Intensive Care Med (2009) 35:1575–1583
DOI 10.1007/s00134-009-1514-4

ORIGINAL

The CoBaTrICE Collaboration

The educational environment for training in intensive care medicine: structures, processes, outcomes and challenges in the European region

Received: 11 February 2009
Accepted: 30 April 2009
Published online: 23 June 2009

Electronic supplementary material
The online version of this article (doi:10.1007/s00134-009-1514-4) contains supplementary material, which is available to authorized users.

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Abstract *Objective:* To characterise the training environment in ICM across Europe, with a particular focus on factors influencing competency-based training. *Method:* A cross-sectional web-based survey completed by the national coordinator for the CoBaTrICE (Competency-Based Training in Intensive Care medicinE) programme in each of 28 European countries. *Results:* Since the last survey in 2004, 50% of EU countries have modified their training programmes. Seven have already adopted the CoBaTrICE programme since its completion in 2006. Multidisciplinary access to ICM training ('supraspeciality' model) is available in 57%, most commonly as a 2-year training programme. National examinations are held by 26 (93%); in 24 (86%) this is a mandatory exit exam; ten use the European Diploma of Intensive Care (EDIC). A formal national system for quality assurance of ICM training exists in only 18 (64%) countries. National standards for approving hospitals as training centres vary widely. In 29% there is no designated specialist with responsibility for training at the local level. Time for teaching was cited as inadequate by 93% of respondents; only 21% of trainers receive contractual recognition for their work. In 39% there is no protected teaching time for trainees. Half of countries surveyed have no formal system for workplace-based assessment of competence of trainees. *Conclusions:* There is considerable diversity in pedagogic structures, processes and quality assurance of ICM across Europe. National training organisations should develop common standards for quality assurance, health systems need to invest in educator support, and the EU should facilitate harmonisation by recognising ICM as a multidisciplinary speciality.

Keywords Intensive care · Critical care · Training · Accreditation · Assessment · Professional competence

Introduction

The CoBaTrICE collaboration was formed in 2003 with the objectives of developing an internationally acceptable competency-based training programme in intensive care medicine to promote the highest standards of multidisciplinary care of critically ill patients and their families through life-long learning, and to harmonise those standards across national borders, thereby facilitating free movement of professionals. Building on previous work [1–4], the first phase of this project used extensive consensus techniques to create the competencies, linked them to the syllabus and educational resources, and provided guidance on assessment of competence, the whole being presented in publications [5–8] and on the website [9]. The objectives of CoBaTrICE have been endorsed by the

national ICM training organisations of 43 countries, including all those of the European Region.

The project was launched with a worldwide survey which demonstrated considerable international diversity in training structures and processes, and in the degree of sophistication of methods of assessment of competence [5]. While none of these variations was inimical with the aims of competency-based training, they did suggest the need for a deeper understanding of the educational environment and, in particular, the challenges faced by trainers and trainees at national and local level in establishing a common competency-based training programme. We have therefore undertaken a second survey limited to European region countries to describe in more detail the environment in which training is currently being delivered, and to determine changes which have occurred since the original survey in 2004. A glossary of terms is provided in Appendix 2.

Methods

A self-report web-based English language survey was developed and piloted through several iterations by the CoBaTrICE programme steering committee, with input from non-native English speakers. Phrase ambiguity was minimised by using opposing descriptive answer techniques and some free text responses (Appendix 3, ESM). The survey was distributed via e-mail to all 28 European National coordinators, senior ICM specialists who officially represent their National Training Organisations (NTOs) in the CoBaTrICE programme. Clarification of responses was sought by e-mail or telephone where necessary. National Coordinators (NCs) were specifically asked to provide as representative a view of their national situations as possible.

Results

The survey was conducted and completed over a 6 month period by all 28 national coordinators (response rate 100%). Summary data is given in Table 1. After noting the extent of change and take-up of the CoBaTrICE competencies, the results are reported under seven headings: access to ICM training; educational processes and resources; supervision and assessment; trainer support; requirements for appointment to ICM specialist; quality assurance; and challenges.

Since 2004, training structures have been modified in 14 (50%) countries, either by a change in mode of training delivery, greater integration with other specialist programmes, or new national recognition of ICM as a distinct speciality training programme.

The CoBaTrICE competencies, since publication in 2006, have been formally adopted by the National Training Organisations in 7 (25%) European countries (Table 1). Three countries (Cyprus, Czech Republic and Greece) are planning implementation when a new training programme has been approved, and others use the competencies on an informal basis. Reasons for non-implementation given by NCs included the NTO has not yet considered adoption (13 countries; 46%), translation difficulties (7; 25%), preference for the existing training programme (5; 18%), inadequate resources or time (4; 14%), and uncertainties about how to implement competency-based training (2; 7%).

Access to ICM training

ICM is taught at the undergraduate level in all countries; in 20 (71%) this is a formal part of their education. This is a notable improvement from the previous survey in 2004. Undergraduate training in all countries now also includes tuition in either basic or advanced life support.

Of the four models of access to ICM postgraduate training (Table 2), the supraspeciality route remains the most common, being reported by 16 (57%) of European Region countries. Anaesthesiology is the base speciality most frequently linked to ICM; others that provide access include internal and pulmonary medicine, cardiology, neurosurgery, trauma, neonatology and paediatrics. Some countries permit multiple modes of access: Germany offers ICM both as a supraspeciality and as a multiple subspeciality, France permits access to ICM either via the supraspeciality route or via anaesthesia as a subspeciality, while in Switzerland access may be via either the supraspeciality or the primary speciality model. ICM exists as a primary speciality (entry directly following completion of undergraduate training) in two countries, Spain and Switzerland. Switzerland also permits multidisciplinary access to ICM as a supraspeciality (the preferred route), while in Spain anaesthetists may also undertake periods of training in reanimation from 3 to 12 months which entitles them to practice in intensive care. The complexity of the Spanish situation is not fully represented in the tables and summary statistics.

Educational processes and resources

There are three main formats for ICM training programmes: in 9 (32%) countries training is delivered in a continuous block, 8 (29%) use the modular approach, and 11 (39%) countries use concurrent training combined with the base speciality as an integral component. The most common duration of ICM training is 24 months (14 countries, 50%) with a range of 10 (Latvia) to 60 (Spain) months. However, this range disguises the fact

Table 1 Summary of survey data

	Trainer represents NTO locally	External visiting programme	Written ICM standards	Critical care units		Speciality status of ICM				Certification specialist training	Formal Processes		Nationally uses EDIC	EDIC pass Required	Formally adopted CoBaTrICE
				Volume beds	Criterion admissions	Supra-speciality	Multi-sub speciality	Single-sub speciality	Primary speciality		Trainer contract	Mandatory exam			
Austria	N	Y	Y	8			Y			Dual	N	Y	N		
Belgium	Y	Y	Y	12		Y				Dual	N	Y	N		
Bulgaria	Y	Y	Y	6			Y			Joint	Y	Y	Y	Y	
Croatia	N	N	Y	8		Y				Alone	N	Y	Y	N	Y
Cyprus	N	N	Y	6		Y				Dual	N	Y	N		Y
Czech Rep.	N	N	Y		500	Y				Alone; Joint	N	Y	N		Planned
Denmark	Y	N	N					Y		Base	N	Y	Y	Y	Planned
Estonia	Y	N	N	6				Y		Joint	N	Y	N		
Finland	N	N	N			Y				Dual	N	Y	Y	N	
France	Y	Y	Y	8		Y		Y		Alone	N	IR	N		Y
Germany	N	N	Y			Y	Y			Dual	N	Y	N		
Greece	N	N	N			Y				Dual	N	Y	N		Planned
Hungary	Y	Y	N			Y		Y		Joint	Y	Y	N		
Ireland	N	Y	Y			Y				Base	N	Y	Y	Y	Consider
Israel	N	Y	Y	4		Y				Dual	N	Y	N		Y
Italy	Y	Y	N				Y			Joint	N	Y	N		
Latvia	Y	Y	N	10	600			Y		Joint	Y	Y	N		
Netherlands	Y	Y	Y	12	1500	Y				Dual	Y	Y	Y	N	Y
Norway	N	Y	N					Y		Joint	N	Y	Y	Y	Y
Poland	Y	N	Y	6				Y		Joint	N	Y	N		
Portugal	Y	Y	Y	8	200	Y				Dual	N	Y	N		Y
Slovakia	N	N	Y	4				Y		Joint	N	Y	Y	Y	
Slovenia	N	N	Y	8	400	Y				Dual	Y	Y	N		
Spain	Y	N	Y	10					Y	Alone	N	N	N		
Sweden	Y	N	N					Y		Joint	N	Y	Y	Y	
Switzerland	Y	Y	Y	6		Y			Y	Alone; Dual	N	Y	Y	N	
Turkey	N	Y	N				Y			Base	N	N	N		
UK	Y	Y	Y	8		Y				Dual	Y	Opt	N		
Totals	15 (54%)	15 (54%)	18 (64%)			16 (57%)	5 (18%)	9 (32%)	2 (7%)		6 (21%)	24 (86%)	10 (36%)	6 (21%)	7 (25%)

Y yes, *N* no, *Opt* optional, *IR* Inter Regional, *Alone* ICM certification awarded as a primary speciality, *Dual* ICM and base speciality certificate awarded, *Joint* ICM and base speciality certificate is integrally linked, *Base* base speciality certificate only is awarded

Table 2 Models of access to ICM training

	Not mutually exclusive
(1) *Multidisciplinary 'supraspeciality'*: access from several primary specialities to a common national core curriculum for ICM	16 (57%)
(2) *Multiple subspeciality*: each speciality with its own ICM core curriculum	5 (18%)
(3) *Single base speciality*: controls all access to ICM	9 (32%)
(4) *Primary speciality*: access to ICM training directly after undergraduate training	2 (7%)
Multiple modes of access: Switzerland (modes 1, 4); France, Hungary (1, 3); Germany (1, 2)	4

Table 3 Supervision and in-training assessment

Planning at the start of the programme or each module	
(1) Informal planning of the trainees' educational needs	18 (64%)
(2) Formal planning of trainees' educational needs using educational contracts or similar documents	10 (36%)
Monitoring the progress of trainees during training	
(1) Informal assessment of progress during routine clinical work, no formal documentation	14 (50%)
(2) Formal structured assessment and formal documentation of competence (knowledge, skills, attitudes) during routine clinical activities	14 (50%)
Assessment of trainees' attitudes and behaviour by nursing staff	
(1) No, only doctors assess trainees	15 (53%)
(2) Nurses may contribute informally to the assessment of trainees	12 (43%)
(3) Nurses contribute formally using multi-source feedback (360° appraisal)	1 (4%)

that a substantial part of ICM training may be delivered as part of anaesthesia, while in Spain the ICM training also includes experience in a range of medical specialities, and training in anaesthesia also includes experience in intensive care.

The NTO appoints nominated local training supervisors or representatives in 15 of the 18 countries with NTOs for ICM (54% of the 28 countries surveyed). In the absence of formal representation, respondents stated that educational support at a local level was delivered through intermittent visits from the NTO, centralisation of training at the university centres, or informal appointments of training supervisors. ICM is represented locally by anaesthesiology in 15 countries.

Twenty (71%) countries stated that there was a named specialist responsible for ICM training in each training centre; each trainee has a nominated mentor in 17 (61%). Protected teaching time is provided in 17 (61%) countries; 23 (82%) deliver this training during working hours, while in 12 (43%) countries some educational activities take place outside working hours and are therefore not included in the limits set by the European Working Time Directive.

In 23 (82%) countries there is adequate library access, and 26 (93%) countries have internet access easily available. However, only 4 (14%) NCs were satisfied with the totality of educational support available to trainees.

Supervision and assessment

Table 3 provides a summary of supervision and in-training assessment. Ten (36%) respondents stated that their countries made formal training plans using educational contracts at the beginning of the training programme; 14 (50%) assessed the trainees during routine clinical activities using structured assessment and formal documentation. One country (UK) includes the formal contribution of nursing staff using multisource feedback ('360° assessment'), while 12 (43%) recognise informal nursing contributions to trainee assessment; 15 (53%) did not seek any contribution from nursing staff. Thus, around half of countries surveyed have no formal method for assessing competence of trainees, and would appear not to seek the views of the nursing staff with whom they work.

A variety of processes are used to identify trainees experiencing difficulties; 19 (68%) countries reported that they did this mainly by formal examination, but also by mentor supervision or continuous assessment. One NC recognised that there was no central system; another reported that the system was not very effective at present.

Excellent trainees are identified by 12 (43%), again mainly by examination, using a grading system, by collecting credits, or from clinical evaluation. France selects the best interregional research and awards a national prize; Ireland honours high exam achievers with an award.

Only two countries do not offer a formal national examination in ICM: Turkey and Spain. Of the 24 (86%) countries with a mandatory examination requiring a 'pass' (i.e. an exit exam controlling access to specialist certification), ten use the European Diploma of Intensive Care (EDIC). The UK offers a non-mandatory examination, and the Netherlands requires trainees to take the EDIC but does not mandate a pass in order to attain specialist status. Examination techniques are diverse (Table 4).

Table 4 Examination techniques (26 countries)

Oral examination	25 (96%)
MCQs	18 (69%)
Clinical examination	12 (46%)
Essays	5 (19%)
Dissertation	2 (8%)
Skill stations	2 (8%)
Simulators	1 (4%)
Case based discussion	1 (4%)

Stand-alone certification in ICM is available in 3 (11%) countries; dual certification with a base speciality in 12 (43%); and joint certification (linked with base speciality such as anaesthesia) in 10 (36%). Three countries do not distinguish ICM training from the base speciality certificate.

Requirements for appointment to specialist post in ICM

Fourteen countries (50%) stated that they had national minimum requirements for appointment to a specialist post in ICM. These included generic (non-ICM) requirements such as registration as a doctor or as a specialist, and specific requirements for ICM including specialist certification, diploma, a defined length of experience, or certification in anaesthesia (Italy and Scandinavia). Informal criteria were reported to include level of experience and exposure to ICM practice.

Trainer support

Only 6 countries (21%) recognised trainers formally in a work plan or contract paid either by their university or local authority. Free text responses included the views that teaching and training were an integral part of a senior doctor's role; but also acknowledged the absence of criteria for appointing individuals as trainers, which vary from devolved responsibility from the professorial head of department (Germany, Netherlands), selection of specific training mentors by the ICU director (Slovakia), or peer nomination supported by the regional educational lead and confirmed by the NTO (UK).

Quality assurance of training

All countries have a national society representing either intensive care medicine, or the base speciality controlling access to ICM, or in some instances, both. Responsibility for quality assurance of postgraduate medical training in ICM at the national level is, however, very variable, and may include professional organisations and societies, chambers, government ministries, councils, and local universities. A formal national system for quality assurance of ICM training exists in only 18 (64%) countries. In 3 (11%) of these, the same organisation represents both the professional and political interests of intensive care specialists, roles which could be regarded as representing a potential conflict of interest in terms of professional self-regulation.

Twenty four (86%) countries require formal approval of ICUs as training centres from their National Training Organisations. Fifteen (54%) reported that approval for ICM training was obtained through external visiting programmes conducted every 3–5 years. The constitution of the external visiting body was variable, but mainly sourced from specialists, and university and local representatives. The assessment is based on nationally approved minimum standards in 18 (64%). Seventeen countries state a requirement for a minimum number of ICU beds; the standard based on beds ranged from 4–12 (median 8). Five countries described a recommended annual admission rate which ranged from 200–1,500. Ten countries had no minimum requirements for either bed number or annual admission rate. Training is delivered in both university centres and community hospitals in 21 (75%) countries; the remaining 7 (25%) use only university hospitals.

Some NCs had difficulty in providing categorical responses to some of the questions on quality assurance because of heterogeneity in training structures and processes at a local level. Free text commentary reflected variation in trainee exposure and experience, inconsistencies in application of training criteria between training centres, and suboptimal quality assurance monitoring.

Current challenges for training

Insufficient time for trainers to devote to teaching was cited as the most common difficulty by 26 (93%) NCs. Lack of sufficient numbers of specialist trainers was cited by 10 (36%); limits on trainees' hours of work, or constraints imposed by shift working, were cited by 12 (43%).

Other comments included lack of control over allocation and funding of trainees, and access to simulation facilities.

Discussion

In this survey of the training environment for intensive care medicine in Europe we have found wide variations in pedagogic structures and processes, and in methods for assessing outcomes of training. While certain common patterns emerge—a preference for the supraspeciality model with a 2 year training programme for ICM, national criteria for accreditation of training centres, and assessment of trainees by formal examination—the predominant feature is one of diversity. Whether this matters or not deserves formal research evaluation. Diversity may be desirable in evolutionary terms or may be entertaining from a cultural perspective, but if it results in suboptimally trained specialists the impact on safety and reliability of care could be catastrophic for patients.

The CoBaTrICE programme has been widely supported in large part because intensivists recognise this distinction between desirable and undesirable variation,

and are willing to work towards harmonising outcomes of training to a common international standard. It is therefore encouraging that seven European Region countries have adopted it in the 2 years since its inception, and more are likely to do so. Several countries outside the ER have also already adopted the programme. However, although the principles of competency-based training are simple, the practical implications of implementation are not. Trainees need to be aware of the requirements for acquisition and documentation of competencies, and to have the clinical opportunities to acquire them. Trainers supported by all their clinical colleagues (including nurses) must be able to observe trainees in the workplace—at the bedside—over a sufficient period of time to make reliable and repeatable judgments of individual performance. A supportive local training environment will recognise the workload this imposes on training supervisors by making a time allowance in their contracts. National training organisations must have the authority and resources for quality assurance of educational processes to support their representatives in each hospital. In particular, remedial systems need to be in place at all levels in order to identify and support trainees (and trainers) in difficulty. Our survey shows that these conditions are only partly met. Indeed, only one national coordinator expressed complete satisfaction with the conditions under which training and education were being delivered.

Positive aspects of the survey

These include the existence of national training organisations for ICM, a strong trend towards the 'supraspeciality model' of multidisciplinary training in ICM, systems in place for accrediting training programmes and centres, adequate physical resources for learning, and evidence of local commitment to training in the form of specialist educational supervisors. The fact that in all countries undergraduates gain access to ICM training is particularly encouraging [10, 11]. This suggests that there is a usable infrastructure on which process improvements can be built.

Areas for process improvement

Trainer support: If professional training is genuinely important to healthcare systems, then lead trainers should have their commitment recognised in their contracts by provision of funded time.

Quality assurance of training: Although all countries have organisations capable of representing intensive care medicine, and 24 countries require formal approval of ICUs as training environments, only 18 (64%) countries have a national system for formal quality assurance of training in ICM. Moreover, the objective standards on which approval and quality assurance are based are almost entirely related to volume metrics—beds or admissions per year—and not on the quality of the training experience or training outcomes. The volume standard is itself compromised by being highly variable between countries and therefore unsuitable for harmonising training and promoting free movement of professionals across national borders.

Methods of Assessment of competence are similarly very diverse. Formal examination is common, but in general this only tests knowledge, not clinical competence, attitudes or behaviours. Few countries have robust methods of workplace-based assessment, or of methods for identifying and helping trainees in difficulty. The views of nursing staff are not generally sought, even though they are such close working colleagues. The use of reflective learning tools such as multisource feedback ('360° assessment') is also rare. There is a major opportunity here for intensive care medicine to lead the way in developing innovative methods of learning and assessment which are validated across national borders.

Looking forward

The CoBaTrICE collaboration is currently engaged in harmonising and developing international standards for quality assurance of training programmes, and in developing more explicit guidance for trainers and trainees on methods of assessment of competence, attitudes and behaviours in the workplace, together with an e-portfolio to help trainers and trainees to plan, conduct, and provide evidence of quality in training, excellence in practice, and life-long learning. This practical support for training at the front-line of care needs to be underpinned by improvements in the status of intensive care medicine at the national and international level. Intensive care medicine is not identified in the European Directive on recognition of Professional Qualifications (Directive 2005/36/EC) [12] because it does fit into the model of a primary speciality, and does not therefore fulfil the criteria for speciality status defined by the European Commission's Committee on Qualifications (discipline must be recognized in at least 2/5th of the Member States, and supported in committee by qualified majority voting) or by the European Union of Medical Specialists (UEMS) (discipline must be recognized as an independent speciality by more than 1/3rd of EU Member States). The European Board of Intensive Care Medicine, with the support of the UEMS, is therefore currently engaged in discussions with EU representatives to permit the inclusion of ICM in the European Directive as a 'Particular Medical Competence', defined by the Union European des Médecins Spécialisées (UEMS) as 'An area of expertise in addition to, and outside the domain of, a

primary speciality, required to provide high quality patient care by multidisciplinary input from doctors from various medical specialities'. This would provide the basis for equal status of ICM with other disciplines, and would underpin the progress we have made in developing competency-based training across national borders. Recognising intensive care medicine in this way would substantially enhance efforts to harmonise and improve national standards and local delivery of training, and thereby translate better training into our common goal [13]—better care for our patients.

Acknowledgments D. D'Hoir, N. Le Devic (European Society of Intensive Care Medicine), N. Middleton, B.Lafferty, C. Edwards (University of Birmingham); K. Tulkis, J. Aulehle (ECOTEC), C. Van Der Vleuten (University of Maastricht). The project is partly funded by a grant from the European Union Leonardo Da Vinci program, with support from the University of Birmingham, European Society of Intensive Care Medicine, University of Maastricht, University of Mater Misericordiae, CYber Imagination and the simulation group SAInT.

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Appendix 2: Glossary

Accreditation

Process for discerning and officially recognising the attainment of a quality standard. This may include completion of specialist medical training to a pre-defined standard, usually formally documented via certification.

Base speciality

Primary speciality. Accessed directly after undergraduate training. Major base specialities include internal medicine, surgery and anaesthesia.

Competence

The ability to integrate generic professional attributes with specialist knowledge, skills and attitudes and apply them in the workplace.

Competency-based training

A strategy which aims to standardise the outcome of training (what sort of specialist will be produced) rather than the educational processes (how the specialist is produced).

Competency-based training programme

A programme which defines the outcomes (competencies) required of doctors at different stages of training, provides guidelines for the assessment of these outcomes and educational resources to support their acquisition within the workplace. Outcomes, articulated as competency statements, are defined in a manner which facilitates integration of knowledge, skills and attitudes and assessment of performance to a common standard during routine clinical work.

The methods by which competencies are acquired and the time taken to do so may vary between trainees and between training programmes, but the competencies and the modes for assessing their acquisition are clearly defined and common to all.

Competency statement

Defines an element of competence which is articulated in behavioural terms which allows performance to be measured, assessed and evaluated.

Core curriculum

Curriculum followed by all trainees within the training programme. May include both theoretical and clinical elements. Encompasses knowledge, skills, attitudes and behaviours. Sets the minimum requirements for completion of ICM training. Formally documented.

Dual specialist certification

Accreditation via certification in both a base speciality and intensive care medicine.

Educational processes

Methods of teaching and learning (how the doctor is produced).

Educational outcomes

The end product of training.

Model of training

Structure of training.

Multidisciplinary access

Access to ICM training permitted for trainees from more than two different major base specialities.

Multiple sub-speciality

ICM training 'owned' by multiple parent specialities—access limited to trainees within the respective parent discipline, enables multidisciplinary access during or after base training. Each speciality has its own national ICM curriculum. Certification is awarded as a dual certification or via the base speciality certification which includes ICM.

National curriculum

A core curriculum which is nationally agreed and recognised.

Pathway of training

Route by which a single ICM training programme is accessed and/or completed. A programme may be combined with other training programmes or accessed at various stages of specialist training but it is essentially the same ICM programme.

Primary speciality

ICM is the base speciality and can be accessed directly after undergraduate training. Specialist certification awards accreditation in ICM only.

Single sub-speciality model

ICM training 'owned' by one parent speciality—access limited to trainees within this speciality either during or after base training. Certification is awarded as either a dual certification or base speciality certification which includes ICM.

Specialist certification

Satisfactory completion of specialist training recognised by the award of a certificate from the responsible national training authority; often also termed 'accreditation'.

Specialist ICM certification

Accreditation via certification in ICM alone (i.e. certification in ICM is validated and awarded independent of a base speciality).

Supraspeciality model

Multidisciplinary access to a single common ICM programme during or after training in a range of base specialities has a common national curriculum. Certification is awarded as a Dual specialist certification in a base speciality and in ICM. ICM specialist certification alone is not permitted.

References

1. Vincent JL, Baltopoulos G, Bihari D, Blanch L, Burchardi H, Carrington da Costa RB, Edwards D, Iapichino G, Lamy M, Murrillo F, Raphael JC, Suter P, Takala J, Thijs LG, (ESICM task force) (1994) Guidelines for training in intensive care medicine. Intensive Care Med 20:80–81
2. Thijs LG, Baltopoulos G, Bihari D, Burchardi H, Carlet J, Chioléro R, Dragsted L, Edwards DJ, Ferdinande P, Giunta F, Kari A, Kox W, Planas M, Vincent JL, Pfenninger J, Edberg KE, Floret D, Leijala M, Tegtmeyer FK, (ESICM, ESPNIC task force) (1996) Guidelines for a training programme in intensive care medicine. Intensive Care Med 22:166–172
3. Bion JF, Ramsay G, Roussos C, Burchardi H, on behalf of the Task Force on Educational issues of the European society of intensive care medicine (1998) Intensive care training and speciality status in Europe: international comparisons. Intensive Care Med 24:372–377
4. De Lange S, Van Aken H, Burchardi H (2002) European Society of Intensive Care Medicine statement: Intensive care medicine in Europe—structure, organisation and training guidelines of the Multidisciplinary Joint Committee of Intensive Care Medicine (MJCICM) of the European Union of medical Specialists (UEMS). Intensive Care Med 28:1505–1511
5. Barrett H, Bion JF, on behalf of the CoBaTrICE collaboration (2005) An international survey of training in adult intensive care medicine. Intensive Care Med 31:553–561
6. The CoBaTrICE collaboration (2006) Development of core competencies for an international training programme in intensive care medicine. Intensive Care Med 32:1371–1383
7. The CoBaTrICE collaboration (2007) The views of patients and relatives of what makes a good intensivist: a European Survey. Intensive Care Med 33:1913–1920
8. Pronovost P, Rodriguez-Paz J, Mohammad Z (2007) Creating competent and caring physicians: ensuring patients are our North Star. Intensive Care Med 33:1873–1875
9. http://www.cobatrice.org
10. Perkins GD, Barrett H, Bullock I, Gabbott DA, Nolan JP, Mitchell S, Short A, Smith CM, Smith GB, Todd S, Bion JF (2005) The Acute Care Undergraduate TEaching (ACUTE) initiative: consensus development of core competencies in acute care for undergraduates in the United Kingdom. Intensive Care Med 31:1627–1633
11. Smith CM, Perkins GD, Bullock I, Bion JF (2007) Undergraduate training in the care of the acutely ill patient: a literature review. Intensive Care Med 33:901–907
12. Directive 2005/36/EC of the European parliament & Council on recognition of professional qualifications, 7th September 2005. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:255:0022:0142:EN:PDF
13. Fink M, Suter PM (2006) The future of our specialty: Critical care medicine a decade from now. Crit Care Med 34:1811–1816