The future of medical education: blending new with old

Sir,

The traditional role of the educator has changed from disseminator of knowledge to facilitator of learning. The use of information and communication technology is of vital importance in this new role of educators. Faculty, administrators and learners recognize that e-learning is a powerful force in medical education and, used effectively, we believe it has a pivotal role in the future of medical education.

We read with great interest Dr Granger's editorial (vol 74(8), 2013, p. 424) on the future of medical education and echo the comments regarding acquisition of knowledge to pass examinations, rather than to enhance professional development. However, we disagree that we are becoming reliant on modern technology at the expense of clinical experience.

The question remains: how can we as clinicians promote education among future doctors and how will we encourage competence and compassion? Traditionally, medical curricula have focused on the assessment of lower order thinking skills, such as data recall or comprehension (Ozuah, 2002). The General Medical Council's (2013) document *Good Medical Practice* proposes that postgraduate examinations and continuing professional development must evolve to incorporate higher order thinking where evaluation and critical appraisal are used to develop analytical skills.

Medical education has had an astonishing growth and development because of new technologies and innovations (Harden, 2002; Bates, 2005). Professional bodies have invested heavily in information and communication technologies, not only to deliver education, but also to improve the quality of health-care services. The World Health Organization and the United Nations have acknowledged that information technologies are useful tools in the field of medical education and health-care delivery, particularly in the developing world, where access to experts in different areas and resources may be limited (Drury, 2005).

Examples of newer technologies include e-learning, simulation and social media. It is important to recognize that these 'tools' are not designed to replace clinical learning or practical experiences, but have been developed to facilitate and support learning. In our own practice the development of a distance e-learning Masters Programme in Perioperative Medicine through the application of robust pedagogical theory underpins the development of a syllabus. This draws on aspects of traditional educational theory and promotion of higher learning skills. The course content is easy to access, is effective for busy clinicians to partake in and is entirely complementary to more traditional learning activities.

High quality e-learning materials increase the accessibility to information, ease in updating content, personalized instruction, speedy distribution, standardization of content and accountability. It allow educators to revise their content simply and quickly and learners have control over the content, learning sequence, pace of learning, time and, often, media. Such flexibility allows the student to tailor his/her experience to meet personal learning objectives. The best examples of internet technologies permit the widespread distribution of digital content to many users simultaneously anytime and anywhere (Ruiz et al, 2006).

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Translational units in occupational health: an innovative operational concept?

Sir,

Translational research is a rapidly growing discipline in biomedical domains and is being developed in many medical fields. It aims to expedite the discovery of new diagnostic tools and treatments by using a multidisciplinary, highly collaborative, 'bench-to-bedside' approach (Woolf, 2008). In public health, translational medicine is focused on developing proven strategies for disease treatment and prevention.

In occupational health, the Global Plan of Action for Workers' Health 2008–17, of the World Health Organization (2007), defines five objectives:

1. To devise and implement policy instruments for workers' health
2. To protect and promote health in the workplace
3. To improve the quality of and access to occupational health services
4. To provide and communicate evidence related to action and practice
5. To incorporate workers' health into other policies.

In order to achieve these goals, the concept of a translational unit in occupational health has been created.

The translational unit in occupational health was created with three major aims: research, teaching and clinics. Research activities are performed in relation with a research unit for important occupational problems. Teaching activities focus on the introduction of medical students to basics of occupational health, initial training for occupational health residents, and continuous medical education for occupational health professionals or other practitioners. Clinical activities are offered directly to patients in a consultation, to provide them with occupational disease diagnosis, prevention and compensation, as well as information and education.

Direct transfer from research to patients and to physicians is achieved via this operational concept of a translational unit in occupational health. Furthermore, the translational unit in occupational health provides direct contact for all stakeholders.

The limitations of this concept involve skills and funding. First, a high level of skill in research, training and clinical practice in a multidisciplinary team is required, and second, only units that are totally independent of industry are possible, given the financial stakes entailed. Funding by a health or university system, with provision of an advanced university degree for the leadership of such a unit is one solution, with salaries similar to those of private industry. The author's unit has recently been structured along these principles (http://patho-pro-garches.aphp.fr/).

The development of this new concept of a translational unit in occupational health, with appropriate funding and resources, is an opportunity for public health that should be applied elsewhere.

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Seeking guidance from the Collegiate Learning Assessment + for trainee doctor interviews

Sir,

Postgraduate interviews following foundation training seem to offer little in terms of holistic selection. Medical and surgical core posts rely on a fixed approach centred on discussion of a clinical scenario, portfolio review and ethical dilemma (Health Education Kent Surrey and Sussex, 2013; Royal College of Physicians, 2013). Most candidates are certain to volunteer a sensible answer to a clinical case taking into consideration their concurrent preparation for membership exams and there are only a handful of ethical scenarios that can be tested which can be rote learned to perfection. As for the portfolio review, completion of foundation training requires such documentation to be finalized in its entirety making it nigh-on impossible for candidates to score badly in this domain. One can imagine therefore how challenging it may be to differentiate between candidates suitable for the job at hand.

In the USA and internationally, the Collegiate Learning Assessment + is being used at college or university level to assess the ability of students to analyse and evaluate information, solve problems, and communicate effectively (Council for Aid to Education, 2013a).

Its raison d'être is based on commissioned surveys (such as that conducted by Hart Research Associates (2013) on behalf of the Association of American Colleges and Universities), which suggest that employers want institutions of higher education to place more emphasis on intellectual and practical skills (Council for Aid to Education, 2013b).

It is certain that during training one will gain continued exposure to clinical cases and ethics, and maintain an ever-increasing portfolio. Therefore in order to prevent a generation of clones would it not seem sensible to assess our trainees on skills such as critical thinking and complex reasoning to name but a few. The chairman of Microsoft seems to think so (Council for Aid to Education, 2013b).

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We ignore confidence intervals at our peril

Sir,

According to one definition the 95% confidence interval signifies that '95% of the time the…. confidence intervals should contain the true value of the variable of interest' (Moore and McQuay, 2006).

For example, although comparison of aspirin *vs* placebo (dose range 50–1300 mg/day) in six trials showed that aspirin reduced the incidence of stroke by 22% (confidence interval 2–38%) in patients with a mean age of 70 years with non-valvular atrial fibrillation (Hart et al, 1999), the true effect might also be either a 2% or a 38% stroke reduction in elderly non-valvular atrial fibrillation patients, among whom 20–30% of strokes might be attributable to coexisting cerebrovascular disease rather than to cardiogenic embolism.

Likewise, the confidence intervals for 'fibrinolytic [therapy] better' were extremely wide in the bundle–branch block category of myocardial infarction patients (Fibrinolytic Therapy Trialists (FTT) Collaborative Group, 1994), accounting for the recent discovery (when percutaneous intervention became the standard of care for myocardial infarction) that the vast majority of left bundle–branch block patients with suspected myocardial infarction did not have thrombotic occlusion (Becker et al, 2013).

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