

## Assessment and Evaluation

### 1 Can We Use Global Scoring in a High-Stakes Objective Structured Clinical Examination (OSCE) for Graduating Medical Students?

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**Key words:** Objective Structured Clinical Examination, OSCE, global scoring, assessment

The aim of the study was to assess the extent to which we could rely on using global scoring in an OSCE for graduating medical students. The School examined 105 graduate-entry final year medical students. There were 10 stations (120 minutes). All stations were developed and reviewed by the discipline head and leaders. All examiners were trained and standardised. Competency-based marking was developed to assess the students' abilities. Each station assessed 10 competencies, for each of which a score of '0' (failed), '1' (achieved) or '2' (achieved well) was given. A separate independent global scoring system using 'Fail', 'Borderline', 'Pass' and 'Very Satisfactory' was also given. Each examiner was instructed to give the global score first before summing the individual competency based scores to minimise bias. The Pearson's correlation co-efficient between the competency based and global scoring marks; and the reliability score (Cronbach's alpha) of the OSCE were calculated. The correlation between the competency based and global scoring marks was highly significant ( $P < 0.001$ ) for all stations (Table 1), ranging between 0.69 and 0.84 (median 0.78). All students (17) who received a 'Fail' global score on a station also 'failed' in the competency based scoring. The overall reliability score was 0.66. The overall global scoring method can be used alone for a high-stakes OSCE. Potentially this could save valuable time for individual marking, score processing and data entry. However, we would need to consider our defence in the event of an appeal in such a high-stakes examination.

Table 1 Pearson's correlation between the competency based and global scoring marks

Station	Correlation	P value
1	0.84	< 0.001
2	0.78	< 0.001
3	0.68	< 0.001
4	0.82	< 0.001
5	0.69	< 0.001
6	0.83	< 0.001
7	0.71	< 0.001
8	0.83	< 0.001
9	0.73	< 0.001
10	0.79	< 0.001

### 2 Telecasting of Clinical Examination as Training Tool for Clinical Examiners

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**Key words:** performance assessment, clinical examination, clinical examiners, examiner training, telecast

Performance assessment, such as long and short case clinical examinations, has long been utilized to assess the clinical competence of medical students. However, the issues of variability between examiners persist, affecting the reliability of such examinations. Therefore, telecasting and video playback of clinical examinations is used to train clinical examiners. In a Mock Exit Examination, 22 final year students were selected for the long and short case examinations. An external examiner was invited to join the examiners of our School for this exercise. With consent obtained from patients, examiners and examinees, the clinical examination sessions were video-recorded. These were telecast 'live' to another venue where the other final year students and academic staff were able to observe first-hand the examination process. With a selection of these recordings, a workshop for clinical examiners was subsequently held. The conduct of the clinical examination was constructively commented upon by the external examiner. The video playback was reported to have provided the examiners with good insight to their own performance and prompted numerous useful discussions. The majority of the participants reported that this workshop was beneficial and indicated the need for more such workshops. Hence, further development of similar workshops is called for to train clinical examiners effectively, thus reducing variability and improving reliability.

### 3 An Analysis of Test Data from a Final Examination in Biochemistry Using a One Parameter Logistic Model, The Rasch Model

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**Key words:** Classical Test Theory, Item Response Theory, Rasch One Parameter Logistic Model, Invariance

Classical Test Theory (CTT) or Item Response Theory is utilized for analysis and interpretation of test data. This descriptive study addressed these specific research questions: How similar or different are CTT and Rasch Model ability and item statistics? Across different samples, how invariant are the CTT and Rasch Model ability and item statistics? Test data from 243 medical students who took an examination in Biochemistry (114 multiple choice questions) were subjected to CTT and Rasch analysis. Descriptive statistics, Pearson  $r$  and  $t$  tests were done to compare the results from both analyses. There is no statistical difference between the ability estimates obtained from either framework ( $r = 0.88$ ). Item difficulty estimates from the two frameworks were statistically different ( $P = 0.00$ ;  $\alpha = 0.05$ ). With CTT, ability estimates for the upper and lowest 27% were item-dependent (all  $P$  values = 0.00;  $< 0.05$ ); with the Rasch Model, ability estimates were invariant (all  $P$  values = 1.00  $> \alpha = 0.05$ ). Item difficulty were examinee-independent from both frameworks (all  $P$  values from the upper

and lowest  $27\% = 1.00 > \alpha = 0.05$ ). Ability and item difficulty estimates were invariant using the Rasch Model and because of this stability of indices, it is recommended that analysis of future test data utilize the Rasch Model for analysis to complement CTT.

#### 4

### Common Errors in Standardized Patient Performance in Clinical Skill Assessment

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**Key words:** SP performance, quality assurance, SP certification  
Nowadays, standardized patient (SP) based assessment plays an important role in medical education. However, there is currently no consensus on the quality assurance system to certify SPs before the examination. We aimed to identify common errors in SP performance during the Pilot Nationwide Clinical Skill Assessment in Taiwan and to develop a rating scale to evaluate their competence for pre-exam SPs certification. A total of 70 trained volunteer SPs were recruited to participate in this study. Eight case scenarios were assigned to the exam site and 40 SPs met the demographic features in cases. We sampled 72 video clips from 24 SPs on Exam Day 1. Two trained independent raters reviewed video clips and list inappropriate behavior or mistakes of SPs during the exam. Medical experts further reviewed and categorized these errors to develop a weighted rating scale. Most errors repeated in different case scenarios and different SPs. Pertinent negative information is the common missing part of scenario provided and is hard for SPs to impart during the scenario. We identified common errors during video clip review process and classified these errors into four different categories including key clinical feature, emotional expression, out-of-bounds information and internal consistency. Each error was weighted using a 6-point scale based on their potential influence on student assessment outcome. It is feasible to identify common errors in SP performance via a video based, expert review process. A rating scale could be developed based on these errors for pre-exam SPs certification.

#### 5

### OSCE Performance of the 4<sup>th</sup> Year Khon Kaen University (KKU) Medical Students: Weak Point and Opportunity to Improve

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**Key words:** OSCE performance, Khon Kaen University  
OSCE was included in summative evaluation of the 4th year students in department of medicine. We used compensatory standard-setting strategy with the 60% minimum passing level (MPL). We retrospectively studied OSCE performance from 2010 to 2011. Among 524 students, only 55.0% passed the examination with mean  $\pm$  SD of  $61.1 \pm 9.8$ . We examined students' performance of each item of the OSCE and use the MPL of each item of 60%. The percentage of students that passed each topic were as followed: peripheral blood smear interpretation (63.1%), basic

radiology interpretation (66.0%), fluid analysis (38.0%), urinalysis (60.0%), infectious & parasitic slide interpretation (77.8%), basic electrocardiogram (78.2%), blood chemistry interpretation (59.8%), medical instrument identification (81.1%), spot diagnosis of clinical signs in medicine (72.4%), and spot diagnosis of dermatology (24.9%). We further studied conjunctive standard-setting strategy for test decision and set the MPL of each item as 60% and students must pass 60% of total items of the examination to pass the exam, more students (311 of 524; 59.4%) will pass ( $P < 0.01$ ). 16 (3.1%) students passed the compensatory strategy but not conjunctive strategy and 39 (7.4%) students passed the conjunctive strategy but not compensatory strategy. Among our students, OSCE performance was poor. The students' skills that needed to be improved are spot diagnosis of dermatology, fluid analysis, and blood chemistry interpretation. To improve students' OSCE performance, we need to consider about (1) clarification of the objective and requirement for our students, (2) design, delivery and monitoring of students' learning experience and (3) considering to use the appropriate standard-setting strategy.

#### 6

### The Development of a Classification System for Item Writing Errors in OSCE to Assist in Pre-Examination Quality Improvement Opportunities

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**Key words:** OSCE, clinical examination

Creation of OSCE stations can be time-consuming and is prone to errors which impact on the validity, reliability, authenticity and reproducibility of the overall examination of clinical competence (Reason, *BMJ* 2000; 320 768–770). This study explored the possibility of creating a classification system of station errors to aid in their identification prior to running the examination. Using an analysis of one undergraduate OSCE debrief meeting as a starting point, errors in the construction of individual stations observed by examiners or simulated patients during the day were reported on and recorded. Possible classification systems were explored until a suitable framework was identified. A classification system of OSCE item writing errors was created highlighting areas for reviewers to monitor and indicating potential impact on the performance of the station and the effect on the candidates. Areas where flaws were identified included errors in structural design of stations, timing miscalculations as well as lack of clarity in instructions. Classification of item writing errors in OSCE development is possible and may assist reviewers to identify potential flaws in a station allowing successful pre-examination alterations.

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### Refinement of Problem Based Learning Evaluation Criteria by Tutors Results in Enhanced Active Engagement of Students and Objective Evaluation Process

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**Key words:** Problem Based Learning, evaluation, PBL tutorial, objective evaluation criteria

Tutor-assessment is an integral part of evaluation of student performance during Problem Based Learning (PBL) tutorials. We examined the effectiveness of assessment criteria refinement and tutor training to reduce subjectivity in PBL evaluation and its impact on student performance. A quasi-experimental study was conducted on year 2 and 3 students, who took twice weekly small group PBL tutorials. Their performance was evaluated using a standardized assessment tool. As an intervention, a series of focus group discussions targeting PBL tutors were carried out to identify and unify PBL evaluation themes, develop a written description of the evaluation criteria, and obtain feedback on student engagement. The scoring criteria were discussed with students to promote awareness. Scores for PBL evaluation and end of module exams before and after the intervention were analyzed. Feedback from tutors indicated enhanced active engagement of students in the PBL process due to students' awareness of scoring criteria. Increased score variability within and between PBL groups was observed post-intervention. Overall, mean PBL scores during pre-intervention modules were significantly higher compared with mean scores in post-intervention modules ( $P < 0.001$ ). Improved correlation and linear relationship between PBL scores and written exam scores was observed post-intervention. Tutors' involvement in refining the PBL evaluation criteria resulted in a more objective evaluation as shown by the increased variability of PBL scores within groups post-intervention. The increased objective evaluation and student engagement contributed to an improvement in the linear correlation between PBL and end of module exam scores.

8

### Evaluation of the Performance of Medical Students in Viva Sessions, After Exposed to a Mock Viva as Examiners, Candidates or Observers

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**Key words:** viva-voce, medical education, medical student  
Viva-voce is an important component included in many exam settings by which theory and clinical application skills of a subject can be tested more effectively. This study focuses on the assessment of the changes in the students' performance after an exposure to a viva session as an examiner, candidate or an observer. A prospective intervention study was carried out among randomly selected 51 final year medical students. Each was exposed to an identical mock viva session enrolling 17 as examiners, 17 as candidates and 17 as observers. After a month, they were all examined as candidates by another structured viva session, and assessed using several criteria, viz. understanding of questions and cues, organization, accuracy and instantaneity. The average of two experienced examiners marks for each student was taken. The data were analyzed using SPSS 17.0 and the each group was then separately analysed to find the significance of the results variance between them using

Kruskal–Wallis one-way analysis. The mean values of marks of the students who were previously exposed as 'Examiner' group was 70.82% ( $\pm 8.75$ ), 'Candidates' was 65.67% ( $\pm 6.76$ ) and the 'Observers' was 56.88% ( $\pm 8.49$ ). Although the difference between candidates and examiner group was not significant ( $P = 0.065$ ), there was a significant difference between examiners and observer groups ( $P < 0.001$ ), and between candidate and observer groups ( $P = 0.006$ ). Active participation of a student, as an examiner or a candidate in a mock viva sessions improves their subsequent viva performance and positively influences their confidence.

9

### Anxiety Levels in Dealing with the Objective Structured Clinical Examination (OSCE): Do They Influence Students' Performance?

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**Key words:** clinical skills, OSCE performance, level of anxiety  
Objective Structured Clinical Examination (OSCE) is widely used to evaluate student clinical performance. Despite its widespread used, it is suggested that OSCE may produce anxiety on students and the uncontrolled one can hinder the process of thinking. This study aims to identify the correlation between anxiety levels and students' competence level in OSCE performance. The study included 112 from 117 students of Medical Faculty of Riau University batch 2011. The data were collected before students having OSCE using questionnaires adapted from Hamilton Rating Scale for Anxiety. Students' competence levels were measured by number of stations which they could pass from all 9 stations. The results show that 1.8% of respondents have no anxiety, 7.1% have mild anxiety, 16.1% have moderate anxiety, 55.4% have severe anxiety, and 19.6% have anxiety in panic level. No students fail in all 9 stations, only 2 students fail in 7–8 stations, 57.9% passed 6–8 station and 24% students could pass all 9 stations. There is a weak correlation between levels of anxiety and OSCE performance ( $r = 0.176$ ). In conclusion, anxiety levels in dealing with OSCE have weak influence on students' performance in Medical Student of Riau University batch 2011.

## Teaching and Learning

10

### Learning Together and Working Together: A Multi-Professional Education Program Designed to Teach Early Recognition and Response to the Deteriorating Patient

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**Key words:** deteriorating patient, multiprofessional, interprofessional

The process of recognising and responding to deteriorating patients often requires different disciplines to communicate and work with each other, but despite working with each other in the clinical setting, multidisciplinary teams rarely receive education targeted at them as one cohesive learning group. We developed a

novel multifaceted education program which aimed to train staff in the teams in which they practice utilising case based education to bridge the knowledge gap between theory and clinical practice, enabling recognition of the deteriorating patient and initiate appropriate interventions in a timely manner, including facilitating effective interprofessional communication. Over 2008–2012, a total of 4265 health professionals were trained in this learning package, called 'COMPASS'. The large majority (65%) were nursing staff, with 12% of participants being doctors, and only 1% physiotherapists. 21% of those taught in the program were undergraduates from nursing and medical schools. All disciplines provided overwhelmingly positive feedback on their experience of the program, with a large number reporting they felt the program had been a positive in their professional development, and would impact on their ability to care for patients. Lessons have been learnt along the way with regards to how the program could be scheduled to facilitate an interprofessional participant group, and also how to deal with cultural issues as they arise.

## 11 Creative Skills and How We Explored it in Medical Students at Walailak University

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**Key words:** creative skills, teaching and learning

It is widely accepted that creative skill is 'the higher-order thinking skill'. Much of the thinking done in medical education emphasises how to remember facts, understand claims and follow a logical argument in order to figure out the correct answer while the skill that focuses on exploring ideas, generating possibilities, looking for many right answers tends to be ignored. Recent developments in medical education indicated that creative skill is an important element in the learning process. Ten sessions-creative skill workshops through art were conducted in order to find out how we could integrate creative skill into teaching and learning in medicine. Action research was done through ten sessions of painting and drawing classes in May-June, 2012 among a group of fifty volunteered and inexperienced in art medical students. The class comprised of a variety of art techniques. At the end of each session, students were asked to reflect upon their work. At the last session, they had to produce an entirely abstract painting in order that their right brain would dominate their work. The results were recorded and content analysis was performed. Students found that it was difficult to create their work through right side of brain because they could not get away from analytical aspect. However, they found that in order to allow them to create better they needed to be confident, the learning environment should be safe for any differences they made and finally they suggested they worked better if they used both brains to complement each other.

## 12 Teaching Percussion Techniques Using Everyday Items: A Student-led Module

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**Key words:** percussion technique, simulators, simulation

Percussion is considered to be one of the harder clinical skills to master, yet it plays a vital role in the examination of many systems. There is currently a lack of publications which bear on educational tools designed for the teaching of percussion skills. We thus developed a student-led module to teach the basics of percussion using simple everyday household items. The purpose of this study was to evaluate the effectiveness of this student-led module in teaching percussion, and gather the students' opinions towards the use of such medical education tools. Three hundred and twenty-two pre-clinical medical students were recruited to participate in a workshop where they were taught percussion with the prototype models. Pre-and post-session surveys about their current practices, preferences and subjective assessment of their own percussion techniques were administered. An objective assessment using a standard marking scheme was also done before and after the session so that comparisons can be made. There were significant improvements in post-module confidence levels and median objective scores. 83.5% of students also indicated that they prefer the use of such models to their current mode of practice. The module appears to be effective in teaching basic percussion. The use of simple everyday items makes this an affordable educational tool that can be easily incorporated into existing pre-clinical programmes to aid in the teaching of percussion.

## 13 Use of Reflective Summary Writing Activity in a Personal and Professional Development (PPD) Curriculum

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**Key words:** reflective summary writing, professional and personal development curriculum

Reflection on practical and educational experiences especially related to death is an important component of learning to care for the dying. The objectives of the present study was to introduce a reflective summary writing activity on end-of-life care in a personal and professional development (PPD) module and to investigate students' perceptions on reflective summary writing. One hundred and 85 first year medical students attended a PPD session conducted in the form of a problem-based learning (PBL) regarding end-of-life care. Students were asked to write a reflective summary on issues related to end-of-life care. Students' perspectives on reflective writing were collected using a validated questionnaire. Reflective summaries were collected and qualitatively analysed for themes. Majority of the students felt that reflective summary writing helped them to understand the concepts, allowed them to express their own thoughts, encouraged critical thinking and promoted self-reflection. Qualitative analysis of stu-

dents' reflective summaries revealed the following major themes: Emotional responses to end-of-life care and emotion management, patient-doctor communication, interpersonal relationships, professionalism, feeling ill-prepared to deal with death, medical ethics and reactions to the curriculum. Reflective summary writing activity incorporated into a PPD curriculum can effectively motivate medical students to develop the habit of critical reflection as a future health care professional.

## 14

### Twitter in Medical Education: An Efficient Tool for Informal and Cooperative Learning

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**Key words:** twitter, medical education, informal learning, collaborative learning

The aim of this case study was to explore the potential role of Twitter in establishing virtual classroom community that support informal learning in medical education. Twenty-five undergraduate students who were undertaking hematology course at the college of applied medical sciences were asked to create twitter accounts and follow each other on twitter with the aim of establishing virtual class community dedicated for learning of the hematology course. The twitter virtual class experience last for one semester (12 weeks). Tasks assigned to the students on twitter include: reflecting on course lectures, sharing links with relevant information, selecting pieces of news and commenting them critically, sharing videos related to the course, and discussion of difficult exam questions. The total number of tweets posted by students was 4654 tweets with the average of 186.1 tweets per student. The average number of tweets per week was 387.8 tweets. Each student posted 16 tweets a week and 3.2 tweets a day on average. Students opinions showed that twitter helped them to connect more effectively to each other and encourage the sense of learning community and collaborative learning experience. This study shows that medical students can use twitter to create out of class learning community and participate in informal dialogue in real time. High level of communication achieved between students outside class hours reported here (33.2%) is a good indicator that twitter can maintain social interaction necessary to provide support and learning. 29.5% of students tweets were course related posts or links which suggests that informal learning outside the class has occurred.

## 15

### An Interprofessional Communication Training Using Simulation for Medical and Nursing Undergraduates

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**Key words:** simulation, interprofessional education, team training, communication, deterioration

A simulation-based interprofessional program was implemented to develop medical and nursing students' communications skills in caring of a patient with physiological deterioration. One hundred and twenty-seven students participated in the 3-hour program that was conducted using high-fidelity simulation and communication strategies adapted from Team Strategies and Tools to Enhance Performance and Patient Safety (Team-STEPPS). The students took turn to undertake simulation scenarios of deteriorating patients in sepsis and septic shock conditions. While standardized patients were used to act as patient with sepsis, patient simulators were used to simulate patients in septic shock. Each session was led by a nursing and medicine faculty staff. A prospective, quasi-experimental pretest and post-test design was conducted to evaluate the outcomes of the program. Thirty-three (100%) medical students and 92 (97.9%) nursing student completed the questionnaires. Both medicine and nursing groups demonstrated a significant improvement on post-test score from pre-test score for self-confidence ( $t = 14.64$ ,  $P < .0001$ ) and perception ( $t = 13.33$ ,  $P < .0001$ ) with no significant differences detected between the two groups. The participants were highly satisfied with their simulation learning with the mean scores of 4.46 on a five-point Likert scale. The study provided evidence to support the effectiveness of a simulation-based interprofessional program for developing nursing and medical students' self-confidence in interprofessional communication and attitudes toward interprofessional learning. This interprofessional learning experience at the pre-registration level of student training has a great potential of preparing future healthcare teams.

*Part of the material in this abstract was obtained from Liaw, S. Y., Zhou, W.T., Lau, T.C., Siau, C., Chan S.W. (Epub ahead of print). An interprofessional communication training using simulation to enhance safe care for a deteriorating patient.*

## 16

### 'What Doctors Can Learn from Actors'

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**Key words:** ethics, biomedical ethics, aesthetics, medical humanities, presence, performance, theatre, Stanislavsky, Grotowski

The claim is that doctors have a great deal to learn about being present with their patients from actors. Actors are trained to bring their full awareness and attention to their roles and can train doctors to bring greater presence to enacting their roles. Yet doctors are resistant to seeing themselves as actors. This is understandable because in common parlance, acting is synonymous with 'pretense,' 'playing a part,' not being real. Yet the great acting teachers, such as Russian Konstantin Stanislavsky and Polish Jerzy Grotowski, saw acting as

truthfulness, not as pretense. What is of even more relevance to the role of a doctor is the capacity of actors to be fully engaged in the moment, yet paradoxically, able to witness themselves – quite coolly – in the middle of the drama. This is a capacity to be fully engaged, yet detached at the same time. This capacity is relevant to medical practice. It addresses the issue of being fully engaged with a patient in her suffering, yet at the same time, detached and able to think quite rationally about what is occurring: to be analytical and directive, yet open and compassionate. Human beings have a capacity for diversity, and for functioning on multiple levels. Although there are some obvious dissimilarities between acting and medical practice, this paper presented potential correspondences between these two professions and drew out relevant skills of performance that actors are good at, and doctors can learn from.

## 17

### Attitude and Practices from Clinical Doctors on Medical Professionalism in Vietnam

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**Key words:** attitude and practices, medical professionalism, clinical doctors in Vietnam

Professionalism is frequently described as the fundamental core of medicine. However, the attitude and practices of clinical doctors on medical professionalism in Vietnam is still a question. The study aims to (1) describe cognitive from clinical doctors in Vietnam on medical professional's values and (2) investigate attitude and practices from clinical doctors on medical professionalism in Vietnam. The cross-sectional study was conducted on 1078 clinical physicians of different specializations in Hanoi, Hue, Hochiminh city via a self-filled questionnaire. The questionnaire included structured questions together with case studies covered 10 commitments on medical professionalism and Hartung' professional value scale. Physician's value from doctors 'attitudes are prestige, supported for the family members. Most of doctors agreed with commitment concerning to respecting patients, improving professional competencies. There is gap between attitudes and practices concerning with medical errors, conflict of interest. There is a need to integrated medical professionalism in medical education and develop instruments to evaluate medical practices for clinical physicians. Review of legal documents concerning to medical practices is also important.

## 18

### The Effects of Reflective Learning on Students' Learning Motivation

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**Key words:** reflective learning, self reflection ability, learning motivation

Reflective learning is learning that teaches how to conduct the self-reflection process. The students are asked to relive a certain experience, express their feelings in response to that event, recognize the feelings that prevent full understanding and perform re-evaluation of that experience by means of association, integra-

tion, validation and adjustment. It may increase self reflective ability (SRA), capability to identify the strengths and weaknesses, relevancy of learning with experience and therefore may increase learning motivation. This study performed on 58 medical students who were divided into 2 equal-sized groups ( $n = 29$ ). SRA and motivation were measured using the rubric for assessment of SRA on-action and the Motivated Strategies for Learning Questionnaire. After intervention, the mean SRA of the treated group increased significantly from  $1.00 \pm 0.75$  to  $3.93 \pm 1.60$  and the mean SRA of the control group increased not significantly from  $0.56 \pm 0.69$  to  $0.86 \pm 0.74$ . The mean learning motivation score of the treated group increased from  $5.00 \pm 0.66$  to  $5.25 \pm 0.42$  and of the control group decreased from  $5.13 \pm 0.55$  to  $4.66 \pm 0.65$ . All students (19) with good self-reflection ability had high motivation ( $P = 0.163$ ). Reflective learning was significantly increasing student self-reflection skills and motivation. Students who had better self-reflection ability tended to have high motivation.

## 19

### Medication Knowledge and Risk of Error – What Changes Take Place During Working? A Comparison Between Graduating Nursing Students and Experienced Registered Nurses

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**Key words:** nurse, nursing student, medication knowledge, risk of error, pharmacology, drug management, drug dose calculation  
Studies and daily practice have revealed unsatisfactory medication knowledge in registered nurses. This study compared medication knowledge and risk of error in graduating nursing students and experienced registered nurses, and evaluated initiatives to improve basic knowledge. Students and nurses underwent a multiple choice test in pharmacology, drug management and drug dose calculation;  $14 \times 3$  questions with 3–4 alternative answers (total score 0–42). Risk of error was scored 1–3; high risk (3) was defined as certain that a wrong answer was correct. The results are presented as mean and (SD) (Table 1). Two-hundred-and-forty-three students aged 28.2 (7.6) years and 203 nurses aged 42.0 (9.3) years participated. Working experience in nurses was 12.4 (9.2) years. The improved knowledge in nurses occurred after 1 year, with no further progress with working experience. Medication knowledge was higher, and risk of error lower in registered nurses than in graduating students. The difference was highest in the practical tasks (management and dose calculation). In all, the knowledge scores were judged as unsatisfactory, but the learning outcome during the first year of practice was encouraging. The results indicate a need for more emphasis on medication knowledge during basic education.

Table 1 Comparison of medication knowledge and risk of error in graduating nursing students and experienced registered nurses

	Knowledge Score 0–14 (Total: 3 × 14 = 42)		Certainty in each answer Score 0–3 (3 = very certain)		Risk of error Score 1–3 (3 = high risk)	
	Students	Nurses	Students	Nurses	Students	Nurses
Total	25.8 (3.3)	29.0 (3.4)	1.7 (0.4)	1.9 (0.4)	1.8 (0.1)	1.7 (0.1)
Pharmacology	9.9 (1.6)	10.3 (1.6)	1.6 (0.5)	1.8 (0.5)	1.7 (0.2)	1.6 (0.2)
Drug management	6.0 (1.6)	7.5 (1.6)	1.6 (0.6)	1.9 (0.5)	2.0 (1.2)	1.9 (0.2)
Drug dose calculation	10.0 (1.9)	11.2 (2.0)	1.8 (0.5)	2.0 (0.6)	1.6 (0.2)	1.5 (0.3)

All  $P < 0.01$

## 20

**Learning from Post-Cardiac Arrest Debriefing**

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**Key words:** debriefing, cardiac arrest, learning, simulation

Debriefing, implemented across a spectrum of industries, is not widely deployed in the NHS. Despite the potential for training in acute care management, leadership, and teamwork – cardiac arrests are often an opportunity missed in the milieu of a busy medical take, with no learning structure to capitalise on the education from such encounters. Our aims were to formulate a flexible, reflective approach to address this. We surveyed a range of health care professionals at a busy district general hospital. Ninety three per cent felt they would derive and educational benefit by debriefing. We explored learning models, facilitation techniques, opinion and experience from the multi-professional team, incorporating technical and non-technical aspects of cardiac arrests to structure the post-arrest debriefing tool. We trialed our debriefing tool with simulation before introducing it to the hospital-wide community through structured teaching sessions. We next orchestrated sporadic simulated arrests in real time, around the hospital over 1 month examining the utility of our debriefing protocol by re-surveying participating cardiac arrest teams. All participants wanted to continue using the debriefing tool. Written feedback highlighted the benefits of debriefing as incorporating a platform for reflection with opportunities to identify technical, logistical, environmental errors, human factors, and essential learning. We have established an effective way to capture the wealth of learning potential using this succinct, flexible, reflective and structured debriefing tool. We have now incorporated our debriefing protocol into the training and routine use of future doctors and nurses within the hospital resuscitation department.

## 21

**Teaching Without Lectures in the First Year: The MUSC Integrated Synthesis Review Block**

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**Key words:** life-long learning, educational innovation, adult learning, peer assessment

As part of a curricular re-design of the pre-clinical curriculum at MUSC, an end-of-the-year lecture-free Synthesis Review Block

(SRB) was created to achieve the following goals: (1) promote self-directed learning; (2) allow independent group-work with formal peer teaching and assessment; (3) create an academic poster; and (4) deliver a formal academic presentation. The SRB was presented at the end of the first year of medical school. Following a videotaped patient-physician interaction, educational learning points illustrated by the video were generated. All students were assigned to one of six broad topic groups based on organ-system Blocks. Broad topics were further subdivided into three subtopics upon which 9–10 students worked collectively researching the answers and creating an academic poster displaying the content material for their subtopic. Faculty did not lecture but served as resources. A Poster Session was conducted wherein each student presented the poster she/he created to faculty colleagues. Students and faculty evaluated the quality of the presentations using a tailored instrument. Working collaboratively, the students took an active role in researching answers to questions and applying content material to the videotaped patient case. Student evaluations of the SRB were extremely positive and examination scores were in line with historical comparisons. The SRB was successful in achieving the four stated goals. This educational innovation, totally devoid of lecture, promoted active learning by allowing students to individually research the answers to topics, work collaboratively within a team, and develop useful academic communication skills.

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## 22

**Use of a Rectal Examination Simulator on Improving the Diagnostic Accuracy of Examination of the Prostate in Family Physicians**

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**Key words:** simulation-based medical education, prostate examination, task trainer, primary care

Specific task simulators are valuable in training undergraduates to acquire basic clinical skills. However, there is limited literature exploring their role in improving the diagnostic accuracy of family physicians in physical examination. The aim of this study was to explore the impact of a rectal examination simulator to

improve clinical proficiency in prostate examination amongst family physicians. Fourteen primary care physicians underwent a training session in groups of 3. Five stations were set up, each consisting of a rectal examination simulator with a different prostate pathology. Each participant performed 3 examinations of the prostate under supervision. Individualized feedback was given to improve their examination technique. Each participant was asked to perform another 2 examinations of the prostate on the morning following the training session. The mean accuracy in detecting prostate pathology improved from 64.2% to 88.5% after the training session. The mean self-rated confidence level also improved from 5.69 out of a maximum score of 10 on a Likert scale to 7.69 after the training session. Differences in diagnostic accuracy between more experienced and less experienced family physicians were reduced after the training session was conducted. A rectal examination simulator is an excellent training aid to improve the accuracy in clinical examination of the prostate among family physicians. More research should be undertaken in simulation-based training in clinical examination amongst doctors in clinical practice.

## 23

### Promoting Inter Professional Collaborative Practice in the Polyclinics

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National Healthcare Group Polyclinics

**Key words:** interprofessional collaborative practice, communication, well functional team

The aim is to develop and promote an interprofessional process for communication and decision making that enables the separate and shared knowledge and skills of care providers to synergistically influence the patient care provided. To develop and strengthen a well functioning team in patient care, especially in chronic case management. Many doctors are not referring appropriately and timely to the other team members, especially nurses/care managers, dietitians whenever applicable. This may be due to lack of awareness of the services or unsure of other team members' role in patient's care. There is minimal inter professional communications during work. The suggestion was to have a regular inter professional collaborative practice case discussion once every 2–4 weeks. The 1 hour lunchtime case discussion will be attended by all doctors and nurses as well as respective team members whenever applicable. The clinic key trainer will oversee a duty roster and assign the topics for discussion for each session. There will be a trainer/senior doctor to facilitate each session. The rostered doctor will present the case, the rest of team member(s) will contribute their parts on the patient's management. After each discussion, the facilitator will enter into the patient's electronic notes the learning points and recommendations from the team discussion. This process will hope to achieve clearer understanding of roles and responsibilities of each team member, to have a regular platform for clear and regular communication among team members; to develop mutual trust, respect, understanding and support and, to recognize and appreciate the team members' contributions.

## 24

### Medical Student Attendance at Non-Compulsory Lectures – Why Do They Come?

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**Key words:** medical student, attendance, non-compulsory lectures  
Newcastle University Medicine (NUMed) Malaysia is the international branch campus of the Medical School of Newcastle University, UK. Lecture attendance is not compulsory but students are encouraged to attend to benefit from this teaching modality. All lectures delivered on campus are captured using a lecture capture system (ReCap) and are then made available online to students throughout the academic year. We conducted a 5-point Likert response scale survey of the opinions of NUMed medical students mid-way through the academic year. When asked about non-compulsory lecture attendance, 85% of NUMed students were in favour of this policy. When asked if the availability of the 'ReCap' system influenced their decision to attend lectures, 30.2% of students agreed, 28.3% were undecided but 41.5% disagreed. When asked whether the easy availability of medical resources on the internet was an important factor, 69.8% of students disagreed. Interestingly, 71.7% of our students thought that attending lectures would help them pass their exams. The most important factor (75.5% of students agreed) which determined whether students attended lectures was the presentation style of the lecturer. Further free-text comments related to this answer indicated that students valued interactive and innovative lecturing styles. The results of this study show that NUMed students do not attend all non-compulsory lectures even though the majority feel that attending lectures will help them pass exams. The availability of electronic resources did not significantly influence their decision. However, most students felt that the presentation style of the lecturer had influenced their lecture attendance.

## Curriculum Development

## 25

### Enhancing Horizontal Interdisciplinary Integration Among Year 4 Medical Students Using Case-Based Learning

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**Key words:** inter-disciplinary integration, medical students

In Monash University Sunway Campus, year four curriculum was delivered in four distinct discipline-based blocks. We introduced integrated case series as a learning module that aimed to foster inter-disciplinary integration. Faculty from Psychiatry, General Practice, Children's Health and Women's Health jointly developed the educational materials, which comprised case scenarios that encompassed care inputs from all four disciplines. The cases were then discussed among students in small groups with facilitation by three tutors of different disciplines, and aided by written materials and pre-recorded videos containing perspectives from the faculty of various disciplines. Students were assessed before and after the sessions (pre and post-test) and at the end of their academic year (final test) via a 20-item test script containing mul-



tiple true-false questions based on the cases discussed. Ninety-five, 102 and 91 students out of 105 completed the pre-test, post-test and final test respectively. Out of 20, the mean scores ( $\pm$  SD) were  $12.8 \pm 2.1$  for pre-test,  $15.2 \pm 2.2$  for post-test and  $14.2 \pm 2.2$  for final test ( $P < 0.001$  across all comparisons). Notably, student performance in the final test remained significantly better than the pre-test ( $P < 0.001$ ). Over 90% of students strongly agreed or agreed that the sessions offered additional learning opportunities and new perspectives outside their curriculum, and gave favourable feedback on the effectiveness of their delivery. Our integrated case series were well-received. They also appeared effective in improving student knowledge, a proportion of which was retained at the end of the students' academic year.

## 26

### Development and Evaluation for the In-Training Examination (ITE) in Family Practice Residency Program

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**Key words:** In Training Examination (ITE), modified essay question (MEQ), test development, validity and reliability

We developed an ITE for Family Practice residency programs in Japan in 2011–2012. This object is to evaluate validity and reliability of the ITE, and clarify its influence for residents. The ITE was developed using a 12 steps approach (Steven M, 2006). Tree trainers discussed the format and content of the exam. We used modified essay question (MEQ) format, and made the following 7 units; 'Mental health', 'Child health', 'Evidence-based Medicine', 'Common disease', 'Patient education', 'Geriatric Medicine', and 'Palliative care', which was based on board examination of Family Practice in Japan. In the second and third committee meeting, we discussed and modified its structure and contents. The test was implemented and scored by two assessors independently. Nineteen senior residents from 5 family practice residency programs participated. We evaluated its validity and influence by an open-ended questionnaire for both residents and test-creators, and a focus group for committee members. We also examined its reliability using Cronbach  $\alpha$  for all of the units combined and each of the 7 units separately. Residents, test creators and committee members all agreed that the ITE format needed to be improved. Eighteen residents (95%) answered that the ITE was useful for self-assessment. The  $\alpha$  value across units was 0.61 and each  $\alpha$  value for individual units was 0.42/0.84/0.48/0.14/–0.23/0.67/0.77 respectively. Inter-rater reliability was 0.98. Test creators judged content validity as high. To achieve higher validity, we plan to conduct a workshop for test creators to share how to write test items.

## 27

### Enhancing Medical Students' Understanding of the Role of the Health Care Team Through a Simulated Patient Journey Scenario

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**Key words:** medical student professional identity, interprofessional collaboration

Ineffective interprofessional collaboration and devaluing junior members of the health care team can create barriers to patient care and ultimately result in adverse patient outcomes. Education providers need to ensure that teaching strategies aimed at promoting effective team work in health care provision are an integral part of the curriculum. We developed and evaluated a teaching session that used a simulated patient journey scenario based on a 'patient' with chest pain that introduced first year medical students to the roles and responsibilities of many of the health professionals involved in patient care. A survey questionnaire comprised of 5 ranked item questions and 4 short answer questions was distributed to participating students to determine if the session increased their awareness and understanding of the contribution of the multidisciplinary health care team. The response rate was 96% (90/94). The 5 ranked items were analysed using descriptive statistics, with results from all questions positive: means ranged from 4.15 to 4.71 (1 = Strongly Disagree, 2 = Disagree, 3 = Neither agree or disagree, 4 = Agree, 5 = Strongly Agree). Topic coding of the short answer questions provided supporting information to explain their responses. This specially designed simulated patient journey scenario for new medical students enhanced their understanding and appreciation of the roles and responsibilities of members of the health care team.

## 28

### National University Hospital (NUH) Postgraduate Year 1 (PGY1) Pharmacy Residency Programme

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**Key words:** pharmacy residency programme, post-graduate

The plan to implement NUH PGY1 Pharmacy Residency was proposed in 2008. In our endeavour to build up integrated clinical pharmacy services, it is necessary to have a robust clinical pharmacy skills training programme to grow and groom our future clinical pharmacists. They will then be able to meet Singapore's demand for higher quality patient care, contribute to meaningful clinical participation and become our next generation of pharmacist clinician-mentors. A formalised systematic programme was adopted from American Society of Health-System Pharmacists (ASHP) PGY1 Pharmacy Residency framework with stipulated outcomes and goals and an evaluation structure. This hospital pharmacy training tool will allow pharmacists to achieve required professional competence in delivery of patient-centred care and pharmacy services. NUH PGY1 Pharmacy Residency is a 12-month educational programme with six educational outcomes. Learning experiences the resident will be exposed to include Cardiology, Critical Care, General Medicine, Infectious Disease, Medication Safety and Pharmacy Informatics, Nutritional Support, Oncology, Paediatrics, Practice Leadership, Ambulatory Care, Staffing and Research. Preceptors are trained using ASHP Residency Learning

System. They will provide criteria-based feedback throughout each learning experience. The inaugural NUH PGY1 Pharmacy Residency Programme commenced in April 2012. This marks the start of the first PGY1 Pharmacy Residency in Singapore that adheres to ASHP standards. We plan to seek ASHP accreditation for our programme as well as look into improving quality of preceptor instruction through a systematic preceptor assessment and development plan. Upon meeting our internal needs, we will expand our resident selection beyond NUH.

29

### Discovering Learning Objectives when Teaching about the Consultation Process

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**Key words:** learning objectives, the consultation process, general practice, agenda for the consultation, feed-back

The common goals (1) General Outcome (2) Knowledge (3) Attitudes and (4) Skills gradually became widened through this study. The General Outcome should be measured by ability to balance between (a) The Patients Part (b) The Doctors part (c) The Common Part. Since 1992 we have been teaching 9 different phases in the Consultation Process (Nystrup *et al.* *SQU Med J* 2010; 3,318–325). Through this study each phase became unfolded by learning objectives. Phase 1 is about incidents prior to the consultation – based on knowledge about the health care system. Phase 2 contains the doctor-patient alliance. Phase 3 is the ability to formulate an agenda for the consultation in collaboration with the patient. In phase 4 the doctor should know how to give feed-back. In phase 5 the doctor exhibits medical expertise. Phase 6 is about negotiation and mediation in order to establish a contract. In phase 7 the doctor must consolidate the contract based on cognitive theories about positive and negative thought patterns. Phase 8 secures follow-up and quality assurance. In the last phase 9 it is time to say goodbye. In order to be able to thrive in the long run, the doctor must be knowledgeable about burn-out and stress theories. The Consultation Process requires not only communication skills, but knowledge and skills as a medical expert, a mediator and negotiator, ability to collaborate with the patient about the agenda for the consultation, the ability to follow-up and secure quality assurance. The Consultation Process is complicated, but can be unfolded in its perspectives.

30

### Implementation of a Competency-Based Global Faculty Education Program

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**Key words:** faculty development, competency-based, global, international

The competency-based approach has been adopted in the development of the faculty education program (FEP) of AOTrauma, who offer training to trauma surgeons in different parts of the world. We examine the result of the program, and its implications for higher education institutions. The development of the FEP began with a careful analysis of the knowledge, skills and

attitudes needed to be an effective faculty member in the training programs of AOTrauma. Through a backward planning process, the appropriate instructional methods and supporting materials are developed. The FEP consisted of an initial online program followed by a live program. The live program was designed on the same educational principles that the participants need to employ in designing activities for their learners. The FEPs were evaluated with four different instruments: pre- and post-course assessment, evaluation at the end of the live event, evaluation on the online platform, and a commitment-to-change contract. The quantitative and qualitative assessment results demonstrated a change in the participants' teaching behavior that could result in better learner outcomes. The competency-based approach is useful in designing and implementing faculty development programs, even on a global scale across regional needs, cultures and languages. The FEP can be used as a model for developing faculty development programs in higher education institutions, which face the challenges of increasingly complex pedagogic methods, the ramification of technology, and the diversification of faculty and student body.

31

### Hospital Admission Experiences of Fifth-Year Medical Students

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**Key words:** patient centered medicine, experience learning, evaluation

Patient-centered practice is an important area in medical education. To investigate this topic, we have, since 1997, conducted an experiential, hospital admission exercise lasting 2 days and one night for medical students in the fifth-year of a six-year curriculum. The intended outcome was for students to understand hospitalized patients' feelings and emotions, and the impact medical staff had on patients. Unfortunately, the evaluation of the session outcome was inconclusive, so we conducted a survey using a questionnaire developed for experienced medical students to determine whether the outcome was achieved. From 2009 to 2011, we distributed a semi-structured questionnaire to fifth-year medical students, regarding their learning, just after each hospital admission session. The questionnaires were completed anonymously. The responses were coded and themes were identified. A response rate of 89% was obtained: 255 out of 286 fifth-year medical students completed the questionnaires. Five main themes and 75 sub-themes were identified. The main themes were: suffering (37%); the effects of experiential learning (11%); the impact of doctors (4%); the devoted care of medical staff (24%); and the emotional state of patients (24%). Our findings show that the experiential hospital admission session is an appropriate way for students in Japan to acquire the core competency of patient-centered practice. Students also gain an understanding of the efforts made by co-medical staff in the hospital context and the impact doctors have on patients.

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### Factors Perceived by Students for Effective Clinical Reasoning Sessions in Medical Education in Japan

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**Key words:** undergraduate medical education, clinical reasoning, program evaluation

Very few medical schools have implemented clinical reasoning (CR) sessions as part of the formal curriculum in Japan. CR sessions using resident-led, faculty-supervised, case-based, and small group discussion has been implemented since 2010. What factors work for effective CR sessions are not known. A questionnaire including utilization of CR and the factors effective for adult learning was developed. A 5-point Likert scale was used to evaluate each factor by students (1 = strongly disagree, 5 = strongly agree). A post-session paper-based survey was administered among the year 4 students who rotated the Department of General Medicine. A total of 48 students attended the CR sessions and all (100%) responded to the questionnaire. Only 19 (39.6%) had heard of CR, 7 (14.6%) learn with CR, and 47 (98%) were satisfied with the CR sessions. Scores of each factor for satisfaction were small group session (4.38, SD 0.95), active participation (4.57, SD 0.74), free discussion (4.51, SD 0.72), academic interest (4.06, SD 1.12), case-based (4.30, SD 1.02), and usefulness in learning (4.51, SD 0.93). Factors effective for adult learning were perceived positively by students for satisfied CR sessions. Further study is needed to assess quality and impact of CR sessions in Japan.

33

### The Usefulness and Viability of Using Simulated Patients in Undergraduate Psychiatry Education and Psychiatric Clerkship

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**Key words:** psychiatric education, psychiatric clerkship, simulated patients, Observed Clinical Interview (OCI), Objective Structured Clinical Examination (OSCE)

The uses of Simulated Patients (SPs) had widely been adopted in medical education. However, its feasibility, usefulness and viability in undergraduate psychiatry education and clerkship is undetermined. Eligible individuals from general public were recruited as SPs and were trained to present and enact various psychiatric illnesses during Observed Clinical Interview (OCI) sessions to fourth-year National University of Singapore (NUS) undergraduate medical students undergoing 6 weeks psychiatry posting. 5-point Likert scale evaluation questionnaires were used to evaluate SPs' enactment performances, students' learning experiences and tutors' teaching experiences during each OCI session. Students (90.11%) found that the SPs enacted naturally like real patients while tutors (89.04%) felt that SPs' enactment were realistic. Students (83.88%) reported that trained SPs provided useful feedbacks. Students (90.97%) also felt that their peers' feedbacks and suggestions had improved their own interviewing and communication skills while tutors (93.15%) noticed that students observing their peers' performances during OCI sessions had improvements in interviewing and communication skills. Tutors (95.89%) also agreed that the case scenarios enacted during OCI

sessions were relevant and prepared medical students to face real-life clinical situations. Majority of students enjoyed the OCI sessions (92.36%) and felt that the OCI sessions improved their communication skills and self-confidence (93.66%). Students (96.45%) and tutors (90.41%) considered the SPs enacted OCI sessions useful and should continue to be part of undergraduate teaching. Our study suggests that using trained SPs for undergraduate psychiatry education and clerkship is realistic, viable and would prepare medical students for real patient clinical encounters.

34

### Family Medicine Residency – A Love-Hate Affair

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**Key words:** program evaluation, feedback, program improvement  
Singapore rapidly implemented US-style ACGME-I accredited residency training within 2 years. Faculty and residents had to adjust to the enhanced structured training for core competencies. Their feedback was sought to improve the program. An annual program retreat was organized. Faculty and residents were given green sticky note pads to anonymously list the top 3 things they liked, and red sticky note pads for the top 3 areas they would like to see improvement. Residents loved the close supervision and feedback from 'great faculty' during the FMC (Family Medicine Centre) Continuity Clinic sessions. Faculty appreciated the protected time for teaching and supervision. The appointment system allowed continuing follow-up of patients and was much welcome. Some residents wanted exposure to different preceptors. Residents valued the varied clinical rotations and multiple short attachments. Saturday core learning sessions were both loved and hated. Residents loved the comprehensive curriculum and well-prepared content by FM and specialty faculty. It was unpopular for being on Saturday afternoons and too much pre-session reading material. Unanimously, evaluations received red stickers. The common refrain was the time-consuming paperwork and the difficulty in getting hospital faculty to fill forms. Some thought the portfolio required too many write-ups. Several faculties reflected that there was insufficient training for faculty to use the portfolio as an evaluation tool. Faculty wanted more time and funding for faculty development. The first year of implementation of the SingHealth Family Medicine residency program was an exciting journey. Continual evaluation will be used to further improve the program.

## Student/Trainee Affairs

35

### Trainees Perceptions of the Educational Environment in Postgraduate Psychiatry Training

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**Key words:** educational environment, postgraduate psychiatry training

Various factors impact students' perceptions of the educational environment: (1) teacher factors (standards and style of teaching, teacher's skills), (2) student factors (perceived social support, autonomy and engagement) and (3) curriculum factors (content and delivery). Postgraduate psychiatry training in Singapore is in

transition from a 5 year 'seamless program' modeled on the UK Royal College of Psychiatrists training to a 4 year residency program structured to ACGME-I requirements. The study aimed to assess the overall educational environment in postgraduate psychiatry training and compare trainees' perceptions. The Postgraduate Hospital Educational Environment Measure (PHEEM) was used. Subscales for perceptions of Role Autonomy, Social Support and Teaching were analysed. The study had Ethics approval. Participation rate was 80% (N 60, 58.3% males and 41.7% females). There was almost equal distribution amongst all training groups. The total score on the PHEEM was 91.37 out of a possible 160, which indicates trainees perceived the training environment as 'more positive than negative but there is room for improvement'. The mean score for perceived Autonomy was 33.75 ( $\pm$  3.70), social support 28.77 ( $\pm$  3.87) and teaching 28.85 ( $\pm$  5.90). Trainees' age and gender had no impact on perceptions of the educational environment but their stage of training did. Those in Advanced Specialty Training scored significantly lower on social support ( $P = 0.026$ ). Trainees reported 'Uncertainty' regarding 'hours of duty', 'readiness to be a specialist' and 'no blame culture'. These findings are important as issues need to be addressed to better engage the trainees and enhance the overall educational experience.

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### Perceptions of Academic Mentors of Their Role and Factors Contributing to the Effectiveness of Mentoring in FMUI

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**Key words:** academic mentoring, perception, obstacles

FMUI assigned each of its students with an academic mentor to provide students with a means to optimize their learning experience. Aligned with the Competency-Based Curriculum, FMUI tried to make the mentoring process more structured and effective through the use of mentoring logbook, training, and annual meeting for mentors. The aim of this qualitative study is to identify mentors' perceptions of their role and factors contributing to the effectiveness of mentoring. Data were collected using focus group discussions among mentors. The discussions were recorded and transcriptions were made verbatim. Using thematic analysis, the result of the discussion was further explored to identify mentors' perceptions. Mentors see their role as parental figure as well as role model. They feel the need to become familiar with the students, have access to their data, and be the first to be informed if something happened to their students. Mentor felt obliged to give guidance and advises to students, and referring them if the problem they encountered needs further intervention. Obstacles in maintaining effective mentoring relationship were time constraints, number of students, and difficulties in supervision. Despite these obstacles, mentors were eager to perform their duty in helping students. Mentoring in FMUI met several obstacles in its implementation. Obstacles were identified and would be handled by the institution to form optimal mentoring relationships.

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### Meeting the Needs of International Medical Graduates for Writing Licensing Examinations

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**Key words:** international medical graduates, foreign medical graduates, multiple-choice questions, physician shortage

Physician shortage is a major problem of the Canadian health care system and Canada relies on international medical graduates (IMGs) to augment its physician supply. IMGs immigrate with diverse educational, clinical, language and cultural backgrounds and an important barrier to practice in Canada is passing the licensing exams. Even competent candidates perform poorly. This study's purpose was to identify barriers to passing examinations, develop intervention programs to help IMGs overcome barriers and evaluate intervention effectiveness. Thirty-two non-registered IMGs were contacted and needs assessment conducted through surveys and two focus groups. Data analysis revealed that IMGs experience difficulty because of the multiple-choice question (MCQ) format; unfamiliarity with the healthcare system and common clinical problems; reading more into the questions than the examiners intended; and poor study techniques. With help from content experts, a program was designed. The 1-day workshop involved introduction to study techniques, review of how learning occurs, and practice sessions of answering MCQs with medical students and physicians. Physicians explained rationale for answers. The program outcome was obtained through written feedback and interviews of participants, medical students and physicians. All IMG participants found the workshop beneficial. Due to confidentiality and security reasons, their success in the licensing exams could not be documented. Canadian students identified reading speed and comprehension, language, cultural differences, unfamiliarity with the health care system, and ways of thinking as reasons for IMGs difficulty in MCQ writing. Interventions such as this can speed up IMG recruitment and thus improve access of patients to physicians.

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### Defining a Good Clinical Teacher: An Action Research at Faculty of Medicine Universitas Indonesia (FMUI)

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**Key words:** clinical teacher, action research, defining

FMUI has more than 600 clinical faculty in main hospital and satellite. Regular course on teaching has been programed regularly as one of faculty development. Action research was performed to identify attribute of a good clinical teacher, challenges and opportunity they faced, evaluate program and develop solutions. A mixed-methods research design of quantitative and qualitative method was used. Clinical faculty and student in clinical years were included in this survey. The quantitative data was analyzed using spss software package and summative content data analysis of qualitative data was performed. Students at clinical years and clinical faculty valued knowledge, good communication, clinical competency and interest in teaching as the most important attribute as a good clinical teacher. Time constraint, workload and lack of teaching skills were identify as a challenge and solutions raised by clinical faculty were do not allow other duties to be placed in

front of teaching responsibilities, more teaching courses and tips. All of faculties like teaching and feel rewarded for the teaching they have done. Course on clinical teaching, teaching tips bulletin 'Excelmed', and clinical teacher seminar were done as an intervention to clinical teacher problems. As the result, clinical faculty value the course as very helpful, enjoy the bulletin and seminar. However, forty percent of them could not attend the session completely due to other competing duties. Further plan are design a tailor-made course according to faculty availability, and give suggestion to academic coordinator to arrange protected time for faculty development program and teaching.

### 39

#### Academic Misconduct in Medical Students

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**Key words:** academic misconduct, medical students

Honesty and integrity are important virtues of the medical profession. However, many medical schools are confronted with a high level of academic dishonesty. Previous studies suggest that unprofessional behaviours by medical students can predict future disciplinary outcomes. The purpose of this study was to explore the prevalence of, and attitudes towards different forms of academic dishonesty among medical students. An anonymous, self-administered questionnaire was distributed to medical students at the Korea University College of Medicine. Seventy-seven premedical and 130 medical students responded the survey and analyzed. The questionnaire consisted of 34 items including engagement of, and attitudes towards academic misconducts, demographic information and previous educational experience for academic ethics. Frequency and correlational analyses were performed using SPSS Win 12.0 package. The most frequent misconduct was engaged in falsification of experiment data at least once after entering medical college (69.6%), and then followed by sneaking out of class after check-in (69.6%), internet plagiarism (69.1%), check-in class on behalf of friend (61.4%), and asking colleague to check-in class on behalf of oneself (48.8%). Cheating on examination (8.7%) was least reported. Students' attitude towards plagiarism and fabrication/falsification on experiment data were relatively lenient (around 40% of students agreed on committing those misconduct). Out 40% of respondents showed intention to commit free-riding on group assignment. The undesirable tendency was more prominent in premedical students than preclinical students. Our results showed relatively high prevalence of, and permissive attitudes for academic misconducts. Education and monitoring system should be reinforced to prevent misconducts in medical students.

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#### Patterns and Trends of Medical Student Research

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**Key words:** medical student research, trend, pattern

There is a significant increase in medical student involvement in research. Our study describes the changes in the research output, trends and content of published research involving medical

students. Pubmed<sup>®</sup> and Scopus<sup>®</sup> were searched for keywords 'Medical Student' in the affiliation field. The investigators scrutinized the abstracts and/or full text articles to look at the variables described below. The combined searches after excluding duplicates yielded 416 results, the first entry being from 1933. Sixty-six articles were excluded from the final analysis. There was an exponential increase in medical student research over the last 3 decade. Medical students were the first author in 170 (48.6%) studies and 55 studies were authored by a single medical student. On average, 44% of authors were medical student. However, a majority ( $n = 256$ ) of articles had only 1 medical student. The 3 most common areas of research in descending order were Psychiatry ( $n = 26$ , 7.4%), General Medicine ( $n = 24$ , 6.9%) and Medical education ( $n = 21$ , 6%). The 3 commonest type of articles were review articles ( $n = 48$ , 13.7%), Cross sectional studies ( $n = 47$ , 13.4%) and Case reports ( $n = 43$ , 12.3%). A majority of articles ( $n = 207$ , 59.1%) had not been cited. The majority of articles originated in the USA ( $n = 133$ , 38%) followed by UK ( $n = 40$ , 11.4%) and Iran ( $n = 39$ , 11.1%). Medical students are engaged in a wide variety of research leading to a multitude of publications. The increase in articles has remained. The lack of citations in a majority raises concerns of validity and applicability.

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#### The Effect of Medical School and Housemanship on Medical Student's Learning Outcomes from 2006 to 2008: A Multi Cohort Longitudinal Study

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**Key words:** medical education, housemanship, medical education survey, learning outcomes, Harden's 3 Circle-Outcomes, effectiveness, cohort

The study aims to compare the learning outcomes of medical school and housemanship within two cohorts of medical students. Student-reported learning outcomes from two cohorts of medical students who completed medical school in 2006 and 2007 (Cohort I & II respectively) from the Yong Loo Lin School of Medicine, National University of Singapore, were collected. The learning outcomes in the survey were grouped into Harden's 3 Circle-Model which were (1) inner circle (technical intelligence), (2) middle circle (intellectual, emotional, analytical and creative intelligences), and (3) outer circle (personal intelligence) (Harden *et al.* Medical Teacher 1999; 21(6) 546-552). Each statement in the survey asked whether a student disagreed or agreed that their undergraduate medical education or housemanship is effective in teaching them the 17 learning outcomes. In Cohort I, more students agreed that 8 learning outcomes were taught effectively during housemanship than during medical school. In Cohort II, more students agreed that 11 learning outcomes were taught effectively during housemanship than during medical school. For both cohorts, all 6 learning outcomes within the middle circle were taught more effectively during housemanship which were understanding of social and clinical sciences underlying principles; attitudes, ethical and legal responsibilities; integrity and honesty; compassion and empathy; approachability; and decision-making skills, clinical reasoning and judgment. Com-

pared with medical school, housemanship was most effective in improving student-reported learning outcomes within Harden's middle circle of intellectual, emotional, analytical and creative intelligences.

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### Emergency Medicine Multitasking Observation and Feedback Study

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**Key words:** direct observation, feedback, multitasking

Could direct observation (DO) of registrars by busy Emergency Department (ED) consultants be limited? This study aims to observe Emergency Medicine registrars and record workplace activities including:

- 1 Direct interactions with supervising senior medical officers (SMOs) such that the SMO had an 'opportunity to observe and provide feedback'.
- 2 Episodes of supervisor provided feedback.
- 3 Episodes where registrars seek feedback.
- 4 Workplace activity suitable for DO.
- 5 Multitasking and interruptions.

A prospective time-in-motion observational study conducted at Middlemore Hospital ED, New Zealand. A medical recorded data in minute units on time-in-motion sheets. Data analysis was by descriptive and difference in proportion statistics. Seventeen registrars participated on one or two occasions each, resulting in 25 240 minute study blocks (6000 minutes or 100 hours) of time-in-motion observation. Fifty SMO 'observation' events occurred (283 minutes total or 4.7% of workplace time). This resulted in 39 feedback episodes with one-third of these associated with seeking feedback. Only sixteen SMO 'observation' events (108 minutes total) occurred while giving direct patient care and SMO feedback to registrars occurred on 50% of these. Several important workplace activities were not SMO 'observed'. Communicating and/or consulting with an SMO had a higher time proportion in SMO 'observed' than non-observed time ( $P$  values all  $< 0.0002$ ). Communication in a formed team setting, resuscitation patient care, and social/psychiatry situations, similarly had a higher proportion ( $P$  values all  $< 0.0002$ ). A DO process over time could be considered to address current observation frequency and bias.

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### Patient Safety Culture Among Medical Students in Singapore and Hong Kong

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**Key words:** patient safety, curriculum, medical students, attitudes  
Undergraduate education plays an important role in promoting patient safety. Students from different backgrounds may differ in their perceptions towards patient safety. We investigated whether and how patient safety cultures may differ between students from different countries. We used a validated instrument, the 'Attitudes to Patient Safety Questionnaire (APSQ)-III', to study two

cohorts of second-year medical students from Singapore (SG) and Hong Kong (HK). None had received any previous teaching on patient safety. The APSQ-III consisted of 26 items covering nine key patient safety factors. The responders included 81 (31.3%) students from HK and 178 (68.7%) from SG. The overall response rate was 66.4%. Significant differences were found in two key factors – students from HK were more likely to report having more patient safety training ( $P = 0.007$ ) whereas SG students reported less confidence in error disclosure ( $P < 0.001$ ). Both groups considered medical error as inevitable, and that long working hours and professional incompetence were important causes of medical errors. The importance of patient involvement and team functioning received relatively less emphasis. In summary, The APSQ-III could identify differences in patient safety cultures and possibly teaching needs amongst students from different medical schools. Students with no prior teaching on the subject may differ in their self-efficacy possibly due to underlying differences between their local cultures and healthcare environments. Patient safety teaching should be tailored to students' perceptions and needs, and longitudinally studies using a validated instrument may help to design and evaluate teaching programs.

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### Stress and Its Associated Factors Among Medical Students of IIUM

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**Key words:** stress, factors, medical students, IIUM

Prevalence of stress is known to be high among medical students. Therefore, to assess stress and its associated factors, a cross-sectional study was conducted among the medical students of IIUM. All pre-clinical (1st and 2nd year) and clinical (3rd and 4th year) medical students were invited to enroll in the study by filling an on-line questionnaire. The level of stress was measured by using a validated Depression Anxiety Stress Scale (DASS-21) while the main stressors were identified by using a validated Medical Student Stressor Questionnaire (MSSQ). A total of 220 students responded. The highest response rate was from the 1st year medical students (94.0%), followed by 3rd year (41.2%), 2nd year (21.0%) and 4th year (17.0%). The study found that the stress level among pre-clinical students was statistically higher than clinical students ( $P = 0.049$ ), which was almost double. Stress level was not found to be significantly different on the basis of gender, family income, family size, marital status of student and marital status of parents. The mean intensity of Academic Related Stressors (ARS) was found to cause more stress (1.83, SD = 0.710) than the other two domains, which were Interpersonal and Intrapersonal Related Stressors (IRS) (1.67, SD = 0.83) and Social Related Stressors (SRS) (1.48, SD = 0.66). The main stressors in ARS domain which contributed to high stress among the medical students were getting poor marks, tests/examinations and not enough medical skill practice. The researchers proposed that stress management intervention should focus among pre-clinical medical students especially in handling academic-related stressors.

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### Do Medical Students' Self Esteem Affect Their Perspectives of Learning Methods?

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**Key words:** Problem-based Learning, cognitive dissonance  
The study of cognitive dissonance in Problem-based Learning (PBL) demonstrates that such a psychological mismatch between the espoused philosophy of PBL and an individual's expectation may relate to an intrinsic motivation among high and low learning achievers. We aim at investigating students' self-esteem on their previous learning achievement, learning preferences toward various learning methods and learning beliefs in peer-assisted learning with comparing these items between high and low achievers. A questionnaire on a 6-point Likert scale was developed to explore students' self-esteem on their previous learning achievement and various students' perspectives to their learning methods. Second-year students at Gifu University were requested to respond. Response rate was 80.2% ( $n = 85/106$ ), average age was 22.5 and female/male ratio was 21 : 64. The whole group was divided according to the level of self esteem into 'high achievers' ( $n = 45$ ) and 'low achievers' ( $n = 44$ ). In general, our students embraced various learning methods, understood the concept of PBL and peer-assisted learning, and showed positive expectation to learn through PBL. There were no statistically significant differences between two groups in all items such as understanding the concept of PBL and peer-assisted learning, preferences to group discussion and self-directed learning, although there were high median scores in high achievers such as 'enjoyment in learning' ( $P = 0.001$ ) and 'uneasy emotion in PBL' ( $P = 0.029$ ). This study indicates that students' cognitive dissonance before joining PBL might be explained by not learning preferences but emotions. The further study should be addressed to explore how self-esteem and emotional factors affect to their value of learning.

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### Academic Dishonesty: Asian and New Zealand European Medical and Pharmacy Students

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**Key words:** academic dishonesty, medical students  
Academic dishonesty is a useful indicator of students' behaviour and a high priority for educators in ethnic-rich Australasian societies. This study considered Asian and New Zealand European student groups in terms of their disclosure of engagement in academic dishonesty and their ethical learning experiences. A total of 312 pharmacy and medical students participated in this survey. A 21-item questionnaire measured engagement in academic dishonesty according to three domains: 'copying', 'cheating', and 'collusion'. Ethical learning experiences were measured according to: 'student learning in ethics' and 'knowledge' and 'reading' of the 'student code of conduct'. Analysis of variance findings indicated that Asian students were more engaged in behaviours classified as 'copying' and 'collusion' than their European peers. Male Asian students were more engaged in behaviours defined as 'collusion' than either European students (male or female) or their female Asian peers. Divergence was noted for 'cheating' behaviours at year 4 but not years 2 and 3. Copying differences were marked at years 3 and 4, but not year 2. Significant negative correlations between 'copying' and 'reading the student code of conduct' were found for all students indicating that those students who read this document were less likely to copy information. This study has addressed differences between Asian and New Zealand European students, and their stage of learning and gender. The diverse needs of students need to be considered when educating them about ethical codes of conduct and creating incentives for them to read and engage in discourse in the area of professional integrity.