Can simulators be used to assess clinical competence?

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In the last 10 years, the use of simulation for training in the field of anaesthesia has been growing steadily. There are currently four centres around the UK that are using high fidelity simulators to train not only anaesthetists, but also surgeons, accident and emergency doctors, operating department assistants, intensive therapy unit nurses and house officers in both technical and non-technical skills (behavioural issues).

ASSESSING COMPETENCE

One of the major issues surrounding the use of simulation has been how far we go in using it for the purpose of assessment of competence and, even more contentiously, for revalidation of existing consultants. In other professions such as the airline industry, pilots have to undergo regular simulator-based competency checks in order to maintain their license.

In the brave new world of clinical governance and accountability, it is likely that medical practitioners will also have to integrate some means of continual assessment of competence. The problem comes in deciding how to assess this competence. Can simulators provide this? Chopra et al (1994) showed that training in the anaesthesia simulator improved the performance of anaesthetists when managing subsequent emergencies during anaesthesia. However, all scenarios both before and after the training were simulated, and as yet there is no good evidence that competence in the simulator is associated with competence in the clinical environment.

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There are still big questions about the consistency, reproducibility, validity and relevance of responses in the simulator environment to true performance in the clinical arena that have yet to be answered.

PROBLEMS WITH COMPETENCY TESTING

There are various reasons why competency testing is so difficult. First, it is very hard to design and accurately script scenarios that will take into account all the interactions between patient and clinician where these may be occurring very quickly. If the testing is to be reproducible, this is very important.

In testing for components of advanced cardiac life support (ACLS), for example, where the protocols are very specific and candidates generally follow the same therapeutic route, it is relatively easy, but it becomes more difficult when testing an anaesthetist in the management of a crisis.

One could imagine a situation where an anaesthetist being tested in the management of a critical incident in the simulator uses a different but equally effective procedure from that used locally, and thus scores badly. This would lead to a false-negative result, in which a candidate is considered to be incompetent, but would be entirely competent in less artificial circumstances. False-positive results may also occur, where candidates perform satisfactorily in the simulator when asked to solve isolated problems, but are in fact not competent in the clinical environment of simultaneous and multifaceted problems.

Second, there are not, as yet, any universally accepted markers of 'competent behaviour' and it has become clear that factors such as leadership, communication and environmental awareness have at least a great a role to play in the successful resolution of a crisis as does the correct medical management. It has already been shown that internal consistency is difficult to achieve when evaluating performance of simple tasks in the simulator (Devitt et al, 1998) and this becomes far more complex when evaluating behavioural factors.

Last, the role of the evaluators themselves needs to be examined. In order to minimize the possibility of bias, should they ever take an active role in the scenario itself and should they be aware of the identity and experience of the candidate?

THE FUTURE

There are many questions still to be answered. Gaba (1994) has stated that there are no gold standards for performance evaluation and that much work would need to be done to validate simulators as a performance tool. In general, there has so far been very little support among the anaesthetic profession for this use of a commercial simulator. HM

Chopra V, Gesink BJ, De Jong J, Bovill JG, Spierdijk J, Brand R (1994) Does training on an anaesthesia simulator lead to improvement in performance? *Br J Anaesth* **73:** 293–7

Devitt JH, Kurrek MM, Cohen MM et al (1998) Testing internal consistency and construct validity during evaluation of performance in a patient simulator. *Anesth Analg* **86:** 1160–4

Gaba DM (1994) Human work environment and simulators. In: Miller RD, ed. *Anaesthesia*. Churchill Livingstone, New York: 2635–79

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