a benchmark with measurable outcomes we have established a method for improving the efficacy of our local teaching strategy.

## 7 J Workshop

### **High authenticity assessment: unintended consequences and subversion of learning**

RK McKinley, L Pangaro, AM Hastings (Keele University School of Medicine, Keele, Staffordshire ST5 5BG, United Kingdom)

**Background:** Assessment drives learning. While this can be constructive and enables institutions to steer learning it can be destructive as students prepare to pass assessments rather than for a lifetime of practice. Increasing authenticity of assessment should increase the alignment between preparation for assessment and preparation for practice. Appropriate test material (cases) and measurement tools are essential for authentic assessment.

**Intended outcomes:** To facilitate, for authentic clinical skills assessment, sharing of experience of: Its impact on learning; Optimizing its impact on learning; Minimizing its unintended consequences.

**Structure:** We will use a case study of an attempt to introduce high authenticity, summative assessments of clinical skills in a UK medical school, the responses of students and faculty and the impact on learning. We will discuss the test materials and the tools used for quantitative and qualitative (global) assessments. Participants will be invited to share their experiences of positive and negative impacts of assessment on learning. Contributions will be used as a basis for discussion of whether institutions can mitigate these effects. We anticipate that the roles of medical schools, leadership, faculty development, assessors, clinical faculty and students will all be important.

**Intended audience:** Designers of assessment.

**Level of workshop:** Intermediate.

## 7 K Workshop

### **Mirror, mirror on the wall ... self-assessment in the health professions**

S Bernstein, M Forte (The Hospital for Sick Children, Mount Sinai Hospital, 555 University Avenue, Toronto, Ontario M5G 1X8, Canada)

**Background:** Self-assessment involves the ability to reflect on one's strengths and weaknesses. The literature shows that health professionals are poor self-assessors, and that self-assessment as an isolated activity is of uncertain value. Guided self-assessment can be facilitated by incorporating feedback from external sources. Teachers are ideally placed to provide feedback to learners and foster their self-assessment skills. Strategies exist to facilitate this process.

**Intended outcomes:** 1. To review the essential components of effective feedback; 2. To define self-assessment and describe some of the current controversies in the literature surrounding its use; 3. To become familiar with the relative ranking model as a tool that incorporates self-assessment in providing feedback.

**Structure:** Participants will be exposed to a summary of current thinking on feedback and self-assessment. They will be encouraged to reflect on the evidence in both small group activities and large

group discussions. The Relative Ranking Model (RRM) will be presented as a tool that can be used to foster self-assessment and enhance feedback. Participants will have an opportunity to apply the model in an engaging, creative activity. Evidence of the application of the RRM will be discussed.

**Intended audience:** This workshop will be of interest to those providing feedback to undergraduate and postgraduate trainees.

**Level of workshop:** Beginner.

## 7 L Workshop

### **Effective "Train the Raters" workshops - A crucial component of simulation-based testing and evaluation**

O Eisenberg, H Berkenstadt, N Gafni, A Ziv (National Institute for Testing and Evaluation, P.O.B 26015, Jerusalem 91260, Israel)

**Background:** A crucial factor in Simulation-Based Testing and Evaluation (SBTE) is the quality and preparedness of the raters who score examinees' performance. Often, the raters are experts in the relevant medical field, but have only limited experience in SBTE. Structured raters' training was found to be crucial for reliable and valid measurement.

**Intended outcomes:** The aim of the proposed workshop is to introduce the concept and principles of a comprehensive raters' training process, and to present a workshop protocol that can be adapted for different SBTE contexts. The session will demonstrate a mini raters' training workshop and will include hands-on practice, enabling participants to experience the scoring and calibration processes firsthand.

**Structure:** Preliminary exercise (10 minutes) – Demonstrating scoring variance among participants using a short video based scoring exercise; Theory (15 minutes) – A review of raters' role in SBTE, potential biases and measurement errors, and principles of raters' training; Main exercise (60 minutes) – Demonstration of the raters calibration process by having participants score physician's performance in 2 videos, surveying participants' ratings and conducting a discussion focused on extreme ratings. Concluding remarks (10 minutes).

**Intended audience:** Individuals who are interested in performance assessment of health professionals.

**Level of workshop:** Beginners and professionals.

## 7 M Workshop

### **Assessing the educational environment via organizational sciences**

IT Cohen, K Smith, C Corriveau, S Yanofsky (Children's National Medical Center, 111 Michigan Ave, NW, Washington, DC 20010, United States)

**Background:** Medical education requires the coordination and integration of disparate elements of academic and health care institutions. This can result in multitude of challenges. The organizational

sciences are able to view complex human interactions through various lenses in order to evaluate organization function and identify areas where small improvements will have optimal impact. One such lens, the Open-Systems Model, can be applied widely and used for diagnosis and design of interventions. The use of this model in medical education can assess curriculum fit, identify gaps in training, and provide understanding of the interdependencies between educational settings. The goal of this workshop is to explore and enhance the learning environment by applying organizational study techniques.

**Intended outcomes:** Upon completion of the workshop participants will be able to: 1) describe educational environment as an open systems model, 2) Apply an organizational framework to diagnosis and assess the educational environment, and 3) discuss barriers and opportunities that may be encountered when introducing change.

**Intended audience:** Medical educators, under and postgraduate.

**Structure:** Welcome, road map, introduction to open-systems model, shared examples of system challenges, small group assessment of an educational environment and report back, exploration of introducing change, Q&A.

**Level of workshop:** Intermediate.

## **7 O Workshop**

### **Academic counselling**

T Singh (Christian Medical College, Ludhiana 141008, India)

One of the major roles of medical teachers is to counsel the students in academic matters. There can be many points during the course of study where students require some type of counseling. There can be a wide range of issues- from simple information seeking, dealing with academic stress to decision making regarding their career- for which counseling may be required. Medical teachers can play a very useful role in supporting students using simple interventions. However, many of the teachers have no training or experience of counseling students. This workshop will aim to equip the participants with the basic skills required for a successful academic counseling session in addition to helping them develop the desirable qualities of a counselor. The workshop is meant for mid level faculty members. Although faculty members with administrative responsibilities may find this workshop more useful, even others who are interacting with students in any way will benefit from the knowledge and skills acquired. The workshop will involve min-plenary followed by role plays and interactive discussions.

## 7 S Posters Faculty Development

### 7 S 1

#### **Training needs analysis of senior faculty at the Severn Deanery**

A Cook (NHS Education South West - Severn Deanery, Deanery House, Unit D, Vantage Office Park, Old Gloucester Road, Hambrook, Bristol BS16 1GU, United Kingdom)

**Background:** In mid 2008 the newly appointed Educationalist/Medical Adviser was charged with ensuring effective faculty development with senior members of the Deanery Faculty (140 people) including Deanery Postgraduate Associate Deans, Hospital and Mental Health Directors of Medical Education, and Heads of Specialist Training Schools. Many views were expressed about what this should be without providing relevant evidence or facts.

**Summary of work:** A project team of internal/external experts was set up to carry out a thorough training needs analysis through interviews and a comprehensive on line questionnaire. A report was produced which is now being used to set up a bespoke range of activities including courses, skills workshops, coaching and mentoring.

**Summary of results:** A list of prioritised development areas (such as handling trainees in difficulty and work planning) for the Faculty with clear guidance on preferred learning methods and styles and identification of other key issues to tackle.

**Conclusions:** Using a systematic educational needs analysis within a medical education faculty produces clear information about what to focus on in learning interventions and how to do this

**Take home messages:** Apply well researched systematic training processes to our own development needs as educators – it works!

### 7 S 2

#### **Utilizing a Fellowship in Medical Education Program to create an educational community**

E Mylona, C Messina, N Nardone (State University of New York Stony Brook Health Sciences Center, Nichols Road, Dean's Suite, Level 4-Rm 184, Stony Brook, New York 11794, United States)

**Background:** Academic institutions benefit from organizational efforts to foster and maintain educational learning communities. Medical education (ME) fellowships foster promote learning communities. We applied the Self-Expansion Model of Motivation, which postulates that individuals participating in self-expanding experiences (i.e., novel and challenging) experience greater closeness with others also involved in that experience, to describe community-building within our ME fellowship. We hypothesized that a novel/challenging fellowship can provide a self-expanding experience and that participants will report greater inclusion with their ME community over time. Perceived participant inclusion with their ME community would also be associated with learning community maintenance.

**Summary of work:** Three cohorts (12 faculty-participants each) of a 16-month ME fellowship program took part. Fellows self-reported their perceptions of inclusion within the educational community of the fellowship.

**Summary of results:** Data suggest that fellows' perception of inclusion with their educational communities increased over time. Perceiving the ME Fellowship as novel was associated with greater self-inclusion while challenge was associated with less self-inclusion.

**Conclusion:** ME fellowships provide a novel experience in which individuals' self-perceive greater inclusion within educational communities. This may increase the likelihood that a learning community/network will be maintained over time. However, greater challenge (i.e., competing professional/personal demands) may negatively affect perceived inclusion.

**Take home message:** Results suggest a novel approach for describing network/community-building and maintenance within ME fellowship programs.

### 7 S 3

#### **Outcomes of the ABIM Faculty Development Course on assessment and evaluation**

W Lobst, S Hood, J Adiletto, E Holmboe (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia, PA 19106, United States)

**Background:** In 2004, the American Board of Internal Medicine (ABIM) began a weeklong faculty development course on assessment and evaluation. The course is offered twice yearly, and is capped at 20 attendees. Upon completion, attendees are asked to identify up to five "commitments to change" (CTC) they anticipate implementing. A follow-up e-mail at six months evaluates their interim progress.

**Summary of work:** Analysis of faculty experience after attending the faculty development course.

**Summary of results:** The 102 program attendees have identified 453 "commitments to change". The top three areas of change included implementing a formal faculty development program, formalizing a mini-CEX direct observation program, and utilizing a chart stimulated recall in residency. To date, 34 of 102 (33%) attendees have reported on their CTCs: of their 152 potential changes, participants have partially or completely implemented 104 changes (68%).

**Conclusions:** Faculty development in assessment generates universal interest in implementing change. Preliminary results suggest participants do implement a number of innovations within 6 months of completing the course..

**Take home messages:** Intensive, interactive faculty development can serve as a catalyst for implementing assessment innovations in training programs. Longer longitudinal follow-up is needed to assess the sustainability of the changes.

### 7 S 4

#### **Long-term mentoring of medical students: Assessing professional and personal impacts on clinical educators**

K Chin, D Boudreau, Y Steinert (Centre for Medical Education, McGill University, 1110 Pine Ave. West, Montreal H3A 2A3, Canada)

**Background:** McGill University has recently introduced a curricular innovation entitled Physicianship, emphasizing the complementary roles of physicians as healers and professionals. A critical component of this innovation is Physician Apprenticeship, a longitudinal course in which six undergraduate students work together with a clinical educator for four years.

**Summary of work:** Currently entering its second year, this four-year, multicase study follows three clinical educators who are participating in: (a) one-on-one interviews, and (b) audio-taped reflections regarding their mentorship experiences. Thematic analysis of these rich data provides insights into their multiple roles, hopes and expectations, as well as personal and professional impacts.

**Summary of results:** Clinical educators articulate the evolving nature of their longitudinal mentorship in terms of meeting expectations, balancing various roles, and reconnecting with the medical profession. Mentoring is seen as rewarding for clinical educators because of interactions with students.

**Conclusions and take home message:** Longitudinal research is important for assessing the evolving nature of mentorship, as well as its extended benefits to clinical educators.

## 7 S 5

### **Faculty Development in Assessment of Clinical Competence: The American Board of Internal Medicine (ABIM) Visit Program**

S Hood, W Iobst, J Adiletto, E Holmboe (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia, PA 19106, United States)

**Background:** U.S. Internal Medicine Residency Review Committee (IM RRC) requirements for accreditation mandate residency programs have faculty that are trained in evaluation and assessment and spend significant time evaluating trainees. The ABIM visit program was developed to help residency programs improve their assessment and evaluation of trainees.

**Summary of work:** ABIM developed a program to deliver onsite faculty development to residency programs. Course materials are presented by ABIM staff physicians with backgrounds in assessment with 1-2 day interactive workshops.

**Summary of results:** Twenty two visits have been completed involving over 500 faculty. The most popular topics were: Direct observation of clinical competence; Effective feedback; Systems approach to evaluation; Rating scales and evaluation forms. Feedback indicates this activity provided relevant and practical faculty development. Participants, when asked if they would recommend this activity using a 7-point scale (7 = strong recommendation), gave a mean rating of 6.5.

**Conclusions:** Faculty development via the ABIM visit program helps programs develop faculty skills around assessment and evaluation. Future work includes expanding the program by developing other educators to provide regional faculty development.

**Take home messages:** Faculty development can help programs improve their evaluation systems and meet the new IM RRC requirements.

## 7 S 6

### **Decision-making practices for Professional Development (PD)**

AJ Daniel (Tulane University School of Medicine, 1430 Tulane Avenue, SL-6, Office of Medical Education, New Orleans 70112, United States)

**Background:** During 2007-2008, the OME received IRB to study faculty PD needs in the areas of teaching and learning, medical education research, assessment and evaluation, using technology to enhance teaching and learning.

**Summary of work:** Although the development of activities was from a “data-driven” model, it could be referred to as “faculty-driven” decision-making practices for PD. The survey consisted of 29 PD and 7 demographic items, inquiring about knowledge, skill, involvement in medical education and research, and educational technology.

**Summary of results:** Respondents selections in design and conduct educational research (average across 8 dimensions = 95%); evaluation and assessment (average across 12 dimensions = 83%); teaching and testing for problem solving (44%); improving their presentation/lecture skills (43%); mentoring services were of interest to 78-81%; 86-97% for assistance with medical education research.

**Conclusions:** A variety of opportunities for faculty to improve their pedagogical skills, engage in medical education research, which included Teaching Excellence Series, Faculty PD Series, Faculty, Journal Club, Research Group, Website for PD.

**Take home message:** PD that is centered on the needs of the faculty is more accepted by the faculty because they are the force driving what they will learn.

## 7 S 7

### **Relationship between leadership skills of leaders of postgraduate medical education in clinical departments and educational climate**

B Malling, LS Mortensen, AJA Scherpbier, C Ringsted (Aarhus University Hospital, Skejby, Brendstrupgaardsvej, Aarhus DK 8200, Denmark)

**Background:** Leaders influence the educational climate. However, to what extent leadership skills of consultants responsible for education in clinical departments (CRE) relate to the educational climate is un-known.

**Summary of work:** In a trans-sectional study the leadership skills of CREs, measured by multi-source feedback (MSF) scores were correlated to the educational climate surveyed among all doctors in clinical departments.

**Summary of results:** Doctors from 42 clinical departments participated. Response rate in the MSF process was 84.3 % (420/498) and 52 % (420/811) in the educational climate survey. No correlation between scores of leadership skills and scores of the educational climate was found ( $p = 0.29$ ).

**Conclusions:** This study indicates that there is no relationship between leadership skills of CREs and the educational climate. The results confirm studies that the CREs have minor influence in clinical departments and hence might have minor influence on the educational climate. One explanation could

be the seemingly separate administrative and educational lines in clinical departments where maybe the administrative leaders have more influence on the educational climate than the CREs.

**Take home message:** There seems to be no relation between leadership skills of leaders in postgraduate medical education and educational climate in clinical departments.

## 7 S 8

### **Engaging trainers in developing workplace-based assessments of clinical leadership**

L Hadley, C Penlington, A Gisvold (Kent, Surrey and Sussex Deanery, 7 Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** Clinical leadership is currently a “hot topic” in postgraduate medical education in the UK. As clinical leadership becomes integrated in specialty curricula in the UK, there is a simultaneous emergence of associated assessments.

**Summary of work:** This paper reports on the beginning phases of an innovative approach taken by the Kent, Surrey and Sussex Deanery which involves engaging clinicians and managers who work in hospitals, in order to champion the teaching and assessment of clinical leadership for all trainee doctors.

**Summary of results:** A key goal of this project is one of developing and piloting workplace based assessments in partnership with practitioners, in order to garner maximum engagement by both trainers and trainees. Early results indicate that clinicians and managers have important practical experience to offer in designing and adapting workplace based assessments of clinical leadership.

**Conclusions and take home messages:** Engaging trainers in the integration of clinical leadership into the experienced curriculum and associated assessments leads to greater engagement in developing this aspect of the postgraduate medical curriculum.

## 7S9

### **Enhancement of Primary Care Physicians' (PCPs) skills in the computerized setting: instruction and evaluation**

Shmuel P Reis, Hilla Cohen-Tamir, Leora Eger-Dreyfuss, Aviv Shachak, Amitai Ziv (Technion, Rappaport Faculty of Medicine, Division of Family Medicine, Atzmon, Post Misgav, 20170 Israel)

**Background:** Information systems in healthcare aim to improve care, increase safety and reduce costs. Although there is a growing evidence of positive impact on quality of care, unintended consequences in safety, quality and even clinical reasoning also emerge. While most attention is paid to the data generated through information systems for health services management, it is high time to look into the patient-doctor-computer interaction, and its impact (negative and positive). We have studied the computer impact on primary care encounters, developed a framework for enhancing PCPs' proficiency in the computerized setting, and are currently piloting its implementation.

**Summary of work:** A package of instruction and evaluation was developed, comprising a daylong workshop with a post-test in the simulated office, and a mixed methods assessment. The package is currently at the pilot stage.

**Summary of results:** Data from the pilot phase will be available for the meeting.

**Conclusions:** We expect that data will shed light on the feasibility and acceptability of the package, as well as aspects of its educational impact.

**Take home messages:** The computer is a new player in the old patient-doctor relationship. Its negative influence commands interventions enabling PCPs skills to empower encounters in the computerized setting.

## 7T Posters Curriculum Evaluation 2

### 7 T 1

#### **AMC Clinical Teachers' Questionnaire**

M Fabriek, B Goos, C Baane, A Verbeek, M J Heineman (Academic Medical Center, Meibergdreef 9, Amsterdam 1218 BX, Netherlands)

**Background:** The AMC considers the education of clinical teachers responsible for the residents training of utmost importance for high-quality patient care and academic development. Because clinical teachers differ as persons and in abilities, we developed an extensive Teach the Teacher program meeting teachers' individual needs. Start of the program is an assessment in which, among other activities, questionnaires are used to define these needs.

**Summary of work:** As a result of a pilot-assessment with seven clinical top specialists we developed the web-based AMC Clinical Teachers Questionnaire. The questionnaire is a work sample of the clinical teacher's job. Test developers Goos and Tjoa assisted in putting this in a strong theoretical framework: the competing values model of Quinn. The domains and items used meet the directions for the development of four teacher roles set by the Central Board of Medical Specialists in the Netherlands.

**Summary of results:** The questionnaire is validated and has proven to identify acknowledged individual development needs.

**Conclusion and take home message:** Teachers can become knowledgeable of the development and use of the questionnaire, and knowledgeable of the questionnaire in the context of the assessment procedure.

### 7 T 2

#### **Assessing the quality of training programmes by identifying components of the training map**

S Ahmad, T Sensky, M Maier (London Deanery, Russell Square, London WC1B 5DN, United Kingdom)

**Background:** With increasing emphasis on improving quality of training programmes in medical education there is great interest in how to measure this. Using several themes from the literature such as constructive alignment and curriculum mapping as a basis it was felt that a widely accepted map of training with its component parts was needed to actually state what it constitutes a training programme.

**Summary of work:** A Delphi technique was chosen to seek an expert consensus on training components for the London Deanery's postgraduate psychiatry training scheme, the largest single provider of psychiatric training in the world. Twenty experts in the field were identified and agreed to participate. An initial training map and components list was compiled then reviewed by the experts separately for

comments. This was collated and sent back with a request to rate importance of different component parts.

**Summary of results:** Initial iterations show there is largely agreement over component parts of training but confusion over the overlap with curriculum and the relationship between service provision and educational needs. Results from further iterations will be reported.

**Conclusions and Take home message:** Expert consensus can establish what constitutes a training experience and in identifying parts that are successful and those that require development: a crucial part of quality assurance.

### 7 T 3

#### **Development of a global evaluation model for an elective clerkship**

I Leiva, M Sirhan, A Wright (Facultad de Medicina, Pontificia Universidad Católica de Chile, Marcoleta 350 Primer piso, Santiago 8330033, Chile)

**Background:** The last year of School of Medicine curriculum at Pontificia Universidad Católica de Chile includes a 26 weeks of Elective Clerkship (EC). This study describes the evaluation experience of this course: Satisfaction, learning, transference and impact. Our aim was to establish a structured evaluation model, specific for the EC and likely to be used in other Clerkships.

**Summary of work:** Auto-evaluation surveys, focus groups and semi-structured interviews were taken from teachers and students, to identify the problems, needs and learning environment of the students. The purposes, contents, objectives, global competences, methodologies, evaluations of the student's learning process of the course were reviewed. Specific indicators were elaborated or selected for each of the levels.

**Summary of results:** This evaluation process allowed restructuring the EC, including objectives and standardized evaluation of the students and course. A final report, underlining strengths, weaknesses and main challenges, as well as a proposal of restructuration of the EC, were presented to the School authorities. Changes were done the following academic year.

**Conclusions and take home message:** and Take Home Messages This model consists in a sequence of activities with defined goals likely to apply, with some modifications, in other clerkships or courses of carriers with supervised practice.

### 7 T 4

#### **Changing course: What tips the balance? A case study**

S Kalishman, C Timm, P McGuire (University of New Mexico School of Medicine, MSC 08 4710, Albuquerque, New Mexico 87131, United States)

**Background:** Students routinely assess the quality of courses or clerkships. Course directors respond with incremental adjustments. This process facilitates improvement in a curriculum that is working well, but may hinder substantial curriculum revision. What is required to achieve larger change?

**Summary of work:** Annually internal evaluation with active student input and faculty response is followed with recommendations from these reviews to the curriculum committee.

**Summary of results:** Courses and clerkships are assessed through a continuous improvement process. A comparison of data indicates that this stakeholder process supports incremental and small changes to improve the curriculum. Enactment of larger change, such as lengthening a course, languishes with this type of process. Larger change occurs in response to external influences such as innovation in peer institutions, national reports on education, and institutional accreditation standards.

**Conclusions:** Self-regulation works when the stakes are small. Tipping the balance for change with larger stakes involving realignment of time, schedule or pedagogy requires external pressures aligned with internal findings.

**Take home messages:** Incremental curriculum improvement and large curriculum change are different processes. Major change such as curriculum realignment is not business as usual and requires a combination of internal findings and external standards and expectations.

## 7 T 5

### **How does medical faculty perceive the evaluation system?**

Eunbae B Yang, Eunyong Hwang (Department of Medical Education, Yonsei University College of Medicine, Institute of Educational Research, Yonsei University, 134, Shinchon-dong, Seodaemun-gu, Seoul 120-749, Republic of South Korea)

**Background:** Medical schools traditionally have three accountabilities, education, research, patient care. But it is hard to maintain the proper balance among them and to set up the reliable evaluation system. This paper is to analyze the perspective of medical school faculty about their evaluation system.

**Summary of work:** The survey was designed to investigate the perception of faculty. We sent 1,856 copies of the survey form to each faculty at the 41 medical schools in Korea and we received 668 completed forms from 35 medical schools.

**Summary of results:** The results fell into three major areas. First, a half of faculty responded its domain and standards were still a valid. Second, only 7.9% of faculty perceived that evaluation methods were reliable and the ratio of satisfaction was not higher than 40%. Third, almost of faculty considered educational activities as extra works. Actually it does not affect the promotion of faculty.

**Conclusion and take home messages:** Faculty has some doubts as to the validity and reliability of evaluation system. They hope it will be changed from regulation system to supporting system. We need to develop the multilateral evaluation model.

## 7 T 6

### **The active handout: a valuable tool in student learning and assessment.**

WT O'Connor (University of Limerick, Graduate Entry Medical School, Limerick, Ireland)

**Summary of work:** Active handouts were employed in Year 3 medical lectures as an aid to student note-taking. At the end of class completed handouts was collected from ten randomly chosen students and then assessed subjectively.

**Summary of results:** Formative assessment of the collected active handouts correlated with the end-of-module summative mark for each student. On the basis of this finding completed active handouts are

routinely collected and formatively assessed at an early stage in each module to initiate early intervention for non-performing students.

**Conclusions:** In addition to allowing discovery learning to be incorporated into note-taking during didactic lectures formative assessment of the completed active handout is an accurate indicator of end-of-module performance for individual students.

**Take home message:** The idea behind the active handout is that the student employs the handout as a template upon which to place more information gleaned during a didactic lecture. In addition to facilitating discovery learning in the lecture, the completed active handout is an accurate indicator of end-of-module performance and is therefore a valuable tool in the assessment of student learning.

## 7 T 7

### **Language skills and study performance: motives and results of an assessment among first year medical students**

MEW Dankbaar, K Stegers-de Jager, Axel P.N. Themnen (Erasmus University Medical Centre, PO box 2040, Desiderius School Room Gk 664, Rotterdam 3000 CA, Netherlands)

**Background:** A program of academic writing is being implemented in our curriculum. Basic language skills (pre-university level) are an essential prerequisite for this program. We have addressed the following questions: do first year students have pu-level language skills and, if not, will they perform remedial learning activities? Is there a relation between good language skills and study performance?

**Summary of work:** Dutch language skills were assessed, using a validated, online test among 1st year students in a controlled environment (January '09). Students received specific feedback and were, if necessary, advised to attend a remedial language course. In June the test was repeated by students who failed at their first attempt.

**Summary of results:** 96 % (n=434) of the 1st year students took the test. 51% of the students failed. At the second attempt in June, (only) 32% failed the test. After 6 and 10 months of study, students, who had passed the test in January, had better study results than those who had failed; this effect disappeared after 12 months.

**Conclusions:** The level of language skills is below standard for half of the 1<sup>st</sup> year medical students. Assessment and feedback makes students aware of deficiencies and stimulates them to improve these skills. Insufficient language skills are present among low and higher performing students, which makes the test important. Further research will be focussed on the relation between language skills and academic writing performance.

**Take home messages:** Assessment of language skills makes students aware of their deficiencies and stimulates them to improve these skills.

## 7 T 8

### **Gathering stakeholders' opinion about student assessment in the pediatric internship: lessons to be learned**

S Grosseman, DO Teixeira, V Bollela, JR Boulet, S Mennin (Universidade Federal de Santa Catarina, Campus Universitário sem número - Centro de Ciências da Saúde/ Departamento de Pediatria – Trindade, Florianópolis - Santa Catarina 88040-900, Brazil)

**Background:** The traditional curriculum of a Brazilian Medical school was changed in 2003, becoming modulated and integrated. Students' assessment in pediatrics rotations consists of global rating. Thinking about changes, a study was developed to gather students' and evaluators' (faculty, medical staff and residents) perceptions of the pediatric internship assessment.

**Summary of the work:** A mixed approach method was employed with focus groups and a structured questionnaire applied to 92 out of 97 interns and 23 out of 24 evaluators, after approval by the Ethics board. The analysis was descriptive.

**Summary of results:** The comprehensiveness of global rating was referred to as its main advantage; 73.0% interns and 43.5% evaluators had a favorable opinion about it ( $p < 0.05$ ); subjectivity and the lack of dedication of some preceptors were cited as its main limitations. The more frequent suggestions to improve assessment were faculty spending more time with students and providing more frequent feedback. Few considered different assessment methods. Faculty development was suggested by some participants.

**Conclusions:** Consistently engaging everyone, especially stakeholders who may show less motivation for other approaches to assessment is a strategy for change.

**Take-home message:** Formative feedback about experiences with assessment works well to identify foci for faculty development. Knowing stakeholders' opinions facilitates efforts to promote changes in assessment practices.

## 7 T 9

### **An exploration of the 2:1 and 1:1 models of clinical education in occupational therapy and physiotherapy**

M Cahill, A O'Connor, E McKay (University of Limerick, Departments of Occupational Therapy and Physiotherapy, Faculty of Education and Health Sciences, Health Sciences Building, Limerick, Ireland)

**Background:** Within the disciplines of physiotherapy and occupational therapy in Ireland the 1:1 model of student supervision (one student to one clinical educator) has traditionally been used. More recently, the 2:1 model (two students to one clinical educator) has emerged and continues to grow in popularity. Greater evidence of the effectiveness of these models is necessary to inform the development of the clinical learning environment and optimise the learning experience for all stakeholders involved.

**Summary of work:** The perspectives of eight practice educators and 12 students who experienced these models were explored using individual semi-structured interviews which were analysed using a phenomenological approach.

**Summary of results:** Opinions on choice of model depended on practice educator preference. Students valued the peer support offered by a 2:1 model early in their clinical education while a 1:1 placement later on promoted independence.

**Conclusions:** There is a value in experiencing both supervision models although it is acknowledged that challenges exist within each.

**Take home messages:** Education is required so that all stakeholders involved in clinical placement are aware of the benefits and challenges of these supervision models. Opportunities exist for clinical placement facilitators to be instrumental in furthering education and research in this area.

#### 7 T 10

##### **The education guidance method of clinical practice to make a learning effect in the occupational therapist education in Japan**

C Sasaki, K Satomura (5-10-32 Nishikasai Edogawa-ku, Tokyo 134-0088, Japan)

**Background:** A purpose of this study is to clarify learning structure from "experience learned from clinical practice" which the student who experienced clinical practice holds to examine the education guidance method of clinical practice to make a learning effect.

**Summary of work:** I investigated 160 occupational therapy students in 2007 whose were registered the clinical practice at college T of occupational therapy schools in Tokyo. I have carried out a questionnaire. It included questions regarding experiences learned from clinical practice and description of what they got. I made it a label and I collected the labels which resembled it and classified categories.

**Summary of results:** The free description and students' comment on meanings of clinical practice was classified in a category and the label number of " Practice of the occupational therapy" 317 pieces, "Self-knowledge" 216 pieces, "The construction of the occupational therapist " 84 pieces, " Others" 20 pieces.

**Conclusions:** The students learned " Practice of the occupational therapy " and did not get an opportunity of the practice to do " The construction of the occupational therapist ", and it became clear to think that " Self-knowledge " was important.

**Take home messages:** As one of the education guidance method of clinical practice to make a learning effect , the necessity that took in the experience of the learning method to learn from the insight of the student and a relation with a supervisor / the patient positively was suggested by education in the study.

#### 7 T 11

##### **Development of a course evaluation tool with higher accuracy and usefulness in medical education**

M Davison, M Vassar (Oklahoma State University Center for Health Sciences, 1111 West 17th Street, Tulsa 74107, United States)

**Background:** Student course evaluations are typically regarded as the most valid source of data in the assessment of teaching effectiveness (McKeachie, 1997). It is estimated that almost 80% of North American medical schools utilize student course evaluation assessments. Most research to date has focused on undergraduate populations as opposed to the medical school environment (Abrahams & Friedman, 1996). Medical schools have unique environments and research in this area is needed.

**Summary of work:** A course evaluation instrument was developed that addresses the two principal issues (accuracy and usefulness) related to course evaluations seen in literature (Tang, 1997). Methods used included: a literature review, Q-Factor Analysis (both faculty and students), and focus groups (both faculty and students). Fourteen new course questions were piloted and additional feedback was solicited.

**Summary of results:** Both faculty and students indicated greater satisfaction with providing and receiving feedback for curricular improvements. Qualitative data was collected with overall positive comments.

**Conclusion:** Our new course evaluation instrument yields better and more accurate feedback for faculty and a higher satisfaction with feedback given and received among both students and faculty.

**Take home message:** This presentation will alert other medical educators to an updated instrument for evaluating courses.

## 7 T 12

### **Does qualitative complexity correspond to the underlying factor structure of undergraduate medical progress tests, constructed to measure higher cognition?**

K Sunger, F Ahmad, A Boles, A Owen, G Byrne (The University of Manchester, ATR4 1st floor Education & Research Centre, University Hospital of South Manchester, Southmoor Road, Manchester M23 9LT, United Kingdom)

**Background:** For tests designed to measure higher cognition, validity evidence is important, but a challenge to gather. Quantitative methods such as factor analysis may have a role. Theory dictates that due to learning transfer issues, scores should not group by cognitive skill, but by context.

**Summary of work:** We hypothesised that categories of cognition would not map to underlying factors in Manchester Progress Test (MPT) scores. 8 MPTs (1000 MCQs) were coded by students. 200 items were clinician coded. Repeated inter-rater reliabilities brought final student consensus including three categories of complexity: 1) CAT1: factual recall; 2) CAT2: interpretation; 3) CAT3: synthesis. Fourteen student scores from 8 successive MPTs were analysed using principal components analysis (varimax rotation). Items loading >0.1 onto a factor were grouped.

**Summary of results:** Percentage category overlap with best fitting factor ranged from 7-48%.

**Conclusions:** Evidence suggests, as hypothesised, cognitive categories do not map to factors.

**Take home messages:** These methods may provide useful information but are fallible. Further research into validity methodologies is required.

### 7 T 13

#### **Internal evaluation of Nursing and Midwifery School's Program in East of Guilan/Iran**

SAI Dadgaran, I Nikookar, F Firouzehchian, Gh Khaef, F Asgari, V Lahouti, and Internal Evaluation Group (Guilan University of Medical Sciences, Mellat st, Namjoo st, Rasht 41446-68164, Iran)

**Background:** Internal evaluation is a kind of evaluation that evaluators know the organizational environment and can facilitate communication and use of results.

**Summary of work:** This is a descriptive-evaluative study. This study was done based on accreditation model in expertise approach. Expert teachers determined standards for 9 domains including: mission and goals, management, education, research, faculty, students, space and equipment, assessing and measurement, and graduates. For each criteria, expert teachers determined indicators in three conditions: desirable, relatively desirable and undesirable. The data gathering tools were questionnaire, interview and documents.

**Summary of results:** The results showed that in curriculum domain most of the indicators were in desirable condition. In research domain, the indicator of "distribution and applying of research results" was undesirable. In graduate domain, some of the relatively desirable indicators included: "graduates' ability in making appropriate decision". In other domains, the results showed that some indicators were desirable, some were relatively desirable and few were undesirable.

**Conclusion:** The results showed that the program of Nursing and Midwifery school in some domains had strengths and in some domains had weaknesses. Program managers and stakeholders must find solutions to rectify the weaknesses and develop the strengths.

**Take home message:** Without involving stakeholders, success in internal evaluation is not possible.

### 7 T 14

#### **Review of clinical learning: challenges and solutions**

F Asgari, SAI Dadgaran, H Mahjoob (Guilan University of Medical Sciences, Rasht 41446-68164, Iran)

**Background:** This study is to determine the attitude of nursing students at Islamic Azad University of Astara Branch on the factors affecting clinical learning.

**Summary of work:** The present study is a descriptive cross-sectional census method in which 85 third year nursing students were studied. To access research and researcher-designed questionnaire in Section 5, demographic characteristics, students' attitude about role of clinical faculty, nursing staff, facility and equipment, ward regulations and how they performed in clinical learning. Its content validity has been approved and reliability had been performed by Cronbach alpha (0.81). After collecting data, analysis was done using software SPSS.

**Summary of results:** The results showed that the majority of the units studied (80/5 percent) had a positive attitude about affective factors on clinical learning. There were meaningful statistical differences between age and mean with students' attitudes about role of facility and equipment factors in the ward respectively ( $p < 0.02$ ,  $p < 0.04$ )

**Conclusion and take home message:** Considering the importance of clinical learning as a key factor in promoting the quality of clinical education of nursing students, the educational planners and officials based their decisions on the research results of this major study.

## 7 U Posters Postgraduate Education 2

### 7 U 1

#### **Procedure based assessment: evidence to support its implementation**

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**Background:** Procedure-Based Assessment (PBA) has been adopted by the UK Intercollegiate Surgical Curriculum Programme ([www.iscp.ac.uk](http://www.iscp.ac.uk)) as the main method for assessing the technical skills of surgical trainees in the operating room. Postgraduate medical assessment methods require evidence of validity and reliability, to fulfil the regulatory standards ([www.pmetb.org.uk](http://www.pmetb.org.uk)).

**Summary of work:** We evaluated the validity and reliability of PBA. Trainees (n=85) in 6 surgical specialties were assessed performing common index procedures (n=437). 749 PBA assessments were undertaken by 51 consultant clinical supervisors (CS) and 4 independent assessors (IA).

**Summary of results:** Construct validity was confirmed by strong correlations with years of training, level of training and previous procedural experience. High reliability ( $G > 0.8$ ) for a specific procedure is achieved using only 3 assessors; reliability for a mix of procedures is achieved with a larger number of cases and assessors. Assessor designation (CS vs. IA) does not affect the score variance.

**Conclusion:** The reliability of PBA is exceptional. Trainees must be adequately assessed on every index procedure. Non-consultant assessors can be used as assessors.

**Take home message:** The ISCP can be confident about the use of PBA. Other surgical training programmes may wish to adopt the PBA method.

### 7 U 2

#### **The effects of changing work patterns on surgical training: dissecting the problem**

NS Blencowe, BA Parsons, AD Hollowood (University Hospitals Bristol NHS Foundation Trust, Bristol Royal Infirmary, Marlborough Street, Bristol BS2 8HW, United Kingdom)

**Background:** There is concern that shift patterns and reduced working hours are detrimental to training. We examined the effects of changing working patterns on the operative experience of surgical trainees in our hospital.

**Summary of work:** Emergency general surgical cases from three time periods were examined: Calman (1996), New Deal (2001) and European Working Time Directive (2004).

**Summary of results:** In 1996, senior house officers (SHOs) performed 31% of emergency procedures, compared with 10% in 2004. In 1996, SHOs performed emergency hernia repair and laparotomy (6% and

8% of caseload respectively). These procedures were not performed by SHO level trainees in 2004. Appendicectomy constituted 33% of SHO emergency caseload in 1996 (24% independent, 9% supervised), compared with 12% in 2004 (4% independent, 8% supervised). Abscess drainage constituted 43% of the SHO emergency caseload in 1996 (41% independent, 2% supervised), compared with 80% in 2004 (72% independent, 8% supervised).

**Conclusions:** SHO participation in theatre has reduced, with a corresponding reduction in their operative repertoire.

SHOs require protected theatre sessions to sustain operative training. Supervised operating is an important training opportunity and should be provided regularly.

**Take home message:** Education must be integrated into working practice for trainees to achieve expected competencies and produce adequately experienced consultants.

### 7 U 3

#### **Syncoated spinning plates – a solution to poor attendance at core teaching**

M Solan, J Simpson, E Sharp, D Gerrard, H Scott (KSS School of Surgery, Postgraduate Deanery, 7 Bermondsey Street, London, SE1 2DD, United Kingdom)

**Background:** The National Surgical Curriculum is delivered, in the KSS Deanery. partly through classroom teaching. This teaching is mandatory and attendance records form part of trainees' annual assessment and ranking. Trainees work in shift patterns which precludes 100% attendance.

**Summary of work:** We audited attendance rates at Core Surgical Teaching and compared this to the theoretical maximum that could be achieved. The latter figure was calculated after considering night-shifts, rest periods, annual and study leave. Availability for "compulsory" teaching was poor because of working patterns. To remedy this Catch-22 situation we implemented regional teaching co-operatives. The co-ordinators ensured that the three programs had identical content but delivered it on different dates. Any trainee unavailable for part of their local teaching could then attend the same session in one of the two other regional programs.

**Summary of results:** The theoretical maximum possible attendance improved to nearly 100%. Forward planning by trainees is essential.

**Conclusions:** For teaching program attendance to form part of trainee assessment, the teaching must be accessible. Shift-work makes regular attendance impossible. Parallel but syncoated timetables provide an excellent solution.

**Take home messages:** Shift-working means that imaginative teaching timetables are essential when attendance rates form part of trainee ranking.

#### 7 U 4

##### **An evaluation of Surgical DOPS in the UK Intercollegiate Surgical Curriculum Programme**

A Mathew, J Beard, D Rowley, A Woodthorpe, J Foulkes (on behalf of the ISCP) (Intercollegiate Surgical Curriculum Programme, The Royal College of Surgeons of England, 35-43 Lincoln's Inn Fields, London WC2A 3PE, United Kingdom)

**Background:** The UK Intercollegiate Surgical Curriculum Programme(www.iscp.ac.uk) uses S-DOPS to assess the basic surgical skills of trainees in the workplace.The main aim of S-DOPS is to aid learning.

**Summary of work:** Our aims were to evaluate S-DOPS, and then to design and pilot an improved version.

**Summary of results:** During the first year of the ISCP,1370 trainees completed 6240 S-DOPS(mean per trainee 3.4, mean score 4.8). Most domains were rated above 4(satisfactory standard for that level of training). Following piloting of the new DOPS the modal level of assessor-satisfaction increased from 5/10(old form) to 8/10(new form), and from 6/10(old form) to 8/10(new form) for trainees. 56% assessors and 100% trainees preferred 'development required' in the rating of domains, rather than 'unsatisfactory'.

**Conclusions:** The absence of ratings below 4 and the low number per trainee suggest that S-DOPS was used only when trainees felt they were able to meet expectations and that assessors might be confused by the norm-based scale.The new form has criterion-based ratings and more space for recording feedback.Both assessors and trainees seem more satisfied with the new form.

**Take home message:** Criterion-based ratings are more acceptable to users and may improve validity and reliability.

#### 7 U 5

##### **Assessing the competence of junior doctors in fluid management of surgical patients**

P Froggatt, P Gold, H Joshi, L Wong (University Hospital Coventry & Warwickshire, Clifford Bridge Road, Coventry CV2 2DX, United Kingdom)

**Background:** The prescription of intravenous fluids for surgical in-patients is an important everyday task for junior surgical doctors. Recent national consensus guidelines have been issued in an attempt to reduce the morbidity and mortality associated with inappropriate prescription of intravenous fluids.

**Summary of work:** All surgical doctors, in their first year of practice, at a university associated teaching hospital completed a seven point questionnaire, covering 26 points. Questions concerned the daily fluid and electrolyte requirements, the content of commonly available intravenous fluids and their knowledge of the consensus guidelines.

**Summary of results:** The questionnaire was completed by all the F1 doctors who were responsible for prescribing iv fluids (n=17). The mean number of points was 7.5 (range 3-17). Only one doctor knew the correct fluid and electrolyte requirements or was aware of guidelines for fluid prescription.

**Conclusions:** The majority of junior surgical doctors are not competent in the fluid management of surgical patients.

**Take home messages:** Junior surgical doctors should have formal teaching regarding intravenous fluid prescription and be made aware of the guidelines to aid their prescribing.

## 7 U 6

### **Assessment of competence for cesarean section (CS) with rating scale (GRS)**

RN Qureshi, SK Ali (Aga Khan University, Obstetrics and Gynecology Department, Stadium Road, Karachi 74800, Pakistan)

**Background:** Historically and traditionally Surgical Operative Training has lacked formal assessment in most related specialties.

**Summary of work:** We evaluated the validity and reliability of a rating scale for assessment of the competence of the obgyn resident for performing CS. It determined the minimum number of procedures required for achieving competence and analysed the effect of case difficulty in achieving competence for caesarean section. The work was conducted in the Obgyn Department and two independent observations were performed for every procedure only if the Consultant and Resident permitted.

**Summary of results:** Fifteen residents performed 40 procedures. Initial results indicate that there is a high level of correlation between Observers, Observer and level of resident indicating internal validity of the tool. Initial analysis also indicates a construct validity of rating scale with differential in the rating of residents from different years. We will be testing for the Generalizability for observations across cases and use multiple regression analysis to assess the role of the difficulty of the procedure and the level of residents.

**Conclusions:** the GRS is a valid tool for evaluating surgical competence.

**Take home messages:** More rigorous testing is required to establish valid tools for evaluate surgical performance.

## 7 U 7

### **Long-term retention of laparoscopic skills: A superior training paradigm**

M Brunsvold, R Minter, P Gauger, A Frischknecht, J Jackson, L Hauge (University of Michigan, Department of Surgery, 1500 E. Medical Center Dr., 2128D Taubman Center, Ann Arbor 48130, United States)

**Background:** The purpose of our study is to compare the skill retention results of a target-based, self-directed laparoscopic skills curriculum (2008) to a similar curriculum with quality goals and a distributed practice regimen (2009).

**Summary of work:** The 2008 group of surgery interns (n=14) completed a self-directed curriculum and demonstrated proficiency by achieving speed targets. The 2009 group (n=15) curriculum included quality and speed targets, and distributed, varied practice. Retention tests were conducted after  $7.5 \pm 2.8$  months. Retention test times from 2008 and 2009 were compared using a t-test, and end-of-curriculum times and retention times were compared using paired t-tests.

**Summary of results:** The groups' times did not significantly differ at the completion of their curriculum. However, retention test times for each skill were significantly better for the 2009 group (Mean times in

seconds: block move 2008=38.7, 2009=20.7; bean drop 2008=50, 2009=27; checkerboard 2008=70.9, 2009=59.1; running string 43.2, 2009=33.3; suture foam 2008=29.9, 2009=14.3).

**Conclusion:** Laparoscopic skill retention was significantly better following the curriculum that emphasized quality goals and distributed practice.

**Take home messages:** Important differences in training protocols are required for acquiring and retaining laparoscopic skills. Skill retention is dependent upon a distributed schedule of varied practice that emphasizes quality and speed.

## 7 U 8

### **Focused Operative Training Briefings: Maximising opportunities for future surgeons**

S Strong, R Griggs, N Blencowe, A Hollowood (Bristol Royal Infirmary, Marlborough Street, Bristol, Bristol BS1 3NU, United Kingdom)

**Background:** Implementation of the European Working Time Directive (EWTD) may limit the ability of surgical trainees to attain expected competencies. Consequently, trainees must maximise training opportunities at each operating list attended. The Focused Operative Training Briefing (FOTB) can be used to divide learning opportunities appropriately at the start of each list for each trainee, improving the efficiency of learning.

**Summary of work:** All surgical trainees in the Severn Deanery (n=130) were sent a questionnaire concerning their exposure to FOTB and their own study preparation prior to theatre lists.

**Summary of results:** Response rate to the questionnaire was 70%. 20% of trainees had attended a FOTB during their current post, but on average these only occurred in 15% of available lists. 80% of surgical trainees spent 1 hour or less preparing for their operating list.

**Conclusions:** FOTBs are not widely used. Trainees do not routinely prepare prior to attending theatre lists. The introduction of a FOTB may facilitate efficient and maximal training for every trainee at every list. In addition, trainees must undertake personal study in order to take ownership of their training and gain full benefits from available training opportunities.

**Take home messages:** Trainers and trainees must collaborate in order to take full advantage of learning opportunities.

## 7 U 9

### **Behavioral interviewing in a surgical residency program: how to assess a resident candidate in key competencies**

C Cheifetz, HD Reines, R Seneca, S Luangkhot (VCU School of Medicine, Inova Campus, 3300 Gallows Road, Falls Church VA 22042, United States)

**Background:** Behavioral interviewing is a tool used in many different industries to determine compatibility and competency of a candidate for a particular job. The goal of this study was to incorporate behavioral interview questions in the residency selection process at the Inova Fairfax Hospital surgical residency program.

**Summary of work:** The General Surgery residency program at Inova Fairfax Hospital adapted their residency interview process to include behavioral interview questions. The goal was to give interviewers an opportunity to learn more about the candidates in 5 key competency areas. After the interviews were completed, participating faculty members were surveyed to ascertain the efficacy of the behavioral interviewing process.

**Summary of results:** 100% of faculty members who participated in the residency selection process found the behavioral interview questions to be effective (20% very effective, 45% effective, 35% somewhat effective) and would use this technique again.

**Conclusions:** Behavioral interview questions provide residency programs with unique insight into their resident candidates. By asking questions which require problem-solving skills and a certain level of competency, interviewers are able to better judge a candidate's acumen in the clinical setting.

**Take home messages:** Program directors should incorporate behavioral interviewing questions in their resident selection process as a means to ascertain candidates' competency and problem-solving skills.

## 7 U 10

### Improving assessments in a clinical situation

C Liyanage, H Scott (St Peter's Hospital, Guildford Road, Chertsey KT16 0PZ, United Kingdom)

**Background:** Many medical schools are now running postgraduate entry medical degrees. In the context of a hospital team setting, this can lead to a difference in attitude to the normal hierarchy of a surgical team.

**Summary of work:** During an attachment, the house officer attached to the team was also the oldest member of the team having previously spent many years working in an office environment. Prior to his assessment, he made a complaint about all the senior members of the team stating that no-one listened to or had any regard for his opinion. There had already been several issues with him throughout his training and it was left until the end of the attachment, to formally discuss the complaint.

**Summary of results:** The trainee's assessments did not reflect the honest opinion of his senior team members but the team had superficially worked well together for the duration of the placement.

**Conclusions:** This case highlights the need to modify attitudes to training and team structures with respect to postgraduate doctors

**Take home messages:** It is important to define the team structure at the start of a job. Assessments may not be beneficial when done face to face. Improvements should be made in training trainers in face to face evaluations.

## 7 U 11

### **Assessment of internal consistency and inter-rater reliability of AHRQ disaster drill evaluation tool in Korea**

H Chung, M Choa, J Cho, Y Park, T Chung, S Kim, M Kim, S Chung, I Park (Yonsei University College of Medicine, 712 Eonjuro (146-92 Dogok-dong), Gangnam-gu, Samsung-dong; Yonsei University Gangnam Severance Hospital, Department of Emergency Medicine, Seoul 135-720, Republic of South Korea)

**Background:** To assess the reliability of disaster preparedness using the Agency for Healthcare Research and Quality (AHRQ) performance evaluation module after modifying it to fit for our institution.

**Summary of work:** The emergency department prepared for a twenty casualty disaster drill (blast injury with chemical exposure) based on Severance Hospital Disaster Preparation Manual. Eight of the disaster preparedness team (DPT) and seven disaster drill participants (DDP) evaluated the performances using the modified AHRQ module. The questionnaire was divided into 5 zones (observation or evaluative type): common, triage, decontamination, command center, and treatment area. The internal consistency (Cronbach's alpha) and inter-rater reliability (Kappa) were analyzed.

**Summary of results:** In the internal consistency, evaluative type scored higher than observational type. In the inter-rater reliability, DPT group agreed in all zones (Kappa value >0.6), while the DDP group resulted in low agreement in most of the zones (0.17-0.49), except the treatment area (observational type).

**Conclusion:** The internal consistency differed according to the question type. For an effective evaluation, the evaluation must be reformed to fit for the institution.

**Take home message:** To increase the internal consistency and inter-rater reliability, the evaluators need to be more educated and experienced.

## 7U12

### **Assessment of progression - trainees in difficulty**

S Bodgener, A Tavabie (Kent, Surrey and Sussex Deanery, 7, Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** In recent years application of Workplace Based Assessment for doctors in training has demonstrated varied ability of trainees at assessment. Deaneries are expected to oversee trainees' performance and support them and their educational supervisors to achieve optimal levels of performance in assessment. Our experience with the new assessment strategy has demonstrated some difficulties in identification and assisting trainees who might encounter difficulties with assessment. We have carried out a review of trainees who have had problems in performance and have identified common characteristics amongst them. The Deanery was able to proactively support trainees and supervisors in advance of poor assessments.

**Summary of work:** Poster presentation of a review of 70 trainees in difficulty with identified common characteristics in behaviour. These characteristics were compared to passing candidates.

**Summary of results:** Presentation of the results, which includes documentation of learning, workplace based assessments, types of consulting style and personal development plans.

**Conclusion and take home messages:** Early identification of trainees in difficulty, before these trainees take their examinations enables adjustment of support systems for supervision to improve trainees' performance. With additional support and intervention behaviours can change with acceptable assessment outcomes.

### **7 U 13**

#### **Residents value the pre-test of a mock code program**

S Zavalkoff, F Bhanji (Montreal Children's Hospital, 2300 Tupper, C808, Montreal, Quebec H3H 1P3, Canada)

**Background:** Testing influences learners' study behaviour and memory of studied material. We implemented a weekly mock code program, including pre-code tests, and evaluated whether learners valued this testing.

**Summary of work:** The program spanned three consecutive weeks. Residents self-studied and completed pre-code summative, written tests to ensure knowledge and comprehension objectives were met before participating in each mock code. Preparation allowed simulated codes to focus on resuscitation skills and teamwork. Following the test, instructors led formative, interprofessional mock codes using a low fidelity manikin and then facilitated debriefing sessions. Learners anonymously completed course evaluation questions based on a 5 point Likert Scale: 1 = not useful, 3 = useful and 5 = very useful. Questions addressed residents' perceived value of the overall program, the mock code and the pre-tests.

**Summary of results:** Twenty-nine residents completed course evaluations. The mean Likert score for the overall program, mock codes and pre-test were 4.97, 5.00 and 4.31 respectively (out of 5).

**Conclusions:** In the context of a mock code program, learners perceived pre-testing as useful.

**Take home messages:** Pre-testing may enhance residents' learning from mock codes and should be considered in resuscitation training programs.

## SESSION 8 SIMULTANEOUS SESSIONS

### 8 A Symposium Progress Testing

C Ricketts (Peninsula College of Medicine and Dentistry, UK), A Freeman (Peninsula Medical School, St Luke's Campus, Exeter, United Kingdom), L Schuwirth (Department of Educational Development and Research, Faculty of Health, Medicine and Life Sciences, Maastricht University, Netherlands), D Swanson (National Board of Medical Examiners, Philadelphia, USA)

Progress testing is a unique form of assessment that samples across all relevant disciplines in a curriculum. The test is set at the final (graduation or licensure) level and sat by candidates at all levels of training. The test is repeated regularly in time. Progress testing gives a comprehensive (across content areas) cross-sectional (across groups) and longitudinal (across time) picture of the growth of knowledge of learners in relation to the end objectives of a curriculum. Progress Testing provides a wealth of information about individual learners, and about curricula, but is thought to be resource intensive.

The main emphasis of this symposium is to provoke debate and discussion about progress testing. The panellists from Europe and North America will each giving a view on one specific issue. Panellists will review the literature, not just their own work. The three topics are: 1. What progress testing tells us about students? 2. What progress testing tells us about curricula? 3. Is collaboration the future for progress testing? However, the breadth of experience of the panel means that any topics are suitable for inclusion by participants.

### 8 B Oral Presentations Work-based Assessment 2

#### 8 B 1

##### **Workplace Based Assessments: What is happening in practice?**

PN Nesargikar, Hassell A, Wong J, RK McKinley (Keele School of Medicine, Keele University, ST5 5BG Keele, United Kingdom)

**Background:** Workplace-Based Assessments (WPBA) forms an integral part of portfolio based assessments in postgraduate medicine in the UK and consists of Mini-CEX, DOPS, CBD and MSF. WPBAs serve as a formative assessment tool, and have shown to be reliable and valid when carried out correctly. The aim of this study was to evaluate current practice regarding these assessments.

**Summary of work:** Foundation year (FY) 1 and FY2 trainees in the Keele/ Shropshire Foundation School were approached with specifically designed questionnaires. The questionnaire's elicited their views about the process, their feelings about being observed and the feedback received.

**Summary of results:** One hundred eighty-five trainees answered the questionnaires anonymously. Sixty-two percent reported receiving no training on WPBAs and felt that it hindered their perception about the assessments. Only 22% of WPBAs were planned in advance, and the majority of assessors were not trained to be assessors. Only 51% were observed during the entire duration of the assessment. 87% received feedback on their assessment, but only 54% had an action plan formulated.

**Conclusions:** This pilot study demonstrates that lack of training and logistical issues like 'dedicated time' in the busy clinical practice are making the WPBAs less effective, and these issues have to be addressed to make it valid and reliable.

**Take home messages:** 1) WPBAs need to have dedicated time in clinical practice for the assessment process. 2) Training of both the assessors and the assesses is critical.

## 8 B 2

### **Negotiated Work Based Learning (NWBL): Bespoke education, training and assessment of competence for clinicians and allied health professionals at Masters level**

J Walton<sup>1</sup>, F Cowell<sup>2</sup>, Rebecca Hamm<sup>2</sup>, Jane Williams<sup>3</sup>, Mark Davies<sup>3</sup> (<sup>1</sup>The University of Liverpool, UK, Faculty of Health and Life Sciences, <sup>2</sup>Royal Liverpool and Broadgreen University NHS Trust, <sup>3</sup>Southport and Ormskirk Hospitals NHS Trust, Liverpool L69 3GB, United Kingdom)

**Background:** Radical reform of the United Kingdom healthcare system has resulted in evolution of work roles to improve efficiency, with resultant professional boundary shifts. Healthcare professionals adopt new extended roles out with their initial qualification. A robust training framework is essential to ensure staff undertaking new roles have documentary evidence of fitness for extended role. NWBL promotes training in the workplace through identification of specific, advanced clinical skills which are the focus of bespoke learning and robust, valid, reliable assessment.

**Summary of work:** This university (2005) developed a multi-professional NWBL module. Personalised, bespoke aims, learning outcomes, resources, syllabus, learning/teaching methods and assessment are negotiated. Assessment is tailored to the specific skill and mapped to learning outcomes. Cohort: 37 students from diverse medical/allied health professions. Competencies assessed included image interpretation, ultrasound, interventional procedures, amniocentesis, case management. Engagement in pedagogy also occurs, invaluable for professional development.

**Summary of results:** One hundred percent of stakeholders had successful outcomes through varied skill based assessment. Critical reflection was fostered commensurate with governance/patient safety. Methods, outcome, validity and reliability of case examples will be discussed.

**Conclusions:** NWBL is an effective, valid vehicle for assessment of competence of advanced clinical skills, in a diverse multi-professional population, in a realistic work based environment.

**Take home messages:** NWBL affords a flexible unique educational pedagogy not achievable through traditional methods.

## 8 B 3

### **Wearing two hats: Trainees' perceptions of work based assessments**

L Allery, L Pugsley, J Macdonald, S Brigley (Cardiff University, Medical Education @ Cardiff, School of Postgraduate Medical and Dental Education, Cardiff CF14 4YS, United Kingdom)

**Background:** Work based assessments (WBAs) have both formative and summative functions, making them high stakes, gate keeper activities which regulate access to medical practice.

**Summary of work:** A qualitative study, comprising a pilot focus group and in depth semi structured interviews with trainees from different specialties.

**Summary of results:** Trainees report receiving neither an induction programme, nor any training in how these tools should be implemented. Themes relating to reliability and validity, the potential for educational opportunities to be lost in the mechanics of the processes, and the affective aspects of these systems for both the assessor and the assessed were identified.

**Conclusions:** The study highlights the duality of assessment roles experienced. As doctors in training, they are themselves constantly being assessed; however they are also cast in the role of assessors, called upon by peers to observe and rate the knowledge, skills and attitudes of their work colleagues. The wearing of two hats, without appropriate guidance is neither comfortable, nor educationally sound.

**Take home message:** Induction and Training on the aims, purposes and methods of WBAs is vital if assessors and those that are assessed are to engage with a rigour, reliable and valid process.

#### **8 B 4**

##### **Paediatric trainees' experience of workplace based assessments**

D Roland, C Brown, G Muir, A Long, A Davies-Muir, M McGraw (Royal College of Paediatrics and Child Health, 5-11 Theobalds Road, Holborn, London WC1X 8SH, United Kingdom)

**Background:** Workplace Based Assessments (WPBA) have recently been incorporated into the competency assessment framework for UK Paediatric Trainees. We report trainees' familiarity and experience with these assessments.

**Summary of work:** An online survey was distributed to all paediatric trainees registered with the Royal College of Paediatrics and Child Health. Four types of assessment were surveyed: DOPS (Direct Observation of Procedural Skills), mini-CEX (Clinical Examination), Case based discussion (CbD) and eSPRAT (Sheffield Peer Review Assessment Tool).

**Summary of results:** Eight hundred eighty trainees completed the survey. 75% had received training in using these assessments. Feedback was reported as being useful frequently or all of the time in 50.7% of trainees using eSprat, 50.0% using CbD but only 39.1% for mini-CEX and 30.1% for DOPS. The more useful a trainee found the feedback the more likely they were to make changes to their clinical practice: DOPS ( $t=0.577$ ,  $p<0.001$ ), Mini-CEX ( $t=0.692$ ,  $p<0.001$ ), CbD ( $t=0.525$ ,  $p<0.001$ ) and eSprat ( $t=0.399$ ,  $p<0.001$ ).

**Conclusions:** WBA are seen by trainees to be valuable but this does vary according to the tool used. Potential reasons for this and recommendations for change will be discussed.

**Take home messages:** UK Paediatric Trainees use Workplace Based Assessments (WPBA) to make changes to their practice.

## 8 B 5

### **How do Foundation Doctors perceive the importance of “process control” within Work-Place Based Assessment (WPBA)?**

P Yeates, R Price, S Jewsbury, G Byrne (University of Manchester, ATR4, Education Research Centre, University Hospital of South Manchester, Southmoor Road, Manchester M23 9LT, United Kingdom)

**Background:** Conduct within WPBA is subject to little scrutiny from administering institutions. We define a new construct “process control” as “ensuring that assessments are conducted in accordance with guideline recommendations”, arguing that it forms part of response process. Poor process control may threaten validity. As users of WPBA must choose whether to follow process control, we aimed to determine how they perceive its importance.

**Summary of work:** We used an interpretivist stance to understand subjects perceptions within the wider context of their work. We used an interview-guided approach. Data was subjected to an inductive thematic analysis. We studied a purposive sample of 6 UK Foundation Doctors (1st and 2nd postgraduate years).

**Summary of results:** We found a rich set of conflicted perceptions. The importance of process control varies from unwillingness to compromise, through to ambivalence, with a more prevalent pragmatic attitude. It appears to be influenced by perceptions of: the assessments’ educational value; working culture; and feasibility.

**Conclusions:** Limitations due to sample size are acknowledged. We aim to further study the prevalence of these perceptions within a wider population.

**Take home message:** Perceptions of the importance of process control may pose an important threat to validity within WPBA

## 8 B 6

### **Developing accreditation standards for implementing workplace-based assessment as a summative assessment**

Heather Alexander, Barry McGrath, Richard Doherty, Alison Reid (Other Contributing Committee members: J Gordon (Chair), E Long, E Flynn, I Frank, L Landau, S O’Dwyer, P O’Sullivan, G Page, T Shaw, T Walters) (Australian Medical Council, PO Box 4810, Kingston 2604, Australia)

**Background:** The Australian Medical Council (AMC) is responsible for the assessment of International Medical Graduates (IMGs) seeking general registration in Australia. Recent Australian national initiatives have introduced new pathways for IMG registration involving workplace-based assessment (WBA) as an alternative to the current OSCE format clinical examination.

**Summary of work:** The AMC has used an evidence-based approach to develop and implement accreditation standards which lead to the accreditation of authorities as providers of WBA as a summative assessment. The standards address fundamental aspects of sound assessment practice and are not prescriptive, allowing variability in program structure. Because the pathway leads to general registration, performance is assessed across adult, child, women’s and mental health disciplines.

**Summary of results:** The AMC has developed and promulgated the accreditation standards, published a literature-based resource guide on implementation, run workshops to assist groups to prepare

accreditation submissions, and identified implementation issues. Barriers to implementation include workload, resource issues, availability of the required clinical disciplines, capacity to meet demand, and conflict of interest. Two authorities have completed the accreditation process successfully.

**Conclusion and Take home message:** Developing an accreditation framework for workplace-based assessment of clinical performance has been completed but the practical aspects of implementation have proved challenging.

## 8 C Oral Presentations Technology 2

### 8 C 1

#### **Using audience response systems for large group testing and session evaluation**

PGM de Jong, NR Bos, R Sijstermans (Leiden University Medical Center, Onderwijs Expertise Centrum V7-26, Postbus 9600, 2300RC Leiden, Netherlands)

**Background:** Audience Response Systems (ARS) or ‘clickers’ are widely used in higher education. Students appreciate the use of clickers as it activates and motivates the audience. Most teachers use ARS to interact with the audience and to adjust their teaching on the spot. However, the system is also useful for formal testing and evaluation.

**Summary of work:** At the Academic Medical Center Amsterdam, the system is used to perform formal testing in students. Clickers are handed out personalized to associate each person with the right set of responses. Questions are projected on the screen and the responses of the students are not displayed. At Leiden University Medical Center, the system is used for evaluating educational conferences. Participants answer several questions at the end of a session without displaying the responses. The clickers are randomized.

**Summary of results:** Clickers are suitable for performing an exam or evaluation in a large group setting. The participants feel comfortable with the technique and results are available immediately after the session. The personalization of clickers and fraud prevention needs solid preparation.

**Conclusions:** Audience Response Systems can be used to perform testing and evaluation.

**Take home message:** Use clickers for more than only activating students!

### 8 C 2

#### **Smart phones, smarter doctors? Harnessing technology to assist learning**

L Pugsley, M. Morgan, M Stacey, A Bullock (Cardiff University, Medical Education@Cardiff, School of Postgraduate Medical and Dental Education, Neuadd Meirionnydd, Heath Park, Cardiff CF14 4YS, United Kingdom)

**Background:** Ease and speed of access to modern technologies has provided a valuable new adjunct to workplace based learning. Medical treatments can be optimised with on the spot evidence based decision making and links to assessment records can provide immediate access to base line data, to chart learning, document progress and highlight weaknesses.

**Summary of work:** This paper discusses the early findings from an ongoing longitudinal evaluation of junior doctors' usage of Smartphone technology to assist work based learning and assessment. Quantitative and qualitative data are collected at key points during the study.

**Summary of results:** The emerging themes indicate: 1) Wide variability in familiarity with and use of IT; 2) Typologies of learner engagement with technology; 3) Perceived benefits of having instant accessibility to assessment records.

**Conclusions:** This on going study will allow us to comment on: 1) The impact of the Smartphone technology on WBA assessments; 2) How trainees learn on the job; 3) The potential benefits of technology for WB learning.

**Take home message:** Appropriate use of technology can, assist learning; impact on both the quality and value of work based assessment and raise the quality of patient care.

### 8 C 3

#### **Study on the effectiveness of interactive response system applied in medical courses**

CJ Peng, TR Hsiue, TY Wong, JC Lee, CL Hsu, RB Lu, BM Huang, CC Liu, JJ Yan, CL Huang, CH Lin (Medical College of National Cheng-Kung University, Center for Education, 138 Sheng-Li Road, 704 Tainan, Taiwan)

**Background:** We aim to explore the effectiveness of Interactive Response System (IRS) on medical courses.

**Summary of work:** Medical students of third and fourth grade of 2008 and teachers of selected ten courses were invited to fill pre- and post- questionnaires inquiring their IRS experiences and expectations. Class attendance rate as well as class evaluation comparing IRS-using versus non-using courses or teachers were used as the outcome indices.

**Summary of results:** Student attendance rates of IRS using classes (91%) were higher than not-using classes (72%) ( $p < 0.05$ ). The most agreed benefits of IRS from students were 'feeling of fulfilment when answer correctly', 'class become more interesting', 'easier to grasp emphasis of study', and 'tuned up teaching by teacher'. A total of 71.4% agreed on 'in general, IRS facilitates learning'. As to the experienced IRS users, agreement on almost all stated benefits of IRS exceeded 90%. Course evaluation comparing IRS using versus non-using courses or teachers showed significantly higher scores on 6 or 7 out of 12 questions.

**Conclusion and Take home message:** The positive feedback obtained from students and teachers plus the positive outcome of higher class attendance rate on IRS class and higher course evaluation results supported the continuity of utilization of IRS in medical courses.

#### 8 C 4

##### **Do examinee characteristics influence the allocation of response times on a multiple-choice question examination?**

TJ Wood, M Roy, M McConnell, Y Lafortune (Medical Council of Canada, 2283 St. Laurent Blvd., Ottawa K1G 3H7, Canada)

**Background:** In order to understand test-taking behavior, it is important to be aware of how different examinee characteristics influence performance. The Medical Council of Canada Evaluating Examination (MCCEE) is a computer-based test consisting of 175 multiple-choice questions. Recently a new test delivery procedure was implemented that allows response times to be captured. This study investigates the influence of examinee characteristics on response times during an examination.

**Summary of work:** Examinee responses and response times were obtained from 3284 examinees that completed the MCCEE between September 2008 and September 2009.

**Summary of results:** Results show that questions appearing at the end of the test have faster response times than questions at the beginning and that accuracy also drops. This pattern is more pronounced for failing examinees compared to passing examinees. In addition, failing examinees tend to take more and longer breaks during the examination than passing candidates. Similar results occurred for repeat examinees compared to first time writers and for examinees born overseas compared to examinees born in Canada.

**Conclusions:** Variables that may account for differences in how examinees manage time were identified, which should provide a better estimation of time requirements for examinees.

**Take home message:** Poor time management during test taking may contribute to failure rates for some groups of examinees.

#### 8 C 5

##### **The challenge of tracking medical school graduates**

A Jotkowitz, S Rosen, C Margolis (Ben Gurion University of Negev, Center for Medical Education, Faculty of Health Sciences, Beer Sheva, Israel)

**Background:** Tracking is a difficult problem for universities and specifically for medical schools. The primary objective of the study is to document our ability to track our graduates.

**Summary of work:** An email questionnaire was developed and sent out to the graduates.

**Summary of results:** At the time of the study, there were 88 graduates from three classes. Out of 88 addresses initially contacted, 82% responded. Of the 80 email addresses contacted requesting that they use the internet based survey, 37 (45%) used the link to visit the website, but only 15 (19%) completed part or all of the form. The email letter and evaluation form were sent out three times at intervals of two months. Each time a few more students responded for a total of 33 (38%) replies.

**Conclusions:** In our project, using a relatively low cost methodology, we were able to track only a minority of our graduates.

**Take home messages:** Most Medical Schools have programs in place to track their graduates with varying degrees of success. The benefits of tracking are numerous to the medical schools that make the effort. Follow up and longitudinal efforts to continue this project would be of great benefit to the medical school.

## **8 D Oral Presentations Other Outcomes 1**

### **8 D 1**

#### **First-year medical students' perceptions about self-directed learning: Are they really doing what PBL aims at?**

SA Azer, Al-Nassar (Universiti Teknologi MARA, Medical Education Research and Development Unit, Shah Alam 40450, Malaysia)

**Background:** With the introduction of problem-based learning, self-directed learning (SDL) becomes an integral component of the learning process. However, there is a lack of knowledge about what do first-year students do in self-directed and what strategies do they use in their learning. We aimed to assess students' perceptions about SDL, what they exactly do, and what are the barriers to their SDL.

**Summary of work:** In a training workshop, first-year students were asked to complete a questionnaire covering: (1) what does self-directed mean to them, (2) how much time do they spent on SDL, (3) what do they do when they research an issue, (4) what barriers affect their SDL, and (5) what do they need to change to enhance their SDL. The training workshop aimed at supporting their learning needs and adding new dimensions to their SDL skills.

**Summary of results:** Most students do not use self-directed strategies in an effective way and do not know how to construct and integrate knowledge learnt from several learning resources. Other results from the questionnaire and the evaluation of the workshop training will be discussed.

**Conclusions and Take home message:** In a PBL self-directed course, first-year students should be trained in workshops to ensure that they practice SDL along the lines planned by the course designer.

### **8 D 2**

#### **OSCE-based assessment of lifelong learning skills**

J Otsuki, S Santen, D Ander, S Franklin, K Kinlaw (Emory University School of Medicine, 1648 Pierce Drive, Suite 375P, Atlanta 30327, United States)

**Background:** Optimal clinical outcomes increasingly depend upon the abilities of healthcare providers as lifelong learners. Reports examining the skills of medical students as lifelong learners are limited.

**Summary of work:** Students nearing the completion of their required clinical clerkships underwent an OSCE based formative assessment of core clinical competencies, including lifelong learning. Students were advised prior to the program that one OSCE would involve starting a diabetic patient on an oral hypoglycemic medication. During the OSCE, several skills relevant to effective lifelong learning were measured.

**Summary of results:** Successful completion of this OSCE included: locating relevant treatment information prior to the case (94% successful); self-awareness that the student had insufficient knowledge to answer patient concerns (91%); the ability to rapidly locate new information during OSCE (93%); the ability to perform all three of these tasks together rather than individually (79%); and the ability to incorporate this new information into the treatment plan (78%).

**Conclusions:** Most students successfully demonstrated the ability to perform several of the individual skills necessary for lifelong learning. However, fewer were able to combine all of these skills to deliver optimal care.

**Take home message:** OSCEs can provide insight into student competency in lifelong learning skills.

### 8 D 3

#### **Variation in medical information-seeking habits among physician specialties**

A Sanchez, M DesLauriers, L Casebeer (Outcomes, LLC., 107 Frankfurt Circle, Birmingham 35211, United States)

**Background:** Lifelong learning habits such as information-seeking behaviors are important aspects of maintaining competence in medicine.

**Summary of work:** The purpose of this study was to examine the variation in information seeking behaviors across 16 physician specialties and to answer questions related to where physicians go and how they approach finding answers to clinical questions. We received 2000 responses from physicians in 16 specialties with 125 physicians per specialty.

**Summary of results:** Significant differences were observed between physician specialties in the types of questions that require them to seek additional information, tendency to seek information online, importance placed on sources of information, the usefulness of information sources in staying current on therapeutic advances, reliance on sources of information before incorporating new techniques into practice, minimum level of evidence for determining an appropriate treatment regimen, the significance of barriers to integrating emerging advances into routine patient care, and preferred formats for receiving medical information. Additional patterns emerged between “technologically savvy”, “busy” and “younger” physicians

**Conclusions and Take home message:** Physicians rely on multiple sources of information to address the specific needs of their patients. Understanding the patterns and variation in information seeking habits could prove to be a useful tool in creating targeted education for specific specialties that ultimately produces improved patient health outcomes.

#### 8 D 4

##### **Assessment of clinical reasoning in early medical undergraduates: a script concordance approach**

A Linn, A Tonkin, C Gannon, H Kildea (Medicine Learning and Teaching Unit, University of Adelaide, Adelaide 5005, Australia)

**Background:** Script concordance testing (SCT) is an established method of assessing clinical reasoning in postgraduate students, particularly in clinical scenarios where uncertainty exists. There is little current literature about the use of the SCT approach in early undergraduate students, who have less well-developed scripts

**Summary of work:** A SCT of 45 questions for second and third year medical students at the University of Adelaide was created and integrated into the existing clinical reasoning examinations. Aggregate scoring was based on the responses of a panel of 14 general practitioners. Examination components were correlated and reliability statistics calculated.

**Summary of results:** SCT scores correlated to a small but statistically significant degree with the existing clinical reasoning examination in years two ( $r = 0.18$ ,  $p < 0.05$ ) and three ( $r = 0.3$ ,  $p < 0.01$ ). The examinations had satisfactory Cronbach's alpha reliability scores; year two  $\alpha = 0.79$  (SCT component  $\alpha = 0.66$ ) and year three  $\alpha = 0.65$  (SCT component  $\alpha = 0.45$ )

**Conclusions:** SCT has potential as a component of clinical reasoning examinations in early undergraduate medical students.

**Take home messages:** Script concordance testing should be considered as a component of integrated of clinical reasoning assessment in early undergraduate medical students.

#### 8 D 5

##### **Assessment of the relationship between basic science knowledge and clinical reasoning in beginning undergraduate medical students**

S Krasne, C Stevens (David Geffen School of Medicine, University of California, Los Angeles, 90095, United States)

**Background:** Skills in clinical reasoning, such as searching and interpreting the online medical literature, formulating diagnoses, and applying evidence to a specific patient, are essential for medical decision-making. Many curricula use Problem-based Learning (PBL) as the vehicle for integrating basic science knowledge into diagnosis and treatment in clinical cases, but few studies have compared competencies in basic sciences with those in PBL and clinical reasoning skills.

**Summary of work:** We used results from formative and summative assessments of first-term undergraduate medical students to investigate how the performance of on online clinical cases and clinical-reasoning questions related to their basic-science knowledge.

**Summary of results:** We found moderate, but highly significant, correlations between performance on clinical-reasoning and basic-science content. The correlations were stronger for open-book, untimed assessments than for closed-book, timed assessments. However, the level of correlation between each basic science discipline and all others was stronger than that between clinical reasoning and basic sciences disciplines.

**Conclusions:** Distinct knowledge and skills are involved in clinical reasoning beyond those associated with the basic sciences.

**Take home message:** The observations presented here argue in favor of pre-clerkship curricula that have components targeted specifically at teaching and assessing competence in clinical reasoning in addition to the basic biomedical sciences.

## **8E Oral Presentations Assessment for Learning**

### **8 E 1**

#### **Formative assessment as a tool for learning: Does it matter how we do it?**

M Weurlander<sup>1</sup>, M Söderberg<sup>2</sup>, M Scheja<sup>3</sup>, H Hult<sup>1</sup>, A Wernerson<sup>2</sup> (Karolinska Institutet and Stockholm University <sup>1</sup>Department of Learning, Informatics, Management and Ethics (LIME), KI, <sup>2</sup>Department of Laboratory Medicine, Division of Pathology, KI, <sup>3</sup>Department of Education, Stockholm University, Stockholm S-141 86, Sweden)

**Background:** We have developed an innovative formative assessment method encouraging students to solve clinically relevant problems in groups. This method has been implemented in a pathology course alongside a more traditional formative assessment method. We wanted to investigate students' experiences of these two forms of assessment.

**Summary of work:** Written accounts from 17 out of 70 medical students were collected and three group interviews were carried out to explore the students' experiences of each method. All students did both assessments and data were collected soon after each assessment. The data was analysed using qualitative content analysis inspired by grounded theory.

**Summary of results:** Our findings show that formative assessment can contribute to learning by affecting the process and the outcome. The new group assessment seems to help students understand how knowledge is related, help them to understand the pathomechanisms and learn from each other. In contrast, the traditional assessment seems to a larger extent be seen as control of knowledge retention and a help to learn basic facts.

**Conclusion and Take home message:** Formative assessments contribute to students' learning. However, the assessment method used matter and small changes in assessment strategies can have a large impact on student learning experiences.

## 8 E 2

### Can test-enhanced learning be explained by stress?

C Kromann, ML Jensen, C Ringsted (Centre for Clinical Education, Copenhagen University and Capital Region of Denmark, Rigshospitalet, section 5404, Teilumbygningen, Blegdamsvej 9, DK-2100 Copenhagen E, Denmark)

**Background:** It has repeatedly been shown that test on studied material enhances memory of that material more than additional study. We have previously demonstrated that test-enhanced learning also applies to resuscitation skills learning<sup>1</sup>. The mechanism behind this testing-effect is not known. This study explores whether test-enhanced learning can be explained by test-induced stress measured by saliva-cortisol<sup>2</sup>.

**Summary of work:** A sample of 145 medical students attending a mandatory course was randomised to intervention or control group. Both groups received a four-hour course on resuscitation skills training. In the last half hour of intervention course participants were tested in resuscitation scenarios, whereas control group had additional training. Learning outcome was assessed two weeks later by rating performance in a resuscitation scenario using a validated checklist and a single blinded assessor. Saliva-cortisol was measured pre-course (cort1), half an hour before end of course (cort2) and post-course (cort3). Learning outcome and  $\Delta$ cortisol (cort2 to cort3) was compared between groups. Saliva-cortisol level (cort3) was correlated to learning outcome.

**Summary of results:** Testing had a medium effect ( $ES=0.6$ ) on learning outcome.  $\Delta$ cortisol (cort3-cort2) was mean 1,16( $SD$  3,73) in the intervention group vs. 0,14( $SD$  2,41) in the control group,  $p=0.02$ . Correlation between cort3 and learning outcome was Pearson's  $r=0.2(p=0.02)$ .

**Conclusions:** Skills testing increased saliva-cortisol. There was a small correlation<sup>3</sup> between post-course saliva-cortisol and learning outcome.

**Take home messages:** Test-enhanced learning can in part be explained by test-induced stress. Other mechanisms must be explored further.

## 8 E 3

### Assessment for transformative learning in longitudinal community-based medical education

J Greenhill, D Prideaux, I Walters, I Lindermann (Flinders University, Po Box 852, Renmark 5341, Australia)

**Background:** Mezirow (1995) identifies 10 phases of transformation. The first phase is a 'disorienting dilemma' triggered by a major life transition.

**Summary of work and results:** This presentation explores the learning and assessment processes of medical students in the PRCC (parallel rural community-based curriculum) at Flinders University over the past 12 years. In the Flinders University medical curriculum 2nd to 3rd year is a transition phase from the pre-clinical theory-based learning to the clinical learning. In the PRCC, early formative assessment is designed to create a 'disorienting dilemma' for the students. Throughout the year, students undertake mock OSCEs, clinical simulation scenarios and Mini CEX with feedback is based on expectations of their performance in the end of year summative OSCEs and exams.

**Conclusions:** Mezirow's transformative learning theory assists in understanding how this longitudinal community-based program uses a range of assessment methods to take the students from unconscious incompetence to conscious competence then praxis and integration of new knowledge and skills.

**Take home messages:** It is argued progressive, formative assessment using a range of assessment methods and commenced early in the year facilitates deep learning compared with block rotations thereby challenging the traditional medical curriculum.

#### 8 E 4

##### **Brown University reflective writing curriculum, faculty feedback (BEGAN) and evaluation rubric (REFLECT)**

S Rejs, H Wald, J Borkan (Warren Alpert Medical School of Brown University, Department of Family Medicine, 111 Brewster St, Pawtucket, RI 02860, Israel)

**Background:** At the Warren Alpert Medical School of Brown University (Alpert med), a curriculum of students' reflective writing with guided individualized feedback from an interdisciplinary faculty team has been implemented. A tool to guide faculty in crafting quality feedback (Brown Educational Guide to Analysis of Narrative - BEGAN), was developed. Subsequently, an evaluation rubric for identifying student reflective level and its development has been constructed and applied (Reflection Evaluation for Learners' Enhanced Competencies Tool - REFLECT).

**Summary of work:** BEGAN Guides to both students and Faculty have been offered to the students and faculty, faculty development was applied and the rubric was applied to the second year "best notes" for 2009 & 10 and is currently applied to out of Brown datasets of students reflective writing.

**Summary of results:** Positive feedback from BEGAN faculty development as well as results of successful REFLECT application are available and forthcoming.

**Conclusions:** The BEGAN is well received by faculty, its educational impact is presently evaluated. The REFLECT is in its 4th cycle of development, is feasible & acceptable and can be administered with acceptable interrater reliability.

**Take home messages:** Enhancing and evaluating students' Reflective Writing are reliable and feasible. Validity, impact and acceptability still pending.

#### 8 E 5

##### **Logbook: A tool for mapping the curriculum and promoting students learning at the Aga Khan University (AKU)**

S Sadaf, T Jafri, R Mohsin, F Jahan, S Shah, N Yousuf, R Ahmed, RW Zuberi (Aga Khan University, Stadium Road, P.O. Box 3500, Karachi 74800, Pakistan)

**Background:** External Program Review of the MBBS Program at AKU, according to the LCME criteria, in 2006 highlighted Logbooks as an area of non compliance.

**Summary of work:** Task force with the mandate to introduce a uniform logbook in all clerkships to monitor and ensure uniform learning experience was constituted. Extensive review of literature and existing formats of the logbooks was undertaken to identify a standardized format incorporating the requirements of all clerkships.

**Summary of results:** Adaptation of the EPITOMISE framework provides a standardized format for documentation of clinical presentations and procedures/interventions observed or performed facilitating monitoring of student's performance through the clerkships. Analysis of the completed summary sheets highlighted the "must" and "rarely" seen clinical presentations in each of the clerkships. This served as a valuable feedback for the curriculum planners for incorporating revisions in the core curriculum.

**Conclusions:** The pilot of introducing a uniform logbook helped identify gaps in learning opportunities, facilitate planning of corrective measures to ensure completeness and uniformity of clinical experiences and specified the minimum number of patients to be seen by each student for each problem.

**Take home message:** Every completed entry in the Logbook through the "EPITOMISE" framework helps illustrate the particular patient problem maximizing student learning.

## 8 E 6

### **Undergraduate nurses' experience of the family health assessment as a learning opportunity**

JJ Willemse, W Kortenbout (University of the Western Cape, Private Bag X17, Bellville, 7535 Cape Town, South Africa)

**Background:** The practice of community health nursing (CHN) may enhance the life experiences of communities, particularly amongst the socially marginalized and the poor. CHN provides a deeper understanding of the health status of people living within communities, e.g. where and how they live, understanding the family, the cultural context and being able to identify the resources available to assist with the continuation of care (Allender, et al, 2010). This qualitative phenomenological study reflects on the self reported lived experiences of third year undergraduate community health nursing students at the University of the Western Cape (UWC) in Cape Town, South Africa. These students conducted a family health assessment (FHA) learning task at homes within communities.

**Summary of work:** Data for the exploration of the lived experiences was gathered through the following research question: "How did you experience the FHA?" The data collected was categorized into themes as guided by Tesch's (1990) systematic data analyses process (Creswell, 2003).

**Summary of results:** The main themes that emerged were: safety threats experienced by participants, difficulty in selection of a family, issues in family culture and academic challenges experienced by participants.

**Conclusions and Take home message:** The importance of the research study was to inform future research and curriculum planning for CHN education in a multifaceted context.

## 8 F Oral Presentations Problem-based Learning

### 8 F 1

#### **Evaluating problem-based learning transcripts using Corpus analysis: do men and machines agree?**

A Da Silva, R Dennick (Medical Education Unit, Medical School, University of Nottingham, Nottingham NG7 2UH, United Kingdom)

**Background:** A typical PBL week might involve between three and five hours of talk but few studies have evaluated the linguistic and cognitive activities taking place. Corpus analysis is a powerful linguistic tool that enables us to evaluate the contributions made by both students and facilitators in PBL sessions. However this computer based analysis needs to be validated by health professionals.

**Summary of work:** PBL transcripts were analysed by Wmatrix2 and by 20 volunteer health professionals who were asked to identify utterances of reasoning, questioning and explaining. The two approaches were compared and an agreeability index calculated. Utterances with low agreeability were analysed according to their relevance and context. Key words identified by health professionals were used to improve the Wmatrix2 automatic tagging system.

**Summary of results:** Although some neglected utterances and incorrectly categorized words were identified there was a good agreement between the software and experts.

**Conclusions:** Corpus analysis is a valid tool to evaluate cognitive activities, such as reasoning, explaining and questioning, in PBL transcripts.

**Take home messages:** Corpus analysis analyses of PBL transcripts can be validated by human evaluation.

### 8 F 2

#### **Remediation program for academic failure**

N Lumbuun, N Suryadinata, D Fairholm (Presenter: Rhendy Wijayanto) (Universitas Pelita Harapan, FK-UPH, Lippo Karawaci, Tangerang 15811, Indonesia)

**Background:** A significant cause for failure in medical schools is poor academic performance. At Universitas Pelita Harapan, in Indonesia, the study program is based on a hybrid PBL model with 25% of curriculum time dedicated to Problem Based Learning and organized into blocks. A remediation plan was devised for failing students which focused on learning using, a comprehensive self-directed study plan.

**Summary of work:** The plan consisted of a 5 week study program in the appropriate failed block. Guidance was provided by content instructors and Academic Advisors. A “test enhanced learning program” was used, based on the principles described by Larsen. A supplemental MCQ examination was provided at the end of study program.

**Summary of results:** The total student population in first 3 years was 244 students. The number of “outright failures” not eligible for remediation was 13 (7%). The number of students eligible for remediation was 50 (20.5%) and the total number of failed blocks was 60. Eighty six percent of those completing remediation passed successfully and 14 % failed and will require further action.

**Conclusions:** The remediation program was considered beneficial to students with academic failure.

**Take home messages:** Remediation using test enhanced learning principles results in effective learning.

### 8 F 3

#### **Students' perception of anatomy teaching in a PBL curriculum**

L Wentworth (University of Manchester, Oxford Road, Manchester M13 9PL, United Kingdom)

**Background:** In light of recommendations, The University of Manchester adopted the PBL philosophy as its primary learning strategy. Surgeons and students have expressed concerns that these curricula changes have had a negative effect on their anatomical knowledge base.

**Summary of work:** To explore students' perceptions of learning anatomy in a PBL curriculum. Focus group discussions, with participants from each year, were undertaken. Categories, themes and sub-themes were indexed, producing an analysis framework.

**Summary of results:** Students were positive about learning in a PBL environment, but felt anatomy as a subject may not be compatible. They valued dissection as a learning resource if their demonstrator had a good style of teaching and understanding of course structure. They felt their knowledge base was adequate for the Manchester course but thought they should know more. Assessment was a driver for learning, but students did not feel obliged to revise anatomy because it was not examined frequently or in depth.

**Conclusions:** Several course improvements are suggested: 1) A guide for anatomy demonstrators; 2) a more explicit anatomy syllabus; 3) vertical integration of anatomy in clinical years (3-5), 4) increased anatomy assessment.

**Take home message:** Anatomy may not be compatible with a PBL curriculum. Students require guidance and assessment to increase knowledge and confidence.

### 8 F 4

#### **Competence for internship: perceptions of final year medical students from the University of Cape Town**

CE Draper, GJ Louw (University of Cape Town, Department of Human Biology, Faculty of Health Sciences, Observatory, Cape Town 7925, South Africa)

**Background:** A new, Problem-Based Medical curriculum was introduced at the University of Cape Town (UCT) in 2002. Final year medical students' perceptions of their competence for internship were qualitatively assessed as part of a larger curriculum evaluation study.

**Summary of work:** Eighteen focus groups were conducted (six per year) with UCT Final year medical students in 2007 (n=27), 2008 (n=27) and 2009 (n=30). Guide questions covered students' expectations of internship, perceptions of competence, and factors influencing competence.

**Summary of results:** Students felt generally positive about and competent to enter internship, and rewards outweighed challenges anticipated by students for internship. Strengths perceived by students related to skills for patient-centred interaction and life long learning. Perceived areas of weakness included basic science knowledge and certain procedural skills. Both personal and contextual factors were identified as influencing competence, such as self-confidence, personal motivation and clinical exposure.

**Conclusions:** While students' expectations about internship and perceptions of competence seem to be similar across 2007-2009, anxiety around the newly introduced curriculum appears to have declined over time.

**Take home messages:** Students' perceptions regarding competence are an important indicator of the attainment of intended outcomes of a curriculum, and provide valuable information for curriculum reform and improvement.

## 8 F 5

### **An online assessment of medical students' problem-based learning competency**

T Korin (David Geffen School of Medicine at UCLA, 60-061 Center for Health Sciences, Los Angeles 90095, United States)

**Background:** Problem-based Learning is becoming ubiquitous in medical education. In fact, 70% of all U.S. medical school support PBL curricula (Kincade, 2006), though few studies exist substantiating learning outcomes of this widely accepted pedagogy.

**Summary of work:** An online PBL test case was developed and assigned to second-year medical students to assess their clinical problem-solving and reasoning skills. Students were assigned points based on the accurate interpretation of information in several areas: pertinent clinical facts, differential diagnosis, laboratory/diagnostic tests, and patient counseling.

**Summary of results:** One hundred forty-nine students completed the PBL assessment with 118 students receiving a passing score. However, 20% of the class failed, and only 6% received high marks. Most students did well listing the pertinent clinical facts and ordering diagnostic tests, but many struggled providing a complete differential list and appropriately counseling the patient.

**Conclusions:** The online PBL assessment tool was an effective way to identify student competencies in clinical problem-solving, information interpretation and reasoning.

**Take home message:** Faculty development will need to focus on strengthening students skills in developing differential diagnoses and patient counseling so to improve overall learning outcomes in PBL.

## 8 J Workshop

### **The use of OSCE as an assessment tool for medical ethics**

J Patel, P Patel (Mayday University Hospital, 530 London Road, Croydon, London CR7 7YE, United Kingdom)

**Background:** Ethics is an integral part of the core undergraduate medical curriculum. Assessment of students' understanding of ethical principles is vital in ensuring that graduating doctors are equipped with the knowledge to face ethical dilemmas in the clinical setting. Assessment of ethics is usually in the form of MCQs or simulated clinical scenarios. However, the latter largely focus on students' communication skills or applied ethics as opposed to their actual understanding of ethical principles in the clinical setting.

**Intended outcomes:** To explore the feasibility and appropriateness of using OSCE as a method of assessing students' application of ethics in the clinical setting. To ascertain whether an ethics OSCE station can be standardized to assess the application of ethics. To discuss and develop a uniform marking criteria for use in OSCE examinations. To showcase and attain a bank of suitable scenarios for use in an ethics OSCE.

**Structure:** The workshop will consist of a brief introductory presentation highlighting the aims and objectives. This will be followed by video footage to show case an example of the assessment of ethics through an OSCE. A facilitated discussion and small group break-out sessions will enable the ideas and themes to be explored further.

**Intended audience:** Medical educationalists, open to all.

**Level of workshop:** Intermediate.

## 8 K Workshop

### **Of Conan Doyle and Hume: A Scottish perspective of professionalism - lessons from medicine and law**

Mairi Scott, Fiona Westwood (University of Dundee, Professional Development Academy, Tayside Centre for General Practice, The McKenzie Building, Dundee DD2 4BF, United Kingdom)

*"Any truth is better than infinite doubt": Arthur Conan Doyle*

**Background:** The education of professionals continues to be discipline and jurisdiction specific with little transfer of learning between them, yet assessing professionalism faces common problems. As professionalism is difficult to define in absolute terms and is context dependent, it may be argued that it is not possible to transfer learning from one discipline and one jurisdiction to another. We offer two models – one from legal education and the other from Scottish medical education to challenge such assumptions.

**Intended outcomes:** The workshop will offer participants tried and tested models of assessment professionalism from another discipline and jurisdiction and allow participants to identify what could be applied to their area of medical education.

*“Truth springs from argument amongst friends”:* David Hume

**Structure:** Two models will be presented. One based on qualitative published research into ‘virtual law firms’ will illustrate specific criteria for assessing professional character of law students. The other will present current Scottish Re-validation approaches that included encouraging a return to the Master – Apprentice relationship. Delegates will then discuss and test the application of both Models to their area of education and identify new assessment of professionalism tools and techniques.

**Intended audience:** All educators designing teaching, learning or assessment exercises.

**Level of workshop:** Intermediate and advanced.

## **8 L    Workshop**

### **Building meaningful core competency assessment using simulation**

F Bhanji, Y Steinert, R Gottesman, S Razack (Centre for Medical Education, McGill University, 1110 Pine Avenue West, Rm 205, Montreal H3A 1A3, Canada)

**Background:** Ideal assessment strategies should be systematically aligned to curricular outcomes, thereby not only measuring student achievement, but also playing an integral role in learning and teaching. Increasing curricular focus in the health professions on core competencies education (e.g. CanMEDS, ACGME) makes simulation-based assessment particularly attractive as a tool for performance assessment. Simulation offers a unique learning environment that challenges learners to perform in an authentic clinical encounter with no risk to patient care. Well-designed simulation also offers the opportunity to evaluate students’ performance through multiple core competency “lenses”, with the potential for rational linkage between what students are taught (curriculum) to curricular outcomes, and ultimately, through attention to the authenticity of the design, to their practice as professionals.

**Intended outcomes:** Upon completion of this workshop, the participants will be able to: 1. Describe approaches to the integration of simulation-based assessment into health professions’ education; 2. Develop simulation-based evaluation strategies to assess core competencies; 3. Demonstrate a rational linkage between desired behavioral outcomes and curricular input.

**Structure:** • Mini-plenary; • Interactive case studies designed to incorporate simulation-based evaluations into core competency education; • Wrap-up.

**Intended audience:** Faculty interested in incorporating simulation into student and resident assessment.

**Level of workshop:** Beginner to intermediate.

## 8 M Workshop

### How can residents' evaluation sessions be prepared more successfully?

G.J.M. Dirksen-de Tombe, M.M.E. van der Meer (Erasmus Medical Center Rotterdam, Burgemeeste S'Jacobsplein 51, Postbus 2040, Rotterdam 3000 CA, Netherlands)

**Background:** How can residents' evaluation sessions be prepared more successfully? In this workshop, we introduce an assessment form that both resident and staff member fill out. The similarities and differences in the evaluation and the self-evaluation give both the resident and the staff member, enough to start a dialogue.

**Intended outcomes:** The audience will learn more about the way they can use the evaluation forms. The staff members get more practice in communication and coaching skills and the residents learn a new way to get help with their self reflection. They will also gain more insight into the role of the other in the evaluation session; resident or staff member.

**Structure:** A brief theoretical introduction; In groups of 4 the differences and similarities in different cases will be discussed; In groups of 4 the evaluation meeting will be simulated (1 resident, 1 staff member and 2 observers). At first the residents and staff members will role-play in their own role and the second time they will change roles.

**Intended audience:** The workshop is for staff members and residents. To have the most benefit of this workshop we would like to have about equal attendance from both groups.

**Level of workshop:** Advanced communication.

## 8 N Workshop

### Workshop on the uses of subjective data in assessment

Matthew C. Holtman, Kevin Eva, Stephen G. Clyman, Robert M. Galbraith, Ann King (National Board of Medical Examiners, 3750 Market Street, Philadelphia, PA 19104, United States)

**Background:** Subjectivity is widely thought to undermine validity in assessment. Scores derived from raters' opinions may disadvantage candidates because of physical attractiveness, gender, ethnicity, or other construct-irrelevant characteristics. Feedback based on subjective data may be insufficiently detailed or credible to support performance improvement. Mistrust of subjective information is pervasive in medical education and assessment. Yet "global" ratings of medical trainees may be more accurate, more reliable, and more construct-relevant than "objective" behavior-based checklist items, which rely to a greater extent than is often recognized on rater judgment. Subjectivity may be especially useful in assessing professionalism and related competencies.

Persistent challenges include designing subjective assessments that are meaningful and developing scoring rules that can yield useful feedback or support defensible selection decisions.

This workshop will provide a forum to explore subjectivity in assessment, to discuss what is known from prior research, and to identify conceptual gaps.

**Intended outcomes:** The goal is to disseminate current work and begin sketching a research agenda to define the role of subjectivity in assessment, its cognitive boundaries, and the social implications of its use.

**Structure:** Several short presentations will be followed by a moderated discussion.

**Intended audience:** Open to anyone interested in the topic.

**Level of workshop:** All levels.

## 8 O Workshop

### **Unconventional Standardized Patients: Similarities between Standardized Pets (SPets) and Standardized Pediatric Patients (SPPs)**

E Langenau, T Scott, E Kachur, L Altshuler (National Board of Osteopathic Medical Examiners, 101 West Elm Street, Suite 150, Conshohocken 19428, United States)

**Background:** Animals and children are both used for formative clinical skills assessment. Standardized Pets (SPets) can be used to teach veterinarian students how to perform particular procedures or clinical skills. Standardized Pediatric Patients (SPPs) can be used to teach communication skills with children and families. While SPets and SPPs are used by very different learners, they share several striking similarities. For instance, both may be distracted, unable to verbally communicate, and respond to operant conditioning.

**Intended outcome:** Identify the challenges and opportunities shared by utilizing animals and children for formative clinical skills assessment.

**Structure:** First, participants will review current literature related to the use of animals and children in clinical skills assessment. Second, through video demonstration, participants will learn how animals can be used to assess the clinical skills of veterinarian students and how children can be used to assess the clinical and communication skills of pediatric residents. Third, through facilitated group discussion, participants will identify similarities and differences between SPets and SPPs. Fourth, through facilitated small group discussion, participants will develop a common training strategy for utilizing and training SPets and SPPs.

**Intended audience:** Medical and veterinary educators working with standardized patients.

**Level of workshop:** All levels of experience.

## 8 S Posters Clinical Competence

### 8 S 1

#### **Stages of competency for medical procedures: A four-step framework**

D Manthey, M Fitch (Wake Forest University School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157, United States)

**Background:** A medical student curriculum was previously described for clinical procedures. Competency to perform procedures unsupervised is important for independent practitioners, but not an expectation appropriate for every training level or procedure.

**Summary of work:** We propose a competency development framework for procedures using four stages to allow incremental expectations tailored for trainee level.

**Summary of results:** Four stages of competency are defined: Knowledge, Exposure, Skill Acquisition, and Assessment. Knowledge is obtained via lecture, reading, or videos about procedures. Exposure is acquired through indirect observation and direct participation in procedure completion. Skill Acquisition includes supervised and deliberate practice of procedures with formative feedback. Assessment encompasses summative evaluation of knowledge and independent technical skills to certify explicit competence via virtual or situational testing. This framework was applied to 20 basic clinical procedures important for graduating medical students. Students will complete the first and second stages (Knowledge and Exposure) for all procedures, through stage three (Skill Acquisition) for seven procedures, and through stage four (Assessment) for eight procedures to demonstrate competency.

**Conclusions and take home message:** Dividing clinical procedures into four steps for developing competency allows graded objectives based on learner level and procedure type. After achieving competency, learners continue to work towards proficiency and expertise.

### 8 S 2

#### **Pediatric H1N1 Decision Matrix**

LB Smith, M Wright, D Summers (West Virginia University, WV Simulation Training & Education for Patient Safety (STEPS), PO Box 9101 Robert C. Byrd Health Sciences Center - South, Morgantown 26505-9101, United States)

**Background:** During times of pandemics, health crises, and other disasters, it is important to preserve and utilize resources in a manner that benefits the greatest number of patients. Due to variances in medical practice and comfort levels in caring for sick children, these pediatric patients may be transferred to higher levels of medical care when they could have been reasonably cared for locally or even sent home. Such medical practice results in emergency department as well as in-patient hospital crowding that in turn prolongs wait times and consumes valuable resources in one location.

**Summary of work:** Therefore, for pediatric patients presenting with H1N1 illnesses, a decision matrix based on best practices and evidence based medicine currently available has been devised. It allows practitioners a logical and stepwise approach designed to better standardize evaluation and management of pediatric patients and potentially diminish numbers of unnecessary transfers.

**Summary of results:** A web-based educational module has been developed and is available via the internet. The curriculum takes about one hour to go through and concludes with a post-test.

**Conclusion and take home message:** Following successful completion of that test, participants are invited to our simulation center where they can apply the decision matrix in high fidelity simulations with various scenarios involving pediatric patients.

### 8 S 3

#### **Assessment of medical students' clinical encounter documentation in paediatric clerkship curriculum**

M Rashid, S Shea (Department of Paediatrics, Undergraduate Medical Education, Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia, Canada; IWK Health Center, 5850 University Avenue, Halifax B3K 6R8, Canada)

**Background:** Medical students' clinical training should complement the objectives of their curriculum, a process requiring tracking of encounters with patients. The study investigated the feasibility of documentation of clinical encounters by students doing their paediatric clerkship rotation.

**Summary of work:** A Clinical Encounter Documentation form was developed comprising of 12 disease domains encompassing the COMSEP objectives of paediatric clerkship rotation. The domains included abnormalities related to Growth, Nutrition, Development, Behavior and common symptoms/disorders of various organ systems. The clinical clerks (third-year medical students) logged their clinical encounters in each domain with maximum of ten per domain during their 6-week paediatric rotation.

**Summary of results:** Of the 199 clinical clerks over two academic years, 196 successfully completed the documentation. Mean number of patient encounters was  $56.9 \pm 18.4$ . At least one encounter in all domains was reported by 79.1% and 93.9% had encounters in 11 of 12 domains. Encounters were comparable between university versus community hospital rotations (59.6vs52.0,  $p=0.17$ ). When a real patient encounter was not possible, an equivalent CLIPP (Computer-assisted Learning in Pediatrics Program) case in the same domain was completed.

**Conclusion and take home message:** Simplified clinical encounter documentation can provide useful information about students' learning in relation to the objectives of clerkship curriculum and may also be helpful for accreditation purposes.

### 8 S 4

#### **Universal precautions and needle stick injury incidents among clinical students in Jakarta**

F Kurniawan, S Ali (School of Medicine, Atma Jaya Indonesia Catholic University, Pluit Raya No. 2, Jakarta 14440, Indonesia)

**Background:** Clinical students are among the highest risk group for needle stick injury and this is risk of contracting blood borne pathogens including HBV, HCV and HIV. To prevent this, universal precautions had been introduced to all students before entering clinical rotation. The efficacy of this method of prevention was evaluated in this study.

**Summary of work:** Three-hundred-forty-nine clinical students from eight medical schools located in Jakarta were surveyed about their knowledge of blood borne pathogens, universal precautions and needle stick injury incidents during their clinical rotation.

**Summary of results:** Sixty-two percent of respondents had adequate knowledge about blood borne pathogens and universal precautions and seventy-two percent have access to personal protection;

however incidents of needle stick injury occurred in thirty-one percent of students. Risk factors for the incidents are the implementation of universal precautions.

**Conclusion:** Knowledge for universal precautions and provision of personal protection is not sufficient for prevention of needle stick injury.

**Take home message:** Attention and guidance in clinical rotations should include the implementation of universal precautions better protection of the clinical students.

## 8 S 5

### **Enhancing cross cultural competencies: A multi-faceted approach**

L Kennedy-Malone, E Jones (The University of North Carolina at Greensboro, School of Nursing, PO Box 27610, Greensboro 27402, United States)

**Background:** The nurse practitioner concentration is located in the most racially and ethnically diverse county in the state as well as being considered the third most diverse in the United States.

**Summary of work:** Consequently, our Adult-Gerontological Nurse Practitioner program has been diligent in creating a myriad of opportunities for our students to understand culture, ethnicity, and disparities and how they are inter-related to individuals' perceptions of health and health care. Likewise, emphasis is placed on the providers' recognition of their own beliefs regarding health, wellness, and providers' role in administering health care.

**Summary of results:** The faculty has taken a systematic approach to integrate these concepts across the curriculum. Students first ascertain their own cultural competency. Students conduct Health Fairs for disparate populations. OSCEs are developed with culturally based cases and simulated patients from culturally diverse groups are selected to participate. Students are placed in clinical settings that manage the care of the medically underserved vulnerable adult and older adult populations. Students are encouraged to select topics that address the needs of culturally diverse populations for their evidenced-based project.

**Conclusion and take home message:** A multi-faceted integration of cultural relevant experiences is necessary to ensure cultural competency.

## 8 S 6

### **Introduction of new observed clinical assessment: did it achieve the aim?**

L P Green-Thompson (Centre for Health Science Education, University of the Witwatersrand, Johannesburg, South Africa)

**Background:** The Graduate Entry Medical Programme (GEMP) at Wits University in South Africa has introduced early clinical exposure to medical students in the first two years of this programme. The clinical exposure is divided between ward based work and clinical skills laboratory sessions.

**Summary of work:** An observed clinical assessment was introduced at the end of the second year of the GEMP. The assessment was loosely based on the mini-CEX format suggested by Norcini et al. The aims of the assessment were to establish which methods students would use to prepare for the assessment and what students' attitudes were towards the assessment. Students were asked to complete an evaluation questionnaire.

**Summary of results:** The total number of candidates was 191. A response rate of 89% was achieved. Students used their clinical notes (76%), read a clinical text book (60%) and 31% returned to clinical wards to practically examine patients. The majority (79%) of students found the assessment a valuable experience.

**Conclusions:** Students responded positively to the introduction of this assessment. The assessment achieved its aims.

**Take home message:** Observed clinical assessments are valuable instruments in ensuring the attainment of clinical competence in medical students.

## 8 S 7

### **The development of a common assessment form for physiotherapy clinical education in Ireland**

A O'Connor, S Coote, L Alpine, C Cassidy, M Loughnane, S McMahon, D Meldrum, M O'Mahoney (University of Limerick, Physiotherapy Department, Faculty of Education and Health Sciences, Health Sciences Building, Limerick, Ireland)

**Background:** A group of Irish physiotherapists working in education convened to design a common assessment form (CAF) for assessing undergraduate physiotherapy students' clinical placement performance. This was in response to clinical educator requests and following recommendations by the National Implementation Group for Clinical Education. Following agreement from the four Higher Education Institutions (HEI's) providing undergraduate physiotherapy education, the needs of users (academic staff, placement facilitators and clinical educators) were established.

**Summary of work:** The CAF was developed by taking the top clinical competencies required by clinical educators (obtained through questionnaires) and HEI's (obtained through consensus meetings) in conjunction with behaviours alluded to in published literature. The form was piloted, revised and then validated by comparing CAF scores to those of existing assessment forms. Inter-rater reliability was established by comparing grading between clinical educators and placement facilitators.

**Summary of results:** Construct validity (PCC 0.906) and reliability estimates (ICC 0.84) were satisfactory.

**Conclusion:** The validity and reliability of the CAF was found to be greater than that of existing forms and was adopted by all four HEI's.

**Take home messages:** Through successful collaborative work between Irish HEI's offering undergraduate physiotherapy programmes, a common clinical placement assessment form now exists in the Republic of Ireland.

## 8 S 8

### **Development of an assessment tool for the use of personal protective equipment in healthcare**

C Williams, Z Hirji, H Carnahan (The Wilson Centre, University of Toronto, 200 Elizabeth Street, 1E5-565, Toronto M5G 2C4, Canada)

**Background:** Personal protective equipment (PPE), such as gloves, gowns and masks, are sometimes misused (Hambraeus, 2006) due to improper acquisition or decay of skills between acquisition and clinical practice. Training often follows didactic models or online instruction and it is unclear if this

transfers to effective physical performance (Hon et al., 2008). There is no standard method to evaluate the actual competencies derived from different training programs.

**Summary of work:** An initial list of items was generated, following which, electronic surveys were iteratively distributed to experts asking them to rate the importance of each item for evaluating performance of PPE skills.

**Summary of results:** The Delphi survey produced a modular checklist and 5-item global rating scale for assessing the selection and use of PPE for routine practices. The assessment tool was able to differentiate between expert and novice performances and demonstrated inter-rater reliability.

**Conclusions:** A Delphi survey was used to develop a valid and reliable assessment tool for PPE skills.

**Take home messages:** There is a new tool for the assessment of PPE skills that will facilitate the development and evaluation of educational programs to support learning and retention of PPE skills. This may lead to improved patient and worker safety.

## 8 S 9

### **Comprehensive assessment measuring student performance in a longitudinal clerkship**

S Strasser, R Strasser, M Matte (Northern Ontario School of Medicine, Laurentian University, 935 Ramsey Lake Road, Sudbury P3E6J7, Canada)

NOSM is the first new school in Canada for over 30 years. The Charter Class has just taken the first part of the national qualifying exam (LMCC). These students achieved the highest rank across Canada for clinical decision making. What are we doing right? In the third year NOSM students undertake the whole of their 3rd year based in family practice in small communities in Northern Ontario where they learn the objectives of 6 core disciplines in parallel rather than block rotations; the Comprehensive Community Clerkship (CCC). To allay anxieties of students while away from their peers, and, faculty with the new program, for the first 3 years of running the program the students have undertaken numerous assessments during their 3rd year. Can we afford to relax? In contrast the last accreditation site visit report has directed NOSM to review accreditation standards ED 30 (formative and summative assessment) and 31 (remediation) with the inference not enough assessment is being done. Through the poster presentation we hope to reach a shared understanding of when enough is enough and not too much.

## 8 S 10

### **Competence in medical performance**

G duPreez-Wilkinson (University of Queensland, Herston Rd, Herston 4006, Australia)

**Background:** Assessment of clinical competence in medicine has long been a focus of deliberation. The current tools to assess JMO performance generally combine a Lickert scale (based on “consistent with level” as standard) with a list of nebulous/ ill defined tasks. The purpose of this research is to design and validate an intuitive tool with more specific criteria.

**Summary of work:** An electronic tool has been designed with a range of core competencies across the domains of knowledge, reasoning and application. Each of these competencies have a five point scale for each level from junior medical student through to senior consultant, with descriptors of expectations appearing as one scrolls across the point.

**Summary of results:** The assessment of junior staff using this tool is correlated with patient surveys and supervisor interviews. Interrater reliability is also being assessed, including the impact of training with the tool. Preliminary results are being analysed and should be available by the time of the conference.

**Conclusions:** Everyone involved in the pilot process has agreed that less ambiguity is needed with clinical assessment of junior doctors, which is one of the key roles of this tool.

**Take home messages:** This tool is the first step in creating a record of life long learning in clinical competence. Potential applications include early detection and remediation for struggling junior doctors, competency based progression for functional medical staff of all levels, and articulation/ documentation of common competencies versus specific competencies for medical specialty training.

## 8 S 11

### **How best to assess Continuity of care in longitudinal integrated programs?**

Linda Sweet (Flinders University, School of Medicine, GPO Box 2100, Adelaide 5040, Australia)

**Background:** Continuity is increasingly popular as a guiding principle within medical curricula. In January 2009 a new longitudinal clinical education program commenced and was the first Australian urban based model of this type. A major issue that has evolved with this is how to assess students' performance with continuity of care.

**Summary of work:** An action research project was conducted to identify the experiences and perceptions of key stakeholders of the continuity patient program. A major issue identified was that given assessment drives learning, then the lack of assessment of this portion of the curriculum lead to poor participation. This leads us to ask how should continuity of care be embedded within assessment?

**Summary of results:** Preliminary results have shown a disparity between student's and academic's expectations of assessment of continuity of patient care. Consideration of the core learning outcomes is key – however leads to the question that if patient centeredness and holistic care is the key learning outcomes, then how can these be assessed validly and reliably?

**Take home messages:** This presentation will present alternative modes of assessment for continuity patient care programs, as well as theorize ways in which to assess and enact continuity in patient care across longitudinal integrated programs.

## 8 S 12

### **Teaching and assessing students' communication and clinical decision-making during phone consultations with nurses**

L Hauge, M Boehler, E Arble, C Schwind, A O'Reilly, M Brunsvold (University of Michigan, Department of Surgery, 2128D Taubman, 1500 E. Medical Center Dr., Ann Arbor, MI 48109-5346, United States)

**Background:** One of the challenges of a surgery intern's first days is responding to nurses' pages about patients. The purpose of our study is to assess learners' performance in phone consultations with nurses.

**Summary of work:** Ten simulated cases for physician-nurse consultations in surgery ("mock pages") were developed. Each mock page included a clinical decision-making assessment and semantic

differentiation scale. A nurse paging team completed 12 hours of training. M4 students (n=30) responded to nurse pages, completing 10 mock pages during a 1-month surgery internship preparation course. Individual feedback was provided after each case.

**Summary of results:** The reliability of the semantic differentiation scale for assessing phone communication ranged from .88 to .95, and the clinical decision-making assessment ranged from .01 to .73 (6 cases above .5). Student performance on clinical decision-making ranged from 28-58% correct. Student evaluation of the realism, feedback, and value of their mock page experience was excellent.

**Conclusions:** The mock page exercise is a feasible and reliable means of teaching and assessing student communication in phone consultations with nurses.

**Take home message:** Students' clinical decision-making performance reinforces the need for rehearsal using this high-fidelity, low-risk exercise prior to internship.

### 8 S 13

#### **The science and the art of video debriefing in formative assessments**

K Khan, S Tolhurst-Cleaver, T Pattison, M Sherwood (Manchester Medical School, Lancashire Teaching Hospitals Foundation Trust, Department of Anaesthetics, Royal Preston Hospital, Preston, United Kingdom)

Debriefing has a positive impact on the learning. It has been shown that educational interventions without debriefing do not improve future performance. Video debriefing and feedback is a very powerful technique which helps to develop insight in the learners. While the underlying principles of debriefing are the same, the technique of video debriefing is substantially different from oral debriefing. The poster will give an explanation of educational principles underlying video debriefing and demonstrate video debriefing technique.

### 8 S 14

#### **An analysis of factors which predict success on clinical skills exam**

N Bray, R Cherner, H Lane, M Echols (Nova Southeastern University College of Osteopathic Medicine, 3200 S. University Dr., Ft. Lauderdale, Florida, 33328, United States)

**Background:** The goal of this research is to gain a better understanding of factors that may predict student success on a clinical skills examination. Student MCAT scores, Myers-Briggs Type Indicator (MBTI), Undergraduate GPA and M-1 Clinical Practicum (CP) final examination scores, and Osteopathic Manipulative Medicine (OMM) final M1 course grade are analyzed to determine if the M-2 Clinical Skills Examination (CSE) pass rate is predictable. This research will supplement the review of current literature on predicting student performance on Clinical Skills Examinations. The ability to predict clinical skill competency would be valuable for faculty and students.

**Summary of work:** This study used Multiple Regression and subsequent Stepwise Regression to determine predictability of the M-2 final CSE based upon MCAT Scores, MBTI, Undergraduate GPA, OMM M1 final grade and M-1 CP final scores.

**Summary of results:** Preliminary results show that MBTI has the potential to predict outcomes on CSEs. Researchers will expand to include 500, second year medical students.

**Conclusions:** Based on this pilot there is a need for further investigation and researchers will provide results at this conference.

**Take home messages:** This study will reveal whether clinical success may be predicted thereby broadening the scope of understanding in the literature.

## 8 S 15

### **Clinical grades versus pass/fail**

Maria Olenick (The Commonwealth Medical College, Clinical Skills and Simulation Center, Scranton, United States)

**Background:** Accurate clinical evaluation that can be substantiated using specific criteria is often difficult. Identifying specific strategies to assure you are as objective as possible and using specific criteria to define competencies such as professionalism, interpersonal communication and caring is extremely important whether you are using a clinical grading system or a pass/fail system. This poster will present key points regarding the use of clinical grades versus pass/fail within criterion based evaluations. The presentation will address the pros and cons of clinical grades, pros and cons of pass/fail and approaches to criterion based evaluations. It will also facilitate implementation strategies to improve student evaluation methods with regard to clinical competence assessment.

## 8 T Posters

### **The Student as Teacher/Assessor**

#### 8 T 1

##### **Evaluation of the use of peer assessment in formative long case clinical examinations**

Annette Burgess (University of Sydney, Central Clinical School, Royal Prince Alfred Campus, Building 63, level 4, Missenden Road, Camperdown 2050, Australia)

**Background:** Peer assessment is currently utilised in the Year 3 medical student formative long case examinations at Central Clinical School, University of Sydney, where students examine and mark peers with a clinician as co-examiner.

**Summary of work:** Aim: The purpose of the evaluation was to investigate the efficacy of peer assessment as a student learning experience. The study evaluated four outcome measures according to student perception: the usefulness of the activity; confidence in preparing for their long case examination; active involvement; and interest.

**Summary of work:** The evaluation involved the collection of quantitative data using survey questionnaires from all student examiners (n=53) using closed ended and open ended questions.

**Summary of results:** Survey responses were received from 17 (32%) students who participated in the formative long cases (n=53). Students found acting as an examiner interesting and useful. It increased their confidence. However, engagement in the activity was hindered when students were not encouraged to contribute to discussion and provision of feedback.

**Conclusions:** The opportunity to act as a peer examiner is highly valued by students.

**Take home message:** In order to maximise the benefits of peer examination in the long cases, measures need to be put in place to ensure that students are actively engaged in the activity.

## 8 T 2

### **Assessing residents' readiness and attitudes towards teaching: results of factor analysis of two short scales**

N Caire Fon, F Marquis, S Ahern, R Gagnon, D Laudy, G Grégoire, A Boucher (Faculty of Medicine, Université de Montréal, Faculté de médecine-CPASS Local Y-200 C.P 6128 Succursale centre ville, Montreal H3C 3J7, Canada)

**Background:** Residents are expected to teach a significant amount of their time, often without formal training. As we are implementing a curriculum to help residents acquire teaching skills it is essential to assess residents' attitudes and their readiness to teach.

**Summary of work:** Two short scales were developed to assess current and past experiences in teaching (11 items) and future interest in teaching (7 items). The scales were used with a group of 121 residents. Principal axis factoring was used to identify main factors.

**Summary of results:** Clear factorial structure was found for both scales: explained variance is higher than 60%. Attitude toward teaching is qualified by interest, feeling of competency, feeling of duty, and a sense of lack of time and competency. Aspirations towards a teaching career are qualified by interest, feeling of competency and sense of duty. Current and future interest in teaching is the main factor and is associated with the number of teaching experiences ( $r = 0,30$ )

**Conclusions:** These results clearly show that it is possible to construct reliable and coherent scales of residents' attitudes toward teaching and identifies factors that should be addressed during residents' training.

**Take home messages:** Clear factorial structure was found for scales assessing residents' readiness and attitudes towards teaching and identifies factors to be addressed during residency.

## 8 T 3

### **Junior doctor-led prescribing teaching for senior medical students – a sustainable model for South-East Scotland and beyond ...**

CA Parisinos, JCL Rodrigues, MA Rodrigues, JN Rodrigues, A Sengupta, C Kane, C Kane, S Maxwell, H Cameron, M Ross, M Ford (Edinburgh University, The Medical Teaching Organisation, College of Medicine and Veterinary Medicine, The Chancellors Building, 49 Little France Crescent, Edinburgh EH16 4SB, United Kingdom)

**Background:** In South-East Scotland, a "near-peer" teaching scheme exists, where junior doctors teach 5th year undergraduates practical prescribing. The initial 2006-07 tutors were selected to participate. Since 2007-08, tutors have been recruited by open advertisement and attend a training symposium to summarise Edinburgh University's curriculum, the University-approved scenarios and teaching/learning methods. We aimed to establish the effect of open recruitment on attendee satisfaction and the scheme's sustainability.

**Summary of work:** Tutorials took place throughout each academic year. The scheme was coordinated by different volunteers each year. Anonymous, voluntary tutorial attendee feedback was analysed.

**Summary of results:** Year 1 (2006-07): 73 tutorials, 271 attendees. Year 2 (2007-08): 52 tutorials, 221 attendees. Year 3 (2008-09) 117 tutorials were delivered across every hospital in the region. 2008-09 feedback was received from 373 attendees; 99% agreed/strongly agreed that the sessions advanced their knowledge and 99% were interested in attending more sessions.

**Conclusions:** Our model is sustainable, even when those teaching/coordinating are replaced year-on-year. Recipient cohorts appear to become teacher cohorts the following year.

**Take home messages:** Our “near-peer” scheme is in its 4th year of running and has now expanded to Dundee University in Eastern Scotland. We believe this model could be useful elsewhere.

#### **8 T 4**

##### **When should medical students start to prepare as teacher?**

T Saiki, T Matsumoto, A Tanaka, N Ban (Nagoya University Hospital Department of General Medicine, Tsurumai 65, Showa, Nagoya 466-8560, Japan)

**Background:** Various studies from US, Canada and UK show the effectiveness of the programs for preparing medical students to teach. However students of those programs are mainly in final year. The most appropriate time when such programs should be embedded in undergraduate curriculum remains unclear.

**Summary of work:** Before bedside learning, we offered a 2-day elective program entitled “An Introduction to Educational Technique as a Basic Clinical Competence” to ten Japanese year 4 students in a six year curriculum. Students learned basic educational principles and practiced giving colleagues feedback. The program and students’ perceptions were evaluated by a questionnaire with comments.

**Summary of results:** Our evaluation showed not only Japanese students’ appreciation toward the program but their willingness to try to practice feedback after the program. Some participants suggested situating the program even earlier in the undergraduate curriculum.

**Conclusions:** The program for preparing students to teach can be successfully introduced to Japanese students. Additionally, the students’ positive attitudes toward the practice of feedback after the program are indicated.

**Take home messages:** Further study should address the learning process and its effectiveness in terms of students’ acquisition of teaching techniques before graduation.

#### **8 T 5**

##### **Evaluation of a model of student-generated case-based learning**

R Ajjawi, A Harris, P Boyce (The University of Sydney, Sydney Medical School, NSW, Sydney 2006, Australia)

**Background:** Clinical Reasoning Sessions (CRS) have recently been introduced in the clinical years of the University of Sydney medical program. CRS involves small group student-generated case-based learning with clinician tutors which builds on problem-based learning in the early years and aims to promote integrated evidence-based clinical reasoning.

**Summary of work:** Evaluation consisted of mixed methods including observation of interactions, interviews and focus groups with students and staff, along with correlation of knowledge and clinical assessment results with features of the CRS such as tutor facilitation ratings.

**Summary of results:** Qualitative aspects of the evaluation indicate that students appreciated the authentic nature of the CRS and that it promoted depth of understanding of patient problems. Students elaborated on the value of discussing actual patient management in comparison with evidence from the literature and the experiences of other students who had examined patients with similar conditions. A difficulty identified by students and staff related to diversity in tutor facilitation where some sessions deteriorated to student and tutor monologues.

**Conclusions:** CRS are an innovative method to bring the depth and complexity of real cases into the small group setting. A key challenge is the facilitation of interaction within the group.

**Take home messages:** Our findings suggest that CRS are a promising addition to structured teaching in the clinical years of our medical program. Further development is needed specifically targeting student and staff training.

## 8 T 6

### **The student voice in quality enhancement: How to turn up the volume**

AJ Wilson, D Owen, A Berlin (Division of Medical Education, University College London Medical School, London WC1E 6BT, United Kingdom)

**Background:** There has never been a time in which student involvement in the quality of their educational experience has been higher on the agenda (QAA, 2008). UCL Medical School has around 2000 students meaning that ensuring a high quality learning experience for all of them is a complex and challenging process.

**Summary of work:** A multimodal approach with stakeholder interviews, focus-groups and evaluation questionnaires was used to gather feedback on the role of students in our curriculum evaluation and quality enhancement process and to generate new ideas and guidelines for the future.

**Summary of results:** The themes that emerged could be broadly categorised under two headings: 1) issues relating to the nature and effectiveness of student voice in general, with numerous suggestions for improvement and 2) issues regarding how, when and why curriculum feedback is collected and used.

**Conclusions:** We will present a brief synopsis of our findings and give recommendations for “turning up the volume” of the student voice in curriculum evaluation and improvement.

**Take home messages:** The student voice is a complex social phenomenon that is affected by personal, cultural and institutional factors. Understanding the relationships between these is central to quality enhancement of the undergraduate medical curriculum.

## 8 T 7

### **Student grand rounds – teaching and assessment tool**

D A Kandiah (Royal Brisbane and Women's Hospital, Department of Rheumatology, PO Box 315, RBH Post Office, Herston 4029, Australia)

Final year medical students have differential exposures to various common medical problems. At the time of graduation, they may not have understood or be assessed on many conditions that they will have to manage as interns. In 2008, Student Grand Rounds were introduced for Final Year medical students at the Royal Brisbane and Women's Hospital. Students were allocated patients to review and then present formally to their colleagues. A senior clinician would facilitate the discussion. At the end of the session, students had a summary of the key learning issues from the case and the relevant conditions. The poster will demonstrate how the process can be used to develop clinical reasoning, clinical decision making and safe medication practices. This could form part of their final formative and/or summative assessment.

## 8 T 8

### **Evaluating peer, self and tutor assessment of procedural skills utilising the Direct Observed Procedural Skills (DOPS) assessment tool in undergraduate medical teaching. Assessing the assessors!**

R Mcleod, J Ker, G Mires (University of Dundee Clinical Skills Centre, Ninewells Hospital and Medical School, Dundee DD1 9SY, United Kingdom)

**Background:** Simulation is increasingly being used in medical education to assess students' clinical practice. Key to ensuring consistent standards is assessor competence. There is inconclusive evidence about who is best placed to assess competence and provide feedback in this context. DOPS provides assessment and feedback in the workplace at postgraduate level.

**Summary of work:** Medical students undertake procedural skills training in a simulated environment during clinical placements. Tutors assess performance using a DOPS tool and this will be extended to be used by students and peers for this study.

**Summary of results:** An analysis of peer, self and tutor assessments will demonstrate who is consistent in assessing and providing feedback in this context.

**Conclusions:** This study will provide evidence of the use of DOPS by peers and students as assessors in a simulated setting and identify who is best placed to provide constructive feedback.

**Take home messages:** Self and peer assessment may be as reliable as tutors in a simulated setting.

## 8 T 9

### **The role of peer education in English learning during general medical education**

M Alizadeh, R Mirnour, F Khorshidi, K Ghabili (Education Development Center (EDC), Tabriz University of Medical Sciences, Pashmineh, Daneshgah Street, Tabriz 5166614766, Iran)

**Background:** Medical doctors need to learn English in order to teach learn and publish their research work. Peer education, as a method of education used by people who share characteristics, has been successfully used. The aim of this study was to assess the potential role of peer education in the quality of English learning among a group of medical students in Iran.

**Summary of work:** A team of four medical students was established as tutors. A group of 16 medical students were interviewed and divided into two groups of eight. Regular classes were held twice a week. Self-administered questionnaires were given to all the students before and after attending the classes.

**Summary of results:** Five percent and 7% of the students declared that they were able to express their intentions in English before and after attending these classes, respectively ( $p < 0.05$ ). One-third of the respondents indicated that these classes helped them to understand the scientific articles written in English.

**Conclusion and take home message:** The present study reveals that peer educational English classes has effective role in the medical students' English progression. Implementation of peer-education method in the English classes during the general medical education seems to improve the quality of education .

## **8 U Posters Postgraduate Education 3**

### **8 U 1**

#### **To what extent does the GP rotation in the Foundation Programme (FP) in the UK prepare future doctors?**

O Zolle, R Odbert, [M Rickenbach](#) (NHS Education South Central, Southern House, Otterbourne, Winchester SO21 2RU, United Kingdom)

**Background:** The two year FP aims to develop junior doctors through sets of 4 month rotational medical placements. One of these rotations is spent in GP. The focus of the rotation is not to prepare trainees to become GPs but rather to provide them with a GP experience.

**Summary of work:** We provided questionnaires for trainees and facilitated discussions with trainers and trainees to explore the perceived suitability of the 4 month rotation in comparison to other medical specialities.

**Summary of results:** GP trainers and trainees have contrasting perceptions as to the extent by which the GP rotation prepares trainees with respect to other specialties. Some trainees felt that other specialties prepared them better in a number of areas that were previously considered to be of the GP domain such as consultation skills. They reported having gained a better insight into these skills through psychiatry.

**Conclusions:** The perceived extent by which the GP rotation in FP prepares future doctors differs between GP trainers and trainees.

**Take home messages:** Since different trainees choose different speciality rotations there is a need to look more closely into how each specialty contributes to the formation of the competent FP doctor.

## 8 U 2

### **Quality managing the delivery of the Foundation Curriculum to Foundation Year Doctors (FDs) in the London Foundation Schools**

DM McGuinness, M Adel-Singh, R Lee, I Hastie, AH Frankel (London Deanery, Stewart House, 32 Russell Square, London WC1B 5DN, United Kingdom)

**Background:** Foundation Training is based on a defined curriculum and Training Providers are required to demonstrate that all of the Curriculum can be delivered to trainees through direct patient contact or formal teaching sessions.

**Summary of work:** The London Deanery developed an automated Curriculum Mapping Matrix, dividing the curriculum into 58 sections. Supervisors and FDs within all Foundation Training Providers rated the ability of their post to deliver the competencies for each section of the curriculum on a four point scale, ranging from no opportunities to plenty of opportunities.

**Summary of results:** There was an 86% response rate from supervisors accounting for 2105 foundation programmes. Of these, 1721 (82%) programmes could access all the competencies, with 384 (18%) unable to access components of the curriculum. The commonest deficit was in the Epidemiology and Screening component of the curriculum where 205 (10%) programmes had inadequate exposure, other gaps were less frequent, but common across providers. FD responses suggested access to curriculum competencies within their posts was less than identified by their supervisors.

**Conclusions:** This curriculum mapping process revealed access to all parts of the curriculum may not be universal for all programmes.

**Take home messages:** This process provides a method to meet the regulator requirement to quality manage curriculum delivery.

## 8 U 3

### **Foundation Assessment Project**

S Quay (KSS Deanery, 7 Bermondsey Street, London SE1 2DD, United Kingdom)

**Background:** Foundation doctors deserve high-quality medical education within NHS Trusts at this vital stage in their professional development. Fair and appropriate assessment is a direct challenge to those colleagues tasked with facilitating this in clinical workplace environments. Rarely have those tasked with making assessments received ongoing formal training as to how assessment strategies can serve both formative and summative purposes. The KSS Foundation Assessment Project has been developed within a new system of educational governance that aims to support those tasked with making accurate judgments about the abilities of the next generations of doctors.

**Summary of work:** A pilot workshop with Foundation lead consultants investigated the purposes and intentions of senior colleagues charged with managing assessment teams in NHS Trusts. This revealed a real need for effective training in the role of assessor, which is of growing significance in the field of medical education. The workshop explores the role of assessors through discussions and activities on: Workplace Based Assessment Tools; Formative and Summative assessment strategies; Strategies for developing Assessment for Learning; Managing challenging scenarios.

**Summary of results:** The ongoing development of: Appropriate assessment strategies; The KSS Deanery Foundation Assessment Network; A written publication: 'Rigorous Assessment for Foundation Doctors'.

**Conclusions:** These workshops provide a model of centralised workshop development in consultation with the 'community of practice' in NHS Trusts and the empowerment of Foundation leads within Local Education Providers as key stakeholders in assessment practices.

**Take home message:** Investment in developing assessment skills in postgraduate doctors and consultants will contribute to developing high-quality Foundation doctors and improved patient safety.

#### **8 U 4**

##### **Systematic review of assessments in the UK Foundation Programme**

O Lord, S Carney (UK Foundation Programme Office, Regus House, Falcon Drive, Cardiff Bay, Cardiff CF10 4RU, United Kingdom)

**Background:** In the United Kingdom all medical graduates undertake the two year Foundation Programme after graduation. In 2009 we undertook a systematic review to examine the validity and feasibility of the Foundation Programme assessment programme.

**Summary of work:** We searched electronic databases, key journals, available conference proceedings, searched citations, contacted first authors and significant institutions for further work. The papers gathered were critically appraised and summarised then grouped by theme.

**Summary of results:** We identified 111 published papers, including letters and editorials, and a further 89 unpublished sources of information relevant to the foundation programme. Of these 16 published articles, 9 unpublished reports, 5 editorials and letters and 10 conference presentations related to assessment in the Foundation Programme There are many studies which present trainees' opinions of assessment tools, especially Direct Observation of Procedural Skills and Multi Source Feedback. Some groups use the portfolio well and are regularly engaging in reflective practice, whilst others do not and find it a burden.

**Conclusions:** Implementation of the assessment programme has been challenging, particularly the time demands made on assessors and trainees. There is evidence of satisfaction with some of the assessment tools.

**Take home messages:** More research is needed to link performance on assessment with clinical outcomes and provide predictive validity.

#### **8 U 5**

##### **Assessing research and teaching competences in the UK Foundation Programme**

S Carney (UK Foundation Programme Office, Regus House, Falcon Drive, Cardiff Bay CF10 4RU, United Kingdom)

**Background:** To help secure the next generation of leaders in research and education, the Foundation Programme (FP) offers academically themed rotations. While all foundation doctors must demonstrate the outcomes required for satisfactory completion of the FP, the academic training opportunities are diverse with no agreement on what skills should be offered and how to assess them.

**Summary of work:** A working party reviewed academic FP descriptions, recommendation from the Academy of Medical Sciences and the FP Curriculum. A modified Delphi approach was used to agree key outcomes, knowledge, competences. A suggested assessment programme was mapped to these outcomes.

**Summary of results:** Agreement was reached around seven research outcomes and two teaching outcomes. In addition to providing evidence through critically appraised topics and research outputs, academic trainees can use multi-source feedback and pilot the new FP teaching assessment tool.

**Conclusions:** A compendium of academic outcomes can provide a clear framework for trainees to plan and demonstrate their achievements as they progress from foundation to specialty/further academic training.

**Take home messages:** Academic foundation doctors should use the compendium to agree their learning objectives with their supervisor. A multifaceted approach to assessing research and teaching outcomes should be employed

## 8 U 6

### **Social induction: an innovative induction programme for Foundation trainees - experience from a Hospital Trust in South East of England**

R Subramaniam, S Mukherjee (East Kent Hospitals University NHS Foundation NHS Trust, St Peter's Road, Margate, Kent CT9 4AN, United Kingdom)

**Background:** Induction for trainee doctors is established in UK. Foundation trainees (F1) are making their transition from University to hospital life. We describe our innovative project of Social Induction (SI) with an aim to create a community of learners.

**Summary of work:** A weekly programme was arranged prior to the start of the training period alongside Hospital Induction. SI included visiting key local attractions, interactions with senior foundation trainees and working in a group to promote team building and enhance communication. Trainees were asked to provide evaluation of the programme.

**Summary of results:** 17 doctors replied with positive responses as follows: 1. Did SI meet expectations? – 100%; 2. Did interaction with current F1 help to understand your role better? – 88%; 3. Would SI help you to decide to apply to this hospital? - 47%; 4. Would SI help you to recommend this job to your peers? – 94%; 5. Did SI help your communication and learning? – 94%; 6. Should information on SI be available on trust website? – 82%.

**Conclusions and take home message:** F1 trainees benefitted from this programme. Trainees communicate more and more through social network sites and hospitals need to be aware. Trainees are drawn more to hospitals, which engage with them as a community of learners with learning/social interaction.

## 8 U 7

### **Does specialty training prepare new consultants for their role? A quantitative study**

G Morrow, B Burford, J Illing, N Redfern, R Briel, C Kergon, P Crampton (NHS North East, Northern Deanery, 10-12 Framlington Place, Newcastle upon Tyne NE2 4AB, United Kingdom)

**Background:** A study was carried out to examine how well specialty training prepares new consultants (attendings) for different aspects of their role.

**Summary of work:** A 68-item questionnaire, developed from themes from qualitative interviews and existing literature, was distributed to 299 consultants with up to five years' experience who had trained in, and were now working in, the Northern Deanery, UK.

**Summary of results:** The response rate was 70.57% (n=211). Respondents were from a range of specialties, which were grouped into eight broad specialty groups. There was a concentration of management and team working, teaching and supervision, and healthcare governance items at the lower end of the scale, professional aspects of the role in the middle, and communication and clinical skills at the upper end. Effects of specialty group were found on nine items only, mainly related to clinical work, with only one significant difference in each of the other five areas. There were a small number of significant differences related to gender and place of initial medical qualification.

**Conclusion and take home message:** There were some differences between specialties, but overall new consultants felt less prepared for managerial roles, particularly those related to finance and service development.

## 8 U 8

### **Improving quality of postgraduate medical education**

S Gray, S Cook, A Etheridge, D Sandhu (Severn Deanery, Deanery House, Vantage Office Park, Old Gloucester Road, Hambrook, Bristol BS16 1GW, United Kingdom)

**Background:** Postgraduate Deaneries in the UK are complex organisations and responsible for the educational governance for about 45,000 trainees. They manage training programmes for 65 specialties and 30 subspecialties, and are themselves quality assured by the national regulator Postgraduate Medical Education and Training Board. Severn Deanery quality manages the delivery of training to over 2,200 graduates, from 13 medical Schools and 41 main programmes. The national PMETB survey has for the first time provided national comparative data on satisfaction of trainees across the UK. Using this data effectively however requires presentation of it in a form that can be easily accessible to busy training programme directors and trainees, and creation of comparative data at local level.

**Summary of work:** Severn Deanery has striven to maximise the impact of the survey by: (1) ensuring a high response rate (94% in 2009); (2) producing profiles demonstrating how specialties compare with other deaneries; (3) interviewing TPDs with relatively poorly performing programmes; (4) actively exploring outliers at Trust Visits; (5) celebrating success of high performing units and programmes.

**Summary of results:** The active use of this data has helped us to: (1) build relationships with hospital faculty and trainees; (2) Improve training programmes and address the needs of patients. Examples of locally generated reports are given.

**8 U 9**

**5 years of assessing Foundation Doctors: Foundation Programme Curriculum (3rd Edition)**

E Neville, S Carney, D Gallen (The Academy of Medical Royal Colleges, 35-43 Lincoln's Inn Fields, London WC2A 3PE, United Kingdom)

**Background:** Since 2005 all UK medical graduates must complete a two-year Foundation Programme (FP) before entering specialty training. This curriculum-driven programme introduced workplace-based assessment. Some perceive assessment to be “just a tick-box exercise.” The FP Curriculum 3rd edition has provided an opportunity to clarify the purpose of assessment, draw upon the best available evidence and agree a consistent approach.

**Summary of work:** The Academy of Medical Royal Colleges commissioned a review of the major assessment modalities: doctor-patient interactions, case-based discussion and multi-source feedback. This was considered together with extensive stakeholder feedback, the revised curriculum outcomes and the Regulators’ Standards for Assessment.

**Summary of results:** It was agreed that assessment in the FP must recognise excellence, enable feedback, provide evidence of progression and identify doctors needing additional help. The changes include: a practical procedure logbook, a new teaching skills assessment tool and Team Assessment of Behaviour as the primary multi-source feedback tool.

**Conclusions:** The interface between formative and summative assessment has evolved over the last 5 years. Further developmental work is in progress.

**Take home messages:** There must be a clear purpose to assessment. A multifaceted approach to assessment is needed. Appropriately trained and resourced assessors/supervisors are integral to successful implementation.

## SESSION 9      SIMULTANEOUS SESSIONS

### 9 A      Symposium      Assessment of Competencies

M C E Gwee (National University of Singapore); D Samarasekera (National University of Singapore), A Ziv (The Israel Center for Medical Simulation, Tel Hashomer, Israel)

*“Competence is not an achievement but rather a habit of lifelong learning; assessment plays an integral role in helping physicians identify and respond to their own learning needs.”* (Epstein, 2007; NEJM, 356:387: 96)

*“... far from being a fixed attribute or trait, competence comprises multidimensional sets of behaviours ... [so] ... the assessment of competence must go beyond the identification of who practitioners are ... to capture what they actually do in contemporary practice ... .”*  
(Klass, 2007; NEJM, 356: 414-5)

Healthcare delivery in the 21<sup>st</sup> century involves, not only the application of knowledge and (psychomotor) skills, but also communication, interpersonal, and team-work skills, personal reflection, ethics, and professionalism. Thus, the healthcare professional (HCP) of the 21<sup>st</sup> century must be equipped with competencies which instil and confer desired habits of mind, behavior and action required of a competent, caring and ethical HCP. Assessment of HCP competencies should obtain evidence whether HCP students and practitioners have acquired the knowledge, skills and attitudes required of their level of practice. Such an assessment will require testing of an entire spectrum of skills and attributes which go beyond just testing cognitive (‘head’) and psychomotor (‘hands’) abilities; testing in the affective (‘heart’) domain is now considered critical. Assessment of HCP professional competencies in the 21<sup>st</sup> century should provide evidence of whether a HCP has acquired and internalized lifelong habits required of their practice.

Symposium panelists will provide useful insights on how best to assess healthcare professional competencies in 21<sup>st</sup> century practice. The primary focus will be on the paradigm shift required for the assessment of lifelong habits of mind, behavior and action. More importantly, the Symposium aims to invite the active participation of the audience in the deliberations.

### 9 B      Oral Presentations      International Dimensions 1

#### 9 B 1

#### **How do Canadians Studying Abroad (CSAs) compare to other examinees on a high-stakes licensure examination?**

MI Bowmer, M Roy, TJ Wood (Medical Council of Canada, 2283 St. Laurent Blvd, Ottawa K2E 5E5, Canada)

**Background:** The number of Canadian-born medical students (CSAs) training outside of Canada is increasing dramatically and many of these students are seeking post-graduate training in Canada. Given that the international medical graduates (IMGs) are not a homogeneous group, it is important to know more about the characteristics of this specific cohort of IMGs and the quality of their medical training.

**Summary of work:** Data from CSAs who attempted a high-stakes medical licensure examination was included. Information related to gender, age, country of training, medical school and pass rates for this examination was determined. Comparisons to Canadian medical graduates (CMGs) and IMGs were made.

**Summary of results:** CSAs who attempt this examination are trained in a fewer countries than their IMG counterparts. Average pass rates for CSAs vary from 65% to 95%. CSAs typically have a higher pass rate than IMGs but lower than CMGs, especially for recent examinations. Other results related to age and gender will be reported.

**Conclusions:** Reasons for the findings will be discussed including potential cultural or clinical language advantages and the potential for many CSAs to have North American electives or other clinical experiences.

**Take home message:** There is variability in the performance of CSAs depending on country of training and other demographic variables.

## 9 B 2

### International Medical Graduates in Taiwan

Tsuen-Chiuan Tsai, Peter H. Harasym (College of Medicine, I-Shou University, Kaohsiung, Taiwan, No.8, E-Da Rd., Yanchau Sheng, 824 Kaohsiung County, Taiwan)

**Background:** Getting into medicine in Taiwan is extremely difficult due to the emphasis on high marks in high school. Thus, many Taiwanese students are now entering medical schools abroad and returning to Taiwan to practice medicine. Given the diversity of countries these physicians are being trained in, concerns have been raised regarding their clinical competency. The purpose of this study was to compare the licensure exam performance of the IMGs to TMGs.

**Summary of work:** The Taiwanese licensure exam consists of 520 MCQs that measure clinical knowledge in 6 domains. The 2003-2008 pass/fail rates for IMGs and TMGS were compared using a Chi-square test.

**Summary of results:** In the last 5 years, the proportion of IMGs passing has decreased from 63% to 39% while the proportion of TMGs has remained relatively constant at 63%. Overall, there is a significant difference in passing rates between IMGs and TMGs with TMGs passing rate remaining higher ( $p < 0.00$ ).

**Conclusion and Take home message:** TMGs and IMGs differ in proportion passing the Taiwanese licensure exam. In addition, there has been a decline in passing rates for IMGs over the 5 year time span. Given the licensure exam measures clinical knowledge there is also a need to administer an OSCE to the foreign graduates to ensure competence in basic clinical skills.

### 9 B 3

#### **Medical education accreditation in Mexico: Impact on student outcomes**

M van Zanten, DW McKinley, I Durante (Foundation for the Advancement of International Medical Education and Research (FAIMER), 3624 Market Street, Philadelphia, PA 19104, United States)

**Background:** Despite the prevalence of accreditation systems worldwide, little research has examined the relationship between accreditation of medical schools and student outcomes.

**Summary of work:** Since 2002, Consejo Mexicano para la Acreditación de la Educación Médica (COMAEM) is the organization responsible for the voluntary accreditation of medical schools in Mexico. Graduates from Mexican schools seeking to enter training programs in the United States must be certified by the Educational Commission for Foreign Medical Graduates (ECFMG®). Requirements for ECFMG certification include passing scores on the United States Medical Licensing Examination (USMLE) series. We investigated USMLE performance of applicants based on medical school COMAEM-accreditation status.

**Summary of results:** From 1992 – September 30, 2009, 3,270 Mexican citizen applicants from 61 Mexican medical schools took one or more exams leading to ECFMG certification. Of these applicants, 1,150 received their degree from COMAEM-accredited schools and 2,120 from non-accredited schools, or prior to their school achieving accreditation. Applicants from accredited schools were more likely to pass all USMLE exams on the first attempt as compared to applicants from non-accredited schools.

**Conclusions and Take home message:** This study lends support the value of COMAEM accreditation. Further research is necessary to determine the impact of various accreditation aspects and other extenuating factors.

### 9 B 4

#### **An International comparative study of medical licensing examinations: Overview**

X Yao, P Qing, XH Wan (West China School of Medicine, Sichuan University, 37# Guo Xuexiang, Chengdu, 610041, People's Republic of China)

**Background:** Medical curricula in China vary greatly, from 3 years at secondary professional schools to 5 to 8 years at universities. The degrees vary from bachelor to doctor. Regardless of the curriculum, students can get the same medical licensure through passing the licensing examination. This study aims to provide suggestions for the Chinese licensing examination through an international comparison.

**Summary of work:** Materials of 12 countries were collected by searching, web-visiting and on-site investigation. Comparative categories included medical education, examination purpose, eligibility, examination contents, MCQ, OSCE, professionalism, passing-standard setting, score reporting and test administration. PubMed, ERIC and SSCI/SCI were searched to identify related articles.

**Summary of results:** The results suggest that our licensing examination with 800 thousands of candidates per year is weak in many aspects, such as no universal education standards, too few stations in OSCEs, passing standards set mostly by proportion rather than necessary knowledge and skills, less information in score-reporting. Fifteen evidence-based suggestions(e.g. considering contraindication or mastery questions from Japan and Australia) were submitted to the National Medical Examination Center and most of which were adopted.

**Conclusion and Take home messages:** Good experiences of licensing examination from other countries are helpful to improve ours.

#### 9 B 5

**International collaborative high stakes clinical skills examination project: Nova Southeastern University/Kazan State Medical University**

H Lane, S Bulatov (Nova Southeastern University COM/Kazan State Medical University, 3200 S. University Dr., Ft. Lauderdale, Florida 33328, United States)

**Background:** International students often take standardized clinical performance examinations to achieve licensure. Many international medical schools do not use standardized clinical skills examinations with formative feedback in their institutions. This study was conducted to determine if a clinical skills formative assessment improves student pass rates on a performance evaluation.

**Summary of work:** Collaboration between Nova Southeastern University College of Osteopathic Medicine in the USA and Kazan State University School of Medicine in Russia produced a clinical skills examination with guided formative feedback for medical students in Russia. Researchers surveyed students and faculty perceptions of this methodology. Researchers compared performance results on international licensure exams for the study group with performance results of previous graduates.

**Summary of results:** International Collaboration between institutions is feasible. Student and faculty perceptions survey results will be presented at this conference. Student performance results will be available in 2010.

**Conclusions:** Based on student perceptions survey, confidence is improved and the format of the feedback session yielded high satisfaction. Faculty surveys determined international collaboration is feasible. Further study will provide data on generalizability of the results.

**Take home messages:** Formative clinical skills examinations improve confidence and performance of students on licensure examinations.

#### 9 B 6

**Clinical experiences and clinical skills examination performance**

D McKinley, A Opalek (Foundation for the Advancement of International Medical Education and Research (FAIMER), 3624 Market Street, 4th Fl, Philadelphia 19104, United States)

**Background:** Little research has been done to examine the relationship between clinical experiences reported by international medical graduates (IMGs) and performance on clinical skills examinations.

**Summary of work:** When IMGs apply to take certification examinations through the Educational Commission for Foreign Medical Graduates (ECFMG®), they provide information about their clinical experiences. Data were extracted for 29,329 applicants who graduated between 1999 and 2008 and took either ECFMG CSA or USMLE Step 2 CS. A regression analysis was conducted to predict first attempt outcomes on these clinical skills examinations. Predictors included first Step 2 CK attempt outcomes, whether clinical experiences reported took place outside their country of medical school, whether any portion of instruction at medical school was in English, and whether the clinical skills examination was taken before their degree was obtained.

**Summary of results:** Positive outcomes on the clinical skills examination were associated with all of the predictor variables.

**Conclusions:** Information provided by applicants on their clinical experiences can be useful in predicting clinical skills examination outcomes. Experience location had the largest effect in the model.

**Take home message:** Collection of standard information on clinical experiences in undergraduate medical education can facilitate efforts to examine variability in examination outcomes amongst IMGs.

## 9 B 7

### **Stability of clinical reasoning assessment results across four different cultural environments**

C Brailovsky, E Pleguezuelos, B Charlin, E Hornos (Instituto Practicum de Investigación Aplicada a la Educación en Ciencias de la Salud, Serrano 16 - 5ta., Madrid 28001, Spain)

**Background:** It is challenging to develop formative assessment tools validated in one country and used with candidates from different learning cultures. This presentation reviews the performance and the psychometric quality of a script concordance test (SCT) in cardiology developed and validated in Spain and piloted with candidates from 4 different countries.

**Summary of work:** Twenty clinical vignettes were written by a group of cardiologists. Another group made up the reference panel. Eighteen participants from Argentina, 11 from Mexico, 7 from Colombia and 4 from Chile answered the tests. Psychometric analyses were performed to compare the candidates' performances.

**Summary of results:** The mean average of the scores was 64,4%, The Cronbach alpha 0,81. No differences in scores were found among the different groups. Generalizability analyses showed 0,85 and 0,83 for the relative and absolute G coefficients respectively. Participants nested in countries (P:C x I) showed that 20 % of the variance is due to participants, 0,1% to countries, 9,5 % to item difficulty and around 80 % to case specificity. The observed performances were stable across countries.

**Conclusions:** This test, used with the goal of maintaining competences through self-assessment and autonomous learning, shows good psychometric qualities.

**Take home message:** On-line testing with STC shows that it is possible to assess candidates in cross-cultural situations with a reference panel that belongs to a different medical culture.

## 9 C Oral Presentations Student Self-Assessment

### 9 C 1

#### **Clinical Skills Assessment: Comparison of students' self-assessment and examiners' assessment in an OSCE**

F Jahan, S Sadaf, S Mohammad, NA Naeem, R Qureshi (Aga Khan University Hospital, Stadium Road, Karachi 74800, Pakistan)

**Background:** Learning of basic clinical skills is introduced in Years 1 & 2 at the Aga Khan University (AKU) through a structured Clinical Skills Teaching program. Acquisition of competence is assessed through the Objective Structured Clinical Examinations (OSCE). Physicians of the clinical clerkships reported unsatisfactory clinical competence of students in assessing simple clinical cases.

**Summary of work:** A cross sectional study was conducted to compare Year 2 students self assessment of clinical skills with the examiners' assessment in an OSCE using a standard rating scale. Students self-assessed their performance on the three OSCE stations along with the examiners who observed and assessed them independently. Data were analysed using SPSS 16. Regression analysis was used to correlate the self-assessed ratings and examiners' assessment.

**Summary of results:** There was significant positive correlation between examiners' assessment and self-assessed ratings in taking consent, demographic, history of presenting problems and summarization.

Students overestimated their performance in demographic, past, family and personal history, associated symptoms, summarizations, liver percussion and spleen examination, while taking personal history and comment on mucosa and prostate were underestimated.

**Conclusions:** This study identifies strengths and gaps in the clinical skills teaching program.

**Take home message:** Early introduction of clinical skills helps improve clinical competence provided the Clinical Skills teaching program is closely monitored.

### 9 C 2

#### **Students' perception of their communication and transition of care skills at the end of their Subinternship (SI)**

MK Aiyer, GD Miller, G Kerolus, B Bostwick, JC Aldag (University of Illinois College of Medicine at Peoria, 530 NE Glen Oak, Saint Francis Medical Center, Peoria, IL 61637, United States)

**Background:** SI is a critical step in preparing students for residency training.

**Summary of work:** This study assesses medical students' perception on transition of care skills, and advanced communication skills at the end of their SI. A pre and post subinternship survey with a 1-5 Likert perception rating scale was utilized. Wilcoxon Signed Ranks Tests were used to test the significance.

**Summary of results:** Thirty-eight students participated in the study: 67.6%, 18.9% and 13.5% completed internal medicine, pediatrics and family medicine SI respectively. Majority of the students managed 2-3 patients daily. Student perceptions of their ability to discharge patient, and write discharge orders improved after their SI ( $p < .001$ ). Their confidence to give verbal and written “sign outs” and ability to communicate with a consultant improved after the SI ( $p < .001$ ). Students’ comfort with providing bad news also improved ( $p < .001$ ). Only 47% of students provided “bad news” and 13 % reported being directly observed while giving “bad news”. Less than 40% of students were comfortable disclosing medical errors with patients.

**Conclusions and Take home messages:** The students’ perceptions of their skills transitions of care and communication improved after their SI. However, less than half the students were comfortable with providing bad news and disclosing medical errors. Formal curriculum needs to be implemented to teach these skills.

### 9 C 3

#### **Can medical students accurately self-assess interpersonal skills?**

R Pauly, L Cooper, M Duerson (University of Florida, College of Medicine, Chapman Education Center, CG-78, P.O. Box 100213, Gainesville 32606, United States)

**Background:** An important component of lifelong learning is the ability to recognize one’s own deficits in terms of knowledge and skills. This study was undertaken to better understand medical students’ ability to self assess.

**Summary of work:** A three-case clinical skills examination was administered to second year medical students. Standardized patients (SPs) presented with coughing blood, chest pain and positive HIV status. SPs scored students’ performance on history-taking, physical exam and communication. In addition, SPs rated students’ interpersonal skills across all stations on a 7-item questionnaire (PPQ) using a 5-point Likert scale. Medical students rated their own interpersonal skills after each SP encounter using the same questionnaire (SPPQ).

**Summary of results:** The data were analyzed using t-tests, ANOVA and correlations. Students (SPPQ) rated themselves higher than SPs (PPQ) portraying a female patient with chest pain, 80.94 vs. 73.76,  $t = 4.37$ ,  $p < .0001$ . There were no SPPQ-PPQ differences for the other cases. There were no significant correlations between SPPQ and the case performance components evaluated by SPs (PPQ, History, Physical Examination, and Communication).

**Conclusions and Take home message:** Results suggest that students at this level of training do not accurately self assess their interpersonal skills with patients (SPs). Effective methods for fostering self assessment need to be explored.

### 9 C 4

#### **Errors of judgement: can students recognise their own errors in written examinations?**

C Hebbes, J Briggs, E Davidson, R Bell, H Crick (University of Leicester Medical School, University of Leicester, University Road, Leicester LE1 7RH, United Kingdom)

**Background:** Despite ongoing research into struggling students, little focuses on the errors made in examinations or students’ abilities to identify them. This work aims to investigate this and its relationship to other demographic factors.

**Summary of work:** Medical students volunteered to sit a formative examination prior to a high-stakes summative examination. This was self-marked and also examiner-marked and students and tutors were asked to give reasons for any marks lost (e.g. mis-read the question). The self- and tutor-scores and error-types was compared to determine the degree of correlation.

**Summary of results:** Significant differences in rates of error-detection (tutor-ascribed score 6.02/10 vs 6.92) were found. Students categorised 37 of 68.5 lost marks (54.01%), whereas tutors categorised 68 of 85.5 marks lost (79.5%) - not significantly different. The exam paper itself was reliable (Cronbach's alpha = 0.67).

**Conclusions:** Scores on self-marked assessments significantly differ from tutors' marks. The difference in categorisation-rates was not significant and further work is planned to investigate this. Analysis of error-type and correlation with demographic factors and performance in the summative examination is ongoing.

**Take home messages:** Self-assessment yields significantly different results to tutor-marking. Students find marking their own formative papers useful in preparing for summative assessments.

## 9 C 5

### **Self-assessment in the evaluation of competencies: Any use at all?**

G Fabry, S Biller, J Forster, M Giesler (Albert-Ludwigs-University, Medical School, Department of Medical Psychology, Rheinstrasse 12, Freiburg 79104, Germany)

**Background:** The validity of self-assessment to evaluate complex educational objectives (i.e. competencies) remains controversial. Since measuring competencies is a cumbersome and resource-intensive endeavour the question remains whether self-assessment might still be useful to compare groups or for formative purposes.

**Summary of work:** We conducted this cross-sectional study to explore such a use of self-assessment. More than 600 medical students answered the "Freiburg Questionnaire to Assess Competencies in Medicine" (FKM). The instrument (developed by the authors of this study) covers seven medical core competencies. We used ANOVAs to check for differences of mean values.

**Summary of results:** Students in their 1st and 2nd year rated their competencies lower than their peers in the 3rd and 4th year. Students with prior professional experiences in health care rated their competencies in two areas higher than their peers. Differences existed regarding the overall level reached among the different areas of competence.

**Conclusions:** The growth in self-assessed competencies might mirror the (expected) educational progress while the differences between the competencies might point to strength and weaknesses of the curriculum. If this is a valid result, then self-assessment could be used for evaluation purposes.

**Take home message:** Self-assessment remains controversial but might nevertheless bear potential for evaluation purposes.

## 9 C 6

### Final year medical students` self assessment of their capability in general competencies

Gh Khaef, E Matini, I Dadgaran, A Eivaz Ziaiee, R Taghavi (Islamic Azad University Tehran Medical Branch, Shariati St, Khaghani St., Tehran 19168-19395/1495, Iran)

**Background:** Assessment of graduating medical students` capability can be a helpful reflection of medical education performance.

**Summary of work:** In this descriptive evaluative study, 94 medical students of Tehran Azad Islamic niversity have been evaluated in 17 general competencies from their own viewpoints. We used a 6 scales Likert questionnaire form, with 101 items adopted from Moattari.

**Summary of results:** Medical graduating of this university had the highest scores related to the competencies such as " case presentation" (  $5.01 \pm 0.80$ ) and "ethical issues" (  $5 \pm 0.86$ ). The lowest scores belonged to" advanced procedures" (  $2.34 \pm 0.96$ ), "geriatrics" (  $3.46 \pm 1.02$ ) and "nutrition" (  $3.71 \pm 1.13$ ). Students` total mean score was  $4.08 \pm 0.66$ . Based on the Regression test, there was significant correlation between most of the capabilities and based on T-test , there was no significant relationship between sex and clinical practices . Also ANOVA test showed no significant relationship between students` GPA and general competencies.

**Conclusions:** Medical students of this university had appropriate competencies in "case presentation" and "communication with patients". But in some competencies such as "geriatrics", "nutrition" and "advanced procedures" they were not good.

**Take home message:** Identification of Graduating medical students` strengths and weaknesses in clinical practices helps program managers to progress the medical education programs.

## 9 D Oral Presentations Other Outcomes 2

### 9 D 1

#### Discourses of emotion within medical education: "The ever present absence"

N McNaughton (University of Toronto, Standardized Patient Program, Wilson Centre for Research in Education, 200 Elizabeth Street, 1E5 565, Toronto M5G 2C4, Canada)

*"Discourses are practices that systematically form the objects of which they speak."* (Foucault)

**Background:** Within medicine, emotion sits uneasily between scientific fact and humanistic values. Training and assessment are informed by conceptions of emotion which in turn shape ideas about competency and professionalism. Various discourses of emotion operating within medical education influence the answer to "what does it mean to be a "good doctor?"

**Summary of work:** Examination of emotion in medical education contributes to knowledge about how different concepts of emotion produce and reproduce practices, concepts, rules and positions of authority. A systematic analysis of statements, rules, and policies derived from written professional and institutional texts between 2000 and the present was conducted.

**Summary of results:** Three discourses of emotion have implications for medical training and practice; a biological discourse reinforces the view of emotion as individualized and pathological, a psychological discourse applies scientific ideas to emotional causal explanations and a socio cultural discourse identifies emotion as a medium of exchange at the interface between the individual and their social context.

**Conclusions and Take home message:** Emotions are an “ever present absence” in medical education. Discourses that inform professional talk and practice related to emotion are critical with important implications for training and evaluation.

## 9 D 2

### **Investigating the emotional resilience of medical students in the clinical workplace**

E Pearson, T Dornan, C Bundy (The University of Manchester, Manchester Medical School, Stopford Building, Oxford Rd, Manchester M13 9PT, United Kingdom)

**Background:** Clinical learning links with anxiety, depression, fatigue and mood disturbance (Bellini, Baime et al. 2002). Most stress impacts negatively (Radcliffe and Lester 2003) and can effect performance (Firth-Cozens and Greenhalgh 1997). Stressed doctors are more likely to report more perceived mistakes and cope with stress by dismissal (Firth-Cozens and Morrison 1989). Research suggests that Emotional Intelligence (EI) can facilitate coping with stress in clinical work (Brewer & Cadman, 2000). Cynicism and hostility (CH) increase and altruism, optimism and empathy decrease during medical training; the reasons are not fully understood.

**Summary of work:** We investigated CH, EI and perceptions of emotionally charged situations in 43 3rd year medical students in one UK University. The measures included: 1) Bar-On EQi; 2) Cynicism in Medicine Questionnaire; 3) Cook-Medley Hostility Scale; and 4) Emotional thermometer.

**Summary of results:** Significant correlations occurred between the intensity of positive emotion and I ( $r_s=.305$ ,  $p<.05$ , two-tailed); intensity of difficult emotion with hostility and EI ( $r_s=.324$ ,  $p<.05$ , two-tailed;  $r_s=-.383$ ,  $p<.05$ , two-tailed); cynicism and EI ( $r_s=-.303$ ,  $p<.05$ , two-tailed).

**Conclusion and Take home messages:** Clinical learning has important affective dimensions and Elements of CH and EI are related. Examining individual responses to common emotions could identify learners needing support during clinical training.

## 9 D 3

### **Associations between internal medicine resident well-being and both web-based and standardized assessments of medical knowledge**

C West, T Shanafelt, D Cook (Mayo Clinic, 200 First Street SW, Rochester, MN 55905, United States)

**Background:** Resident distress is common, but the relationship between resident well-being and competency is not well understood. It has previously been shown that factors closely related to well-being, such as empathy, may not be well-associated with medical knowledge assessment on standardized examinations, but whether this holds true for additional domains of well-being or for web-based learning assessments is unknown

**Summary of work:** Resident data on a broad range of well-being variables (including depression, burnout, and quality of life) from the ongoing longitudinal Mayo IMWELL Study were linked to web-based knowledge assessments and to results from the annual national standardized in-training examination for Mayo Clinic internal medicine residents. Data were evaluated for associations between well-being and medical knowledge scores for 126 residents providing both well-being and competency data.

**Summary of results:** The available sample size provided 80% power to detect a small-to-moderate effect size of 0.25 standard deviations. No statistically or clinically significant associations were observed in this study.

**Conclusions:** Resident well-being appears to have limited impact on competence in medical knowledge as determined by scores on web-based examinations and standardized testing.

**Take home messages:** First, medical knowledge competency assessment is not dependent on resident well-being to a meaningful degree. Second, documented effects of resident well-being on patient care outcomes are unlikely to be mediated by a lack of medical knowledge.

#### 9 D 4

##### **Gathering validity evidence for SAGAT and SPAM, two measures of situation awareness, during crisis situations in medicine**

G Chiniara, A Tekian, S Downing, C Brailovsky, M Lessard (Université Laval, Pavillon Ferdinand-Vandry, 1050, avenue de la Médecine, bureau 2426, Université Laval, Québec G1V 0A6, Canada)

**Background:** Situation awareness (SA) is the coherent mental representation of the situation and its future states. It is crucial in crisis situations in medicine. In this study, we gathered validity evidence for SAGAT and SPAM, two measures of SA.

**Summary of work:** Twenty-six anesthesiology residents at Université Laval were required to manage 3 simulated crisis situations in a replicated operating room with a human patient simulator. Queries were used to probe SA during pauses in the simulation (SAGAT group) or while the situation was ongoing (SPAM group). Accuracy (SAGAT and SPAM) and response time (SPAM) were recorded.

**Summary of results:** The scores had good validity related to content. Reliability was low to moderate, with relative generalizability coefficients of .025 for the SAGAT SA Accuracy score, .473 for the SPAM SA Accuracy score, and .616 for the SPAM SA Time score. All scores had a low variance component related to the individual. SAGAT itself may also affect SA. The scores were significantly correlated to the participants' level of expertise.

**Conclusions:** SAGAT is not a reliable measure of situation awareness. SPAM has some potential for success.

**Take home messages:** SA is a crucial concept in medicine but is hard to measure reliably in crisis situations.

## 9 E Oral Presentations Case Studies in Continuing Education

### 9 E 1

#### **CME: Practical methods for meeting Criterion 12**

E Brady, M Johnson, D Dietze (Scienta Healthcare Education, 2511 Old Cornwallis Rd, Suite 290, Durham 27713, United States)

**Background:** The ACCME's Accreditation Criteria (2006) require CME providers to gather data and conduct a program evaluation to measure the degree to which the organization's CME mission has been met. In the absence of guidance on how to measure the impact of an individual activity and design outcomes tools that allow for a roll up of data across an organization, many CME providers may find it challenging to meet Criterion 12.

**Summary of work:** Scienta Healthcare Education has developed standard metrics for success within activities based on changes in patient outcome, performance, competence, and satisfaction. We have standardized questions to allow for data analysis across activities and implemented an evaluation across all of our programs.

**Summary of results:** Scienta has analyzed our outcomes data from 2008 and 2009, with subcut analyses across therapeutic areas and educational format in order to analyze the impact of our overall program.

**Conclusions:** Scienta has devised a methodology for meeting Criterion 12 that provides a basis for planning improvements to our overall program.

**Take home messages:** CME providers can effectively meet Criterion 12 by analyzing their programs across activities by defining metrics for success and comparing them with their data compiled from individual programs.

### 9 E 2

#### **Enhancing clinical nursing practice in a comprehensive healthcare environment through application of information and communications technology**

EJ Ricks, V Benjamin (Nelson Mandela Metropolitan University, P O Box 77000, Port Elizabeth 6013, South Africa)

**Background:** The inability to access medical and health information hobbles healthcare providers in the world's poorest countries. Due to poor communications infrastructure they do not have recourse to the fundamental health information required for good practice and sound decision-making. The aim of this research was therefore to build the capacity of registered nurses in healthcare settings so that they could provide patients with accurate information at the point of care by deploying mobile computing devices.

**Summary of work:** Phase one of this study comprised a quantitative, explorative and descriptive survey to identify the health information needs of the registered nurses. Convenience sampling and a structured self-administered questionnaire was used to gather the necessary data. Descriptive statistics was used to analyse the data. Phase two involved the training and implementation phase and Phase three was also a quantitative survey to evaluate whether access to information at the point of care of the patient improved clinical nursing practice.

**Summary of results:** The main findings reflected that majority of the registered indicated that nursing practice improved by providing relevant, correct and up to date information to patients at the point of care thus empowering patients and themselves with knowledge related to the health problems/diseases that patients present with.

**Conclusions:** Relevant, correct and up-to-date health information at the point of care of the patient does improve clinical nursing practice.

**Take home message:** Smart phones can be used to make information accessible to Registered Nurses registered at the point of care of the patient.

### 9 E 3

#### **Innovation for CME activities improvement**

A Murt, M Yildirim, G Eral, M Aydin (Cerrahpasa Tip Fakultesi, Tip Egitimi Anabilim Dalı, Istanbul 34098, Turkey)

**Background:** Cerrahpasa Medical School modernized the Continuing Medical Education Activities in 1997. Although more than 13000 medical staff have taken part in a total of 68 symposiums/courses for 12 years, we focused on finding ways to improve what we had in our hands. The program was also assessed for compliance with ACCME criteria.

**Summary of work:** We simulatenously and indepedently assessed CME committee regular meeting minutes, financial/legal issues, evaluation forms from 4,436 participants in the past 2 years(2007-2009) and symposium outcomes. In order to reach the predefined expected outcomes of CME program, the study had proved that the program should serve for more medical staff. Thus, the range of topics included should be appropriate for all kinds of participants. Having the financial status secure is also a prerequisite and that needs professional approach.

**Summary of results:** Once attended, the CME activites are closely being followed. So attracting newcomers is an important building block. Web-based services of CME program should include pre-tests, symposium books, updated news and online evaluation.

**Conclusion and Take home message:** CME program is essential for qualified healthcare services and improvement of programme should have dynamic structure. This study will present the effective strategical method we created and applied for CME program improvement.

#### 9 E 4

##### **Developing consultation skills in the experienced family practitioner**

H Murugasu, S Scallan, J Lyon-Maris (Wessex School of General Practice, NESG, UK, Southampton Patch, GP Education Unit, Mailpoint 10, Southampton University Hospital Trust, Tremona Road, Southampton SO16 6YD, United Kingdom)

**Background:** The Southampton Patch of the Wessex Deanery (UK) runs a scheme that offers established GPs the opportunity to review their consultation skills with a senior educator, in order to explore their approach to consulting, to reflect on alternative approaches and to identify areas for development. Five GPs have participated in the scheme over the 2 years it has run, and they have been supported by 2 senior educators. The scheme is being evaluated in order to identify the strengths, weaknesses and outcomes, and how it may evolve to provide a means of exploring practice in the light of the requirements of revalidation and enhanced appraisal.

**Summary of work:** A case study approach was chosen to explore the views and experiences of participants, both GPs and educators. The evaluation addresses the following research questions, amongst others: 1) Motivation and barriers to participation; 2) Reflections of the GP participants on the process; 3) The approach used by the senior educators to observe and provide feedback; and 4) The effects of the scheme on participants' subsequent approach to consulting.

**Summary of results:** The aim of the communication will be to report the findings of the case study, and place them in the context of the wider literature.

**Conclusions/Take home messages:** The research will consider how such programmes can support the CPD of GPs and link to revalidation and enhanced appraisal.

#### 9 E 5

##### **Developing a Readiness for General Practice: Learning Needs Appraisal – Innovation in Assessment**

K Pandithage (Northern Territory General Practice Education (NTGPE), Charles Darwin University, Level 3 Building 39, Ellengowan Drive, Casuarina NT 0810, Australia)

**Background:** General Practice placements for pre vocational (post graduate) doctors are an essential part of the vertical integration model. These doctors undertaking remote general practice placements in the Northern Territory (NT), Australia have had limited general practice exposure in an indigenous context. The Learning Needs Appraisal (LNA) model was developed to identify the "general practice readiness" of pre vocational doctors. The LNA is comprised of an objective structured examination, based on the Australian Curriculum Framework for Junior Doctors (ACFJD). The LNA model was piloted in 2008. Our aim was to determine whether the LNA model improves performance of pre vocational doctors in communication, clinical management and professional skills- the domains of the ACFJD.

**Summary of work:** Pre vocational doctors undertaking placements in rural and remote locations in the NT underwent a LNA during their orientation. This assessment focused on the three above mentioned domains. Group level feedback was provided immediately via group discussions, while further individual feedback was provided in writing. An equivalent structured examination was applied on completion of their placements.

**Summary of results and Conclusion:** Quantitatively, there was a modest improvement in the performance of the pre vocational doctors who underwent a LNA. However, qualitatively, this model received positive feedback from the participants for identifying individual learning areas in need of improvement.

#### 9 E 6

**Results of a Quality Improvement-CME activity to improve the management of joint pain patients**  
GC Bird, J Scotti, R Kennison (Peer Point Medical Education Institute, LLC, Evanston, Illinois 60201, United States)

**Background:** As the population ages, the number of patients reporting a complaint of joint pain is set to expand rapidly, greatly increasing the burden on the healthcare system in the United States. However at present, the first line of patient contact - primary care is ill-equipped to deal with this growing crisis.

**Summary of work:** We report the results of a 6-month, site-based combined Quality Improvement and CME activity designed to demonstrate improved healthcare provider performance at the primary care level by comparing prospective joint pain patient data before and after implementation of evidence-based tools and resources into their practices.

**Summary of results:** A total of 78 healthcare providers took part in this activity, and 1070 joint pain patients were reviewed. After the tools and resources had been implemented, statistically significant improvement was obtained in the management of these patients with regards to provider diagnostic skills, the time required to make the correct diagnosis, and in the referral process. In addition, providers that chose to re-evaluate their entire practice work flow reported improved efficiency and an increase in patient volume.

**Conclusion and Take home message:** This initiative's positive impact on patient-level outcomes successfully demonstrates how Quality Improvement methodology may be coupled with CME to improve healthcare provider knowledge, competence, and performance.

#### 9 E 7

**Peer assessment of medical performance: The NSPAR Medical Colleague Study**

J Sargeant, T Hill, M Power, D Sinclair (Dalhousie University, C-106, 5849 University Ave, Halifax, Nova Scotia B3H4H7, Canada)

**Background:** The College of Physicians and Surgeons of Nova Scotia multi-source feedback program, the Nova Scotia Physician Achievement Review (NSPAR), uses a standardized questionnaire to collect physician performance data from medical colleagues, co-workers, patients and self. This study explored how family and specialist physicians make decisions about performance ratings for family physician (FP) colleagues.

**Summary of work:** This was an exploratory qualitative study using focus groups, one with 12 FPs, and one with 11 specialists, who had served as NSPAR medical colleague reviewers. We analyzed focus group transcripts using thematic analysis.

**Summary of results:** Family and specialist physicians described specific practice behaviours they used to evaluate FP colleagues using the NSPAR questionnaire. Both groups used multiple sources of information to assign NSPAR scores (e.g., patients, medical records, referral letters, input from colleagues and self-comparison). Specialist colleagues appeared to have greater access to performance data than FP colleagues.

**Conclusions:** FPs and specialists have access to diverse information to assess FP colleague performance. In response, we have developed an online resource to enhance the usefulness of medical colleague NSPAR scores.

**Take home messages:** Peer assessment is not a popularity contest. Family and specialist physicians use a wealth of sources and experiences to assign NSPAR scores to their FP medical colleagues.

## 9 F Oral Presentations Written Assessment

### 9 F 1

#### Improving the reliability of high stakes MCQ examinations

H Till, D Ward, E Winton (Joint Committee on Intercollegiate Examinations, 2 Hill Place, Edinburgh EH8 9DS, United Kingdom)

**Background:** In high stakes examinations it is important to be able to demonstrate reliability as it indicates smaller error variance and thus a smaller Standard Error of Measurement. This study investigated the effect of reducing error by improving the discriminatory ability of questions used in postgraduate medical examinations.

**Summary of work:** Item analyses were conducted on 40 examinations, each consisting of two papers - one containing 110 Single Best Answer questions and the other 135 Extended Matching Items. Questions with a point biserial of  $>0.25$  were deemed to be of good quality. A total discriminatory value for each paper was also calculated. Statistical analyses explored the relationship between discrimination (quality) and reliability and quality and number of questions needed for a reliability of 0.9.

**Summary of results:** Strong linear relationships were demonstrated between discrimination and reliability, as well as between the number of good quality questions and reliability. Fewer good quality questions were required to achieve high reliability.

**Conclusions:** Improving the quality of questions used increases reliability.

**Take home message:** Conducting item analyses and having subject experts improve poorly discriminating questions, reduces measurement error, spreads out the candidates and thus improves the confidence level of decisions around the cut point.

## 9 F 2

### **Protecting your assessment content: Cost-effective successful strategies and lessons learned at the Medical Council of Canada (MCC)**

R S Lee (Medical Council of Canada, 2283 St. Laurent Blvd, Ottawa K1G 5A2, Canada)

**Background:** Testing content is the lifeblood of assessment programs and protecting it is critical to ensure fair, valid and reliable assessments. In today's technology enhanced era, knowledge sharing via the World Wide Web is more common than ever before putting immense pressure on educators and testing programs to find new methods to protect intellectual property. The Medical Council of Canada delivers high-stakes examinations that are essential prerequisites to licensure in Canada.

**Summary of work:** The MCC developed a comprehensive and multifaceted strategy to respond to various threats. The program elements, costs and lessons learned in deploying the program will be discussed.

**Summary of results:** Through prudent investments in awareness to candidates about confidentiality, copyright and trademark investments related to MCC intellectual property, the MCC has been very successful in eliminating active content threats.

**Conclusions:** Testing programs can do several simple, cost effective steps that will go a long way to providing a defensible basis to take action against violators and aid in the protection of their precious content. Multiple activities should be employed.

**Take home messages:** There are cost effective methods to protect your assessment content, but this risk highlights the need for sustainable content renewal practices as a major mitigating process.

## 9 F 3

### **Evidence that key features problems assess higher-level cognitive processes than conventional multiple-choice items**

RN Chinn, GM Hurtz, GC Barnhill, NR Hertz (110 Blue Ravine Road, Suite 160, Folsom, California 95630, United States)

**Background:** The purpose of the study was to explore the distinction between Multiple-Choice Questions and Key Features Problems through analysis of the relationships between these two types of measures. In the KFP format, the clinical case scenario is followed by series of nonoverlapping questions focusing on key features of the case. The test taker must use decision making skills to select a subset of multiple response options.

**Summary of work:** We evaluated 28 KFPs developed for alternate forms of an allied health certification test to assess whether these items measured something more cognitively complex than MCQs. We compared test taker data as well as subject matter expert judgments of the cognitive processes elicited by the two item formats.

**Summary of results:** The pattern of loadings from principal components analysis suggested that some KFPs are similar to conventional MCQs while others are more distinct. Analysis of expert ratings of cognitive levels suggested KFPs were more likely than MCQs to be assigned to higher levels of cognitive processing. The results are consistent with the proposition that KFPs can assess decision making in a way that taps cognitive processes distinct from more conventional MCQs.

**Conclusion and Take home message:** KFP may be a worthwhile format for credentialing examinations where clinical decision making skills are involved.

#### 9 F 4

##### **Flawed multiple-choice questions and student discrimination**

HI Shin, CJ Lyu, EB Yang (Yonsei University, College of Medicine, 262 Seongsanno Seodaemungu, Seoul 120-749, Republic of South Korea)

**Background:** Multiple-choice questions (MCQs) are widespread among medical schools. While MCQs are designed to assess medical knowledge reliably, research shows that violations of the most basic item-writing principles are very common in achievement tests in medical schools. Therefore we investigated how many items on examinations in-house developed were flawed, and how they affected student performance.

**Summary of work:** Nine tests were selected for study from the end of a semester in 2008. Items were classified as either standard (without flaws) or flawed (containing one or more item flaws). The items were evaluated using the standard principles of effective item writing.

**Summary of results:** The proportion of flawed items on the nine tests ranged from 25-50%. More than 30% of the flawed items had low discrimination index, which demonstrated, that high-achieving students were negatively affected.

**Conclusions:** Item-writing flaws had negative impacts on student achievement and discrimination.

**Take home messages:** Research attention must be paid to objective item writing, and there must be more faculty development workshops on this topic with high-quality training materials to improve the fairness of student assessment.

#### 9 F 5

##### **Question book analysis of national competence examination for Indonesian medical doctors**

PD Sari, CP Novianti, M Ghozali, D Agustian, I Setiawan, TH Achmad (Joint Committee for National Competence Examination for Indonesian Medical Doctor, Jl. Samratulangi No. 29, 10340 Jakarta, Indonesia)

**Background:** National Competence Examination for Indonesian Medical Doctor has been conducted for two consecutive years. Faculties from all medical institutions developed the items. These items were collected in an item-bank, which were selected randomly based on blueprint to develop question book. This study analyzed composition of selected items based on "Constructing Written Test Questions For the Basic and Clinical Sciences" by Case and Swanson (2003).

**Summary of work:** There were 9 examinations for the past 2 years. All items were analyzed based on technical item flaws and grouped into issues related to testwiseness and irrelevant difficulty. The items were counted and percentage, and analyze to see its relevancy with standard of medical competency.

**Summary of results:** The most technical item flaws were testwiseness in convergence strategy (30%). Items in bank were already good in term of irrelevant difficulty. There were items that were not important for medical doctor (competency level 1 or 2) (25%).

**Conclusion:** This study showed the demand to improve the quality of item bank in term of capacity building for item developer and reviewer that in turn improve quality of item bank.

## **9 G Oral Presentations Curriculum Evaluation 1**

### **9 G 1**

#### **Graduating Grant Recipient Program (PMG) on Clinical Pathology (CP): a successful pedagogical tool for improving learning and teaching abilities in the Medical School, UFMG, Brazil**

TF Soares, EN Mendes, LG Viana, RMD Faria, SM Elói-Santos, PG Vidigal, LM Resende, B Resende, FFA Santos, FG Machado, MVF Floresta (School of Medicine, Universidade Federal de Minas Gerais, Brazil, Av. Alfredo Balena, 190/400, 30130-100 Belo Horizonte, Brazil)

**Background:** In order to give medical students an opportunity to experience teaching activities while learning the contents of CP, the Department of Propedeutics/Medical School/UFMG has been offering, since 2003, the PMG (<http://www.ufmg.br/prograd>).

**Summary of work:** The PMG is offered annually to students from the 7th semester onwards. They must submit to a hard contest, and, if selected, they will work under close supervision of the Department professors for nine months. In the reviewed period (2006/2009), twelve students developed the following activities: 1) teaching under supervision in the optional discipline Topics-in-Laboratory-Medicine; 2) preparation of practice manuals, practical classes and clinical cases; 3) analyses of the teachers' evaluations by undergraduate students.

**Summary of results:** The program is highly considered among the students involved. In their opinion, PMG has been useful for their medical training and inspired them to take other academic activities, especially after their participation in Topics-in-Laboratory-Medicine.

**Conclusions:** Students preferred activities that put them in contact with the practice of teaching, a reality that authorize PMG to continue promoting actions that favor acquisition of skills in learning methodologies.

**Take home messages:** A closer student-professor relationship and an opportunity for the student to teach seems to be good pedagogical strategies to the medical curriculum.

### **9 G 2**

#### **Integration of preclinical and clinical teaching in Singapore: the perception of medical students and educators 10 years later**

RM Seet, SM Saw, K Singh, P Gopalakrishnakone (YLL School of Medicine, National University of Singapore, Singapore 117597, Singapore)

**Background:** Integration of preclinical and clinical teaching aims to facilitate the translation of basic sciences to clinical practice . We surveyed students and educators on their perception on curricular changes.

**Summary of work:** Students and educators were asked to "agree" or "disagree" on 20 statements that enquired on their perception of these curricular changes.

**Summary of results:** We included 840 students and 246 educators (response 70%). Students opined combining the teaching efforts of preclinical and clinical produce better doctors, current teaching of clinical subjects has limited input from preclinicians, early exposure to clinical subjects is useful. Educators believed clinicians have no time to teach and preclinical educators tend to teach materials that are not clinically relevant. Preclinical educators opined preclinical subjects should be taught by all, clinicians do not feel confident teaching preclinical subjects. Clinicians believed it is difficult to apply clinical teaching to what has been learnt in the preclinical years.

**Conclusion and Take home message:** Understanding the perception of students and educators is pivotal to ensure a seamless integration of preclinical and clinical teaching. Teaching resources and incentives are necessary for the success of these curricular changes.

### 9 G 3

#### **Defining excellence in a primary care learning environment**

G Buckle, A Ewens, H Falcon, K Jones S Plint (Oxford Postgraduate Deanery and Oxford Brookes University, The Triangle, Roosevelt Drive, Headington, Oxford OX3 7XP, United Kingdom)

**Background:** At a recent Postgraduate Medical Education and Training Board quality assurance visit we were challenged to define an excellent learning environment for a primary care placement. This has resulted in the following collaborative work between the Oxford Deanery School of Dentistry and School of General Practice and Oxford Brookes University who are responsible for clinical placements for other primary care health professionals.

**Summary of work:** Anecdotally learners are able to articulate a good or poor placement. However we wanted to design a quantitative study to explore in a systematic way what sets aside the good from the poor and what sets aside the excellent from the good and therefore what defines 'excellence'. The methodology includes a literature search which will look at examples of excellence and how it is defined and will also include a Delphi technique survey to be sent to learners and educators. This study will also enable us to make comparisons between the learners from dentistry, medicine and nursing and to identify both generic and possible discipline specific factors which contribute to an excellent primary care learning placement.

**Summary of results and Conclusion:** This is a study in progress and results and conclusions will be available for discussion at the conference.

### 9 G 4

#### **Perceptions of the learning and teaching environment in an Australian health service**

N Roberts, K Leong, J Martin (Eastern Health Clinical School Medical Student Programs, Monash University and Deakin University, Level 3, 5 Arnold Street, Box Hill 3128, Australia)

**Background:** From 2010 clinical placements at the Eastern Health Clinical School include students of two universities. While differences in the courses present some challenges, an integrated program has been developed. Outcomes of this study provide direction for program development and management.

**Summary of work:** Surveys were conducted of students in the clinical years of the existing program, and clinicians involved in teaching. Survey questions addressed perceptions of program effectiveness, preference for different teaching and learning formats and organisational issues.

**Summary of results:** Highly valued aspects of the program included bedside tutorials and practicals, ward experience and PBL sessions. Students perceived inadequate communication between administration and teachers. Other impediments to learning included overcrowding on ward teams and lectures without audiovisual supplements. Clinician perspectives echoed those of students regarding communication. Lack of time and resources and variable student attendance were also concerns.

**Conclusions:** Students and teaching clinicians need a clearer understanding of learning objectives. Students should be better distributed in order to increase individual access to learning experiences. Administrative and pedagogic support for students and clinicians should be improved.

**Take home messages:** These studies identified improvements now incorporated in the integrated program. Similar studies will be on-going to support quality improvement.

## 9 G 5

### **Assessment of recent graduate knowledge and practice to inform a national curriculum in rheumatology in Ireland**

N Jordan, S Donnelly (University College Dublin, Health Sciences Centre, Belfield, Dublin D4, Ireland)

**Background:** To inform national curricular reform in rheumatology, an assessment of recent medical graduates in their internship was undertaken.

**Summary of work:** Recent graduates of UCD undertook an Extended Match Item assessment during internship to explore 3 domains (1) clinical diagnosis (2) investigation & (3) immediate management using case vignettes. Additionally, interns scored their confidence using standard confidence scores. Finally, actual practice was inferred from audit of intern consults to rheumatology in these domains. Scores were pooled, mean scores generated per domain and results triangulated to inform curricular reform.

**Summary of results:** We report better diagnostic than investigation or management skills by 2 of 3 methods. Confidence scores uncovered lack of confidence in selecting tests and initiating treatment-also found on consult analysis. Poor knowledge of several common conditions was uncovered.

**Conclusions and Take home message:** Triangulation of intern assessment aids curriculum reform by uncovering specific deficits in the essential skills of investigation and management. It also uncovers particular common conditions requiring emphasis. The 2009 Irish national rheumatology curriculum is a problem-centered curriculum, which addresses the observed deficits. While this method is not valid for individual assessment, the ability of confidence based EMI to identify deficits observed in clinical practice may merit specific investigation.

## 9 G 6

### **The development of descriptors as an accreditation enhancement tool**

M Kennedy, D Davis (The Royal College of Physicians & Surgeons of Canada, 774 Echo Drive, Ottawa K1S 5N8, Canada)

**Background:** The Royal College of Physicians & Surgeons of Canada accredits Canadian specialty and subspecialty postgraduate programs. Accreditation is based on 91 Standards in 6 major categories. Program directors and accreditation team members express difficulty interpreting the Standards for individual programs.

**Summary of work:** Concerns interpreting the Standards were identified through literature review, focus group and individual interviews with program directors, medical educators and veteran surveyors. Descriptors for the Standards were developed and revised through an iterative process. The descriptors identified concrete items whose presence indicates that a program partially or fully meets the Standard.

**Summary of results:** Feedback indicates that the descriptors enhance program directors' understanding of the Standards. Descriptors also promote objective program evaluation by the programs and by accreditation team members.

**Conclusions:** Descriptors for accreditation Standards will ensure consistency in programs across specialties and Universities. Descriptors help program directors and evaluators objectively implement and evaluate programs to meet the Standards and ensure clarity when organizations develop Standards.

**Take home messages:** Program directors and evaluators appreciate clarity in accreditation Standards. Concrete descriptors facilitate program development and review. Accrediting organizations should strongly consider descriptors to facilitate the work of all involved as well as the objectivity of the process.

## 9 J Workshop

### **Validity of teacher and peer assessment of medical communication skills of 2nd year students**

RL Hulsmán, M Fabriek (Academic Medical Centre, Department Medical Psychology, PO Box 22660, Amsterdam 1100 DD, Netherlands)

**Background:** In our medical school the second year program is focused on history taking. Students learn to gather reliable diagnostic information and to incorporate patient's ideas, concerns and expectations regarding the complaints and treatment plans. Acquisition of effective communication skills requires both the practicing of skills and reflective thinking. Video recordings of history taking consultations with simulated patients of all 350 students are uploaded in their digital portfolio and shared with two peers. Students provide written reflections on self-selected critical events in their own consultation, and provide peer-feedback. Peer-assessments and teacher assessments of the videos is based on categories of the Amsterdam Attitude and Communication Scale (AACS). Categories are rated on three levels: below expectations, meets expectations, and above expectations.

**Intended outcomes:** Participants: get acquainted with using a digital portfolio; learn to define expectation levels in summative assessments of communicative skills; learn about the advantages and disadvantages of combining teacher and peer-assessments.

**Structure:** 30 min: introduction; 30 min: reviewing sample videos in the digital portfolio; sharing reflections with 'peers', and providing 'peer-assessment' using the AACS; 30 min discussion of findings.

**Intended audience:** Course designers, medical teachers, teachers of communication skills, students.

**Level of workshop:** Experience in assessment is helpful.

## 9 K Workshop

### **The introduction of work-place based assessment to UK Family Practice**

J Edwards, S Street (Royal College of General Practitioners, 14, Princes Gate, Hyde Park, London SW7 1PU, United Kingdom)

**Background:** In August 2007 a new assessment process was introduced for all doctors undertaking specialty training in general practice in the UK. One of the three components of the examination for membership of the Royal College (MRCGP) is Workplace Based Assessment (WPBA). The assessment is based on evidence recorded electronically in the trainees' portfolios. WPBA tests highly significant areas of performance that cannot be adequately tested elsewhere. The quality of assessment depends upon local educational supervisors making consistent judgements. As a licensing examination the assessment must be defensible which poses a challenge to those responsible for quality assurance. This workshop will examine the concept of the 'good enough' ePortfolio. It will be led by national experts in WPBA and quality management from the RCGP, supported by 'Deanery Assessment Leads' from the Oxford and Wessex regions.

**Intended outcomes:** Participants will gain an understanding and appreciation of the strengths and weaknesses of the WPBA tools used in GP specialty education. By examining real ePortfolios they will experience the training given to educational supervisors in the calibration of the benchmarks that constitutes sufficient evidence of competence in family practice.

**Structure:** The workshop will combine short presentations and small group work: The MRCGP examination; The WPBA tools in action: theoretical principles of WPBA; Naturally occurring evidence – what is recorded in the ePortfolio; Plenary.

**Intended audience:** All trainees and educators and assessors involved in or wanting to learn more about WPBA.

**Level of workshop:** Prior experience of using an ePortfolio and assessment in the workplace would be an advantage.

## 9 L Workshop

### **Progress Testing. What flavour do you want? Formative? Summative?**

A Freeman, S Schaubert, Z Nouns (Peninsula Medical School/Charité Medical School, St Luke's Campus, Magdalen Road, Exeter EX1 2LU, United Kingdom)

**Background:** Progress Tests are well established and increasingly used in medical education to assess the development of knowledge during training in both undergraduate and postgraduate medical education. They are used formatively and summatively.

**Intended outcomes:** At the end of the workshop the participants will have an understanding of the potential of progress testing for both summative and formative assessments. They will have an understanding of some differences between longitudinal and single point assessments. They will have an understanding of the basic methods of creating progress test systems.

**Structure:** There will be presentations of two types of progress testing. Charite medical school in Berlin creates progress tests that are taken by nearly 9000 students in different schools in Germany and Austria and used only formatively. Peninsula Medical School in the UK uses progress testing as the only summative knowledge assessment in its five year course. The presentations will illustrate how the method can be used for different purposes. After the presentations members of the workshop will be invited to work in small groups to illustrate how such a testing method might be used in their institutions. The presenters will facilitate the groups.

**Intended audience:** This workshop is intended for people with an interest in assessment who may have heard about progress testing and wish to explore the concepts further.

**Level of workshop:** Intermediate. Participants should have basic knowledge of assessment principles.

## 9 M Workshop

### **Formative assessment in a summative world. Is formative assessment being lost in modern medical education?**

Peter Bratuskins, George Zaharias (Monash University Department of General Practice, Ferntree Gully Rd, Notting Hill, Melbourne 3168, Australia)

**Background:** Recently, medical education programs have had increasing demands from many sources to provide evidence of the success of their training. Outcome based curricula, program evaluations and program accreditation have created the need for a more evidenced based or summative approach to assessment. However, this raises the following questions: • Does summative assessment accurately reflect clinical performance? • Has formative assessment been devalued? • Are we, as educators, becoming less learner-centred?

**Intended outcomes:** Participants will be able to: • compare the strengths and weaknesses of formative and summative assessment in meeting the different needs of educators and learners; • reappraise the role of formative assessment in medical education; • reflect on the role of formative and summative

assessment in their program(s).

**Structure:** This workshop will engage participants in the appraisal of various learner-teacher interactions. This will highlight the different roles of a medical educator and how these roles influence the development of a capable and competent clinician in a complex environment.

**Intended audience:** Educators, Administrators, program directors.

**Level of workshop:** All levels.

## 9 N Workshop

### **Assessing the leadership needs of your organisation**

D Sandhu, S Gray, A Cook (Severn Deanery, Deanery House, Vantage Office Park, Old Gloucester Road, Hambrook, Bristol BS16 1GW, United Kingdom)

**Background:** Leadership in Medical Education is essential with new models of Health Care and Education Commissioning emerging. Evidence indicates that the success of any faculty is dependant on the quality of leadership activities it undertakes. Leadership in education is a team game as well as requiring key individuals to demonstrate clear guidance and direction for colleagues and trainees. This workshop explores how to assess the type and style of leadership that will best take a medical education organisation forward and help participants understand their own leadership qualities.

**Intended outcomes:** 1. To summarise key research findings and concepts about leadership; 2. To describe how effective leaders vary their styles and methods as needed; 3. To outline how organisations grow, develop and change and the role of leaders in enabling this; 4. To identify the personal qualities and skills that enable participants to lead effectively.

**Structure:** The workshop will be highly interactive and will cover the following activities: 1. Introductions and session scoping; 2. Reflective activity; 3. Focused input; 4. Discussion; 5. Questionnaire; 6. Review.

**Intended audience:** Senior Faculty members and educational team leaders who have directing, organisational or managerial responsibilities.

**Level of workshop:** Intermediate to Senior.

## 9 S Posters Teacher Evaluation

### 9 S 1

#### **Faculty assessment by medical students: Factors contributing to differences in assessment of a female professor**

R Levin-Epstein, [A Hirsch](#) (Boston University School of Medicine, 830 Harrison Avenue, Moakley Building - LL, Boston 02118, United States)

**Background:** We aim to identify medical student differences in assessment of teaching faculty, with specific attention paid to academic level and student gender.

**Summary of work:** A didactic session in Radiation Oncology was taught by a female professor. Thereafter, students completed a Likert scale survey assessing the professor on various scholastic attributes. The 139 students included 55 third year and 84 fourth year medical students, with males and females equally represented.

**Summary of results:** With regard to academic year, fourth year students perceived the professor as significantly more “knowledgeable about the subject” ( $p=0.017$ ), “organized and clear” ( $p=0.026$ ), “assertive” ( $p=0.028$ ), and “overall very good” ( $p=0.011$ ). Fourth years also reported that they were motivated to learn more about the subject ( $p=0.031$ ). Males and females equally reported that the professor seemed “knowledgeable about the subject” ( $p=0.89$ ), “organized and clear” ( $p=0.70$ ), “assertive” ( $p=0.79$ ), and “approachable and warm” ( $p=0.58$ ). There were no gender differences in rating of the professor as “overall very good” ( $p=0.24$ ).

**Conclusions:** Students at higher academic levels had more favorable views of the professor in all assessment categories. In contrast, there were no gender differences in any assessment categories.

**Take home messages:** In this analysis, faculty assessment differed by academic level but not by student gender.

### 9 S 2

#### **Trainee evaluation of consultant teaching at a District General Hospital**

[A G Blundell](#), A L Gordon, G M Cox (Sherwood Forest Hospitals NHS Foundation Trust, Mansfield Road, Sutton-in-Ashfield NG17 4JL, United Kingdom)

**Background:** Senior doctors have a contractual obligation to teach junior colleagues. Evaluation of teaching is vital for quality assurance and the professional development of teachers but is not currently undertaken in the clinical setting.

**Summary of work:** Teaching and educational supervision provided to junior staff by senior doctors was evaluated over two consecutive years using a trainee evaluation of consultant teaching tool (TECT). Eleven domains were assessed using a 6 point Likert scale.

**Summary of results:** 3029 evaluations about 34 consultants were collected over the two year period. Mean scores were: teaching domains  $>4.5$  (year 1) and  $>4.4$  (year 2); pastoral domains  $>5.2$  (year 1) and  $>4.8$  (year 2). Significant improvement in teaching was identified for one participant and a significant decline for six. The 3 poorest performing teachers were the same in both years.

**Conclusions:** Useful data were derived about trends in teaching performance over time. Although these data do not control for inter-rater variability between cohorts, the consistent evaluation of three teachers as underperforming suggests the tool may have some value for identifying deficient teachers.

**Take home message:** Using a TECT tool to collate feedback from junior doctors about their teaching in a clinical setting is achievable; useful data can be derived about trends in teaching performance over time.

### 9 S 3

#### **A national local faculty initiative in secondary care. The experience in Wales**

Peter Donnelly, Sian Lewis, Derek Gallen (Cardiff University, Postgraduate Deanery, Cardiff, United Kingdom)

**Background:** Postgraduate Medical Education and Training Board, the UK regulatory body has developed training standards for consultants who act in a supervisory role. Training for the educational role and systems to recognize consultants as accredited supervisors are required.

**Summary of work:** Continuing professional development mapped to a supervisory role is described as Professional Development in Education (PDE). Postgraduate Deanery Wales developed a PDE Standards Framework in collaboration with the NHS Wales. The Framework describes attributes of the competent supervisor mapped to 10 subject areas. The minimum standard is training undertaken in all subject areas with recognition of prior experience. The Deanery developed a network of 28 Local Faculty Leads (LFLs) in hospitals in Wales. LFLs deliver, commission and quality control all PDE ensuring face to face training maps to the Framework. In parallel an all Wales database was embedded in NHS hospitals to capture all PDE electronically.

**Summary of results:** This co-ordinated national PDE system has led to the majority of consultants being recognized as accredited supervisors.

**Conclusions and take home message:** Investment in a unified electronic PDE system in parallel with the delivery of co-ordinated and quality controlled PDE training has enabled the majority of consultants in Wales to meet UK regulatory standards leading to improved training and enhanced clinical services for patients.

### 9 S 4

#### **The qualities of a good facilitator in problem based learning: experiences from medical school in University Popular Autonomous of Puebla State (UPAEP)**

JA Alonso, S Martinez, F Morales (Universidad Popular Autónoma del Estado de Puebla, 21 sur 1103, col Santiago, Puebla 72160, Mexico)

**Background:** The introduction of problem-based learning (PBL) in undergraduate medical courses necessitates the special training of teachers and monitoring of their performance. The leader of a PBL program acts as facilitator rather than a teacher, using their expertise not primary to transmit facts, but to provide encouragement and guidance as the participants tackle the problems they have identified, encouraging critical thinking, fostering self-directed learning and curiosity among others activities. These activities demand special attributes.

**Summary of work:** In Medical School at the Faculty of Medicine – UPAEP since 2005 the problem-based learning (PBL) was introduced in courses of cellular and molecular biology, biochemistry and physiology.

The facilitators of these courses were previously capacitated on PBL. By monitoring on students we collect both discomfort and acceptance of the PBL. To monitoring their PBL- performance on these courses, the activities of each course was videotape recording with the previous permission from teachers that participated in this study.

**Summary of results and conclusion:** The activities were perceived to enhance acceptance PBL on courses were related to teachers able to develop rapport with learners, providing guidance between basic and clinical related issues, able to monitoring group progress as well as their creativity to develop activities using learning tools.

## 9 S 5

### **Rewarding teaching excellence in the South-east Asian region**

HY Yee, JP Judson (The International Medical University, No.126, Jalan 19/155 B, Kuala Lumpur 57000, Malaysia)

**Background:** Teacher evaluation serves personal development but plays a minimal role in career advancement, much to the disadvantage of many excellent teachers. Awards for teaching excellence in medical schools are based mainly on student feedback and are often viewed as “divisive” or unreliable.

**Summary of work:** Through focus group discussions with students and faculty, effective delivery, knowledge and passion for teaching were identified as the top three qualities of an excellent teacher. Reward systems for teaching excellence in 16 schools in the region were reviewed in a questionnaire and a follow-up study of another set of twelve schools.

**Summary of results:** Of the 16 respondents, five lacked a rewards system and in the rest, awards were decided based only on student feedback. Teaching portfolios were not used in any school. Similar results were obtained in the follow-up study which also revealed that “standardized student evaluators” are not used in any of the schools reviewed. The concept of “scholarship of teaching” was largely unknown.

**Conclusions and take home message:** Teaching excellence is either not or inadequately rewarded in many schools in the South East Asian region and robust mechanisms need to be developed if delivery of high quality medical education is expected of teachers.

## 9 S 6

### **An assessment tool for the evaluation of medical faculty**

R Sarchami, M Hoseini, PF Abed, N Mohammadi, A Javadi (Qazvin University of Medical Sciences, EDC, Shahid bahonar Blvd., Qazvin 3419759811, Iran)

**Background:** Faculty members frequently have concerns about the methodology and accuracy of such evaluation. The objective of this applied research was to design a standard evaluation tool and decision making method to monitor faculty performance.

**Summary of work:** Using a descriptive method, current evaluation tools and methods were evaluated on the basis of the opinions of 121 faculty members at the Qazvin University of Medical Science. Results revealed the need for a revision of these tools. Two complementary tools were proposed: one using evaluation criteria, and the other using a decision-making method.

**Summary of results:** Our results indicated that most faculty members (75.2%) considered the current tools and methods of evaluation to be very inappropriate, while 13.2% rated them as inappropriate. The majority of faculty members (81.8%) considered the proposed tools and methods to be very appropriate, while 12.4% considered them to be appropriate.

**Conclusions:** These results indicate that a good evaluation system has a comprehensive approach based on predefined tasks and involves all stakeholders in faculty performance.

**Take home messages:** More valid and reliable assessment tools based on the faculty opinions can result to a better contribution and also higher levels of improvement in faculty performance.

## 9 T Posters Professionalism

### 9 T 1

#### **Professionalism and psychometrics in the assessment of competence at the clinical workplace**

O ten Cate (University Medical Center Utrecht, Universiteitsweg 98, Utrecht 3584 CG, Netherlands)

**Summary of work:** Given the need to apply workplace assessment procedures in clinical training and given the psychometric inadequacy of current procedures, this paper attempts to analyze why and how individual judgment of supervisors on residents can be made more useful.

**Summary of results:** Key in professionalism is maintenance of professional standards, because “outsiders” have too little access to knowledge to control professionals. From a sociological standpoint, the profession must be trusted by the outside world to (a) take the best possible decisions and (b) to have mechanisms to control, correct and stimulate members of the profession to perform optimally. Vis-à-vis trust and compensation, in whatever form professionals receive this, they are obliged to maintain high standards. In patient care, these features are well known.

**Conclusions:** Professionals must make decisions not only in patient care but also on progress of trainees. This relates professionalism to psychometrics. Professionals must observe their trainees, judge them and entrust responsibilities when they meet expected standards. This involves more than standardized assessment procedures.

**Take home messages:** This paper explores how to scaffold professionals in their assessment role.

### 9 T 2

#### **The Professionalism Portfolio**

D Shaw, J Hamstra, P Anderson-Worts (Nova Southeastern University College of Osteopathic Medicine, 3200 S. University Dr., Davie 33328-2018, United States)

**Background:** Post graduate medical training programs have struggled to develop methodologies for assessing and teaching residents the required competency of Professionalism. Teaching and measuring professionalism is problematic in that it encompasses multiple subjective elements, further complicated by the lack of agreement on its precise definition.

**Summary of work:** The faculty and residents at Nova Southeastern University College of Osteopathic Medicine have jointly developed and implemented a Professionalism Portfolio. The portfolio approach

was chosen for its outcome based assessment characteristic with the added benefit of enhancing self directed learning.

**Summary of results:** Residents are assessed twice a year using a specially designed rubric yielding objective data.

**Conclusions and take home message:** The Professionalism Portfolio has been in use with two family medicine residency programs since 2006. Based on informal feedback and the objective data from faculty and residents, we believe it to be a valuable approach to both teaching and assessing professionalism.

### 9 T 3

#### **Clinical competence and the hidden curriculum - an area of tension**

T Rotthoff, F Meyer, T Kosubek, A Nilges, M Wieg, H Barz, M Schneider (Heinrich-Heine University Duesseldorf, Germany, Deanery - Medical Faculty, Department of Educational Research and Management, Universitätsstr. 1, Duesseldorf 40225, Germany)

**Background:** For development of clinical expertise and professionalism structured feedback was implemented in 21 clinical departments for 55 medical students in their last year. The students received information about their actions (i.e. creating a treatment plan, practical procedures ...) by a standardized checklist and an immediate consultation with instructors every other week. The aim of this project was establish a culture of feedback at our institution, too.

**Summary of work:** Since implementation in May 2009 the project was evaluated by independent educational researchers. Problem-centred interviews helped to document the experiences of the participants. The project-team evaluated the checklists.

**Summary of results:** Instructors graded the students highly positive (average 7.73 of 9 points), because of having problems in giving cues for improvement. This was due to their inexperience in giving feedback and to vague criteria for evaluation of students' actions in the faculty. A lack in exchange over a minimal standard for goals and values among the instructor could be identified.

**Conclusion:** The goal of facilitating development of clinical expertise and professionalism has not been sufficiently attained. Agreement on shared values between the instructors can not be assumed and discourse about the outcomes and criteria of assessment of learning between all involved is necessary.

**Take home messages:** The hidden curriculum has a strong guiding function for the project's goals. A broad exchange between all persons involved about the learning targets and guiding principles of medical professionalism is in order.

#### 9 T 4

##### **Consensus or contestation? How medical schools in England construct and present a curriculum for personal and professional development (PPD): a qualitative evaluation.**

D Gill (UCL Medical School, Whittington Campus, Holborn Union Building, Highgate Hill, London N19 5LW, United Kingdom)

**Background:** A growing discourse surrounding medical professionalism has encouraged educators to consider ways of addressing professionalism in the undergraduate programme. Each English medical school has developed their own unique PPD curriculum to address this aspect of learning to be a doctor.

**Summary of work:** Analysis of the publicly accessible curriculum documents from all English medical schools and a series of in-depth interviews with curriculum leads from selected case schools to identify, within a qualitative framework, how individuals, existing curricula ideology, the ethos of institutions and policy combine to mould the planned curricula to address this area and identify reasons for areas of convergence and divergence in approach.

**Summary of results:** There is remarkable consensus in approach which is only loosely bound to pedagogical notions and instead appears due to a pragmatic response to a series of restrictions that apply to all schools. While individual agency is curtailed by institutional restrictions and policy guidance, it is often variations in this agency that allow divergent approaches to be adopted.

**Conclusions and take home message:** Curriculum developers struggle with devising planned activities for PPD but underlying notions of professional learning often remain unexamined and changes at the level of curriculum in this domain are impeded by a range of factors encouraging the 'status quo'.

#### 9 T 5

##### **Assessing and building professional character – the key role of practitioner tutors**

M Scott, F Westwood (Professional Development Academy, University of Dundee, McKenzie Building, Dundee DD2 4BF, United Kingdom)

**Background:** Students learning about (ethics and professionalism) has been said to occur primarily in the clinical years and predominantly through the informal and hidden curriculum' (Wear and Aultman). Assessing professionalism is difficult because it is context specific. Attempts to formalise and teach it in a predictable and structured way often result in students engaging in superficial learning rather than truly testing their espoused personal and professional values. Yet learning in professional practice is messy and haphazard with the result that some students may fail to have opportunities to develop their professional character.

**Summary of work:** The presentation will illustrate the essential nature of the role of practitioner tutor in the development of professional character. It will offer tools and techniques that these tutors can employ to allow them to maximise the opportunities that arise in students' early practice to ensure that all students are enabled to probe and develop their professional character.

**Summary of results:** The presentation will provide a summary of typical events that arise in professional practice that trigger the opportunity to assess and thereby influence professionalism. It will match these to a variety of teaching tools and techniques that tutors can use to maximise such opportunities so that all students can engage in reflection and development of their professionalism.

## 9 T 6

### **Tolerating uncertainty (an aspect of professionalism): Personal epistemology in a problem-based curriculum**

G Maudsley (The University of Liverpool, Division of Public Health, Whelan Building (Quadrangle), Liverpool L69 3GB, United Kingdom)

**Background:** The literature on measuring medical students' personal epistemology (within a thinking skills framework, and involving professionalism) is minimal, and hardly overlaps with literature about learning approaches. Problem-based curricula promote such cognitive development. Aim: To analyse how medical students conceptualize their developing 'knowledge-base' in a problem-based curriculum.

**Summary of work:** Two cohorts of Liverpool medical students (paired mid- and end-Year 1 versus mid-Year 5) completed a postal questionnaire for Moore's Cognitive Complexity Index (CCI), with closed items on: satisfaction, and 1) notions of ideal tutoring (mid-Year 1), subjected to principal components analysis, and 2) entwistle learning approaches (mid-Year 5). Students' descriptions of their knowledge-base (both cohorts) were analysed inductively.

**Summary of results:** Returns (n~142, 150, 116) showed, on multiple regression: Satisfaction associated with slightly higher CCI (both cohorts), while an ideal tutoring component (mid-Year 1) and surface learning (mid-Year 5) showed small positive and negative associations, respectively; Mid-Year 1 relativism index just approached significance in predicting passing end-of-year summative assessments without retakes; Descriptions highlighted different tolerances to uncertainty, related to CCI.

**Conclusion:** How students tolerate uncertainty might affect their experience and progress at medical school.

**Take home message:** How curricula nurture personal epistemology has implications for professionalism.

## 9 T 7

### **Program evaluation and the hidden curriculum: comparing student empathy and burnout between traditional block clerkships and a longitudinal third year curriculum**

E Simanton, L Hansen (Sanford School of Medicine of The University of South Dakota, 1400 S. 22nd Street, Sioux Falls, SD 57105-1570, United States)

**Background:** The hidden curriculum may lead to outcomes not intended by the curriculum or even go directly against the curriculum. While professionalism is a key component of medical schools curriculum, studies show that empathy (an important facet of professionalism) decreases during medical school. The purpose of this study was to compare empathy and burnout between in a traditional block clerkship third year and students in a longitudinal program.

**Summary of work:** Empathy and burnout were measured among students immediately after completion of third year at the Sanford School of Medicine. Scores were compared between students in the Yankton Ambulatory Program [YAP] and other campuses (traditional block-clerkship curriculum) of the Sanford School of Medicine.

**Summary of results:** Although the study is ongoing and in the early stages, initial results indicate that students who completed the YAP program were more empathetic and felt less burned-out than students who completed traditional block clerkships.

**Conclusion:** Choice of curriculum models can impact the hidden curriculum.

**Take home messages:** Longitudinal programs have better outcomes regarding empathy and burnout.

## **9 U Posters The Basic and Paramedical Sciences**

### **9 U 1**

#### **How to write clinical problems integrated with basic sciences**

MVL Vasconcelos, RS Rodarte (1.College of Medicine at the Federal University of Alagoas, 2. Biologic Science and Health Institute at Federal University of Alagoas, Rua São Francisco de Assis, 573 - Jatiuca - Maceió, Alagoas 57035-680, Brazil)

**Background:** An assessment tool is most effective when it reflects an understanding of learning as multidisciplinary and integrated. This work presents a model of written problems for the integrated cognitive assessment tool planned for the Medical Course, aligning the knowledge from basic sciences and the medical routine from the beginning of the course.

**Summary of work:** The methodology consists of building a chart which enables us to cross the educational values and key words to teaching themes and to send them by faculty of basic sciences and clinical situations in common to allow the faculty of basic cycle, not physician, to elaborate their questions.

**Summary of results:** This methodology has been administered on pupils of the medical course in the basic cycle over the last four years and has well shown a positive impact in a better opportunity of keeping knowledge and relating to them during the instrument application.

**Conclusions:** Writing clinical situations for the basic sciences require discipline and knowledge of the basic principle of the structure and feature of educational objectives that have been considered to achieve the integration.

**Take home message:** This approach consolidates a group which has developed the spreading of the model and integrating areas.

### **9 U 2**

#### **Knowledge preservation from basic level in the students of clinical level**

ME Ponce de León, A Ortiz, M Varela, J Reynaga, W Reyes (Universidad Nacional Autónoma de México, México, Facultad de Medicina, Ciudad Universitaria, Coordinación de Planes y Programas de Estudio, México D.F. 11930, Mexico)

**Background:** The students generally go deep into the knowledge according to the type of questions they are evaluated with.

**Summary of work:** In fourth grade students are evaluated with questions based on first and second grade items, they will show an important forgetfulness, mainly when they imply the simple memorization.

**Summary of results:** Judges selected 88 questions of the three levels of knowledge from tests of Anatomy, Psychology, Physiology and Surgery . The same test was randomized and applied to 13 groups of second grade and 13 of fourth grade. The U. of Mann Whitney was applied to identify differences and percentiles with inter-quartiles rank for the dispersion. 310 test of second grade and 247 of fourth grade were answered. The reliability of the test was of 0.9009 and 0.9102, respectively. Significant differences were identified  $p = 0.000$  in the global examination and the answers of Surgery and Psychology, considering right answers and level of knowledge, (memory and understanding). There were no differences in Anatomy and Physiology  $p = 0.527$  and  $p = 0.203$ . The median of right answers was 39 and 43, respectively. The dispersion of items in the global analysis and by subject maintained an inter-quartiles rank between 3 and 4.

**Conclusion and take home messages.** When the student is evaluated with memorization knowledge, they forget it and lose interest, because he doesn't find the application and the basic integration of the knowledge in the clinic area.

### 9 U 3

#### **Changing medical students' perceptions of their pharmacotherapeutic competencies: a 'before' and 'after' survey**

EN Kwizera, NB Sathiakumar (Department of Pharmacology, Faculty of Health Sciences, Walter Sisulu University, Mthatha 05117, South Africa)

**Background:** Medical students at Walter Sisulu University (WSU) are introduced to Pharmacology and Therapeutics at the beginning of the 3<sup>rd</sup> year of a 5-year programme. Their acquired pharmacotherapeutic knowledge, skills, and attitudes are then assessed formatively and summatively using routine written and oral examinations. The present study sought to look at the students' perceptions of their pharmacotherapeutic competencies before and after exposure to a year's course of basic and clinical Pharmacology.

**Summary of work:** Just before they were given their first Pharmacology lecture in January 2009, 3<sup>rd</sup> year medical students at WSU were asked to complete a very short (6-item) questionnaire on their perceived pharmacotherapeutic competencies, on a Likert scale of: 'strongly agree', 'agree', 'neutral', 'disagree', and 'strongly disagree'. After a year of learning Pharmacology in integrated small group PBL tutorials (twice weekly), and from interactive lectures (once weekly) the students completed the same questionnaire on the day of their last summative examination for the year in November 2009. Responses were analysed quantitatively as percentages.

**Summary of results:** Out of 102 students in the 2009 MB ChB 3 class, 97 (95.10%) completed the 'before', and 73 (71.57%) completed the 'after' questionnaire. For all the 6 items of the questionnaire, the 'before' and 'after' responses were nearly mirror images. Thus, in the 'before', the 'strongly agree' were 0-1%, 'agree' – 0-15%, 'disagree' – 31-47%, and 'strongly disagree' – 31-63%. By contrast, the corresponding 'after' responses were: 12-40%, 37-52%, 1-7%, and 0-3%. There were more 'neutral' responses in the 'after' than in the 'before' survey (8-44% cf. 5-13%)

**Conclusions:** From comparing their 'before' and 'after' responses, it is apparent that in 2009, WSU medical students felt that their pharmacotherapeutic competencies improved over their third year of their training. However, the higher 'neutral' responses in the 'after' survey suggests that, at the end of their third year, more students than at the beginning of the year were unable to articulate their perceptions of their pharmacotherapeutic competencies,

**Take home message:** 'Before' and 'after' surveys may demonstrate change, but those using a Likert scale should pay particular attention to the 'neutral' responses.

#### 9 U 4

##### **Analysis of ultrasound in teaching gross anatomy to medical students**

M Sadanandaswamy, R Searle (Newcastle University, Anatomy and Clinical Skills, School of Medical Sciences Education Development, The Medical School, University of Newcastle upon Tyne, Newcastle Upon Tyne NE2 4HH, United Kingdom)

**Background:** Ultrasound is used as a supplement in undergraduate anatomy teaching.

**Summary of work:** Ultrasound was incorporated into practical session of upper/ lower limb anatomy. Questionnaires were distributed to 30 first year graduate entry (A101) & 211 second year (A100) medical students and feedback analysed using chi-square test.

**Summary of results:** The response rate was 60.2% (145/241). 78% of A101 and 63% of A100 students found the teaching useful/ essential. The graduate entry group had statistically significant positive responses for identifying bone (91.67% vs. 70%,  $p=0.02$ ), vessels (91.67% vs. 54.4%,  $p=0.001$ ) & nerves (45.83% vs. 12.60%,  $p=0.001$ ), finding line diagram useful/essential (95% vs. 55.10%,  $p<0.001$ ) and being able to translate most/ all of the structures on line diagram (61.90% vs. 36.61%,  $p=0.03$ ) when compared with non-graduate group. Similar trend though not significant was obtained for identifying muscle (62.5% vs. 51.67%,  $p=0.33$ ) & tendons (45.83% vs. 31.67%,  $p=0.18$ ).

**Conclusions:** Majority of students found ultrasound as a useful tool in anatomy teaching. The A101 group had better results probably because they are mature learners or had the advantage of having cross-sectional anatomy images with line diagrams.

**Take home message:** Ultrasound could act as a useful adjunct in teaching anatomy to medical students.

#### 9 U 5

##### **Learning effectiveness of pathology in medical undergraduates in an integrated curriculum**

R R Panirselvam, B Sengodan, P K Rajesh (Faculty of Medicine, AIMST University, 3 1/2 Bukit Air Nasi, Jalan Semeling, Kedah Darul Aman, Bedong 08100, Malaysia)

**Background:** This is an explorative study conducted to assess learning effectiveness of pathology among medical undergraduates at AIMST University. Basics of pathology are dealt in Year 1 and an organ based systems approach in Year 2. Teaching learning methods include lectures, tutorials, practicals and PBL.

**Summary of work:** Learning effectiveness is termed as the learner's (completed Year 2) ability to apply core pathology knowledge into clinical settings. On this premise, the learner's attitude and cognitive knowledge were assessed using a standardized questionnaire. Learner's attitude was gauged from non preferential based items while cognitive knowledge was assessed using integrated clinical questions.

**Summary of results:** Batch X: Mean attitude and Outcome score of 6.52 (SD= 1.84) and 3.24 (SD= 1.00) respectively. Batch correlative curve of 0.22. Batch Y: Mean attitude and outcome score of 6.52 (SD= 1.89) and 3.26 (SD= 0.86) respectively. Batch correlative curve of 0.21. We intend to conduct the study on more batches.

**Conclusion:** A positive attitude towards pathology exists among students however with poor transferability of knowledge.

**Take home messages:** Future methods of improving learning pathology must aim at long-term application of core knowledge. The positive attitude among students should encourage adoption of more active learner oriented teaching methods.

## 9 U 6

### **Providing continuity in a preclinical preceptorship to improve chronic care competency: A novel approach**

S Wali, C Stevens, A Relan, L Wilkerson (David Geffen School of Medicine at UCLA, 60-051 Center for Health Sciences, Los Angeles 90095, United States)

**Background:** New accreditation standards for American medical schools have emphasized the attainment of clinical competence in the management of chronic disease. Traditional clinical education, characterized by disconnected blocks of discipline-specific rotations in core specialties is ill-suited to provide students with the continuity needed for management of chronic illness.

**Summary of work:** We reorganized our preclinical curriculum to include longitudinal care experiences during preceptorships. Eleven students volunteered to participate in this pilot project over two years and were assigned to highly rated clinical preceptors at the same site. The highlights of the intervention included regular visits to the clinic, exposure to chronically ill patients in multiple settings, extensive feedback, and emphasis on evidence-based practice.

**Summary of results:** Medical students bonded genuinely with clinical instructors, took a deep interest in feedback, and demonstrated greater depth of understanding and management of chronic illness. Faculty found the experience rewarding due to greater student contact, teaching opportunities and more reliable assessment.

**Conclusion:** Longitudinal preceptorships in the preclinical curriculum can be effective in providing continuity of clinical experiences to teach and manage chronic illness.

**Take home message:** A restructuring of clinical experiences can be daunting, but successful in teaching new competencies required for accreditation as well as the evolving practice of medicine.

## SESSION 10 SIMULTANEOUS SESSIONS

### 10 A Symposium Assessment for Selection for Healthcare Training

K Eva (McMaster University, Ottawa, Canada); M Kroopnick (AAMC, United States), C Roberts (University of Sydney, Australia), K Dore (McMaster University, Canada), C Kreiter (University of Iowa, United States)

The century post-Flexner has witnessed considerable evolution, both in terms of strategy and principle, of the approaches the health professions have adopted to select trainees. Reiter has described this transition as moving from an age of ignorance through an age of prioritizing cognitive attributes, then professional attributes, to the point at which we find ourselves today in which increasing emphasis is placed on diversity and compromise across many personal and social factors.

In this symposium we will bring together an international panel of scholars to present on and facilitate discussion pertaining to the current state of the art in relation to each of these eras.

### 10 B Oral Presentations International Dimensions 2

#### 10 B 1

##### **Quality assessment of PGME: an international comparison**

C de Burbure, J Piérard, I Vinck, R Remmen, D Paulus (Medical Faculty, Université catholique de Louvain UCL, Avenue Hippocrate 10, Brussels 1200, Belgium)

**Background:** Aiming to standardize its two separate educational systems, Belgium is currently reviewing quality criteria applied to PostGraduate Medical Education (PGME). An international comparative study was therefore deemed appropriate.

**Summary of work:** Five countries were chosen for a comparative study of PGME systems: France, the Netherlands and the United Kingdom as neighbor systems, Switzerland for its recent application of quality procedures in PGME, and Canada, pioneer in the field. The WFME's Global Standards for Quality Improvement in Medical Education were used to collect and analyze data.

**Summary of results:** Comparative tables were built giving a general overview of PGME organization, details and roles of specific accreditation organization, accreditation targets, reference quality criteria (eg CanMEDs, WFME, governmental), accreditation evidence and validity, visitation systems, trainers' accreditation, logbook or portfolio. Large variations were identified but also future trends, such as recognition of specialist medical training according to learning outcomes - not training length - as well as the need for external evaluation systems.

**Conclusions:** New governance principles were effective in most studied countries, with local latitude to implement national legislation.

**Take home message:** An international comparison of quality criteria applied in PGMEs brings interesting insight prior to developing and implementing new regulations.

## 10 B 2

### **The University of Queensland-Ochsner Health System International Medical Education Partnership allowing students to study medicine across two continents**

PD Jones, D Wilkinson, W Pinsky, H Marshak (University of Queensland, Mayne School of Medicine, Brisbane 4072, Australia)

**Background:** Students from the USA are being recruited to study Medicine at UQ's School of Medicine and will spend the first two years of their Medical program in Australia and the majority of their final two years completing clinical rotations in New Orleans.

**Summary of work:** The students will graduate with an Australian MB BS and complete the USMLE examinations to allow them to match for a residency program in the USA on graduation. The new program is currently being assessed by the Australian Medical Council (AMC) and pending approval, these students will be eligible to practice in Australia. Current Australian students in the UQ program will be allowed to complete 6 months of their clinical rotations in New Orleans.

**Summary of results:** In 2009 an initial cohort of 15 USA students has commenced their Medical studies in Brisbane and 30 students from UQ's current final year have completed clinical rotations in Louisiana with 6 of these participating in the 2010 USA residency match.

**Conclusions:** The UQ-Ochsner-International Pathways© partnership is developing a unique opportunity for students to study medicine in both Australia and the USA. The AMC are planning a formal site visit of UQ and the Ochsner Health System in 2010. The first graduates of this program are expected in 2013.

**Take home message:** An International Partnership approach to Medical Education has the potential to ensure that the next generation of graduates will be fit and licensed to practice around the world.

## 10 B 3

### **Trainees' perspectives on an international training program in Neonatal-Perinatal Medicine in Shanghai**

A Jefferies, X Qiu, A Chiu, J Macartney, H Osiovich, B Simmons, S Lee (Dept. of Paediatrics, University of Toronto, 600 University Avenue, Room 775, Toronto M5G 1X5, Canada)

**Background:** The effect of international medical training programs on trainees is not well described. We therefore evaluated the impact of the International Training Program in Neonatal-Perinatal Medicine, a joint venture of the Canadian Neonatal Network<sup>TM</sup> and Children's Hospital of Fudan University, Shanghai. The program includes one year each in Shanghai and Canada. Forty-nine physicians from across China have enrolled.

**Summary of work:** A focus-group interview was conducted in Chinese with 17 of 19 trainees who have returned to China after training. Trainees discussed their satisfaction with the program and its impact on skills, knowledge, behaviour, leadership and ability to effect change. The 3-hour interview was videotaped, translated and transcribed. Using Krueger & Casey's (2000) framework of analysis, central themes and issues emerged and were interpreted.

**Summary of results:** Trainees expressed personal and professional satisfaction with the program, although separation from family and adjustment to Canada were challenging. Excellent clinical training, inter-professional and family-centred care and opportunities for teaching were some of the benefits. Trainees have been able to make changes upon return, perceived as a positive long-term impact of the program. Continuing such programs is seen as key to promoting change at local hospitals.

**Conclusions and Take home messages:** Despite challenges, trainees view the program positively with benefits for career development. It seems to have become part of the changing force for neonatology in China.

#### 10 B 4

##### **Cultural determinants of early patient contact learning experience**

DL Whitford, AR Hubail (RCSI Bahrain, PO Box 15503, 15503 Adliya, Bahrain)

**Background:** RCSI Bahrain is a new medical school where the curriculum has been transferred en bloc from Ireland. Important nuances of a host culture may determine the learning experience of students. We explored cultural influences that impacted the learning experience in the Early Patient Contact course in Bahrain.

**Summary of work:** Qualitative study - thematic analysis of 54 reflective logbooks from students examining cultural determinants of learning experience.

**Summary of results:** Cultural issues that affected learning included: visits to families that followed strict traditions of gender separation; the centrality of family in the local culture; the challenge of overcoming the cultural norm of not visiting the homes of strangers; the practice of norms of Arab hospitality when visiting homes; language barriers for some students; varied cultural beliefs encountered concerning childbirth and child rearing; and increased anxiety in those students who were sensitive to cultural norms.

**Conclusions:** There are challenges implementing a course from one culture into another culture that may lead to different learning outcomes than those intended. In addition, some cultural differences should be challenged and overcome in order to maximize learning.

**Take home messages:** Transfer of curriculum into different cultures demands adaptation and may lead to different learning outcomes.

#### 10 B 5

##### **Factors that could help or hinder overseas doctors in making a successful transition to the UK workplace**

J Illing, G Morrow, C Kergon and B Burford (Northern Deanery, 10-12 Framlington Place, Newcastle upon Tyne NE2 4AB, United Kingdom)

**Background:** The UK National Health Service depends heavily on overseas doctors. 37% of doctors registered with the General Medical Council received their primary qualification overseas. Recent data from the National Clinical Assessment Service has identified that overseas qualified doctors are over represented in referrals for under performance.

**Summary of work:** The study aimed to identify factors that could help or hinder overseas doctors making a successful transition to the UK workplace. Telephone interviews were conducted with 66 overseas doctors before starting work and after 4 and 12 months in the work place. They were compared with a sample of UK doctors (n=65) followed up for the same period. Educational supervisors were also interviewed.

**Summary of results:** Interviews identified differences in the training culture particularly with regard to: communication, teams and hierarchy. Various forms of informal support helped. The lack of formal support was likely to hinder overseas doctors in making a successful transition to the UK workplace.

**Conclusions:**

Cultural differences may leave overseas doctors ill prepared for work in the NHS. The failure to recognise this may hinder the transition.

**Take home messages:** Overseas doctors require specific induction and ongoing support to enable them to make a successful transition to the UK workplace.

**10 B 6**

**Assessing IMGs for suitability for General Practice**

Anita Smith (Rural Workforce Agency, Victoria (RWAV), PO Box 7382, 8004 St Kilda Road, Australia)

**Background:** The Rural Workforce Agency, Victoria (RWAV) is funded to recruit International Medical Graduates (IMGs) for rural general practices within the state of Victoria, Australia. RWAV, the Postgraduate Medical Council of Victoria (PMCV) and the Medical Practitioners Board of Victoria (MPBV) formed a consortium and are an accredited PESCI provider. The PESCI is an assessment tool consisting of eight clinical scenarios designed to assess suitability for rural general practice. The PMCV conducts PESCI for hospital positions, RWAV for GP applicants coming through RWAV sponsored positions and the MPBV for Non RWAV sponsored GP positions.

**Summary of work:** RWAV has been conducting GP Pre-employment Structured Clinical Interviews (PESCI) since 1998 and have four banks of scenarios based on the domains of general practice. These are designed for responses to various elements. Three Medical Advisors are employed to conduct the existing Structured Interview.

**Summary of results:** RWAV has conducted 90 PESCI in the 12 months to 30 November, 2009 with 88 of the applicants being successful.

**Conclusions:** The interviews have proved to be a very successful gauge of suitability for rural general practice with 41 applicants having commenced in rural general practice, 13 who have accepted positions and are yet to commence and 9 who have passed the PESCI and are unplaced.

**Take home messages:** The assessment is a quality assurance process designed not only to assess IMGs but also identify the support IMGs require for successful placement in rural general practice.

## 10 B 7

### **How do Ugandan interns perceive the doctor-patient relationship? A study of perceptions of professionalism by a UK Foundation Doctor working in Uganda.**

S Jewsbury, P Yeates, N Davies, L Othieno, M Surgenor, G Byrne, E Ovuga (University Hospital of South Manchester NHS Foundation Trust, ATR4, Education Research Centre, Southmoor Road, Manchester M23 9LT, United Kingdom)

**Background:** Professionalism in the UK Foundation Programme (FP) is well defined by the Foundation Curriculum<sup>1</sup>, Good medical Practice by the GMC<sup>2</sup>, and is inherent to UK practice. As international consensus on assessment of professionalism approaches<sup>3</sup>, it is of interest to consider the perceptions of doctors from different educational systems with different cultures and healthcare-resource availability.

**Summary of work:** We explore the perceptions of doctor-patient relationship (within the context of professionalism) in Ugandan Interns. Data collection by semi-structured interview. Data analysis by thematic analysis using Good Medical Practice for theoretical orientation.

**Summary of results:** A thematic description of the similarity and diversity of the Ugandan interns' perceptions of the doctor-patient relationship within the context of professionalism will be reported.

**Conclusions:** The identified themes will be discussed in relation to the participatory-researcher's own biases and perspective as a UK Foundation doctor (PG year 2), as well as considered in light of the educational, socio-cultural and resource-limited context in which Ugandan interns work.

**Take home message:** To optimise international health links it is important to consider the perceptions of professionalism of doctors from diverse settings.

## 10 C Oral Presentations Evaluation of Teachers

### 10 C 1

#### **Attributes of good surgical trainers: perspectives from trainee focus group discussions and narrative interviews**

P Nisar, H Scott (Kent Surrey Sussex School of Surgery, 7 Bermondsey Street, Southwark, London SE21 2DD, United Kingdom)

**Background:** In the UK there is renewed interest in the attributes & skills of trainers in light of the introduction of European working time directive (EWTD) and the reduction in training hours for surgeons. We explored trainee perspectives on the attributes of ideal surgical trainers using focus groups and narrative interviews. Viewpoints from junior (Core) and senior trainees were compared.

**Summary of work:** Focus groups were conducted with 32 trainees in Surgery. Two facilitators asked what made a good trainer, what characteristics helped in dealing with bad trainees and what ideal attributes were recognised from previous experiences. Six other trainees separately participated in narrative discussions.

**Summary of results:** Themes were categorized as 'educational management', 'personality traits' and 'perceived core beliefs'. Junior trainees valued trainers that were patient, approachable, set goals for the trainee and appreciated trainees' deficiencies. Senior trainees wanted inspirational trainers with strategies to ensure high quality training in a service environment.

**Conclusions:** Junior trainees wanted nurturing and encouragement from trainers who could teach surgical skills. Senior trainees appreciated the implications of EWTD and flexible training opportunities.

**Take home messages:** A trainer's vision and support to help achieve a trainee's self-directed goals were considered important.

## 10 C 2

### **Student and teaching characteristics related to ratings of instruction in medical sciences graduate programs**

H Delver, T Beran, T Donnon (Medical Education and Research, Department of Community Health Sciences, University of Calgary, Calgary T2N 4N1, Canada)

**Background:** Although the validity of students' ratings of instruction has been documented, several student and course characteristics may be related to the ratings students give their instructors. The purpose of this study was to examine student ratings obtained from the Universal Student Ratings of Instruction (USRI) instrument. These responses were compared to various student characteristics. Also, teaching characteristics that were most closely associated with the ratings were determined.

**Summary of work:** A total of 1,738 USRI forms were completed by graduate students enrolled in medical science courses from 1999 to 2006 in the Faculty of Medicine at a Canadian university.

**Summary of results:** Stepwise regression analysis showed that perceptions of high course workload, and low grade expectations were related to negative student ratings of overall quality of instruction. In addition, organization of course material and perceptions of amount learned in the course were most closely related to global ratings of instructional quality.

**Conclusions:** Good teaching includes organization and delivery of course content that meets the learning objectives of graduate students in medical sciences.

**Take home messages:** Graduate students have expectations for mastery at both theoretical and practical levels at this stage in their education programs that demand highly organized instruction.

## 10 C 3

### **Utilizing teaching evaluations to promote faculty development in teaching**

K Leslie, E Egan-Lee, R Pittini, S Cardoso, M Schreiber, A Dionne, L Baker, S Reeves (Centre for Faculty Development, Faculty of Medicine University of Toronto at St. Michael's Hospital, 30 Bond St., Toronto M5B 1W8, Canada)

**Background:** Faculty can improve their teaching practices through reflection with the use of data, guidance or consultation. Teaching evaluation scores are a readily available source of information about teaching performance. The literature suggests, however, that the processes associated with collecting and sharing scores with faculty favours its use for summative (e.g. promotions, maintenance of teaching responsibilities) rather than formative (e.g. teaching improvement) purposes.

**Summary of work:** An exploratory case study was conducted to examine the processes, perceptions and use of teaching evaluation scores. A purposive sample of course directors and teachers in undergraduate medical education at one university participated in semi-structured interviews (n=26). Recorded interviews were transcribed and analyzed on an inductive thematic basis.

**Summary of results:** The presentation will report findings in two areas. First, how teaching effectiveness scores predominantly used for summative purposes can be adapted to provide more formative feedback to teachers. Second the value teachers attached to this type of formative information as a way of improving their teaching.

**Conclusions and Take home messages:** Opportunities to use teaching evaluations to promote reflection on teaching practices will be discussed during the presentation. Results of the study will be used to inform the creation of faculty development opportunities.

#### 10 C 4

##### **'Harvey' (the cardiac patient simulator) peer-tutors' teaching ability – tutees' feedback versus tutors' self-appraisal**

JCL Rodrigues, MA Rodrigues, CA Parisinos, VG Lim, KAA Fox, M Denvir (Department of Cardiology, The Royal Infirmary of Edinburgh, 51 Little France Crescent, Old Dalkeith Road, Edinburgh EH16 4SA, United Kingdom)

**Background:** 'Harvey' is a cardiac patient simulator. 3rd year medical students at Edinburgh University, during their cardiovascular module, can attend extra-curricular 'Harvey' tutorials given by trained 4th year peer-tutors. We compared tutees' feedback about their peer-tutors with the tutors' self-appraisal.

**Summary of work:** Twelve 4th Year undergraduate peer-tutors delivered 36 tutorials to 117 3rd year undergraduate students in 2008-2009. Tutees rated their tutor's ability in 4 domains after each tutorial on 0-10 scale. Tutors also rated their own performance after each tutorial.

**Summary of results:** Tutees consistently rated their peer-tutors' ability very highly (knowledge 9.34+/-0.77, clinical skills 9.48+/-0.7, teaching ability 9.40+/-0.89, teaching confidence 9.34+/-0.99), regardless of the number of tutorials the tutor had given previously. The tutors' self-appraisal was consistently lower than the tutees' opinions (knowledge 8.42+/-0.64, clinical skills 8.69+/-0.79, teaching ability 8.04+/-1.51, teaching confidence 8.12+/-1.42). However, tutors' subjective perceptions increased with increased number of tutorials given.

**Conclusions:** Peer-tutors are highly rated by their tutees, irrespective of the number of tutorials the tutor has previously led. The tutors self-perceived ability increases with the more tutorials they deliver.

**Take home messages:** Active participation in this peer-led teaching scheme is required for peer-tutors to achieve maximal self-confidence in their teaching ability.

## 10 C 5

### **The development of Ipsix: A psychometric test for the selection and development of high quality examiners**

C Dewberry, A Davies Muir, S Newell (Royal College of Paediatrics and Child Health, 5-11 Theobalds Road, London WC1X 8SH, United Kingdom)

**Background:** The purpose of this paper is to explain the development and validation of a psychometric test designed to predict examiner quality and to provide examiners with feedback about their characteristics as assessors.

**Summary of work:** The development of Ipsix draws on theories and research on the process by which people assess and calibrate the performance of others. The validation of the instrument involved two stages. First, Rasch modelling was used to examine the assessment characteristics of over 400 examiners collectively involved in over 25,000 assessments. Second, subsets of these examiners completed Ipsix, and the performance of this test in predicting key examiner characteristics was assessed.

**Summary of results:** Multiple regression indicates significant associations between Ipsix scales and three indices of examiner quality.

**Conclusions:** Ipsix provides a novel and effective way of predicting examiner quality with respect to stringency/leniency, examiner consistency, and use of evaluative scales.

**Take home messages:** The quality of an examiner depends on their expertise in the field and also on their ability and style as an assessor. Ipsix is the first validated psychometric test to predict examiner quality. It can be used in both the selection and the development of high quality examiners.

## 10 C 6

### **Medical students' perceptions of the best clinical teachers**

C H Tsai, C Y Chan, W Chen, S C Liao (China Medical University Hospital, 91, Shueh-Shih Road, 404 Taichung, Taiwan)

**Background:** In 2007, China Medical University decided to extend the clinical education in the medical program from two to three years. To strengthen clinical education and teacher qualification, we launched a survey study to understand medical students' perceptions of the best clinical teachers.

**Summary of work:** One hundred Sixty-six clerks answered a survey in March, 2008 and 159 (95.7%) of the filled surveyed were effective and analyzed.

**Summary of results:** Based on results of statistical analyses, we found that characteristics that described the best clinical teachers included: passionate about teaching, good patient-physician relationship, professionalism, good teaching attitude, rich professional knowledge, care for student, and effective teaching skills. Characteristics that described unpopular clinical teachers included: bad teaching attitude, not passionate about teaching, poor patient-physician relationship, and ineffective teaching skills.

**Conclusions:** Although teaching attitude and professional knowledge were crucial, in the scenario of clinical education, students also valued the clinical teacher's patient-physician relationship and professionalism.

**Take home message:** A good teaching attitude and professionalism were the two qualifications for clinical teachers. Further research is called upon to explore how to help clinical teachers to develop these qualifications.

## 10 D Oral Presentations Other Outcomes 3

### 10 D 1

#### **Using the UCLA Script-Concordance Test of cross-cultural care at the University of Michigan**

ML Lypson, JA Purkiss, PT Ross, CM Grum (University of Michigan Medical School and the David Geffen School of Medicine, University of California, Los Angeles, Office of GME 2600 Green Road #150, Ann Arbor; Center for Education Development and Research – UCLA; Ann Arbor, MI 48105, United States)

**Background:** Assessment of medical student ability in cross-cultural care is mandatory given rapidly changing demographics of the North American population. External validity of a Script Concordance Test (SCT) was explored through comparison with the diagnostic pattern recognition exam (DPRE) used in the Internal Medicine clerkship, as well as other test scores.

**Summary of work:** We correlated results for 164 students who completed both the online SCT, and the DPRE test. SCT scores were also correlated with USMLE Step 1 and OSCE communication skills.

**Summary of results:** SCT mean score = 87.46% (SD=11.27, N=167), and DPRE mean = 178.09 (SD=8.98, N=164). Correlation between SCT and PR was statistically significant, though weak: Pearson's:  $R=0.161$ ,  $p=0.040$ ,  $N=164$ . SCT did not correlate with USMLE Step 1 ( $R=0.002$ ,  $p=0.977$ ) or OSCE communication skills ( $R=-0.092$ ,  $p=0.240$ ).

**Conclusions:** Given these weak or non-existent correlations, SCT may require refinement, or it may be assessing a unique clinical reasoning domain.

**Take home messages:** Although we found evidence of minimal overlap between reasoning assessed by SCT and that assessed by DPRE, it is also possible that issues related to cross-cultural care allow for a new and unique type of pattern recognition for disease presentation. Further assessment and validation of the SCT is warranted.

### 10 D 2

#### **Conflict of interest in medical education: Where do we currently stand in residency programs?**

Kathryn Ross, William Iobst, Brian Hess (American Board of Internal Medicine, 510 Walnut Street, Suite 1700, Philadelphia 19106, United States)

**Background:** The American Board of Internal Medicine Foundation was requested by the American Board of Internal Medicine Conflict of Interest Taskforce to explore educational venues to enhance the knowledge, skills, and attitudes with conflict of interests (COI) of medical students, residents and practicing physicians. We hope to identify “best practices” in and develop a skeleton framework for COI medical education across the spectrum of a physician’s career.

**Summary of work:** In Spring 2009, we disseminated an online survey to Program Directors and Senior Residents of Internal Medicine programs to establish a baseline for what COI curriculum and assessment currently exist for trainees.

**Summary of results:** Program Directors' and Senior Residents' responses varied in several domains. There were differences regarding perception of particular activities as representing a COI, particularly accepting unrestricted educational grants. There is discordance between what COI-related activities Program Directors and Senior Residents believe are allowed within their programs.

**Conclusions:** As an assessment of the general state of COI awareness in training, the surveys suggest that training, monitoring, and enforcing of COI policy is poor.

**Take home messages:** Results indicate that COI needs a stronger presence in residency curriculum and assessment. Further exploration needs to be done to learn how to better incorporate guiding principles for COI in residency programs.

### 10 D 3

#### **Construct validity of conflict management style profiles in medical students**

P Wimmers, D Ogunyemi, M Stuber (David Geffen School of Medicine, UCLA, Center for Educational Development and Research, 10833 Le Conte Ave, CA 90095-1722 Los Angeles, United States)

**Background:** To promote professionalism and communication skills, medical students ought to receive training in conflict management. Instruments measuring conflict styles, have been not been studied well with medical students.

**Summary of work:** Third-year medical students ( $n = 136$ ; 98.5% response rate) completed three instruments on communication and conflict resolution: "Thomas-Killmann Conflict Model Instrument," "Interpersonal Influence Inventory," and "My Best Communication Style. We studied the inter-relationships among the subscales of the instruments to determine construct validity.

**Summary of results:** Correlation coefficients revealed that instruments show a moderate to good convergent and discriminant validity; correlations between theoretically similar styles are relatively high and correlations between theoretically dissimilar styles are relatively low. For example, Competing conflict style positively correlated with Openly Aggressive ( $r=.5$ ,  $p < .0005$ ) influence style, but negatively with Sympathetic communication style ( $r = -.34$ ,  $p < .0005$ )

**Conclusions and Take home messages:** Conflict and communication instruments could be valuable tools to assist students identify preferred style and become effective communicators and conflict managers.

#### 10 D 4

##### **Building a framework for assessing leadership competencies in medical faculty**

L Naismith, K Chin, Y Steinert (McGill University, 1110 Pine Avenue West, Montréal, QC H3A 1A3, Canada)

**Background:** There is growing recognition of the importance of faculty development to improve leadership skills in medical education. However, what is meant by leadership skills? A common definition of leadership is necessary to effectively design, develop and evaluate faculty development initiatives in this area.

**Summary of work:** Nine exemplar studies of leadership development programs were selected from a systematic review of the literature. A qualitative analysis using open coding techniques was performed to extract specific competencies from each study's literature review and program description.

**Summary of results:** There was high variation in how each study conceptualized leadership, with over 25 different competencies reported. Competencies that showed broad consensus across studies included: knowledge of leadership styles, understanding of institutional organization and culture, financial management, conflict management, negotiation, and performance management of faculty and staff.

**Conclusions:** Leadership is a broad concept that can be viewed as encompassing many different competencies. Identifying frequently-mentioned competencies in the literature can be used as a starting point for developing a conceptual framework of leadership in medical education.

**Take home messages:** Establishing a common definition of leadership is a first step towards building a framework for designing and evaluating faculty development initiatives to improve leadership skills.

#### 10 D 5

##### **Developing and testing tools for assessing leadership skills and competencies in emergency medicine trainees**

J McKimm, S Petersen (University of Leicester, Department of Medical and Social Care Education, Maurice Shock Medical Sciences Building, University Road, Leicester, United Kingdom)

**Background:** Medical leadership is fundamental to ensuring high quality health outcomes and patient safety and leadership is included as a core competence for doctors in competency frameworks and standards. However, to date there is little systematic teaching or assessment of leadership in medical education.

**Summary of work:** In 2009, 12 second-year trainees began the first UK Academic Foundation programme in Leadership, Management and Emergency Medicine. We used competency frameworks to develop new assessment instruments and used existing clinical assessments to carry out multisource assessment of trainees' leadership competence.

**Summary of results:** The new instrument, coupled with structured tutor and peer feedback, was effective for developing trainees' self insight and awareness on leadership, teamworking and interpersonal interaction. Existing clinical assessments did not provide useful feedback on leadership competence.

**Conclusions:** Current assessment instruments, focussing primarily on clinical competence for trainees, do not easily enable assessment in leadership. New assessment instruments are required to assess leadership.

**Take home messages:** Leadership can be assessed, but challenges remain in how to systematically integrate teaching and assessment of leadership and management in the day to day work of trainees and their supervisors.

#### 10 D 6

##### **Assessment of self-directed learning skills before and after a multifaceted intervention for family medicine residents**

M Nothnagle, P George, R Goldman, G Sullivan, S Reis (Brown University Family Medicine Residency, 111 Brewster St, Pawtucket, RI 02860, United States)

**Background:** Physicians need self-directed learning (SDL) skills to develop and maintain expertise, but traditional residency education has not emphasized these skills. High quality instruments to measure SDL are lacking and definitions vary. Two essential components of SDL are goal-setting and reflection.

**Summary of work:** For one year, 12 second-year family medicine residents met monthly with a learning coach, who helped them formulate learning goals, reflect on their learning, and document goals and reflections in a web-based portfolio. A two-hour forum involving discussion and reflection with classmates and faculty was held bimonthly. Residents' ability to set goals and reflect on learning was assessed before and after the intervention using self-reported ratings. The coach also rated residents' goal-setting and reflection after each meeting using a rating form with behavioral anchors.

**Summary of results:** Residents' goal-setting and reflective ability, as measured by their self-reported ratings and by the learning coach's ratings, improved significantly after the intervention.

**Conclusions:** A multifaceted intervention to improve family medicine residents' SDL skills was associated with improvements in residents' and coach's ratings of goal-setting and reflection.

**Take home messages:** Improvements in skills essential for SDL suggest that interventions in resident education may foster self-directed learning.

#### 10 D 7

##### **Determining the optimal mix of abnormal to normals for learning radiograph interpretation: a randomized controlled trial of residents**

M Pusic, J Andrews, G Kamdar, D Kessler, D Teng, M Pecaric, K Boutis (Columbia University College of Physicians and Surgeons, 622 W 168th St, PH1-137, 10032 New York, NY, United States)

**Background:** The optimal composition of digital case banks for learning remains to be determined. We sought to determine how the ratio of normals to abnormal in a radiograph case bank affects learning.

**Summary of work:** We created three 50-case versions of an ankle radiograph case bank differing in the ratio of abnormal to normal (30%, 50%, 70% abnormal). We ensured that the case difficulty was the same between groups and that all major diagnostic classes were represented in each. We randomly assigned PGY2-5 residents to complete one of the three learning sets. Subjects classified each case as

either normal or abnormal. They were given immediate feedback. All participants subsequently completed the same 20-case, 40% abnormal, post-test.

**Summary of results:** One hundred residents completed the study. The three groups did not differ in their accuracy on the post-test ( $F_{2,97}=1.32$ ;  $p=0.27$ ). However, they showed considerable variation in their sensitivity/specificity tradeoff. The low, medium and high abnormality groups demonstrated opposite trends for Sensitivity (0.51/0.62/0.70;  $p=0.007$ ) compared with Specificity (0.86/0.75/0.71;  $p<0.001$ ) respectively.

**Conclusions and Take home message:** The influence of spectrum bias on the nature of the ultimate learning should be considered when designing learning item banks.

## 10 E Oral Presentations Addressing the Underperforming Professional

### 10 E 1

#### The role of cognitive function screening in physician competence assessment

L Korinek, L Thompson, C McRae, E Korinek (CPEP, Center for Personalized Education for Physicians, 7351 Lowry Blvd., Suite 100, Denver 80230, United States)

**Background:** Concerns are sometimes about the neuropsychological functioning of physicians whose clinical competence is under review. This has led to the incorporation of cognitive screening in the testing protocols of some programs that provide post-licensure evaluation of physicians. The purpose of this study was to compare the cognitive abilities of a group of physicians referred for competence evaluations and those of a control group.

**Summary of work:** Using a computerized neuropsychological screen, the cognitive performance of 267 physicians referred for competence evaluations (referred group) was compared to the performance of a control group of 68 recruited practicing physicians whose competence was not in question.

**Summary of results:** Compared to the control group, the referred group had a greater proportion of physicians with scores suggesting possible cognitive impairment (24% vs. 0%) and performed significantly lower on scores of processing speed (mean score difference 12.391;  $P$

**Conclusions:** This study found significant neuropsychological differences between the referred group and the control group.

**Take home messages:** Screening for cognitive deficits is relevant in assessing physician competence. Cognitive deficits may contribute to performance issues and may impact the remediation of physicians with competence concerns.

## 10 E 2

### **The consideration of cognitive decline in assessed practitioners**

N Brown, P McAvoy, M Rhodes (National Clinical Assessment Service, Market Towers, 1 Nine Elms Lane, London SW8 5NQ, United Kingdom)

**Background:** There is little published information on the prevalence and impact of mild to moderate cognitive decline in practising doctors but experience has led the subject to be of increasing interest to The National Clinical Assessment Service (NCAS) in the UK. NCAS plays a lead role in the assessment and management of performance concerns in established health care practitioners. It has recently included screening for cognitive impairment as a standard part of its assessment of performance.

**Summary of work:** This presentation will provide detail about the approach to assessment adopted by NCAS including choice of instrument, what has been found and its implications not just for NCAS and the United Kingdom context but more broadly for doctors, their employers and regulatory bodies.

**Summary of results:** Experience this year using screening has indicated the need for more detailed neuropsychological testing in 14% of referred practitioners. Affected practitioners show a profile of older age and isolation in practice.

**Conclusions and Take home messages:** There are clear questions about the impact of cognitive decline on a doctor's ability to continue to practise safely and to engage with any remediation programme. These questions are emergent and will be informed by NCAS' growing follow-up database.

## 10 E 3

### **Identification, assessment and management of non-clinical 'poor performance' in qualified doctors in the UK**

JR Skelton, CM Wiskin (The University of Birmingham, School of Health and Population Sciences, Edgbaston, Birmingham B15 2TT, United Kingdom)

**Background:** Suspension from practise for a doctor for "poor performance" rather than misconduct was implemented July 1997. The debate is that "problem doctors", where the difficulty is not simply lack of mastery of a clinical skill, is multi-factorial, and very challenging to pin down. Areas of concern include communication, teamworking, professional attitude and management. This highlights the central issue of what is to count as 'evidence' in assessment of such cases.

**Summary of work:** We offered one-to-one training to 220 individuals, over 8 years. This comprises consists a meeting with a Director, 1-3 x ½ day interventions, usually involving simulation of doctor/colleague or doctor/patient interaction and a written evaluation. Data are collected for analysis on an ongoing basis to identify why individuals are referred, the demographics of "poorly performing doctors", the means of identifying (and assessing/evaluating) the nature and extent of the problem, and the success of the intervention.

**Summary of results:** Interim evaluations are satisfactory, and the future progress of most referred doctors appears positive. A relationship with ethnicity and/or language is emerging. Triggers for referral have been identified, that may have pre-emptive application.

**Conclusion and Take home message:** Simulation is a viable methodology for poor-performance assessment. "Communication" is the symptom, not the problem. Language is power, and insight brings hope.

#### 10 E 4

##### **Characteristics of physicians referred for competence assessment: a report on 1000 competence assessments**

E Grace, E Korinek (CPEP, Center for Personalized Education for Physicians, 7351 Lowry Blvd., #100, Denver 80230, United States)

**Background:** CPEP is a U.S. physician assessment program that evaluates physicians whose competence has been questioned. CPEP completed its 1000th competence assessment in 2009. Data regarding these physician-participants provides insight into characteristics of physicians who present for post-licensure competence assessment.

**Summary of work:** In this observational study, data was obtained from questionnaires completed by physician-participants in the CPEP program.

**Summary of results:** The majority of physicians referred for assessment (82%) had completed  $\geq 3$  years of U.S. post-graduate training; solo practitioners comprised 44% of the referred physicians. Compared to the general U.S. physician population, primary care specialties were more commonly represented (50% versus 32%). A higher proportion of referred physicians were male (85% vs. 72%). A majority had current specialty-board certification (64% vs. 73%). Graduates of non-U.S. medical schools (IMGs) composed a smaller proportion of participants (18% vs. 26%).

**Conclusions:** This data indicates that physicians referred for competence evaluation are likely to be male, U.S. medical graduates, board-certified, and practice primary care; a significant number are in solo practice.

**Take home messages:** This data may dispel myths about the profile of the incompetent physician. Professional isolation may be a factor related to referral for competence assessment. Additional study is warranted to identify predictive characteristics that might allow for preventive interventions.

#### 10 E 5

##### **Using simulation of community pharmacy practice to assess practitioners whose performance has given cause for concern**

M Rhodes, N Brown, L Cowan, J Delic, H Dolan, R Marchant, P McAvoy, P Wooley, K Wyse (National Clinical Assessment Service (NCAS) & School of Pharmacy, University of Hertfordshire, Market Towers, 1 Nine Elms Lane, Vauxhall, London SW8 5NQ, United Kingdom)

**Background:** The National Clinical Assessment Service (NCAS) helps employers in the UK manage performance concerns in doctors, dentists and pharmacists. When necessary a holistic workplace based assessment is conducted; this includes direct observation of practice. Many community pharmacists are peripatetic locums others may have been suspended from practice making observation in the workplace a challenge.

**Summary of work:** NCAS and the School of Pharmacy at the University of Hertfordshire have developed a three hour simulation of pharmacy practice for community pharmacists identified as potentially having performance problems and for whom direct observation in the workplace is not feasible.

**Summary of results:** Difficulties have been: 1) Ensuring content validity of the scenarios involving patients and customers; 2) Providing the appropriate level of challenge; 3) Conducting a complex high fidelity simulation within a recognisable environment including computer software; 4) Additional training for the peer and lay NCAS assessors. These have been addressed through a multidisciplinary team with expertise in pharmacy, assessment, management and the performing arts. The simulation has been piloted using volunteer pharmacists. How the difficulties have been overcome will be described.

**Conclusions and Take home messages:** Simulation of community pharmacy practice has been shown to be a practical proposition.

## 10 E 6

### **Design and evaluation of a development centre to strengthen medical appraiser skills**

A Koczwara, A Tavabie, F Patterson. (Work Psychology Group and Kent, Surrey and Sussex Deanery, 15 Wheeler Gate, Nottingham NG1 2NA, United Kingdom)

**Background:** Medical revalidation will be introduced in the UK with appraisal playing a central role. This large-scale policy change means doctors need to be appraised annually by approved peer appraisers, with decisions affecting re-licensing. This is a high-stakes environment - doctors must have sufficient capability and confidence for the role.

**Summary of work:** Development centre (DC) methods were used to produce a one-day workshop to encourage appraisers to reflect on their competence and identify/address additional required skills through, practice observation and feedback. The concept of emotional intelligence was introduced to support appraisers develop their inter and intra personal awareness.

**Summary of results:** One hundred participants attended the DC and evaluation data collected from participants, facilitators and observers.

**Conclusions:** The DC was positively received. Participants reported increased confidence in running appraisals effectively, being aware of their impact on appraisees and having the skills to constructively challenge. Follow-up interviews 3-5 months later indicated successful transfer of learning to the workplace.

**Take home message:** Using DC methods enabled the design of a process that stimulated learning, strengthened appraiser skills and increased participants' confidence in a manner which transferred to the workplace. Using a similar approach could be effective in developing other groups of educators.

## 10 F Oral Presentations 360 Degree Evaluation

### 10 F 1

#### **From scores to comments: What does the free text box add to assessor ratings in multi source feedback?**

P Vivekananda-Schmidt, L MacKillop, J Crossley, D Bee, W Wade, M Armitage (University of Sheffield, Academic Unit of Medical Education, 85 Wilkinson Street, Sheffield S10 2GJ, United Kingdom)

**Background:** In the UK, Multi-Source Feedback (MSF) is now a key part of the revalidation of career grade doctors. The Royal College of Physicians has conducted a pilot study to evaluate the utility of a generic MSF that can be used across specialties. MSF tools usually contain a free text box where assessor ratings can be supported with evidence. It is not known what is written in this freetext box and how these comments could be utilized.

**Summary of work:** The free text box was evaluated as part of a larger analysis of the MSF tool (n=1368 UK doctors). Raters were strongly urged to write in the text box especially if they scored unacceptable. Thematic analysis of the free text responses were performed using QSR NVivo 8.0.

**Summary of results:** 5660/11791 (48%) assessor ratings were supported by free text comments and in the cases of poorly performing doctors were typically related to a lack of interpersonal skills. Key themes around positive comments included 'Interpersonal skills', 'good team working' and 'relationships with patients'.

**Conclusions/Take home messages:** These findings are in accordance current evidence on medical professionalism and have implications for personal development planning.

### 10 F 2

#### **Getting the questions right: comparing compound questions and pure questions on matched multi-source feedback instruments**

J Crossley, L MacKillop, J Parker-Swift (University of Sheffield, Academic Unit of Medical Education, 85 Wilkinson Street, Sheffield S10 2GJ, United Kingdom)

**Background:** Multisource feedback provides a window into complex areas of performance in real workplace settings, but, because it requires subjective judgements, many respondents are needed to achieve reliable assessments. Optimising the consistency of judgements will help reliability.

**Summary of work:** An evaluation of 2789 assessments on 205 doctors compared a modified MSF instrument with reference evaluation data from the original instrument. The original contained 9 compound performance items; the modified instrument contained 19 pure items each asking about a single aspect of performance. The instruments were otherwise matched to cover the same performance domains. Factor analysis examined the internal structure of the responses. Generalisability analysis evaluated assessment reliability.

**Summary of results:** The original instrument had no internal structure. The modified instrument was able to separate humanistic items (eg considerate and respectful; conscientious and reliable) from non-humanistic items across 2 factors with Eigenvalues >1. Using mean scores (to neutralise the effect of instrument length) the modified instrument is more reliable. On a 4-point scale 7 respondents were sufficient for a 95% confidence interval of 0.24. The original version required 10 responses for the same precision.

**Conclusions:** Multisource feedback of complex performance will always depend on judgements, but appropriate instrument design can improve the consistency of judgements.

**Take home messages:** Avoid compound questions.

### 10 F 3

#### **Implementing multi-source feedback for scientist training in the UK**

L Southgate, V Davison, K Sidoli, S Heard, S Hill (Department of Health, Modernising Scientific Careers Programme, New Kings Beam House, 22 Upper Ground, London SE1 9BW, United Kingdom)

**Background:** In the UK, the Modernising Scientific Careers [MSC] programme is defining and implementing a national curriculum for the healthcare science workforce. A pilot programme in genetics is combining previously discrete training programmes in cyto- and molecular genetics, whilst introducing nationally specified workplace assessments for the first time.

**Summary of work:** The MSC genetics pilot is developing and testing a suite of assessment instruments for the healthcare science workforce, directed at scientific reasoning, professionalism and practical skills. Multisource feedback (MSF) is included and has first been tested on the genetics pilot trainers. The MSF instrument was blueprinted to the new genetics curriculum. Each trainer nominated 10 raters according to guidelines for selection.

**Summary of results:** Twenty-two trainers in the pilot programme received feedback. The instrument, types of raters, the scores for each item, congruence between self rating and the mean score from raters, and qualitative feedback will be reported.

**Conclusions:** The instrument is feasible but care must be taken in introducing it into a new environment. Trainers should not undertake feedback without first experiencing MSF themselves.

**Take home messages:** Assessment approaches developed for the medical workforce can be tailored to, and applied in, other professions with positive outcomes.

### 10 F 4

#### **Using multi-source feedback to assess medical students' learning on an interprofessional surgical healthcare team**

J White, N Sharma (University of Alberta, Room 409, CSC, Royal Alexandra Hospital, 10240 Kingsway Avenue, Edmonton T5H 3V9, Canada)

**Background:** This study was conducted to explore the use of multi-source feedback (MSF) in the assessment of medical students in a General Surgery/Anesthesiology clerkship.

**Summary of work:** We designed, developed and implemented an MSF instrument to assess the day-to-day clinical performance of third-year medical students as observed by surgeons, anesthesiologists, residents, nurses, administrators, peers, and patients. The instrument was administered to 100 students completing the clerkship. A one-page report was generated to summarize the feedback on each student's performance, including CanMEDs ratings. Interviews on the use of the instrument were conducted with assessors and students.

**Summary of results:** Each student had 25 assessments completed over 6 weeks (physician:8, patient:6, nurse:4, peer:3, chief resident:2, self:1, administrator:1), including 250-300 assessment items and 20-30 narrative comments per student. At interview, this method of assessment was considered useful and was thought to provide more information on observed performance than traditional methods.

**Conclusions:** This study is the first to demonstrate the feasibility of MSF in undergraduate medical education. We plan to further define its advantages and limitations in future studies.

**Take home messages:** We anticipate that MSF will prove to be a valuable assessment tool in environments employing a team-based approach to learning.

## 10 F 5

### **The evaluation of residents' competency in China: a 360-degree assessment**

Q Zhao, Y Zhao, B Qu, B Sun (China Medical University, Research Center for Medical Education, 92# North Second Road, Heping District, 110001 Shenyang, People's Republic of China)

**Background:** It is imperative to establish a standard for the evaluation of professional ethics and communication skills of resident doctors in China.

**Summary of work:** To test the reliability and validity of a 360-degree instrument and evaluate the residents' competency in professionalism and communication skills. We carried out an evaluation of 518 resident doctors from 19 hospitals in China. A 360-degree evaluation questionnaires from education outcomes service group of the Arizona Medical Education Consortium was developed for use by the attending, resident, self, nurse, patient, office staff and resident peer.

**Summary of results:** The instruments are internally consistent (Cronbach's  $\alpha > 0.90$ ). The principal components analysis with varimax rotation for the attending-, resident self-, nurse-, patient-, office staff- and resident peer-, rated questionnaires explained 67.9%, 68.4%, 70.2%, 72.7%, 63.5%, 64.7% of the total variance, respectively. Significant differences ( $P < 0.5$ ) were found among different evaluators. The 360 degree evaluation questionnaires developed by Education Outcomes Service Group of the Arizona Medical Education Consortium is higher reliability and validity.

**Conclusions and Take home message:** The 360-degree instrument appears to be reliable to evaluate residents' competency in professionalism and communication skills. Information from the assessment maybe provide feedback to residents.

## 10 F 6

### **Does the resident of Pediatrics include the patient's perspective? Audio-video recording of the consultation as a tool for the assessment of clinical competences**

D Ballester, SMC Zuccolotto, S Gannam, ML Bourroul, AMU Escobar (University Hospital, Department of Pediatrics, School of Medicine, University of São Paulo, Brazil., Avenida Professor Lineu Prestes, 2565, São Paulo 05508-900, Brazil)

**Background:** The outcome of the medical consultation is associated with better results when based on patient-centered care among which stands out the inclusion of the patient's perspective.

**Summary of work:** The aim of this study was to examine whether the residents in a general pediatric outpatient clinic conduct a consultation which included the parents' perspective. 10 residents were randomly selected to be videotaped while performing a consultation at the beginning and at the end of their ambulatory course at this general outpatient clinic. The data was analyzed through qualitative methodology by exploratory technique involving three independent judges.

**Summary of results:** The majority of residents explored precipitately the first parents' complaint and only 2 residents included the parents' concerns involved with this complaint. Few residents explored other complaints. The parents' agenda was usually neglected. All residents showed a non-shared decision-making practice. This pattern was maintained along both recordings.

**Conclusions:** Most pediatric residents in this general outpatient clinic do not perform consultations including the parents' perspective. Audio-video recording of the consultation seems to be a good tool for the assessment of clinical competences.

**Take home message:** Since most residents do not have the competence for conducting a patient-centered consultation, specific teaching strategies should be introduced in the residency programs.

## 10G Oral Presentations Curriculum Evaluation 2

### 10 G 1

#### **"Does my S3 look big in this?" Crafting invisible maps of the body**

K Fleming, G Finn, JC McLachlan (University of Ulster, York Street, Belfast BT15 1ED, United Kingdom)

**Background:** Examples from a Wellcome Trust funded collaboration of medical educators and artists at 2 UK Universities will: 1) Illustrate the use of cross-disciplinary methodologies and artefacts in medical education environments; 2) Demonstrate that mapping from reference material onto real anatomies has implications for learning, interpretation, behaviour and application of knowledge and skills; 3) Conclude with how cross-disciplinary engagement enhances scientific understanding and contributes to a sustainable disciplinary curriculum.

**Summary of work:** Culturally constructed views are challenged through material interactions and the creation of crafted structures mapping dermatomes, Langer lines and Blaschko lines. The role of making and the haptic in learning, professionalism and developing medics' emotional intelligence will be examined. 'Doing' is an important part of deep learning that is reinforced by the kinaesthetic engagement. The 'desensitisation' of medical students has been seen as a desirable outcome of their education.

**Summary of results:** In a context of the body (medical/aesthetic/cultural), it will be shown that meaning, value and behaviour can be developed in cross-disciplinary contexts through making, visual mapping, tactility and engagement with crafted artifacts challenging existing canons.

**Conclusions and Take home messages:** FOUR purposes will be described- information, empathy, explanatory and narrative- through THREE engagements - incision gown, body painting, and dermatome 'jeans' – “Does my S3 look big in these?”

## 10 G 2

### **A low-cost method for performing a curriculum gap-analysis in developing countries: Medical school competencies in Ghana**

S Rominski, K Nkyekyer, K Danso, P Donkor, A Lawson, D Stern (University of Michigan, 717 E. Huron St., Suite 1E, Ann Arbor 48104, United States)

**Background:** In this study, we undertook a comparison of the international, national, and local curricula of Ghanaian medical schools in order to identify gaps.

**Summary of work:** The Ministry of Health and the two major sites for medical education in Ghana (UGMS, KNUST) participated. Two US consultants (DS, SR) compared the medical school and Ministry curricula to internationally validated outcome standards for medical education, the Global Minimum Essential Requirements (GMER). The comparisons were then edited and validated by leaders of medical education in Ghana.

**Summary of results:** The KNUST team identified 6 gaps in their curriculum and the team from UGMS identified five. The Ministry standards were found to have 6 gaps, many of which overlapped with those found in the Ghanaian medical school curricula.

**Conclusions:** This analysis is a first step to determining physician training competency and an inexpensive method for identifying agreed-upon gaps in the current national requirements and local curriculum.

**Take home messages:** Future work could focus upon closing these competency gaps, on policy recommendations to the Ministry, and on measuring whether the written curriculum and learned curriculum are concordant.

## 10 G 3

### **Institutional self review using the WFME Standards**

GR MacCarrick, CJ Kelly, CO Boyle (Royal College of Surgeons in Ireland, 123 St Stephen's Green, Dublin 1, Ireland)

**Background:** Curriculum reform poses significant challenges for medical schools across the globe. The threat of formal accreditation can be the most significant external driver for change. What if no such external threat exists?

**Summary of work and Conclusions:** This paper describes an international medical school's experience of institutional self review. Although fully accredited with the Irish Medical Council the Royal College of Surgeons in Ireland (Medical School) sought additional detailed review of all aspects of its undergraduate medical program. Following a comprehensive self review using the World Federation for Medical Education (WFME) standards in 2005, five internationally renowned medical educationalists were invited to visit the College to act as 'critical friends'. A series of recommendations were made and acted upon by faculty. Three years later a follow up self review was conducted which demonstrated that significant progress had been made towards best practice against all nine standards.

**Take home message:** The process of institutional self review (as opposed to more high stakes accreditation) can bring about significant reform, especially when supported by a panel of 'critical friends' working alongside faculty to help guide and support sustained curriculum reform.

#### 10 G 4

#### **Medical students' perspectives of educational quality: A phenomenological study of the 'Student Voice'**

AE Griffin (Academic Centre for Medical Education (ACME), Division of Medical Education (DoME), UCL Medical School, University College London, Whittington Campus, 4th Level, Holborn Union Building, 2-10 Highgate Hill, London N19 5LW, United Kingdom)

**Background:** Higher education has undergone significant change; the student demographic, massification, commodification and shifting pedagogic practices all potentially impact on students experiences, yet qualitative reports from the student-stakeholder, the students' voice, are rare.

**Summary of work:** This study explored students' perceptions of educational quality at medical school. Interpretative phenomenological analysis was employed to generate meanings from focus-groups which afforded 'experience-close' encounters. The data generated revealed the lived, human experience; students' subjective, first-person, accounts alongside the context in which they arose.

**Summary of results:** Educational quality is complex and multi-factorial; however, the central importance of teaching, in particular the doctor-student relationship, seems to transcend all other issues. Changes in students' perceptions of educational quality occur with time, many attributable to changing pedagogic relationships and transition to ward-based learning.

**Conclusions:** Whilst there is overlap between faculty and students' perspectives on the constructs of quality, this study revealed some fundamental mismatches: students' perspectives were not fully captured by existing evaluation practices.

**Take home messages:** If our evaluation practices seek to assess the genuine student experience, to permit a fuller articulation of their voice, we need to review current practices, in particular, revisiting the methods used to appraise the clinical learning environment, and create opportunities to hear students' accounts.

## 10 G 5

### Using CurrMIT for curriculum evaluation

M Echols (Nova Southeastern University College of Osteopathic Medicine, 3200 S University Drive, Ft. Lauderdale 33324, United States)

**Background:** Curriculum evaluation is dependent upon accessing data about the curriculum. The curriculum management database, CurrMIT, has been available through the American Association of Medical Colleges (AAMC) for approximately ten years.

**Summary of work:** Nova Southeastern University College of Osteopathic Medicine (NSU-COM) purchased CurrMit in 2006. Education Coordinators were trained on the software program. Working with Course Directors, the coordinators entered data for M1 & M2 courses into CurrMit.

**Summary of results:** CurrMit is used to identify curriculum topics which are redundant or lacking, identify department and faculty contributions to education, identify teaching modalities used in the curriculum and generate course syllabi. CurrMit has proved to be an effective tool in mining curriculum data for grant proposals, justification for expansion of faculty positions and administrative reports.

**Conclusions:** Having excellent curriculum data not only provides ongoing opportunities to assess and evaluate curriculum, but also to complete curriculum surveys, submit administrative reports, produce course syllabi and manage curriculum with ease. CurrMit provides quick access to curriculum data to support funding requests and develop grant proposals.

**Take home message:** You cannot evaluate a curriculum without a database. CurrMit is an effective database which improves curriculum evaluation and provides data for funding opportunities.

## 10 G 6

### Curricular modification impact on 1<sup>st</sup> time USMLE Step 1 Examination passing rate at The American University of The Caribbean, School of Medicine

Thackery S Gray (The American University of the Caribbean, St. Maarten, Netherland Antilles)

The American University of the Caribbean has implemented a modified curriculum over the past three years for students who are in their first two years of preclinical sciences. The curricular changes involved a combination of integrating basic science courses, assessment administration, and phasing in an expanded clinical medicine curriculum. We also have provided a more extensive pre-clinical preparation for the USMLE Step 1 examination. After phasing these changes into the curriculum over several semesters we have observed a substantial increase in Step 1 first time passing rate for our students who participated in the new curriculum. The first time USMLE Step 1 examination passing rate for our students improved dramatically from 79% (2007) to over 90% (2009). We will summarize the curricular changes and present data that demonstrate the effectiveness of curricular change. We conclude that the curricular changes contributed to the improved USMLE Step 1 examination initial passing rate.

## 10 J Workshop

### **Creating an OSCE for assessing humanism, moral development, or cultural competency**

D Hirsh, M Ho, S Tsai, E Gauferg (Harvard Medical School and National Taiwan University, Cambridge Health Alliance, Department of Medicine/4th Floor Macht Building, 1493 Cambridge Street, Cambridge, Massachusetts 02139, United States)

**Background:** OSCEs are a staple of clinical assessment and their use for social aspects of professional assessment such as cultural competency is growing. However, the use of OSCE in assessing moral reasoning and humanism within or across cultures is nascent.

**Outcomes:** The workshop should advance the principles, actual structures, and applications of a "moral reasoning" or "humanism" OSCE. Participants should leave with actual preliminary OSCE cases they create to assess these core professional attributes within or across cultures.

**Structure:** Introductions/brief review of session goals/method (a "think tank"), brief needs assessment of participants, and review of assessment of cultural comp, humanism, moral development (20 minutes). Dedicated small groups work creating goals and actual structure of OSCE stations with "consultations" from session leaders (40 minutes). Larger group discussion to address problems encountered and anticipate practical (20 minutes). Participants should leave session with a preliminary "product" (OSCE station).

**Intended audience:** For faculty involved in training or assessing humanism, moral reasoning, or cultural competency or those involved in general clinical assessment or curriculum design.

**Level of workshop:** For faculty initiating development of or extending experience in OSCE design and the assessment of moral reasoning and humanism within or across cultures.

## 10 K Workshop

### **Navigating excellence and equity in performance-based assessment**

S Razack, Y Steinert, F Bhanji, B Hodges (Centre for Medical Education, McGill University, Lady Meredith House, 1110 Avenue des Pins Ouest, # 205, Montreal, Quebec H3A 1A3, Canada)

**Background:** Globalizing health professions workforces, societal demands for reliable evaluation of practice-readiness, and concerns for an equitable assessment process for students from diverse backgrounds raise important concerns for the design of equitable performance-based assessment to evaluate clinical competence. Assessment design has focused on psychometric properties as the means to judge the value of tools in determining candidates' competence. Sociological dimensions of assessment, including equity for underrepresented groups, cultural biases, and the interpretative nature of concepts such as 'validity' provide another important lens with which to examine performance-based assessments. The authors have designed an interactive workshop looking at the evaluation of performance-based assessment from both the psychometric and the sociological perspectives.

**Intended outcomes:** At the end of this workshop participants will be able to 1. Describe the common psychometric indicators used in interpreting the validity of performance-based assessment in specific

contexts; 2. Identify the social dimensions inherent in assessment processes; 3. Analyze performance-based assessment scenarios with respect to psychometric and social concerns.

**Structure:** · Interactive plenary using the thread of an assessment case-study to highlight psychometric and sociologic dimensions in assessment; · Small group work regarding participants' own experiences with assessment; · Wrap-up.

**Intended audience:** Health professions educators involved in assessment.

## 10 L Workshop

### **A novel approach to enhancing realism in simulation-based training and assessment: introducing the VentriloScope**

G Tunncliffe, R Kneebone (St Mary's Hospital, Praed Street, London W2 1NY, United Kingdom)

**Background:**The VentriloScope (VS) offers an innovative approach to simulation-based training and assessment. A wireless transmitter sends authentic recordings of heart, lung or bowel sounds to a stethoscope-mounted receiver. A Standardised Patient activates signs during the clinical examination, simulating a range of auscultatory findings. VS may address some limitations of using Standardised Patients, who provide great interpersonal realism but lack clinical signs of acute illness.

**Intended outcomes:** Participants will gain hands-on experience of this new technology and explore its potential for patient-focused assessment. The workshop will demonstrate planning a VS teaching/assessment session as well as evaluating the validity of its use within a clinical scenario.

**Structure:** 20 minutes: Introduction, illustration of a clinical scenario employing the VS, explanation of technology and overview of workshop; 50 minutes: Participants will use the technology within 2 further scenarios, experiencing the roles of standardised patient, candidate and facilitator; 20 minutes: Group discussion of strengths, limitations and potential uses of this device for teaching and assessment.

**Intended audience:** Any medical educator involved in the education and evaluation of clinical skills

**Level of workshop:** Intermediate.

## 10 M Workshop

### **Catch them while you can: systematic identification and remediation of unprofessional behavior in medical students**

R L Hernandez, P E Mendez, A J Mechaber, M T O'Connell (University of Miami Miller School of Medicine, Miami, United States)

**Background:** Professional behavior is a critical competency to assess in all medical students. Literature has shown that students who display unprofessional behavior in medical school are more likely to replicate these behaviors in later years. Barriers in systematically identifying students who display these

behaviors early on exist in many institutions. In addition, experience with strategies to remediate these students is limited. During this workshop, we will identify these barriers and discuss why identifying these students is often difficult and ineffective. Participants will be asked to review several medical student cases as part of the discussion. We will present a comprehensive system in place at the University of Miami Miller School of Medicine used to identify, review and remediate the unprofessional behavior of students. A unique remediation program has also been established which includes psychological evaluation, drug testing, close monitoring, and 360<sup>0</sup> evaluations. Data will be provided describing outcomes of students enrolled in this program over the past several years. We will offer strategies for developing similar systems at other institutions.

**Intended Outcomes:** By the end of the workshop, participants will be able to: (1) Describe barriers in systematically identifying students who display unprofessional behaviour; (2) Appreciate the importance of using a systematic approach within the School to identify, label and review cases of unprofessional behaviour; (3) Describe a comprehensive program being utilized to evaluate, monitor remediate students displaying unprofessional behaviour.

**Structure:** Introduction to the problem and goals of the session (5 minutes); General discussion asking audience members to identify barriers to labeling and reporting unprofessional behavior (15 minutes); Presentation – UMMSM’s Physicianship and Professionalism Advocacy Program, providing processes (PIRs and PEFs) for identifying and reporting unprofessional behavior (15 minutes); Breakout Cases – four student cases are presented to small groups. Each group will discuss how their home institutions would handle these cases (20 minutes); Regroup – small groups would return to large group and discuss how they would attempt to identify, report and manage these cases at their home institutions (20 minutes); Presentation – Describe what happened in each of the four student cases (15 minutes); Presentation – UMMSM’s program (PDP) for remediating unprofessional behavior, along with outcomes data and how schools can set up their own programs (15 minutes); Open discussion (15 minutes).

**Intended Audience:** This workshop is intended for any medical educator who participates in the training of medical students.

**Level of Workshop:** This workshop is intended for individuals with minimum to advanced experience in medical student education.

## 10 N Workshop

### **Faculty Development: formative feedback and creation of Individualized Learning Plans (ILPs)**

C Bernat, J Christner (University of Michigan Medical School, 1135 Catherine St., 3960B Taubman Medical Library, Ann Arbor 48103, United States)

**Background:** The provision of formative feedback based on direct observation of a learner’s performance is a necessary skill for faculty educators, whether done in the context of educational exercises or students’ clinical work. Another vital component of feedback is working with students to establish achievable learning goals to assist them in their clinical development. This workshop is designed to teach faculty and other medical educators how to create achievable learning goals with students as part of a larger feedback discussion.

**Intended outcomes:** At the end of this workshop, participants will be able to: • Describe the tenets of

successful formative feedback; • Utilize forms to organize the feedback discussion; • Understand what ILPs are and their purpose; • Create ILPs.

**Structure:** Welcome (5); Formative Feedback (30); Group discussion; Tenets of formative feedback; Successful vs. unsuccessful feedback; Sample FB forms and their use; Individualized Learning Plans (45); Importance/purpose; Break-out session/case scenarios; Group discussion; ILP toolkit; Conclusions (10).

**Intended audience:** This workshop is intended for faculty or other non-physician medical educators seeking a broader understanding of formative feedback and creation of ILPs with learners.

**Level of workshop:** Appropriate for any audience.

## **10S Posters Team-based and Workplace Assessment**

### **10 S 1**

#### **Assessing needs of interdisciplinary teams: A case study in critical care**

M Dupuis, P Cardinal, M Ferland, F Leblanc, JM Baril, A Landriault, Michèle Gagnon, S Murray (S Hayes to present) (AXDEV Group, 8 Place du Commerce, Suite 210, Brossard J4Z 3H2, Canada)

**Background:** Inter-disciplinary teams (IDT) are playing an increasing role in Canadian healthcare. The needs of such teams are distinct and require explicit assessment to determine how IDT processes and outcomes can be improved. A case study approach was employed to assess the educational needs, clinical challenges, and contextual issues of IDTs in critical care of three community hospitals in Quebec's Gaspésie Region.

**Summary of work:** Participants included critical care physicians (n=18), nurses (n=28), respiratory therapists (n=5), and pharmacists (n=6) from the three hospitals. Data collection included: a) discussion group: physicians; b) discussion group: nurses and respiratory therapists; c) interviews: internists and pharmacists; d) questionnaires with all participants. Data was collected from March to August 2008.

**Summary of results:** Study domains included 1) challenges and successes working in IDT; 2) knowledge and attitudes regarding working as an IDT, 3) knowledge and attitudes toward the actual team functioning, communication processes, leadership, and each member's roles and responsibilities; and 4) educational needs and characteristics of the hospital setting.

**Conclusions:** This approach to evaluate IDTs allows a comprehensive assessment of challenges and needs from multiple perspectives and data collection methods.

**Take home messages:** Contextual issues and organizational challenges of IDTs must also be identified to inform and optimize the value and impact of educational interventions.

## 10 S 2

### **Moving interprofessional (IP) learning beyond the classroom: Lessons learned from four student placement models**

T Hatch, L Guirguis, M Hall, R Kahlke, S King, L McFarlane, S Mulholland, S Patterson, J Pimlott, S Sommerfeldt (University of Alberta, 218 Telus Centre, 87 Avenue and 111 Street, Edmonton T6R 2R1, Canada)

**Background:** Eight University of Alberta Health Science Faculties collaborate to develop and deliver interprofessional education (IPE), including one elective course which provides students with practical and immersive IP experience in a clinical setting. Through this experience, health science students enhance their IP skills and knowledge by building on four IP competencies: communication, collaboration, role clarification and reflection.

**Summary of work:** Over the last decade the course has been offered using four models: 1) IP student teams form to complete a project while engaged in discipline specific clinical placements; 2) individual students engage with a practicing IP team; 3) individual students are matched with a patient mentor to experience the patient's health network; and 4) individual students engage with IP clinical and administrative teams in an Interprofessional Clinical Learning Unit.

**Summary of results:** This presentation will compare the models, focusing on how the benefits (student engagement, knowledge transfer to workforce) and challenges (ethical, logistical) impact student learning.

**Conclusion:** Analysis of these models provides insights into effective strategies for moving IPE from the classroom to practice settings.

**Take home message:** Flexibility balanced with sufficient structure is necessary to meet student, clinical site, and faculty needs, and to ensure sustainability.

## 10 S 3

### **Implementation of Team-Based Learning in a Microbiology Course**

Jennifer W Gibson, Annie Daniel, Deborah Larimer, Kerstin Honer zu Bentrup (Tulane University School of Medicine, Office of Medical Education, 1430 Tulane Ave, SL-6, New Orleans, LA 70112, United States)

**Background:** Team-Based Learning (TBL) was recently implemented in a medical school basic science curriculum. TBL is a 3-phase teaching method in which students are assessed once individually and twice as a team (Michaelsen et al, 2008). The current study assessed outcomes of TBL in a Microbiology course.

**Summary of work:** Microbiology students (N=178) were assigned to one of 30 teams with 5 to 6 members each. During the 5-week course, students completed individual and group quizzes and peer evaluations in 4 TBL sessions. Two multiple-choice course exams were also administered. Scores were analyzed to determine whether there was a relationship between TBL scores and course exam scores.

**Summary of results:** Teams performed higher than individual students in TBL (mean group score 96.6%, mean individual score 69.7%). Significant positive correlations existed between individual TBL performance, peer evaluation scores, and exam scores ( $p < .01$ ).

**Conclusions:** Group performance exceeded individual performance. Additionally, students who performed better on the individual TBL quiz performed better on the course exam.

**Take home message:** Those who prepare well for the individual TBL quiz tend to perform better on the course exams.

#### 10 S 4

##### **Evaluation of a collaborative clinical training experience for emergency medicine residents and emergency nurse practitioner students: Effects on management and clinical skill development**

D Dowling Evans, R Seitz, M Mott, J Gordon, K Heilpern (Emory University, 1520 Clifton Road, Atlanta, Georgia 30322, United States)

**Background:** Emergency department efficiency and successful patient outcomes depend on effective communication between emergency care providers. This study assessed whether a special training program in which emergency medicine residents (EMRs) mentoring student emergency nurse practitioners (ENP-Ss) improves managerial skills in EMRs and communication confidence and clinical skills in ENP-Ss.

**Summary of work:** EMRs (n = 22) and ENP-S (n = 26) completed a 100- hour training program in which EMRs mentored ENP-Ss. Surveys were then administered to assess post-training EMR confidence in managing ENP-Ss and ENP-Ss communication and clinical skills confidence.

**Summary of results:** Among EMRs, 65% (95% CI: 41% - 85%) reported that the training program made them more confident to manage ENPs in the future. Among ENP-Ss, 78% (95% CI: 56% - 93%) reported increased confidence in communicating with physicians and 83% (95% CI: 61% - 95%) reported enhanced skill in clinical procedures. A majority of EMRs and ENP-Ss (76% and 87%, respectively) had a positive view of the training program..

**Conclusions and take home message:** A training program that partners EMRs and ENP-Ss improves managerial skills in EMRs and communication confidence and clinical skills in ENP-Ss. Such programs should be considered in emergency medicine residency and ENP training.

#### 10 S 5

##### **Prescribing competence is influenced by undergraduate professional background**

M Spooner, J Strawbridge, RT Brady, R Mullen, SJ O'Neill, J Kelly, NG McElvaney (Departments of Medicine and Pharmacy, Royal College of Surgeons in Ireland, Beaumont Hospital, Beaumont, Dublin D9, Ireland)

**Background:** Medication errors contribute to patient morbidity and mortality. To address this training gap, a joint initiative between the departments of Medicine and Pharmacy was introduced in the form of an online problem –based inter-professional prescribing module. Five themes of prescribing concern were identified and assessed.

**Summary of work:** The programme was offered to Final year medical students (FYM), postgraduate pharmacy interns (PPI) and postgraduate medical interns (PMI). An initial multiple choice question examination was performed to assess baseline competence.

**Summary of results:** There was no overall difference between the 3 groups all scoring below 35%. Sub-analysis, revealed no differences between FYM and PMI . The PMI scored highest in prescribing warfarin ( 51% correct, PPI 39%,  $p<0.05$ ) and antimicrobials (39% correct, PPI 24%,  $p<0.05$ , and management of medication side-effects (53% correct, PPI 37%,  $p<0.05$ ) The PPI scored highest in palliative prescribing (36% correct, PMI 22%,  $p<0.05$ , prescribing science (53% correct, PPI 37%,  $p<0.05$ ) and legal prescribing (25% correct, PPI 8%,  $p<0.05$ ) .

**Conclusion:** Analysis of pre-course competency indicates suboptimal baseline knowledge in all groups; however sub-analysis demonstrates that selected groups have superior proficiency in specific areas related to their professional background.

**Take home message:** An inter-professional prescribing programme can characterize learning patterns and knowledge of healthcare graduates.

## 10 S 6

### **How does education fit within a modern health care commissioning model?**

K Llewellyn-Date, D Sandhu (Severn Deanery, NHS Education SouthWest, Deanery House, Vantage Office Park, Old Gloucester Road, Hambrook, Bristol BS16 1GW, United Kingdom)

**Background:** Health Care Commissioners (HCC) will develop systems for health and social care that increase capability, capacity, be cost effective and more transparent and accountable. Future medical training will have to fit in within this model.

**Summary of work:** HCC are aligning services on the following 5 principles: 1. Co-production – need to work with all stakeholders; 2. Subsidiarity – devolve power and decision making to patients; 3. Clinical Leadership – align processes and practices; 4. System alignment – work together and pull in the same direction; 5. Clear Accountabilities – commissioners and providers have to work together.

**Summary of results:** While the systems bed down and in the interests of reducing costs there is a danger that the provision of medical education will get overlooked. Two recent examples of commissioning Toxicology and Child & Adolescent Psychiatry have already resulted in no provision for training.

**Conclusion:** Need to assess the quality, benefits of service intervention, research on improved outcomes, prevention of ill health and early diagnosis. Educationalists and Deans need to engage with commissioners, and ensure, that training has a high profile so that it can deliver on a workforce fit for purpose.

**Take home message:** Ignore health and social care commissioners at your peril.

## 10 S 7

**(to be presented as oral presentation 3 C 5)**

## 10 S 8

### Clinical assessment in Internal Medicine

D A Kandiah (Royal Brisbane and Women's Hospital, Po Box 315, RBH Post Office, Herston, Queensland 4029, Australia)

**Background:** Internal medicine is a major part of a medical curriculum. The breadth of knowledge required makes it difficult for students to cover all topics. There has been much work done recently on the use of Mini-Clinical Examinations (Mini-CEXs) and Case-based learning (CBLs) as part of formal assessments of clinical skills.

**Summary of work:** Full time clinical students are currently assessed with Mini-CEXs and CBLs. This forms part of their formative and summative assessments at Griffith University School of Medicine. In the foundation year of the programme, the process was developed and modified to maintain consistency and equity for all students.

**Summary of results:** Recommendations after a year of using this form of assessment are as follows: In the 2 summative mini-CEXs allocated to their medical rotation, one should be on a clinical assessment consistent with their level of training and experience and the other on counselling. Examples include a full neurological examination and discharge drug counselling. The CBLs should be on at least 5 systems to both understand the clinical and management issues.

**Conclusions and take home messages:** Assessment tools can also be used as educational exercises and should be refined and evaluated regularly so that criterion-referenced consistency and accuracy can be achieved.

## 10 S 9

### Developing workplace based performance assessments for established community pharmacists

M Rhodes, N Brown, P McAvoy, W Rial (National Clinical Assessment Service (NCAS), Market Towers, 1 Nine Elms Lane, Vauxhall, London SW8 5NQ, United Kingdom)

**Background:** The National Clinical Assessment Service (NCAS) helps employers in the UK manage performance concerns in established health care practitioners. This may involve a holistic workplace based performance assessment. From April 2009 NCAS has extended its service to include pharmacists.

**Summary of work:** To develop the assessment framework for community pharmacists we:- Established a working group of stakeholders including academics and practising pharmacists; Conducted half day visits to multiples and independent pharmacists to pilot and refine the assessment instruments; Developed patient and colleague feedback questionnaires; Developed a high fidelity simulation of pharmacy practice; Trained peer and lay assessors and conducted pilot visits.

**Summary of results:** Issues that have been identified and addressed have included:- Lack of clinical records for most interactions; Patient anonymity in many consultations leading to issues of patient consent; 35% of the profession in the UK are locums, often peripatetic; Low level challenge for many patient interactions; Many activities are delegated and are not centred on individual patients.

**Conclusions and Take home message:** Community pharmacists present unique challenges for conducting workplace based assessments. Valid and reliable assessments have been shown to be a practical proposition.

## 10 S 10

### **Innovation in CPD: implementing a comprehensive teamskill competencies program integrating the best practices of the aviation world in simulation and e-training**

RL Thivierge, JV Patenaude, P Drolet, M Aylward, M Powers, C Anderson, A Robitaille, A Boucher, G Herve (Université de Montréal, Canada)

**Background:** Interprofessional collaboration is increasingly identified as a key element in improving healthcare and safety outcomes. Previous attempts at teaching collaboration skills to healthcare professionals have met with mixed success. Crew Resource Management (CRM) and Threat and Error Management (TEM) are aviation teamwork concepts focussing on: (1) establishing shared awareness of situations and team roles and resources; (2) identifying potential threats early to plan preventative measures; (3) recognizing errors quickly and acting to minimize ill effects.

**Summary of work:** The University of Montreal and CAE are collaborating on a blended learning course involving simulation and the application of CRM and TEM concepts to healthcare to: (1) manage crises; and (2) take preventative steps to recognize threats and avoid errors.

The poster will (1) characterize competencies required for effective teamwork; (2) discuss use of simulation to practice teamwork skills; (3) discuss integration of skills maintenance training with development of professional communities of practice; (4) discuss tools needed for near and long term evaluation.

## 10 S 11

### **Multi-level outcomes assessment for team training: Using Kirkpatrick's Model to evaluate teamwork at Naval Medical Center Portsmouth**

TR Turner, VA Parodi, MW Scerbo (Naval Medical Center Portsmouth, VA, 246 Red Cedar Court, 1A, Chesapeake 23320, United States)

**Background:** Teamwork failures are the leading cause of adverse patient outcomes (JCAHO, 2006; Sorbero et al., 2008); yet recent research on healthcare team training efficacy has yielded mixed results (Nielsen et al., 2007; Salas et al., 2006; 2008). One reason for this is the complexity of linking team performance characteristics to measurable outcomes. Few healthcare team training programs currently implement a comprehensive evaluation protocol, thus failing to demonstrate the achievement of intermediate training objectives and outcomes.

**Summary of work:** We have developed a multi-level assessment protocol for healthcare team training results. Our protocol involves four distinct levels of evaluation: reaction, learning, behavior, and results (Kirkpatrick, 1994). We first establish that our program is valued by trainees with reaction surveys. Trainees should also be able to demonstrate requisite knowledge and attitudes on a set of questionnaires designed specifically for our program. Simulated cases provide specialized observers an opportunity to assess key teamwork behaviors in a controlled environment. Finally, metrics recorded and analyzed by individual units should demonstrate transfer of training, improved patient outcomes, and increased efficiency.

**Summary of results and conclusion:** We are currently establishing the psychometric properties of our knowledge and attitudes assessment instruments. We are developing parallel forms of the knowledge

assessment tool for pre- and post-training comparisons. We are also training specialized observers to rate team performance in our units via behavioral checklist.

## **10 T Posters OSCEs in Undergraduate Education**

### **10 T 1**

#### **Medical students' communication skill outcomes after specific undergraduate training**

C Chung, J Florido, M<sup>a</sup>C Chung, R Gómez, JM Peinado (Departamento de Obstetricia y Ginecología, Universidad de Granada España, Avda de Madrid s/n. Pabellón de Especialidades, 7<sup>a</sup> Planta, Hospital Universitario San Cecilio, Avda. de la Constitución 19- 1ro C, Granada 18014, Spain)

**Background:** Doctors must be able to communicate clearly and sensitively with patients and their relatives. Despite this important fact, today, it is generally accepted that standardized communication skills training is needed at the undergraduate level, although these skills are acquired usually as part of the so called hidden curriculum. Few medical schools offer specific courses.

**Summary of work:** The purpose of the present study was to determine by an OSCE performance of 1637 students, whether 680 students who received communication skills training, perform better in doctor-patient communication by standardized patients, than 957 students without. Of those who received training, 432 received a training course during the third year of their studies, while 248 were trained in a voluntary specific communication courses.

**Summary of results:** The analysis of the global communication skill results shows that students who received training had an average score (67.97), significantly higher than those that did not (64.59). ANOVA analysis ( $p < 0.005$ ) shows also, that the rating is higher in those who made more than one year training.

**Conclusion and take home message:** Communication skills training significantly improve student performance of OSCE assessment. We suggest that all new undergraduate medical curricula should introduce specific communication skill courses.

### **10 T 2**

#### **Does clinical performance on third year required clerkships reliably identify students with serious deficiencies in clinical skills?**

CB White, ME Hernandez, J Purkiss, JC Fantone (University of Michigan Medical School, 1135 Catherine Street, Ann Arbor, MI 48109, United States)

**Background:** The summative OSCE, given at the end of the third year, often detects students with serious deficiencies. Earlier identification and remediation of these students is desirable. This study examined the relationship between third year clinical performance on each of seven required clerkships and performance on the OSCE.

**Summary of work:** Overall clinical performance was measured for 500 students (2007-2009) using a standard clerkship assessment instrument (12 items, 9 point scale). Correlations were examined between scores for each clerkship and each OSCE station, and mean overall OSCE and mean overall clerkship performance. Based on mean clinical performance, the students were stratified into quintiles and the correlations re-examined.

**Summary of results:** Overall clinical and CCA performance were moderately correlated ( $R=0.368$ ,  $p<0.001$ ;  $R\text{-squared}=0.135$ ). For students in the top quintile the correlation persisted ( $R=0.386$ ,  $p<0.001$ ;  $R\text{-squared}=0.149$ ), but there were no significant correlations for the other quintiles.

**Conclusions:** These findings suggest clerkship grades are associated with, but do not reliably predict, poor performance on the summative OSCE. They also suggest that the OSCE is measuring something different than the clinical clerkships.

**Take home message:** Overall clinical performance, as measured by clerkship evaluations, is unlikely to reliably identify students at risk for poor summative OSCE performance.

### 10 T 3

#### **Approach to communication and documentation in the end-of-life: an evaluation of medical students with OSCE methodology**

A Lopes, R Daud-Gallotti, A Marruaz, M Marcela, B Tess, L Zambon, I Velasco, M Martins, I Tibério (University of São Paulo - Faculty of Medicine, Rua Teodoro Sampaio - 763, apto 53, Sao Paulo 05405-050, Brazil)

**Background:** Issues related to approach to the end-of-life are discussed during medical undergraduation. Few methodologies have been driven to evaluate medical students in those situations.

**Summary of work:** In 2009 a scenario with a patient in palliative care was included in an OSCE evaluation of 167 6th year medical students. The scenario of the OSCE station was related to a home care visit by a family physician to a patient of whom decision was not receive any end-of-life interventions. During the clinical examination, student noticed that the patient had no pulse. OSCE station checklist evaluated a Death-domain (Not resuscitate/Declare the death/Not send to necropsy/Fill the Death Certificate) and an Empathy-domain with a Likert scale. Statistical analysis was performed.

**Summary of results:** Students presented a high mean global OSCE performance (mean $\pm$ SD:  $77.3\pm 1.4\%$ ), with higher mean score in Death-domain ( $81.1\pm 13.5\%$ ) than in Empathy-domain ( $65.0\pm 11.1\%$ ). Despite of high OSCE performance,  $22.8\%(\pm 3.5)$  of students tried resuscitation maneuvers and  $25.1\%(\pm 3.8)$  indicate necropsy to a palliative care patient.

**Conclusions:** Even with discussion during undergraduation of aspects related to the end-of-life, these issues need to be reinforced.

**Take home messages:** Improving undergraduation discussion of palliative care could contribute to relieve patient and family suffering and decrease government expenses.

#### 10 T 4

##### **'Did you clean your hands?' – Revisiting hand cleaning behaviour in major summative OSCE examinations**

H Magee, R Nicholas, A Feather (Barts and the London Medical School, Queen Mary's, University of London, Garrod Building, Turner Street, Whitechapel, London E1 2AD, United Kingdom)

**Background:** In 2000 we showed that medical students rarely washed their hands in a high stakes OSCE examination (n = 25/187, 13.4%). We called for 'hygiene marks' to be incorporated into all OSCE checklists and this subsequently became the norm in UK medical schools.

**Summary of work:** Nine years later we re-examined this important professional behaviour in our major summative OSCEs. 'Hand cleaning' items are included on all of our clinical examination checklists both pre and post-contact with the patient.

**Summary of results:** Data analysis shows that: (a) Comparing similar OSCE stations (Neurological assessment of the lower limbs (2000) vs Examination of the Hip (2009)), we found a significant positive change in behaviour (n = 325/342, 95.0%); (b) This was maintained in all five examination stations in the final year and in examination stations throughout years 1 – 5 in the summative OSCE, 2009, both prior to and after contact with patients (Range 74.1% - 100%, Mean 90.1%); (c) At all stages there was a significant difference between the pre (Mean 93.3%) and post contact (Mean 83.7%) hand cleaning behaviour.

**Conclusion and take home message:** We discuss how these changes have been achieved, whether they are simply rote 'assessment behaviours', and why we are still unable to influence NHS hospital acquired infection rates.

#### 10 T 5

##### **SCAss -Standardized Clinical Skills Assessment: A practical exam for a cohort of more than 700 2nd year medical students**

Michaela Wagner-Menghin, Ingrid Preusche, Michael Schmidts (Medical University of Vienna, (MUV), Vienna, Austria)

**Background:** Organizing a practical assessment (PA) with a cohort of 700 is a challenge. Problems emerge with providing enough rooms, time, trained examiners, and keeping stations confidential. OSCEs were therefore not implemented at MUV until recently.

**Summary of work:** SCAss is developed to overcome these problems and to introduce standardized practical assessment at MUV. OSCE's essential elements (sampling of predefined standardized situations and examiners, standardized rating against predefined criteria) are kept. Dissemination of station content is accepted as it drives learning and stations cover mostly procedural facts.

**Summary of results:** The 26 stations' psychometric quality is satisfying thus indicating construct validity. Administering 5-6 stations/student is feasible within resources, thus reliability of individual's score is low. Students practice procedures at length caring to stick to the standardized course of action.

**Conclusions:** SCAss is suitable to overcome the difficulties connected with practical exams for large-cohorts.

**Take home messages:** A five-station PA is better than no PA, primarily in terms of educational impact on learning and formative evaluation.

#### 10 T 6

##### **Assessment of a patient safety program during clerkship with a standardised-patient based OSCE**

R Daud-Gallotti, LS Zambon, A Scalabrini-Neto, MA Martins, IT Velasco, IC Tibério (University of São Paulo School of Medicine, Rua Dr Enéas de Carvalho Aguiar, 255, ICHC, Room 5023, São Paulo 05403-000, Brazil)

**Background:** Patient safety (PS) is a growing field in Medical Education. Clerkship is the ideal moment to incorporate and train PS-contents. OSCE is considered a powerful tool in evaluating PS-competencies.

**Summary of work:** To determine the performance of 5th and 6th year medical-students in an OSCE PS-station, emphasizing physician-patient-relationship (PPR) issues and medical-error (ME) recognition and disclosure. Since 2007 a formal PS-program has been performed in our clerkship. Standardised-patient based OSCE station related to PS-competencies was applied in 2008 and 2009 for 5th and 6th year medical-students. PS-checklist, completed by standardised-patients, was divided in 2 domains: ME-recognition/disclosure and PPR-issues.

**Summary of results:** OSCE was applied to 552 medical-students (326 males). Mean global OSCE PS-station score (mean  $\pm$  SE) in these two years was 86.92 $\pm$ 0.63. They had better performance in PPR-domain than in ME-domain (PPR: 91.93 $\pm$ 0.67; ME: 81.90 $\pm$ 1.02,  $p < 0.001$ ) Mean score remained stable in PPR-domain (2008: 92.24 $\pm$ 0.79; 2009: 91.54 $\pm$ 1.14,  $p = 0.60$ ) and increased in ME-domain (2008: 73.95 $\pm$ 1.53; 2009: 91.93 $\pm$ 0.93,  $p < 0.001$ ).

**Conclusions:** it was noticed that the mean scores are better in PPR than in ME domain, but the latter shows improvement between the two years. Take-Home Messages:

**Take home messages:** A PS-program is a valuable tool to increase PS-competencies during clerkship, reinforcing positive role-models.

#### 10 T 7

##### **Identifying the clinical reasoning problems described by medical students who failed a comprehensive senior OSCE using a critical items standard**

L Wilkerson, C Stevens, CC Fung, T Spector (David Geffen School of Medicine at the University of California, Los Angeles, Box 951722, Los Angeles, CA 90405-1722, United States)

**Background:** Standard setting for OSCE assessment continues to be debated in the literature. Using a consensus panel of faculty, we developed a Critical Items (CI) standard based on 2-5 critical items per case for a senior OSCE. What problems in clinical reasoning did students who failed identify in their performance?

**Summary of work:** The 26 students who failed the CI standard completed a stimulated recall with written narratives at 4 points in each case: What were you thinking at this point? We used systematic qualitative analysis to identify and code the narratives.

**Summary of results:** The students described 8 clinical reasoning problems that varied by case: 1. I was pressured for time; 2. I did not know or remember; 3. I was anxious; 4. I did not have a broad enough

differential diagnosis; 5. I collected the data but did not use it; 6. I did not hear something the patient said; 7. I did not have a plan; 8. I was distracted by a test feature.

**Conclusions and take home message:** Students described 2 problems most commonly, time pressure and failure to construct a differential diagnosis. These problems should be addressed in the curriculum for students as part of their clinical education.

#### 10 T 8

**Summative assessment of clinical competence with an OSCE at UNAM Faculty of Medicine in Mexico**  
A Trejo-Mejía, A Martínez-González, J Peña-Balderas, M Sánchez-Mendiola (Universidad Nacional Autónoma de México, Facultad de Medicina, Circuito Interior, Ciudad Universitaria, Del. Coyoacan, México D.F. 04510, Mexico)

**Background:** The end-of-career professional exam at UNAM's Faculty of Medicine in Mexico includes a clinical competence component, which is tested with an OSCE exam.

**Summary of work:** 708 Medical students were tested in a two-day period, in six different clinical sites. The OSCE exam consisted of 18 six-minute stations, designed to assess clinical competency at the general physician level. Four versions of exam were designed, two for each day. 114 Clinician raters and 124 trained standardized patients participated in the test.

**Summary of results:** The global mean score was  $63.5 \pm 6.05$ , Cronbach's alpha was 0.64. Separate scores were obtained by discipline (Emergency medicine, Obstetrics & Gynecology, Internal Medicine, Family Medicine, Pediatrics and Surgery) and by type of clinical skills. The raters and the students were satisfied with the exam. The student population accepted the test passing rate.

**Conclusions and take home message:** The OSCE is a valid instrument to assess the clinical competence of students in a summative high-stakes exam at the end of the medical career. The results of the OSCE exam provide useful feedback information for the medical school and the faculty, in order to identify areas of strengths and weaknesses in the curriculum.

#### 10 T 9

**Using OSCE as a comprehensive assessment method to evaluate strengths and weaknesses of a clinical training program for medical students**

I Hammel, C Rohr (Synergy Medical Education Alliance, 1000 Houghton Ave., Saginaw, Michigan 48602, United States)

**Background:** OSCE stations have been increasingly popular as an assessment method used to evaluate medical students' clinical skills. As a new fifth semester program created within a Clinical Campus of Ross University, the OSCE examination was an opportunity to evaluate both the students and, at same time, the strengths and the weaknesses of the program.

**Summary of work:** Performance on the OSCE examination for four groups of students ( $n =$  approximately 200) is analyzed to determine if there are gaps in the curriculum where the program could make improvements. OSCE stations are grouped in the following categories: history-taking, physical exam skills, procedure skills, critical thinking skills, physician-patient interaction, laboratory and x-ray interpretation. In order to assess the program's strengths and weaknesses, the performance on each category will be analyzed to determine proportions of students who performed poorly on

individual stations. Those curricular areas where there is excessive poor performance will be redeveloped and implemented for new groups of students.

**Summary of results:** Results are pending and will be available soon. We are currently completing the OSCE with our fourth group of students. Initial results indicate there may be some opportunity for curricular enhancement.

#### 10 T 10

##### All that an OSCE can tell

A Valenzuela, J Bloomfield (Universidad del Desarrollo, Somerscales 2032 A, Santiago de Chile 7860054, Chile)

**Background:** Our School of Medicine belongs to a new private university. Since the first time pediatric course was introduced students' performance was assessed by an OSCE. Unexpectedly their scoring was very bad.

**Summary of work:** In order to understand students' failure in achieving the objectives, we critically reviewed the course's program and analyzed each station together with the students.

**Summary of results:** Analysis disclosed following errors made during the course; 1. Contents knowledge of other courses was tested; 2. It was assumed that previous courses contents were known but were not clearly stated as a requisite in the program; 3. Different tutors taught different contents and from different point of views; 4. Students were asked to integrate contents that had never practiced before; 5. Students were expected to perform clinical skills not trained during the course; 6. Diseases taught only theoretically were asked to be recognized in a simulated scenario; 7. Several learning targets were asked but taught in an incomplete way in the course. Based on the information gathered, several changes were made to improve our outcomes.

**Conclusion:** OSCE is not only an assessment tool but also an powerful teaching process evaluation method.

**Take home message:** OSCE is a mirror of our teaching practices.

#### 10 T 11

##### Students' opinions on the experience of the OSCE

YJ Ahn<sup>1</sup>, Kyung Rye Moon<sup>2</sup> (Chosun University, Department of Medical Education<sup>1</sup> and Pediatrics<sup>2</sup>, College of Medicine, Republic of South Korea)

**Background:** Evaluation of clinical skill assessment is an essential area of Medical Licensure Examination in 2010. We surveyed students' opinions after OSCE to improve the contents and technical management of the OSCE program on medical education.

**Summary of work:** We trained intensively 11 basic clinical skills to medical students for 1 week before formal clinical clerkship. After the half year of formal clinical clerkship, we evaluated 11 basic clinical skills through OSCE and then we surveyed students' opinions about OSCE by questionnaire. 130 students were answered.

**Summary of results:** 69.1 percent of medical students about the duration of OSCE thought that it was suitable. 76.3 percent of medical students were satisfied to the OSCE program. Many students took part in OSCE themselves, actively and very actively and thought that it was helpful for formal clinical clerkship. The satisfaction of OSCE by Likert scales was 4.53 in wound suture, 4.33 in blood sampling, 4.32 in surgical scrubbing, 3.94 in CPR, 3.91 in blood pressure, 3.71 in EKG, 3.55 in nasogastric tube insertion, 3.41 in neurologic examination, 3.39 in chest and abdomen examination, 3.23 in foley catheter insertion, 2.37 in enema. But they thought that the technical management of the OSCE was not systematic.

**Conclusion and take home message:** Medical students were interested in OSCE program and thought the OSCE were helpful for formal clinical clerkship. The satisfactions of foley catheter insertion, enema and the technical management were low relatively. So we have to improve technical management and contents and items of OSCE.

## **10 U Posters      Continuing Medical Education and the Assessment of the Doctor**

### **10 U 1**

#### **How to assess clinical performance of radiologists: the structured oral interview**

F Goulet, M Dupre, R Ladouceur, L Samson, Y Drouin, G Merette, J-F Desjardins (College des Medecins du Quebec, 2170 Rene-Levesque west, Montreal H3H 2T8, Canada)

**Background:** Since 2002, the Collège des médecins du Québec (CMQ), the medical licensing authority in Quebec, has been assessing the clinical performance of radiologists through the structured oral interview (SOI). The SOI, supervised by two peers, uses imaging as well as realistic and representative clinical vignettes (cases). Expected answers are based on a key feature fashion.

**Summary of work:** The assessment process includes: 1. On the spot film diagnosis (snapper) (10 cases); 2. Film interpretation and dictated report (10 cases); 3. Relevant findings (positive and negative) using differential diagnosis (10 cases); 4. Skill evaluation, and interpretation of ultrasonography (5-10 cases). To render the methodology, the type of practice and criteria used for the selection of radiologists who underwent the assessment and to present the remedial programs when required.

**Summary of results:** From 2002 to July 2009, 22 radiologists were assessed. Among this number, the clinical performance was judged adequate for 11; 4 received recommendations of CME; 3 were required to do part time remedial clinical training; 4 were imposed a full time remedial training program, with limitation of practice (all of them eventually chose to retire and cease their practice).

**Conclusion and take home message:** The SOI is a valid and relevant tool to assess practicing radiologists, and to determine the type and length of potential remedial programs.

### **10 U 2**

#### **Assessment of physician performance change from CME using medical claims data**

S Bender, A Paris, D Dietze (Improve CME, LLC, 21202 E. Excelsior Ave., Queen Creek, Arizona 85142, United States)

**Background:** Measurement of physician performance change for large, national-scope CME initiatives has largely been limited to physician self-reported data.

**Summary of work:** Baseline primary care physician performance in the identification of patients with rheumatoid arthritis was assessed using a national medical claims data set. Physicians not meeting specific performance criteria were invited to participate in a CME initiative (a lecture and workshop) designed to improve early provisional diagnosis of RA, and motivate early referral to a rheumatologist to improve patient outcomes. For physicians participating in the CME activity (test group), medical claims data from 4 months previous to the educational intervention will be compared to data from 4 months post-intervention. Test group results will also be compared to a matched control group not exposed to the educational intervention.

**Summary of results:** The medical claims data set will be defined, and baseline performance results described in the presentation. Pre/post test group and test/control group comparisons will be summarized as available by the conference.

**Conclusions:** Medical claims data can be used to identify, invite, and measure performance change in CME activity participants.

**Take home messages:** Measurement of changes in physician performance using objective data can be accomplished for national scope CME initiatives.

### 10 U 3

#### **Patients' disclosure in health plan: Quality of care and physician competence**

AA Alsulaimani (Taif University, Medical College, PO Box 685, Taif 21944, Saudi Arabia)

**Background:** The growth in malpractice premiums and claims payments over the Kingdom of Saudi Arabia and national wide has been reflected passively on healthcare provider and health service.

**Summary of work:** Medical error and tort reform have increasingly taken center stage in the health care debate in our region and all over the world. Patients, policy makers and health Professionals grapple with the striking prevalence and consequences of medical error, which resulting in patient injury and health care service. Debate ranges from legislating restrictions on cost awards in malpractice trials to ethical and moral imperatives germane to untoward clinical incidents, whether in the hospital or in outpatient settings.

**Summary of results:** Fears of malpractice liability, difficulties in communicating bad news, and confusion about causation and responsibility have long impeded comprehensive and bold initiatives designed to change the patient, family and clinician experience with medical error.

**Conclusion and take home message:** Offering an apology and making full disclosure of harmful medical errors to patients and their families can do much to defuse the hurt and anger that can lead to further emotional and physical trauma.

## 10 U 4

### **National CPD framework of physicians in Finland**

K Patja, T Litmanen (The Association for Continuous Professional Medical Development in Finland (Pro Medico), Mäkelänkatu 2, Helsinki 00500, Finland)

**Background:** Continuous professional development (CPD) joins together individual development and organizational quality. However, if it lacks vivid contact and support from the work environment and health care organizations, it carries a risk for becoming an individual's mission. In Finland, employers are obliged under a legal obligation to ensure the skills of health professionals and equally, health professionals to sustain and improve these skills. However, there is no system of reassurance of the process.

**Summary of work:** Medical associations established Pro Medico to support CPD. The association provides tools, materials, a national CME calendar and runs development projects with health care organizations. Currently it is building a system for physicians to explicate and evaluate their developmental goals and activities. A web-platform for reporting CPD is under construction with a link enabling data gathering from patient databases. Our goal is to build a comprehensive tool for supporting CPD for individuals and also organizations. The framework is based on supporting professional development and adult learning in the working environment.

**Conclusion and take home messages:** Developing tools to support CPD in the workplace, brings the concept of CPD closer to personnel management and leadership with health care. Work environment is a major learning environment.

## 10 U 5

### **Script Concordance Test as a new CME model focused on clinical reasoning: An international validation in Spanish speaking countries**

E Pleguezuelos, C Brailovsky, E Hornos, M Martínez (Institute PRACTICUM of Applied Research in Health Sciences Education, Serrano 16, 5ta, Madrid 28001, Argentina)

**Background:** The need for effective programmes for CME to develop competencies has become increasingly clear. A new distance learning model using the Script Concordance Test to train reflexive abilities has been developed.

**Summary of work:** A pilot study was conducted simultaneously in 4 Spanish countries to test acceptance by physicians regarding a web-based SCT learning model. It identifies the perceptions of its use in postgraduate education and consists of daily on-line reasoning and decision making exercises in Cardiology (20 SCT vignettes). Out of 47 cardiologists from Argentina, Mexico, Chile and Colombia in the trial, 40 (85,1%) completed the test in four weeks. A survey was conducted to collect data reflecting the professionals' opinions.

**Summary of results:** Twenty-nine (61,9%) participants answered the questionnaire. Survey respondents indicated "very high" (68,4%) and "high" (31,5%) degrees of interest in the web-training model. The format was easy to use, useful for daily practice and time-saving compared to other formats of CME. They supported the validity of the model for CME use.

**Conclusions:** Web-based SCT learning model was proved to be well- accepted by professionals for CME.

**Take home messages:** Our results provide interesting perspectives and potential for Web-based SCT learning model to be widely implemented in CME.

#### 10 U 6

##### **Do ANTS CARE about workplace based assessments? Triangulating all-round professional competence in anaesthesia**

K Rabenstein (East Sussex Hospitals NHS Trust, Conquest Hospital, The Ridge, St Leonards TN37 7RD, United Kingdom)

**Background:** With increasing professional regulation (the General Medical Council's Licensure & Revalidation), rising standards and tightening training pathways and numbers, senior professionals of the future will need to pass not only assessments of technical competence but also tests of non-technical skills and patient-reported outcome measures. Although it is often felt that anaesthesia does not lend itself as readily to this as other frontline disciplines, validated tools which allow such triangulation actually exist.

**Summary of work:** The outcome of an ongoing prospective quantitative pilot trial of triangulation using numbers of returns for workplace-based assessment (WBA) tools such as Direct Observation of Procedural Skills (DOPS), Clinical Evaluation eXercise (CEX), Case-Based Discussion (CBD) and Multi-Source Feedback (MSF), supplemented by Anaesthesia Non-Technical Skills (ANTS) and Consultation & Relational Empathy (CARE) forms, are presented and discussed. Different methods of data analysis and presentation are also considered.

**Conclusions and Take home message:** In today's evidence-based practice environment, decisions about trainee progression and remedial action need to be based on quantitative assessments of all domains of professional competence; regularly repeated triangulation of the type described may be a feasible way of doing so in anaesthesia. Future rounds of triangulation will employ a weighted scheme of returns count.

#### 10 U 7

##### **Continuing professional education in athletic training: Is knowledge acquired and retained?**

J Doherty-Restrepo, A Perry, G Del Rossi, C Phekoo, J Jordan (Florida International University, 11200 SW 8th St., ZEB 251B, Miami 33199, United States)

**Background:** We assessed certified athletic trainers' knowledge acquisition and retention following a continuing professional education (CPE) program offered in either a lecture or interactive format.

**Summary of work:** We used a pre-test, post-test experimental design with comparison groups utilizing stratified randomization based on the learning strategy preferences of 46 certified athletic trainers. A 30 item multiple-choice exam was administered prior to, immediately after, and one-month following the CPE program to determine level of knowledge acquisition and retention.

**Summary of results:** A significant main effect for treatment ( $F_{2,70} = 6.02, p < 0.004$ ) was observed indicating that subjects in the lecture format CPE program acquired and retained more knowledge than subjects in the interactive format regardless of learning strategy preference. There was no significant loss in knowledge observed one-month following the CPE program regardless of learning strategy preference or CPE format.

**Conclusions:** Based on these data, lecture format CPE programs may be optimal for knowledge acquisition and retention, independent of learning strategy preference.

**Take home message:** Acquiring and retaining knowledge is necessary to ultimately transfer knowledge to professional practice and improve healthcare provided to the patient.

## 10 U 8

### **Differences in competence at basic life support by specialty and grade**

L Etheridge, A Sturrock, J Dacre (UCL Medical School, Academic Centre for Medical Education, 4th floor Holborn Union Building, Highgate Hill, London N19 5LW, United Kingdom)

**Background:** The ability to perform effective cardiopulmonary resuscitation (CPR) is a core clinical skill. No study has examined differences in competence between specialties and levels of clinical experience.

**Summary of work:** The competence of doctors in the same basic life support (BLS) assessment was examined for differences by specialty and grade. 559 doctors from 6 different specialties and a range of grades took part in an OSCE to pilot stations used in the General Medical Council's Fitness to Practise assessments.

**Summary of results:** Physicians scored significantly worse than other specialties. Emergency medicine doctors, anaesthetists and psychiatrists performed best. General practitioners and surgeons also performed better than physicians. There was no difference in performance by grade overall but within anaesthetics and psychiatry there was a significant difference in performance by grade.

**Conclusions:** While physicians may use advanced life support skills frequently, their basic life support skills may require targeted training. Recent evidence from monitored patients during real cardiac arrests shows deficiencies in external chest compressions and ventilation. More senior doctors, who see acutely unwell patients infrequently, may also need targeted training.

**Take home message:** Knowledge of the competence of different specialties and grades at BLS may help in targeting training.

## 10 U 9

### **Designing a practical guideline for needs assessment in Continuing Medical Education**

S Shahidi, T Changiz, H Salmanzadeh, A Yousefi (Medical University of Isfahan, Educational Development Center, Isfahan 81647-84153, Iran)

**Background:** Due to the diversity of educational needs assessment resources in one hand and different advantages and disadvantages of the models and techniques on the other hand, it is difficult to choose an appropriate needs assessment model and a practical guideline is necessary.

**Summary of work:** At the first stage by searching the library and on-line documents and focus group relevant studies were assessed. Based on the results the guideline was prepared. At the second stage the prepared guideline was sent to the secretaries of CME department of nation medical universities. After collecting their viewpoints data were analyzed by SPSS and with descriptive statistics,  $\chi^2$  and t-test.

**Summary of results:** Finding showed the following factors should be considered in terms of selecting a needs assessment model or technique: The level, purpose and target of needs assessment, needs type definition, resources. A step by step practical guideline prepared in 8 parts based on the above factors. To evaluate this guideline from CME secretaries' points of view, 87.5 % of respondents found the guideline clear and 87.2% found it practical. From all the respondents 50% believed that in order to use it reading the content is enough.

**Conclusions and Take home messages:** Based on the views of majority of cases regarding that it is clear and applicable and also taking into account their suggestions, this guideline may be used for CME needs assessment. However, it is necessary to instruct individuals regarding the content of guideline.

## **SESSION 11 PLENARY    Ottawa Consensus Statements and Recommendations, And Miriam Friedman Memorial Lecture**

### **11 A    Presentation of draft Consensus Statements and Recommendations**

- Theme 1: Criteria for good assessment
- Theme 2: Technology-based assessment
- Theme 3: Performance assessment
- Theme 4: Assessment of professionalism
- Theme 5: Assessment for selection for healthcare and specialty training
- Theme 6: Research in assessment

### **11 B    Miriam Friedman Memorial Lecture: Culture, Pedagogy and Assessment: a view from the bridge**

Stewart Mennin (Professor Emeritus, University of New Mexico School of Medicine, Albuquerque, New Mexico, United States)

Assessment and learning are co-embedded and inextricable. Research, innovation and standards for medical education have been dominated for many years by educators from North America, Europe and Australia. The rest of the world is challenged to adopt and adapt these approaches. A steady stream of consultants from North America, Europe and Australia have trained people at institutions in the developing world to learn about and implement new methods and `tools´ in assessment and pedagogy. This presentation will examine the limitations and challenges involved in the transposition of `tools´ and methods of assessment and pedagogy to other cultures.