

## ● Medical education

# Simulation training: a new adventure



**Dr Crina Burlacu**, College of Anaesthetists in Ireland, explains the setting up of the national programme of training through simulation and details the associated benefits

The College of Anaesthetists in Ireland (COAI) has announced the launching of the College of Anaesthetists' Simulation Training (CAST) Programme, which involves the introduction of full-scale realistic simulation in the overall competence-based training in the specialty of anaesthesia. This programme is the result of a successful educational partnership between the COAI and several regional clinical skills and simulation facilities.

The CAST programme is aiming at integrating modern simulation-based methods of education and training in healthcare into more traditional methods of education, training and assessment in the specialty of anaesthesia in Ireland.

Human-patient simulator-based training has been gaining increasing recognition in healthcare, as an educational method that takes into account the needs and obstacles of modern clinical training such as shorter working hours, limited exposure to critical events and increased patient expectations.

During full-scale realistic simulation, any shortfall in training becomes traceable, understandable and remediable in a safe and controlled environment, where knowledge gaps and procedural mistakes can happen and be corrected without inflicting any risk on real patients.

Furthermore, acknowledging that human factors underline most medical errors, human behaviour in a crisis can be observed and taught appropriately.

## Pilot facilities

In line with the recommendations of the 'Report of the Working Group on Undergraduate Medical Education' (Fottrell, 2006) and the 'Report of the Postgraduate Medical Education and Training Group' (Buttimer, 2006), the COAI has been keen to capitalise on the opportunity provided by initial funding under the capital investment framework of two pilot regional clinical skills training facilities and to enter into an educational partnership with these facilities, whereby progress towards the College's goals in competence-based training and education in anaesthesia can be achieved.

The development of the two regional facilities – the Advanced Southern Simulation Education and Training (ASSET) Centre in University College Cork and the Multidisciplinary



The CAST Programme incorporates full-scale realistic simulation in the specialty of anaesthesia

Regional Clinical Skills Centre in St James's Hospital, Dublin – has coincided with the construction of a modern Education Centre on the COAI grounds in Merrion Square, Dublin.

This has finally provided housing for the two medium fidelity patient simulators (SimMan, Laerdal Medical) that were purchased by the College a couple of years ago.

Other existing clinical skills facilities such as the Clinical Skills Laboratory in the RCSI Education and Research Centre (Beaumont Hospital, Dublin) and Galway's Clinical Skills Laboratory (associated with the Department of Anaesthesia and Intensive Care in Galway University Hospital) were also invited to participate in this programme. This was in order to make available a national educational network catering for the educational and training requirements of the anaesthesia trainees and registered medical practitioners.

## Education and training

Over the recent years, the COAI has redefined and acquired new roles in education and training in the specialty of anaesthesia. Its historical role had been partly that of an accrediting body, conducting Primary and Fellowship Examinations as well as defining the specialist training process for anaesthesia, and partly as an education provider through a wide range of educational activities such as courses, meetings, conferences, a Masters in Medical Professionalism programme and its most recent educational adventure – the CAST programme.

For years, training in anaesthesia in Ireland followed the apprenticeship model, relying heavily on the clinical expo-

sure to a range of patients and interventions. To ensure broad exposure to routine cases, specialist training in anaesthesia has been modularised for some years now.

Despite efforts of hospitals that are approved for training to provide adequate caseload and expertise, anaesthetists may still have limited experience in uncommon life-threatening events.

In these rare situations, the prompt and effective application of clinical knowledge, skills and principles of crisis management may influence patient outcome. Trainees may have limited opportunities to take a lead role in such circumstances, and time for debrief after such an event is limited in a busy clinical environment.

The requirements of the European Working Time Directive in terms of working hours may further diminish the development of expertise during training hours, which may ultimately undermine optimal patient care. There are also increased patient expectations to be treated by trained healthcare personnel.

The COAI acknowledges that simulation, using computerised patient mannequins and a mock-clinical environment, may help address this deficiency. Within the safe setting of a simulator, emergencies can be scheduled and repeated, the level of difficulty can be varied and the scenarios can be designed to address a range of learning objectives from the acquisition of simple clinical skills and treatment algorithms to dealing with major crisis.

There is recent evidence that establishes the role of high-fidelity medical simulation in facilitating learning, provided that particular learning conditions

are met, such as: (1) effective integration into the standard medical school or postgraduate educational curriculum; (2) repetitive practice; (3) adequate feedback after simulation; (4) adjusted level of difficulty; (5) interactive participation in a controlled, safe environment; and (6) clear learning objectives and tangible outcome measures are met (Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Med Teach*. 2005 Jan; 27(1): 10-28).

The general principles underlying the development of the CAST programme are: (1) careful mapping to the current competence-based training curriculum in anaesthesia; (2) national coverage; (3) uniform educational content; (4) homogenous training of educators; and (5) continuous quality management programmes.

## Curriculum

A national simulation training curriculum has been developed where the existing competence-based training curriculum was carefully dissected to expose areas that are amenable to training in a simulated environment. The agreed curriculum standards have been merged into a number of courses that address a range of learning objectives from the acquisition of simple clinical skills and treatment algorithms to dealing with rare events and major crises.

The CAST programme consists of a range of core courses such as Anaesthesia Emergencies Simulation Courses, Obstetric Anaesthesia and Paediatric Anaesthesia, and more advanced specialised

courses such as Cardio-Thoracic Anaesthesia, Trauma and Intensive Care Courses. These standardised courses will be developed and delivered over a phased period of time, with the first Anaesthesia Emergencies Simulation Course due to be delivered over the next couple of months in a number of locations nationwide.

Trainees from various regional Basic Surgical Training schemes and the National Specialist Registrar scheme will have access to the same courses regardless of their geographic workplace. Although the CAST courses are designed for trainees in anaesthesia in the first instance, it is envisaged that these courses will have considerable appeal to registered practitioners who may want to refresh knowledge and skills as part of a CPD programme.

A simulation workshop for consultants will be delivered at the Irish Congress of Anaesthesia 2010 in May.

It is envisaged that multidisciplinary training will be also provided in the future. A programme of collaboration with other medical training bodies has been already initiated to identify which parts of the skills curriculum could have synergies with the training requirements of other specialties, and be feasible therefore to be taught in multidisciplinary simulation courses.

In general terms, during the course, participants are exposed to several full-scale clinical scenarios where learning objectives are clearly predefined. The participant is expected to manage the case scenario according to his/her training grade. Each scenario is followed by personalised feedback during focused, instructor-led debrief sessions that augment the learning outcomes.

Both individual competence and performance as a team member is discussed in a constructive, positive manner. Good principles of clinical crisis management such as leadership and delegation, teamwork, effective communication, efficient use of available resources, support from seniors and regular review of patient progress are thoroughly addressed and reinforced.

The College has centrally trained a number of facilitators of simulation. A Train the Trainer course was completed in October 2009 under the auspices of the COAI and delivered by a team of international trainers with recognised experience in instructing in a simulation environment. Fifteen consultant anaesthetists participated in the course on that occasion.

Other regional initiatives have taken place in order to increase the pool of facilitators and thereby ensure homogenous delivery of education. Lead consultants with responsibility for individual course de-

velopment, delivery, evaluation and regular updating have been identified.

## Quality management

Finally, the COAI envisages that a process of quality management using an array of tools such as inspection, evaluation and accreditation needs to be implemented to ensure adherence to simulation curriculum and training standards. The aim of the accreditation process is to maintain consistency across course providers, and ensure each centre meets minimum explicit standards.

These standards include physical facilities, appropriate number and training of instructors, availability of part-task trainers and computerised simulators, and adherence to course material and methods of course delivery.

The incorporation of training through simulation in the overall competence-based training curriculum in anaesthesia in Ireland is at a very early stage. The College acknowledges that there is diversity in regards to facilities and equipment availability among various simulation centres and encourages the initial pooling of simulation equipment and instructors to maximise the utilisation of expertise and resources attached to each individual centre.

Explicit standards to ensure the effective delivery of simulation courses have been developed and the accreditation procedures have been decided upon. Further funding is however required before such strict accreditation procedures can be implemented.

International experience has demonstrated that setting up a national standardised simulation programme is a challenging task that, if appropriately concluded, is a rewarding experience for both participants and educators. With the first course due to be delivered in Ireland soon, there is ongoing advertising, construction work, stockpiling with the required equipment, technical and software training, staff and faculty recruitment, rehearsals, excitement and emotions.

We are certain that there are many difficulties facing us in such a logistically complex task that will require the support, co-operation and agreement of many agencies, not least those who provide funding, to bring success. In anticipation of the imminent launching of the CAST programme, we are keen to share our experience with the *IMT* readers.

● For further information on the simulation training courses, please contact **Dr Crina L. Burlacu**.

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