Competency-Based Training

The CoBaTrICE project: Changing Clinical Behaviour Through Education
Competency Based Training in Intensive Care Medicine in Europe (and Elsewhere)

ESICM; University of Birmingham; Charles University; Picker Institute Europe; Intensium Oy

CoBaTrICE is supported by an EU FP6 grant Leonardo da Vinci Programme.
Additional supporters: GlaxoSmithKline; SSCM; Pfizer (HK); ESICM
CoBaTrICE: international coverage

The CoBaTrICE collaboration covers 42 countries from all over the world
E.g. Europe, Chile, Costa Rica, Indonesia, India, Hong Kong, USA...
<table>
<thead>
<tr>
<th>Phase 1</th>
<th>International survey of training in adult intensive care medicine (<em>completed</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 2</td>
<td>i) Consensus development of competencies for ICM (<em>completed</em>)</td>
</tr>
<tr>
<td></td>
<td>ii) Syllabus development &amp; links (<em>completed</em>)</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Assessment guidelines (<em>end Aug</em>)</td>
</tr>
<tr>
<td>Phase 4</td>
<td>Identification of educational resources linked to each competence (<em>no end date, &gt;800 validated sources to date</em>)</td>
</tr>
</tbody>
</table>
CoBaTrICE: Rationale & challenges

- Harmonisation of standards of training
- Workforce mobility (EU)
- Patient-practitioner interaction main focus of healthcare delivery
- Patient safety & teamworking
  - Education essential
  - The acutely ill patient a particular challenge
- What is an intensivist?
  - product specification
- Stakeholders:
  - Who ‘owns’ intensive care?
  - Who has an interest in ICM?
- Balance between standardisation and creative variation
Intensivists: general practitioners of acute hospital medicine
Competency-based training

• Defines what a practitioner can do, in terms of knowledge, skills, attitudes & behaviours
• Workplace-based assessment of training outcomes
• Curriculum determined by competencies, not by examination
• Potential criticism of CBT is that it focuses attention on the physician solely as craftsman / technician
  – What distinguishes the ‘craftsman’ from the ‘professional’?
    • Attitudes, behaviours & ethics
    • Self-regulation & life-long learning
CoBaTrICE phase I: survey
An international survey of training in adult intensive care medicine

Internationally... wide variation in structures and processes of ICM training

Abstract Objective: The aim of this international survey of training in adult intensive care medicine (ICM) was to characterise current structures, processes, and outcomes to determine the potential for convergence to a common competency-based training programme across national borders. This survey is the first phase of a 3 year project which will use consensus methods to build an international competency-based training programme in ICM in Europe (CoBaTriCE). Methodology: A survey training programme; in nine (24%) training was only available within anaesthesia. The minimum duration of ICM training required for recognition as a specialist varied from 3 months to 72 months (mode 24 months). The content of most (75%) ICM programmes was standardised nationally. Work-based assessment of competence was formally documented in nineteen (50%) countries. An exam was mandatory in twenty-nine (76%). Conclusion: There are considerable variations in
Survey of ICM Training

- 41 countries: n = 38
- Formal adult ICM training in 36 (95%)
- 54 different training programmes
- Variations in structure, duration & format
- CBT in UK, Canada
- Ownership
  - 55% supraspeciality (multidisciplinary access with common programme)
  - 30% anaesthesia only
  - 15% multiple subspeciality

<table>
<thead>
<tr>
<th>Region</th>
<th>Countries surveyed</th>
<th>ICM training programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>29</td>
<td>37</td>
</tr>
<tr>
<td>Asia</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>North America</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>South America</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Australasia</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Arab</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>West Africa</td>
<td>1</td>
<td>0 *</td>
</tr>
</tbody>
</table>

* Emergency Medicine Programme includes principles of ICM
Minimum duration of ICM training

Range: 3 – 36 months (mode 24 months)

Czech R: 3 months ICM

Bulgaria: 12 months ICM

Switzerland: 36 months ICM

Legend:
- University / pre-registration
- Base specialty
- ICM
Sequence of training

Modular or Single block – during or after base training

**BASE (Anaesthesia) TRAINING**

**Poland:**
- 24 months ICM
- 24/12 ICM

**SHO / FYT**

**BASE (SpR) TRAINING**

**UK:**
- 33 months ICM
- 3/12 ICM
- 6/12 ICM
- 12/12 ICM
- 12/12 Complementary training
- Basic
- Intermediate
- Advanced
Implications

- Variations in training not obviously based on the needs of patients
- Competency based training can be applied despite these variations in structures and processes of training
- Must accommodate learning needs of trainees from different base specialities
- Collaboration across national borders is possible

How can we achieve international harmonisation of training in ICM, focussed on the needs of patients, while accommodating local training structures?

- By defining competent practitioners in terms of the outcome of training – the knowledge, skills and attitudes expected of a professional
CoBa Phase II: Web-based Delphi
Involving front-line clinicians

Data collection: Online free-text survey - 6 month period

- 536 respondents
- 58 countries
- 8 languages
- 5241 suggestions
- 1 – 134 suggestions per person (mode = 10)

- Suggestions categorised using 35 pre-determined keywords
Practical procedures the most frequently cited single category, but attitudes and behaviour (professionalism and communication) equally cited.
1st Round Delphi Output

Online Survey
5241 competence suggestions

35 Keyword Categories
(multiple categories allowed)

Key themes summarised
(10 – 20 per category)

Consumer Survey - patients and relatives 8 EU countries
1391 questionnaires

21 items & free text
→ 3 key themes
Medical knowledge & skills
Communication & interpersonal skills
Decision making

Editorial process

169 competence stems (Scope = roles & tasks)
+ 4 Generic levels of expertise (Quality)
<table>
<thead>
<tr>
<th>NAME</th>
<th>PROFESSIONAL BACKGROUND</th>
<th>COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr A. Van Zanten</td>
<td>ICM - Internal medicine</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Dr A. Armaganidis</td>
<td>ICM - Pulmonary medicine</td>
<td>Greece</td>
</tr>
<tr>
<td>Dr J. A. Romand</td>
<td>ICM - Anaesthesia</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Dr V. Gasparovic</td>
<td>ICM - Internal medicine</td>
<td>Croatia</td>
</tr>
<tr>
<td>Dr F Rubulotta</td>
<td>ICM (newly appointed specialist) - Anaesthesia</td>
<td>Italy</td>
</tr>
<tr>
<td>Dr U. Bartels</td>
<td>ICM Trainee - Anaesthesia</td>
<td>Germany</td>
</tr>
<tr>
<td>Prof. J Scholes</td>
<td>Critical Care Nursing</td>
<td>UK</td>
</tr>
<tr>
<td>Dr M. Parker</td>
<td>ICM - Paediatrics</td>
<td>USA</td>
</tr>
<tr>
<td>Dr C. Gomersall</td>
<td>ICM - Anaesthesia and Internal medicine</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Dr A. Larsson</td>
<td>ICM - Anaesthesia</td>
<td>Denmark</td>
</tr>
<tr>
<td>Dr S. Iyer</td>
<td>ICM - Internal medicine</td>
<td>India</td>
</tr>
<tr>
<td>Dr P. Ferdinande</td>
<td>ICM - Anaesthesia</td>
<td>Belgium</td>
</tr>
</tbody>
</table>
Nominal Group Tasks

For each competence stem the NG:

1. Agreed the **minimum level of expertise**:

   **By the end of ICM specialist training, the trainee...**

   | Has knowledge of, describes… | Performs, manages or demonstrates under supervision… | Performs, manages or demonstrates independently… | Supervises or teaches others in the performance, management or demonstration of… |

   Then:

2. Rated the **importance** of the competence statement:

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unimportant, of little relevance</td>
<td>Minor importance</td>
<td>Moderate importance</td>
<td>Important</td>
<td>Very important, essential</td>
</tr>
</tbody>
</table>
**NG Output**

**Minimum level of expertise:**
- There was no complete consensus before discussion
- Consensus was achieved for all competencies after discussion (default in 5 cases)
- Minimum level of expertise = baseline level

*This does not restrict scope for acquiring competencies at an enhanced level of expertise (local / national guidelines)*

**NG Rating of importance:**
- 111 = high importance (mean >4)
- 50 = moderate importance (mean 3 - 4)
- 8 = low importance (mean <3)

⇒ Online 2nd round Delphi
2nd round Delphi & review process

• 169 competencies presented online for comment
• Expertise simplified to three levels:

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>By the end of specialist training, the trainee describes...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervised practice</td>
<td>By the end of specialist training, the trainee....</td>
</tr>
<tr>
<td></td>
<td>(performs / manages / demonstrates etc.) ...<strong>under supervision</strong></td>
</tr>
<tr>
<td>Independent practice</td>
<td>By the end of specialist training, the trainee....</td>
</tr>
<tr>
<td></td>
<td>(performs / manages / demonstrates etc.)</td>
</tr>
</tbody>
</table>

• Supervision included as a competence statement:

“By the end of specialist training, the trainee appropriately supervises, or delegates to others, the delivery of patient care”
Final editorial review process

- Common themes merged: reduce repetition & remove discrepancies
- 102 competence statements grouped into 12 domains:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Resuscitation &amp; initial management of the acutely ill patient</td>
</tr>
<tr>
<td>B</td>
<td>Assessment, investigation, monitoring and data interpretation</td>
</tr>
<tr>
<td>C</td>
<td>Diagnosis and disease management</td>
</tr>
<tr>
<td>D</td>
<td>Therapeutic interventions / organ system support</td>
</tr>
<tr>
<td>E</td>
<td>Practical procedures</td>
</tr>
<tr>
<td>F</td>
<td>Peri-operative care</td>
</tr>
<tr>
<td>GH</td>
<td>Continuity, comfort and recovery</td>
</tr>
<tr>
<td>I</td>
<td>End of life care</td>
</tr>
<tr>
<td>J</td>
<td>Paediatric care</td>
</tr>
<tr>
<td>K</td>
<td>Transport</td>
</tr>
<tr>
<td>L</td>
<td>Patient safety &amp; systems management</td>
</tr>
<tr>
<td>M</td>
<td>Professionalism</td>
</tr>
</tbody>
</table>
The CoBaTrICE Collaboration

Development of core competencies for an international training programme in intensive care medicine

- Independent practice
  - Performs independently...
    “By the end of ICM specialist training, the trainee…”

- Direct supervision
  - Performs under supervision...
    “By the end of ICM specialist training, the trainee...under supervision”

- Indirect supervision
  - Has knowledge of...
    “By the end of ICM specialist training, the trainee describes…”

Level of expertise
Example of a Domain...

E: PRACTICAL PROCEDURES

Practical procedures underpin all forms of organ system support. All these competencies will include, where relevant, attention to:

- Indications & contraindications
- Prioritisation of tasks (patients and procedures)
- Planning: preparation of patient (including consent), staff and equipment
- Comfort of the patient
- Relevant applied anatomy
- Alternative modes and methods
- Placement / insertion
- Safety: equipment, infection control, correct placement, complications
- Clinical measurements from monitoring and point of care devices
- Maintenance and safe use of devices - troubleshooting
- Duration of placement, discontinuation and removal
- Appropriate referral / assistance / consultation

Respiratory

By the end of ICM specialist training, the trainee...

E1 Performs emergency airway management

E2 Performs difficult and failed airway management according to local protocols

E3 Uses oxygen administration devices
Domain 11: Patient safety & health systems management

These competencies will include, where relevant, attention to:

- Professionalism
- Identification and minimisation of risks and safety issues
- Monitoring
- Complications: prevention; identification; management
- Prescribing and therapeutics
- Communication and documentation tasks
- Equipment: safety; prevention of adverse events; trouble-shooting
- Development of collaborative care plans

By the end of ICM specialist training, the trainee...

11.1 Leads a daily multidisciplinary ward round
11.2 Complies with local infection control measures
11.3 Identifies environmental hazards and promotes safety for patients & staff
11.4 Identifies and minimises risk of critical incidents and adverse events (including complications of critical illness)
11.5 Organises a case conference
11.6 Critically appraises and applies guidelines, protocols, and care bundles
11.7 Describes commonly used scoring systems for assessment of severity of illness, case mix and workload
11.8 Demonstrates an understanding of the managerial & administrative responsibilities of the ICM specialist
I: END OF LIFE CARE

Death is inevitably a managed, not a ‘natural’ process in intensive care. The manner in which it is conducted may affect the survivors – family and staff – for the rest of their lives. Treatment limitation or withdrawal does not mean denial of care; patients should not suffer, and, where possible, their wishes should be determined and respected.

All these competencies will include, where relevant, attention to:

- Ethical issues
- Communication, team-working and minimisation of distress
- Management strategy / care plans
- Appropriate referral and consultation

By the end of ICM specialist training, the trainee ...

I1  Manages the process of withholding or withdrawing treatment with the multidisciplinary team
I2  Discusses end of life care with patients and their families / surrogates
I3  Manages palliative care of the critically ill patient
I4  Performs brain-stem death testing
I5  Manages the physiological support of the organ donor
# Professionalism: Attitudes & behaviour

## CONFIDENTIAL ‘360 DEGREE’ ASSESSMENT OF PROFESSIONAL ATTITUDES AND BEHAVIOUR

<table>
<thead>
<tr>
<th>NAME of person being assessed</th>
<th>Current post</th>
<th>Date started current post</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ATTITUDES &amp; BEHAVIOUR</strong></td>
<td></td>
<td></td>
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</tbody>
</table>

Please indicate your summary assessment by ticking the relevant box on the right for each of the four domains. Comments are only required for concerning behaviour.

### Satisfactory, no concerns

**Professional relationships with patients and relatives**  
-May include: Focused on the needs of the patient and family, particularly patient safety. Maintains trust, reserves appropriately. Polite, caring & unprejudiced. Seeks the views and opinions of the patient. Respects patients’ privacy, dignity and confidentiality.

### Could improve, minor concerns

**Professional relationships with colleagues: team working**  
-May include: Collaborative, supports all members of the multidisciplinary team. Approachable. Respects and values others’ roles. Exchanges information effectively. Punctual, reliable; arranges cover for absence.

### Unsatisfactory, major concern

**Communication skills**  
-May include: Understands communication is a 2-way process. Sensitive to the reactions and emotional needs of others. Able to communicate at all levels. Gives accurate information and ensures comprehension; clarifies ambiguities. Listens. Appropriate use of non-verbal communication.

### Assessor

**Professional & personal responsibility (‘governance’)**  

**Date:**

*Please return this form in a sealed envelope labeled ‘confidential’ to……………………..*
Building the Syllabus: the entire body of knowledge & skills underpinning competence

### Skills and Behaviours

<table>
<thead>
<tr>
<th>EID</th>
<th>NAME</th>
<th>1.1</th>
<th>1.2</th>
<th>1.3</th>
<th>1.4</th>
<th>1.5</th>
<th>1.6</th>
<th>1.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>732</td>
<td>Recognise signs and symptoms of impending cardiac arrest</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>678</td>
<td>Participate in timely discussion and regular review of 'do not resuscitate' orders and treatment limitation decisions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>899</td>
<td>Use emergency monitoring equipment</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>788</td>
<td>Implement emergency airway management, oxygen therapy and ventilation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>910</td>
<td>Primary survey: obtain relevant information rapidly and accurately including rapid examination</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</table>

### Knowledge

<table>
<thead>
<tr>
<th>EID</th>
<th>ELEMENT</th>
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<th>1.2</th>
<th>1.3</th>
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<th>1.5</th>
<th>1.6</th>
<th>1.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>109</td>
<td>Causes of cardio-respiratory arrest and identification of patients at risk</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>587</td>
<td>Initial management of patients at risk of cardio-respiratory arrest (prevention) - corrective treatment of reversible causes</td>
<td>✓</td>
<td></td>
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<tr>
<td>357</td>
<td>Treatment algorithms for common medical emergencies</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>878</td>
<td>Recognition of sudden life threatening changes in physiological parameters (e.g. mean arterial pressure, pH, PaO2, plasma potassium concentration)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>Early warning signs of impending critical illness</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>Physical signs associated with critical illness</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>474</td>
<td>Common causes for admission to intensive and high dependency care (ICU / HDU)</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</tr>
</tbody>
</table>
Assessment of competence

*Formalising what we all do*

- Should be explicit, transparent & repeatable
- Should encourage reflective learning (formative assessment, plus insight)
- Multiple opportunities, several ‘observers’
  - ‘360 degree’
- Workplace-based (most realistic)
- Must not add greatly to workload!
- Assessment toolbox:
  - Benchmarking: features of competent performance
  - ‘Bundles’: clinical scenarios linking competence domains
  - Assessment methods – wide variety
  - **Portfolio** – trainees’ responsibility to maintain evidence of competence and professional development
Assessment in the workplace: The trainee integrates history with clinical examination
Portfolios: presenting the evidence
Electronic presentation:  
www.cobatrice.org

CoBaTrICE Curriculum Map
Will be available from Sept 25th  
2006
Competency-based life-long learning: *bridging the gaps in acute care training*

- Undergraduate acute care competencies
- 2-yr Foundation
- Specialist in Intensive Care Medicine
- CME / MOPS

- Other health care undergraduates
- Acute care practitioners, nurse consultants, physician extenders…
- CME / MOPS
The Acute Care Undergraduate TEaching (ACUTE) Initiative: consensus development of core competencies in acute care for undergraduates in the United Kingdom

12 domains
- Airway, oxygenation
- Breathing & ventilation
- Circulation
- Confusion & coma
- Drugs, therapeutics, protocols
- Clinical examination, monitoring, investigations
- Team working, organisation, communication
- Patient & societal needs
- Trauma
- Equipment
- Pre-hospital care
- Infection & inflammation

Supported by RC(UK) & IBTICM
CHMS & GMC not willing to be involved
Modified Delphi & NG
359 healthcare professionals
2,629 competency suggestions
Edited to 99 main themes
Nominal Group: prioritised **71 competencies** as essential
CURRICULUM MAP

Survey
41 countries
54 ICM training programmes
Web-based Delphi
5,241 suggestions
535 contributors
>50 countries
Questionnaire
(patients, relatives)
70 ICUs
8 EU countries
Collaboration
EU grant
85 NCs
41 countries
National orgs

PHASE 1

ESICM
Div Prof Dev

European
Board ICM

PHASE 2

Nominal Group
12 members
169 competency statements
Rating level & importance

Delphi iteration
Competency statements on website

PHASE 2iii
102 competencies

PHASE 3 & 4

EDIC

Draft competence set
Delphi iteration

Syllabus
Knowledge, skills & attitudes for each competence

Assessment
Descriptors of how competencies are assessed in workplace

Educational Resources
Learning & teaching

ESICM
Div Prof Dev

European
Board ICM

EDIC
Summary & Conclusion

• Consensus techniques an effective tool for ensuring both **stakeholder involvement and expert review**

• Project has generated core competencies for ICM which can be shared across professional disciplines and national borders

• These competencies are linked to a **common syllabus** identified from existing ICM training programmes

• **Electronic curriculum map** allows competencies to be linked to assessment guidelines, educational resources, and personalised portfolios
Next steps & challenges

• Making it work for trainees and trainers
• Maintenance, updating, funding
• Evaluation: will CoBaTrlCE improve patient care?
  – Research application required
Acknowledgements

CoBaTrICE Steering Committee Partners:
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