

# Really Good Stuff

**Reports of new ideas in medical education**

**Annual, peer-reviewed collection of reports  
on innovative approaches to medical education**

Edited by M. Brownell Anderson

Association of American Medical Colleges

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## More 'Really Good Stuff'

Since 2001, *Medical Education* has published a selection of structured, short reports of innovations in medical education in its November issue. This 'Really Good Stuff' was the brainchild of M Brownell Anderson (Brownie), of Washington DC, and, in its first years, mirrored the 'In Progress' section of our North American sister publication *Academic Medicine*. Recently, *Academic Medicine* has changed its editorial direction and no longer publishes this type of manuscript.

We believe that educators across the world are keen to read about the new ideas that their colleagues in other institutions have to improve their teaching and to make learning more effective and we now publish the section in May and November each year. Each manuscript submitted for consideration in this section of the journal is read by at least 2 senior members of the editorial team and then by up to 4 peer reviewers drawn from a special panel of reviewers, who have volunteered for the task in addition to their other journal review activities. We use a double-blind review process wherever possible, where the identities of author and reviewer are not revealed to either party. Authors of all submitted manuscripts receive structured feedback from the review process, irrespective of the decision made about their paper in relation to its publication. This final decision is made by the editor of the journal acting in association with, and on the advice of, Brownie Anderson, our 'Really Good Stuff' editor.

Each year sees an increase in the number of manuscripts received and in the range of ideas described. The majority come from medical educators based in the USA (55% this year) and around half of those that are finally published are drawn from this group. Submissions from the UK, Europe, Australia and Canada follow, but only around 1 in 10 manuscripts published originate in the developing world. We used the services of over 100 reviewers drawn from 18 different countries this year in the decision-making process.

Despite growing numbers of submissions we accept only about half of all the manuscripts we read. Why is this? The main reason is that the idea as described just

doesn't fire the imagination of the reviewers. Of course, some of the manuscripts describe ideas that are not quite ready yet for public display and some have yet to be evaluated adequately, but many of those not accepted for publication describe ideas that are not truly original or are perhaps not fresh enough developments of existing methods or tools. All of our reviewers are hands-on medical teachers and, to be published, you have to convince them that your idea is really good. Because we use reviewers from many countries and backgrounds we hope to eliminate some of the bias that may be associated with judgements made solely from the perspective of the developed world. In fact, our acceptance rate for manuscripts submitted by teachers from countries outside North America, Australia and Europe is very high, even though we receive very few papers from the rest of the world.

This year's selection of papers has been grouped into 7 themes: international medical education; the curriculum; assessment and medical students; changing attitudes; graduate medical education; continuing professional development, and technology applications. The papers are a celebration of the energy and enthusiasm so many medical teachers bring to their work and are a joy to read and to think about. The range of ideas described stretches from examples of introducing the humanities to medical students, through the use of artwork in professional development, to imaginative new ways of using computers in teaching. But, as Brownie Anderson writes in her introduction, these published ideas can only represent a very small sample of the many new and creative ideas that are daily being developed throughout the medical education world. We would, of course, like to encourage others to submit their own really good stuff so that the ideas can cross-fertilise and add to the armamentarium of teachers as they develop their own courses and teaching skills. If you have something that you think fits this section, or know of someone who has but has not got around to writing it up, then please let us know by submitting a manuscript – and encourage your friends to do so. The details of how to do this and of

how to prepare and structure your paper are available on the journal website.

Eric Bentley once wrote, 'Ours is the age of substitutes: instead of language, we have jargon; instead of principles, slogans; and, instead of genuine ideas, bright ideas.' We leave it to you to classify those described in this month's selection.

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### **Introduction to 'Really Good Stuff': new ideas in medical education**

Are you reading this section of *Medical Education* and saying to yourself (or aloud), 'We do the same thing; I could have written this!' Well, you're correct, you probably could have contributed something equally valuable to 'Really Good Stuff' and we hope you will consider doing so for a future edition. The next deadline for submission is May 1, 2004, for publication in November 2004.

The fact that some schools send in multiple submissions while many schools do not submit anything at all has not changed from past years. There are hundreds of medical schools in the world. At almost every one of these schools there is innovative activity underway in

medical education. Yet most of these schools are not represented here because they did not submit anything. My hope is that future issues of 'Really Good Stuff' will feature 100 or more *different* medical schools and/or institutions.

Your challenge is to read through the reports selected for publication in this issue and then to consider whatever it is you are doing that you want the world to know about. Remember that your really good stuff cannot have been in place for more than 3 years, and that we are interested in promising initiatives that were not successful as well as those that have worked.

'Really Good Stuff' was created to encourage the sharing of ideas and the potential for networking with people involved in interesting work at other institutions. As you read through this issue, you may identify a new colleague with whom you might collaborate on a project of shared interest.

As RGS continues to evolve, we hope it will continue to better meet your needs. Let us know what you think about it. Most of all, submit your own really good stuff for review and consideration for the May 2004 issue of 'Really Good Stuff'.

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## International review panel

We are grateful to the following for their valuable assistance in reviewing 'Really Good Stuff' manuscripts during 2003:

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## Reports of new ideas in medical education

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### Collaboration between medical students and NGOs: a new model for international health education

*Indi Trehan, Julie R Piskur & Jason J Prystowsky*

**Context and setting** An increasingly globalised society places unique demands on the medical profession. Complex cultural, social and geographic barriers are being crossed by both patients and health care providers, leading to new challenges for future doctors that need to be addressed by the medical education system.

**Why the idea was necessary** Medical students from industrialised nations are increasingly interested in travelling to developing nations to gain clinical experience and learn about different health care contexts. Most international education initiatives are linked to established academic or community hospitals. Thus, they fail to expose students to rural communities where social, political, economic and environmental factors contribute to a very different set of medical and public health issues to those seen in other clinical settings.

**What was done** In 1999, students and faculty at Northwestern University Medical School, Chicago began semi-annual delegations to rural Central American communities that lack regular access to medical care. Under the guidance of faculty preceptors, students prepare for their visit by studying relevant medical, public health and social topics. Close collaboration is also established with local non-governmental organisations (NGOs). The NGOs select rural communities they know intimately to host the delegation and handle the logistics of setting up clinics and pharmacies. Because they are continuously and actively involved in a wide range of community-level sustainable development activities, the NGOs are better equipped than academic institutions to ascertain the immediate and longterm health care needs of these rural communities. Upon arrival, the medical team meets first with health officials for a detailed orientation and introduction to the country's social, economic, environmental and health systems. The delegation then travels to various rural communities to set up clinics. Local NGO staff con-

tribute to clinic operations with triage, referral to local resources and patient follow-up. Preclinical students translate, carry out triage, staff the pharmacy and contribute to the medical evaluation of patients. Clinical students actively evaluate patients and develop treatment plans based on diagnosis and availability of resources. Attending doctors with prior international health experience supervise all medical care and provide active teaching throughout. Educational workshops on preventive medicine and public health topics are conducted with small groups of patients throughout the day.

**Evaluation of results and impact** We have so far established successful collaborations with 6 NGOs in rural Nicaragua, Belize and El Salvador. Over 100 medical students have travelled to the communities served by these organisations, caring for more than 8000 patients over the past 4 years. Surveys of volunteers have shown the experience to be quite positive, with students reporting strong gains in knowledge of tropical diseases not seen in their home institutions – and both the biological and social factors responsible for them – as well as a strengthened commitment to practise in medically underserved areas domestically and internationally. Feedback from patients, NGO staff and community leaders has been extremely favourable, with local co-ordinators reporting positive outcomes in both the health and social environments of the communities served. NGO staff have been eager to continue the collaboration, as it adds to the provision of health care as a component of sustainable community development.

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### 'Teaching to Teach': enhancing fourth year medical students' teaching skills

*Naomi S Bardach, Rajesh Vedanthan & Richard J Haber*

**Context and setting** Studies show that the quality of teaching skills among interns and residents varies, and

that courses for faculty members and residents can enhance these skills.

**Why the idea was necessary** Interns often spend more time with medical students than do other members of the inpatient team. They teach multiple skills (e.g. time management, information gathering, physical examination, procedures, real time clinical decision-making) and provide evaluation and feedback. However, minimal curricular time is devoted to preparing undergraduate medical students for their future teaching responsibilities.

**What was done** In response to the need to enhance the teaching skills of medical school graduates, we launched a 'Teaching to Teach' course at the end of the fourth year of the medicine course at the University of California San Francisco (UCSF), immediately prior to the start of internship. During the final weeks of the fourth year, students attend 4 classroom-based, 1-hour blocks. The first 3 sessions address the following topics:

- 1 creating an environment conducive to learning and the exchange of ideas;
- 2 evaluating students fairly and providing constructive feedback, and
- 3 recognising 'teachable moments' and developing clinically relevant teaching plans that promote understanding and retention.

The fourth session is devoted to practising and discussing these skills in small groups led by residents. The faculty and residents for the course are selected from a group that fourth year UCSF students have recognised for their outstanding qualities as teachers and mentors. The emphasis of the course is on teaching intern-specific skills. For example, skills for formal didactic teaching receive minimal attention while skills for giving ongoing formative feedback and for teaching effectively under the pressure of housestaff duties are emphasised.

**Evaluation of results** Evaluations demonstrate that participating students strongly endorse this programme (overall ratings for 2000: mean = 3.5,  $n = 22$  [scale 1–4]; 2001: mean = 3.4,  $n = 23$  [scale 1–4]; 2002: mean = 4.0,  $n = 23$  [scale 1–5]; 2003: mean = 4.4,  $n = 21$  [scale 1–5]). Nearly all respondents said that the experience would be useful as they entered the first year of residency. Strengths of the sessions included their provision of opportunities to interact with faculty and residents known to be outstanding teachers and the learning of practical tips on how to be a more effective teacher. All respondents 'agreed' or 'strongly agreed' with the statement: 'Formal instruction in teaching should be a required part of medical education' (2001:

mean = 3.6,  $n = 17$ , [scale 1–4]; 2002: mean = 4.4,  $n = 23$  [scale 1–5]).

A 'Teaching to Teach' course provides a forum for articulating and practising teaching skills with students; participating students perceive it as an important addition to their education. Future plans include:

- 1 studying the effect of this course on the quality of the teaching skills of our graduates, and
- 2 introducing this course material earlier in the undergraduate medical education curriculum, so that these skills can be practised prior to entry into a residency programme.

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## A curriculum in homeless health care was effective in increasing students' knowledge

*Sharad Jain & David Buchanan*

**Context and setting** Homeless patients have complex health problems that often differ from those encountered in general practice. Despite increased use of health services, mortality rates for homeless people remain 3-fold higher than those for the general population. However, doctors rarely receive formal training in caring for homeless patients.

**Why the idea was necessary** As the homeless population continues to grow, knowledge of homeless medicine becomes increasingly relevant for all doctors. To address these issues, we created an elective for fourth year medical students at the University of California, San Francisco to teach the unique aspects of providing care for homeless patients and to introduce them to role models in the community who care for a group of people who are underserved.

**What was done** The course consists of a 2-week elective offered annually to fourth year medical students; enrolment is limited to 5 students.

The lecture series is given by faculty members and community providers who work with homeless people. Lectures include topics that provide a context for understanding the needs of the homeless population, as well as common medical issues, including tuberculosis, HIV infection, substance abuse, mental illness and skin disorders.

Students gain clinical experience by spending 4 half-days per week providing care to homeless people. Students also perform medical outreach with experienced doctors to people living on the street. Finally,

students visit sites that provide services to homeless people to learn innovative ways to provide care and to introduce them to role models in the community.

**Evaluation and results** Course evaluation was performed using written evaluations and knowledge-based tests. Knowledge-based multiple-choice tests were administered on the first and last days of the course. These tests were also administered to a control group of students who were unable to enrol due to space limitations. In order to maintain anonymity, identifiers were not used on the tests and an unmatched analysis was performed. Testing for the change in test scores between the intervention and control groups was performed with a linear model.

This course has been offered for 3 years, with 9 students enrolling in total. Student feedback has been uniformly positive. Students unanimously felt that the course objectives were met and that the teaching was excellent. All students stated that they would recommend the elective to their colleagues.

Mean knowledge scores at baseline were 59.8% for the intervention group and 63.2% for the control group. Following the course, the intervention group's mean knowledge score increased to 80.0%, while the control group's mean was 59.2%. The coefficient of the interaction term in the linear model was 24.2 ( $P < 0.001$ ), indicating that the intervention group showed significantly higher test scores than the control group.

Our evaluation instruments showed that students who enrolled in this elective were successful in acquiring the specific skills and knowledge needed to provide care to homeless patients, gaining higher post-test scores than the control group. Students stated that they especially enjoyed the opportunity to work with clinicians, both within the University and from the community, who directly deliver care to impoverished patients. Future work is needed to assess whether student attitudes change with course participation.

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## A new undergraduate teaching session in occupational medicine

*Paul Grime, Sián Williams & Sandra Nicholson*

**Context and setting** We present an interim evaluation of a new half-day teaching session at the Royal Free Hospital, London that aims to develop fourth year

medical students' understanding of the basic principles and practice of occupational medicine. The first 6 of 9 sessions have been attended by groups of 20 to 32 students.

**Why the change was necessary** Despite UK government strategy, teaching in occupational medicine is declining in UK medical schools and workplace visits are no longer used as a teaching tool. A new undergraduate medical curriculum served as the catalyst to revising the structure and content of our occupational medicine teaching session.

**What was done** The session is now more structured than it was previously in that it has 5 clearly stated learning objectives covering occupational history taking, work related ill-health, workplace hazard assessment and control, and the assessment of medical fitness for work. We use a variety of teaching methods, including small group work, and an interactive feedback exercise asking students to describe cases from general practice attachments to highlight the links between work and health. Case scenarios encourage students to consider the hazards of work, work related ill-health and medical fitness for work. To illustrate these concepts we visit a workplace within the hospital (boilerhouse, carpenters' workshop or kitchens). We give students a checklist with which to identify some hazards of work, assess the risks to health and observe control measures. Students then feed their observations back to the group afterwards, emphasising anything they found to be unexpected.

**Evaluation of results and impact** Of the 141 students who have attended the sessions so far, 124 (88%) have returned written evaluations. In response to our request at the start of the session to briefly define the term 'occupational medicine', 63% showed prior appropriate understanding, but 10% did not respond. At the end of the session, these proportions were 67% and 25%, respectively. A total of 82% of students felt that all the stated learning objectives had been met.

We asked students to rate on a 4-point scale (1 = disagree, 4 = agree), the usefulness, relevance, timing, structure and teaching methods and their enjoyment of the session, and to specifically rate the relevance and their enjoyment of the workplace visit. The modal rating was 3 for all of these.

We asked students to comment on what they had found most useful. For this, 22 students mentioned the case histories, 21 the workplace visit and 12 the occupational history. In answer to a question asking what they would like to see changed, 14 students said the session was too long, 9 requested handouts and 9 felt the workplace visit was unnecessary.

In response to the student evaluations we have curtailed the session by visiting the hospital kitchens only, rather than the boilerhouse and carpenters' workshop, which were more time-consuming. We have integrated case scenarios into the main body of the teaching session and provided additional written material to accompany the session.

This evaluation demonstrates the need for such teaching. By responding appropriately to the student feedback, the teaching session's design can be tailored to optimise student satisfaction and learning, and provide a useful model for other institutions planning similar teaching.

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## Variety show syndrome: making a diagnosis

*Lindsay Davidson*

**Context and setting** Despite a radical shift in curricular philosophy over the past decade, many medical schools struggle with a problem that we have dubbed 'variety show syndrome' (VSS). This syndrome is typified by a course dominated by a stream of 'guest lecturers', most of whom feel little ownership in the course as a whole. Undergraduate medical school teaching continues to rely on multiple teachers able to deliver highly specialised individual lectures within the framework of a larger course. The first year Musculoskeletal Course at Queen's University, Kingston, Ontario is a prime example: the course is a systems-based, multi-disciplinary module taught in the winter term of the first medical year. It is taught by 22 lecturers, who deliver approximately 50 hours of didactic teaching to the students over a 4-week period.

**Why the idea was necessary** While this is an effective way to expose students to individuals with particular expertise in the different facets of a larger topic, poor communication between lecturers can lead to a sense of discontinuity for students and result either in duplication of material or in significant omissions. This may result in problems that are difficult for a course co-ordinator to diagnose and treat. A simple approach utilising focused samples of student feedback is described here. This technique was used to inform the course co-ordinator, provide quality assurance and enhance course development.

**What was done** In order to address this problem, a focused, real time quality assurance programme was introduced. When the course was given in the winter of 2002, students were asked to rate the objectives for each lecture immediately after it was given. A random sample of 20 students (20% of the class) was chosen at the beginning of each session and asked to complete an anonymous survey. Each objective was rated in terms of the depth of its coverage during the lecture (using a 5-point Likert scale, where 1 = not at all and 5 = extensive coverage). Students were also asked to rate the effectiveness of the lecturer in terms of his/her classroom presentation skills and ability to interact with and motivate students.

**Evaluation of results** The survey results were collated and used to identify objectives that had not been addressed in the lectures. Several lectures were identified as having objectives that differed significantly from those of the associated in-class presentation. This information was invaluable for the course chair and led to the restructuring of the course in a variety of ways: further revision of objectives were required for 1 session; another has been converted to a web-based, self-study module, and a third lecture has been augmented by assigned reference reading.

Most co-ordinators of large medical courses are familiar with variety show syndrome and the problems inherent in this type of course design. A simple process for alleviating these can be initiated, using timely and focused student feedback to inform the co-ordinator (as well as the individual teachers) and to allow the growth and development of an effective multi-teacher course.

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## Introducing assessments to new medical students: a transition workshop

*Elaine Halley, Debra Nestel & Richard Doherty*

**Context and setting** As part of their transition into medical school, all first year students at the Faculty of Medicine, Monash University participate in a range of activities over the weekend prior to their first semester. The aims of the programme are diverse and include introducing students to the medical curriculum in terms of its structure, processes and outcomes. This report focuses on introducing students to assessments. It is well documented that assessment can drive what and how students learn.

**Why the idea was necessary** Medical students may experience considerable anxiety over assessments. This anxiety is sometimes driven by lack of familiarity with new modes of assessment. Most students are used to high stakes examinations of knowledge-based subjects and are less familiar with assessments of attitudes and skills and those that integrate broad ranging concepts. In order to alleviate potentially unhelpful levels of anxiety, and in line with the notion of assessments as motivating what and how students learn, we introduced in a novel and relatively stress-free manner some of the assessment formats offered in medical school.

**What was done** Students participated in a 75-minute session that commenced with a brief didactic presentation and handout distinguishing formative from summative assessments and outlining the different domains in which students will be assessed (knowledge, attitudes and skills). Students then participated in 2 experiential activities on topics unrelated to medicine. The first activity consisted of a written assessment that used a range of question structures (e.g. extended matching questions, short answer questions, multiple choice and modified essay questions). The second activity was a 5-station objective structured 'non-clinical' examination (e.g. sensory challenge to identify hidden objects, jigsaw puzzle, written preparation for an interview, an interview with a simulated stranger and an information-giving exercise). These 2 activities were followed by small group discussion on the aims, rationale and preparation for each assessment. After the session, students rated the degree to which the aims were met, while tutors recorded aspects of the session that worked and those that required development.

**Evaluation of results** Students ( $n = 180$ ) used a 5-point rating scale where 1 = not at all effective and 5 = very effective to rate the session in terms of its helpfulness in facilitating their transition to medical school. The mean score was 4.2 (SD = 0.9, range 3–5). Comments suggested that the activity was successful in introducing new assessment methods and that students were able to reflect on the reasons for such assessments and how they might prepare for them.

Tutors reported that students were able and willing to discuss their experiences and grasped the notion of integrated assessments and the new domains to be examined. The opportunity to discuss assessments in the context of teaching and learning was appreciated, as was the fact that this all took place in a relaxed atmosphere. The longterm impact of this familiarisation activity could result in fewer questions from students and lower levels of anxiety before assessments.

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## An assessment measure to evaluate case write-ups in a medicine core clerkship

*Jennifer R Kogan & Judy A Shea*

**Context and setting** Patient write-ups provide information about a student's ability to collect information, identify and evaluate problems, demonstrate clinical reasoning, develop management plans and communicate through the written record. Although write-ups are ubiquitous in medicine clerkships, there is no standard method of evaluating them. The purpose of this study was to assess the validity of a tool developed to grade write-ups.

**Why the idea was necessary** Students and clerkship directors agree that case write-ups are valuable, but there is concern about the variability of criteria and standards used for evaluation. Many clerkship directors have recommended that a standardised instrument be developed to evaluate case write-ups and to provide students with specific, standardised feedback about their written documentation skills.

**What was done** Between January and December 2002, students ( $n = 165$ ) enrolled on the 6-week inpatient medicine core clerkship were required to submit case write-ups in weeks 2, 4 and 6.

During week 1, write-up format was reviewed and students were given a copy of a model write-up.

The write-ups were graded by 1 grader, who was either the associate clerkship director or 1 of 12 teaching residents/fellows who were not the students' clinical supervisors. Write-ups were returned within 1 week so that feedback could be incorporated into subsequent write-ups.

The write-up evaluation instrument used a 4-point Likert rating scale (1 = strongly disagree, 4 = strongly agree) for 7 history components (chief complaint, chronological history, symptom characterisation, pertinent positives/negatives, past medical history, family/social history, review of systems), 2 physical examination components (patient description, pertinent positive/negative examination findings), 1 data presentation component and 4 assessment components (summary statement, problem list, differential diagnosis with clinical reasoning, diagnostic/therapeutic plan). Each write-up received an overall rating of fail, pass, high pass or honours

(1–4, respectively). Students' final write-up grade, which represented 7.5% of their course grade, was given as the average of the 3 overall ratings. Analyses focus on changes in scores over the 3 write-ups and correlations of final write-up grades with inpatient clinical clerkship grades and National Board of Medical Examiners (NBME) medicine subject examination scores.

**Evaluation of results and impact** A total of 493 write-ups from 165 students were graded over the year. Component scores ranged from 3.43 (physical examination findings) to 3.84 (chief complaint) for write-up 1 and from 3.64 to 3.96 for the same components in write-up 3. The mean overall rating increased significantly from write-up 1 to write-up 3 (3.16 versus 3.43;  $P = 0.0012$ ). There were significant improvements in 12 of 14 components; these occurred between write-ups 1 and 2 for 8 components and between write-ups 2 and 3 for 2 components. Final write-up grades were associated with inpatient clinical clerkship grades ( $r = 0.26$ ,  $P = 0.0008$ ) and examination scores ( $r = 0.36$ ,  $P = 0.0001$ ).

Initial analyses suggest that the write-up evaluation form is useful as improvement was observed in students' performances following feedback. Validity is supported by correlations with other summative assessment measures. Future analyses will assess inter/intra-rater agreement, the number of domains represented by the component items, and whether the improvement in written documentation skills is associated with the form per se or with general experience.

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## Web-based feedback of medical student assessment results

*S Fox, W A Reid & P Evans*

**Context and setting** In the University of Edinburgh Medical School, candidates' examination results, limited to matriculation number, final mark and grade, were formerly posted as a typed list on a noticeboard, allowing no opportunity for detailed feedback to students. As students would have little difficulty in finding out colleagues' matriculation numbers, any anonymity was compromised.

**Why the change was necessary** Students were receiving no useful feedback on their assessments. In the medical course, redesigned as a consequence of

*Tomorrow's Doctors*, we tried to maximise formative feedback from assessments. We devised a web-based system for giving candidates confidential, detailed feedback on assessment components. This was pioneered in Year 2, in each term of which there are 2 in-course written assignments and an examination, comprising a multiple choice paper and a written paper with several modified essay questions. In addition, there is a peer appraisal component, comprising comments and marks accorded by students to colleagues in problem-based learning small groups.

**What was done** Assessment results were stored in a Microsoft Access database, then exported to an Excel spreadsheet and sent to the Learning Technology Section, University of Edinburgh, where the data was transferred into an SQL Server 2000 database, designed to hold a full breakdown of the assessments found in each Year 2 module. The data were displayed in the Edinburgh Electronic Medical Curriculum (EEMeC) using active server pages (ASPs), which enabled the display of ranking details and histograms showing each student's position within the cohort.

With a username and password, students accessed their personalised version of the EEMeC. They then located their *My Results* page, which displayed their own results, but not those of other candidates. (<http://www.eemec.med.ed.ac.uk/MyResults/staff.asp>). The *My Results* page listed the candidate's percentage mark in each assessment component alongside a histogram giving the spread of the whole class, highlighted the column into which the candidate's own mark fell and showed the candidate's numerical rank in the class. A separate information button accessed details of how that component contributed to the overall assessment mark, with a model answer and/or comments from markers on how candidates generally answered the question.

**Evaluation of the results and impact** Of 183 students (87% of 210) who responded to a web-based questionnaire, 165 (91%) agreed or strongly agreed that the results were easy to access, 161 (88%) found the information panels on examination structure and weightings useful, 164 (90%) found the breakdown of the individual components of the assessment useful and 146 (80%) found the histograms showing where their mark came in relation to those of the whole class of value.

The responses indicate a high degree of acceptability to students. As a consequence of this work, assessment results are now returned to students in electronic form only. The level of confidentiality provided by this method is, of course, much greater than that of a list

displayed on a noticeboard and this practice has now been stopped.

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## 'Attitude awareness' – helping students make the link between attitudes and interpersonal behaviour

*Maureen Kelly & Nicholas Fenlon*

**Context and setting** Attitudes play a vital role in interpersonal communication. A good practitioner needs to be aware of his/her own attitudes towards patients and to be conscious of how these attitudes may affect his/her communicative behaviour. The Department of General Practice at the National University of Ireland, Galway has been teaching an attitude awareness workshop, as part of a larger communication skills module, to fifth year medical students since 1999.

**Why the idea was necessary** Social psychology theory holds that attitudes are powerful determinants of interpersonal behaviour. However, students often consider themselves to be 'value-free' and are unaware of the effect their own attitudes have on how they interact with patients. We propose that 'attitude awareness' is an essential step in identifying the chain of events that leads from deeply held attitudes to the expression of these attitudes in communicative behaviours. We devised a model that offers students an opportunity to become acutely aware of the effect of attitudes on behaviour within a safe learning environment.

**What is being done** One facilitator leads a 3-hour workshop with a maximum of 20 students. The broad aims of this workshop are to:

- 1 help students recognise that we all have attitudes;
- 2 consider the reciprocal relationship between personal attitudes and professional behaviour, and
- 3 discuss how attitudes are expressed and how this might affect doctor–patient communication.

Central to the workshop is a group exercise in which 4 volunteers are each given an identity label to be worn on their back. They are each asked to sit in a different corner of the room. The 4 volunteers are unaware of the identities on their labels. The identities are: a transvestite, a named ethnic minority, an alcoholic, homeless person and a pimp. The rest of the class considers the 4 identities. The facilitator asks them to imagine bringing 1 of these people home for 24 hours,

where they will meet family and friends, use beds, bathroom, kitchen, etc. and their identity will be obvious to everyone. The students are instructed to stand beside the volunteer they would be most comfortable bringing home. Students are asked to state what influenced their choice, describe the stereotype they used and offer 3 positive and 3 negative comments about the person they have chosen. They also state why they have not chosen the others. The 4 volunteers are asked to share how they feel about what is said about their identity.

The discussion then moves on to consideration of the possible conflicts for the practitioner between personal attitude and professional responsibility when dealing with a patient towards whom he/she has a negative personal attitude.

**Evaluation of results** Student feedback is collected annually by anonymous questionnaire. Students give the workshop a score out of 10 for its perceived educational worth (10 = excellent). The average scores for 2002–03, 2001–02, 2000–01 and 1999–2000 were 8.5 ( $n = 55$ ), 7.5 ( $n = 49$ ), 8.7 ( $n = 57$ ) and 7.8 ( $n = 65$ ), respectively.

Comments given in the free text section included: 'the attitude workshop was excellent'; '[I] learned how to appreciate other views and attitudes', and 'the seminar on attitudes was excellent mainly due to its interaction between the students.'

Students' communication skills are assessed by means of an objective structured clinical examination in which 1 station is specifically designed to challenge students' attitudes towards patients.

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## Class does matter: a working class workshop for medical students

*Jill E Thistlethwaite & Barry Ewart*

**Context and setting** Many medical schools include 'Valuing Diversity' sessions as part of personal and professional development (PPD) modules. Such sessions focus on helping students to reflect on their attitudes to patients who have different life experiences to their own. Topics cover areas such as ethnicity, sexuality and disability. At Leeds Medical School, our objectives for PPD also include characterising and valuing differences that arise through class.

**Why the idea was necessary** Although 1 PPD session is devoted to poverty, we do not specifically focus on class differences elsewhere. In 2003 we invited second year students to suggest subjects for the Valuing Diversity workshops. One student proposed a session on the problems faced by working class medical students in a predominantly middle class environment. Due to changes in the student grant support system in the UK and the introduction of student fees, the majority of medical students come from fairly affluent backgrounds. In line with our objectives and the student's suggestion, we thought it important to develop a workshop about the working class, a sector of society not covered in other sessions. Moreover, we hoped that this session would allow students to discuss and share their own experiences and what they perceived as 'class' differences.

**What was done** The session was run by a senior lecturer in adult education, with a portfolio of publications about the working class, and 1 of the authors (BE). Second year medical students have a choice as to which of 2 Valuing Diversity sessions they attend. Eleven students chose the session, 4 of whom described themselves as 'working class'. The 2-hour workshop included facilitated discussion on working class participation in higher education, obstacles facing working class students and the benefits/disadvantages to patients of working class doctors.

**Evaluation of results and impact** Part of the PPD assessment consists of a piece of reflective writing. This includes a section on the Valuing Diversity sessions, which asks what has been learnt from the sessions and how students may change as a result. The 11 students' responses evaluated the workshop and demonstrated its impact.

The session highlighted preconceptions about class in the 2 broad groups of students (i.e. middle and working class). Both expressed the idea that the other was 'looking down on me'. One student wrote: 'Some of my middle class colleagues expressed their feelings of anxiety and embarrassment when first meeting people from the working classes at university. I had always believed that such feelings were only experienced by the working classes and that people from the upper classes had enough confidence to avoid such emotions.' The main learning points from the seminar were: that the medical profession should be more accessible to the public; that widening participation is essential; that socioeconomic differences exist both at university and in the 'real world'; that people should not categorise each other but should treat one another as individuals, and that studying medicine should not be taken for granted but viewed as a privilege. Participants also

stated that they gained an understanding of the difficulties faced by some students.

Following the success of the workshop we will encourage more students to choose this option next year.

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## A humanities orientation to physical diagnosis

*Charles R Perakis*

**Context and setting** As an orientation to the physical diagnosis portion of an Introduction to Clinical Medicine course for second year medical students, I play a self-recorded audiotape of Richard Selzer's essay, *Textbook*, while showing a PowerPoint presentation of the images mentioned in the essay

**Why the idea was necessary** One of the most intimate aspects of the doctor-patient relationship is the physical examination. Physical diagnosis textbooks place a great deal of emphasis on the necessary techniques and clinical correlations that a medical student must learn in order to become a competent clinician.

This essay explores the doctor's privilege and responsibility in performing an intimate examination on another human being. It illustrates the ideal balance between necessary scientific knowledge and the gentle wisdom of the humanities, which together produce the kind of focussed examination human beings desire.

**What was done** In Richard Selzer's essay, *Textbook*, the Yale surgeon-writer offers the medical educator a way to balance the art and science of physical diagnosis. He poetically describes giving an old physical diagnosis textbook to a medical student as a reminder of the healing continuum that is medicine's legacy. By taking us through his textbook pages, Selzer gently reminds us of the beauty and truth to be found in 'ugliness' and misery. He points out that: 'The man who photographed the people in this book knew that in October, when the leaves fall from the trees, you can see further into the forest.'

The passion illustrated here, however, is not found in my medical students' contemporary textbook on physical diagnosis. Therefore, I simultaneously illustrate the reading with many images gleaned from a variety of sources, such as old physical diagnosis textbooks, the Internet, journals and other medical books.

After I present *Textbook* to my class, a respectful silence accompanies this powerful entry into the world

of medicine. Building on this mood, I do not ask immediately for responsive dialogue, but instead allow the students to reflect quietly.

**Evaluation** I do not ask for a formal evaluation of this presentation, but I do allow an opportunity for feedback through the students' portfolios that reflect on the entire course.

The students find the presentation both disturbing and eye-opening. The images are powerful and can cause uneasiness. The students appreciate that they will need to deal with their reactions to persons with all kinds of afflictions and that this is their initiation into this process.

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### 'Social Medicine', a novel 1-week required clerkship on the biopsychosocial model

*Paul S Mueller, Mary E Johnson & Jacqueline L Johnson*

**Context and setting** In 1998, the Association of American Medical Colleges issued Report I of the Medical School Objectives Project (MSOP). One MSOP learning objective is that students must demonstrate knowledge of the non-biological determinants of health and of the economic, psychological, social and cultural factors that contribute to the development and continuation of disease and illness.

**Why the change was necessary** Medical school curricula emphasise biological determinants of health and disease. However, non-biological factors may also be important determinants of health. The biopsychosocial model of health and illness incorporates both biological and non-biological determinants. To provide holistic patient care, doctors must be able to discern and address not only biological but also non-biological determinants of health.

**What was done** During 1999, we implemented a new clerkship called 'Social Medicine', which emphasises the biopsychosocial model. During this 1-week required clerkship, fourth year medical students participate in patient rounds with social workers for 2.5 days, with chaplains for 1 day and with hospice colleagues for 1 day. Students do not perform the functions of these colleagues. Instead, students gain an appreciation of the roles of these colleagues and how they address non-biological factors that may affect health outcomes (e.g. recovery from illness). Specifically, students observe

how social workers function in their many roles (e.g. counsellor, facilitator, patient advocate) as they systematically assess and address psychosocial determinants of health (e.g. insurance issues, family dynamics, placement). Students also witness how chaplains offer support and comfort to patients, especially when patients pose existential questions ('Why me?') that science cannot answer. Finally, students learn how hospice colleagues provide holistic care to dying patients and their grieving loved ones.

In addition to observing social workers, chaplains and hospice workers, students are required to read a collection of relevant articles. These articles describe the biopsychosocial model, the nature of suffering, the role of social workers in the health care setting, the relationship between patient spirituality and health outcomes, and the features of high quality end-of-life care. Students also meet with the physician director of the clerkship to discuss their observations. Finally, students are required to submit an essay reflecting on their observations on the week's clerkship and the required readings. They are encouraged to comment on how psychosocial, spiritual and other non-biological factors impact health, outcomes of illness and the dying experience, and how social workers, chaplains and hospice workers address those factors.

**Evaluation of results** Of 130 students who completed the clerkship between 1999 and 2002, 66 have submitted their evaluations of it. The students' overall rating of the clerkship was very good. Based on a 5-point scale (5 = excellent; 1 = poor), the median score was 4 and the mean  $\pm$  SD score was  $4.0 \pm 1.0$ . Student feedback consistently included an appreciation (and prior lack of awareness) of social workers, chaplains and hospice colleagues as indispensable members of the health care team. Students also consistently reported they would be more likely to refer patients to these colleagues as a result of the clerkship.

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### Medicine, Cinema and Culture: a workshop in medical humanities for clinical years

*Etienne Lepicard & Keren Fridman*

**Context and setting** Recent reform of the medical curriculum at Tel Aviv University School of Medicine endorses a patient-centred view of medicine, a biopsychosocial approach to disease and lifelong learning.

In the wake of this, the Department of Behavioural Sciences launched a programme called 'Medicine, Patient and Society'. The workshop 'Medicine, Cinema and Culture' was developed last year, in order to introduce the programme's principles into the setting of the clinical years. The workshop consists of 8 meetings of 4 academic hours each, during which students watch a full-length movie and then participate in a 1-hour, small group discussion.

**Why the idea was necessary** The programme was targeted at the first 2 semesters of the clinical years, which are liminal in terms of the socialisation process by which the future doctor-identity of the students is determined. The students' worldviews are challenged; they have to learn to cope with human suffering and death in a professional setting. Moreover, they are, as never before, confronted with different kinds of doctors, constituting potential role models. University hospitals represent a cultural system with a separate, unexpressed system of values, into which the student is introduced. Cinema was chosen to answer this liminal identity challenge, as it allows for a comprehensive approach involving all the senses, rather than the application of cognitive knowledge only. The artistic point of view offers an alternative perspective on medical issues, and as part of entertainment culture, cinema has an important cultural dimension.

**What was done** A pilot programme was conducted in spring 2002. Two groups of 8 students were to meet 4 times, twice during their internal medicine clerkship and twice during their paediatrics clerkship. Because of security issues, only 1 group succeeded in meeting 3 times. The films *Wit* (2001) directed by Mike Nichols, *Red Beard* (1965) by Akira Kurosawa and *Lorenzo's Oil* (1992) by George Miller were seen and were followed by discussion when time permitted. Two staff members from the Behavioural Sciences Department were present and contributed to the discussion.

Changes in setting occurred during the pilot, as the first meeting took place around a small television in the staffroom and the next 2 were held in the main hospital hall, with a large screen and a more cinema-like atmosphere. It became evident that the workshop had to be an integral part of the clerkship morning hours. The merits of the presence of additional staff members were discussed, because although their presence offers valuable input to the discussion, the students' discussion was more open and unhindered in their absence.

**Evaluation of results** At the final meeting, students were asked to fill in evaluation forms containing the following questions:

- 1 To what extent did participation in the workshop offer an opportunity to discuss significant clinical experiences?
- 2 Did exposure to the different kinds of caregivers presented in the movies lead students to identify with a certain character?
- 3 To what extent did the workshop present different perspectives on the medical world?

The positive results of the evaluation, together with the constructive structural changes in the course implemented by departmental staff, led the faculty teaching committee to extend this workshop to all students in 2003.

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## Drawing on experience: physician artwork in a course on professional development

*Michael W Rabow*

**Context and setting** During 2–3 months of outpatient rotations, groups of 3–8 interns in the University of California San Francisco's Primary Care Internal Medicine programme participated in a required weekly seminar called *Doctoring: A Course on Personal and Professional Development*. A component of the seminar involved 'Art Experiential' sessions, in which participants engaged in self-reflection through artwork.

**Why the idea was necessary** Professional enculturation is a powerful process that has been documented as having some negative consequences for doctors-in-training. Although improving educational curricula and work environments are important ways of addressing the issues concerned, innovative programmes must also be developed to support housestaff in dealing with difficult training experiences. Enhancing personal awareness through Balint groups, discussion of critical incidents, or journal-keeping may improve professional effectiveness. Artistic expression is another promising method.

**What was done** Interns spent 1 quarter of seminar time in the Art Experiential sessions, where they explored issues of doctor identity, the nature of healing, the patient–doctor relationship, and death and dying through drawing, painting, mask-making and collage. These sessions were facilitated by a faculty doctor and an artist.

After agreeing on rules of confidentiality, participants were asked to reflect on their professional development

through creating a work of art. The instructions given included: 'Draw a picture of yourself before you started medical school and another of yourself now'; 'Create a memorial collage to a patient you cared for who died', and 'Create a plastercast mask of your face and decorate it with symbols of who you are becoming as a physician.' Participants were then invited to describe their artwork and discuss its meaning with the rest of the class.

**Evaluation and impact** Between 1997 and 2000, 63 of 78 participating interns (81% response rate) completed confidential course evaluations. Interns rated the quality of the Doctoring PPD seminar overall as high (mean = 4.46, where 1 = poor and 5 = excellent). A number of interns commented on the importance of the seminar to their personal well-being ('it has made me feel whole again', 'it has helped create perspective and made me happier over the course of the year') and to their commitment to medicine ('it helped me reaffirm why I was here, as I felt myself losing that vision'). All interns were willing to participate in the Art Experientials and all respondents reported feeling comfortable with the sessions. No respondent reported experiencing negative consequences as a result of the sessions. All but 1 respondent (98%) found the Art Experientials useful and a number identified the Art Experientials as the most important element of the seminar. One participant reported, 'I started doing projects at home as a way of expressing issues at work.' Another said, 'I think the creative nature of all the different exercises was a true strength of the seminar.'

Artistic expression adds to previously described techniques for encouraging doctor self-reflection. Artwork may allow access to and sharing of some experiences in a way not possible via simple discussion groups among housestaff. Art Experientials may be a useful innovation for courses in professional development for medical students and also for practising doctors.

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## Postgraduate internal medicine teaching in the Pacific: a sustainable approach

*Kimberly Oman, Joji Malani & Robert Moulds*

**Context and setting** In 1998, Fiji School of Medicine established a training programme in internal medicine

as 1 of several training programmes developed to address a profound lack of specialists in the Pacific region. Previously, specialist training had to be undertaken outside the Pacific region, and many successful trainees did not return.

**Why the idea was necessary** While our main teaching hospital provided a rich clinical environment, we needed to ensure that our candidates acquired a comprehensive yet appropriate knowledge base in all subspecialties of internal medicine because they would be practising as generalists, often in isolated settings. We chose to develop a formal teaching programme rather than relying on self-study because our students had access to few learning resources, especially resources relevant to developing countries, and there were no dedicated subspecialty services for in-depth learning by 'immersion'. Our academic teaching activities needed to be relevant, sustainable and adaptable to distance learning in a setting of severe overall resource constraints.

**What was done** All specialist training programmes were divided into a 1-year 'Diploma', with intakes of 2-6 trainees, followed by a 3-year 'Masters', which consisted of 2 years of formal training followed by examinations and an elective year. For internal medicine, we divided the 40-week teaching year into 10 4-week modules, with subspecialty areas visited roughly once a year over 3 years. In all years we scheduled 2-3 hours per week of didactic/interactive sessions centred around presentations either prepared in PowerPoint or as 'paper cases', which were discussed as a group. The Masters trainees also worked through multiple choice questions. Although our curriculum was strongly influenced by guidelines from developed countries, we actively adjusted our presentations to a Pacific context, especially in the earlier years, and we supplied readings from textbooks and journals. After 3 years, we created a CD-ROM with a full set of teaching materials.

**Evaluation of results and impact** While 15 and 6 of our students have passed the Diploma and Masters examinations, respectively, the main impact of our approach has been its sustainability and flexibility, which is especially important in developing countries.

We initially found the preparation of formal teaching materials very time-consuming. In the 2 years since this task was completed, however, we have been able to maintain our teaching approach despite an initial reduction in faculty numbers from 4 to 2. We have found that revisions, if needed, can be made quickly, and we have updated some modules with presentations from visitors and from online sources. We have also successfully used our teaching materials in distance learning.

We had several advantages that other similar programmes might not have, including external funding for an extra staff position for 3 years, access to computers, a reliable electricity supply, a reasonable medical library and home Internet access that is affordable on modest local salaries. Nevertheless, we believe that creating a comprehensive set of locally relevant, knowledge-based learning materials is a sustainable option worth considering for new and existing postgraduate programmes in developing countries. We also see the potential for collaboration and for sharing of teaching materials between similar postgraduate programmes in other developing countries.

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## A successful hospitalist rotation for senior medicine residents

*Alpesh N Amin*

**Context and setting** The hospitalist rotation is a required rotation for every third year internal medicine resident at the University of California, Irvine (UCI).

**Why the idea was necessary** Although every internal medicine resident is exposed to consultative medicine and the preoperative clinic, not everyone receives exposure to hospitalist medicine. Hospitalists are doctors who spend at least 25% of their professional time serving as doctors-of-record for inpatients, during which time they accept 'hand-offs' of hospitalised patients from primary care doctors, returning the patients to the primary care providers at the time of hospital discharge. They have increased hospital expertise and availability, as well as an enhanced commitment to hospital quality improvement. Because of increasing interest and growth in hospitalist medicine as a career choice, we developed a rotation, with a standardised curriculum, to give residents exposure to hospitalist medicine, inpatient medicine consultation and the outpatient preoperative clinic.

**What was done** The hospitalist 4-week rotation is designed as a 3-sided experience of hospitalist medicine, inpatient medicine consultation and the outpatient preoperative clinic. Patients admitted by the UCI Primary Care Medical Group are pooled into 1 team staffed by 2 senior medical residents (without interns or students) and a hospitalist faculty member. This team admits every day, serves as the primary resource for medicine consultation, and staffs the preoperative clinic

at least 4 half-day afternoons per week. Dedicated teaching rounds for the residents utilising a series of case vignettes on hospitalist, consultative and preoperative medicine occur for at least 1 hour per day on top of patient-directed teaching (diagnosis, management and bedside rounds) and other administrative topics (discharge planning, communication skills, patient satisfaction and appropriate utilisation of resources).

**Evaluation of results** The hospitalist rotation is a unique educational experience for medical residents for several reasons:

- 1 the senior resident has no interns or students, which requires him/her to serve as the primary inpatient doctor;
- 2 the experience prepares the senior resident for community-based practice in terms of writing admission orders, fielding calls from nurses, maintaining communication with primary care providers and patients' families, working directly with attending consultants, providing documentation and carrying out discharge planning;
- 3 the resident learns how to be a good consultant, facilitate patient care as a consultant and maintain communication, and
- 4 the resident learns to perform a good outpatient preoperative evaluation and follow the patient in the hospital after surgery.

Narrative comments showed that the residents appreciated the knowledge and skills acquired during this rotation. Every resident over the past 4 years rated this rotation as either very good or outstanding on his/her post-rotation evaluations. They found this rotation to be busy, challenging and stimulating. Although every graduating resident is required to take 1 month of this rotation, some have asked to take further months as an elective. The residents have also strongly recommended this rotation and the hospitalist faculty for future housestaff. Residents have found this rotation to provide a distinctly different learning experience from the traditional ward experience. In view of the importance of learning communication, documentation, organisational and professionalism skills, the autonomy gained by not relying on interns and students in community-based practice combined with the learning of hospitalist, consultative and preoperative medicine makes this rotation a unique experience that prepares our graduating residents for practice in the near future and exposes them to the experience of hospitalist medicine.

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## An online core curriculum in primary care medicine for internal medicine residents

David A Cook, Denise M Dupras & Warren G Thompson

**Context and setting** Each resident in the internal medicine residency programme at the Mayo Graduate School of Medicine, Rochester, Minnesota spends a half-day each week in ambulatory 'continuity clinic', managing a panel of general internal medicine patients and learning the principles of ambulatory medicine. With 144 residents spread over 8 sites and 46 preceptors, implementation of a standard curriculum has been challenging.

**Why the change was necessary** Last year we introduced a curriculum in core topics in ambulatory medicine. Each resident reads an evidence-based practice guideline, completes an open-book quiz to reinforce learning and reviews the quiz with their preceptor.

Residents quickly noted problems. The practice guidelines were lengthy, were not organised for use while caring for patients, often failed to address practical clinical questions and were occasionally outdated. Quizzes were time-consuming and of low clinical relevance. Both guidelines and quizzes were difficult to access.

We felt that a web-based teaching format would address each of these problems.

**What was done** We selected topics from the diagnoses most frequently seen in our clinics. We excluded 2 topics (coronary artery disease and hypertension) covered in the previous year's curriculum, and 1 topic (dementia) for which no guideline was available. The most frequent diagnoses remaining were selected for our curriculum. We reviewed guidelines, journal articles and textbooks to construct 5 evidence-based modules in hyperlipidaemia, depression, nicotine dependence, diabetes mellitus and asthma.

Each module is published online and has sections on epidemiology, screening and diagnosis, initial evaluation, management ('stepwise management', non-pharmacological measures, drugs and follow-up visits) and complications. Each also includes a key points section and a bibliography. Hyperlinks connect the modules to other sites within the curriculum, full-text guidelines and journal articles, online tools (e.g. clinical calculators) and patient handouts.

An online test administered via WebCT precedes each module. Residents continue to complete the open-book quiz (available online), but each question is now based on a clinical scenario. A post-test is planned at year-end.

A password-protected preceptor homepage contains announcements, a timeline and test answers.

**Evaluation of results and impact** We implemented the modules sequentially over 8 months. Each resident has online access to the first module (hyperlipidaemia) and 2 other modules. Residents use paper guidelines to complete modules for which they do not have online access.

Final evaluation is underway, but informal feedback from residents and preceptors has been strongly positive. Many residents using paper guidelines have requested to use the password-protected online modules instead. Although site hits were more frequent in the weeks following release, the first module still receives 3–10 hits per week, suggesting ongoing 'just-in-time' learning.

Barriers to implementation (and our solutions) included difficulty logging on to WebCT or the online modules (addressed by providing access to study personnel by pager and e-mail in order to resolve problems quickly), poor communication with preceptors (improved by delegating communication to each site co-ordinator), and insufficient time to complete modules (addressed by reserving clinic appointment slots to allow time for module completion).

Although it is not without problems, implementation of an online curriculum in ambulatory care successfully met the needs of residents at multiple clinic sites. We plan to add a further 4 topics over the coming year.

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## Portable interactive faculty development for multiple site clinics using computer-based CD-ROM modules

Paul E Ogden, Janine C Edwards & Andrew G Stricken

**Context and setting** An interactive CD-ROM using video vignettes and questions based on distance learning principles was developed to instruct doctor faculty. The CD-ROM provides interactive faculty development principles to 120 part-time and 80 fulltime faculty doctors at more than 25 clinical sites.

**Why idea was necessary** The delivery of a medical student and resident curriculum requires faculty members who can interact with trainees in clinical sites, and evaluate learning using defined standards of performance. Academic medical centres face numerous challenges that hinder regular face-to-face faculty development. By necessity and design, much of the

curriculum is moving into the community, where preceptors have intermittent exposure to trainees, an inadequate frame of reference for defined standards of performance and limited time to pursue faculty development offerings. Previously, faculty development programmes have concentrated on individuals pursuing academic careers and have been time-intensive. A new type of faculty development must evolve.

**What was done** A teaching hospital, a medical school and an instructional technology laboratory collaborated on producing a portable, interactive faculty development programme.

Distance learning techniques have been used effectively for over 25 years. The goals of our project were to develop a distance learning module that would enable faculty members to learn to evaluate medical students and residents using defined standards. We also wanted faculty members to understand the role of the judge/diagnostician in evaluating performance, as many continue in their role as teacher/mentor during the evaluation process, resulting in grade inflation.

A CD-ROM utilising 4 video vignettes of interactions between trainees and faculty was produced. A pre-assessment video is followed by questions and feedback. A study section follows, in which the concept of judge/diagnostician is introduced, and defined evaluation standards are discussed, most notably the RIME (Reporter, Interpreter, Manager, Educator) system described by Pangaro. A video vignette with questions and feedback follows the study section. The CD-ROM concludes with 2 practice sessions using video vignettes to practise and apply the new skills.

**Evaluation of results** The software underwent formative evaluation through 1-on-1 tryouts with 10 family doctors and 4 subspecialists. The doctors required an average of 45 min to complete the CD-ROM. All found it valuable and helpful and correctly answered the post-test questions. The computer technology presented some difficulties, which were resolved using the formative evaluation information. The software development was costly and required more time than was practical. However, we anticipate that future projects can be accomplished in substantially less time. We plan to test the software on a larger cohort of teaching faculty to demonstrate immediate and 6-month retention of the material. We are also interested in examining the effect of this intervention on an entire department, using the future clinical grades of the trainees as outcome measures.

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## Developing mentoring skills for general practitioners using a simulated doctor

*Richard E G Sloan & Janice McMillan*

**Context and setting** Simulated patients are widely used to improve both the clinical and communication skills of doctors. Over several years, the Postgraduate General Practice network in Yorkshire has used a pool of patient simulators for the summative assessment of the consultation skills of intending general practitioners (GPs). Their roles are carefully developed from video recordings of real consultations.

In 1996 about 80 GPs were trained in mentoring skills. The method of training included theoretical input as well as analysing videos of 10-minute co-mentoring sessions.

**Why the idea was necessary** Further training was planned for 2001 for these mentors. We felt that a significant number of the problems brought to the co-mentoring sessions in the original training session involved low level challenges. We decided that the use of simulated GPs with roles developed from knowledge of real mentoring experiences would be a powerful learning tool for improving mentoring skills. We found little in a formal literature search on simulated doctors.

**What was done** Pre-course questionnaires were sent to the cohort of GPs, requesting information about their mentoring experiences and further training needs. One-day training sessions were then designed to respond to these identified needs. We developed the roles of 3 doctors using simulators who had already carried out significant work as simulated patients. We organised training sessions with the simulators to develop the roles further and rehearse the scenes. The roles were those of a 55-year-old, male GP who drinks too much and is disillusioned with his work; a 40-year-old, religious, female GP who has a partnership problem and a 24-year-old, male GP in training, who lacks confidence and is considering a career change. These specific roles were designed to raise challenging issues that would exercise the skills needed for effective mentoring.

On the course, the group was divided into 3 smaller, facilitated groups of 4–5 participants each. There was an opportunity for 3 GPs in each group to practise their skills on the 3 different simulated mentees. Afterwards, there was in-depth discussion and feedback to the GP mentor. The simulators were asked to give feedback using pre-prepared, focused questions. This proved to be an invaluable developmental process for the GP mentors.

**Evaluation and impact** A total of 80 GPs attended these courses. The evaluations were overwhelmingly positive. Specifically, delegates commented on the benefits of using simulated doctors: ‘...simulated scenarios very useful – especially simulators’ feedback’ and ‘...simulators very stimulating and very believable!’ The only negative comment was that it would have been better had all the GP mentors in the small groups had an opportunity to practise their skills. This was instructive and has informed the design of future courses.

The feedback has inspired the Yorkshire Deanery to include this methodology in other programmes for doctors. Simulators are now an established part of appraisal skills courses for hospital consultants and GPs. We are currently developing roles for simulated doctor interviewees on our recruitment and selection interviewing courses.

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## A faculty development workshop to encourage research activity

*Meta T Lee, Alice M Tse & Jay E Maddock*

**Context and setting** Research, teaching and service are required for promotion and tenure in academic institutions. Most research development programmes at academic medical centres are either incorporated into intensive fellowship programmes or emphasise the development of basic science research. Clinical medical faculty members who have little formal training in research must demonstrate achievement in an area in which they have little confidence or experience.

**Why the idea was necessary** Although most institutions provide faculty with educational opportunities to develop research skills, the effectiveness of such programmes for novice clinical researchers has not been well published. Interviews were conducted with clinical faculty at our academic institution to determine the area of research education most in need of development. Our needs assessment determined that getting started and finding the right mentor are amongst the most difficult barriers to overcome. This project was developed to determine whether a workshop focused on developing research ideas for novice clinically-based faculty researchers would result in more positive atti-

tudes towards and greater confidence in research, and increased research productivity.

**What was done** We designed and implemented an 8-hour educational workshop to encourage research amongst members of the Pediatric Department at the University of Hawaii John A Burns Medical School. Before the session, workshop committee members divided faculty into 2 groups: experienced and inexperienced researchers. Experienced researchers participated in the workshop as small group facilitators and mentors for inexperienced researchers.

Introductory lectures lasting 30 minutes were given on hypothesis generation, research design and data analysis. After each lecture, groups of 3–4 participants met to apply concepts and develop research ideas. At the conclusion of the workshop, developed ideas were presented to the large group for feedback.

Research attitudes, interests, involvement, experience and confidence were measured before and after the workshop using a validated research attitudinal survey. Although this instrument has been validated on national samples of health care professionals, it has not been used for doctors.

**Evaluation of results** Prior to the intervention, 58% of our faculty members completed the survey ( $n = 37$ ). Of those who responded, 70% attended the workshop ( $n = 26$ ), 53% as participants ( $n = 14$ ) and 47% as mentors ( $n = 12$ ). Of the attendees, 58% were male, 61% were assistant professors, 15% were associate professors and 23% were professors.

Immediately following the intervention, the level of involvement in research increased significantly ( $t(15) = -2.259, P = 0.039$ ). No significant differences were found for level of experience, research interest, research perceptions, comfort, or perceived characteristics of work environment ( $P > 0.05$ , for all). Of note, workshop evaluations were overwhelmingly positive. Participants rated the workshop highly as being helpful in developing research ideas, useful in receiving constructive feedback, and enjoyable in fostering collegial discussions.

Thus far in our project we are able to validate the use of our survey instrument for this study population and conclude that our workshop resulted in immediate increased faculty involvement in research. Although there have been no immediate increases in research attitudes or confidence, these changes may become evident after distribution and analysis of our 6-month and 1-year follow-up surveys.

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## Teaching junior doctors to recognise child abuse and neglect

*Calum Macleod, Olivia Dorman, Alison Livingstone, Lorna McCormack, Judith Lees & Mark Jenkins*

**Context and setting** The junior doctor in the Accident and Emergency (A&E) Department is often the first, and sometimes the only, doctor to assess children presenting with injury or illness and therefore has a critical role to play in identifying possible child abuse and neglect (CAN). For over 30 years repeated inquiries into the deaths of children caused by abuse have stressed the importance of training for front line hospital staff and yet concerns remain that child protection is a neglected branch of medicine. Research from our own department indicates that junior doctors often fail to recognise standard indicators of abuse and that most have had no training in recognising CAN prior to taking up posts in paediatrics or A&E departments.

**Why the change was necessary** The lack of training of junior doctors represents an important risk management issue that requires urgent attention. Adult education theory tells us that adults are purposeful, competency-based learners who learn best when learning is work-related, of direct personal relevance and can be put into practice immediately.

**What was done** In August 2001, we introduced a CAN training workshop based on adult learning theory for all new junior doctors working in paediatrics and A&E medicine. The workshop is facilitated by consultants in paediatrics and emergency medicine, a hospital social worker and a child protection nurse specialist. The workshop uses a combination of interactive large and small group teaching and question and answer sessions. Written supporting material is also provided.

**Evaluation and results** We sought to determine whether a workshop based on the principles of adult learning theory improves the ability of junior doctors to recognise and report CAN.

We used action research methodology with pre- and post-workshop questionnaires and semistructured interviews as the main outcome measures.

So far, 57 junior doctors have attended the workshops and all have completed an 11-item pre-workshop and a 16-item post-workshop Likert scale questionnaire.

Pre-workshop data indicates that most (63%) junior doctors have had no previous training in CAN and are not confident of their ability to recognise or report CAN (81%). All recognised that training in CAN was

important to their current post and all wished to receive training.

Post-workshop data indicates that all participants agree (39%) or strongly agree (61%) that the workshop met their needs from the perspective of course presentation, content and personal relevance. Most participants reported an improved ability to recognise (90%) and report (92%) CAN. Interview data indicates that attendance at the workshop increased confidence in dealing with CAN.

A CAN training workshop is a necessary and effective educational intervention that demonstrates how the practical application of educational theory can improve clinical practice. We recommend that all new junior doctors in paediatrics and A&E medicine should attend a CAN training workshop as part of their induction.

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## Interactive acute medicine

*Imtiaz M Shah, Matthew R Walters & James H McKillop*

**Context and setting** Over the past decade, there have been major advances in interactive and virtual reality clinical medicine teaching. This has emerged as a popular and effective learning tool for medical students. The undergraduate medical curriculum at the University of Glasgow is based on student-centred and problem-based learning. Computer-assisted learning is a fundamental component of this new course. Currently, we are developing a case-orientated, interactive, web-based teaching program on 'Acute Medical Management'.

**Why the idea was necessary** The management of medical emergencies is among the most challenging tasks faced by newly qualified doctors. A recent study has shown deficiencies in junior doctors' basic knowledge and skills in the initial assessment and treatment of acutely ill patients. This can delay appropriate patient management and can be detrimental to patient care. A recent report from the General Medical Council gives high priority to pre-registration house officer training in acute medical care.

**What is being done** To facilitate the training of senior medical students and junior doctors, we are developing an interactive teaching website, in collaboration with the Computing Services Department at the University. Clinical cases are presented in a problem-

based learning format, so that they closely resemble real life medical scenarios. Students are supplied with the history and clinical examination details of a patient. They then decide upon a course of investigation, interpret the results, make a diagnosis and institute treatment. Important diagnostic tests including patient assessment will be discussed. Blood test results, ECGs and X-rays will be used to assess data interpretation. Helpful tips and pointers will be given for each case study. Short video clips will be added to illustrate some of the clinical scenarios. The contents of the program complement and consolidate the existing clinical teaching, and allow familiarisation with the advanced life support algorithms.

The aim is that, with repeated use, the student will become familiar with management of a wide variety of medical case scenarios and will gain confidence in decision-making in the context of acute medical care.

**Evaluation of impact** This interactive website has been specifically designed to make teaching and learning easier and more enjoyable. It covers topics within our core curriculum and will be an invaluable source of material for undergraduate examination revision. We have already introduced aspects of this into the final year examinations, as part of the objective structured clinical examination. The material will also be relevant for training junior doctors and continuing medical education. Extending matching questions will be used to test the understanding of important clinical areas. We will be evaluating the teaching program via an on-line questionnaire. We intend to expand this project to cover other clinical specialities.

We have also used these interactive cases as part of a special study module (SSM) in Acute Medicine, and this was very well received by the students. We received encouraging feedback from pre-registration house officers who participated in this SSM last year. They found the material extremely useful and relevant to their current clinical practice.

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## Teaching pathology using 'hotspotted' digital images

*Mark Dziegielewski, Gary M Velan & Rakesh K Kumar*

**Context and setting** Our Department of Pathology at the School of Medical Sciences, University of New

South Wales has an active outreach programme, which includes structured visits for senior high school student groups to our Pathology Museum. During their visit, the students attempt to correlate specimens of diseased tissue with topics in their biology module 'The Search for Better Health'. We also play a large role in the education of medical undergraduates.

**Why the idea was necessary** High school students often find it difficult to recognise diseased tissue, despite the fact that descriptions are available in Museum catalogues. Similar difficulties are also experienced by many medical students. We therefore sought to increase the usefulness and accessibility of our collection by creating interactive digital images of pathology specimens.

**What was done** To meet our objectives, we developed 'hotspotted' images on our interactive website, which has open access. The website utilises a small sample of our comprehensive collection of digital images of macroscopic pathology. Users can explore images of diseased tissue and compare their conception of the disease with the objective feedback provided by clicking the mouse over an area of interest. The clickable hotspots are associated with descriptions of targeted areas on the specimens, which represent such conditions as asthma, gouty arthritis of the knee, acute appendicitis, pulmonary embolism and acute cholecystitis. The images include a history of the illness along with a public health message: for example, a diphtheria specimen 'shows the trachea and major bronchi of a 6-year-old child who died of diphtheria, an infectious disease preventable by immunisation'. An effort has also been made to provide plain language translations of the medical names of common conditions, such as carcinoma of the bronchus (lung cancer).

We also provide sets of interactive digital images within computer-assisted learning modules developed for medical students in Macromedia Authorware™. These use hotspots to relate macroscopic pathology specimens or histopathological findings to ultrasound, CT and MRI scans. When the hotspot feature is activated, a set of markers is superimposed on the image over areas of interest. When the student positions the cursor over a marker, a brief text description is displayed. Importantly, the hotspot feature can be deactivated, allowing an unobstructed view of the image. The hotspots are created in Macromedia Flash™, which facilitates reusability, because each hotspotted image is a separate file that can be inserted into another module or embedded in a web page.

**Evaluation and impact** The interactive website has been very successful and was described in a *Lancet* editorial as 'graphic, appealing, informative and

sobering'. The more advanced implementation in the self-learning modules for senior medical students has received favourable comment, both for helping to orient students by identifying anatomical landmarks while highlighting significant disease processes, and for reinforcing concepts in pathology learnt earlier in the medicine programme. We propose to extend the use of hotspotted images to online formative assessments. Question Mark Perception™, our standard tool for such assessments, has recently been upgraded with a facility to utilise linked Macromedia Flash files. This will enable us to provide enhanced visual feedback to our students.

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### Use of video-projected structured clinical examination (ViPSCE) instead of the traditional oral (viva) examination in the assessment of final year medical students

*Gamal H El Shallahy & Eltayeb A Ali*

**Context and setting** Assessment of medical students using the traditional oral (viva) system has been criticised for being non-structured and highly subjective. The use of the objective structured clinical examination (OSCE) circumvents these disadvantages. The OSCE is, however, costly and time-consuming, particularly when used in the assessment of large numbers of students. The need for another form of examination that enjoys the advantages of the OSCE while avoiding its disadvantages in the face of limited resources has been the inspiration behind this innovative approach.

**What was done** A video-projected structured clinical examination (ViPSCE) in surgery was introduced in the assessment of 112 final year medical students at Alazhari University, Khartoum, Sudan. The domains to be assessed were similar to those tested by the traditional oral examination. These involved surgical knowledge, identification, problem solving and management abilities. They did not include skills that are assessed by another form of clinical examination.

Pre-examination preparations involved departmental meetings, paper and computer work and photography. In the ViPSCE approach, the components of the examination, including instruments, X-rays and photographs of lesions were displayed as a PowerPoint slide show on a large screen by a video projector connected

to a personal computer (PC). The 20 slides constituting the examination were timed to allow 3 minutes per slide. Instead of having the students rotate around 20 stations, as in a traditional OSCE, the students were seated comfortably in a large examination hall and answered the questions written in the examination papers. The 112 students were divided into 2 groups. Each group undertook the same examination in sequence and precautions were taken to ensure that students were unable to communicate during the examinations. Lastly, the students completed evaluation forms.

**Evaluation of results** The administration of the ViPSCE was smooth and straightforward. The whole examination lasted about 2 hours, representing a great improvement on the OSCE, which usually took over 6 hours for a similar number of students. In retrospect, it can be seen that the whole group of students could have taken the examination together in 1 hour.

The results showed a normal distribution curve, with a mean of 82.8% and standard deviation of 9.4%. Student feedback showed that they preferred the ViPSCE to both the traditional oral examination (92%) and the OSCE (69%). In the students' opinion, the ViPSCE was better than the oral because the former was fair, objective, less stressful, covered a broader spectrum and was more relevant to clinical practice. In comparison to the traditional OSCE, the ViPSCE was better because it did not involve movement or rotation of students. In their previous experience, students found this rotation distracting and time-wasting. For both students and tutors the ViPSCE saved a lot of time and hence was more cost-effective than the OSCE.

In conclusion, the ViPSCE is a better replacement of the oral examination than the OSCE and is much less time-consuming and more cost-effective.

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### Pilot study of a computer-based self-teaching system in cardiac auscultation

*Bernard M Karnath, William Thornton & Mandira Das Carlo*

**Context and setting** We report the results of a pilot study that evaluated a newly developed, computer-based, self-teaching system (CBSTS) in cardiac auscultation. The CBSTS was developed by author WT at

the University of Texas Medical Branch, Galveston, Texas. The program was pilot tested within the second year medical curriculum.

**Why the idea was necessary** The benefits of teaching cardiac auscultation with simulated sounds are now recognised. The CBSTS system was developed in an effort to improve the cardiac auscultation skills of medical students while decreasing faculty time in the classroom.

**What was done** The hardware consists of a computer, an auscultation transducer and a pulse transducer. The program is a narrated, interactive display of heart sounds and images. This program allows students to review the physiological origins of heart sounds and murmurs, auscultate heart sounds and murmurs and palpate a pulse simultaneously with the heart sounds. The program is unique in that it allows the student to look, listen and feel. The student can look at an animated video-clip of a beating heart that shows the timing of valvular function, while simultaneously listening to a heart sound or murmur and palpating a pulse.

A total of 28 second year medical students were invited to participate in this pilot project. They had scored less than 70% in an assessment of cardiac auscultation skills at the end of the cardiopulmonary module, a 10-week course taught during the second year of medical school. Earlier in the module, these students had participated in 2 1-hour, faculty-led training sessions on cardiac auscultation using 'Harvey', the cardiac simulator. It was decided to use the CBSTS as a remedial tool for the self-learning of cardiac auscultation skills. Students' participation in the remedial programme was voluntary and they were

briefed about the pilot project before they decided to participate.

In all, 21 students signed up for the project. All of them completed a pre-test of knowledge and skills. Knowledge was assessed by using 10 short essay questions on cardiac auscultation and skills were tested by asking students to identify and diagram 6 cardiac sounds. Students were then assigned a 1-hour time slot in the library computer centre to practise auscultation skills using the CBSTS. Two weeks later, the students completed a post-test. Students again had to demonstrate their ability to identify and diagram heart sounds and murmurs in addition to answering essay questions.

**Evaluation of results** The pre-test results showed a mean score of 49% for knowledge and 59% for auscultation skills. The post-test results showed a mean score of 76% for knowledge and 73% for auscultation skills. Improvements were significant in both knowledge and skills ( $P < 0.001$ ). Nineteen students provided written feedback about the CBSTS and 15 stated they preferred the CBSTS to the faculty-led, small group sessions using Harvey.

The results of the pilot study indicate that the CBSTS is a useful remedial tool for students who have performed poorly on a previous cardiac auscultation assessment. The computer-based, self-teaching system may help to free up faculty time without jeopardising student education.

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