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### Competency-Based Training in Intensive Care Medicine



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The Competency-Based Training in Intensive Care Medicine in Europe (CoBaTrICE) collaboration was established in 2003 with a grant from the European Union's Leonardo Programme, and endorsement from the European Society of Intensive Care Medicine and the national training organisations (NTO) of 42 countries, including all those of the EU. The aim was ambitious: to develop an international competency-based training programme in intensive care medicine, which was compatible with very diverse national training programmes, but which resulted in a harmonised, quality-assured product—the intensive care specialist. The founding principle was to define a specialist in intensive care medicine (ICM) in terms of the knowledge, skills, behaviours and attitudes required to become an expert in the highly complex task of caring for critically ill patients and their families. The following article provides an overview of the steps taken by the authors to create what is today a successful and inspirational educational programme.

The first step in developing this ambitious programme was to convince individual practitioners and their NTOs that a harmonised international training programme was both desirable and necessary. We did this by surveying the current state of ICM training worldwide (Barrett and Bion 2005), and found very large, and probably undesirable, differences in the structures, content, processes and outcomes of training, to the extent that it was difficult to believe that these programmes could produce intensive care specialists of a common and high standard. Armed with this information, it became easier to convince colleagues of the need for change.

The Leonardo Programme grant allowed us to build a worldwide collaboration, based first on the European Region, with 28 national coordinators and deputies representing the diverse national training programmes. Countries from other world regions—North and South America, the Middle East, Asia and the Far East—also joined this enterprise, via representatives who were either supported by their NTOs or who were self-funding. We held biannual meetings that were linked to the major European intensive care congresses, and managed most of the work through electronic means of communication, and a website ([www.cobatrice.org](http://www.cobatrice.org)).

#### Stakeholder Involvement

We started the core part of our work by accessing the expertise of front-line clinicians and other relevant stakeholders, inviting them to submit up to 10 competencies that they considered a specialist in intensive care medicine should have acquired by the end of training. We did this using a modified webbased Delphi process (The CoBaTrICE collaboration 2006). The first round secured 5,241 suggestions from 536 respondents in 57 countries. Importantly and uniquely, the competencies identified by our respondents referred to attitudes and behaviours as much as to practical task-related skills and procedures, demonstrating the importance that intensive care specialists attach to communication, teamworking, professionalism and leadership. The majority of respondents were intensive care physicians (76 percent specialists, 10 percent trainees), but 8.5 percent were from other disciplines, and three percent were nurses.

We also undertook a parallel survey of patients and families from 70 ICUs in eight European countries (working in collaboration with the Picker Institute), and this generated 1,398 responses (The CoBaTrICE collaboration 2007). We brought these two sets of informed opinion together and, using a structured editing process, reduced the proposals and suggestions to 164 items. We then submitted these items to a nominal (expert) group (NG) with multidisciplinary representation, and over a two day period this group refined and ranked the content, having first defined the level of expertise at which each competence should be demonstrated (among four levels of expertise from “knowledge of”, to “independent practice”). The output from the NG was then presented again to the wider group as the second phase of the Delphi process. This resulted in a final set of 102 competencies in 12 domains, covering all aspects of practice in ICM.

The next step was to link the competencies to underlying factual knowledge—the syllabus. We did this by aggregating the ICM curricula of eight

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countries, removing redundant material, and then allocating the knowledge elements within each competence and domain. This then brought together the outcomes of training—the competencies—with the underlying knowledge.

Finally, we described the methods of assessment of competence, to provide guidance to colleagues on how to conduct assessments in the workplace, since many national training programmes did not have a tradition of formal assessment. Within this, we included a template for multi-source feedback: a 360 degree appraisal based on those competencies which best reflected attitudes, behaviours and aspects of professionalism.

#### **Development, Harmonisation and Assessment**

The second phase of CoBaTrICE was called CoBa-IT; this was the IT component referring to innovation transfer. The aim of phase two was to develop practical tools for implementing training in ICM, focusing on those areas which trainers and training programmes found most challenging. These were the need for internationally harmonised methods for workplace-based assessment of competence, and systems for documentation. With this in mind, we undertook a second survey, this time of structures and processes of training in ICM, which again revealed wide variation in practice and resources (The CoBaTrICE collaboration 2009). We used this to develop a set of standards for training programmes in ICM, using consensus techniques as the method for development. This resulted in 29 internationally agreed programme standards, and a further nine potential standards for future development (The CoBaTrICE collaboration 2011). Finally, we developed an e-portfolio for documentation of acquisition of competence, which also permits electronic communication between trainer and trainee, and linkage of competencies to supporting evidence. The e-portfolio is fully functional and freely available to NTOs, but is still in an early stage of development and requires additional work to adapt it to national needs.

The combined work has resulted in the CoBaTrICE programme, a virtual tool that is freely accessed by any national training programme in ICM, endorsed by 42 NTOs and already adopted by 10 European countries, including France and the UK. The programme has twice been identified as an example of best practice by the European Commission, and the process has been emulated by the USA. In the UK, the competencies have been integrated in the training of advanced critical care practitioners (Department of Health 2008) (nurses and technical grade staff working in intensive care) and in all healthcare staff with responsibilities for acutely ill patients (Department of Health 2009). Links are being developed with undergraduate training as well (Perkins et al. 2005). This is a model of integrated multidisciplinary work in practice.

Nevertheless, this is merely the beginning. The development of competencies is no more than a product specification. We now need to develop quality assurance processes across very different training structures and cultures.

We also want to develop the CoBaTrICE collaboration as a platform for pedagogic research and quality improvement that links clinical research, best practice, and implementation science. Achieving this requires a new phase, in which we try to answer the question: "Does better training result in better specialists delivering better care to patients?"

This challenging question demands a new model of research, involving human factors and sociology expertise, investigating different models of training, in different locations, over long periods of time. The challenge lies not just in developing new research methodologies but also in engaging research funders, who all too often regard education as a mere add-on to clinical work and who are impatient, expecting results from research funding within a few months. The EU has the opportunity to use international variation in education and training experience to answer important questions relating to patient care, but to do this requires long-term commitment to pedagogic research as a valid and important area of scientific enquiry.

The CoBaTrICE collaboration has been a model of collaborative practice which, through training and education, provides healthcare systems with an opportunity to determine the best approaches for quality assurance and long-term improvements in the care of critically ill patients and their families. Enhancement and harmonisation looks set to continue both via this developing programme and also others that are influenced by it.

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