European Diploma in Intensive Care (EDIC)

František Duška
Large diversity between national ICM training programs

National intensive Care Medicine Training Programs
Qualification authority

- **Ministry of health:**
  - Belgium, Croatia, Denmark, Greece, Hungary, Ireland, Lithuania, Spain, Sweden, United Kingdom, and Poland

- **University:**
  - Estonia, Finland, France, Italy, and Slovakia

- **Medical association:**
  - Austria, Cyprus, Germany, Israel, Latvia, the Netherlands, Norway, Portugal, United States, Switzerland, Argentina, Brazil, Venezuela, and Peru

- **Hybrid model:** Czech Republic
## IMC training characteristics

<table>
<thead>
<tr>
<th>ICM training</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competency based training</td>
<td>Spain, Switzerland, UK, Canada, USA</td>
</tr>
<tr>
<td>ICM Training &lt; 18 months</td>
<td>Bulgaria, Ivory Coast, USA</td>
</tr>
<tr>
<td>ICM Training 18-24 months</td>
<td>Belgium, Croatia, CzechREstonia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Slovakia, Slovenia, Argentina, Brazil, Canada, Egypt, India, Indonesia</td>
</tr>
<tr>
<td>ICM Training &gt; 24 months</td>
<td>Austria, Finland, Scandinavia, Spain, Switzerland, Turkey, UK, ANZ, Hong Kong, Malaysia</td>
</tr>
</tbody>
</table>
Specific training intensive care medicine

Competences description

Specific Intensive Care Medicine Training

12 m. 12 m. 12 m.

Basic Advanced Specialisation

Training module level 1 Training module level 2 Training module level 3

Formative assessment

EDIC 1 EDIC 2

ICM Specialist

Diploma

EDIC

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## CoBaTrICE based training program

### CoBaTrICEs’ 102 Competencies

<table>
<thead>
<tr>
<th>Domain</th>
<th>Competence Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient with disordered physiology</td>
</tr>
<tr>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td></td>
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<tr>
<td>1.4</td>
<td></td>
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<tr>
<td>1.5</td>
<td></td>
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<tr>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>

### 1.1 Adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient with disordered physiology

#### Knowledge

- Early warning signs of impending critical illness
- Causes of cardio-respiratory arrest, identification of patients at risk and corrective treatment of reversible causes

#### Skills & Behaviours

- Conduct a primary survey: obtain relevant information rapidly and accurately
- Recognise and assess
- Order and implement
- Treat and monitor
- Demonstrate compassionate care
- Establish trusting relationships
- Obtain consent

#### Attitudes

- Rapid response and resuscitation
- Appreciates the importance of timely institution of organ-system support
- Recognises the need for supportive care for all organ systems whether failing / injured
- Clear in explanations to patient, relatives and staff
- Consult and take into account the views of referring clinicians; promote their participation where appropriate
- Establishes trusting relationships with and demonstrates compassionate care of patients
- Patient safety is paramount
- Determination to provide best and most appropriate care possible regardless of environment
- Appreciates the importance of ensuring physiological safety as a primary aim
- Recognises personal limitations, seeks and accepts assistance or supervision (knowledge required)
Assessing competencies

Assessment pyramid

- Knows
  - Shows how
    - Does
  - Knows how
- Knows

“Domain specific” skills

Formative (learning)

- Knowledge testing
- Work based assessment, MiniCEX, DOPS

Summative (selection)

- Behavioral testing
  - EDIC part 1 & 2
- Selection?
  - Minimal requirements?
- Non-specific training?
The European Diploma in Intensive Care

Objectives

- High level of Exam to test the knowledge and competences in intensive care medicine
- Assure the ESICM quality of intensive care medicine in ICUs around the world
- Set the ESICM standard for a summative exam at the end of training in intensive care medicine
- However, regulation of training and supervision of training is the remit of the local jurisdiction and cannot be supervised or replaced by the ESICM.
EDIC Exam

EDIC 1

- **EDIC 1 - written:**
  - MCQ test, 100 MCQs, 3 hours
  - 40 type K, 60 type A
  - Pass-mark set by Angoff

- **EDIC 2 – oral**
  - Format changed in 2013
EDIC a landmark in the history of ESICM

- Since 1989: MCQ true/false + oral exam at the national level
- Since 2004 Official guidelines for the conduct of EDIC 1 & 2
- Since 2007 EDIC 1 cooperation with the Swiss Society of Intensive Care Medicine
- 2012 the EDIC 1 passmark setting changed to Angoff
- 2013 Development and implementation of the OSCE based EDIC part 2 exam format
- 2018 Pass mark setting EDIC 2 changed to borderline regression
Structure of the EDIC exam

**Written exam (EDIC part 1)**
- 3 hours exam
- 100 MCQs divided in to 11 major domains of intensive care medicine (blue print) based on cobatrice
- The pass mark is pre-defined by a group of experts (EDIC-committee) in order to standardize minimal knowledge level of an intensivist
- Exam validity and reliability is assessed at each session. Quality criterium: Cronbach-alpha ≥ 0.80
- Co-production with the Swiss Society of Intensive Care Medicine with the support of the Institute for Medical Education in Heidelberg, Germany
The most frequent cause of severe hypoxaemia within the 72 hours after a lung transplantation is (Please mark one answer!)

(A) Ischaemia-reperfusion injury
(B) Pulmonary infection
(C) Pleural effusions
(D) Obstruction of airways by secretions
(E) Acute allograft rejection

**Frequency**

- A: 0.7
- B: 0.1
- C: 0.2
- D: 0.3
- E: 0.5

**Index of discrimination**

- A (Upper 1/3): 0.6
- B (Middle 1/3): 0.2
- C (Lower 1/3): 0.4

**Difficulty**

0.5126

**Discriminatory power**

0.2161
**Structure of the EDIC exam**

**Oral exam (EDIC part 2)**
- To assess skills, attitudes, competency, and knowledge in intensive care medicine at the end of a 2 years formal training
- Objective Structured Clinical Exam (OSCE)
- The content of the exam is based on CoBaTrICE, the standard is set by the EDIC committee.
- Two hours and 15 minutes of active interaction with 9 experts testing candidate performance on 3 clinical case scenarios (2 expert/case) and 3 computer skill stations (1 expert/station)
EDIC part 2: Format clinical case scenario

◆ Clinical Case: Objectives

- To assess clinical competences and skills while dealing with a critically ill patient in the ICU setting (health advocate & manager)
- To assess candidates ability to communicate and interact/collaborate with other intensive care specialists
- To assess candidate professional behaviors
EDIC part 2: Format clinical case scenario

Clinical Case Scenario 2

Follow Up - Vignette 2a

6 hours later, after two units of red blood cells were transfused.

Chemistry

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na⁺</td>
<td>141</td>
<td>(136-145)</td>
</tr>
<tr>
<td>K⁺</td>
<td>4.7 mmol/l</td>
<td>(3.3-4.5)</td>
</tr>
<tr>
<td>Urea</td>
<td>2.9 mmol/l</td>
<td>(2.8-8.21)</td>
</tr>
<tr>
<td>Creatinine</td>
<td>85 μmol/L</td>
<td>(62-108)</td>
</tr>
<tr>
<td>Albumin</td>
<td>26.8 mg/dl</td>
<td>(40-49)</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>4 μmol/l</td>
<td>(&lt;21)</td>
</tr>
<tr>
<td>CRP</td>
<td>3.18 mg/dl</td>
<td>(&lt;0.5)</td>
</tr>
<tr>
<td>CK, total</td>
<td>196 μmol/L</td>
<td>(&lt;190)</td>
</tr>
<tr>
<td>CK MB (%)</td>
<td>B</td>
<td>(&lt;10)</td>
</tr>
<tr>
<td>GOT</td>
<td>30 UI/l</td>
<td>&lt; 35</td>
</tr>
<tr>
<td>Troponin T</td>
<td>0.312 μg/ml</td>
<td>(&lt;0.14)</td>
</tr>
<tr>
<td>proBNP</td>
<td>3764 ng/l</td>
<td>(&lt;376)</td>
</tr>
</tbody>
</table>

Blood gas

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sättigung</td>
<td>85 mmHg (11.3 kPa)</td>
</tr>
<tr>
<td>PO₂</td>
<td>60 mmHg (8 kPa)</td>
</tr>
<tr>
<td>pH</td>
<td>7.29</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>26.2 mmol/l</td>
</tr>
<tr>
<td>BE</td>
<td>2.5 mmol/l</td>
</tr>
<tr>
<td>Lactate</td>
<td>1.6 mmol/l</td>
</tr>
<tr>
<td>Sodium</td>
<td>140 mmol/l</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.5 mmol/l</td>
</tr>
</tbody>
</table>

She received a spinal anaesthesia for haemodynamic control. Two times 2 mg of morphine for comfort. HR 130 b/min, and BP 75/30 mmHg. A 22.1 kPa (166.8 mmHg) and a PaO₂ of 560 mmHg was reached which was followed by a hypervolemic and vasopressor therapy were immediately started and after 1 hour she was admitted to the ICU.
EDIC part 2: Format PC based scenarios

◆**PC based scenario: Objectives**

- To assess clinical competences and skills in different key domains of patient management (interpretation of images, pressure and flow curves, ECGs, biochemical scenarios, and .....

- To assess candidates ability to explain and communicate with other intensive care specialists

- To assess candidate professional behaviors
EDIC PASS RATE

- EDIC part I pass rate is currently 58%
- EDIC part II pass rate is currently 60%
  - i.e. 36% of candidates is succeeding in both parts at first attempt
EDIC 2 Passed

- Autumn 2013: 69.0%
- Spring 2014: 72.0%
- Autumn 2014: 52.0%
- Spring 2015: 55.0%
- Autumn 2015: 48.9%
- Spring 2016: 44.2%
- Autumn 2016: 68.8%

Exam Passed: 58.6%
### Determinants of success in EDIC 2

Result of EDIC 2 2015 as binary parameter (passed/failed) – logistic regression, multivariate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Odds ratio (yes vs no)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDIC prep course attendance (yes/no)</td>
<td>1.0 (0.5; 1.7)</td>
<td>0.861</td>
</tr>
<tr>
<td>Age (standardized, SD=5.5 years)</td>
<td>0.7 (0.5; 0.9)</td>
<td>0.002</td>
</tr>
<tr>
<td>Gender (male/female)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>English (yes/no)</td>
<td>4.3 (1.7; 10.7)</td>
<td>0.002</td>
</tr>
<tr>
<td>Use PACT? (yes/no)</td>
<td>2.0 (1.2; 3.3)</td>
<td>0.011</td>
</tr>
<tr>
<td>Cobatrice? (yes/no)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Actually work? (yes/no)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>EDIC 2 center grouped G1 vs G2: 2.4 (1.4; 4.1)</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>EDIC 2 center grouped G2 vs G3: 3.9 (1.7; 9.2)</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>EDIC 2 Session (Spring vs Autumn)</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Speciality grouped G1: Gen.Med + ICM G2:Anest.+Other</td>
<td>1.6 (0.; 2.7)</td>
<td>0.096</td>
</tr>
<tr>
<td>Region medical school grouped (Europ/non-Europe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region working country grouped (Europ/non-Europe)</td>
<td>Europe vs non-EU: 2.5 (1.5; 4.3)</td>
<td>0.001</td>
</tr>
<tr>
<td>First EDIC 1 result - points (standardized, SD=6.1)</td>
<td>1.9 (1.4; 2.4)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

(Waldauf et al. JICS 2017)
Borderline regression method
EDIC

- Exit level exam
- High standard of exam quality and reproducibility
- Recognised as surrogate of national exam:
  - Switzerland, Ireland, Scandinavia, The Netherlands
- Sat by 1000 of intensivist each year

- Go for it!