Setting the Stage: An Intro to CBME

Kate Hatlak, EdD

Southeast Hub: Developing Faculty Competencies in Assessment

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Disclosure: None of the speakers for this educational activity have a relevant financial relationship(s) to disclose with ineligible companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

Outline

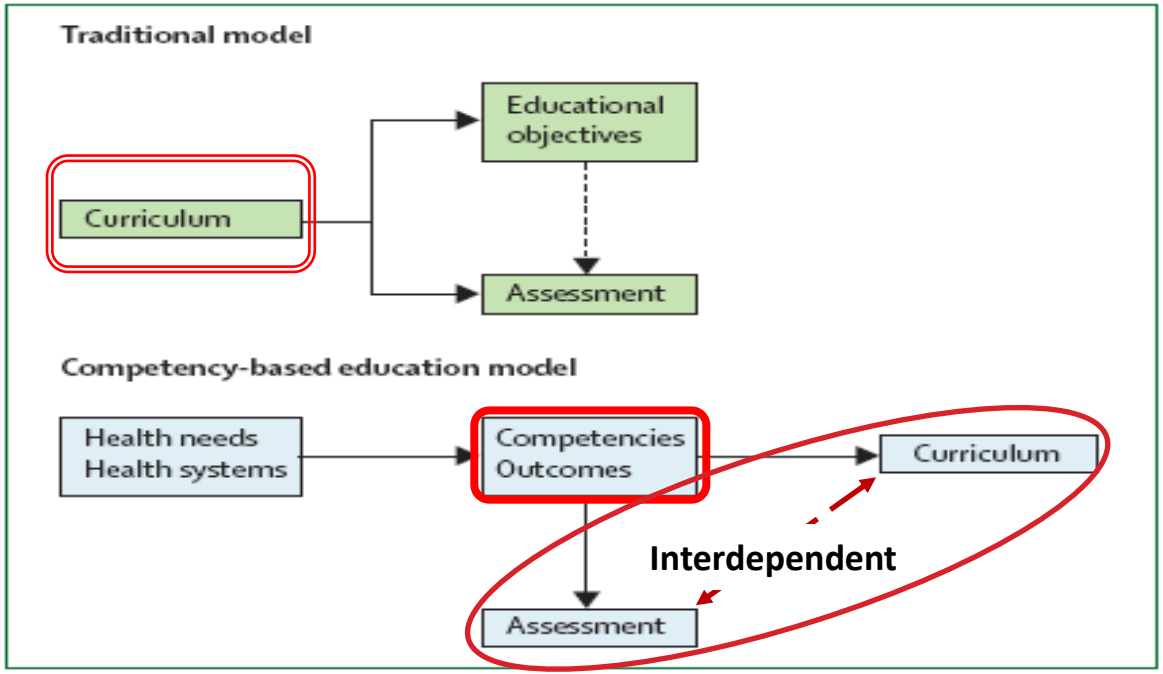
1. Why Outcomes?
2. Key Definitions and Principles
3. Thinking Developmentally about Assessment
4. Milestones and Entrustment in CBME
5. Programmatic Assessment

TRIZ Exercise

Design an assessment system that would ensure every graduate of your program entered unsupervised practice ***completely unprepared*** *(i.e., incompetent) to provide high-quality, safe, 21st century healthcare in your setting.*

WHY OUTCOMES?

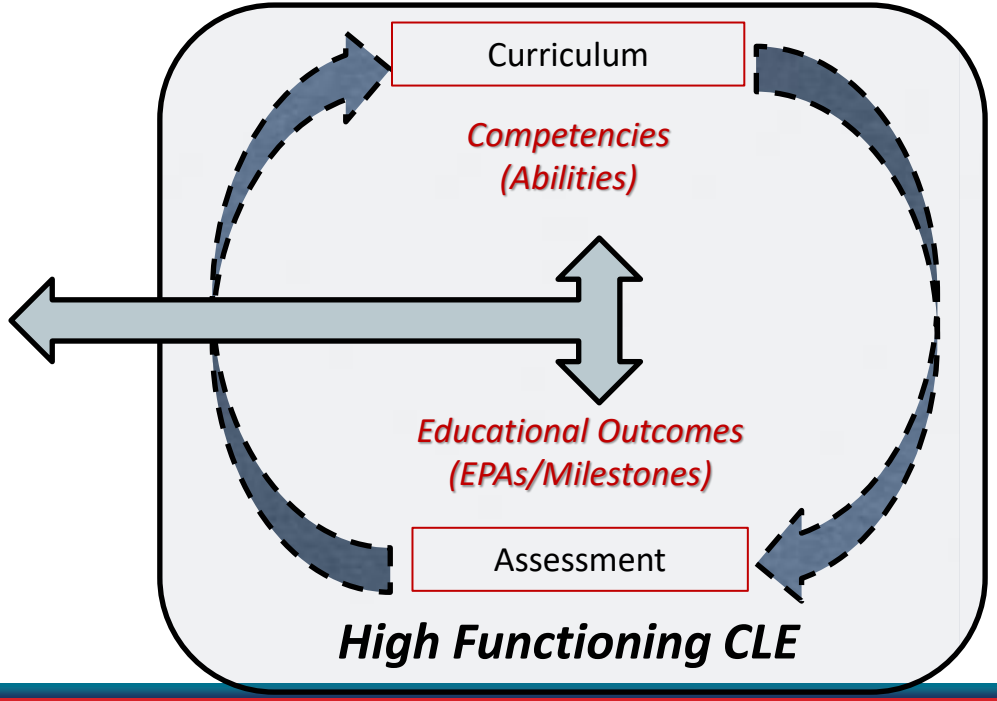
Start with System Needs



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

The Ultimate Goal of Medical Education

Quintuple Aim



Health Care System Performance Rankings: 2021

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING	**3**	**10**	**8**	**5**	**2**	**6**	**1**	**7**	**9**	**4**	**11**
Access to Care	8	9	7	3	1	5	2	6	10	4	11
Care Process	6	4	10	9	3	1	8	11	7	5	2
Administrative Efficiency	2	7	6	9	8	3	1	5	10	4	11
Equity	1	10	7	2	5	9	8	6	3	4	11
Health Care Outcomes	1	10	6	7	4	8	2	5	3	9	11

Commonwealth Fund. Mirror, Mirror. 2021

Appendix Table 4.34. Measure: Severe maternal morbidity per 1,000 delivery discharges, women ages 12-55
Source: Healthcare Cost and Utilization Project
Benchmark was not available.
Disparity Year: 2019
Note: Lower estimates are better for this measure. The unit of measurement is rate per 1,000.
Legend:
Trend: Improving | Not changing | Worsening **Disparities:** Better | Same | Worse

Population Category	Subgroup	Baseline Year	Baseline Rate	Current Year	Current Rate	Average Annual Change %	Change Over Time	Years to Benchmark	Reference Group	Rate for Reference Group	Rate for Comparison Group	Relative Difference	Disparities
Total	Total	2016	7.2	2019	8.1	3.8	Worsening	======	======	======	======	======	======
Ethnicity	Non-Hispanic, White	2016	6.1	2019	6.6	2.8	No change	======	======	======	======	======	======
	Hispanic, all races	2016	7.1	2019	8.2	4.8	Worsening	======	Non-Hispanic, White	6.6	8.2	24.3	Worse
	Non-Hispanic, API	2016	7.5	2019	8.7	6.1	No change	======			8.7	32.1	Worse
	Non-Hispanic, Black	2016	11.3	2019	12.3	2.9	Worsening	======			12.3	86.6	Worse
Income	400% of PG or more	2016	6.3	2019	7.5	5.5	Worsening	======	======	======	======	======	======
	Less than 100% of PG	2016	8.2	2019	8.9	3.1	Worsening	======	400% of PG or more	7.5	8.9	19.6	Worse
	100-199% of PG	2016	7.3	2019	7.9	2.7	No change	======			7.9	6.4	Same
	200-399% of PG	2016	6.7	2019	7.7	4.7	Worsening	======			7.7	3.0	Same
Health insurance	Any private	2016	6.4	2019	7.1	4.1	Worsening	======	======	======	======	======	======
	Medicaid only	2016	8.1	2019	9.0	3.7	Worsening	======	Any private	7.1	9.0	25.8	Worse
	Other insurance	2016	6.5	2019	7.9	6.6	Worsening	======			7.9	10.8	Worse
	Uninsured	2016	6.4	2019	7.3	4.6	Worsening	======			7.3	2.7	Same
Metropolitan status	Large fringe metro	2016	7.0	2019	7.9	4.2	Worsening	======	======	======	======	======	======
	Large central metro	2016	7.9	2019	9.2	5.0	Worsening	======	Large fringe metro	7.9	9.2	16.2	Worse
	Medium metro	2016	7.0	2019	7.7	3.2	Worsening	======			7.7	-2.5	Same
	Small metro	2016	6.5	2019	6.5	1.0	No change	======			6.5	-18.0	Better
	Micropolitan	2016	6.6	2019	6.9	1.7	No change	======			6.9	-12.3	Better
	Noncore	2016	6.7	2019	7.1	1.9	No change	======			7.1	-9.9	Better
Age	18-24	2016	6.2	2019	6.6	2.6	No change	======	======	======	======	======	======
	12-17	2016	7.5	2019	8.3	3.5	No change	======	18-24	6.6	8.3	25.6	Worse
	25-34	2016	6.7	2019	7.4	3.3	Worsening	======			7.4	10.7	Worse
	35-55	2016	10.6	2019	11.9	3.9	Worsening	======			11.9	79.2	Worse

Country	Legatum Prosperity Index Health Score	CEOWORLD Health Care Index (2023)	US News Ranking (2022)	WHO Index (2000)
Search... (195)	Min Max	Min Max	Min Max	Min Max
Singapore	86.89	67.22	21	0.97
Japan	86.5	55.73	13	0.96
South Korea	84.8	53.28	17	0.76
Taiwan	83.37	59.76		
China	83.11	46.15	29	0.48
Israel	83.1	54.92	19	0.88
Norway	82.98	57.38	5	0.95
Iceland	82.72	65.15		0.93
Sweden	82.28	56.29	1	0.91
Switzerland	82.11	56.2	6	0.92

https://worldpopulationreview.com/country-rankings/best-healthcare-in-the-world

Country	Legatum Prosperity Index Health Score	CEOWORLD Health Care Index (2023)	US News Ranking (2022)	WHO Index (2000)
Search... (195)	Min / Max	Min / Max	Min / Max	0.90 / 1.0
Singapore	86.89	67.22	21	0.97
Japan	86.5	55.73	13	0.96
Norway	82.98	57.38	5	0.95
Iceland	82.72	65.15		0.93
Sweden	82.28	56.29	1	0.91
Switzerland	82.11	56.2	6	0.92
Netherlands	82.05	54.63	11	0.93
Luxembourg	81.59	56.31	16	0.93
Germany	81.41	55.98	7	0.9
Italy	80.9	72.15	22	0.99

https://worldpopulationreview.com/country-rankings/best-healthcare-in-the-world

US Rankings

Country	Legatum Prosperity Index Health Score		CEOWORLD Health Care Index (2023)		US News Ranking (2022)		WHO Index (2000)	
united states	Min	Max	Min	Max	1	Max	Min	Max
United States	73.26		51.34		23		0.84	

https://worldpopulationreview.com/country-rankings/best-healthcare-in-the-world

Small Group Discussion

How can we, as a GME community, improve outcomes for the patients and communicates we serve through our educational programs?

KEY DEFINITIONS AND PRINCIPLES IN OUTCOMES-BASED EDUCATION

Outcomes-based Education: What is it?

- Central tenet: *start with the end in mind*
  - Focus on what type of physician will be produced
  - Structure and process flow from the outcomes
- Educational outcomes should be "*clearly and unambiguously specified*."
- These educational outcomes determine:
  - Curriculum, assessment processes, and the learning environment

© AAFP: Collaboration Improves Patient Outcomes, Lowers Cost (aafp.org)

Harden RM. Outcomes-based education: Part 1-An introduction to outcomes-based education. Med Teach. 2009; 21: 7-14.

Operationalizing Outcomes

An approach to preparing physicians for practice that is fundamentally oriented to graduate outcome ability and organized around competencies derived from an analysis of societal and patient needs.

It de-emphasizes time-based training and promises greater accountability, flexibility, and learner-centeredness.

Frank et al. Toward a definition of CBME. Med Teacher 2010

“Time” Still Matters

- In outcomes-based education, time is viewed as a *resource,* not an *intervention/measure*
  - Time is too often used as a proxy for competence
- Shortening training is *not* the primary goal of CBME
  - The amount of ‘training time’ should be based on outcomes
- The core principles of CBME can still advance GME within ‘fixed’ program lengths, designing outcomes-based flexibility within a program

Achieving the Desired Transformation: Thoughts on Next Steps for Outcomes-Based Medical Education. Acad Med. 2015 Sep;90(9):1215-23.

Core Components Framework

Outcome Competencies	Sequenced Progression	Tailored Learning Experiences	Competency-focused Instruction	Programmatic Assessment (using Systems Thinking)
Competencies required for practice are clearly articulated.	Competencies and their developmental markers are *sequenced progressively*.	Learning experiences *facilitate*…	Teaching practices *promote*…	Assessment practices *support & document*…
		….the developmental acquisition of competencies.		

Van Melle E, et. al. A Core Components Framework for Evaluating Implementation of Competency-Based Medical Education Programs. Acad Med. 2019 Jul;94(7):1002-1009.

Philosophical Principles of CCF

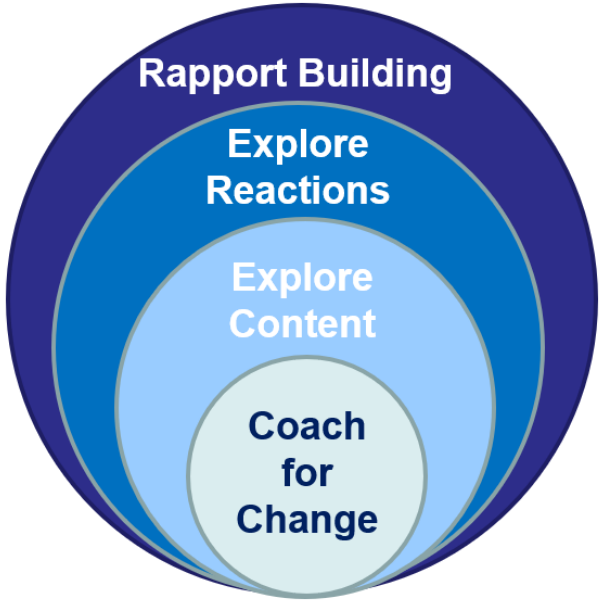
Grounded in a “growth” mindset:

- Forms the basis for significantly redesigning assessment practices, instructional methods, and learner experiences
- Focused on promoting learner growth and development through frequent formative assessment

Van Melle E, et. al. A Core Components Framework for Evaluating Implementation of Competency-Based Medical Education Programs. Acad Med. 2019 Jul;94(7):1002-1009.

Philosophical Principles of CCF

- Rich in feedback/coaching individualized to the learner and grounded in desired competencies
- Provides rich and diverse learning experiences, steeped in clinical practice where learners can stay *as long as required*



Van Melle E, et. al. A Core Components Framework for Evaluating Implementation of Competency-Based Medical Education Programs. Acad Med. 2019 Jul;94(7):1002-1009.

Small Group Exercise

How would you judge your program's effectiveness on the core components of CBME?

Outcome Competencies	Sequenced Progression	Tailored Learning Experiences	Competency-focused Instruction	Programmatic Assessment (using Systems Thinking)

THINKING DEVELOPMENTALLY ABOUT ASSESSMENT

General Competency Framework

General Competencies
Patient Care and Procedural Skills
Medical Knowledge & Clinical Reasoning
Professionalism
Interpersonal Skills & Communication
Practice-Based Learning & Improvement
Systems-based Practice

Love them or hate them, competencies have required GME to focus on important abilities long neglected in healthcare

If not competencies to specify the educational outcomes… then what would you replace it with?

Competencies

- Competency frameworks are just that – organizational *frameworks to guide* curriculum and assessment
  - Help build *shared mental models*
- Do *not* represent the totality of a discipline or all professional development
- Help define the *educational outcomes* (abilities) of individuals

Learning Curves

From Pusic, et. al. Acad Med. 2014

Dreyfus Developmental Stages

Dreyfus Stage	Description (clinical reasoning example)
Novice	Rule driven; analytic thinking; little ability to prioritize information
Advanced Beginner	Able to sort through rules based on experience; analytic and non-analytic for some common problems
Competent	Embraces appropriate level of responsibility; dual processing of reasoning for most common problems; can see big picture; Complex problems default to analytic reasoning. Performance can be exhausting.
Proficient	More fully developed non-analytic and dual process thinking; comfortable with evolving situations; able to extrapolate; situational discrimination; can live with ambiguity
Expert	Experience in subtle variations; distinguishes situations

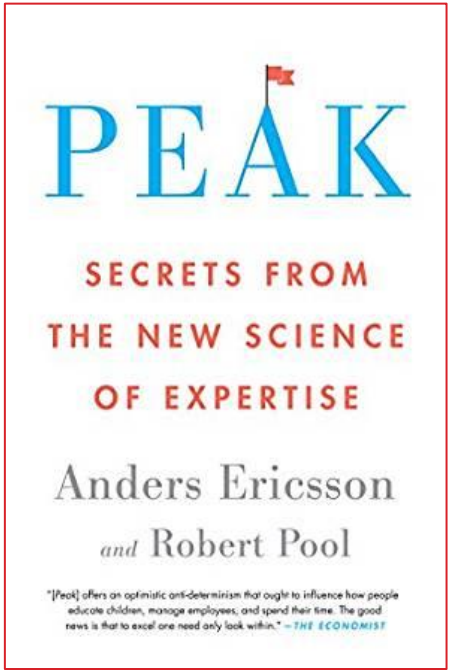
Dreyfus Developmental Stages

Stage of Learning	Learning Steps	Learner Characteristics
4. Proficiency	• Rules and principles are replaced by situational discrimination • Emotional responses to success or failure build intuitive responses that replace reasoned ones	• Learner immediately sees the goal and salient features • Learner reasons how to get to the goal by applying rules and principles
5. Expert	• Gains experience with increasingly subtle variations in situations • Automatically distinguishes situations requiring one response from another	• Immediately sees the goal and what must be done to achieve it • Builds on previous learning experiences

From Dreyfus, HL. *On the Internet: Thinking in Action*. 2001. Routeledge, New York.

Deliberate Practice

- “Individualized training activities especially designed by a coach or teacher to improve specific aspects of an individual’s performance through repetition and successive refinement.”
- Requires a reasonably well-developed field. *Clear mental representations of the tasks of the field are essential.*



Mastery-Based Learning

- Excellence is expected and achievable by all learners who are able, motivated, and work hard
- Little to no variation in measured outcomes
- Learning in any domain depends on learning a sequence of less complex components
- If learners receive optimal quality of instruction and learning time required, the majority of learners should attain mastery.

McGaghie WC. Mastery Learning: It Is Time for Medical Education to Join the 21st Century. Acad Med. 2015;90:1438–1441.

Shared Mental Models

"Shared understandings or representations of the goal of the team, individual team member tasks, and how team members will coordinate to achieve their common goals; individual team members can have varying degrees of overlap or 'sharedness' among their mental models of the team."

Mental Models (slideshare.net)

Edgar L, et. al. Better decision-making: shared mental models and the clinical competency committee. J Grad Med Educ. 2021

The Understanding Problem

In many areas of educational programs, there are likely:

- Incompletely developed robust mental representations of clinical practice;
- Highly variable conceptions of optimal clinical practice; or,
- Faculty assessors and coaches with variable skills

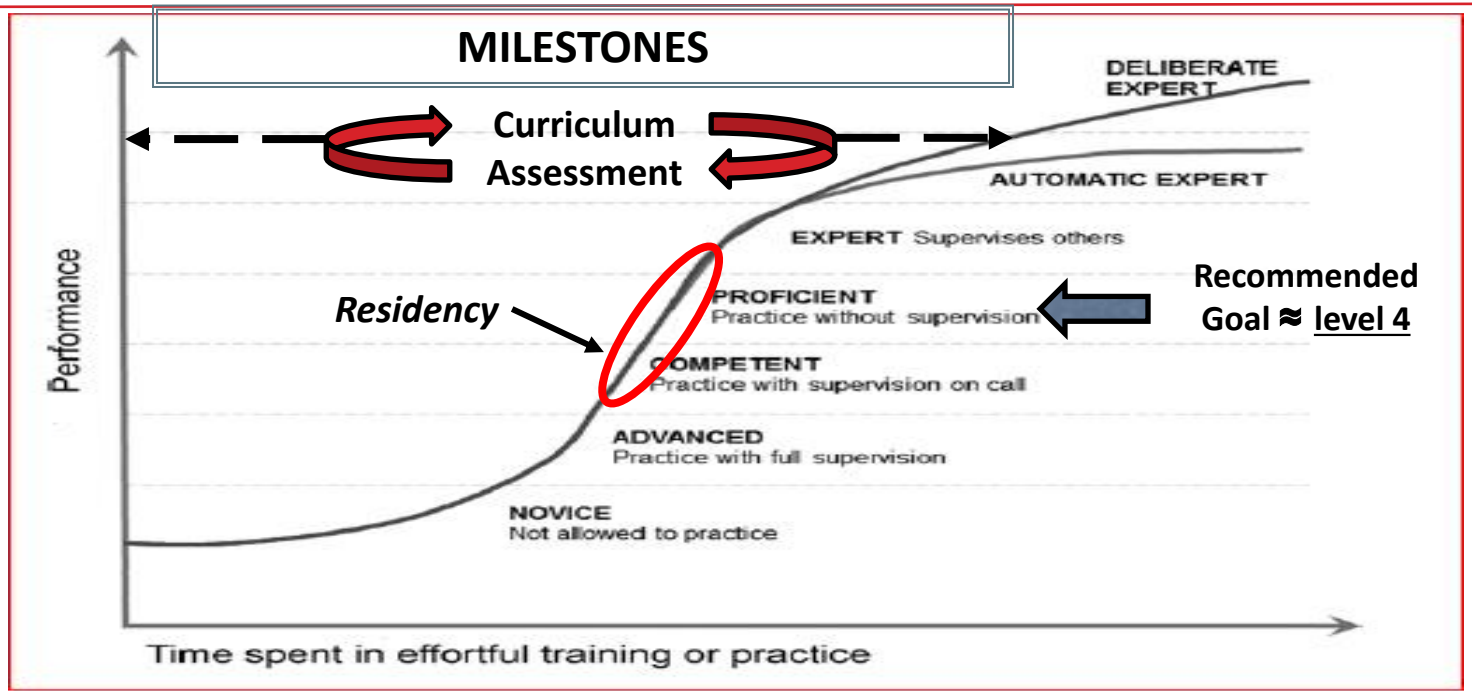
Small Group Exercise

How are you incorporating "developmental thinking" into your assessment program?

What is your faculty's mental model (understanding) of professional development?

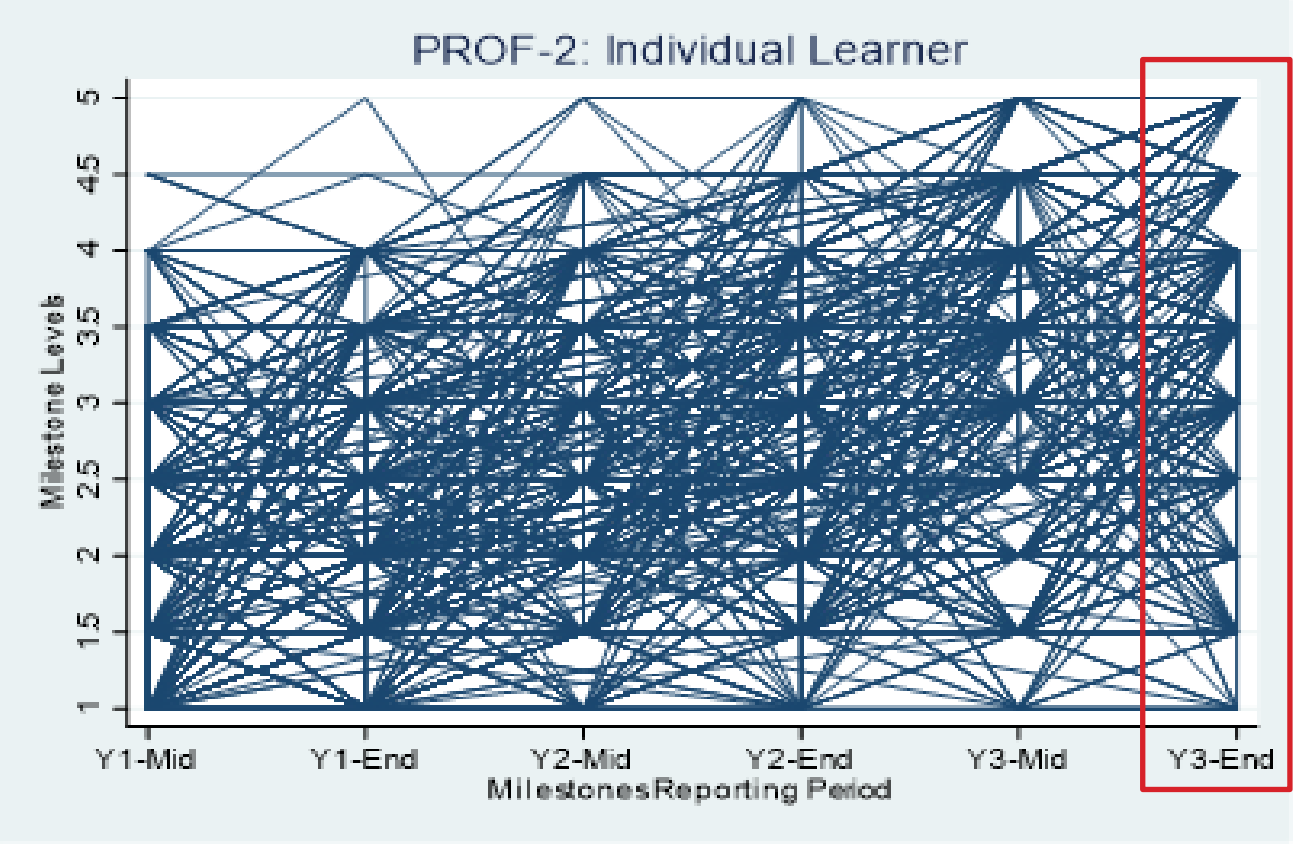
MILESTONES AND ENTRUSTMENT IN CBME

Learning Curves and Milestones



From Pusic, et. al. Acad Med. 2014

Developmental Trajectories: Milestone 1.0 Example
PROF-2: Demonstrates Professional Conduct and Accountability



Slide courtesy of
Dr. Yoon Soo Park

Trust

"Trust involves the confident expectation that a person can be relied on to honour [sic] implied or established commitments to an individual and to protect the individual's interest(s).

It renders the individual vulnerable to the extent (s)he cannot oversee or control the actions of the other, on whose expertise or integrity (s)he may depend."

Photo from www.freepik.com

From ten Cate, et al., Entrustment decision making in clinical training. Acad Med. 2016; 91: 191-98

Ad Hoc Entrustment

Ad Hoc

- In the moment
- Usually based on a mix of estimated trustworthiness, risk of situation, urgency, suitability of task
- Does not necessarily set a precedent for future decisions

Summative and Scheduled Entrustment

Summative

- Grounded in sufficient and robust assessment
- Leads to supervision, licensing, and certification decisions

Scheduled

- Night float; PGY transitions

Entrustable Professional Activities (EPAs)

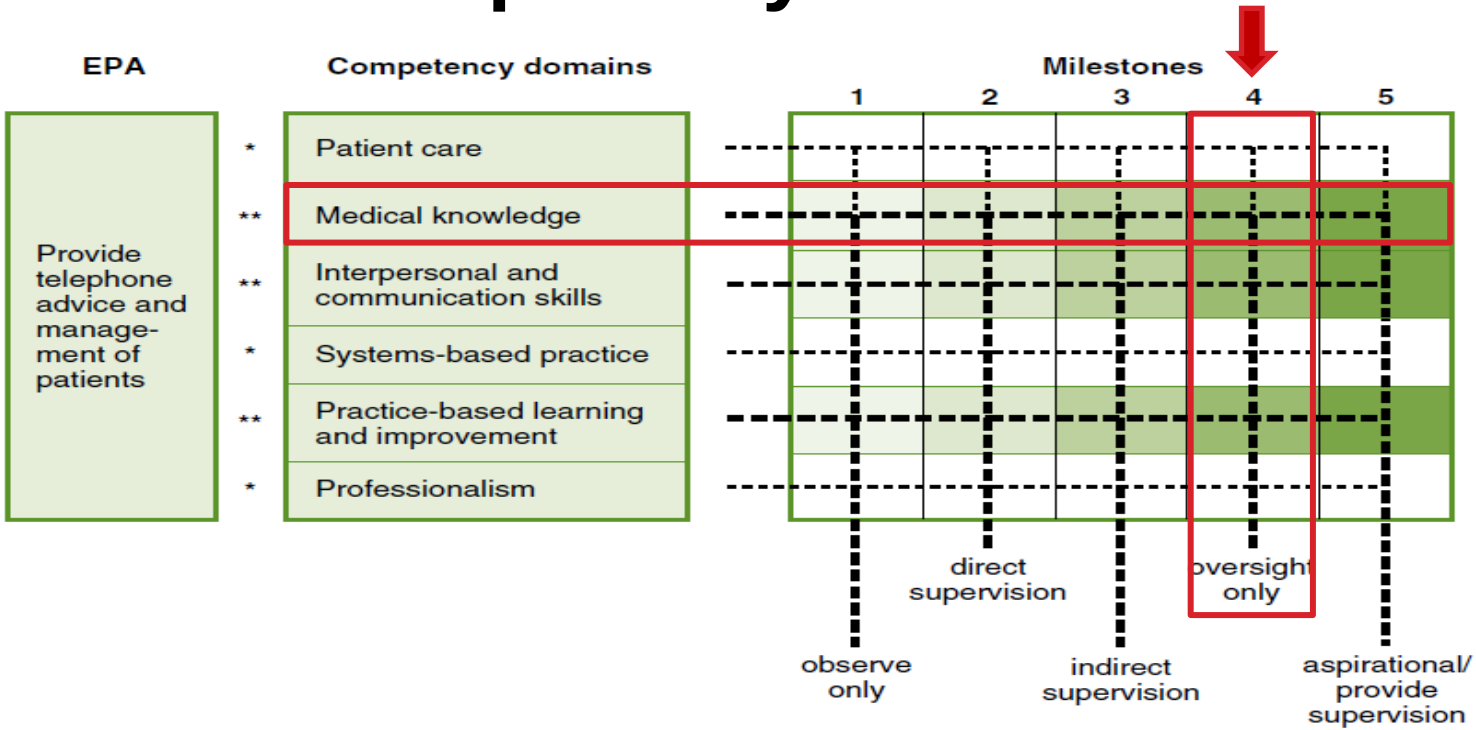
- Represent the routine *professional* life activities of healthcare professionals based on their discipline
- Enstrustable: “a practitioner has demonstrated the necessary knowledge, skills, and attitudes to be *trusted* to perform this activity *[unsupervised]*.”

Ten Cate O, Scheele F. Competency-based postgraduate training: can we bridge the gap between theory and clinical practice? Acad Med. 2007; 82(6):542–547.

Competencies vs. EPAs

- Competencies define the core *abilities* of the individual (educational outcomes)
  - Milestones describe *developmental narrative steps of competencies*
- EPAs define the core *activities* health professionals perform in daily practice
- Competencies are the *abilities* needed by the individual to effectively perform the professional *activity (or EPA)*

EPAs and Competency-based Milestones



• **Fig. 1.1** Using milestones to determine an appropriate level of supervision for an entrustable professional activity (EPA).

Alignment of Developmental Models

Milestone Level	Dreyfus Stage	Learner Behavior	Transition to Practitioner	Level of Supervision
1	Novice	Doing what is told; rule driven	Intro to clinical practice	Observation, no entrustment
2	Advanced Beginner	Comprehension	Guided clinical practice	Act under direct supervision
3	Competent	Application to common practice	Early independence	Act under indirect supervision
4	Proficient	Application to uncommon practice	Full unsupervised practice	Clinical oversight
5	Expert	Experienced; up-to-date clinician	Aspirational growth	Supervises others

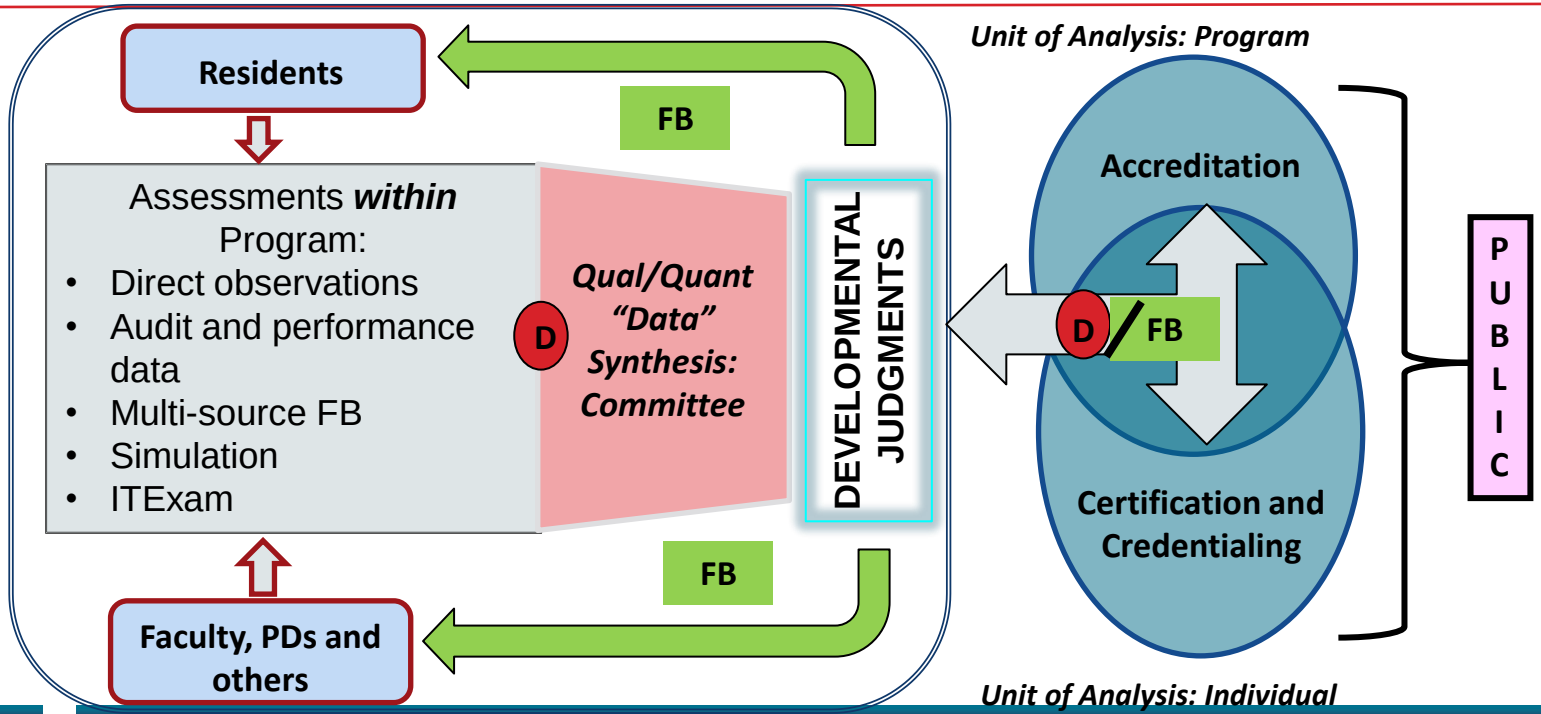
Small Group Exercise

How does your program make enstrustment decisions?

How does your program decide when a learner receives a change in supervision?

PROGRAMMATIC ASSESSMENT

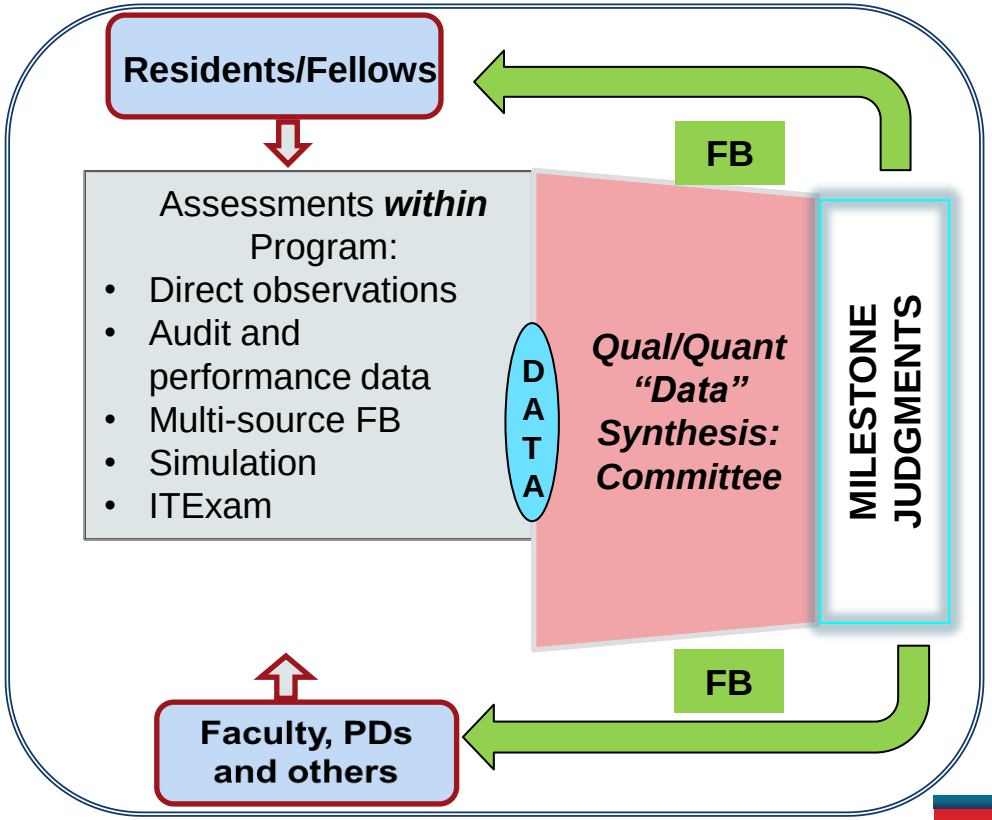
The GME Assessment "System"



Holmboe, Eric S. MD; Batalden, Paul MD. Achieving the Desired Transformation: Thoughts on Next Steps for Outcomes-Based Medical Education. Academic Medicine 90(9):p 1215-1223, September 2015.

What's an Assessment Program?

- A group of related assessment activities (or methods) managed in a coordinated manner
- Integrated assessment activities have a common goal or success "vision"



UCSF Programmatic Principles

1. Centrally coordinated plan for assessment aligns and supports a curricular vision
2. Multiple assessment tools used longitudinally generate multiple data points
3. Learners require ready access to information-rich feedback to promote reflection and informed self-assessment

Hauer KE, O'Sullivan PS, Fitzhenry K, Boscardin C. Translating Theory into Practice: Implementing a Program of Assessment. Acad Med. 2018 Mar;93(3):444-450.

UCSF Programmatic Principles

4. Coaching is essential to facilitate effective data use for reflection and learning planning
5. The program of assessment fosters self-regulated learning behaviors
6. Expert groups make summative decisions about grades and readiness for advancement

Hauer KE, O'Sullivan PS, Fitzhenry K, Boscardin C. Translating Theory into Practice: Implementing a Program of Assessment. Acad Med. 2018 Mar;93(3):444-450.

Conclusions

- The ultimate goal is to improve outcomes for patients and communities by improving educational outcomes
- Moving to criterion-referenced, developmentally-focused assessments is challenging but important
- Learning curves/trajectories vary among learners and by program

THANK YOU

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