



History, present and future of CBME and EPA's

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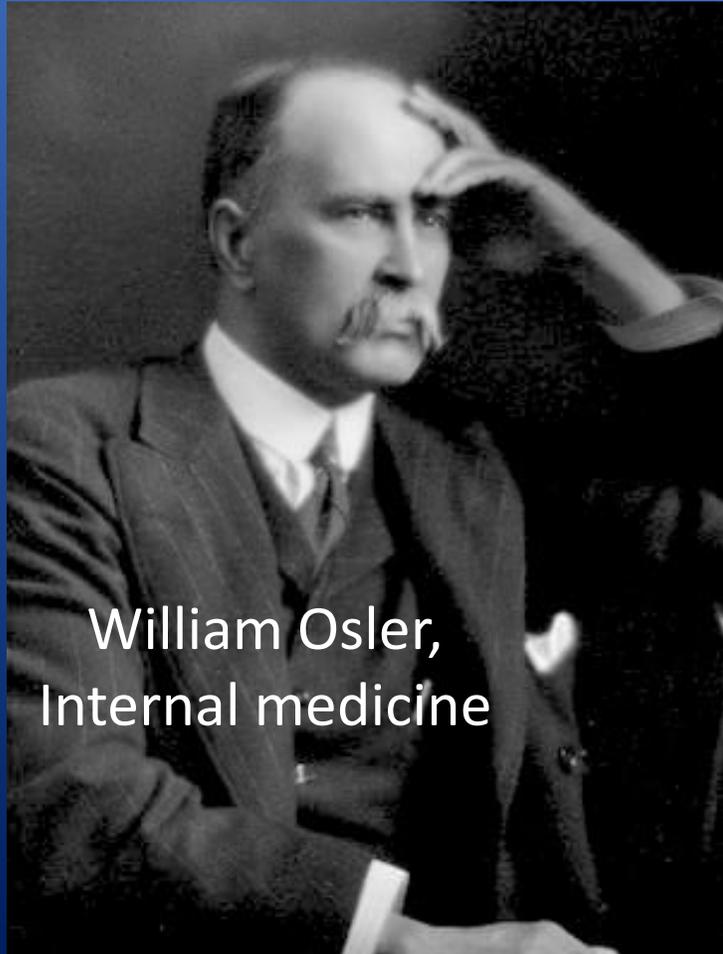
Brief history of speciality training and CBME

- 1st half 2th century: no structure, unclear objectives
- 1960s: Carroll and Bloom: Objectives and Mastery Learning
- 1970s: WHO document: Competency-based medical education
- 1980s: Libby Zion case New York; doctor's strike Canada
- 1990s: Patient safety movement (To Err is Human)
- 2000s: CanMEDS and ACGME models developed and exported
- 2010s: Operationalized with Milestones, EPAs and portfolios

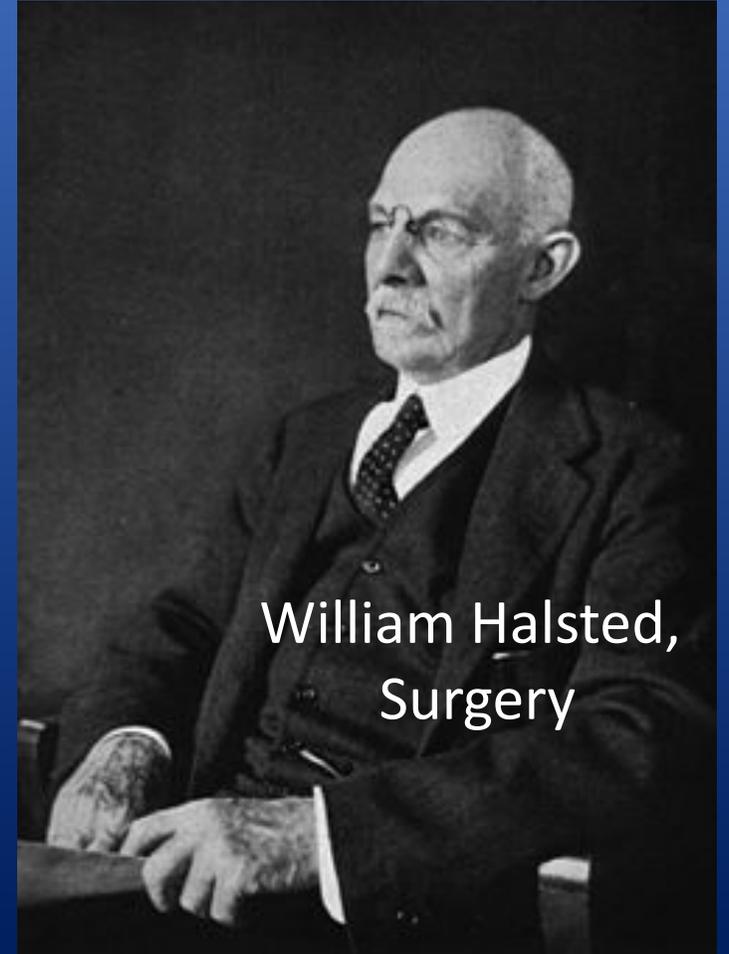


The inventors of postgraduate medical specialty training

*early 20th
Century,
John's Hopkins
University*



William Osler,
Internal medicine



William Halsted,
Surgery

“Just serve as my House-Officer for a couple of years and I will recognize you as a medical specialist”



Around 1970: first proposals for competency-based medical education

COMPETENCY-BASED CURRICULUM DEVELOPMENT IN MEDICAL EDUCATION



WORLD HEALTH ORGANIZATION

GENEVA

1978

WILLIAM C. MCGAGHIE

GEORGE E. MILLER

ABDUL W. SAJID

THOMAS V. TELDER

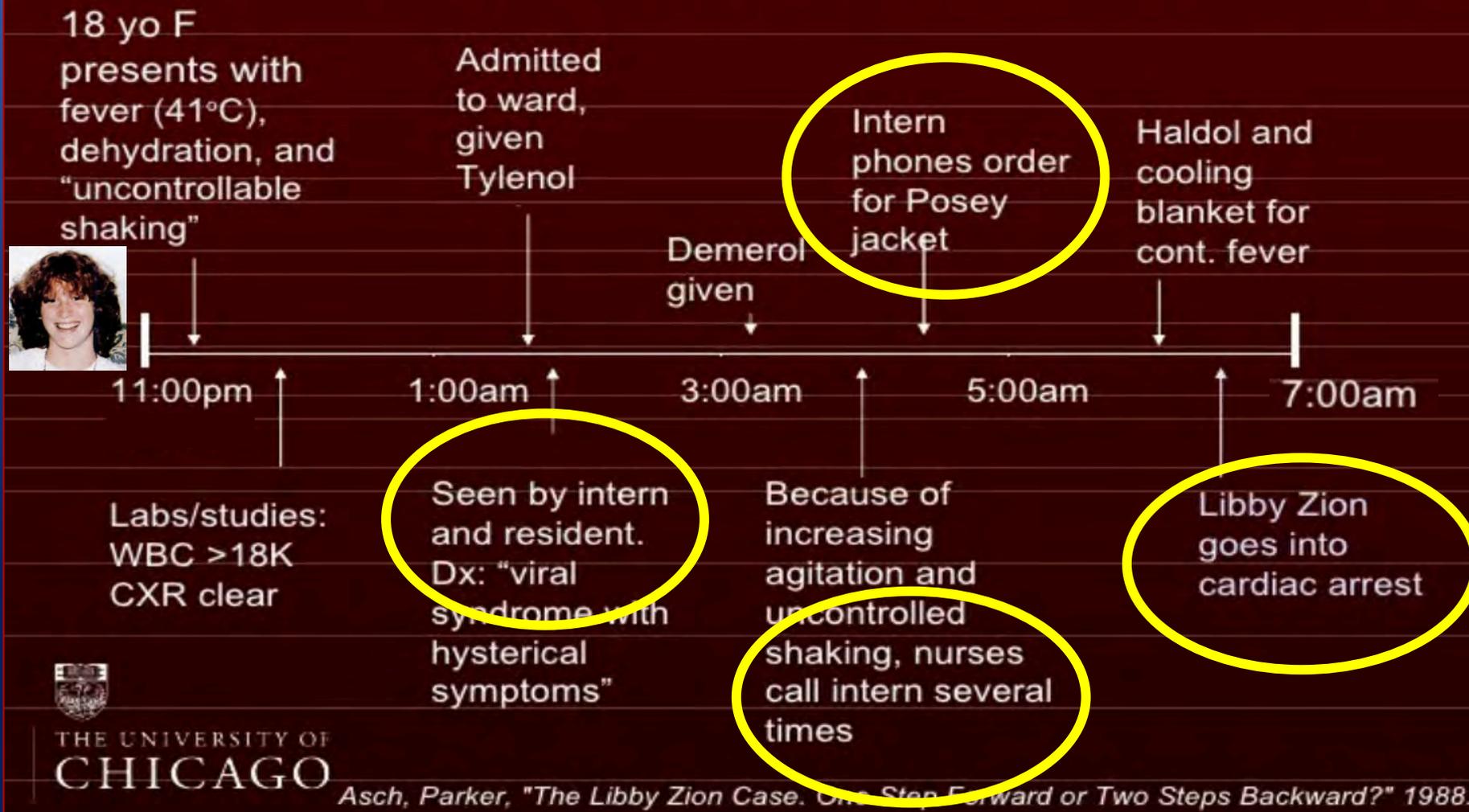
With the assistance of LAURETTE LIPSON

*Center For Educational Development
University of Illinois at the Medical Center, Chicago, IL, USA*



A student's death when attended by only trainees stirred patient safety movement in the USA

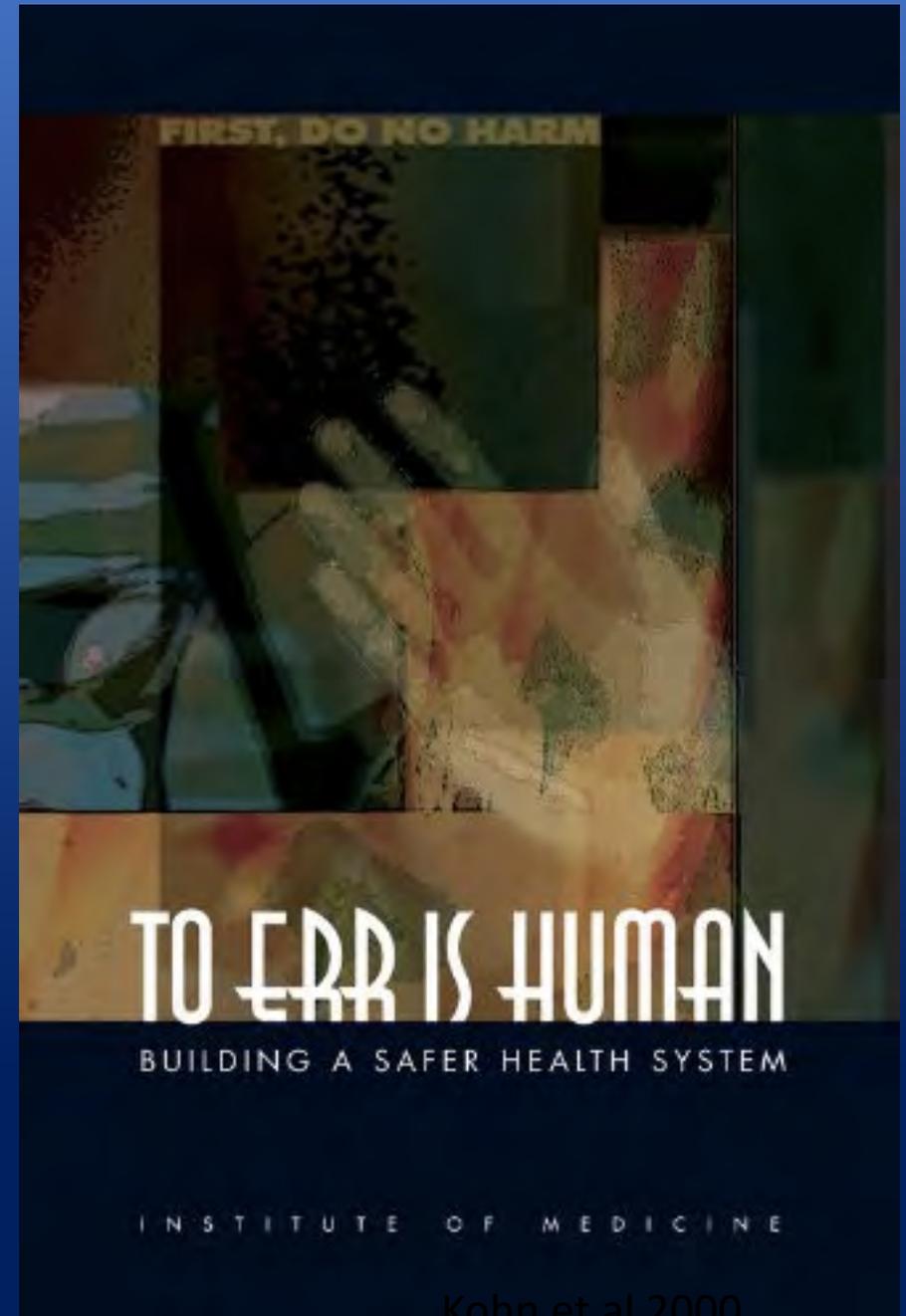
The Case of Libby Zion, March 4, 1984





1990s Patient safety movement

- Call for better competence
- Call for better assessment
- Call for better supervision
- Call for resident duty hours restrictions (to 80/wk in 1983)

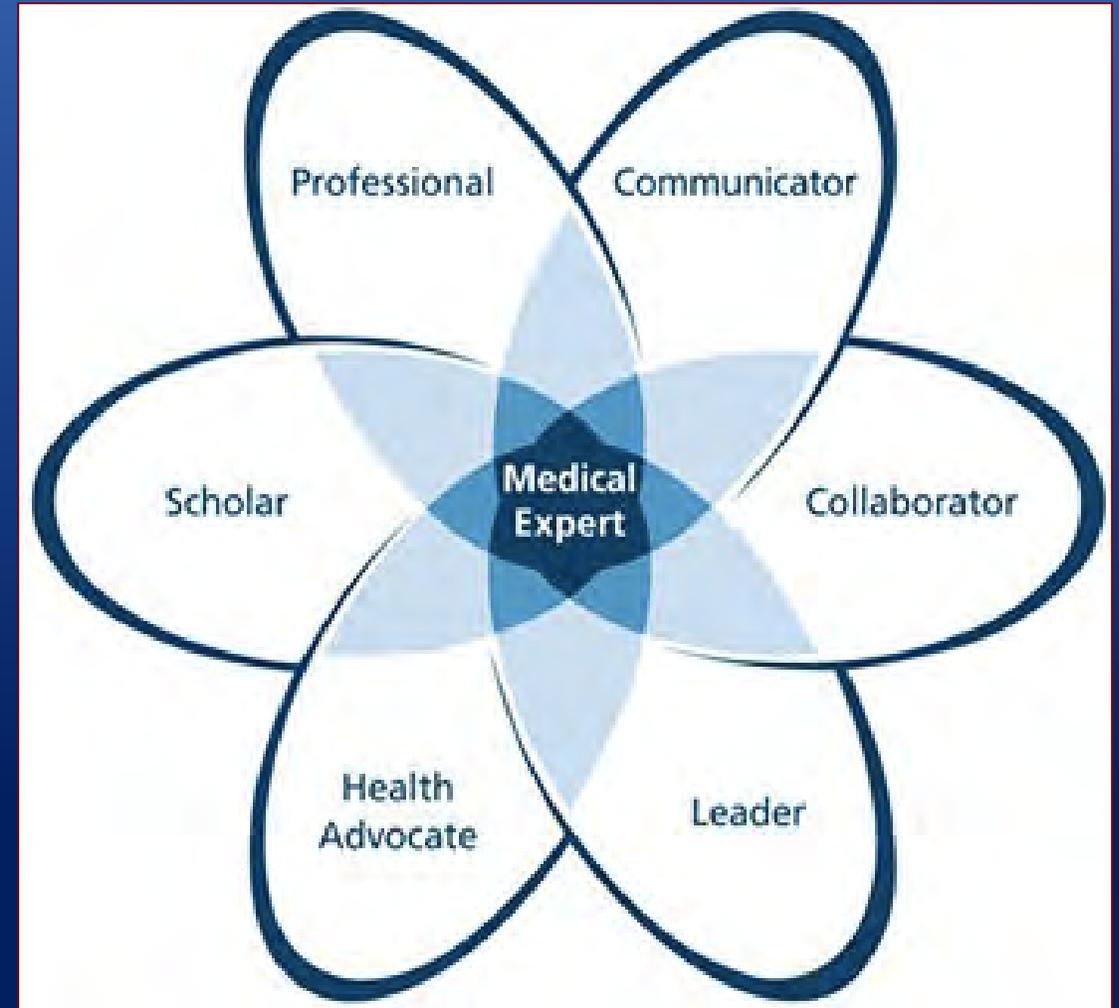


Around 2000: Competency frameworks

ACGME,
Outcome project
enhancing residency education through outcomes assessment

The Project	Forum
Competencies	Implementation
Assessment	About Us

Copyright 2000 ACGME



BJA

British Journal of Anaesthesia, July 2020, pre-publication

Would you trust your loved ones to this trainee? Certification decisions in postgraduate anaesthesia training

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Keywords: certification; entrustment; failure to fail; medical education; postgraduate medical education; specialty training; trust



Would clinical educators trust all graduating trainees with their own family members as patients?

- Many residency program directors can recollect cases signing off for completion of training even if not confident
- *Failure to fail* reasons: “time is up”; “no valid documentation to back up failure”; “failing a trainee gives us trouble”; “no tools to handle this”; “when unsure, we err for the benefit of trainee”
- The imperative of CBME: Reducing “false positive” decisions when graduating trainees for unsupervised practice



Essence of competency-based medical education

- **CBME**: Education, aimed at a standard level of proficiency for all graduates
- **Critical features** of CBME:
 - a. Clear description of standards for a “good physician/specialist”
 - b. Assessment of all medical trainees using these standards
 - c. Competence, not time, is primary reason to finalize training



A Core Components Framework for Evaluating Implementation of Competency-Based Medical Education Programs

Acad Med. 2019;94:1002-1009.

Elaine Van Melle, PhD, Jason R. Frank, MD, MA(Ed), Eric S. Holmboe, MD, Damon Dagnone, MD, MSc, MMed, Denise Stockley, PhD, and Jonathan Sherbino, MD, MEd, on behalf of the International Competency-based Medical Education Collaborators

Generally agreed 5 core components of CBME

1. Outcome-based competencies
2. Progressive sequencing
3. Tailored learning experiences
4. Competency-focused instruction
5. Programmatic assessment



CBME: appreciation and challenges

General acceptance of CBME worldwide, but..

- CBME frameworks can become analytical and detailed
- Competencies are sometimes rather abstract and general
- Clinical teachers often struggle with assessment

**The promise, perils, problems and progress of
competency-based medical education**

Claire Touchie^{1,2} & Olle ten Cate³

Medical Education 2016; 50: 93–100



What critics say

MEDICAL EDUCATION AND THE TYRANNY OF COMPETENCY

The Incapacitating Effects of Competence: A Critique

Monkey see, monkey do: a critique of the competency model in graduate medical education

MARTIN TALBOT

U.K.

A critical time for medical education: the perils of competence-based reform of the curriculum

Karen Malone · Salinder Supri

Competency-based training: who benefits?

Alexandra Brightwell,¹ Janet Grant^{2,3}

ABSTRACT

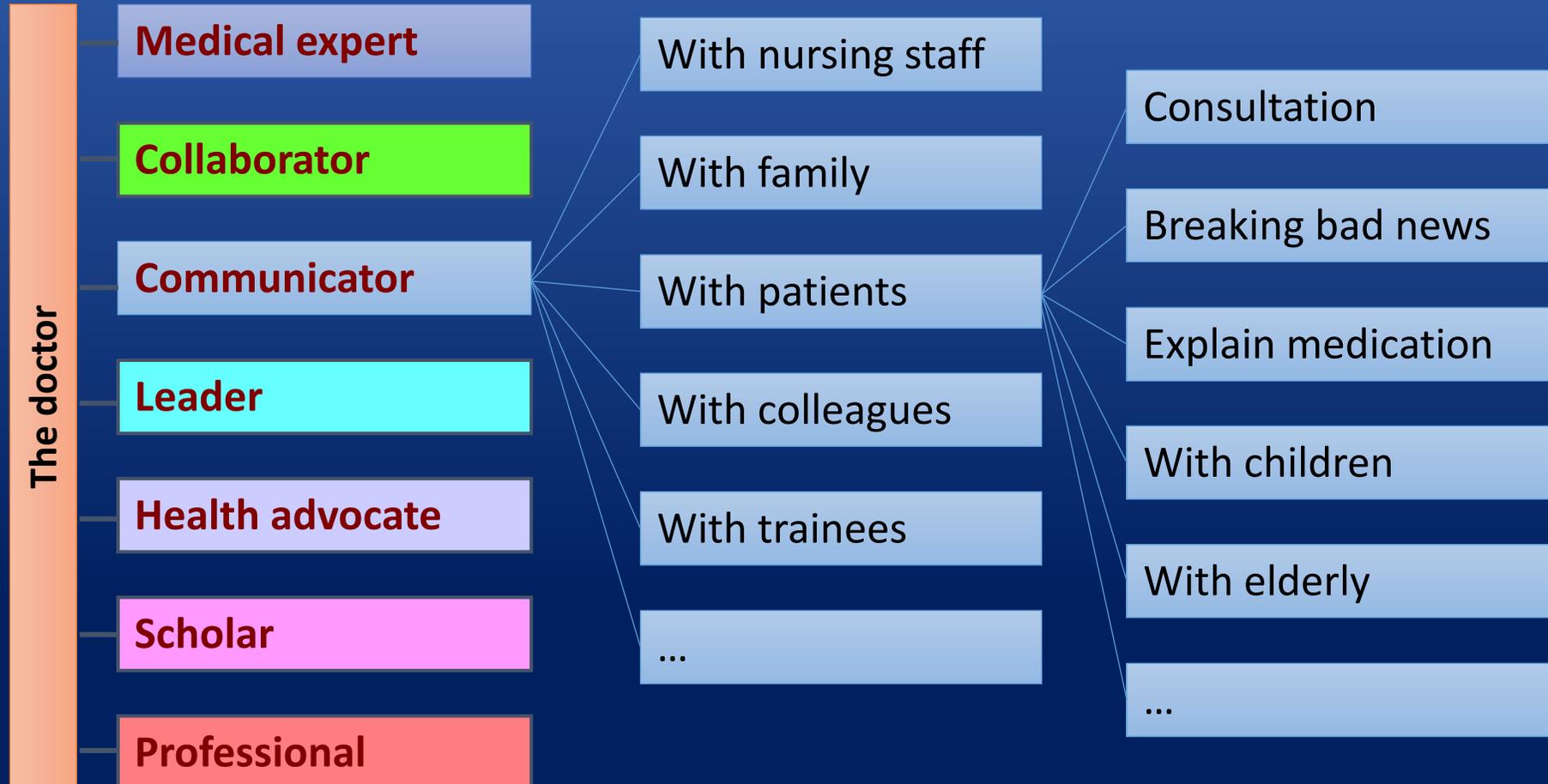
The problem with this assumption to medical education, is that being

BMJ

Competency based training is a framework for incompetence

Excellent care for patients cannot be learnt by ticking off arbitrary numbers of activities, writes Jonathan M Glass. We should want to produce masters of our art, not technicians

The analytic approach to CBME





The analytic approach to CBME: the CanMEDS 2015 version

Role	161 key concepts	28 key competencies	116 enabling competencies	434 milestones (excl CPD)
Medical expert	16	5	21	77
Communicator	27	5	18	66
Collaborator	21	3	8	47
Leader	19	4	13	68
Health Advocate	14	2	13	24
Scholar	39	5	27	85
Professional	25	4	16	67

Measurement of the General Competencies of the Accreditation Council for Graduate Medical Education: A Systematic Review

Stephen J. Lurie, MD, PhD, Christopher J. Mooney, MA, and Jeffrey M. Lyness, MD

Academic Medicine, 2011

“[there is] no evidence that current measurement tools can assess [..] competencies independently [..] Further efforts are unlikely to be successful, ..

..[So, use] competencies to guide and coordinate [..] evaluation [..] rather than develop instruments to measure [..] competencies directly”



Around 2010: Two new elements

- 1. Milestones** (mandatory in US since 2013/14; in Canada 2015/16): Descriptions of expected trainee behavior to guide assessment of learner development
- 2. Entrustable Professional Activities** (not mandatory but widely applied): Concrete activities that ground competency assessment in practice

Milestones for one pediatric competency *Gather Essential and Accurate Information About the Patient*

TABLE 1 PC1. GATHER ESSENTIAL AND ACCURATE INFORMATION ABOUT THE PATIENT				
Level 1	Level 2	Level 3	Level 4	Level 5
Either gathers too little information or exhaustively gathers information following a template regardless of the patient's chief complaint, with each piece of information gathered seeming to be as important as the next. Recalls clinical information in the order elicited, with the ability to gather, filter, prioritize, and connect pieces of information being limited by and dependent upon analytic reasoning through basic pathophysiology alone	Clinical experience allows linkage of signs and symptoms of a current patient to those encountered in previous patients. Still relies primarily on analytic reasoning through basic pathophysiology to gather information, but has the ability to link current findings to prior clinical encounters, and allows information to be filtered, prioritized, and synthesized into pertinent positives and negatives, as well as broad diagnostic categories	Demonstrates an advanced development of pattern recognition that leads to the creation of illness scripts, which allow information to be gathered while simultaneously filtered, prioritized, and synthesized into specific diagnostic considerations. Data gathering is driven by real-time development of a differential diagnosis early in the information-gathering process	Creates well-developed illness scripts that allow essential and accurate information to be gathered and precise diagnoses to be reached with ease and efficiency when presented with most pediatric problems, but still relies on analytic reasoning through basic pathophysiology to gather information when presented with complex or uncommon problems	Creates robust illness scripts and instance scripts (where the specific features of individual patients are remembered and used in future clinical reasoning) that lead to unconscious gathering of essential and accurate information in a targeted and efficient manner when presented with all but the most complex or rare clinical problems. These illness and instance scripts are robust enough to enable discrimination among diagnoses with subtle distinguishing features

Novice Adv.beginner Competent Proficient Expert

All speciality training programs in the US must define 5 milestones for each sub-competency, and report progression of each resident on all (sub-) competencies to the Accreditation Council, every 6 months



Entrustable Professional Activity

- **Definition:** Unit of professional practice (a task or responsibility) that can be fully entrusted to a trainee, once he or she has demonstrated the necessary competence to execute this activity unsupervised
- **Purpose:** To operationalize competency-based medical education through a stepwise and safe engagement of trainees in clinical practice – with a progressive (bounded) autonomy
- **Becoming competent:** Passing the threshold that allows for sufficient trust in the trainee to act unsupervised

Competencies ↔ EPAs



Person



Work



Competencies

person-descriptors

knowledge, skills, attitudes, values

- content expertise
- health system knowledge
- communication ability
- management ability
- professional attitude
- scholarly skills

the *ability* to do something successfully or efficiently*

EPAs

work-descriptors

essential units of professional practice

- discharging patient
- counseling patient
- leading family meeting
- designing treatment plan
- Inserting central line
- Resuscitating patient

that *something* that is (trusted to be) done successfully or efficiently; permission requires qualification

*Oxford dictionary



Does it fit?





All EPAs require multiple competencies

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

Recommendation: focus assessment on EPAs; use competencies for feedback

Competency frameworks tend to be analytic, EPA frameworks are synthetic



Operationally defining 'competent'

When a professional activity is mastered..

- ...at a **threshold** level
- ...that permits **trust**
- ...to act **unsupervised**

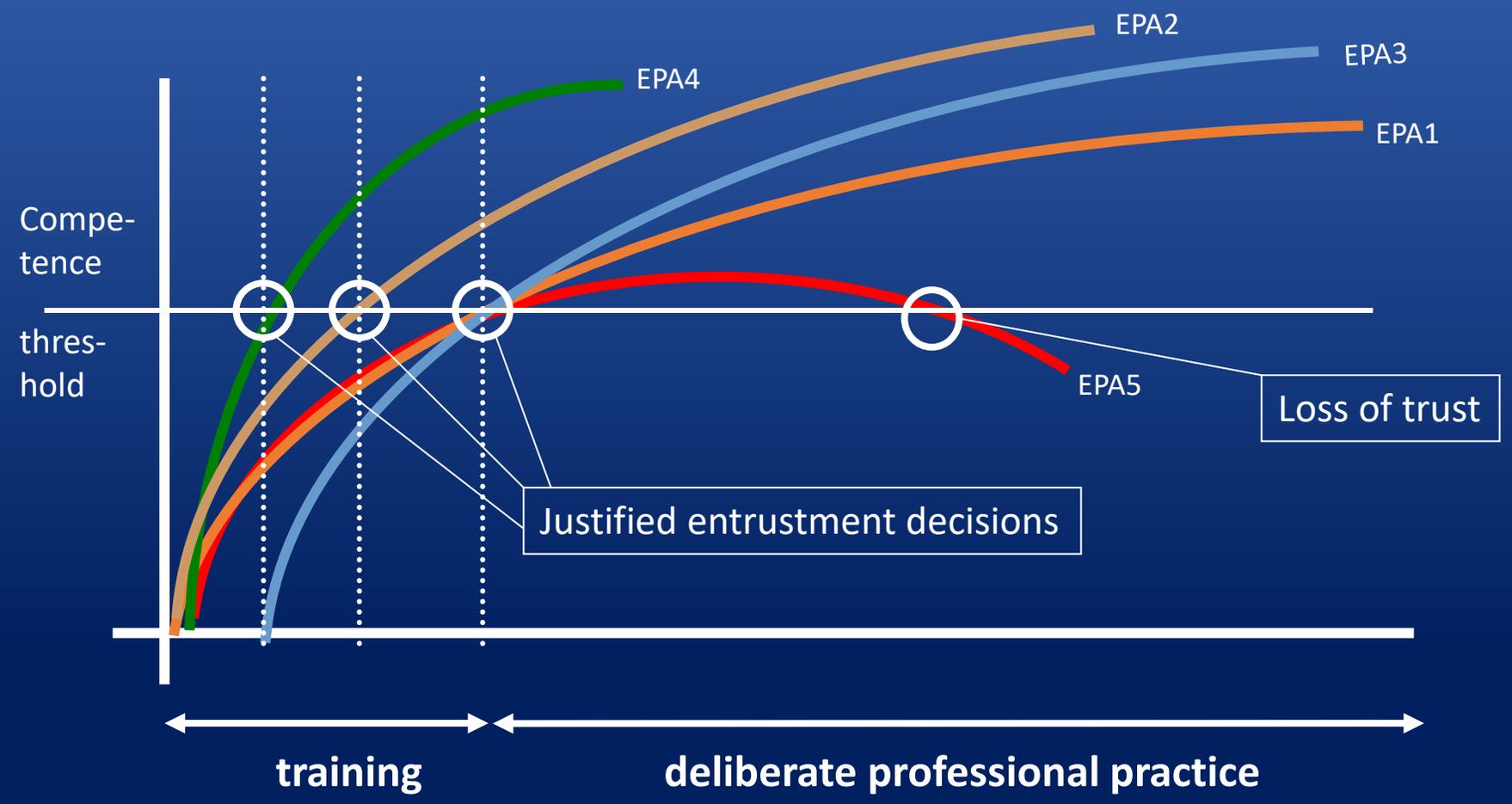


Competent: *stage* in a developmental continuum

Growth of competence over time



Competency curves of one trainee for various EPAs





Entrustment decisions: Five levels of supervision, reflecting increasing trust in trainee autonomy

1. Be present but no permission to enact EPA
2. Practice EPA with direct (pro-active) supervision
3. Practice EPA with indirect (re-active) supervision
- [threshold]-----
4. Unsupervised practice allowed (distant oversight)
5. May provide supervision to junior learners



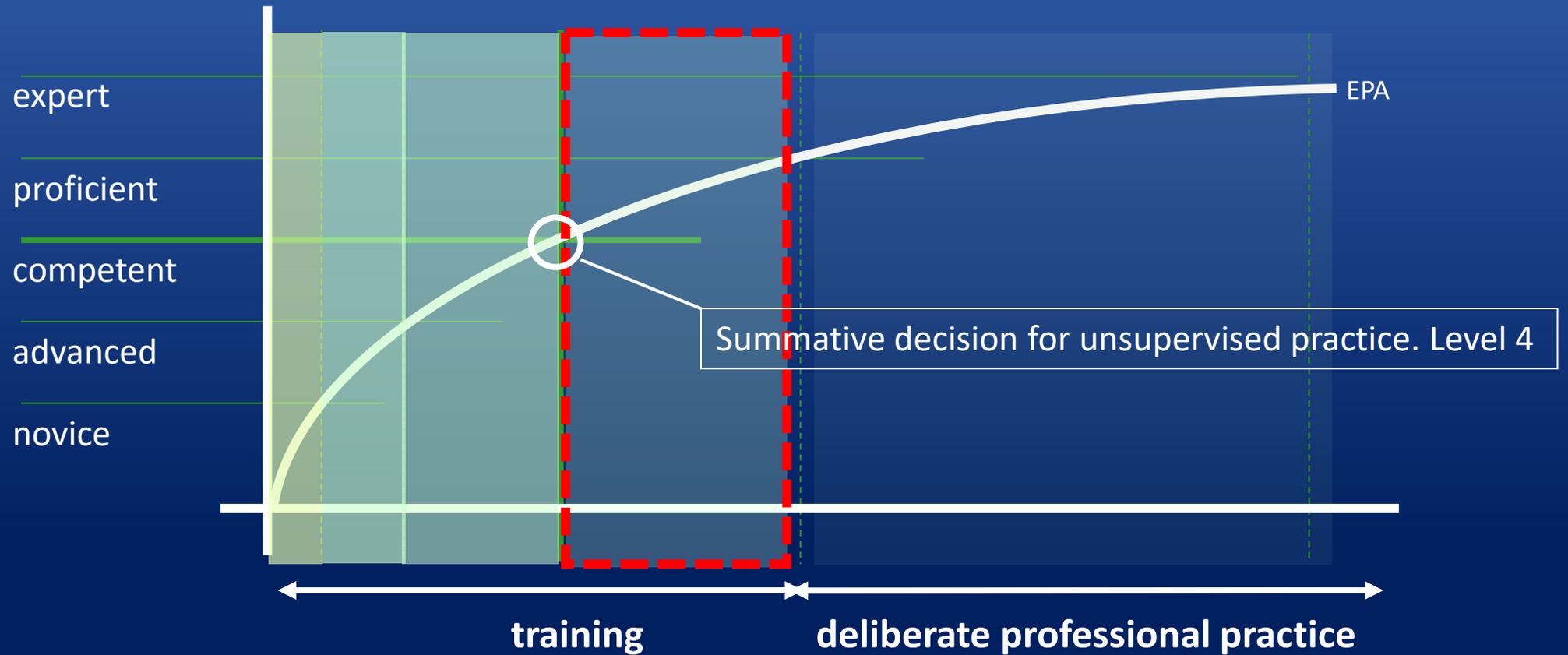
An individualized workplace curriculum

Graded supervision allows for	
1	Observing the activity
2	Acting with direct, pro-active supervision present in the room
3	Acting with (re-active) supervision available within minutes
4	Acting unsupervised, i.e. under clinical oversight
5	Acting as the supervisor to a junior

Portfolio of:	PGY1		PGY2		PGY3		PGY4	
<i>trainee Jones</i>								
EPA a	1	2	2	2	3	4	4	5
EPA b	1	1	2	2	2	3	3	4
EPA c	2	2	3	4	5	5	5	5
EPA d	2	3	4	4	4	4	5	5



Growth of competence – decrease of supervision



- Observe
- 2 direct
- 3 indirect
- 4 distant
- no

Shades of decreasing supervision

The purpose of workplace-based assessment: *Retrospective or Prospective?*

Does the student show mastery of the content, taught in courses and rotations?



Is the student ready to assume the expected future responsibilities?



End of training



Psychology of traditional workplace assessment

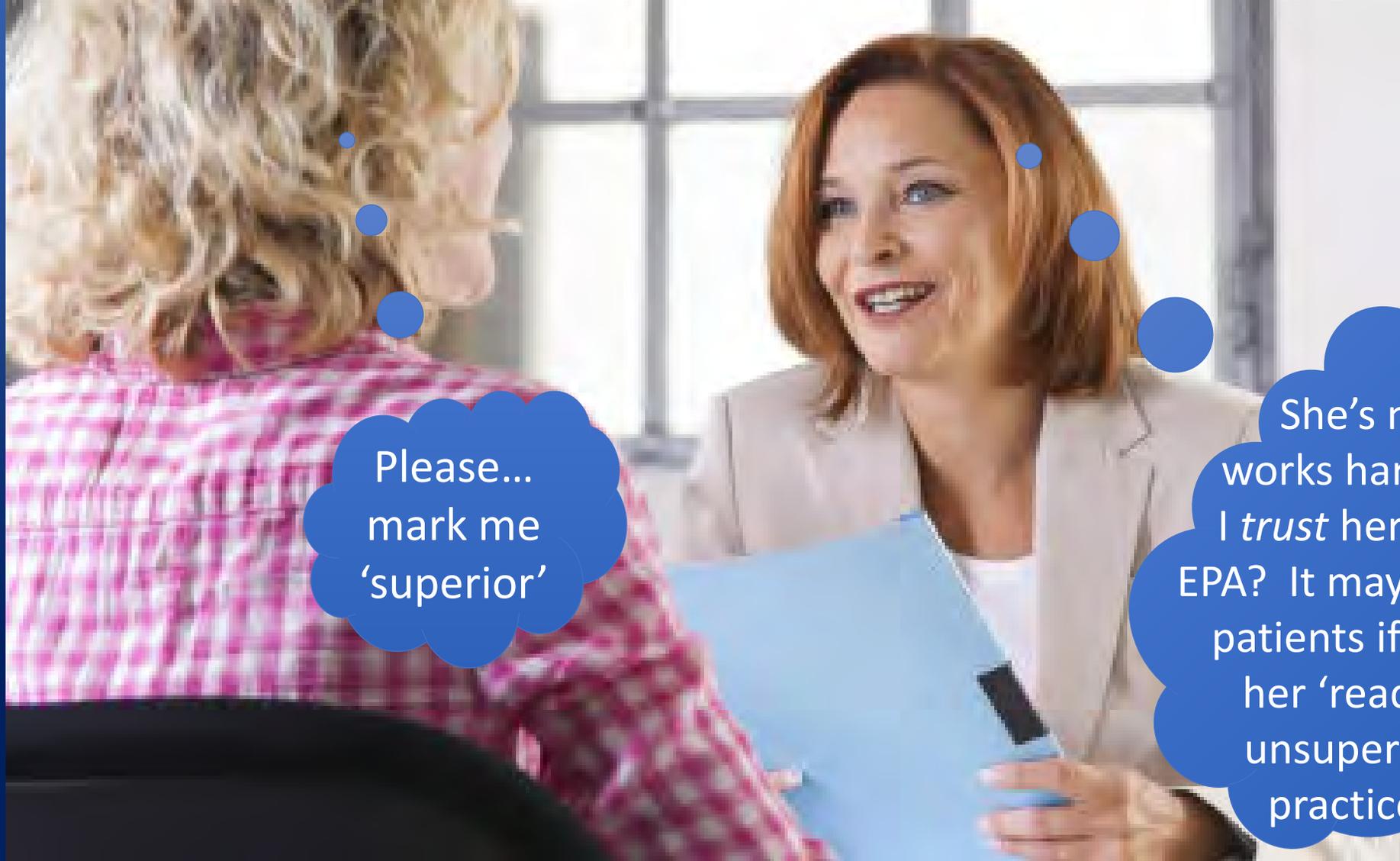


Please... mark me 'superior'

She's nice and works hard; it won't hurt and will probably motivate her if I mark her 'superior'



Psychology of *EPA-based* workplace assessment



Please... mark me 'superior'

She's nice and works hard, but can I *trust* her with this EPA? It may hurt my patients if I mark her 'ready for unsupervised practice'



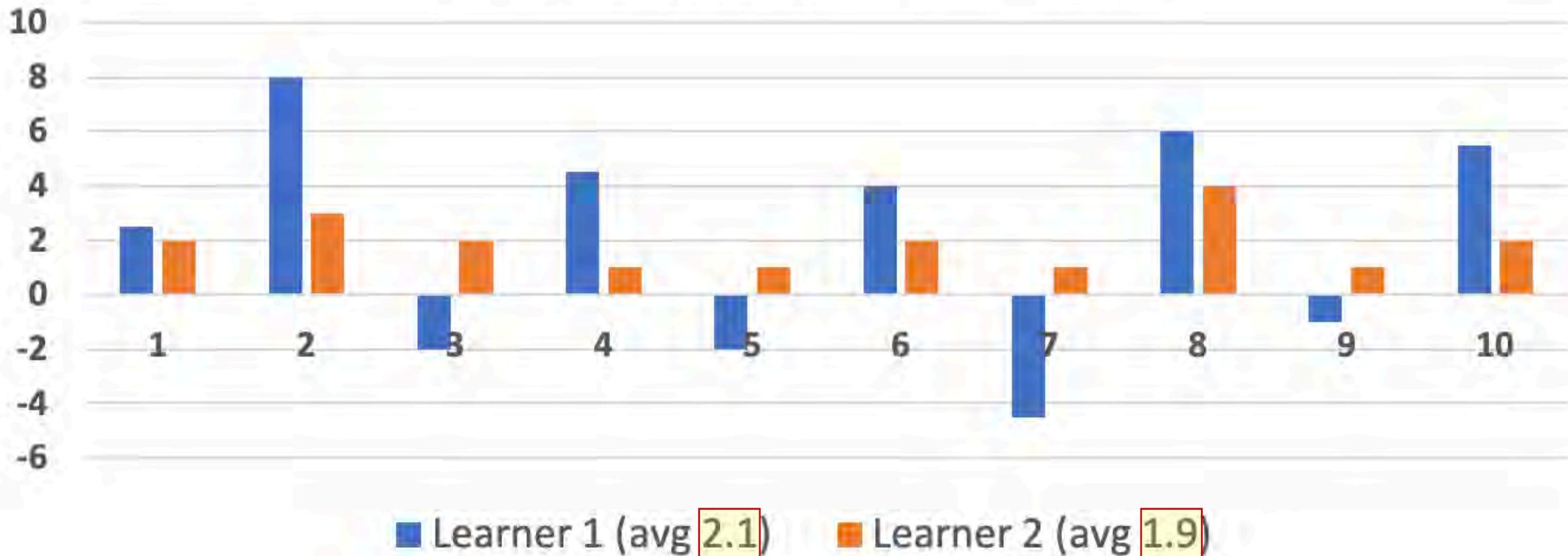
The trust concept in EPA-based assessment

- Trusting someone is making yourself **vulnerable**
- Accepting the **risk** that adverse events *could* happen
- Graduates will be certified for activities supervisors may **not have observed** and learners may not have encountered
- Entrustment decisions require estimation of **adaptive competence** to cope with unfamiliar situations
- Trust involves more than an average of past performances



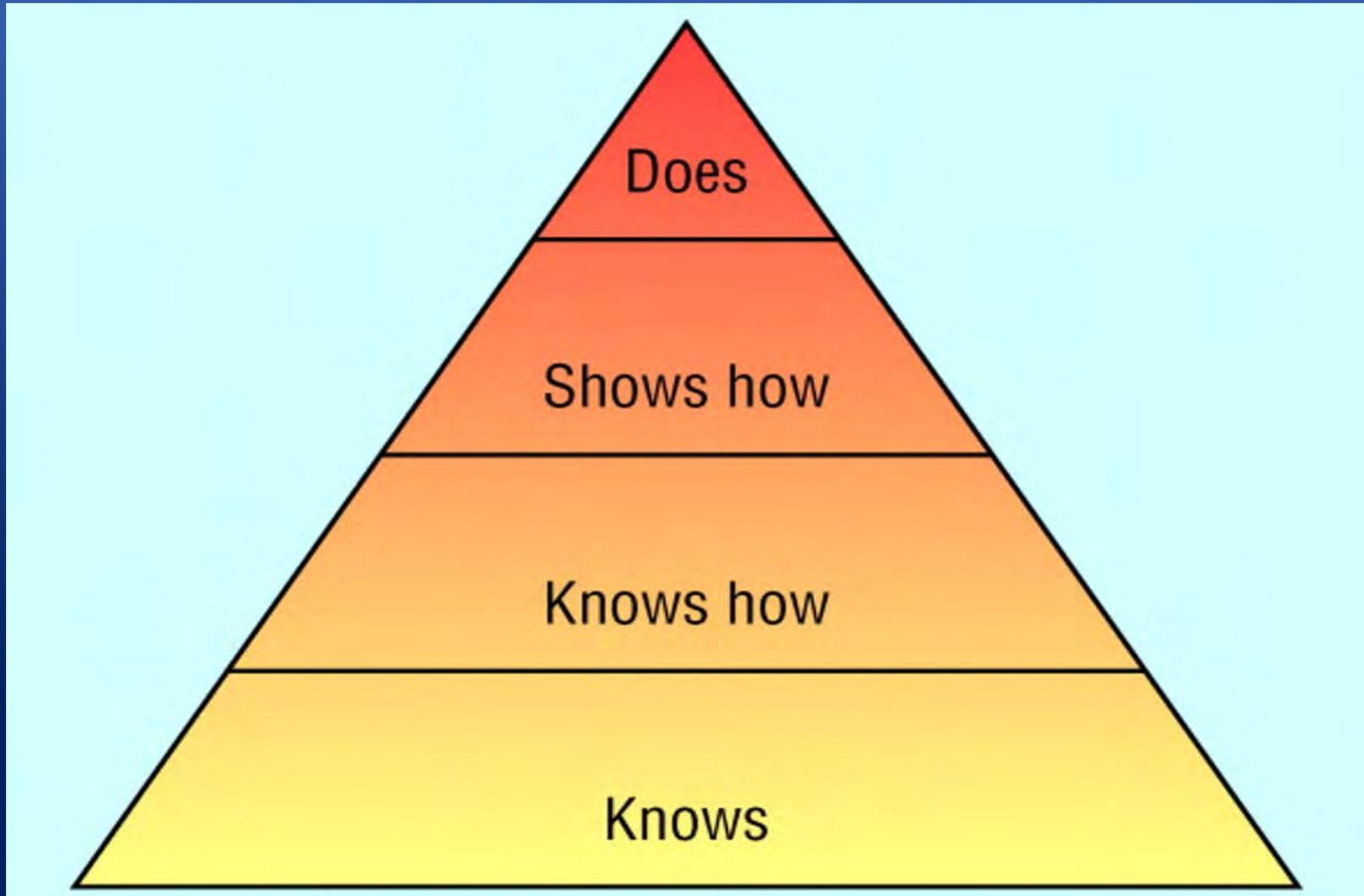
Who would you trust most for the next patient?

Performance across 10 observations





Is reporting what a learner 'does' really the highest level of assessment we should aspire to?



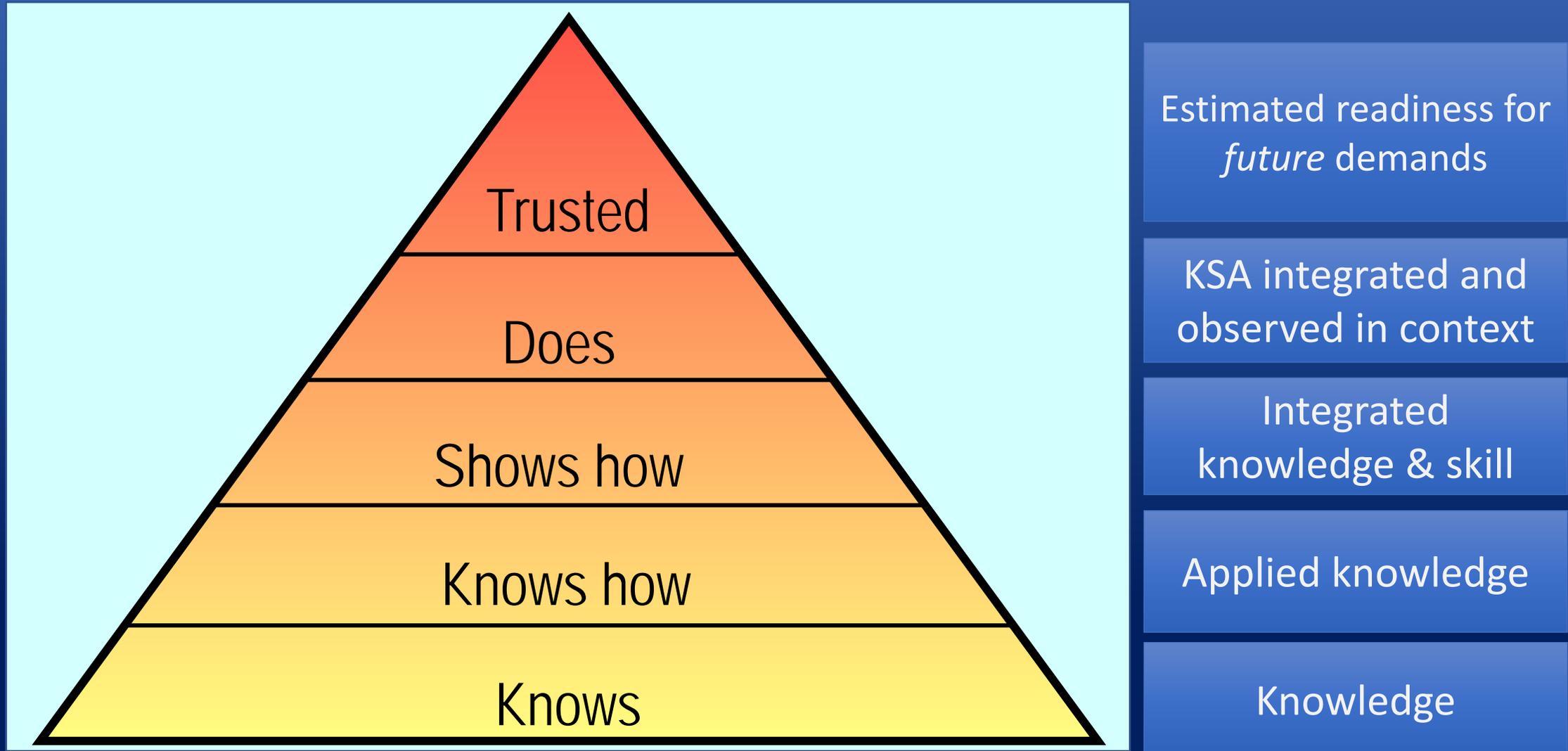
KSA integrated and observed in context

Integrated knowledge & skill

Applied knowledge

Knowledge

Is reporting what a learner 'does' really the highest level of assessment we should aspire to?





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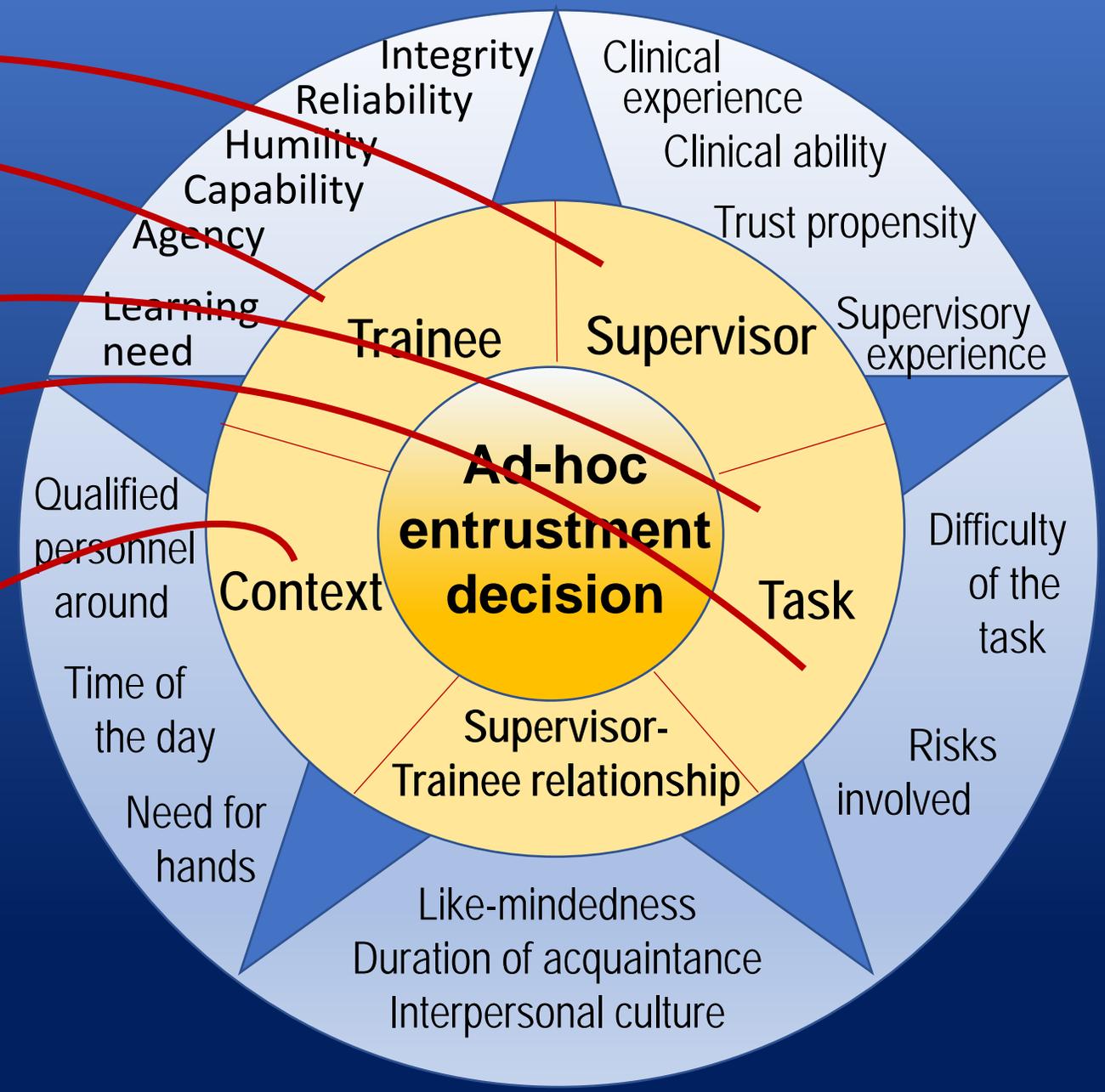
What factors determine entrustment decisions?

“Can I trust this student to attend to this patient now?”



More than knowledge, skill or specific proficiency

“Can I trust *this* student to attend to *this* patient *now*?”



What qualities of trainees, managers, sellers or others in general, generate trust?

Clinical education Kennedy et al, 2008	Management Mayer et al, 1995	Philosophy Dame O'Neill, 2013	Socio-cognitive trust theory Castelfranchi & Falcone, 2010
• Having knowledge and skill	• Able	• Competent	• Competent
• Truthful	• Benevolent, having integrity	• Honest	
• Conscientious		• Reliable	• Predictable
• Discerning own limitations		• Showing vulnerability	

Striking parallels in different domains



General qualities that enable trust (in trainees)

1. **Capability** (knowledge & skill; experience; awareness and oversight)
2. **Integrity** (truthful, good intentions, patient-centered)
3. **Reliability** (conscientious, predictable, accountable, responsible)
4. **Humility** (observing limits, willing to ask help, receptive to feedback)
5. **Agency** (self-confident, proactive toward work, team, safety, development)

Useful acronym: think of *A RICH entrustment decision*



Ad hoc and summative decisions

Ad-hoc decisions of entrustment are individual decisions, occurring daily in clinical education.

Summative decisions of entrustment are team decisions, based on multiple workplace-based assessments and must lead to increased autonomy (sometimes called a STAR)

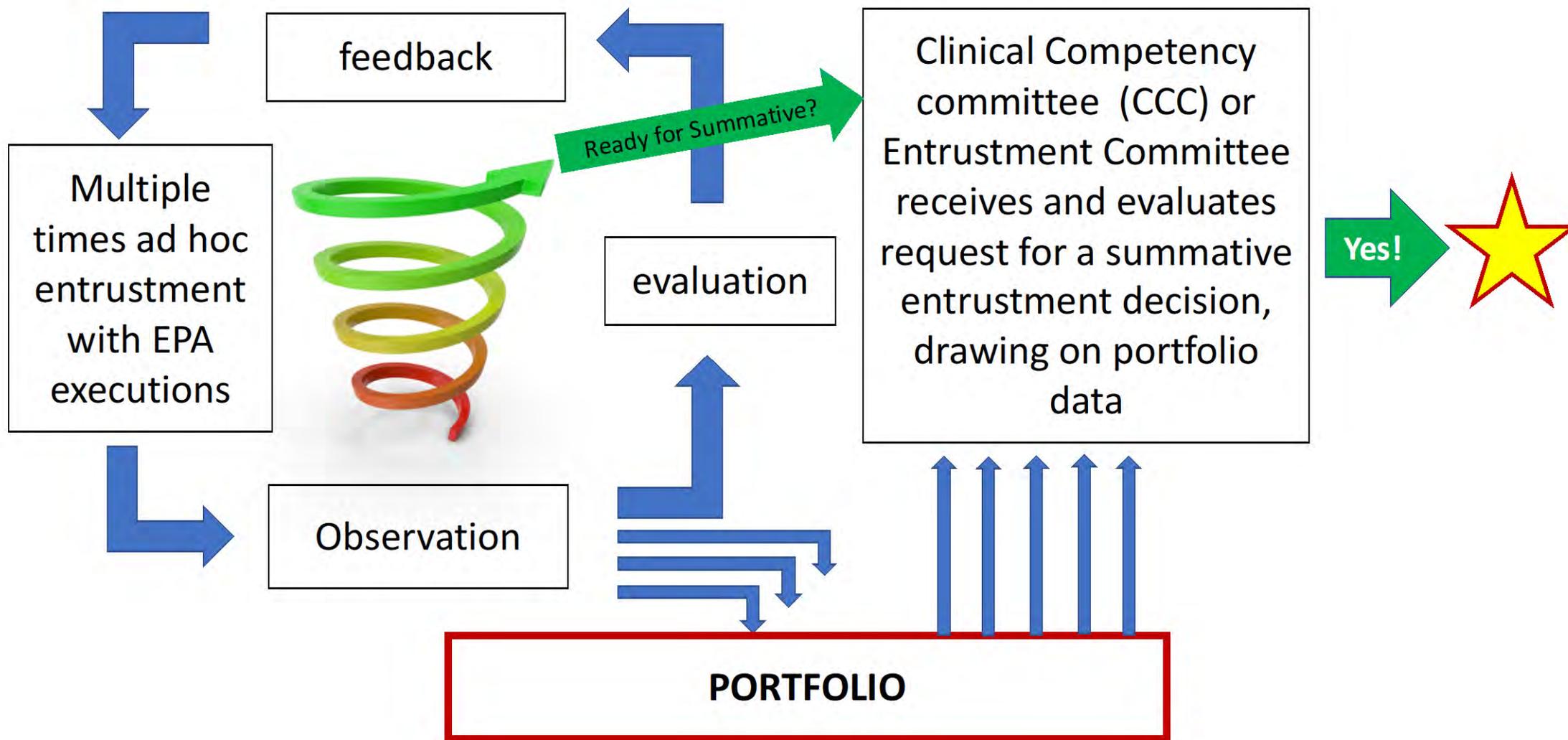
Statement of Awarded Responsibility

Name of trainee:

From tomorrow, we will allow you to:

Title of EPA:		
Specification:		
Limitations:		
Level of supervision:		
Date:		
Name and signature 1:		
Name and signature 2:		
Name and signature 3:		

The flow of workplace-based assessment data



Back to the individualized workplace curriculum.

Recommendations

1. Evaluate a learner's competence profile at the start, related to EPAs
2. Determine, agree, plan reasonable moments for 'STARs' (level 4)
3. Monitor the trainee, adapt the plan if needed, invite them to apply for STARs, make justified summative entrustment decisions
4. Make sure the trainee increases in responsibility and autonomy

Portfolio of: <i>trainee Jones</i>	PGY1		PGY2		PGY3		PGY4	
EPA a	1	2	2	2	3	4	4	5
EPA b	1	1	2	2	2	3	3	4
EPA c	2	2	3	4	5	5	5	5
EPA d	2	3	4	4	4	4	5	5



Future: what lies ahead?

- Technology to support competency-based medical education
- A renewed vision on the educational continuum



Technology is needed – some requirements

- Programmatic assessment for EPA's (i.e. defensible decisions for entrustment and qualification) requires:
 - Information from multiple sources (supervising clinicians, other co-workers), as close as possible at the point of care
 - Regular documentation of recommendations for supervision levels
 - ePortfolios
 - Mobile applications that minimize time and feed into a portfolio
- Several excellent tools are being developed*



Proposal in 2015

1

>

2

>

3

OBSERVER: Dr John Smith

TRAINEE:

EPA:

DATE:

Based on my observation(s), I suggest for this EPA the trainee may be ready after the next review to:

	NO	Hesitate	YES
2. Act under direct supervision	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Act under indirect supervision	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Act with only post-hoc report	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Supervise juniors	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

SPECIFY

OBSERVER: Dr John Smith

TRAINEE:

EPA:

DATE:

Provide feedback on each of the following domains of competence, relevant to this this EPA

- * Medical Expert
- * Communicator
- * Collaborator
- * Scholar
- * Leader
- * Health advocate
- * Professional

SPECIFY

OBSERVER: Dr John Smith

TRAINEE:

EPA:

DATE:

COMMUNICATOR
Provide specific feedback. Try to include strengths and aspects that may benefit from improvement.

Or record a feedback message

CONFIRM AND SEND



Example of a Mobile App for Surgical EPAs

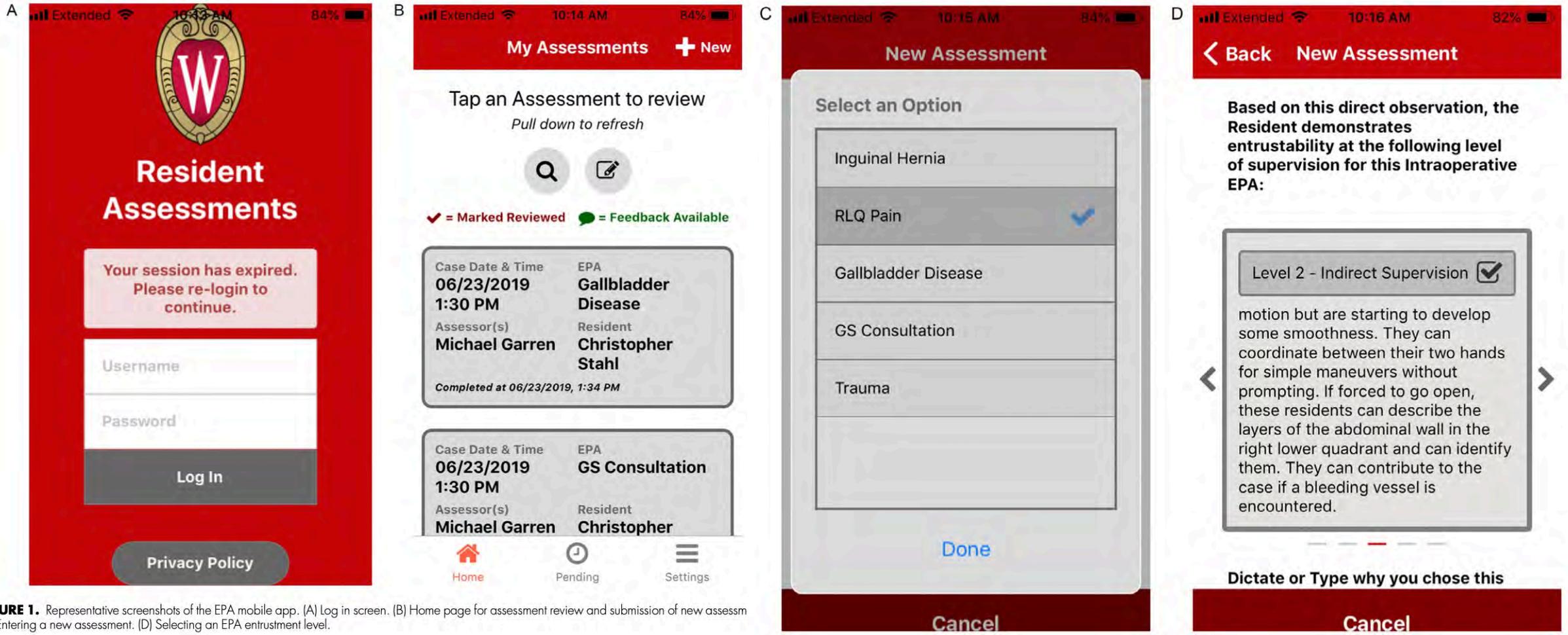


FIGURE 1. Representative screenshots of the EPA mobile app. (A) Log in screen. (B) Home page for assessment review and submission of new assessments. (C) Entering a new assessment. (D) Selecting an EPA entrustment level.



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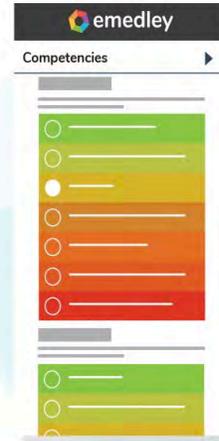
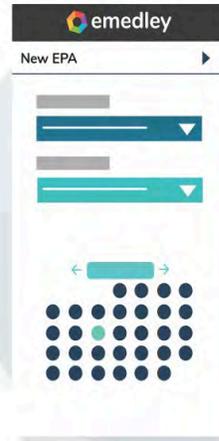
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Solutions ▾

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Resources ▾

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evaluate | EPAs

EPA Management, Tracking and Reporting

Advanced and Intuitive Solutions for real-time assessments of learners in Clinical Settings

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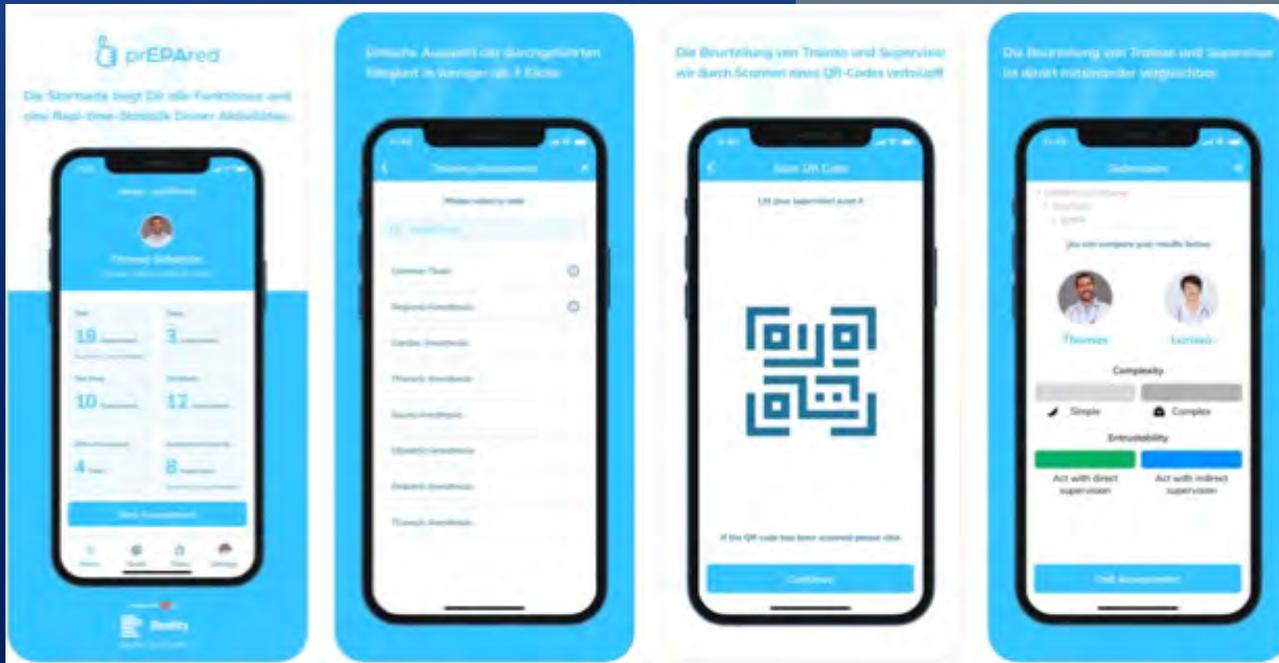


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Meaningful individualized education

The learner-centered EPA-based assessment system to build your personal competency profile.



<https://www.prepared.app>

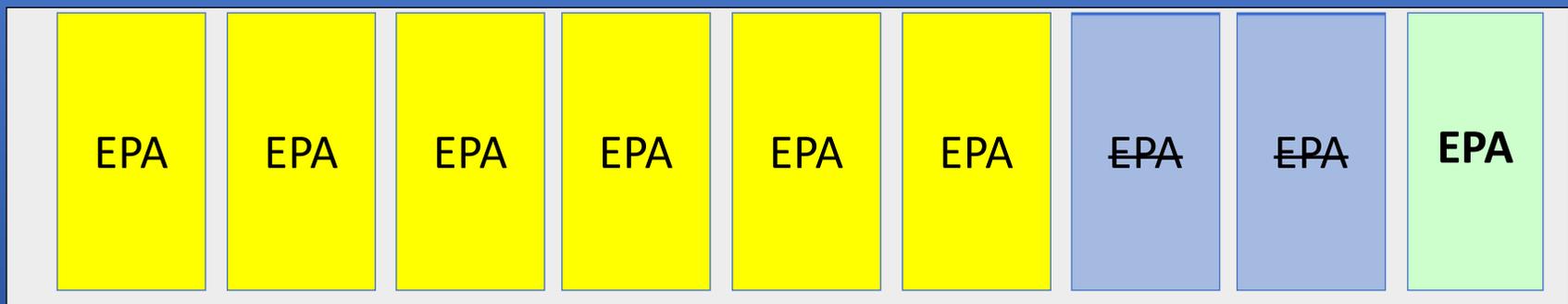


Medical Education Continuum (med school to retirement)

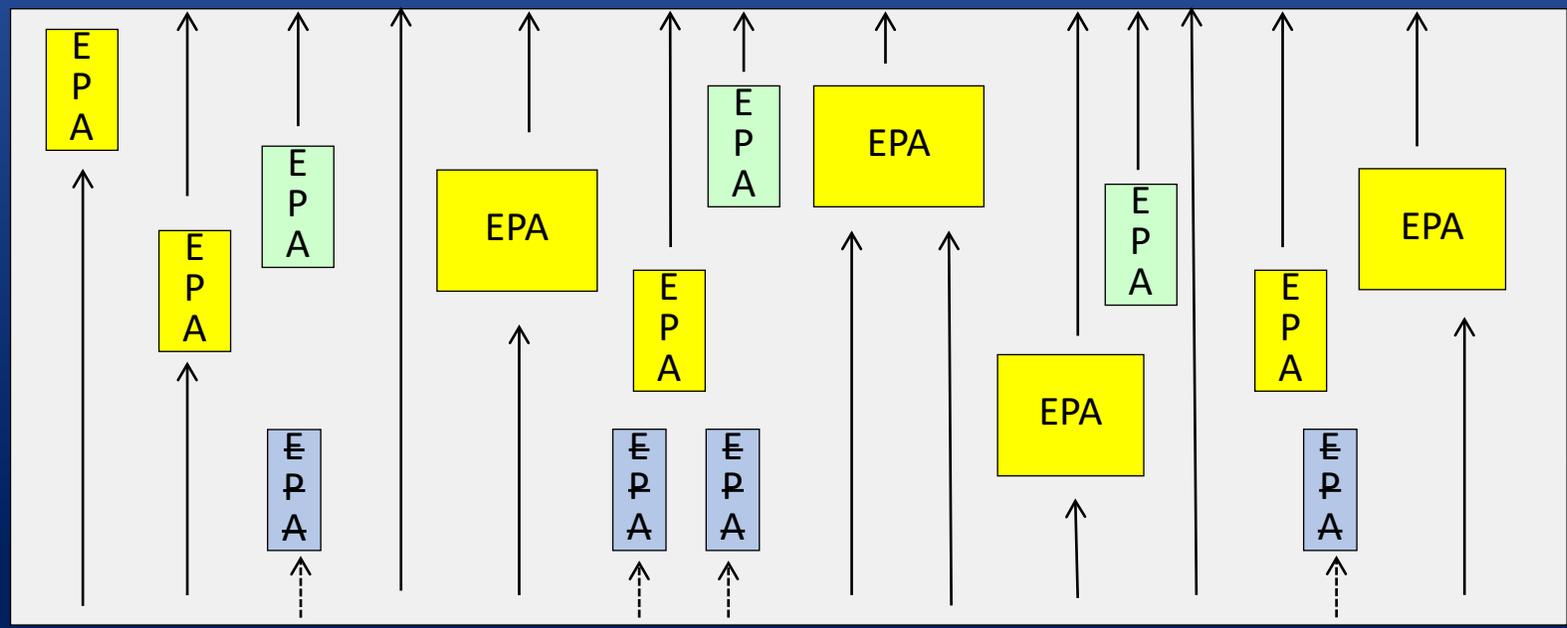
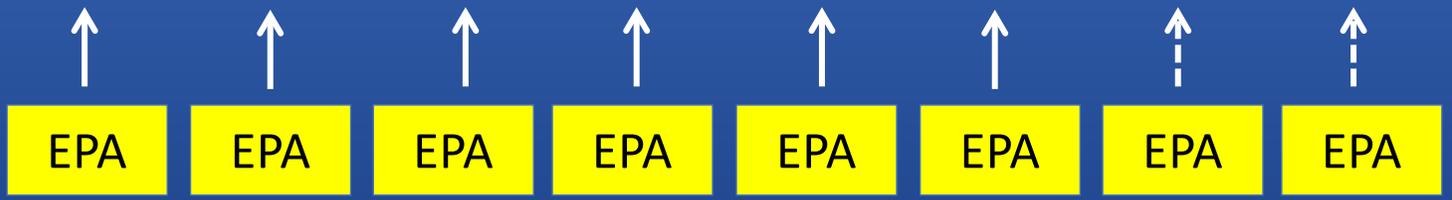
Think of *medical competence* as a dynamic portfolio of certified EPAs across a lifetime

- EPAs can be flexibly added or replaced after training
- Boundaries can be crossed between UME-GME-CME
- Boundaries can be crossed between specialities, to tailor individual physicians' needs
- Boundaries can be crossed between professions
- Medical competence: rather a state than a trait

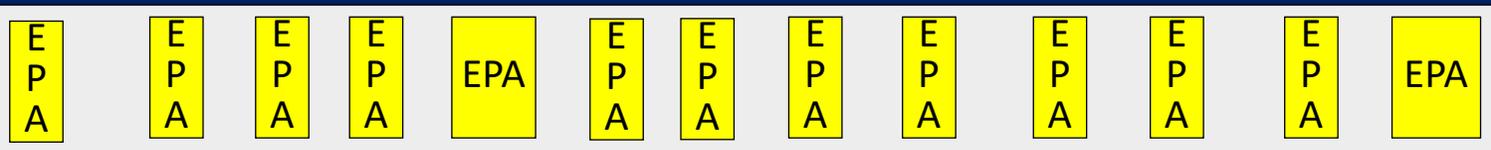
EPAs potentially allow for rethinking the structure of health care work force



Practice



Residency



Medical school



Need for supervision after licensing and certification



Volume 186, Issue 7

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Pages 216-216

PAPER

Qualified but not yet fully competent: perceptions of recent veterinary graduates on their day-one skills

Chantal Duijn ¹, Harold Bok,¹ Olle ten Cate ², Wim Kremer¹

- Recent Veterinary graduates in farm animals require up to 1 year of supervision after commencing “unsupervised” practice.



Continued Supervision for the Common Pediatric Subspecialty Entrustable Professional Activities May Be Needed Following Fellowship Graduation

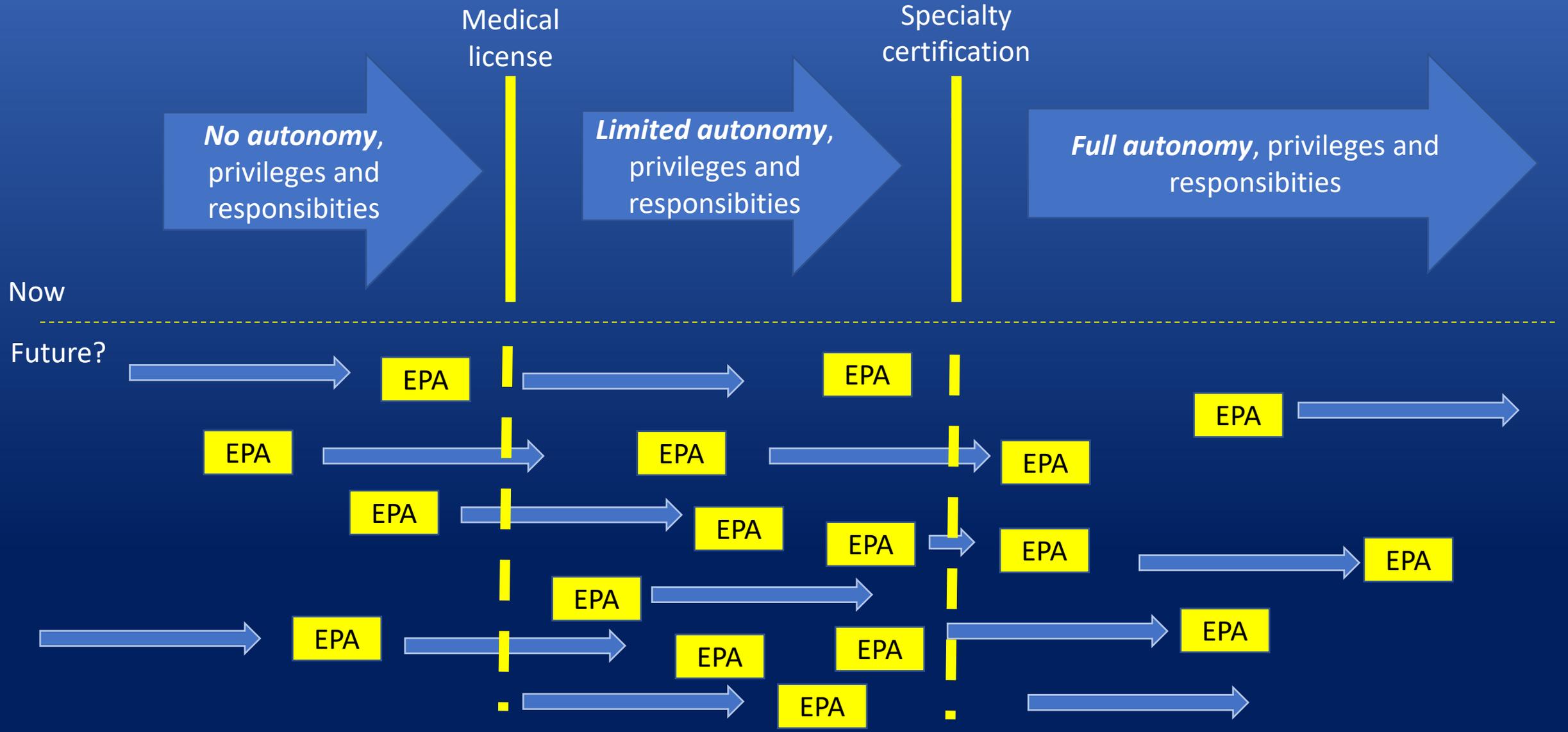
David A. Turner, MD, Alan Schwartz, PhD, Carol Carraccio, MD, Bruce Herman, MD, Pnina Weiss, MD, Jeanne M. Baffa, MD, Patricia Chess, MD, MS, Megan Curran, MD, Christiane Dammann, MD, Pamela High, MD, Deborah Hsu, MD, Sarah Pitts, MD, Cary Sauer, MD, Tandy Aye, MD, Jill Fussell, MD, Jennifer Kesselheim, MD, MEd, John Mahan, MD, Kathleen McGann, MD, Angie Myers, MD, and Richard Mink, MD, MACM, for the Subspecialty Pediatrics Investigator Network (SPIN)

Conclusions:

“..Consensus among FPDs across all pediatric subspecialties demonstrates the potential need for ongoing supervision for graduates in all 7 common pediatric subspecialty EPAs after fellowship..”

Currently: hard boundaries in the continuum

Future: qualifications for units of practice before and after boundaries?

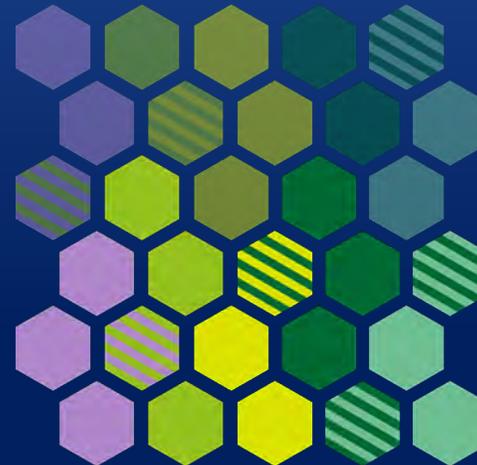
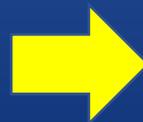


Current and future postgraduate nursing education in The Netherlands

- Before 2023
- Education in silos
- Specialized nursing staff shortages
- Insufficiently adapted to changes in health care



Non-EPA-based



EPA-based

- From 2023
- Flexibility
- Enhanced career perspectives
- Adaptation to health care needs, accelerated after COVID-19 experience



EPA Checklist for new employees in emergency veterinary care

Essential EPAs in emergency veterinary care		For this EPA I estimate I require this level of supervision*					I strive to be ready for unsupervised practice after X months					
		1	2	3	4	5	0	1	2	3	4	5
Initial treatment of a dog or cat with...												
1	trauma, bleeding(en), wound(s)											
2	cardiorespiratory arrest (needing CPR)											
3	epilepsy											
4	dilated stomach/volvulus (excl. surgical intervention)											
5	dysuria / stranguria / pollakiuria											
6	intoxication											
7	dyspnea											
8	luxatio bulbi											
9	acute glaucoma											
10	acute blindness											
11	perforated eye											
12	stalled delivery (including caesarean sectio)											
13	pyometra (including hysterectomy)											
14	dental urgency											
15	acute heart failure (myocardial, pericardial, arrhythmia)											
16	diarroeoa, vomiting or abdominal pain											
17	anemia											
18	acute paresis/paralysis											
19	foreign body in nose/oropharynx, trachea, esophagus											
20	fever and hyperthermia											
21	allergic reaction											
22	diabetic ketoacidosis/hyperglycaemia											
23	determining indication to perform euthanasia											

Project, currently starting in the Netherlands*:

Certified veterinarians, if accepted to start working in emergency vet care, are asked to evaluate their readiness to perform a series of emergency EPAs, in terms of required supervision for each EPA

- *Level of supervision**
1. Ready to be present but not enacting the EPA
 2. Ready to practice this EPA with supervisor physically present
 3. Ready to practice this EPA with indirect (on-call) supervision
 4. Ready for unsupervised practice
 5. Ready to provide supervision to junior learners

Name: ... Date: ... Discussed with supervisor: ...

*adapted from Robert Favier DVM ,PhD et al



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