

What should we know about competency based residency training?

08-April, 2019
Faculty of Medicine,
University of Turku, Finland

Jamiu Busari (MD, MHPE, PhD)
@jobusar



Introduction

Past Department Chair & Program Director
Department of Pediatrics
Zuyderland Medical Center

Associate Professor of medical education
Maastricht University

Executive board member, Dutch Association of Medical Education
www.nvmo.nl

Member, Toronto International Summit on Leadership Education for
Physicians (TISLEP) Planning Committee
[http:// tislep.pgme.utoronto.ca/](http://tislep.pgme.utoronto.ca/)



Maastricht University



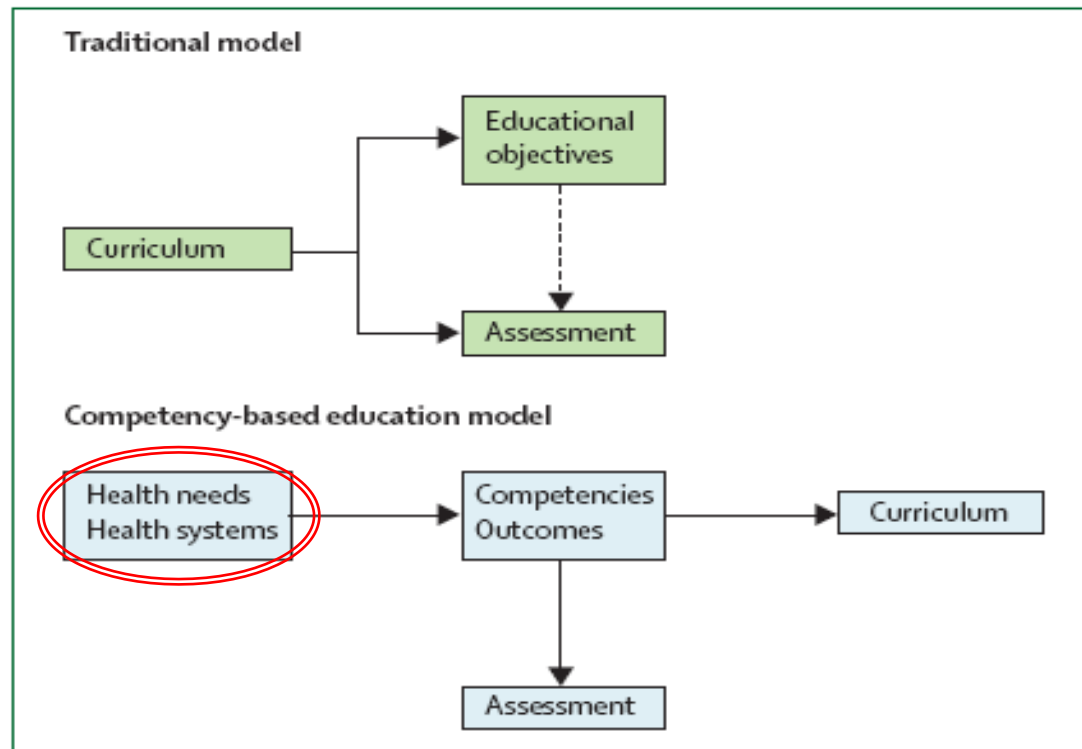
DISCLOSURE STATEMENT



No conflicts of interest

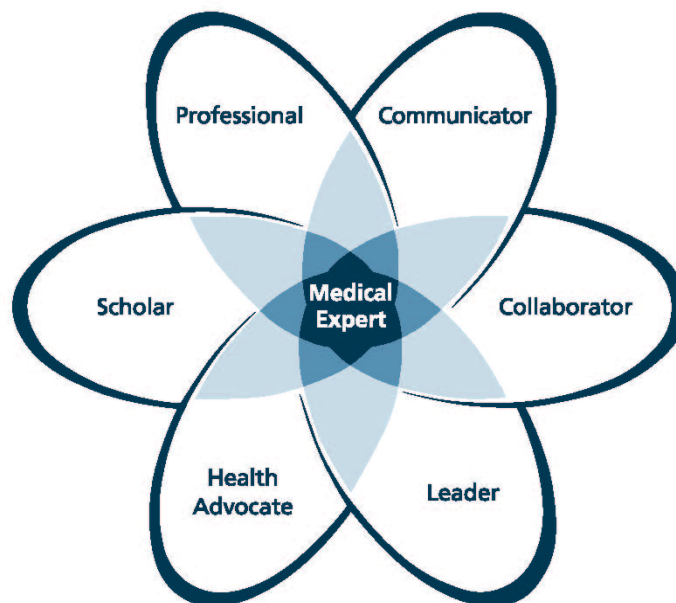


Why CBME: Patient & System Needs



Frenk J. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010

CanMEDS 2015



CANMEDS

Fundamental Characteristics of CBME

1. **Goal:** Graduate outcomes in the form of achievement of predefined desired competencies These are aligned with the roles of the discipline
2. **Competencies:** derived from the needs of patients & organized into a coherent guiding framework
3. **Time:** is a resource for learning, not the basis of progression of competence
4. **Teaching and learning:** sequenced to facilitate an explicitly defined progression of ability in stages
5. **Progress:** Learning is tailored to the learner's individual progression in some manner.
6. **Feedback:** Repetitive direct observations and focused feedback contribute to effective development of expertise
7. **Assessment:** is planned, systematic, systemic, and integrative.

Competency versus competence

Competence: a generic term that describes an individual's overall ability to perform a specific task and refers to the knowledge and skills the individual needs to perform the particular task

Competency: on the other hand refers to specific capabilities, such as leadership, collaboration, communication, and management capabilities demonstrated while performing a task.

Competence is considered a habit of lifelong learning rather than an achievement, reflecting the relationship between a person's abilities and the task to be performed

Competency versus competence

Competence is considered a habit of lifelong learning rather than an achievement, reflecting the relationship between a person's abilities and the task to be performed

Competency, involves the *collective application* of a person's knowledge, skills, and attitudes and is aimed at standardizing how knowledge, skills, and abilities are combined in describing what aspects of performance are (considered) important in particular areas.

A trainee's clinical reasoning may therefore appear to be competent in areas in which their knowledge base is well organized and accessible but may appear to be much less competent in unfamiliar contexts.

What's a (training) Program?

- A Program:
 - is a group of related activities managed in a coordinated manner to obtain benefits and control that are **NOT** available from managing them individually.
 - The activities have a common goal or success "vision" under integrated management. These activities consist of people, technology, and processes aimed at implementing significant educational and clinical change.

What is a “System?”

- W.E. Deming:
 - “Two or more parts that work together to accomplish a shared aim.”
- Key concepts:
 - Working together, interactional and interdependent.
 - CBME as a system is not simply the sum or average of the curricular and assessment components, but the product of all the interactions among the components.

Assessment System

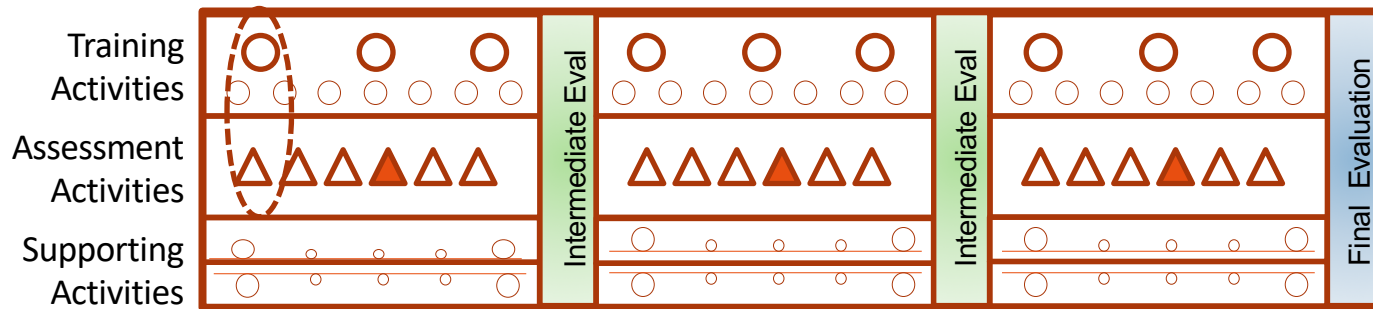
- This system has a *structure* to carry out assessment *processes* that produce an *outcome*
 - The assessment system must ultimately produce a valid entrustment judgment

Assessment as a System

- An assessment system is a group of people who work together on a regular basis to perform evaluation and provide feedback to a population of trainees over a defined period of time
- The assessment system must ultimately produce a valid entrustment judgment

Model For Programmatic Assessment

(With permission from CPM van der Vleuten)



Time →

- = learning task
- = learning artifact
- △ = single assessment data-point
- ▲ = single certification data point for mastery tasks

- = learner reflection and planning
- = social interaction around reflection (supervision)

- (dashed) = learning task being an assessment task also

Shared Mental Model Challenge



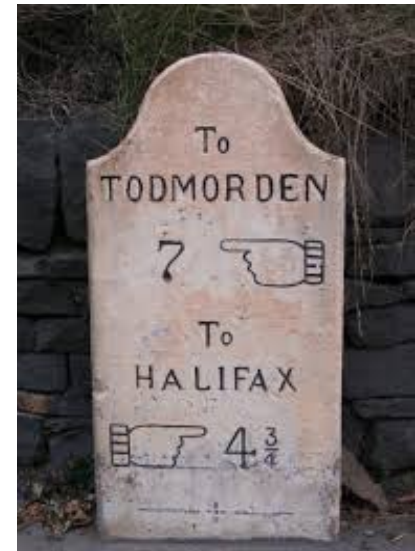
* From TeamSTEPPS/AHRQ

Competencies

- Serve as framework and “scaffolding” for outcomes-based education
- Examples of existing frameworks
 - CanMEDS roles
 - ACGME/ABMS general competencies
 - UK Good Medical Practice
- Competencies are the “conduits” to competence, but have been hard to operationalize

Milestones

- By definition a milestone is a significant point in development.
- Milestones can describe the developmental trajectory of a competency
- Milestones should enable residents, fellows and the training program to better determine an individual's trajectory of competency acquisition.



PC1. History (Appropriate for age and impairment)				
Level 1	Level 2	Level 3	Level 4	Level 5
Acquires a general medical history	Acquires a basic clinical history including medical, functional, and psychosocial elements	Acquires a comprehensive clinical history integrating medical, functional, and psychosocial elements Seeks and obtains data from secondary sources when needed	Efficiently acquires and presents a relevant history in a prioritized and hypothesis driven fashion across a wide spectrum of ages and impairments Elicits subtleties and information that may not be readily volunteered by the patient	Gathers and synthesizes information in a highly efficient manner Rapidly focuses on presenting problem, and elicits key information in a prioritized fashion Models the gathering of subtle and difficult information from the patient

U.S. IM Residency Example

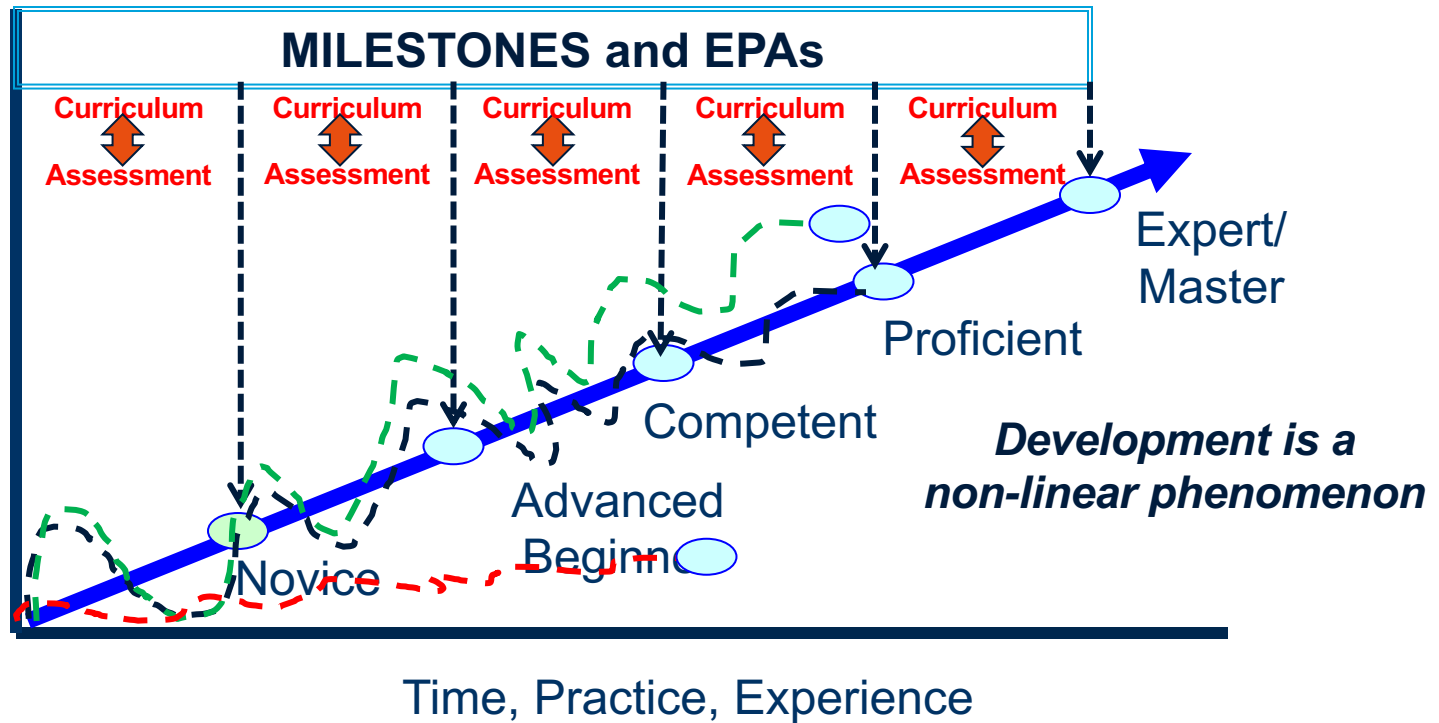
Subcompetency

1. Gathers and synthesizes essential and accurate information to define each patient's clinical problem(s). (PC1)													
Critical Deficiencies				Ready for unsupervised practice	Aspirational								
Does not collect accurate historical data	Inconsistently able to acquire accurate historical information in an organized fashion	Consistently acquires accurate and relevant histories from patients		Acquires accurate histories from patients in an efficient, prioritized, and hypothesis-driven fashion	Obtains relevant historical subtleties, including sensitive information that informs the differential diagnosis								
Does not use physical exam to confirm history	Does not perform an appropriately thorough physical exam or misses key physical exam findings	Seeks and obtains data from secondary sources when needed		Performs accurate physical exams that are targeted to the patient's complaints	Identifies subtle or unusual physical exam findings								
Relies exclusively on documentation of others to generate own database or differential diagnosis	Does not seek or is overly reliant on secondary data	Consistently performs accurate and appropriately thorough physical exams		Synthesizes data to generate a prioritized differential diagnosis and problem list	Efficiently utilizes all sources of secondary data to inform differential diagnosis								
Fails to recognize patient's central clinical problems	Inconsistently recognizes patients' central clinical problem or develops limited differential diagnoses	Uses collected data to define a patient's central clinical problem(s)		Effectively uses history and physical examination skills to minimize the need for further diagnostic testing	Role models and teaches the effective use of history and physical examination skills to minimize the need for further diagnostic testing								
Fails to recognize potentially life threatening problems													

CanMEDS 2015 Milestones: Example

Key and enabling competencies	Requirements for residency	Transition to discipline	Foundations of discipline	Core of discipline	Transition to practice	Advanced expertise
MEDICAL EXPERT MILESTONES						
1 Practise medicine within their defined scope of practice and expertise						
1.1 Demonstrate a commitment to high-quality care of their patients	While engaging as a learner in the clinical environment, demonstrate a duty of care toward patients		Demonstrate compassion for patients	Under supervision, demonstrate commitment and accountability for patients in their care	Demonstrate a commitment to high-quality care of their patients	Role-model a commitment to high-quality patient care
1.2 Integrate the CanMEDS Intrinsic Roles into their practice of medicine	Describe the CanMEDS Roles and explain how they relate to the practice of medicine	Explain how the Intrinsic Roles need to be integrated in practice of their discipline to deliver optimal patient care			Integrate the CanMEDS Intrinsic Roles into their practice of medicine	Teach and assess the application of the CanMEDS Competency Framework to medical practice

Dreyfus & Dreyfus Development Model



Dreyfus SE and Dreyfus HL. 1980

Carraccio CL et al. Acad Med 2008;83:761-7

Milestones as the Roadmap



Observations:

1. Journey not a straight line
2. More than one path (but not infinite)
3. “If you don’t know where you are going, any road will get you there”

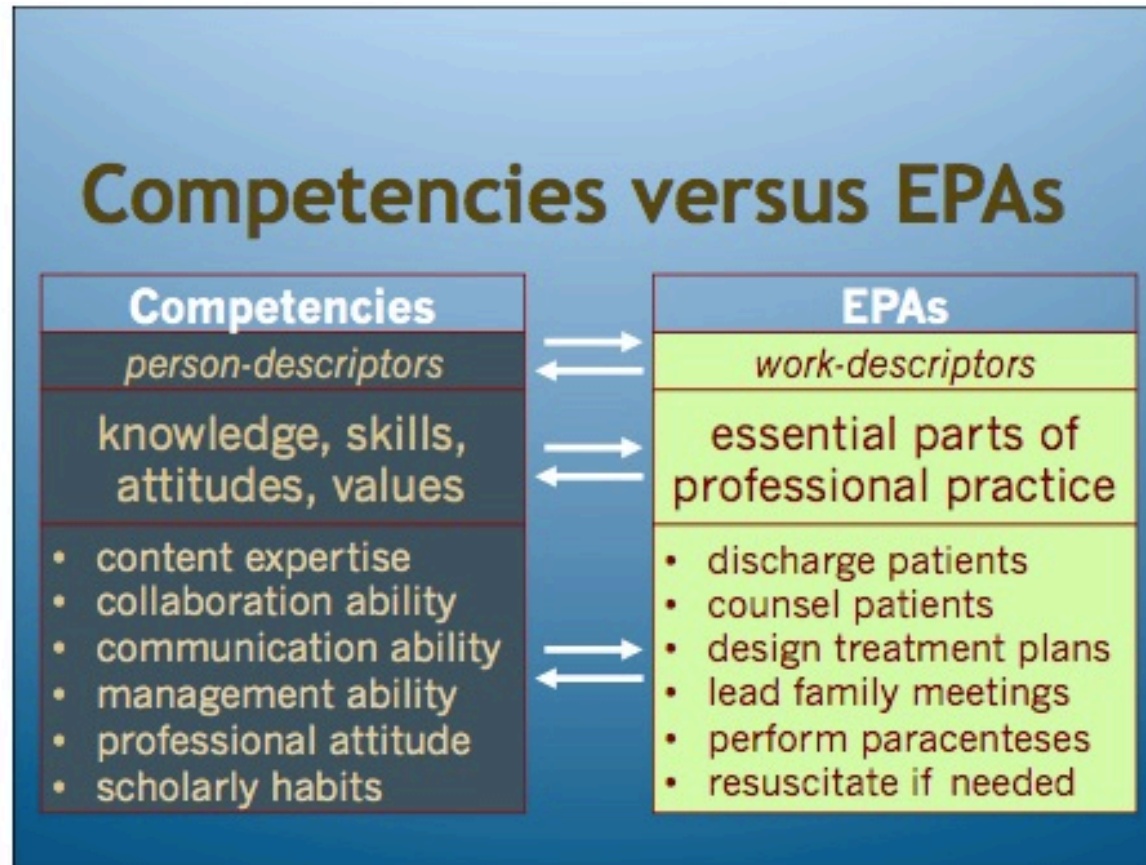
Entrustable professional activity (EPA):

A collection of tasks a trainee needs to be able to deal with in order to perform well in an essential part of his or her professional work domain.

Why do we need EPAs?

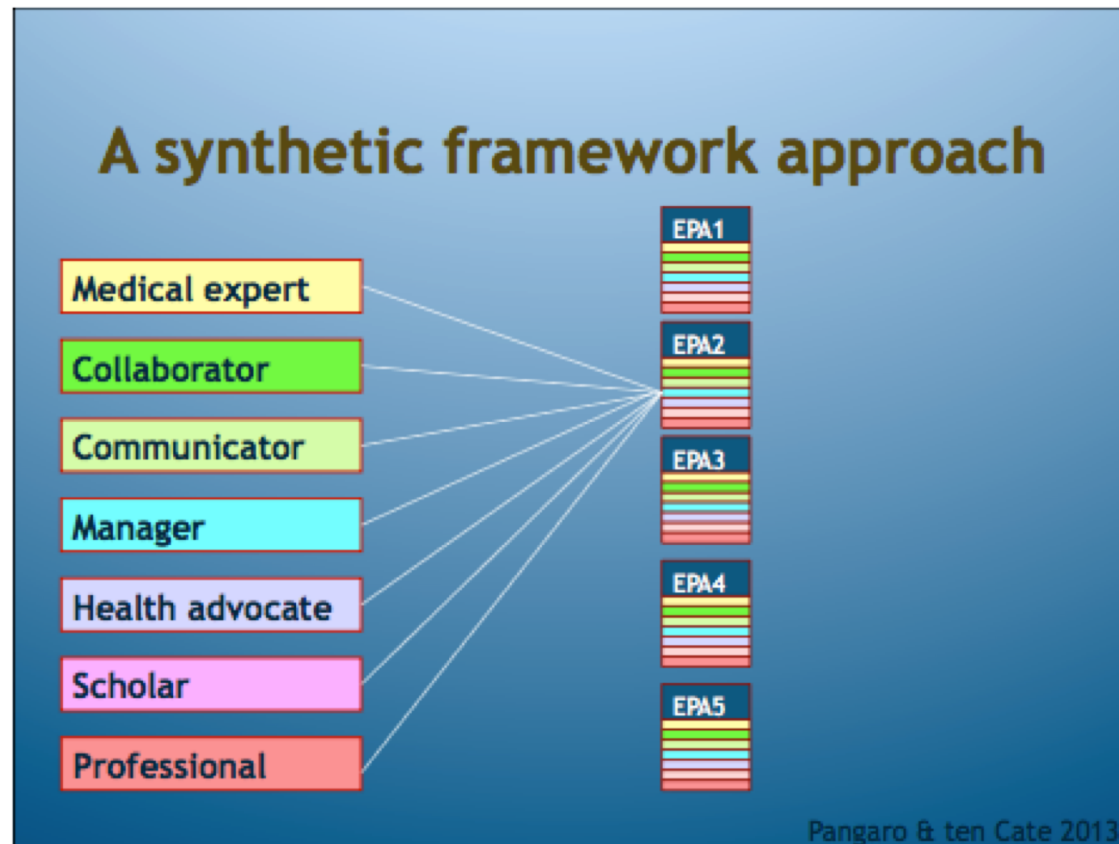
- EPAs can be used to make competencies meaningful, trainable and assessable for clinical teachers (Carraccio & Burke 2010).
- Competencies alone are abstract and need to be embedded in a relevant clinical context in order to train and assess them (Dath & Iobst 2010).

Understanding CBME & EPAs



With permission O. Ten Cate

Understanding CMBE & EPAs



With permission O. Ten Cate

Understanding CMBE & EPAs

Combining the competency-framework with EPAs

	EPA1	EPA2	EPA3	EPA4	EPA5
Medical expert	++	++	+		++
Collaborator	+		+	++	
Communicator	+	++			+
Manager		+	++	++	
Health advocate	+		++	+	
Scholar	+				++
Professional	+	+	+		

Assessment based on EPAs

competencies inferred

With permission O. Ten Cate

Terminologies

- Nested EPA's
- Overarching EPA's



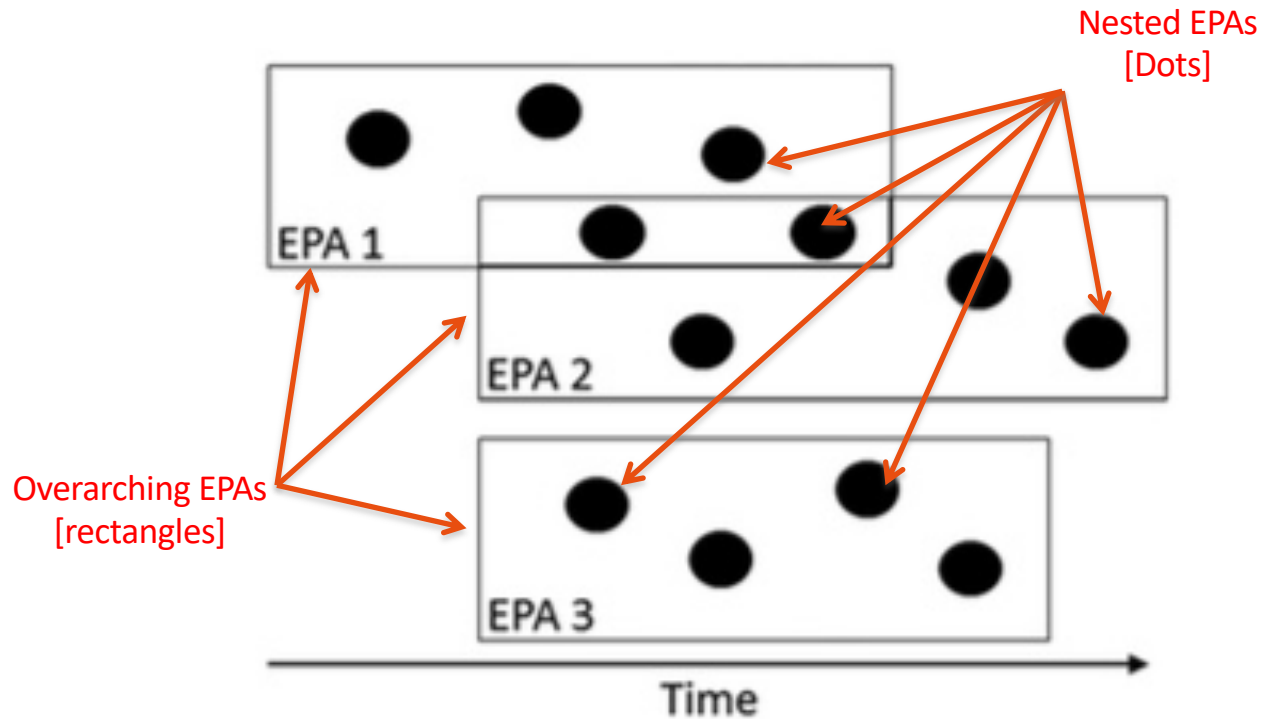
Nested EPA's

- These are several small sub-EPAs within a bigger overarching EPA.
- Usually tasks considered to be of high importance for daily practice (core business),
- high-risk or error-prone task (e.g. surgical procedure)
- Specific competencies (Scheele et al. 2008).

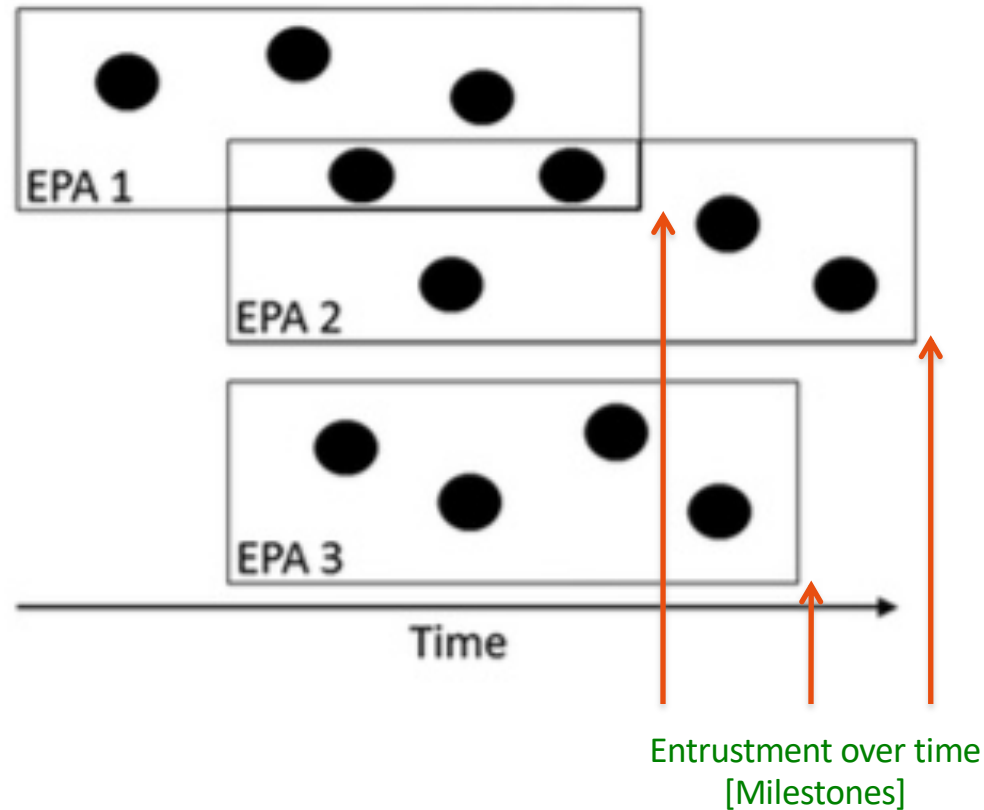
Overarching EPA's

- The overarching EPA defines the total number of assessable activities
- Favors the holistic view.
- Synonymous with Milestones
- For entrustment in the overarching EPA, the resident has to show he is competent in the nested EPAs

EPAs and Entrustment



EPAs and Entrustment



Inter-relationship Perspectives:

Competencies, Milestones and EPAs

Better Education for Obstetrics & Gynaecology (BOEG)

Dutch National Competency Based Curriculum for Obstetrics & Gynaecology – Courtesy Fedde Scheele (NL)

Benchmarks for attaining levels of competency (levels 1-5) throughout training	Benchmark I Year 2	Benchmark II Year 4	Benchmark III Year 6 (sub- specialization)
Uncomplicated Antenatal care	5		
Complicated Antenatal Care	3	4	
Intrapartum care	5		
Complicated Childbirth	3	4	
Basic High Risk Childbirth	3	3	
Uncomplicated Postpartum & Newborn Care	5		
Complicated Postpartum & Newborn Care	3	4	
Basic Reproductive Medicine	2	4	
Benign Outpatient Gynecology	3	4	

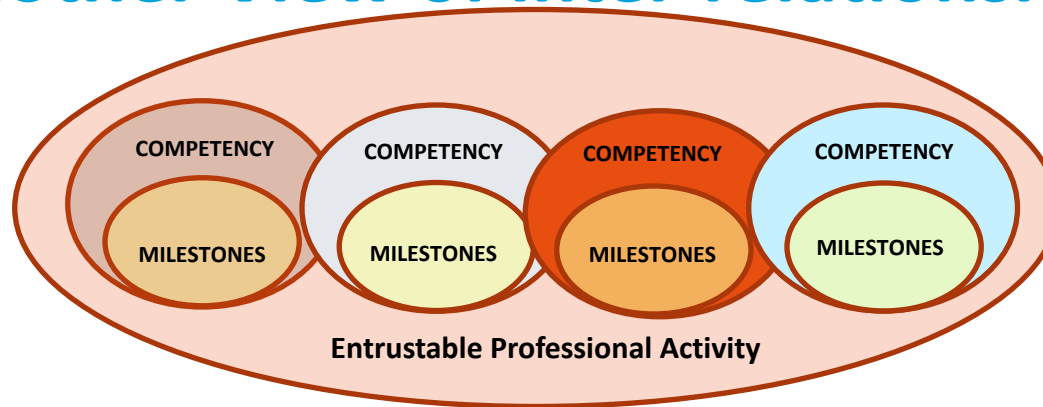
Benchmarks as used here are synonymous with Milestones

EPA/Theme: Uncomplicated Antenatal Care

<i>Diagnosis and advice</i>	<ul style="list-style-type: none"> • Providing preconception advice. • Counselling about prenatal diagnostic testing, pregnancy complications, intrapartum analgesia, postpartum care and breastfeeding. • Discuss management of malpresentation, fetal growth restriction, polyhydramnios and oligohydramnios and possible rupture of membranes. • Is familiar with electronic fetal monitoring and indications for its use. • Assess feasibility of induction of labour.
<i>Treatment requiring specific skills</i>	<ul style="list-style-type: none"> • Able to conduct a basic obstetrical ultrasound (fetal biometry, umbilical cord pulsatility index, fetal screening for most common anomalies with the exception of NT, detailed anatomical ultrasound and advanced screening for congenital anomalies).
<i>Communicator</i>	<ul style="list-style-type: none"> • Obstetrical Counselling,
<i>Scholar</i>	<ul style="list-style-type: none"> • Modifies obstetrical care protocols based on the current literature. • Knowledge of teratology. • Applies EBM in the practice.
<i>Collaborator</i>	<ul style="list-style-type: none"> • Collaboration with primary care healthcare providers.
<i>Manager</i>	<ul style="list-style-type: none"> • Participates in the obstetrical care system.
<i>Health Advocate</i>	<ul style="list-style-type: none"> • Is compliant with WGBO (Dutch Medical Treatment Contracts Act). • Initiates appropriate maternity care interventions. • Prevention by informing.
<i>Professional</i>	<ul style="list-style-type: none"> • Constructive participation in integrated obstetrical care.

Competencies, Milestones and EPAs

Another View of Inter-relationship



Characteristic	Competencies	Milestones	EPAs
Granularity	Low	Moderate to High	Low to Moderate
Synthetic/Integrated	Moderate	Low to Moderate	High
Practicality (application)	Low	Moderate	High
Conceptual	High	Low	Low to Moderate

Challenges

- Finding a balance between holistic activities and the granularity of the training program.
- Narrowing down the activities of a discipline to independent professional activities without losing the holistic view of the profession.
- When is a trainee competent (indicated on an EPA)

The Reality of CBME, Milestones and EPAs

- There are no simple or singular “solutions”
- All interventions represent “partial solutions”
 - This is not a bad thing...
 - but rather the reality of working in highly complex systems such as healthcare and medical education
- The goal is ongoing, iterative improvement
 - Competencies, milestones and EPAs can help

***George Box: “All models are wrong,
some are useful”***

Acknowledgements

- Eric Holmboe, ACGME, USA
- Shelley Ross, University of Alberta, Canada



Contact

- Email: jamiu.busari@maastrichtuniversity.nl
- Twitter: @jobusar

