

The following two papers are timely, given the various debacles this year in medical training and education. Davis and Ponnampereuma argue for 'outcome-based' training: they verify that assessment of this new method of training is time-consuming and costly, but that one of its potential benefits is reproducible standards not only of training but also of examination. Linda de Cossart writes incisively against competency-based training, suggesting that it is a tool for rapid production of 'qualified' surgeons in a process-based system rather than one fostering independent education, creating a closed mind with a box-ticking mentality.

Surgical training has always been highly competitive, attracting the best of medical graduates. Elevating standards and reducing extreme variables in performance and in examinations is necessary: I fear, however, that the unproven move to competency-based training will result in a lacklustre copy of the pathway-orientated version of nurse training (training, not education) – will this inspire our dynamic graduates? We are moving away from a system respected worldwide of educating university graduates with a medical degree, who may work in the NHS, to a system of training NHS surgeons. There is a world of difference.

Tom Dehn, series editor

*Ann R Coll Surg Engl (Suppl)* 2007; **89**:342–345

# Education in surgery: competency-based training

## The case for

Margery H Davis

Gominda G Ponnampereuma

Centre for Medical Education, University of Dundee

Competence-based training flourished in the 1980s in several spheres of education. The approach, however, was seen as focusing on units of competence that were too narrow and technically oriented for postgraduate training in the health professions.<sup>1</sup> 'Competence-based approaches,' suggests Norris,<sup>2</sup> 'tend to reduce job competence to atomised, observable behaviours, which may not embody competence in the sense of generalisable or holistic capability.' Saunders argued that 'competence-based systems embody a reductionist concept of work practice'<sup>3</sup> and that 'the danger of reductionism may be more acute at the higher levels of qualification and their associated training.'

The somewhat narrow and technically oriented notion of competence has been replaced by the broader brush stroke of an outcome but unfortunately the outmoded terminology has lingered on in some circles. What is being introduced in postgraduate training throughout the world is more correctly called outcome-based education and is the basis of the General Medical Council's *Good Medical Practice*,<sup>4</sup> the CanMEDS roles in Canada,<sup>5</sup> the Accreditation Council for Graduate Medical Education outcomes in the USA,<sup>6</sup> and the Scottish Doctor project.<sup>7</sup> Spady

doctors have the technical competence to treat a patient but they must also understand why they are doing it; they should adopt appropriate critical thinking to what they are doing; use appropriate decision-making strategies; and adopt appropriate attitudes to their patients.

They must also put their approach to the management of the patient in the context of the overall health care delivery system and at the same time be able to assess their own competence in the area and keep up to date with current

## NOT ONLY MUST DOCTORS HAVE THE TECHNICAL COMPETENCE TO TREAT A PATIENT BUT THEY MUST UNDERSTAND WHY THEY ARE DOING IT.

defines an outcome as 'a culminating demonstration of learning'.<sup>8</sup> It is what the trainee should be able to do at the end of training.

In educational jargon an outcome is a meta-competence: the notion is one of higher-level competences acting on other competences; for example, not only must

developments. Harden *et al* have described the approach in a three-circle model, in terms of what the doctor does, the approach taken to practice and the professionalism of the individual.<sup>9</sup> In other words, doing the right thing, doing the thing right and the right person doing it. Outcomes can provide clarity regarding what it is to be a surgeon.

In the UK, the Postgraduate Medical Education and Training Board (PMETB) has been tasked with the introduction of outcome-based training and assessment. Various specialties including surgical subspecialties have developed outcome-based curricula for approval by PMETB. This has not been an easy task as designing outcome-based curricula requires considerable expertise. It is essentially a backward process where decisions about the curriculum are driven by the exit-learning outcomes. The outcomes are first identified and the curriculum is then planned to enable the trainee to achieve the outcomes. As Spady pointed out, 'Outcome-based education does not mean curriculum based with outcomes sprinkled on top. It is a transformational way of doing business in education.'<sup>8</sup>

The approach, however, offers many advantages to postgraduate training. It provides definition of the core curriculum. If material does not

## DIFFERENT TEACHING AND LEARNING STYLES MAY BE EMPLOYED AS LONG AS THE TRAINEE IS FACILITATED IN ACHIEVING THE OUTCOMES.

contribute to achievement of the outcomes it is not included in the curriculum. It shifts emphasis from process to product. In outcome-based education what is important is that the trainee achieves the outcomes, not how he or she does this. Different teaching and learning styles may be employed as long as the trainee is facilitated in achieving the outcomes.

Assessment of trainees in outcome-based education is a taxing and rigorous process. No longer will vivas alone suffice for exams. The trainees' achievement of the outcomes must be demonstrated in a way that is reliable, valid, practicable, acceptable, cost-effective and with an educationally positive impact.<sup>10</sup> This is no easy matter. There is no one exam that we can use that will test all of the outcomes and an assessment system is required with a

toolkit of testing procedures capable of assessing the full range of outcomes.<sup>11</sup> The assessment system needs to be blueprinted against the outcomes to demonstrate to all the stakeholders that each and every outcome is adequately assessed.<sup>12</sup> Technical expertise in assessment is required to demonstrate that the results are valid and achieve the level of reliability required of high-stakes assessment.

Cost-effectiveness is an issue and expensive exams such as the objective structured clinical examination or portfolio assessment are combined with less expensive tests such as multiple choice exams. Criterion referencing of exams is needed to ensure that all the candidates have achieved the appropriate standard. Standard-setting procedures need to be introduced so that the experts (the trainers and members of the specialty) can identify the appropriate standard.<sup>13</sup> What is required is a combination of tests that will assess not

only what the candidate can do under the highly artificial, controlled conditions of an exam but also what the candidate habitually does in day-to-day practice.

An important feature of the new outcome-based assessment systems that are being introduced is that they not only identify whether or not the trainee has achieved the appropriate standard in the outcomes but they also support learning.<sup>14</sup> Feedback to trainees is an important component of the approach and the feedback needs to be provided in such a way that the trainee can identify his or her own strengths and weaknesses in terms of the outcomes. Mentoring is required to help the trainee to do this<sup>15</sup> and to develop strengths further and remedy any weaknesses that are present. Training for the trainers is essential to enable them to undertake their many new roles.

If outcome-based training and assessment can be made to work in postgraduate education it can provide assurance to patients that their surgeons are highly trained and qualified and to trainees that they have achieved appropriate standards for practice. What is important is that the educational concepts behind outcome-based education identified in this article are not lost in the scramble to introduce Modernising Medical Careers.

### References

1. Jessup G. *Outcomes: NVQs and the Emerging Model of Education and Training*. London: Falmer Press; 1991. pp31–9.
2. Norris N. The trouble with competence. *Cambridge Journal of Education* 1991; **21**: 331–41.
3. Saunders M. Understanding education and work: themes and issues. In: Moon B, Ben-Peretz M, Brown S, eds. *Routledge International Companion to Education*. London and New York: Routledge; 2000. pp700–1.
4. General Medical Council. *Good Medical Practice*. London: GMC; October 2006.
5. CanMEDS 2000: Extract from the CanMEDS 2000 Project Societal Needs Working Group Report. *Med Teach* 2000; **22**: 549–54.
6. Accreditation Council for Graduate Medical Education. General competencies. In: *Outcome project*. Chicago: ACGME; 2007. Available at: <http://www.acgme.org/outcome/comp/compFull.asp> (accessed on 2 May 2007).
7. Simpson JG, Furnace J, Crosby J et al. The Scottish doctor – learning outcomes for the medical undergraduate in Scotland: a foundation for competent and reflective practitioners. *Med Teach* 2002; **24**: 136–43.
8. Spady W. *Outcome-Based Education*. Deakin West, ACT 2600: Australian Curriculum Studies Association, 1993.
9. Harden RM, Crosby JR, Davis MH et al. AMEE Guide No. 14: Outcome-based education: Part 5-From competency to meta-competency: a model for the specification of learning outcomes. *Med Teach* 1999; **21**: 546–52.
10. Van der Vleuten CPM. The assessment of professional competence: developments, research and practical implications. *Adv Health Sci Educ Theory Pract* 1996; **1**: 41–67.
11. Swing S, Bashook PG. *Toolbox of assessment methods*©. Accreditation Council for Graduate Medical Education and American Board of Medical Specialties: Evanston and Chicago, Illinois; 2000 (available at: [http://www.acgme.org/acWebsite/RRC\\_380/380\\_toolboxVersion.pdf](http://www.acgme.org/acWebsite/RRC_380/380_toolboxVersion.pdf), accessed on 3 May 2007).
12. Crossley J, Humphris G, Jolly B. Assessing health professionals. *Med Educ* 2002; **36**: 800–4.
13. Ben-David MF. AMEE Guide No. 18: Standard setting in student assessment. *Med Teach* 2000; **22**: 120–30.
14. Dent JA, Rennie S. Student support. In: Dent JA, Harden RM, eds. *A Practical Guide for Medical Teachers*. 2nd edn. Edinburgh: Churchill Livingstone; 2005. pp374–81.
15. Luna GK. Mentoring the general surgeon. *Am J Surg* 2007; **193**: 543–6.

## The case against

**Linda de Cossart** Consultant Vascular Surgeon, College Council Member

**Competency-based training relies on breaking down a practice into its definable or measurable components and training learners to perform each part to a particular standard. It does not provide for the complex thinking and the deep understanding of the practice so essential for creating competent surgeons.**

It assumes that total mastery of a technique is possible. It has a fixed set of requirements and this fixity influences teaching and assessment with the values of the teacher being on getting the process right rather than developing the learner.<sup>1</sup> It often results in the learned technique becoming a routine performed over and over again (without critique) with the reassurance that it has been assessed. It creates a closed-minded and uncritical practitioner who works within a set of rules. While this may be appropriate for training workers for routine tasks it is quite inappropriate for educating surgeons.

Being a consultant surgeon is a complex occupation.<sup>2</sup> It demands the ability to work successfully in a complex multidisciplinary environment with competing demands. It requires the surgeon to treat challenging surgical cases as well as to carry out routine work with efficiency. It involves being able to empathise with patients, use scientific knowledge, improvise, think on your feet and analyse data. It has a moral and ethical dimension. Being an expert technical operator is essential.

By the very nature of their job surgeons have to be leaders and managers. A most important characteristic of a wise surgeon is temperance in the use of technical skills or knowing when not to operate. This is a decision that tests a surgeon's judgement. It cannot be taught by a competency-based approach. It can

only develop in young surgeons in a clinical learning environment safe for patients and safe for learning surgeons.<sup>3</sup>

Surgeons are chosen from among the highest achievers in school and university. They are individuals with a toughness of personality, fitness of body and an intelligent brain willing to learn and develop. They have been chosen from a highly competitive field. They must be given the best educational environment to allow them to develop into wise and trustworthy practitioners. Patients rely on this happening and rather assume that this is the case. However, those who are directing new educational programmes in surgery have become uncritically swayed by the superficially seductive approach of competency-based training. They have adopted the views of others: they have not seriously considered what will happen in surgical practice by imposing this

## THOSE DIRECTING NEW EDUCATIONAL PROGRAMMES HAVE BECOME UNCRITICALLY SWAYED BY THIS SUPERFICIALLY SEDUCTIVE APPROACH.

process. They should listen to some of the anxieties of our American colleagues.

Competency-based training has its roots in vocational training and national vocational qualifications (NVQs) and as such ignores all the crucial elements that drive visible behaviour in the professional (like moral awareness and professional judgement). In a competency-based course, teaching and learning is seen in terms of an industrial transaction where what is important is what will conduce to the efficient and cheap delivery of a product. In this view, assessment becomes a simplistic and narrow activity. It places emphasis on visible skills and overlooks (and thus leads to an erosion of) professional values like sensitivity and imagination. It ignores the moral issues of how, when and where such skills should and should not be used. It inculcates an inflexibility that mitigates against future development (particularly professional self-development).<sup>3</sup> Its values are those of the employer and the teacher who is an employee.

In the competency-based approach, the occupational skills needed within a job are analysed and categorised, as a means of quality assurance. As Fish pointed out, this is about quality in manufacturing industries who in Britain had to conform to British Standard 5750, which gave 19 criteria a company should use in deciding how to operate quality assurance.<sup>4</sup> The skills are thus turned into competencies and used as the means of assessing performance in the workplace. This has been of particular use in further education and associated with vocational training leading to NVQs, which were set up by the government Training Agency.<sup>5,6</sup>

Although few doctors are aware of it, the Department of Health has underpinned the Skills for Health competency-based training resource that has been created for managers to use to define and create new roles in health care. It defines the

competencies and gives guidance on how these might be taught in the workplace. It is linked to the nine-point NHS Career Framework. It was only very recently that doctors were removed as part of their endeavour. The idea that doctors should have been included in this should send shivers down the spines of those who are redefining surgical educational and training. Words do matter: their precise meaning changes understanding.

There is a large literature that contributes significantly to the argument that the competency approach to educating professionals for practice is both naive and underestimates the complexity of their responsibilities.<sup>7-15</sup> Competency-based assessment is borrowed from other occupations and was certainly not designed for doctors, yet alone surgeons. It must be assumed that surgeons have adopted this because they have been persuaded (foolishly) of the need for the safer and faster production of surgeons. At a time when

the NHS and medical education particularly is under siege, we ignore the experience and traditions of our surgical education and training at our peril. The past may not have been perfect but then no assessment system ever is able to solve all the issues about assessment.<sup>3</sup> We should be building on our experiences and not adopting an untried venture.

The Intercollegiate Surgical Curriculum Programme (ISCP) and the foundation curriculum are examples of a competency-based curriculum. The latter is currently under evaluation. Tools of the Trade are the competency-based

of a profession but there is no evidence that I can find to support the validity and reliability of these assessment tools to do this. Why are we senior surgeons abandoning our experience to an untested resource? Why are we not building on our experience and making it better and more transparent? We are proceeding blindly and will live to regret this lack of challenge.

As an experienced surgeon I have, throughout my career endeavoured to accrue evidence to support change in practice. I know that attention to detail is essential to create the best results. Small

this will have grave implications for our professional status and ultimately for the safety of patients.

## SURGEONS HAVE BEEN PERSUADED (FOOLISHLY) OF THE NEED FOR THE SAFER AND FASTER PRODUCTION OF SURGEONS.

assessment processes for these programmes. These processes of assessment are now the driver of learning by young doctors and are beginning to replace College standards. The curriculum is regulated by the Postgraduate Medical Education and Training Board. The learners are completing their assessments but are they developing their clinical capabilities?

Tools of the Trade are now embedded in the ISCP for the first two years of new recruits to surgery. This is the most formative learning time of new members

changes at key times often make the biggest impact on outcome. However, the argument against competency-based training for professional practitioners has been well made in the academic literature. Surprisingly, I have been unable to find any supporting literature to confirm the notion that competency-based training will work for surgeons. My experience and intuition tell me that we are on the wrong road. We need to develop from what we have been good at in the past before we destroy a well-trying process of education and training of surgeons. The consequences of not doing

### References

1. Fish D, Coles C. *Medical Education: Developing a curriculum for practice*. Maidenhead: Open University Press; 2005.
2. Gawande A. *Complications: A surgeon's notes on an imperfect science*. London: Profile Books; 2001.
3. de Cossart L, Fish D. *Cultivating a thinking surgeon: New perspectives on clinical teaching, learning and assessment*. Shrewsbury: tfm Publishing Ltd; 2005.
4. Fish D. But can you prove it? Quality assurance and the reflective practitioner. *Assessment & Evaluation in Higher Education*. 1991; **16**: 22–36.
5. Burke JW, ed. *Competency Based Education and Training*. London: Falmer Press; 1989.
6. Wolf A. *Competence-based Assessment*. Buckingham: Open University Press, 1995.
7. Fish D, Coles C. *Developing professional judgement in healthcare: learning through the critical appreciation of practice*. Oxford: Butterworth-Heinemann; 1998.
8. Broadfoot P. Educational Assessment: the myth of measurement. In: Woods P, ed. *Contemporary issues in teaching and learning*. London: Routledge; 1996. pp203–30.
9. Broadfoot P. Assessment and Intuition. In: Atkinson T, Claxton G, eds. *The Intuitive Practitioner: on the value of not always knowing what one is doing*. Buckingham: Open University Press, 2000.
10. Carr D. Questions of competence. *British Journal of Educational Studies* 1993; **41**: 253–71.
11. Carr W. *For Education: Towards Critical Educational Inquiry*. Buckingham: Open University Press; 1995.
12. Eraut M. *Developing Professional Knowledge and Competence*. London: Falmer Press; 1994.
13. Golby, M, Parrott, A. *Educational Research and Educational Practice*. Exeter: Fair Way Publications; 1999.
14. Leung WC. Competency based medical training: a review. *BMJ* 2002 Sep 28; **325**: 693–95.
15. White S, Stancombe J. *Clinical Judgement in the Health and Welfare Professions: Extending the evidence base*. Maidenhead: Open University Press; 2003.

### Core Skills in Laparoscopic Surgery: Launch of a regional programme

A network of accredited centres in England and Wales has been established to deliver the College's *Core Skills in Laparoscopic Surgery* course. It is anticipated that the regional programme will allow 250 surgeons a year to receive training in basic level laparoscopic surgery at locations convenient to them. The course is highly practical and is supplemented by comprehensive educational materials.

The 27 accredited centres will be fully equipped for the course and a pool of teaching faculty has been trained to deliver the programme. Courses will be held in Basildon, Leeds, London, North Tees and Stoke-on-Trent this year. Other centres will be available in 2008.

For further information on the course and the course venues visit the College website:  
<http://www.rcseng.ac.uk/education/courses/>.