



# The Rising Tide of Competency-based Medical Education: A Global View

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Welcome |

# About me:

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- Emergency MD
- Working in Meded for since 1990s
- Royal College & University of Ottawa
- Special focus: **CBME**
- Founder of the International CBME Collaborators
- Worldwide collaborations
- Coach ice hockey



This Session:

**HPE → CBME Movement → Definitions & Elements → Examples**



Social media friendly: #meded

@drjfrank





# Current HPE

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- Scientific (Flexner)
- Scholarly
- Systems
- Dedicated teachers



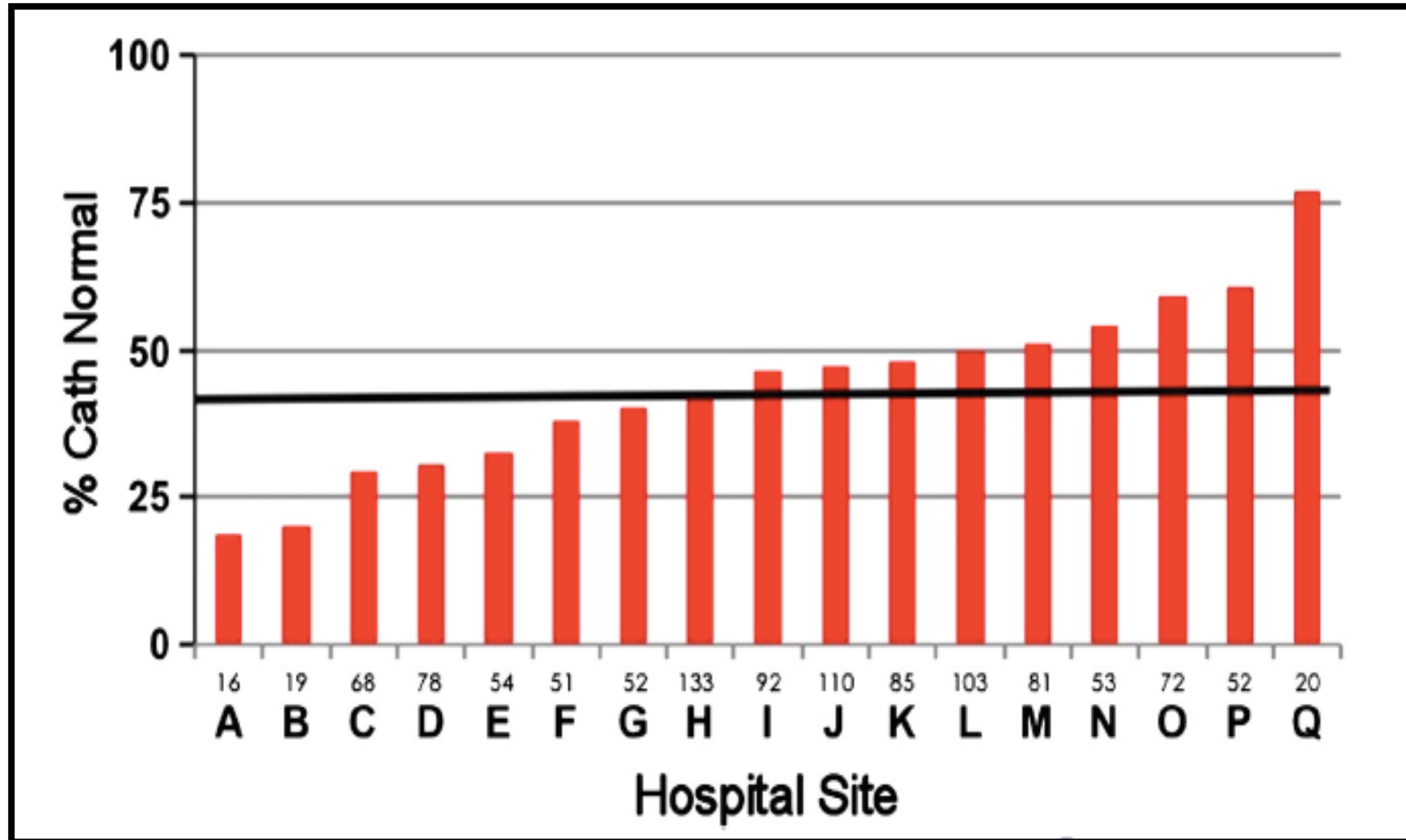
# Current HPE?

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- Time spent, not ability
- Trainees unprepared
- Unclear progression of expertise
- Weak assessment / failure to fail
- Assessment can feel bogus or useless
- Concerns about supervision & patient safety
- Missing content
- Disempowered learners
- Overwhelmed teachers
- Lack of best practice in education

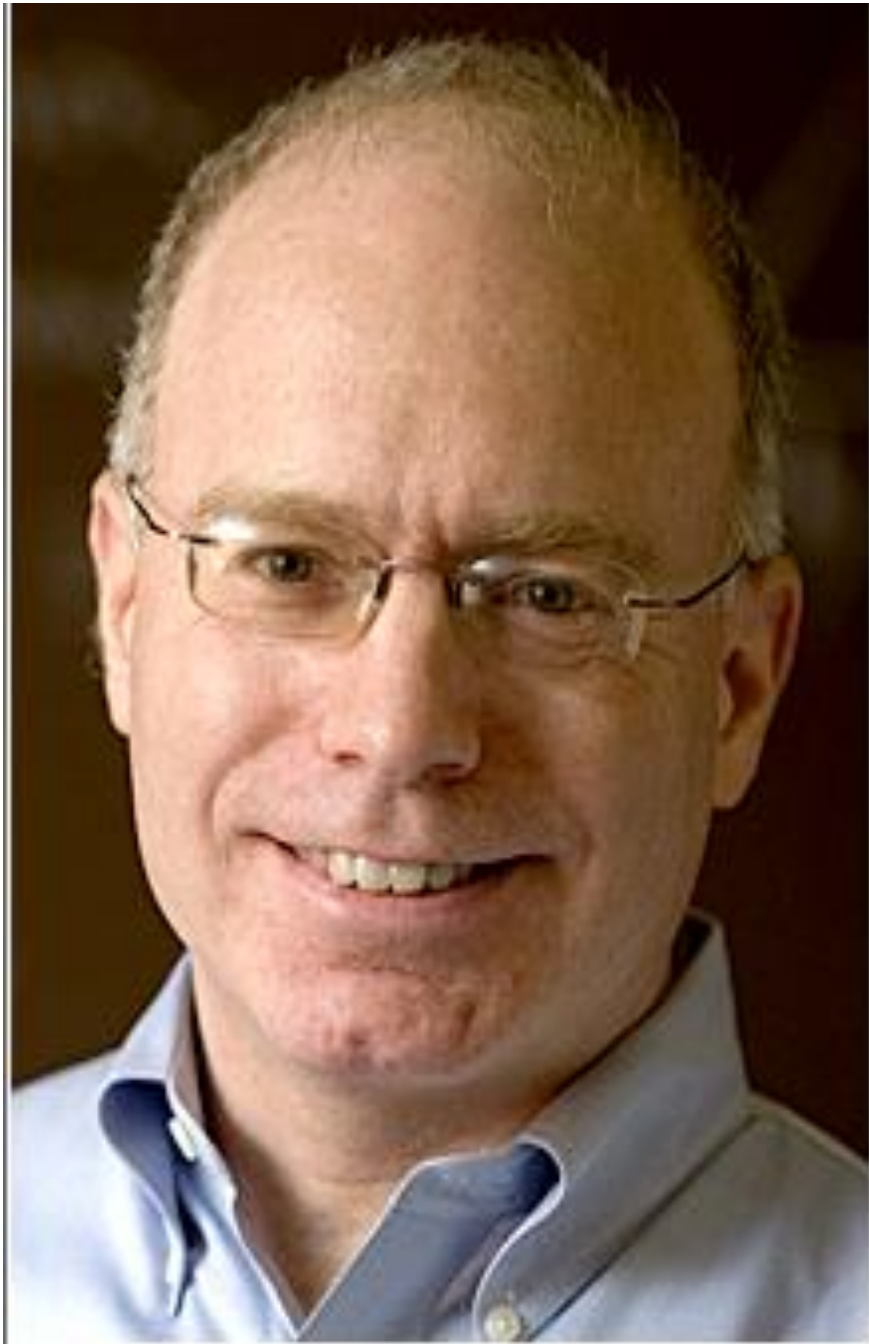


## Variations in MD Practice



Levitt K. Am Heart J 2014





## How Do You Deliver a Good Obstetrician: Outcome-Based Evaluation of Medical Education

David A. Asch, MD, Sean Nicholson, PhD, Sindhu K. Srinivas, MD, MSCE,  
Jeph Herrin, PhD, and Andrew J. Epstein, PhD, MPP

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### Abstract

The goal of medical education is the production of a workforce capable of improving the health and health care of patients and populations, but it is hard to use a goal that lofty, that broad, and that distant as a standard against which to judge the success of schools or training programs or particular elements within them. For that reason, the evaluation of medical education often focuses on elements of its structure

are more practical because they are easier to collect, and they are valuable when they reflect activities in important positions along the pathway to clinical outcomes. But they are all substitutes for measuring whether educational efforts produce doctors who take good care of patients.

The authors argue that the evaluation of medical education can become

outcome—maternal complications of obstetrical delivery—and show how examining various observable elements of physicians' training and experience helps reveal which of those elements lead to better outcomes. Does it matter where obstetricians trained? Does it matter how much experience they have? Does it matter how good they were to start? Each of these questions reflects a component of the production of a

Variable outcomes...

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Current HPE?

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**Time spent, not ability =  
Variable outcomes**



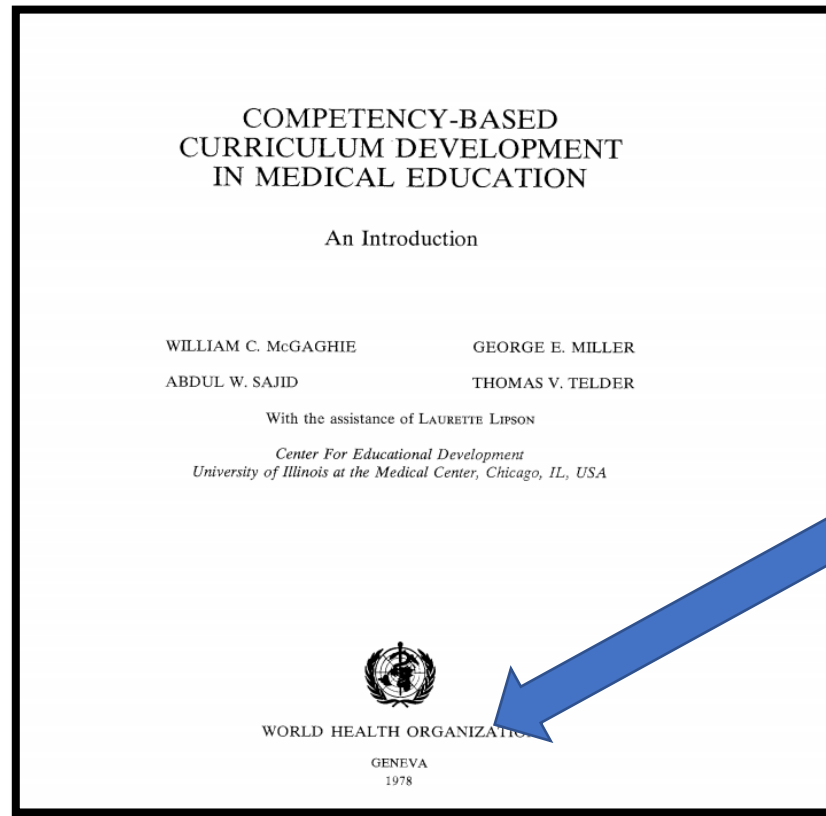
What do we mean by the  
**“CBME Era”?**





# Quiz: Origins of “CBME”?

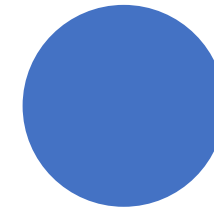
Teacher Education?	Engineering?
Medicine?	Nursing?
Astronaut training?	Submarine training?
1910?	2000?
1930?	1999?



1978!

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CBME = Competency Based  
Medical Education



Competency-based Education:

**“What are the abilities needed of graduates?”**





# CBME principles

1. Focus on outcomes: graduate abilities
2. Ensure progression of competence
3. Time is a resource, not framework
4. Promote learner centredness
5. Greater transparency & utility

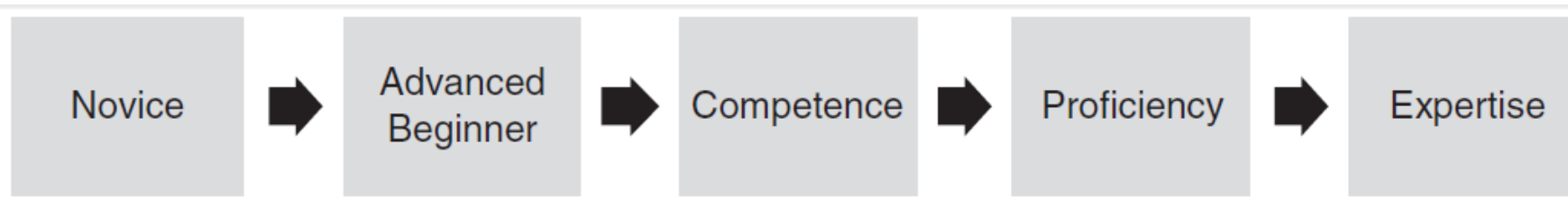


...Ultimately, a move to  
CBME is about a **better  
way to train health  
professionals...**

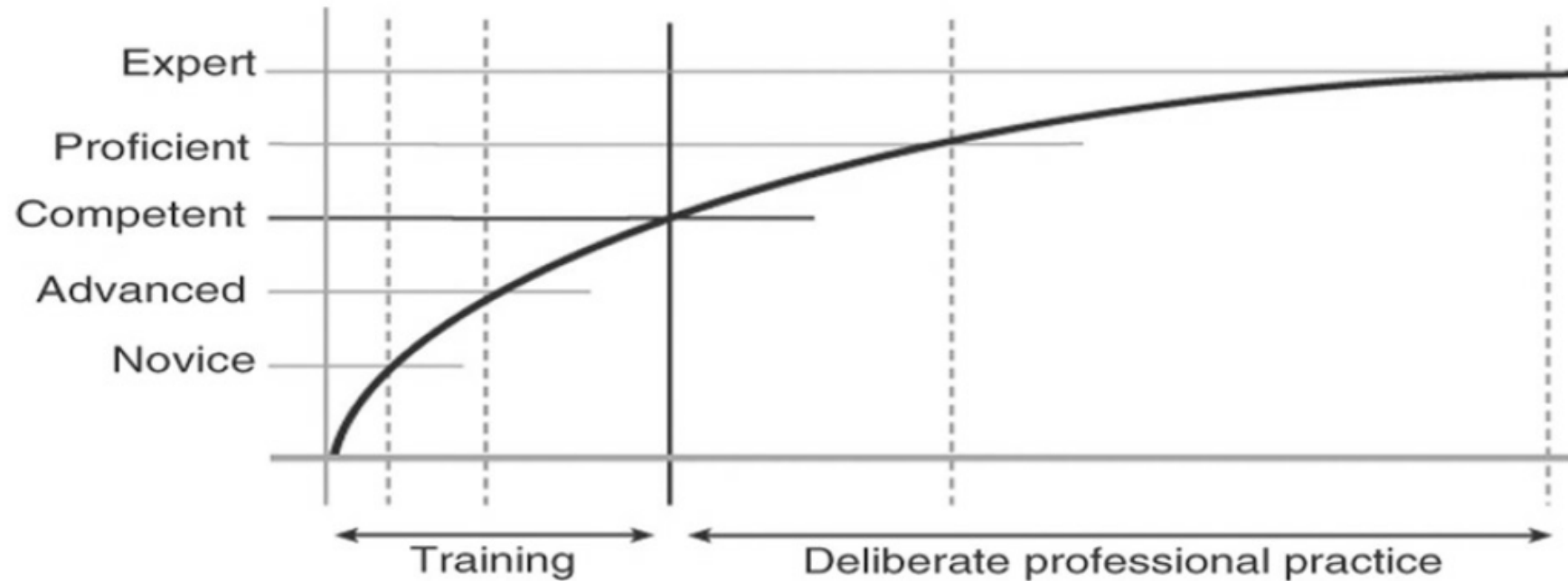


CBME Philosophy...





**Figure 2.** Spectrum of skills acquisition (Dreyfus & Dreyfus 1980).

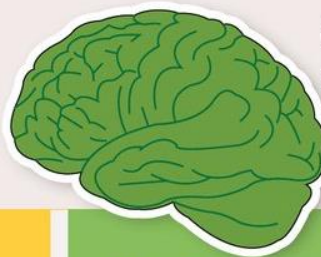


**Figure 3.** General curve of skills acquisition reproduced from ten Cate (2010).



## ***FIXED MINDSET***

Belief that my intelligence, personality and character are carved in stone; my potential is determined at birth



## ***GROWTH MINDSET***

Belief that my intelligence, personality and character can be developed! A person's true potential is unknown (and unknowable).

<b><i>DESIRE</i></b>	Look smart in every situation and prove myself over and over again. Never fail!!	Stretch myself, take risks and learn. Bring on the challenges!
<b><i>EVALUATION OF SITUATIONS</i></b>	Will I succeed or fail? Will I look smart or dumb?	Will this allow me to grow? Will this help me overcome some of my challenges?
<b><i>DEALING WITH SETBACKS</i></b>	"I'm a failure" (identity) "I'm an idiot"	"I failed" (action) "I'll try harder next time"
<b><i>CHALLENGES</i></b>	Avoid challenges, get defensive or give up easily.	Embrace challenges, persist in the face of setbacks.
<b><i>EFFORT</i></b>	Why bother? It's not going to change anything.	Growth and learning require effort.
<b><i>CRITICISM</i></b>	Ignore constructive criticism.	Learn from criticism. How can I improve?
<b><i>SUCCESS OF OTHERS</i></b>	Feel threatened by the success of others. If you succeed, then I fail.	Finds lessons & inspiration in other people's success.
<b><i>RESULT...</i></b>	Plateau early, achieve less than my full potential.	Reach ever-higher levels of achievement.

# Is Your Program Competency-based?

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How would you know??



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Change is  
Underway...







Competence  
= Time?



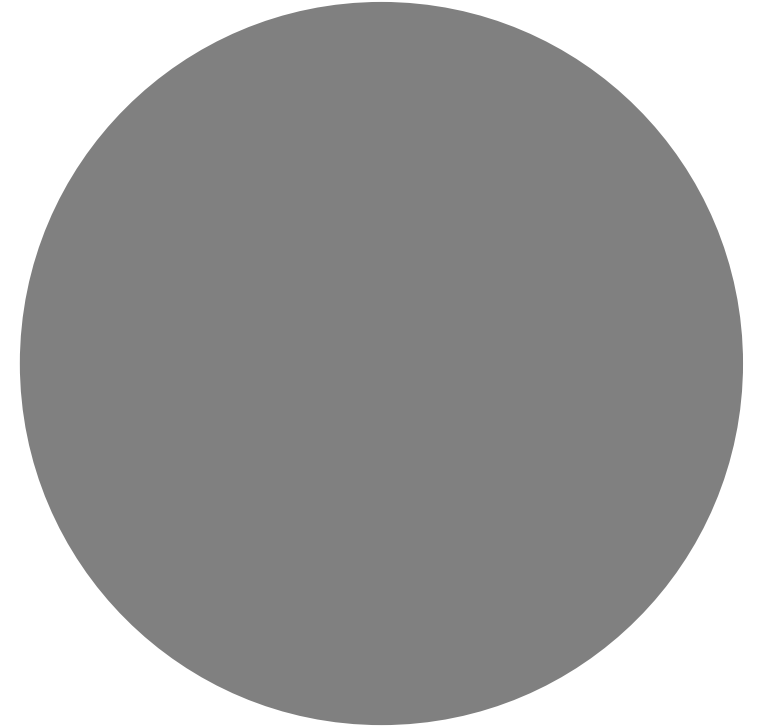
# Competency-based Education:

What are the abilities needed of graduates...?

**...an outcomes-based approach to  
the design, implementation,  
assessment and evaluation of an  
education program using an  
organizing framework of  
competencies**

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CBME Defined:



# Van Melle's Core Components of CBME

1. Outcomes competency framework
2. Sequenced progression of competence
3. Tailored learning experiences
4. Tailored bedside coaching & observation
5. Programmatic assessment

(publication pending)





The CBME  
“Toolkit”

# Competency / Competencies

*An observable ability of a health professional*

- Reflects a spectrum



- Integrates multiple components such as knowledge, skills, values, & attitudes
- Multiple competencies can be combined
- Measureable with respect to a defined outcome



# Milestones in Medical Education: Progression

## Milestones:

- The abilities expected of a health professional at a stage of development

## Entrustable Professional Activities (EPAs):

- The key tasks of a discipline that a practitioner needs to be able to perform
- (e.g. run a clinic)

Defining Milestones & EPAs



# Problems Milestones Solve

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- Progression of Competence
- Comprehensive Curriculum
- Faculty guidance
- Learner transparency
- Failure to fail



# Key Concept in EPAs: *Entrustment*

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- “What can I safely delegate with indirect supervision?”



# Examples of EPAs

In the real world:

- Teenager on an errand



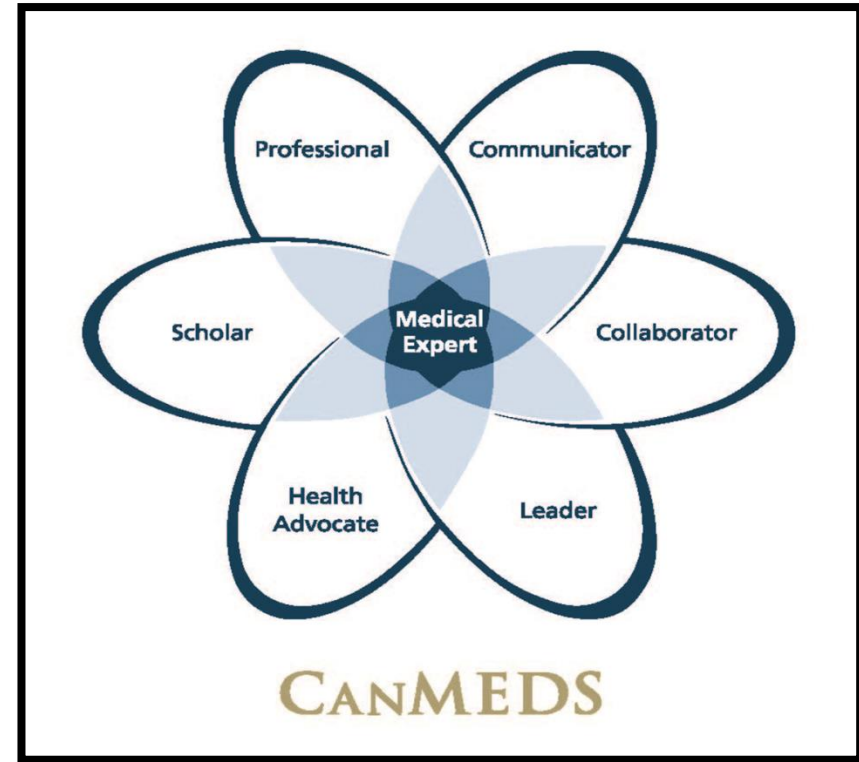
In medicine:

- Run a code



# 1. Outcomes Defined as Competencies

- Carefully chosen abilities for those who successfully complete the curriculum
- Observable
- Practical
- Relevant to practice expertise





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## 2. Competencies Organized as a Progression



### 3. Tailored sequence of learning experiences

- Utility rules
- Ask: “what competencies can be acquired with this experience”
- Not the same as service provision



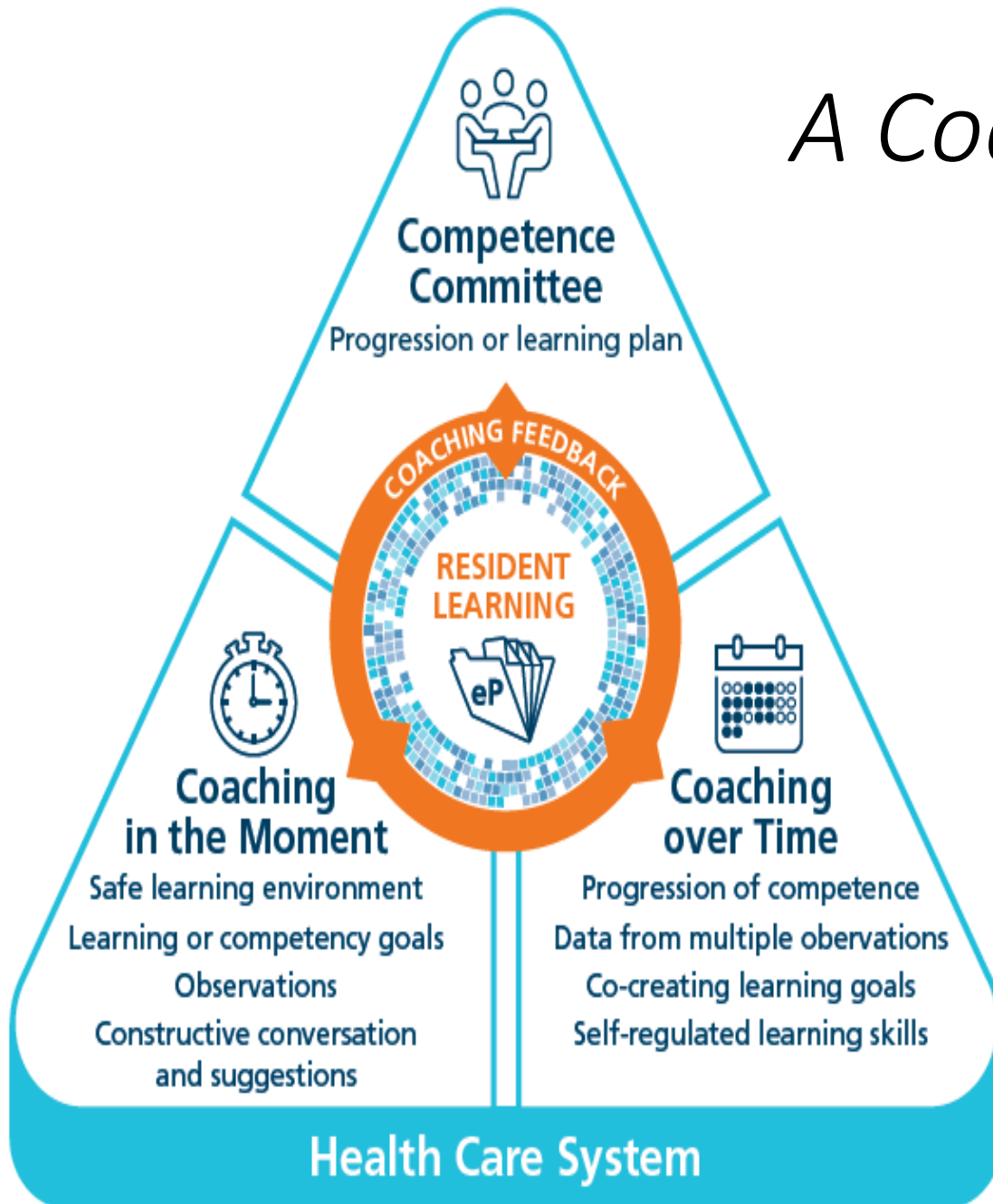
## 4. Competency-focused teaching methods

- Active learning
- Application
- Immersion
- Coaching & high quality feedback
- Deliberate practice



# *A Coaching Model for CBME*

Facilitating learning and  
development of a learner's  
competence





# 5. Programmatic Assessment that Promotes Learning

- Emphasis on workplace observation
- Focused on tasks performed
- Multiple observers
- Multiple methods
- Entrustment
- Curation
- Collation
- Decision-framework & benchmarks

2015 APDS SPRING MEETING

## What Shape is Your Resident in? Using a Radar Plot to Guide a Milestone Clinical Competency Discussion

David T. Harrington, MD, Thomas J. Miner, Thomas Ng, MD, Kevin P. Charpentier, MD, Pam Richardson, and William G. Cioffi, MD

Alpert Medical School at Brown University, Rhode Island Hospital, Providence, Rhode Island

**OBJECTIVE:** One of the challenges for program directors (PDs) is to sort and weight the tidal wave of assessments that training programs create in the modern Milestone era. We evaluated whether the use of a radar plot (RP) would be helpful in sorting data and providing a graphic representation of each resident's progress.

**DESIGN:** Using at least 2 different types of assessments for each of the 16 surgical Milestones, the data were ranked and weighted by a predetermined method embedded in a computerized workbook (Excel). This process created a unique 16-spoked RP for each resident (Fig. below). The RP allowed the faculty to see areas of weakness (shown by concavity) and allowed an overall grade calculated as a ratio of the area of the smooth outer circle (faculty expectations, triangles) and the resident's unique radar shape (resident performance, squares). To help us validate our new tool, we looked at whether residents with recent remedial issues "looked" different from residents without remedial issues.

**RESULTS:** Of our 30 categorical residents, 8 had significant areas of concavity, suggesting possible areas of improvement. Of these 8 residents, 4 had been on a remediation program in the last 18 months. The average ratio of performance/expectations was 0.709. The 4 residents on recent remediation had a ratio of 0.616 when compared with 0.723 for the residents without remedial issues ( $p < 0.009$ ).

**CONCLUSIONS:** Many exciting challenges await PDs, as we evolve to a competency-based evaluation system. The use of an evaluation summary tool using RPs may aid PDs in leading clinical competency discussions and in monitoring a resident's progress over time. (J Surg 72:e294-e298. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

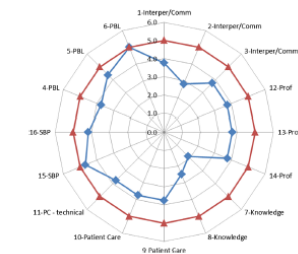
**KEY WORDS:** milestones, radar plot, assessments, competency

**COMPETENCIES:** Systems-Based Practice, Medical Knowledge, Practice-Based Learning and Improvement

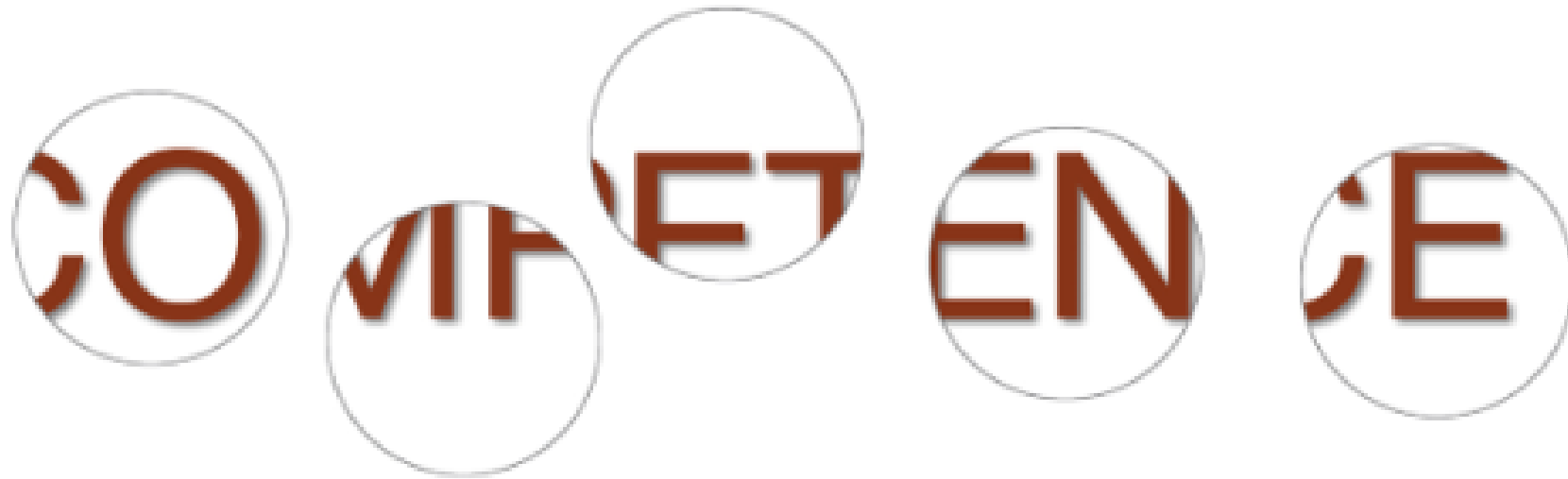
### INTRODUCTION

The American Council on Graduate Medical Education (ACGME) Milestone projects is an ambitious goal to move residency training from a curriculum based on time to a curriculum based on attainment of competency. This project is the natural evolution from the ACGME 6 core competencies that asked program directors (PDs) to evaluate 6 aspects of surgical skills: knowledge, patient care, communication, professionalism, systems-based practice, and practice-based learning. PDs have been encouraged to develop a tool box to teach and assess for learning in all these competencies. To meet Milestone requirements, general surgical training programs have to teach, assess, and provide summative grading on 16 Milestones promulgated by the ACGME.

Many challenges await PDs as they become compliant

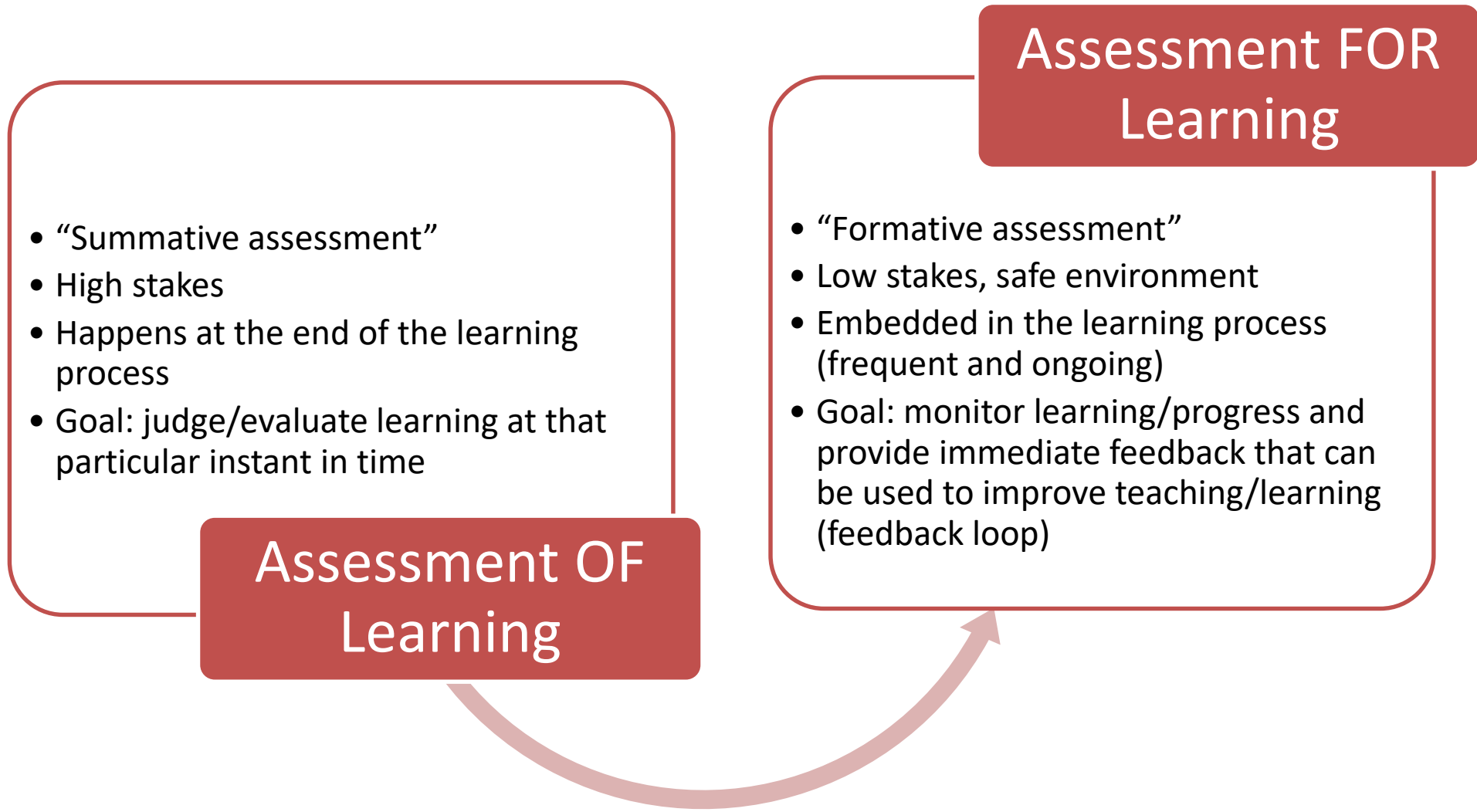


# Multiple Assessments



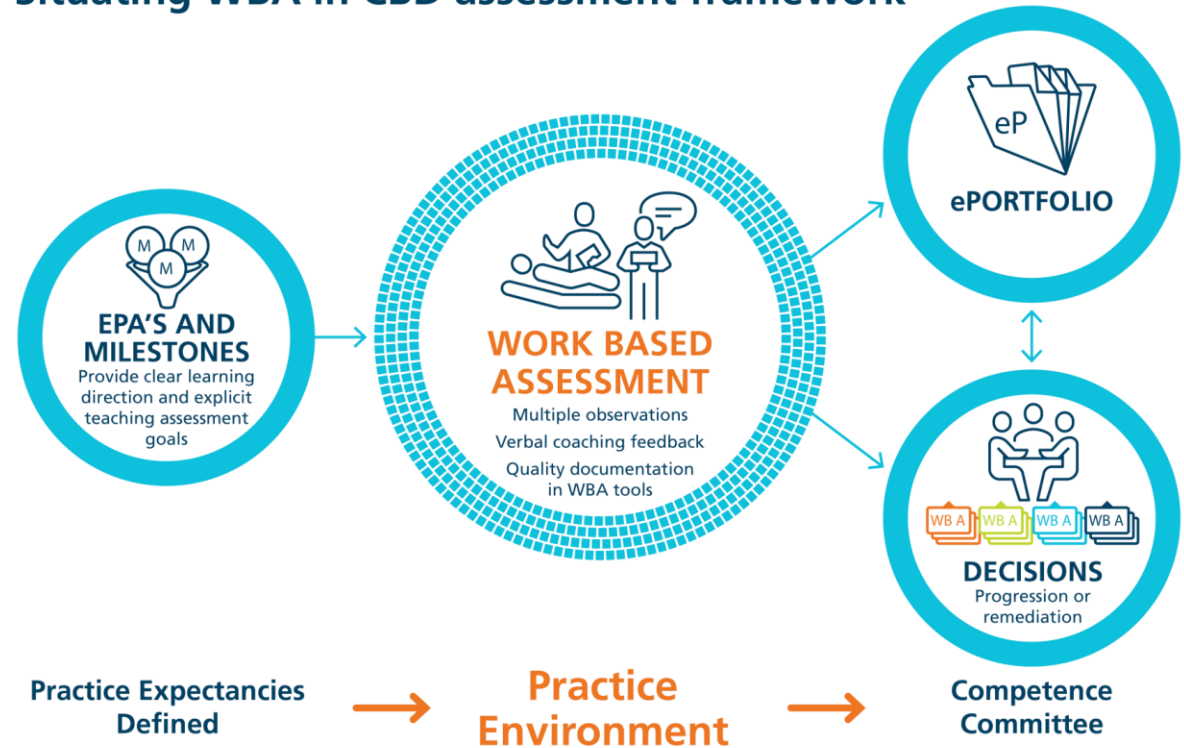
Caverzagie and lobst

# Paradigm Shift of Thinking



# Work Based Assessment in CBME

## Situating WBA in CBD assessment framework





# Competence Committees



- Responsible for regular review of learner progress
- Uses integrative data from multiples observations
- Identifies patterns and trends
- Recommends progression

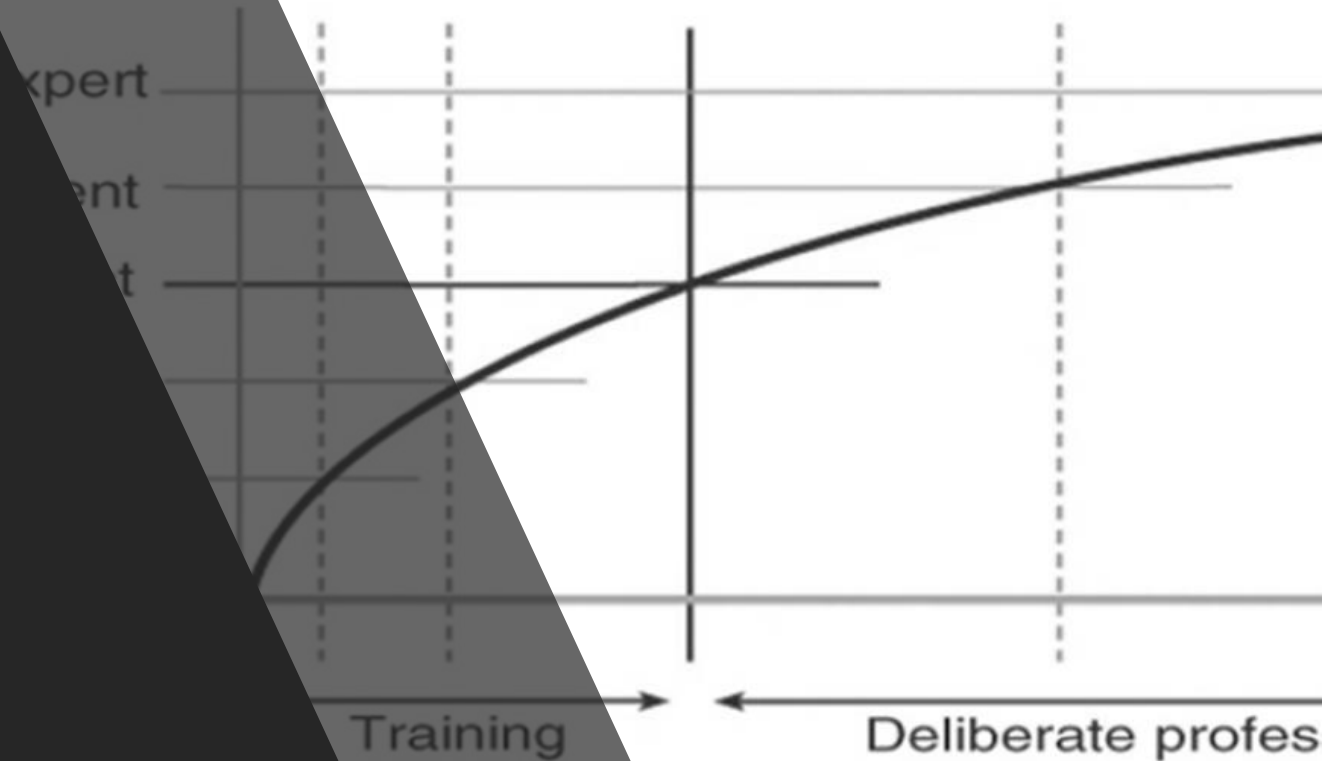
## A Spectrum of CBME Innovations

# Van Melle's Components of a "CBME" Curriculum:

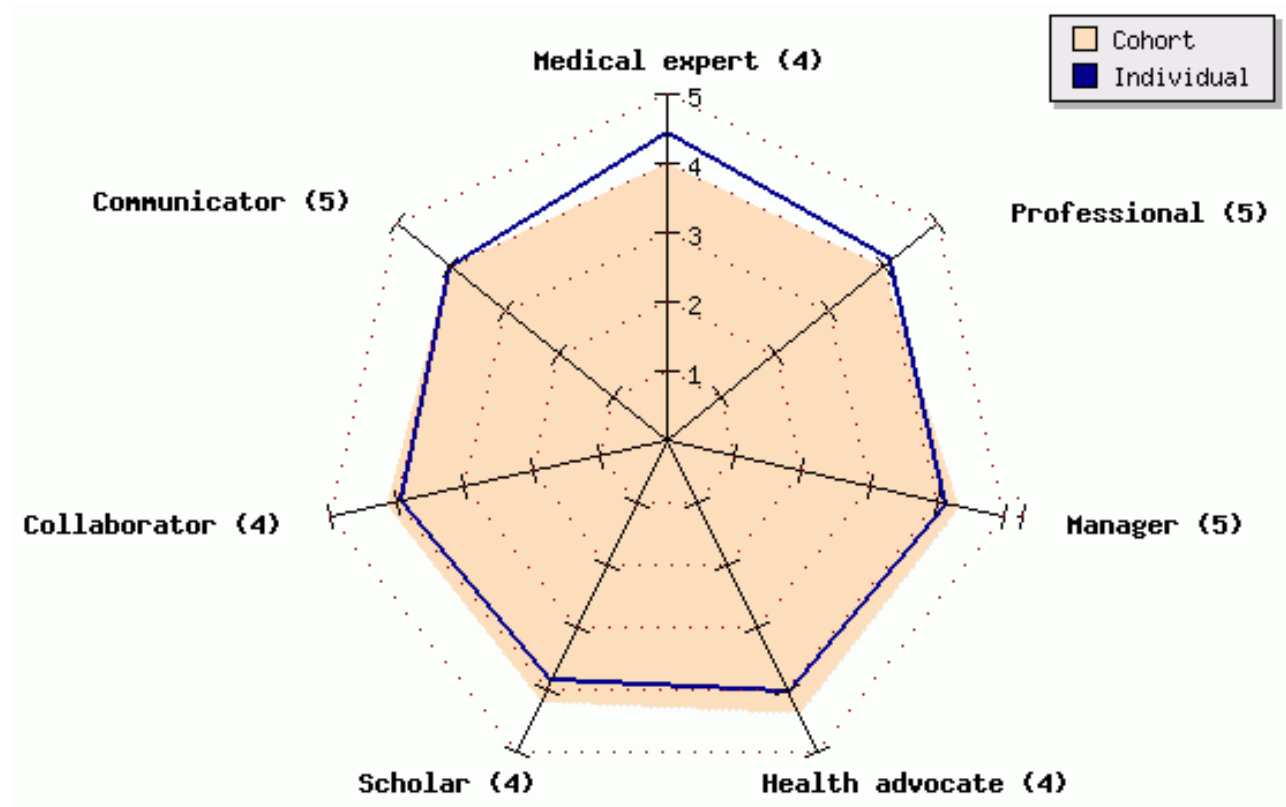
1. Outcomes defined as **competencies**
2. Competencies organized as a **progression**
3. Tailored sequence of learning **experiences**
4. Competency-focused **teaching** methods
- 5. Programmatic assessment*** for learning

# Data...Analytics

**Figure 2.** Spectrum of skills acquisition (Dreyfus &



# Maastricht Electronic portfolio (ePass)



Comparison between the score of the student and the average score of his/her peers.

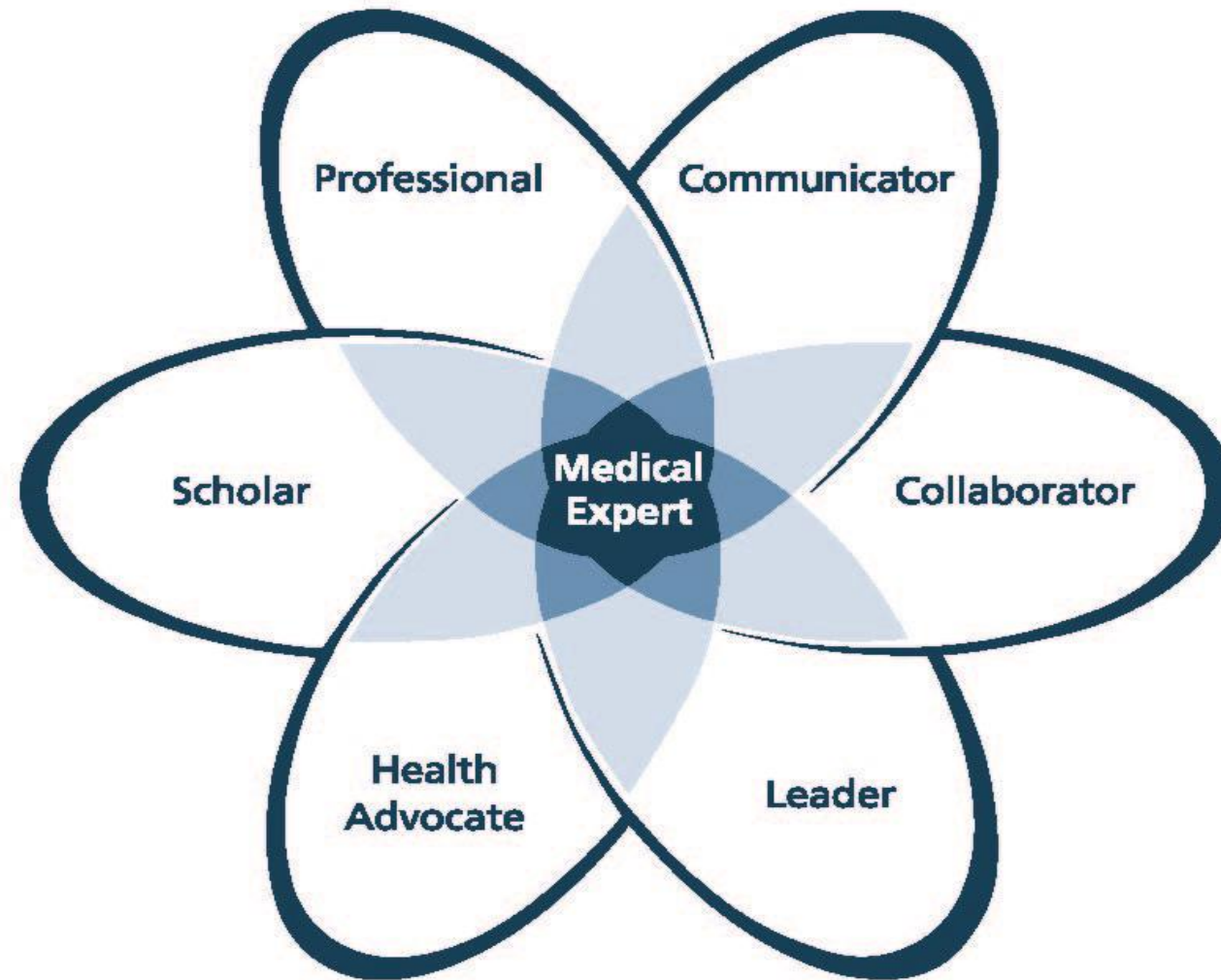


# CBME: A Global Movement

- Netherlands
- USA
- Singapore
- Saudi Arabia
- Kuwait
- South Africa
- Australia
- Canada
- +more

*Transformational CBME:*

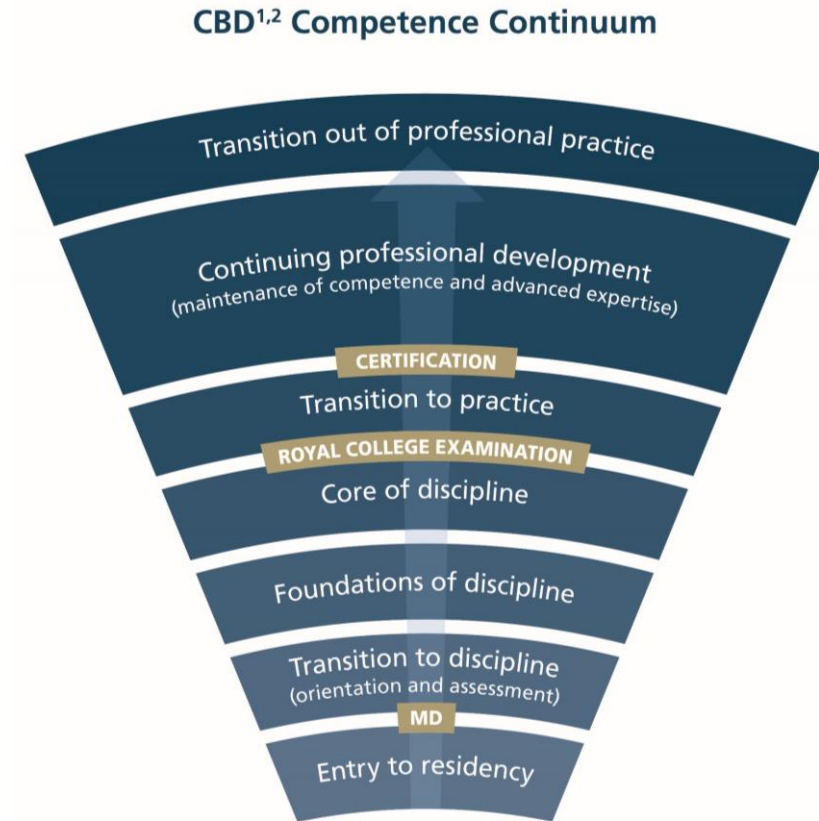
*Competence by  
Design Project*



**CANMEDS**

# Key Elements

- New CanMEDS
- Stages of physician development
- EPAs & Milestones
- New Assessment
- New Accreditation





# Defining the stages of training

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## CBD<sup>1,2</sup> Competence Continuum



# Next Generation Meded:

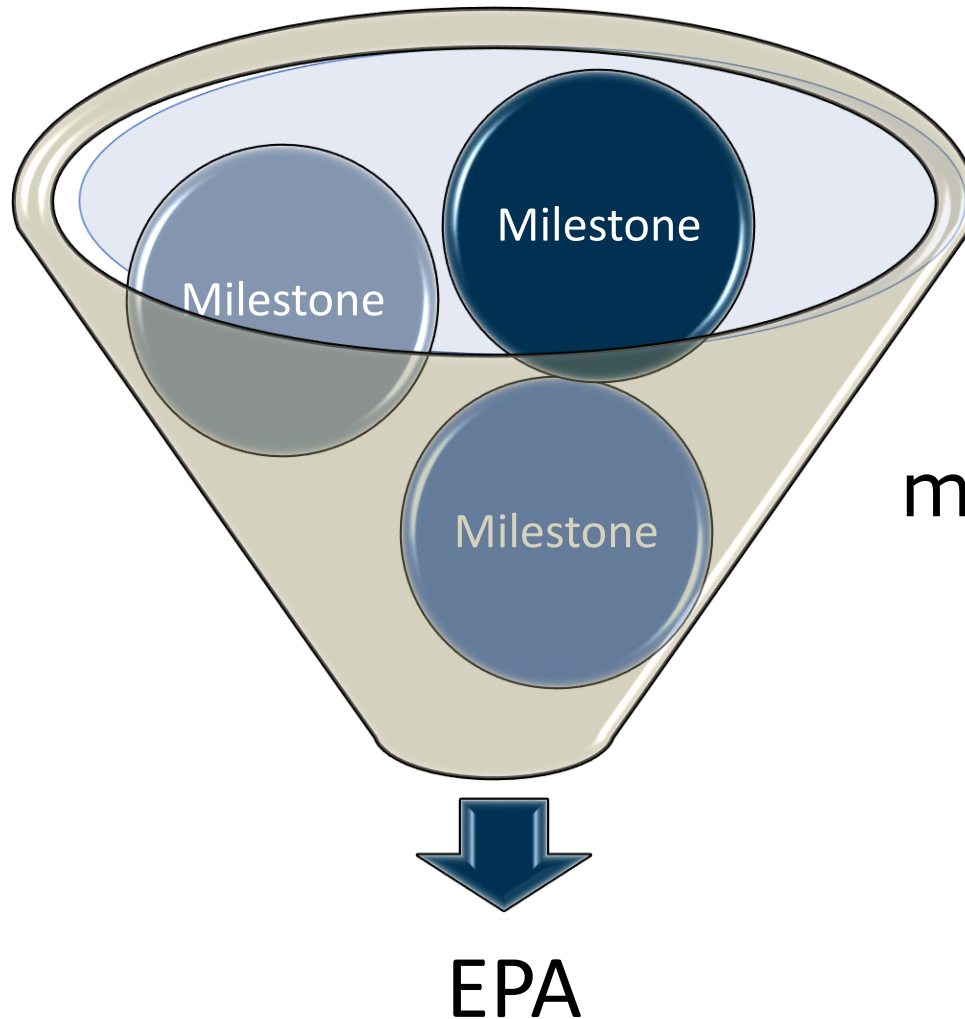
## Forget:

- PGYs
- Objectives
- Prescriptive standards
- Ad hoc ITERs
- the Big Exam
- “Read more”
- 5 years only

## Enter:

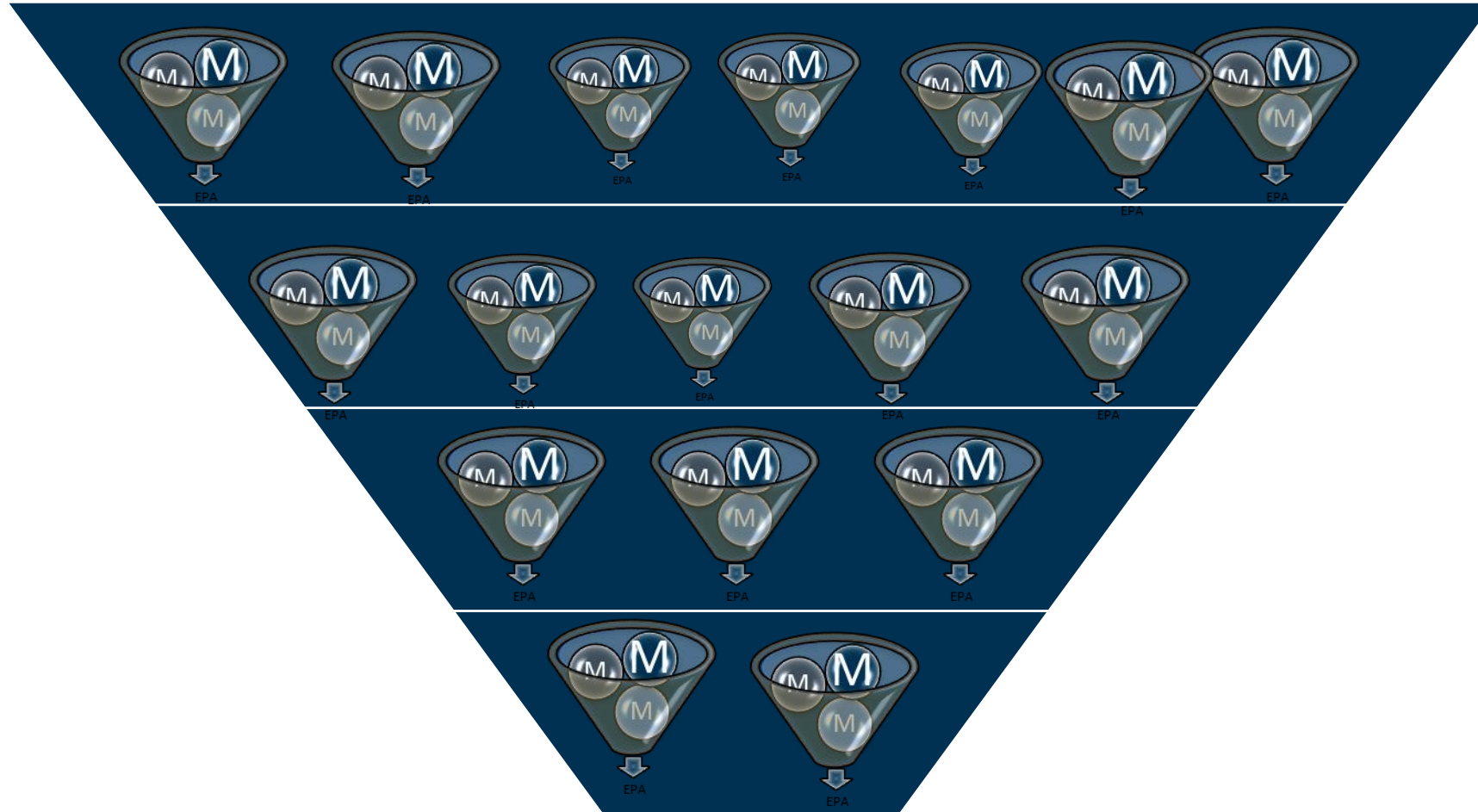
- Stages
- Milestones & EPAs
- Local Flexibility
- Competence Ctes
- Progress testing
- Focused observation
- Ready to practice

# Milestones within an EPA



Typically, each  
EPA **integrates**  
multiple milestones.

# Milestones and EPAs within Four Stages of Residency



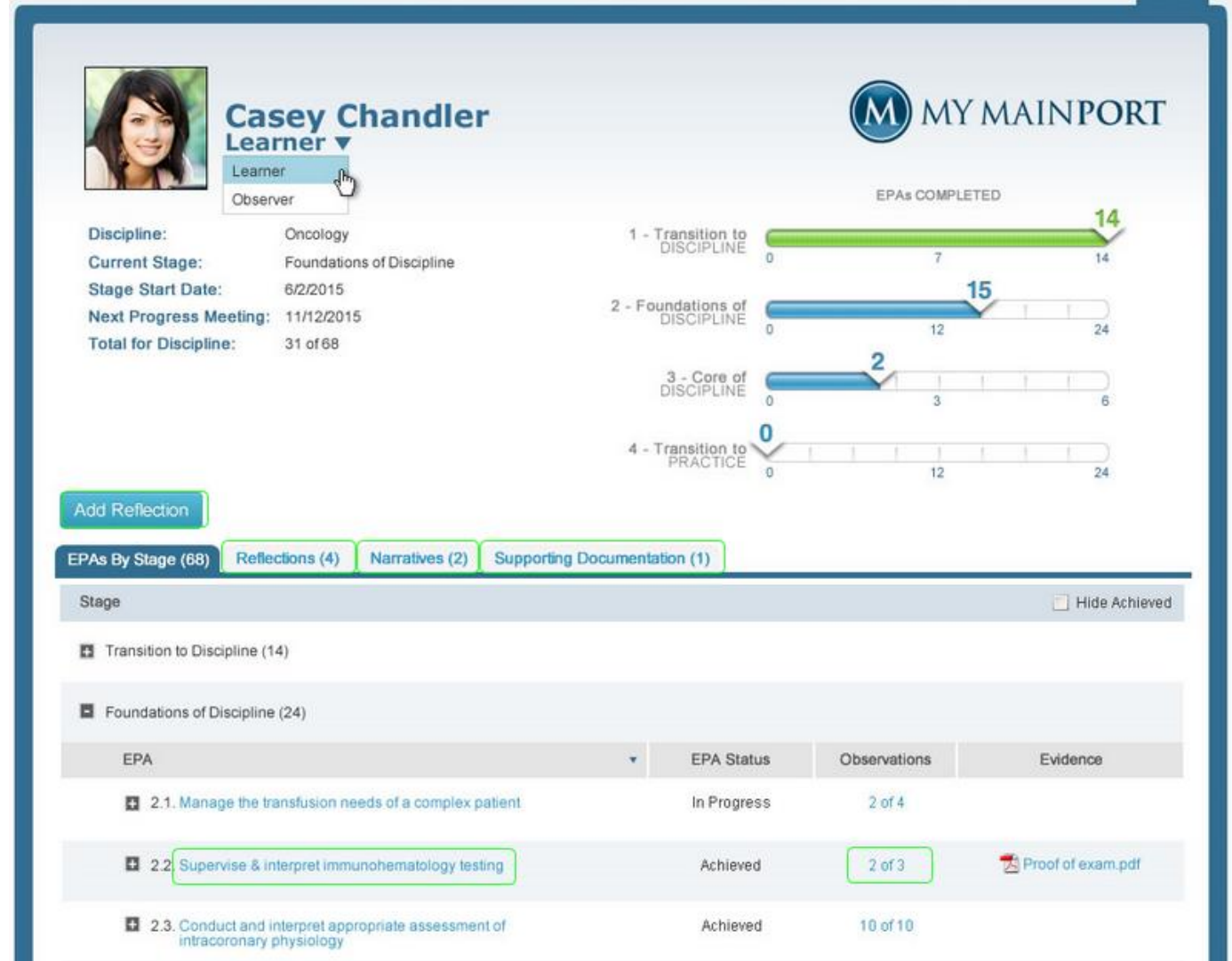
# Progression of Competence

Competence  
by Design





# ePortfolio: Learner Dashboard



# ePortfolio: Observer Dashboard

The screenshot shows the 'ePortfolio: Observer Dashboard' for Brigitte Hayes. The interface includes a top navigation bar with 'CBD Home', 'Discipline', and 'Learners'. A user profile section for Brigitte Hayes, Observer, is visible, with a dropdown menu showing 'Learner' and 'Observer' options. A 'Discipline' dropdown is set to 'Oncology'. Below this, there are tabs for 'Pending Observations (4)', 'EPAs by Learner (2)', 'My Archived Observations (32)', and 'Narratives (3)'. The 'Accepted' section displays a table of observations with columns for 'Observations', 'Learner', 'Stage #', and 'Actions'. The 'Pending Acceptance' section also displays a table of observations with the same columns. The 'Discipline' dropdown is set to 'Oncology' in both sections.

**Accepted** Discipline: Oncology

Observations	Learner	Stage #	Actions
Multiple Source Feedback	Guerrero, Kim	1 - Transition	Actions
3.2 Supervise & interpret immunohematology testing	Logan, Bryan	3 - Core	Actions
3.4 Assessment, development and communication of an interventional plan	Mitchell, Johnny	3 - Core	Actions

**Pending Acceptance** Discipline: Oncology

Observations	Learner	Stage #	Actions
1.6 Knowledge and practical application of adjunctive pharmacotherapy	Rios, Gail	4 - Transition	Actions

# ePortfolio: PD Dashboard

**CBD Home** | **Discipline** | **Learners** | **Observers** | **Competence Committee** | **Reports**

**Marshall Gross**  
Program Director ▼

Next Competency

Program Director  
PG Dean  
Program Administrator  
Observer  
Competence Committee Member

University  
University  
University

MY MAINPORT

1 - Transition  
2 - Foundations  
3 - Core  
4 - Transition

1-Transition  
17

**My Discipline Snapshot**

Discipline	Total Learners	Transition to Discipline	Foundations of Discipline	Core of Discipline	Transition to Practice
Oncology	25	14	6	3	1
Otolaryngology	12	3	2	5	0

Discipline: Oncology ▼


**Learners (9)** | Observers (5) | Learners with No Activity (7) | Reflections (4) | Narratives (4) | Supporting Documentation (5) | Notes (5)

Learner	Next Progress Meeting	Stage		Learner Status	Actions
		#	Start Date		
Guerrero, Kim	11/12/2015	1 - Transition	4/15/2015	Progressing as Expected	Schedule Progress Meeting
Logan, Bryan	10/11/2015	3 - Core	2/1/2015	Not Progressing as Expected	Flag for Review


# ePortfolio: Competence Committee Agenda

[CBD Home](#)
[Discipline](#)
[Learners](#)
[Competence Committee](#)

[< Back to Dashboard](#)



Oncology  
Competence Committee



Discipline: Oncology





Meeting: 10/20/2015 - Upcoming

View Archived Agendas: Select

9/20/2015 - Pending
8/20/2015

Learners (6)

☐ Reviewed
☐ Not Reviewed
☒ All

Learner	Priority	Presenter	Stage		Learner Status
			#	Start Date	
 <div> Benson, Teresa Not Reviewed </div>	High	Morgan, Curtis Pending	1 - Transition	3/13/2015	---
 <div> Brown, Kelly Not Reviewed </div>	Medium	Frazier, Pam	3 - Core	5/25/2015	---
 <div> Guerrero, Kim Not Reviewed </div>	Medium	---	1 - Transition	4/15/2015	---
 <div> Logan, Bryan Not Reviewed </div>	Low	Morgan, Curtis Pending	3 - Core	2/1/2015	---

Feedback to Learner

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam. Erat volutpat ut wisi enim adminim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis atutem vel eum iriure dolor in hendrerit in vulputate velit esse molestie cons3equat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue dui

# ePortfolio: PG Dean Dashboard

The screenshot displays the 'ePortfolio: PG Dean Dashboard' interface. At the top, there are navigation tabs: 'CBD Home', 'Discipline', 'Learners', and 'Reports'. The user profile for 'René Neal, PG Dean' is shown on the left, with a dropdown menu listing roles: Program Director, PG Dean (selected), PG Manager, Program Administrator, and Observer. A 'Next Competency' date of 10/20/2015 is indicated. On the right, the 'MY MAINPORT' logo is present, along with a legend for stages: 1 - Transition (blue), 2 - Foundations (dark blue), 3 - Core (green), and 4 - Transition (red). A horizontal bar chart shows the distribution of learners across these stages, with a tooltip for '1-Transition' showing a count of 17. Below this is a 'My Discipline Snapshot' table showing data for 'Oncology' and 'Otolaryngology'. The 'Discipline' dropdown is set to 'Oncology'. At the bottom, there are tabs for 'Learners (7)', 'Learners with No Activity (7)', 'Narratives (4)', 'Supporting Documentation (5)', 'Notes (5)', 'Pending Status Approvals (1)', and 'Archived Status Approvals (3)'. The 'Learners' tab is active, displaying a table with columns for Learner, Next Progress Meeting, Stage, Start Date, Learner Status, and Actions. Two learners are listed: Benson, Teresa and Guerrero, Kim.

Discipline	Total Learners	Transition to Discipline	Foundations of Discipline	Core of Discipline	Transition to Practice
Oncology	25	14	6	3	1
Otolaryngology	12	3	2	5	0

Learner	Next Progress Meeting	Stage	Start Date	Learner Status	Actions
Benson, Teresa	11/12/2015	1 - Transition	3/13/2015	Failure to Progress	Actions
Guerrero, Kim	11/12/2015	1 - Transition	4/15/2015	Progressing as Expected	Actions





4.

It's your turn...

# Van Melle's Core Components of CBME

1. Outcomes competency framework
2. Sequenced progression of competence
3. Tailored learning experiences
4. Tailored bedside coaching & observation
5. Programmatic assessment

(publication pending)

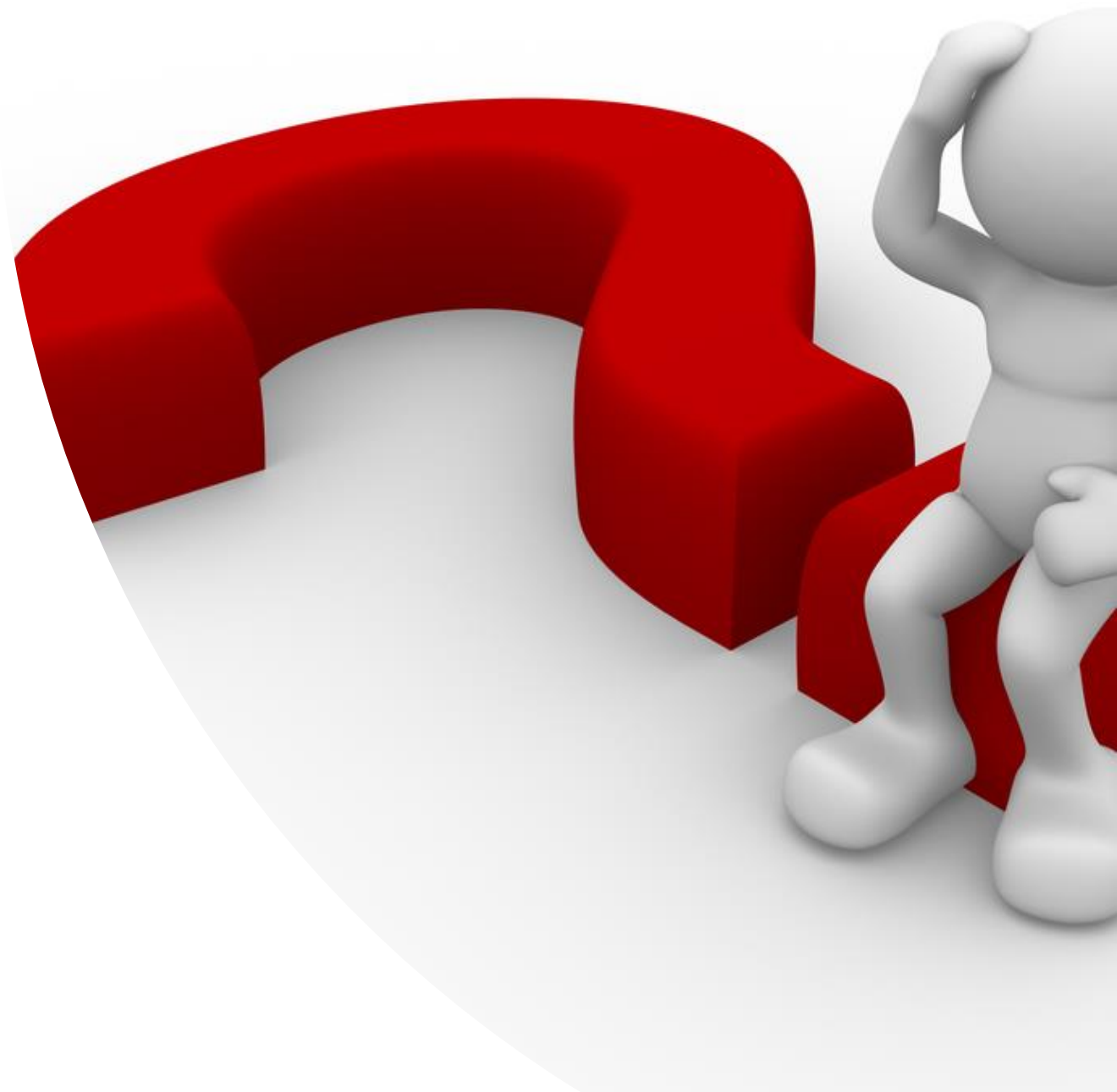
# Is Your Program Competency-based?

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How would you know?

Should it be?

What are the pros & cons for  
your program?



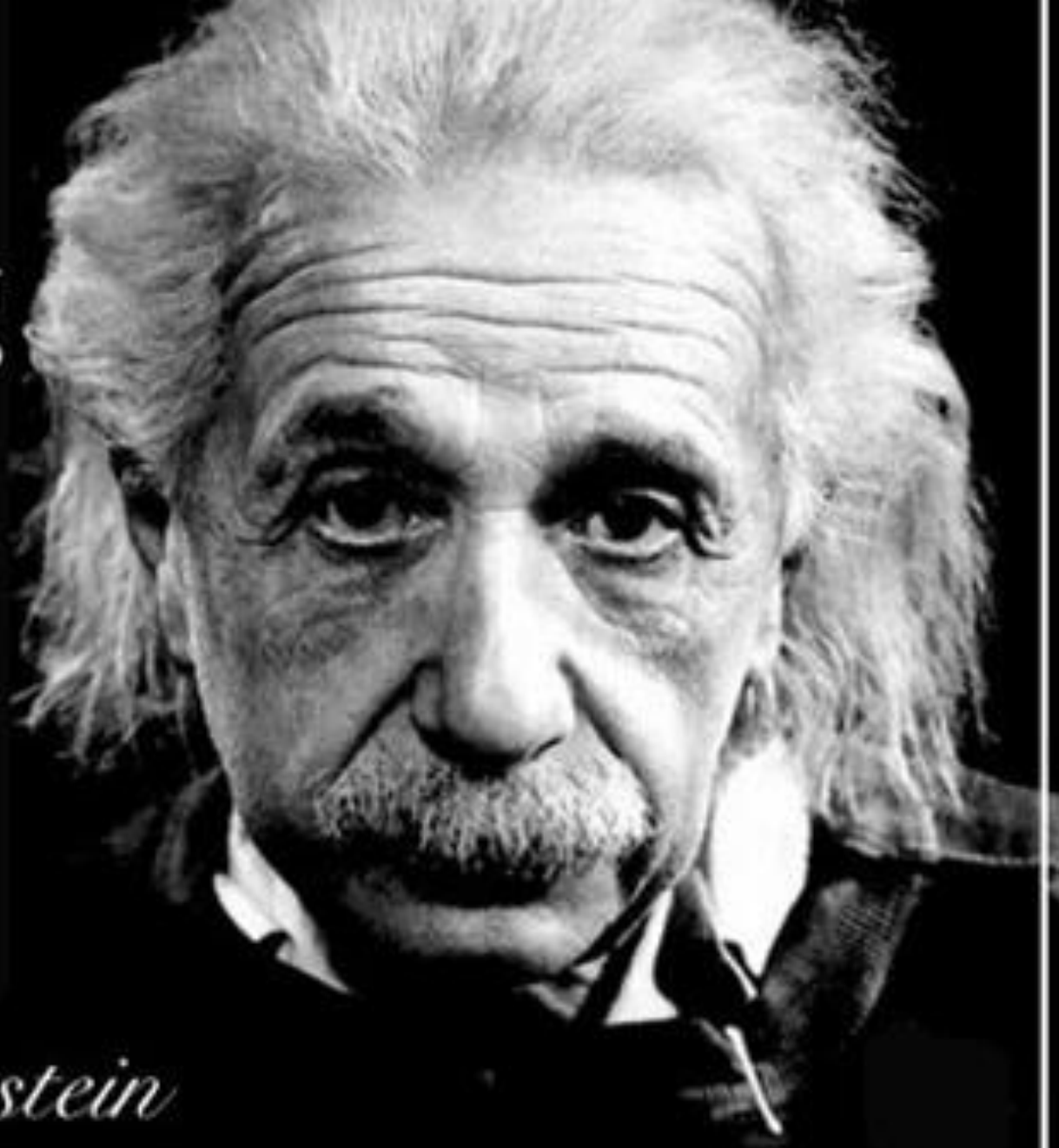
# Diagnosis: The “Tea Bag Model” of Med Ed



Is there a better way to ensure competence than just time spent?

Insanity:  
doing the same thing  
over and over again  
and expecting  
different results.

*- Albert Einstein*







CBME: WHY? |

...Ultimately, a move  
to CBME is about a  
**better way to train**  
health professionals...







# The Rising Tide of Competency-based Medical Education: A Global View

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