Intro to Competency Based Medical Education: From Theory to Practice

Regina Bray Brown, MD, MHPE
Sandi Moutsios, MD

TRIZ Exercise – 5 min

Design a training program that would ensure that every graduate of the program is ***unprepared*** *(i.e. incompetent) to provide high quality, safe, 21st century healthcare in your setting.*

” Every act of creation is first an act of destruction."– Pablo Picasso

Southeast Hub: Developing Faculty Competencies in Assessment

Speakers: Kati Beben, MD, Molly Benedum, MD, Regina Bray Brown, MD, MHPE, Sandi Moutsios, MD, Monica Newton, DO, MPH, Varsha Songara, MD, MHPE, Daniel Yoder, Jr. MD, and Kathleen Young, PHD, MPH, LP, ABPP

Planners/Facilitators: Kati Beben, MD, Molly Benedum, MD, Regina Bray Brown, MD, MHPE, Sandi Moutsios, MD, Kate Hatlak, EdD, Monica Newton, DO, MPH, Varsha Songara, MD, MHPE, Daniel Yoder, Jr. MD, Kathleen Young, PHD, MPH, LP, ABPP, and Lagena Rupe

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.

Additional Disclosures

This workshop content was originally created by Eric Holmboe and adapted by Sandi Moutsios, then further adapted by us for this year's course.

Sandi works part-time for the ACGME supporting the regional hub courses.

Accreditation Council for Graduate Medical Education

Sandi works part time for the Academy of Communication in Healthcare (ACH) doing Relationship-Centered Communications (RCC) Skills training.

Academy of Communication in Healthcare

Goal

The goal of this session is to build a shared understanding of competency-based medical education and how it can be used to design, assess, and improve training programs in support of learner development and high-quality patient care.

Objectives

- By the end of this session, participants will be able to:
  - Explain competency-based medical education and why an outcomes-based approach matters in today's training environment
  - Describe how CBME shifts training from time-based requirements to developmental progression
  - Reflect on strengths and gaps in their own program's approach to teaching and assessment within a CBME framework
  - Describe how effective assessment systems support learner development, coaching, and continuous program improvement

Competency Based Medical Education

What is it?

What does it mean to you?

"Competency-based education (CBE) is an approach to preparing physicians for practice that is fundamentally oriented to graduate outcome abilities 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-centredness."

Frank JR, Mungroo R, Ahmad Y, Wang M, De Rossi S, Horsley T. Toward a definition of competency-based education in medicine: a systematic review of published definitions. *Med Teach*. 2010;32(8):631-637.

Southeast Hub
FACULTY DEVELOPMENT LEARNING NETWORK

CBME

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

Frank, JR, Snell LS, ten Cate O, et. al. Competency-based medical education: theory to practice. Med Teach. 2010; 32: 638–645

What are the outcomes?
What is the framework?

Outcome

- Competent physicians who can practice unsupervised and provide excellent, high-quality care

Framework (for GME)

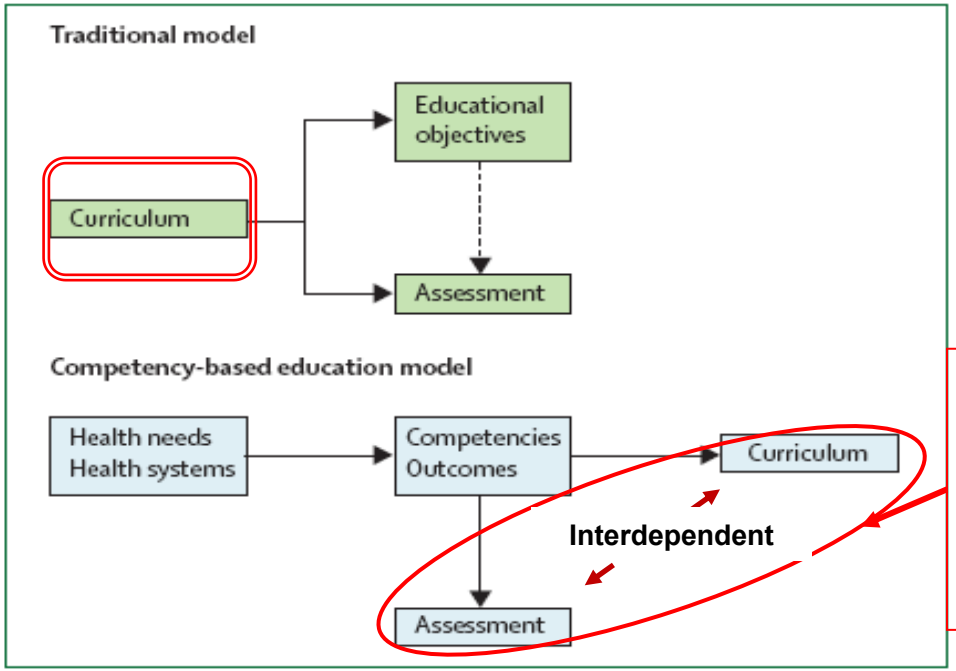
- ACGME(i) Six Core Competencies
  - Sub-competencies with Milestones (Defined by subspecialty)
- Good Doctor Framework
- CanMeds

Frank, JR, Snell LS, ten Cate O, et. al. Competency-based medical education: theory to practice. Med Teach. 2010; 32: 638–645

ACGME Core Competencies

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

CBME: Starts with what *patients* need



Assessment and Curriculum must be integrated: Assessment drives learning; learning drives assessment

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

VARIABLE	EDUCATIONAL PROGRAM	
	STRUCTURE/PROCESS-BASED	COMPETENCY-BASED
DRIVING FORCE FOR CURRICULUM	Content – knowledge acquisition	Outcome – knowledge application
DRIVING FORCE FOR PROCESS	Teacher	Learner
PATH OF LEARNING	Hierarchical (teacher → student)	Non-hierarchical (teacher ⇔student)
RESPONSIBILITY FOR CONTENT	Teacher	Student and teacher
GOAL OF EDUCATIONAL ENCOUNTER	Knowledge acquisition	Knowledge application
TYPICAL ASSESSMENT TOOL	Single subjective measure	Multiple objective measures ("evaluation portfolio")
ASSESSMENT TOOL	Proxy	Authentic (mimics real tasks of profession)
SETTING FOR EVALUATION	Removed (gestalt)	"In the trenches" (direct observation)
EVALUATION	Norm-referenced	Criterion-referenced
TIMING OF ASSESSMENT	Emphasis on summative	Emphasis on formative
PROGRAM COMPLETION	Fixed time	Variable time

Carraccio C, Wolfsthal SD, Englander R, Ferentz K, Martin C. Shifting paradigms: from Flexner to competencies. Acad Med. 2002;77(5):361-367.

So now we have established the what, lets move on to the WHY?

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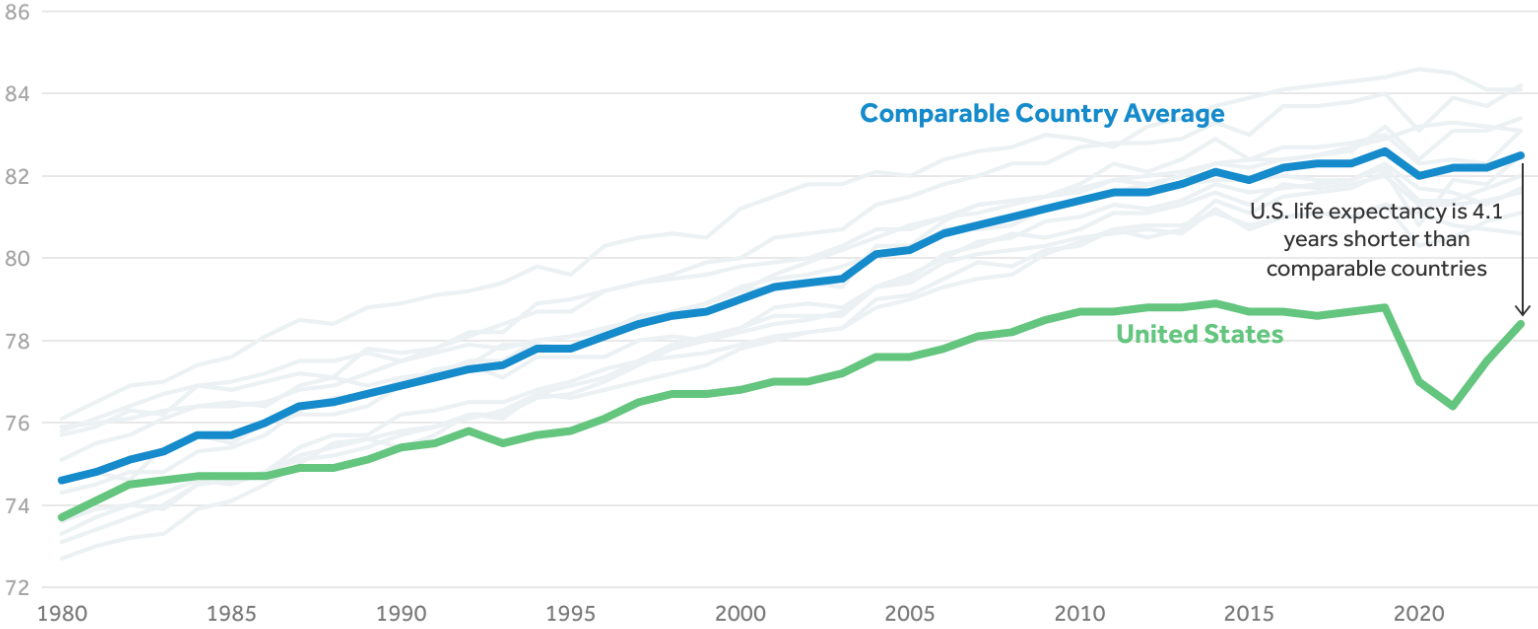
Audience Response

What comes to mind when you think about our current health care outcomes?

Life expectancy at birth, in years, 1980-2023



Notes: Comparable countries include Australia, Austria, Belgium, Canada, France, Germany, Japan, the Netherlands, Sweden, Switzerland, and the U.K. 2023 U.K. life expectancy data is only for England and Wales. See Methods section of "How does U.S. life expectancy compare to other countries?"

Source: KFF analysis of CDC, OECD, Australian Bureau of Statistics, German Federal Statistical Office, Japanese Ministry of Health, Labour, and Welfare, Statistics Canada, and U.K. Office for National Statistics data

Peterson-KFF
Health System Tracker

Life expectancy and per capita healthcare spending (PPP adjusted), 2023

Country	Life expectancy ▲	Health spending, per capita
United States	**78.4**	**$13,432**
Germany	80.6	$8,441
United Kingdom	81.1	$6,023
Austria	81.6	$7,811
Canada	81.7	$7,013
Netherlands	82.0	$7,737
Belgium	82.5	$7,380
Comparable Country Average	**82.5**	**$7,393**
Australia	83.1	$6,931
France	83.1	$7,136
Sweden	83.4	$7,522
Japan	84.1	$5,640
Switzerland	84.2	$9,688

Notes: Health spending per capita data represent health consumption spending per capita. Comparable countries include: Australia, Austria, Belgium, Canada, France, Germany, Japan, the Netherlands, Sweden, Switzerland, and the U.K. 2023 U.K. life expectancy data is only for England and Wales. See Methods section of "How does U.S. life expectancy compare to other countries?"

Source: KFF analysis of CDC, OECD, Australian Bureau of Statistics, German Federal Statistical Office, Japanese Ministry of Health, Labour, and Welfare, Statistics Canada, and U.K. Office for National Statistics data

Peterson-KFF Health System Tracker

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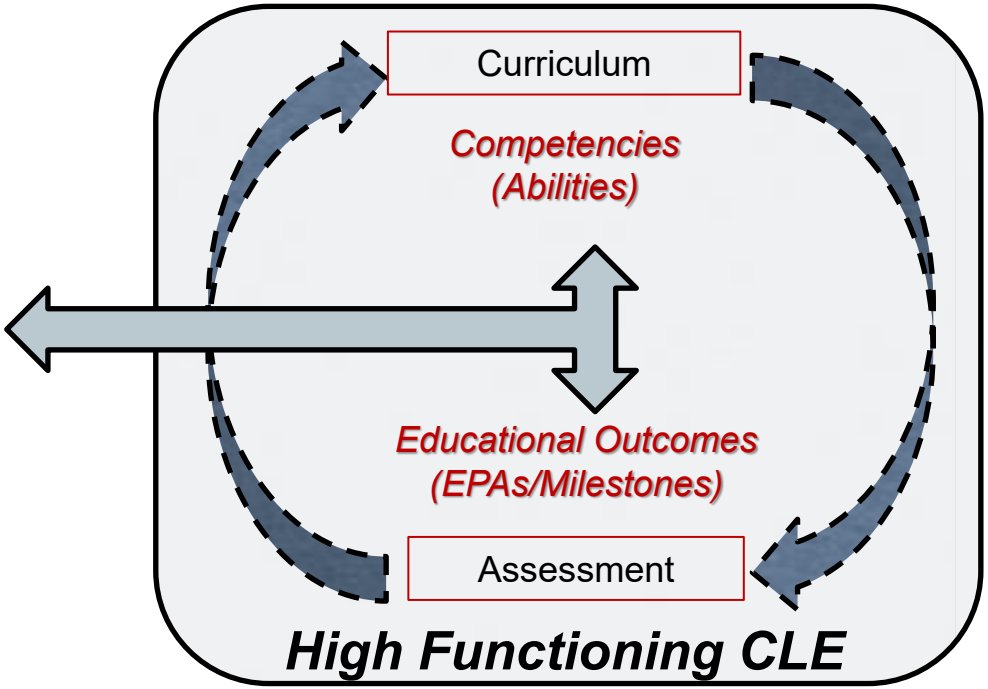
LEARNING NETWORK

The Ultimate Goal of Medical Education

Quintuple Aim



Small Group Discussion

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

Operationalizing CBME Today

An approach to preparing physicians for practice that is fundamentally oriented to graduate outcome abilities 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

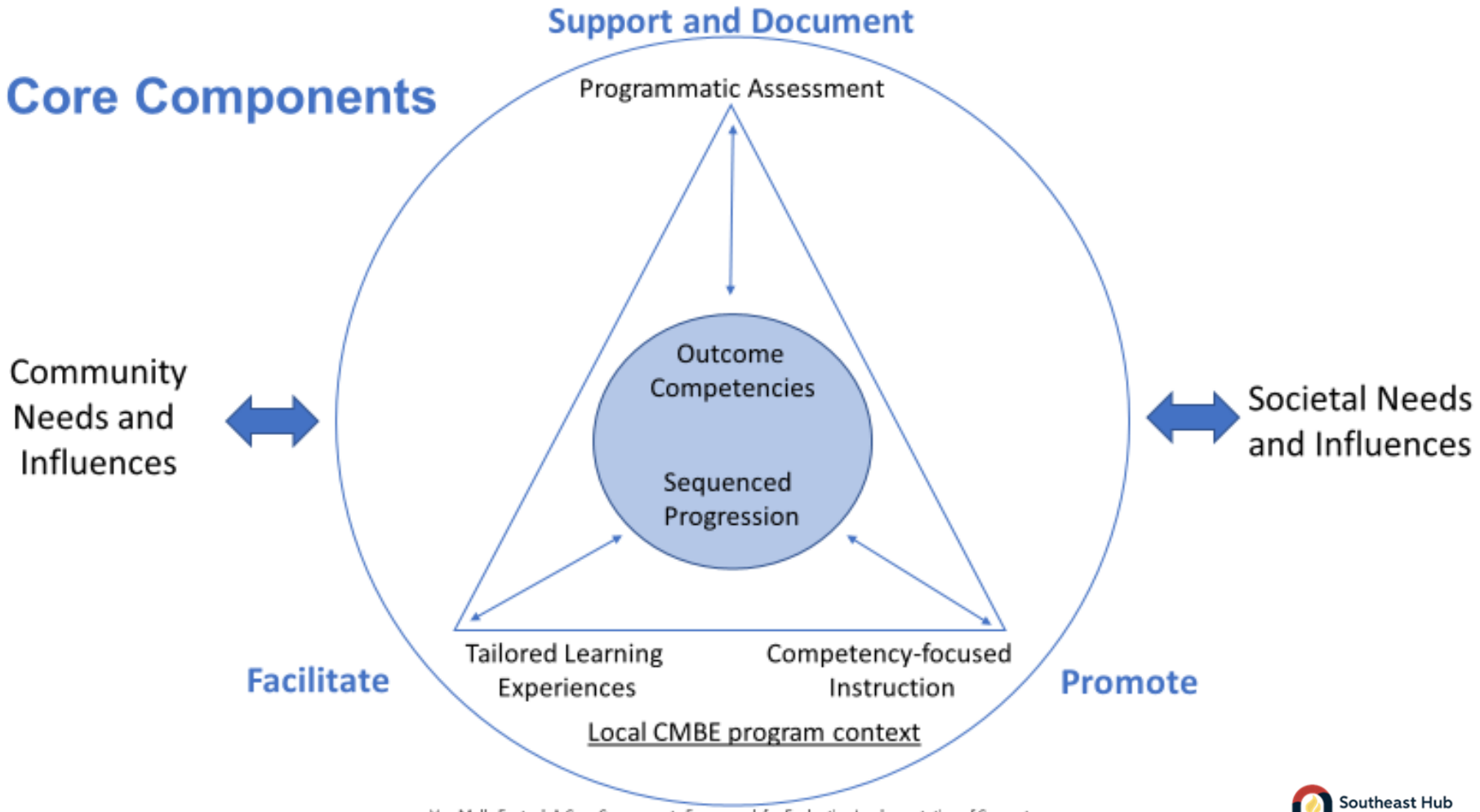
Achieving the Desired Transformation: Thoughts on Next Steps for Outcomes-Based Medical Education. Acad Med. 2015 Sep;90(9):1215-23.

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.

Core Components



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

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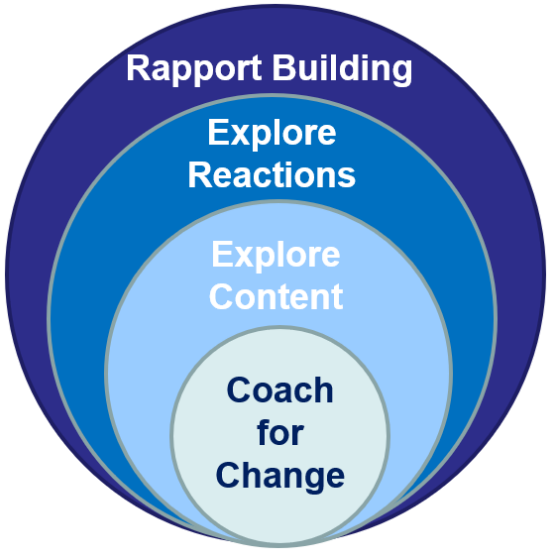
Philosophical Principles of the Core Components Framework

- Rich in feedback/coaching individualized to the learner and grounded in the 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 is your program doing on the five core components of CBME?

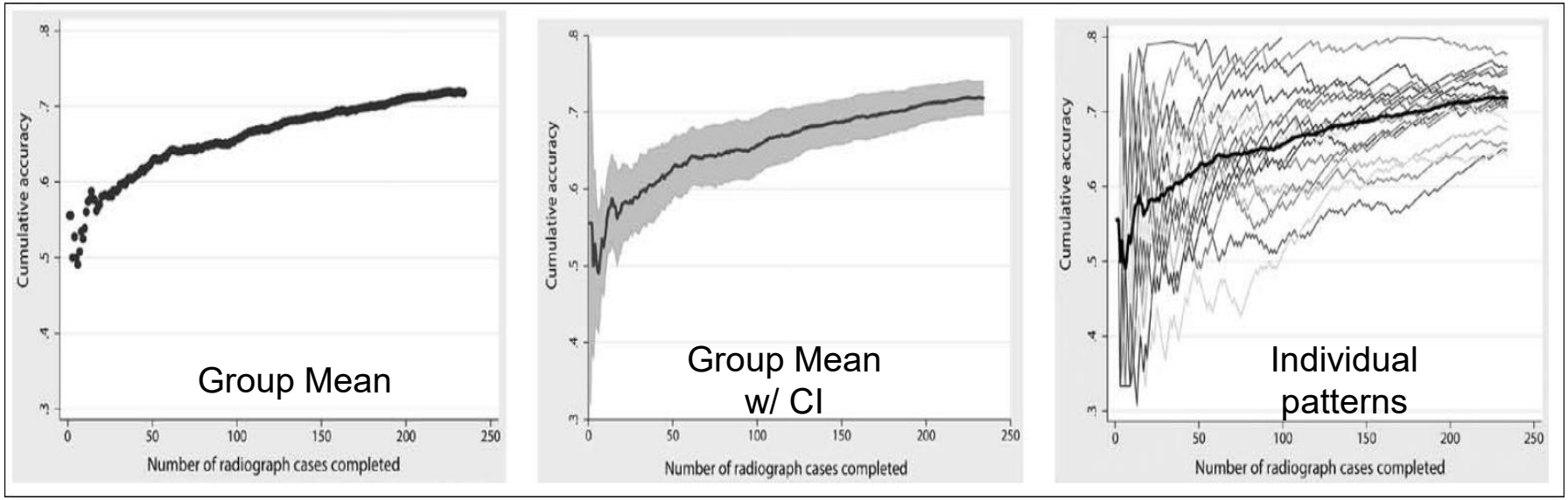
Outcome Competencies	Sequenced Progression	Tailored Learning Experiences	Competency-focused Instruction	Programmatic Assessment (using Systems Thinking)

Thinking Developmentally

Core Components Framework (CCF): Theory and Evidence Informed

Sequenced Progressively	Tailored Learning Experiences	Competency-focused Instruction
• **Expertise Theory** • Entrustment • Surface & Deep Approaches to Learning • **Mastery-based Learning**	• Situated Learning • **Deliberate Practice** • Self-regulated Learning • **Workplace-based Learning** • Professional Identity Formation	• Zone of Proximal Dev't • Constructive Friction • **Learner-Centered Teaching** • Cognitive Apprenticeship • Coaching Theory • **Growth Mindset**

Reading Radiographs: An Example



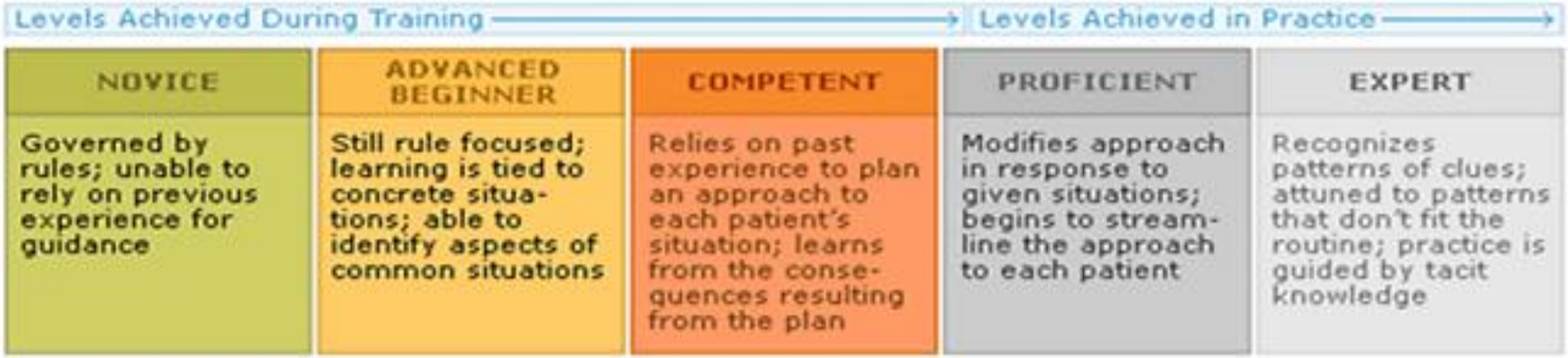
18 residents reading pediatric ankle radiographs

From Pusic, et. al. Acad Med. 2014

Learning Curves and Developmental Models

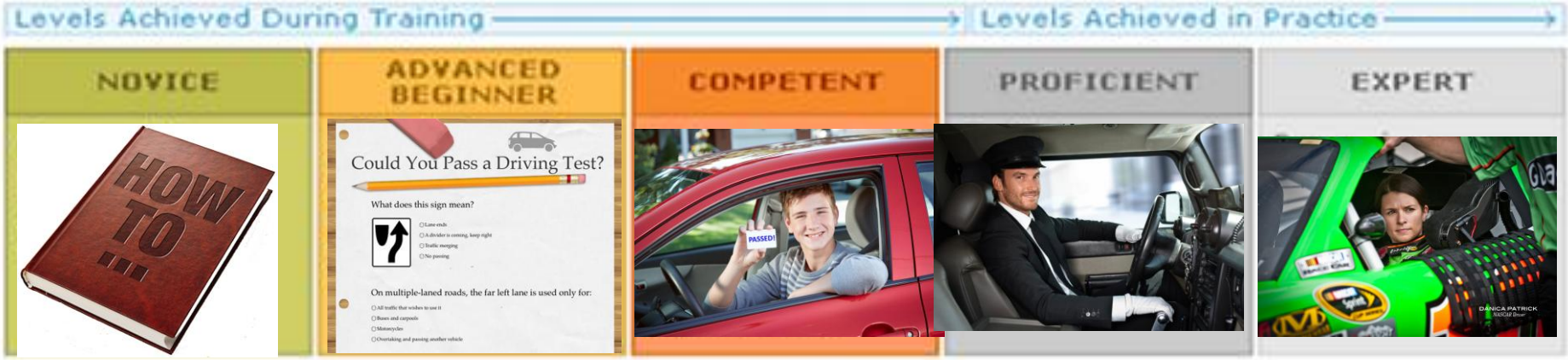
Pusic M et. al. Acad Med. 2014

Dreyfus Model of Skill Acquisition



Originally from: H. Dreyfus and S. Dreyfus. *Mind Over Machine* (New York Free Press, 1986)

Dreyfus Model of Skill Acquisition



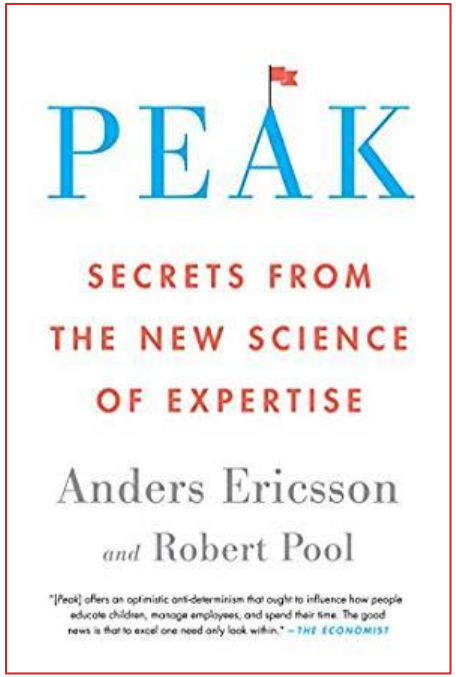
Click on each button below to assess each area (opens in a new window, please disable pop-up blockers):

Originally from: H. Dreyfus and S. Dreyfus. *Mind Over Machine* (New York Free Press, 1986)

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 field that is reasonably well developed. ***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–

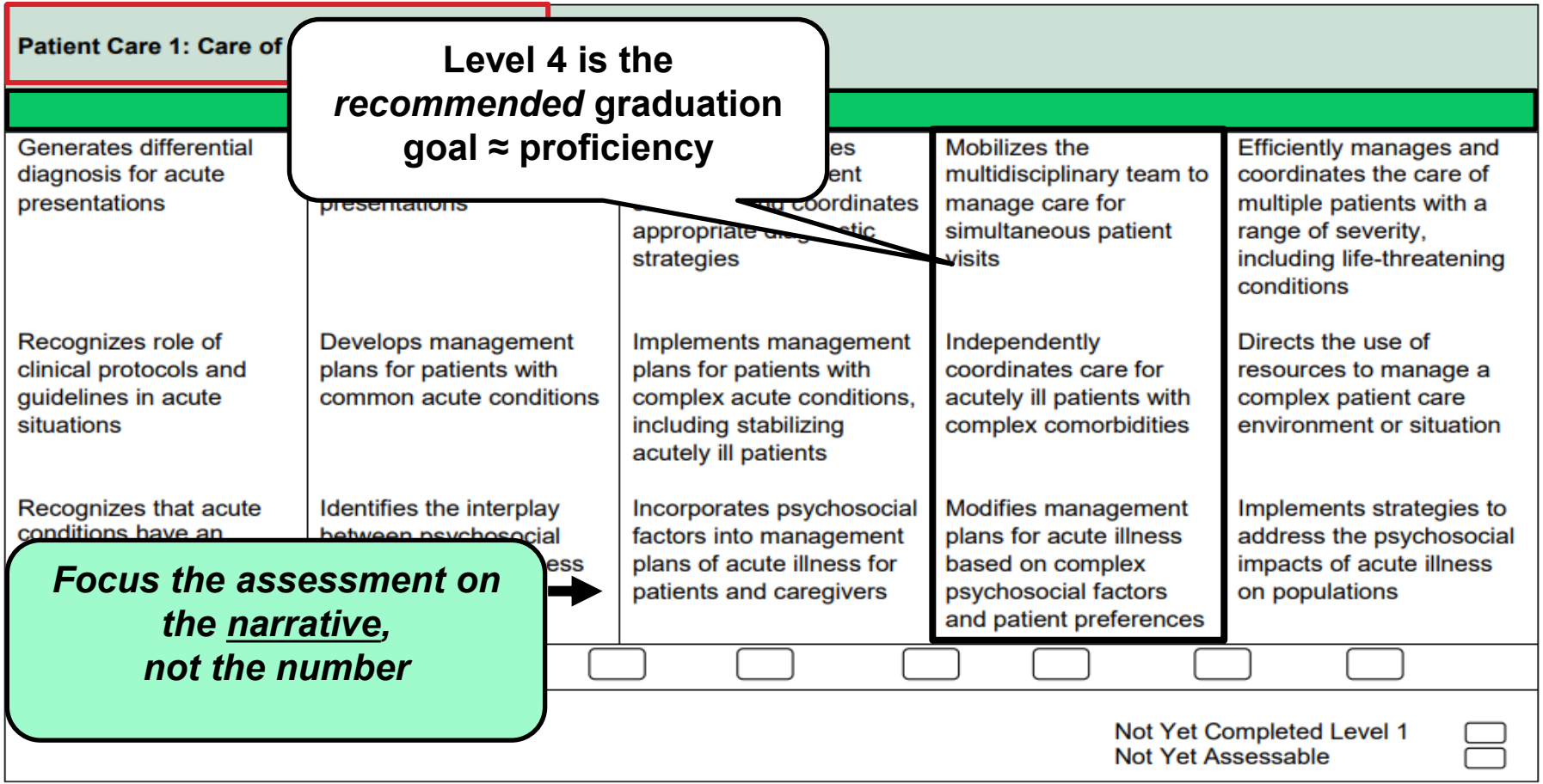
Shared Mental Models

"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

Milestone Example: Family Medicine



ACGME

Small Group – 5 min

What was this intern entrusted to do without direct supervision?

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

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.

Ad Hoc Entrustment

- 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

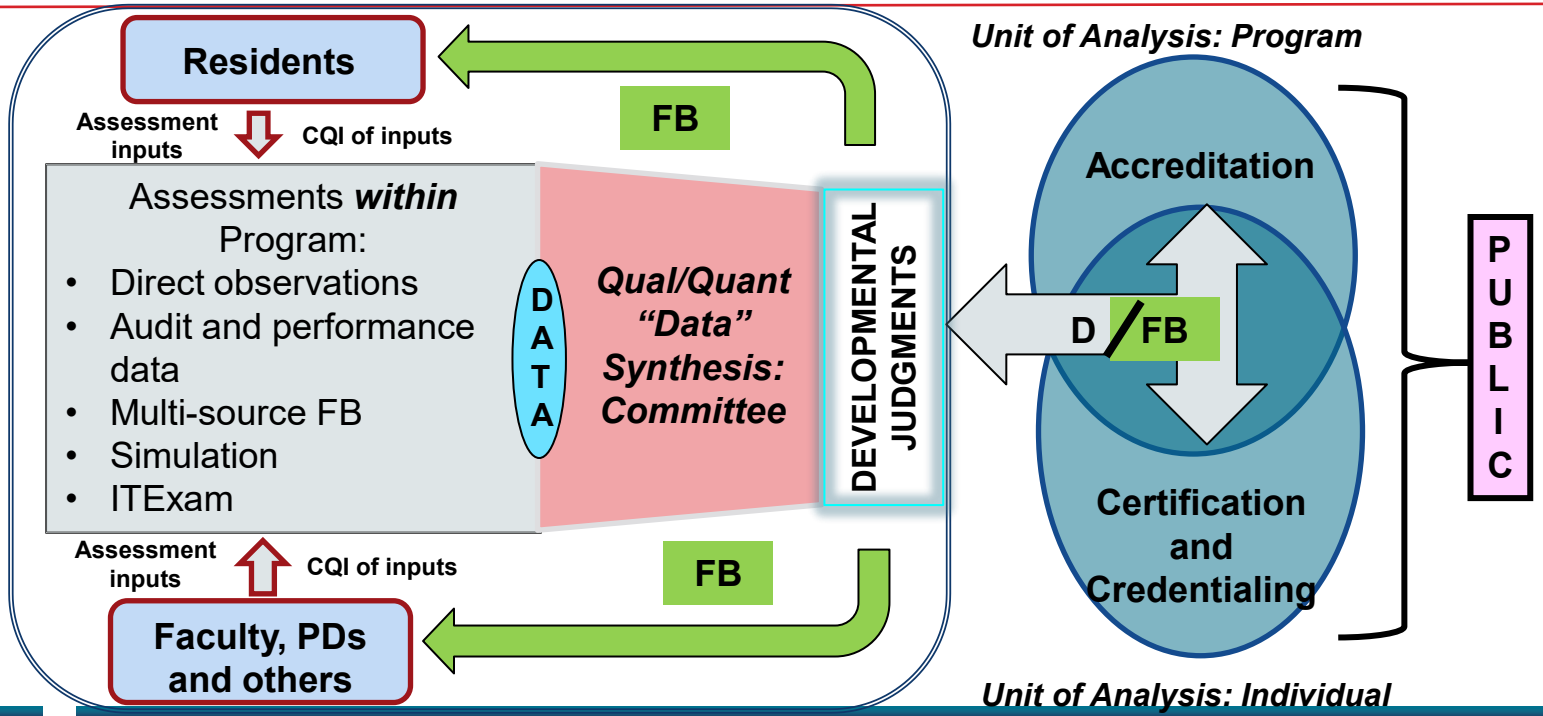
Small Group Exercise

How does your program make enstrustment decisions?

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

The Basics of 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 is a “System?”

Deming:

“Two or more interdependent 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.

Data: Minimal Assessment Components

- Faculty assessments
- Direct observations
  - *PC, ICS and MK ("in vivo")*
- Multi-source FB
  - *Prof, ICS and SBP*
- Audit and performance data
  - *PBLI and SBP*
- Simulation
  - Procedures *(PC and ICS)*
- IT Exam
  - *MK (if available)*

People: Clarity of Faculty Roles in Assessment

Frontline Faculty

Primary responsibilities:

- Provide accurate, rich, descriptive information
- Provide feedback and coaching
- Provide feedback to program for CQI

Core Faculty

Primary responsibilities:

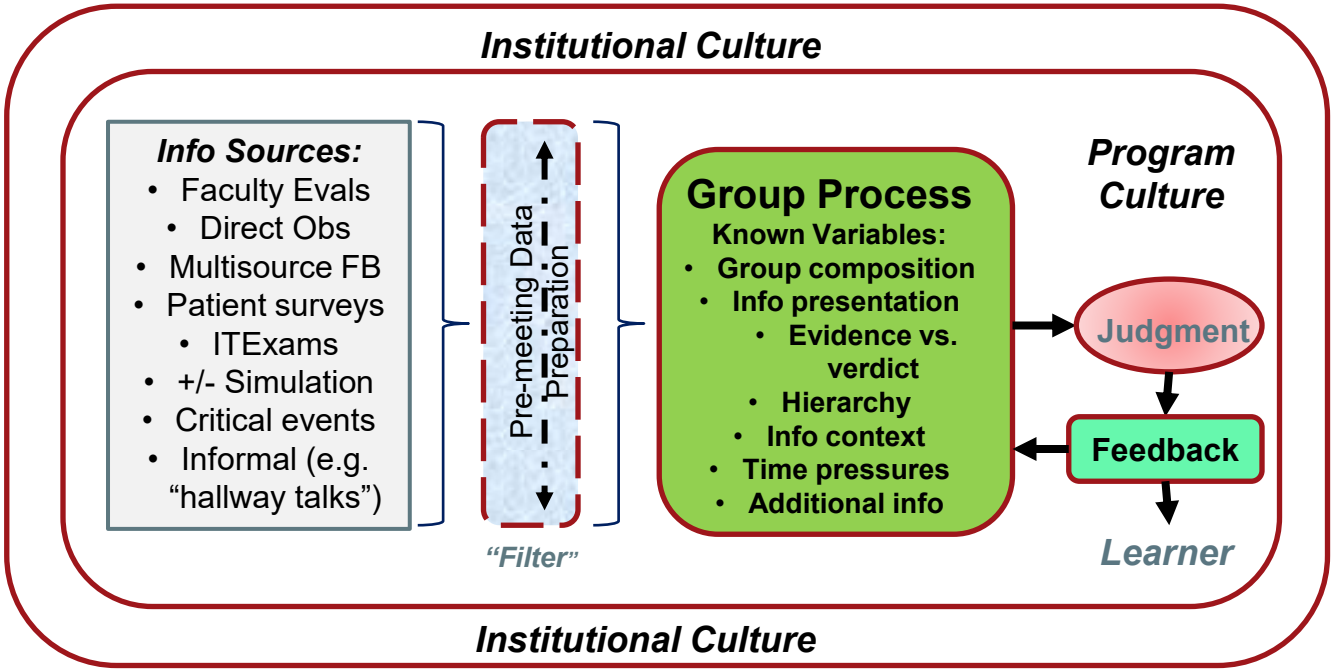
- Provide accurate, rich, descriptive information
- Understand best practices: assessment & Milestones
- Provide feedback and coaching

PD and CCC

Primary responsibilities:

- Manage assessment program
- Understand best practices: assessment & Milestones
- Synthesize and aggregate assessment data
- Provide feedback and coaching
- Perform CQI of assessment program

Group Judgment for Assessment:
Clinical Competence Committee (CCC)



UCSF Six Programmatic Principles

1. Centrally coordinated plan for assessment aligns with 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 Six 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.

Small Group Exercise

Using the Hauer Grid:

- *What is working well in your program?*
- *Why is it working well?*
- *What aspect of your assessment program do you feel needs improvement?*
- *What are any lessons from what is working well?*
- *Where are the feedback loops? Where could they be?*

Take Homes

- Competency-based medical education starts with the end in mind.
- Learning and assessment are inherently developmental.
- Assessment should drive learning forward.
- Faculty coaching and judgment matter.

Questions?

Sandi.moutsios@vumc.org

rbraybrown@capefearvalley.com