Association of Pediatric Program Directors

CBME Across the Continuum

What Are the Possibilities?

Meghan O'Connor, MD

Pat Poitevien, MD, MSc

Jennifer Soep, MD

David Turner, MD

CBME panel



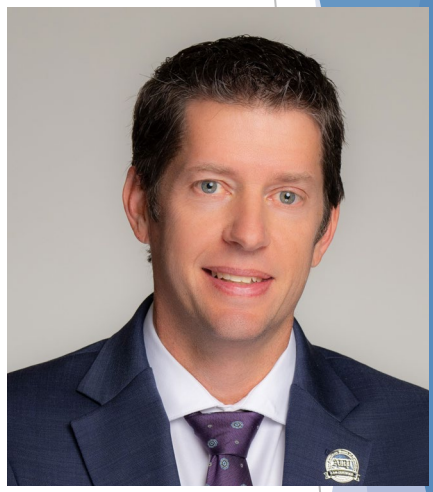
Meghan O'Connor, MD
Associate Professor of Pediatrics
Associate Program Director
University of Utah



Jennifer Soep, MD
Professor, Pediatrics
University of Colorado School of Medicine



Pat Poitevien MD, MSc
Associate Professor of Pediatrics
The Warren Alpert Medical School of Brown University
Immediate Past President, APPD



David Turner, MD
VP of Competency Based Medical Education
American Board of Pediatrics

Association of Pediatric Program Directors

What is CBME?

- A framework for medical education that is **learner-centered and patient-focused**
  - Patient and population outcomes are the primary objective
  - Educational goals are aligned with patient outcomes
  - Learning is individualized
  - Competence is valued over time
  - Education is envisioned across the continuum

Setting the stage for CBME

- Identify the competencies
- Determine the competency components and the performance levels
- Establish how to evaluate the competencies
- Perform overall assessment of the entire process

Carraccio C, Wolfsthal SD, Englander R, Ferentz K, Martin C. Shifting paradigms: from Flexner to competencies. Acad Med. 2002 May;77(5):361-7. doi: 10.1097/00001888-200205000-00003. PMID: 12010689.

Setting the stage for CBME

- Psychological Safety
- Growth Mindset
- Trust
- Faculty Development
  - Coaching
  - Feedback

Association of Pediatric Program Directors

Why CBME?

- Do our systems of education produce doctors who are prepared to care for our patients?
- Are our current tools of assessment reliable?
- How healthy is our current clinical learning environment?

Quality of Medical Education

- When surveyed, IM and FP residents report differences in preparedness to manage common adult conditions consistent with differences in training setting.
- Surgical PD's surveyed about new fellows reported:
  - 21% unprepared for the operating room
  - 66% were unable to operate for 30 minutes unsupervised
- Anesthesia PD's surveyed admitted they had graduated a trainee they wouldn't trust to treat a family member

Wiest FC, Ferris TG, Gokhale M, et al. Preparedness of internal medicine and family practice residents for treating common conditions. JAMA. 2002 Nov 27;288(20):2609-14. doi: 10.1001/jama.288.20.2609. PMID: 12444870.

Schumacher DJ, Gielissen K, Kinnear B. Competency-based medical education: Connecting training outcomes to patient care. Curr Probl Pediatr Adolesc Health Care. 2024 Aug 13:101675. doi: 10.1016/j.cppeds.2024.101675. Epub ahead of print. PMID: 39142928.

Mattar SG, Alseidi AA, Jones DB, et el. General surgery residency inadequately prepares trainees for fellowship: results of a survey of fellowship program directors. Ann Surg. 2013 Sep;258(3):440-9. doi: 10.1097/SLA.0b013e3182a191ca. PMID: 24022436.

Jonker G, Ochtman A, Marty AP, Kalkman CJ, Ten Cate O, Hoff RG. Would you trust your loved ones to this trainee? Certification decisions in postgraduate anaesthesia training. Br J Anaesth. 2020 Nov;125(5):e408-e410. doi: 10.1016/j.bja.2020.07.009. Epub 2020 Aug 5. PMID: 32768180.

Reliability of our assessment

- Non-URM minority students were more likely than White students to receive a lower category MSPE summary word
- URIM and Asian IM residents received lower ratings on performance assessments than their White peers during PGY-1 and PGY-2
- Compared with female trainees, male residents received significantly higher scores from male attending physicians than from female attending physicians
- Black/AA residents accounted for nearly 20% of all residents who were dismissed, despite comprising only 5% of all resident populations.

Low D, Pollack SW, Liao ZC, et al. Racial/Ethnic Disparities in Clinical Grading in Medical School. Teach Learn Med. 2019 Oct-Dec;31(5):487-496. doi: 10.1080/10401334.2019.1597724. Epub 2019 Apr 29. PMID: 31032666.
Hauer KE, Lucey CR. Core Clerkship Grading: The Illusion of Objectivity. Acad Med. 2019 Apr;94(4):469-472. doi: 10.1097/ACM.0000000000002413. PMID: 30113359.
Boatright D, Anderson N, Kim JG, et al. Racial and Ethnic Differences in Internal Medicine Residency Assessments. JAMA Netw Open. 2022 Dec 1;5(12):e2247649. doi: 10.1001/jamanetworkopen.2022.47649. PMID: 36580337; PMCID: PMC9857126.
Rand VE, Hudes ES, Browner WS, et al. Effect of evaluator and resident gender on the American Board of Internal Medicine evaluation scores. J Gen Intern Med. 1998 Oct;13(10):670-4. doi: 10.1046/j.1525-1497.1998.00202.x. PMID: 9798813; PMCID: PMC1500895.

Health of our Clinical Learning Environment

- Lack of trust between UME and GME
- Traditional assessment creates competition and de-emphasizes competency development and lifelong learning
- Bias in assessment creates mistrust among learners
- UIM residents report unfair assessment and experience imposter syndrome and diminished belonging

Hsu D, Rassbach C, Leaming-Van Zandt K, et al. Competency based medical education and trust in the learning environment. Curr Probl Pediatr Adolesc Health Care. 2024 Jun 13:101640. doi: 10.1016/j.cppeds.2024.101640. Epub ahead of print. PMID: 38876832.

Yemane L, Kas-Osoka O, Burns A, Blankenburg R, Prakash LK, Poitevien P, Schwartz A, Lucas CT, Marbin J. Upholding Our PROMISE: Underrepresented in Medicine Pediatric Residents' Perspectives on Interventions to Promote Belonging. Acad Med. 2023 Dec 1;98(12):1434-1442. doi: 10.1097/ACM.0000000000005443. Epub 2023 Aug 30. PMID: 37643583.

Competency-Based Advancement in Undergraduate Medical Education

Jennifer Soep, MD

Professor, Pediatrics

University of Colorado School of Medicine



Outline

- Describe the EPAC Project as an example of CBME in action
- Demonstrate how the 5 core elements of CBME were incorporated in EPAC
- Share learner outcomes
- Identify lessons learned
- Describe EPAC’s impact on local curriculum reform



EPAC Background

- Despite the movement toward CBME, most training programs in the United States still advance learners based on completing time-in-training, rather than competency standards
- Gap persists in part due to lack of knowledge about how to effectively design and implement training programs to support competency-based advancement
- Education in Pediatrics Across the Continuum (EPAC) was designed to fill this gap

EPAC Goals

- Design a CBME program aligned across the UME and GME continuum
- Test the feasibility of making advancement decisions based on demonstrated competency as learners advanced across two transitions:
  - UME to pediatric GME
  - Pediatric GME to independent practice or fellowship training



EPAC Structure

- 4 participating schools: Universities of California-San Francisco, Colorado, Minnesota, Utah
- Sponsored by the AAMC and Macy Foundation
- Enrollment (2014-2018): up to 4 learners per year for 4 years at each program
- Learners followed through UME & GME
- Program adapted to each site. Common elements:
  - Holistic selection
  - EPAs as the competency framework
  - Prioritization of longitudinal relationships
  - Learner-driven feedback to support learning
  - Guaranteed residency position



5 Core Elements of CBME in EPAC

Outcomes competency framework	**Outcomes identified in advance; EPAs as framework of assessment**
Progressive sequencing of competencies	**Sequencing of rotations in med school; Longitudinal relationships**
Learning experiences tailored to acquisition of the competencies	**EPAC specific content; Individualized curricula based on CCCs**
Teaching tailored to competencies	**Faculty and learner training on EPAs; Teaching guided by gaps determined by CCCs**
Programmatic assessment	**Multiple low stakes assessments; Direct observation, workplace-based**

EPAC Assessment Strategy

Entrustable Professional Activities

Workplace-Based Assessments

Clinical Context

Entrustment/Supervision Level

Clinical Competency Committees

SUPERVISION SCALES AND TRANSITION LEVELS

UME supervision levels for Core EPAs

1. Not allowed to practice EPA
2. Allowed to practice EPA only under proactive, full supervision
3. Allowed to practice EPA only under reactive/on-demand supervision
   a. With supervisor immediately available, all findings double checked
   b. With supervisor immediately available, key findings double checked
   c. With supervisor distantly available, findings reviewed
4. Allowed to practice EPA unsupervised
5. Allowed to supervise others in practice of EPA

GME supervision levels for Pediatric Residency EPAs

1. Not trusted to practice EPA
2. Trusted to practice EPA only under proactive, full supervision
3. Trusted to practice EPA only under reactive/on-demand supervision
4. Trusted to practice EPA unsupervised
5. Trusted to independently supervise others in practice of EPA

Learner Outcomes





Cohort	Accepted into EPAC	Completed a Categorical Pediatrics Residency at their home institution N (%)	Initial Post-General Pediatrics Residency Career		
			Gen Peds Outpatient N (%)	Hospitalist Medicine N (%)	Fellowship * N (%)
1	14	10 (71)	3 (30)	0	7 (70)
2	16	13 (81)	6 (46)	2 (15)	5 (39)
3	13	10 (77)	4 (40)	1 (10)	5 (50)
4	13	11 (85)	4 (36)	2 (18)	5 (45)
Total	56	44 (79)	17 (38)	5 (11)	22 (50)

*Pediatric fellowships pursued included: critical care, emergency medicine, endocrinology, gastroenterology, neonatology, nephrology, pulmonary, rheumatology, and sports medicine

EPA Results

- Individual Core EPA readiness was attained sequentially:
  - Early- history and physicals, documentation, presentations, evidence-based medicine, and teamwork
  - Middle- differentials, interpreting tests, entering orders, and contributing to a culture of safety
  - Late- handovers, identifying need for urgent/emergent care, informed consent, and procedures

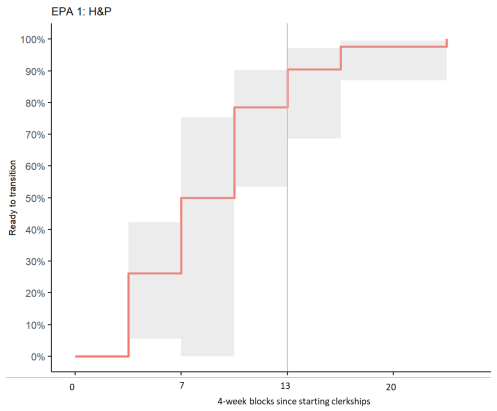


Figure 1A: Example of early transition EPA: Time to meet transition standard for Core EPA 1 (Perform History and Physical Exam)

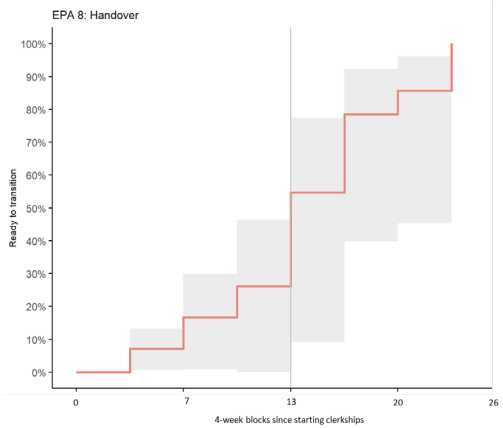
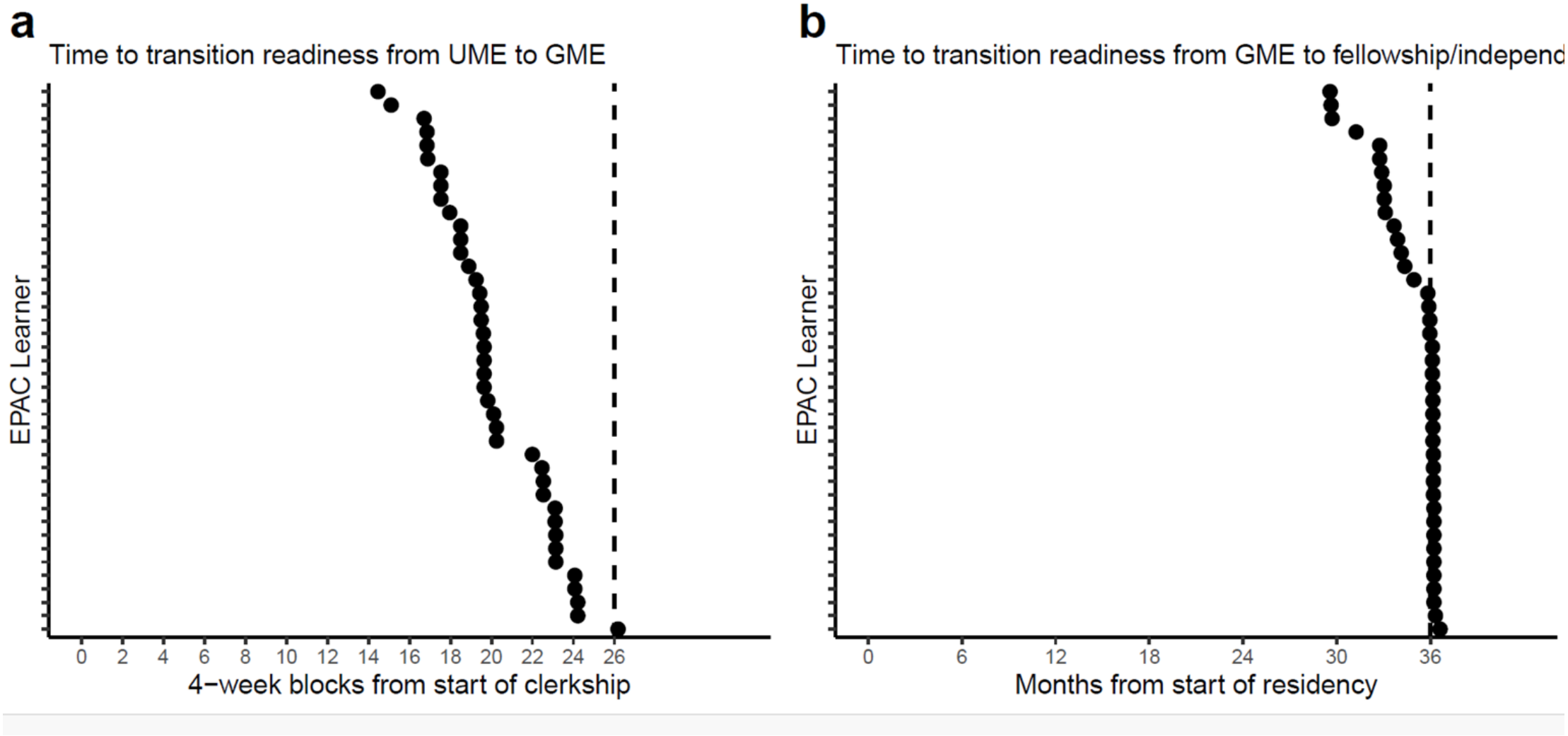


Figure 1B: Example of late transition EPA: Time to meet transition standard for Core EPA 8 (Handovers)

Variability in Time to Meet Readiness to Transition



Other Learner Outcomes

Holistic Review

- Learners were selected early in medical school, using a holistic review process
- Our positive outcomes in terms of fellowship positions and jobs following residency support the use of holistic review in selecting participants in this program and our residencies

ACGME Milestones

- EPAC learners had the same mean ACGME pediatric milestone ratings at their first milestone measurement (p=0.21) compared to non-EPAC residents
- EPAC learners had statistically higher mean milestone ratings than non-EPAC residents at their final milestone measurement (mean difference 0.32, SE 0.12, p=0.007).

Board Pass Rates

- EPAC First-time pass rate (n=43) was 93% (compared to 80-87% nationally and 84-96% institutionally)



Lessons Learned from EPAC

Application to curriculum reform at University of Colorado School of Medicine

Curriculum Linked to Assessment

EPAC

- We decided to use EPAs (while they were still in draft form!) as our framework of assessment
- Then we developed curriculum, clinical experiences, and performance outcomes



CU SOM

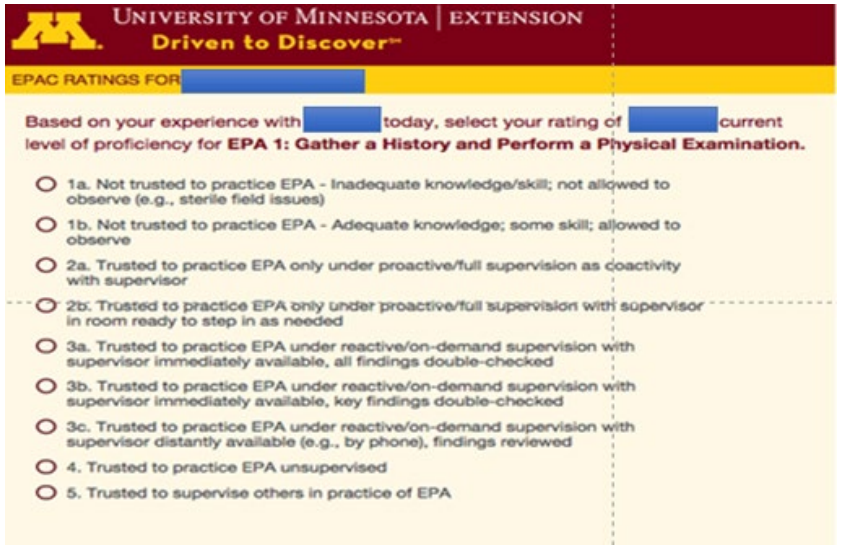
- We use EPAs with supervision levels as our framework for assessment and grading
- We created 26 graduation Medical Education Program Objectives and accompanying milestones and then developed curriculum, clinical experiences and grading criteria

Outcomes competency framework

Use of Workplace-Based Assessments

EPAC

- We used frequent, low-stakes workplace-based assessments to gather data


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EPAC RATINGS FOR [redacted]

Based on your experience with [redacted] today, select your rating of [redacted] current level of proficiency for **EPA 1: Gather a History and Perform a Physical Examination.**

- 1a. Not trusted to practice EPA - Inadequate knowledge/skill; not allowed to observe (e.g., sterile field issues)
- 1b. Not trusted to practice EPA - Adequate knowledge; some skill; allowed to observe
- 2a. Trusted to practice EPA only under proactive/full supervision as coactivity with supervisor
- 2b. Trusted to practice EPA only under proactive/full supervision with supervisor in room ready to step in as needed
- 3a. Trusted to practice EPA under reactive/on-demand supervision with supervisor immediately available, all findings double-checked
- 3b. Trusted to practice EPA under reactive/on-demand supervision with supervisor immediately available, key findings double-checked
- 3c. Trusted to practice EPA under reactive/on-demand supervision with supervisor distantly available (e.g., by phone), findings reviewed
- 4. Trusted to practice EPA unsupervised
- 5. Trusted to supervise others in practice of EPA

CU SOM

- We use frequent, workplace-based assessments for assessment and grading

For a patient with a *common concern*, if you were to supervise this student again how would you assign the task to the student to *assure safe and effective patient care*?

- Let the student watch me do it
- Do it with the student together
- Let the student do it on their own and then repeat <u>all</u> findings or provide <u>substantial</u> input/revisions
- Let the student do it on their own and then repeat <u>some</u> findings or provide <u>minimal</u> input/revisions

Programmatic assessment

Longitudinal Relationships

COMPASS Stands for:

Co – Coaching

M – Mindful reflection

P – Professional Identity Formation

A – Assessment

S – Self-care

S – Self-directed learning

EPAC





- We have gained experience in longitudinal mentorship, coaching, advising, patient relationships, and peer relationships

CU SOM

- We converted from traditional clerkships to all longitudinal integrated clerkships (LIC)
- LIC preceptors develop relationships with students that facilitate teaching, learning, assessing
- All students have a COMPASS guide for all 4 years that provides coaching, advising, support

Learning experiences tailored to acquisition of the competencies

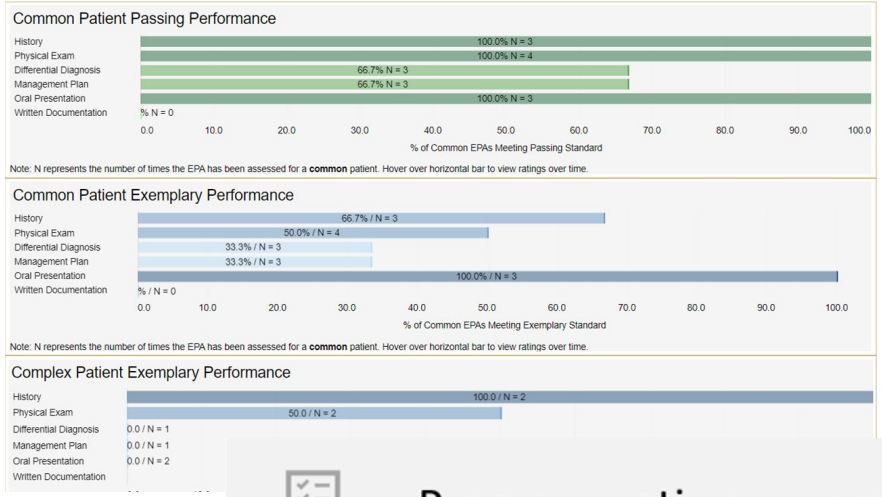
Portfolios

EPAC

- We developed a portfolio, housed in a learning management system
- Learners developed their portfolios over time, carrying them through the continuum of their education

CU SOM

- We have created a Dashfolio that houses all data including EPA ratings and comments
- Can be viewed by learners, course directors and graders



Programmatic assessment

Competency-Based Progression (and Context Matters)

EPAC

- We can dete
  to progress
  competency
  framework
- We formed
  progress an
  readiness d
- We can mak
  levels of
  supervision
  this is impa
- These judge
  time variable progression

Appendix 2: Minimum and Exemplary levels of supervision for each of the EPAS used during the Foothills

For each of the clinical skills below, a minimum level of supervision (green) has been identified that a student MUST achieve for **common** clinical conditions by the end of Foothills (as evidenced both in comments and in ratings). An exemplary level of supervision (blue) has also been identified for each clinical skill when working with **common** clinical conditions. If a preceptor selects this exemplary level of supervision an additional question is provided that asks them to consider the same clinical skills and levels of supervision for patients who are **medically/socially complex or undifferentiated.**

For a patient with a **common** concern, if you were to supervise this student again, how would you assign the task to the student to ***ensure safe and effective patient care***?

EPA (Task)	"Watch me do this."	"Let's do this together."	Repeat all findings or substantial input/revisions.	Repeat key findings or minimal input/revisions.
Gather a history from a patient.	I would gather the history myself	I would gather the history with the student	I would let the student gather the history and repeat all findings	I would let the student gather the history and repeat key findings
Perform a physical exam.	I would do the physical exam myself	I would do the physical exam with the student	I would let the student do the physical exam and repeat all findings	I would let the student do the physical exam and repeat key findings
Develop a differential diagnosis.	I would create the differential diagnosis myself	I would work with the student to create the differential diagnosis but take the lead	I would let the student create the differential diagnosis, but then provide substantial input	I would let the student create the differential diagnosis, but then provide minimal input
Develop a management plan (including suggesting and interpreting lab tests and preventative care).	I would create the management plan myself	I would work with the student to create the management plan but take the lead	I would let the student create the management plan but then provide substantial input	I would let the student create the management plan but then provide minimal input
Provide written documentation of a clinical encounter.	I would write the note myself	I would sit next to the student and write the note together	I would let the student write the note but then make substantial revisions	I would let the student write the note but then make minimal revisions
Provide an oral presentation of a clinical encounter.	I would not allow the student to present	I would do the presentation with the student but take the lead	I would let the student present the patient, but then provide substantial input	I would let the student present the patient, but then provide minimal input

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Programmatic assessment

Mitigating Bias - Grading at CU

Grading committees

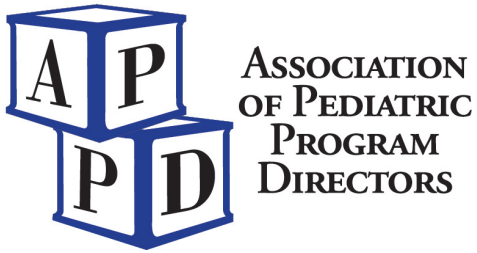
Pre-meeting reviews and submission of preliminary grade

Voting

Deidentification of Dashfolio – removal of student and assessor names, pronouns, sites

Executive committee review prior to failing student

Preliminary analysis – Less bias in grading (by race/ethnicity and gender) after changing to all LICs and using new grading approach



CBME in Pediatric Residency

Meghan O'Connor, MD
APD, Pediatric Residency Program
Associate Professor
University of Utah

ASSOCIATION OF PEDIATRIC PROGRAM DIRECTORS



UTAH PEDIATRIC RESIDENCY PROGRAM

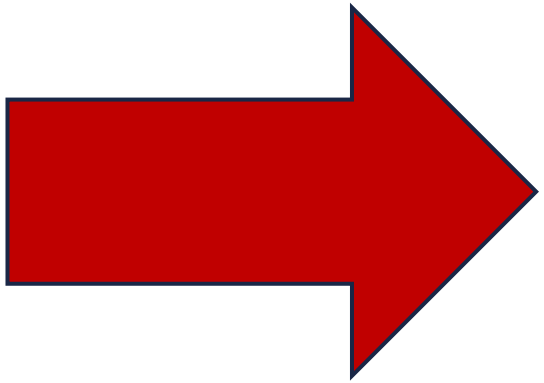
CBME Implementation

Outcomes competency framework	Progressive sequencing of competencies	Learning Experiences tailored to Acquisition of the Competencies	Teaching tailored to competencies	Programmatic assessment
EPAs Core EPAs for Entering Residency → Gen Peds EPAs Expectations/ outcomes clearly articulated & understood by learner and CCC Central repository for assessment program	UME core EPAs for entering residency –> Gen Peds EPAs (ex: H&P, differentials, enter orders → care for the well newborn) Use of longitudinal relationships with preceptors to allow for gradual opportunities & increase in expectations Thoughtful sequencing of rotations	Curriculum Mapping → EPAC-specific experiences & teaching for EPAs where the current curricula does not fully support acquisition of competence Use of the CCC to identify curricular gaps Individually – Use of CCCs, self-reflection, and coaching to work with the learner to develop a plan for development of competency (in elective space or 'individualized curricula space') Time Variable	Learner development - EPA education, peer/coach group discussions, 1:1 coaching CCC – Faculty development in understanding the EPA framework & expectations of learners at each stage Use of the CCC to guide teaching: Globally – identify "trends" Individually – identify individual learner needs & develop plan for addressing gaps	All EPAs represented with multiple raters/observers over time in different clinical contexts & varying levels of acuity/complexity Evaluation forms: Direct observation-based Multiple "low stakes" assessments/WBAs that provide feedback Use of feedback, self-reflection, and goals to develop skills. Co-production of ILP. Learners with direct access to their individual assessments Q3-6m CCC holistic review with sufficient information to review Learner receives CCC "summative review", reviewed with coach, and goals revised/updated Assessment system that focuses on behaviors, promotes learning and decreases bias

EPAC

How can we use what we learned to benefit the rest of our residents…

3 EPAC residents/ year



23 categorical
3 Med/Peds
3 Peds Neuro
3 Triple Board
1 Ped Genetics
3 EPAC

36 residents/year

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Entrustable Professional Activities

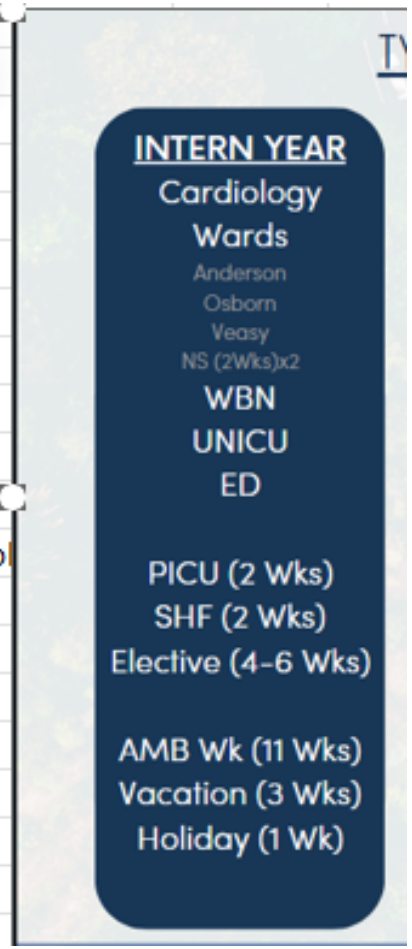
Goal at Graduation:
Ready for *unsupervised practice*

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EPAC-elements in Peds Residency

Incorporating the EPAs: Curriculum Mapping

EPA	
1	Cards, WBN, SHF, AMB
2	Wards, WBN, NICU, ED, AMB, Adol
3	WBN
4	Wards, WBN, ED, AMB
5	AMB
6	AMB
7	Cards, Wards, WBN, NICU, ED, PICU, AMB
8	Cards, Wards, Adol, AMB
9	Wards, ED, AMB, Adol
10	Wards, WBN, NICU, ED, PICU, AMB
11	Cards, Wards, NICU, WBN, ED, PICU, SHF, AMB, Adol
12	Wards, WBN, NICU, ED, PICU, AMB
13	Wards, WBN, AMB
14	Wards, WBN, NICU, ED, PICU, AMB
15	Wards, WBN, NICU, ED, PICU, SHF, AMB
16	Cards, Wards, WBN, NICU, ED, PICU, AMB
17	WBN, NICU, ED, PICU, AMB



- Where do the residents have opportunities to practice the individual EPAs?
- Are there gaps in exposure or ability to practice?

Outcomes competency framework	Progressive sequencing of competencies	Learning Experiences tailored to Acquisition of the Competencies	Teaching tailored to competencies	Programmatic assessment
Gen Peds EPAs Expectations/ outcomes clearly articulated & understood by learner and CCC Central repository for assessment program	UME core EPAs for entering residency –> Gen Peds EPAs (ex: H&P, differentials, enter orders → care for the well newborn) Use of longitudinal relationships with preceptors to allow for gradual opportunities & increase in expectations Thoughtful sequencing of rotations	Curriculum Mapping **Use of the CCC to identify curricular gaps** **Individually – Use of CCCs, self-reflection, and coaching to work with the learner to develop a plan for development of competency (in elective space or 'individualized curricula space')**	Learner development CCC – Faculty development in understanding the EPA framework & expectations of learners at each stage **Use of the CCC to guide teaching: Globally – identify "trends" Individually – identify individual learner needs & develop plan for addressing gaps**	All EPAs represented with multiple raters/observers over time in different clinical contexts & varying levels of acuity/complexity Evaluation forms: Direct observation-based Multiple "low stakes" assessments/WBAs that provide feedback Use of feedback, self-reflection, and goals to develop skills. Co-production of ILP. Learners with direct access to their individual assessments Q3-6m CCC holistic review with sufficient information to review Learner receives CCC "summative review", reviewed with coach, and goals revised/updated Assessment system that focuses on behaviors, promotes learning and decreases bias

EPAC-elements in Peds Residency

Use of the CCC to identify gaps: Program



Trends Identified



Insufficient information

Use of the CCC to identify curricular gaps: Program Level

EPA

- Pick an EPA. Read through the functions & scope

CCC

- Consider the recent CCC

Review

- Does our program offer progressive sequencing, learning opportunities, and teaching to support unsupervised practice?

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Identifying individual educational needs:

Individualized Learning Plans

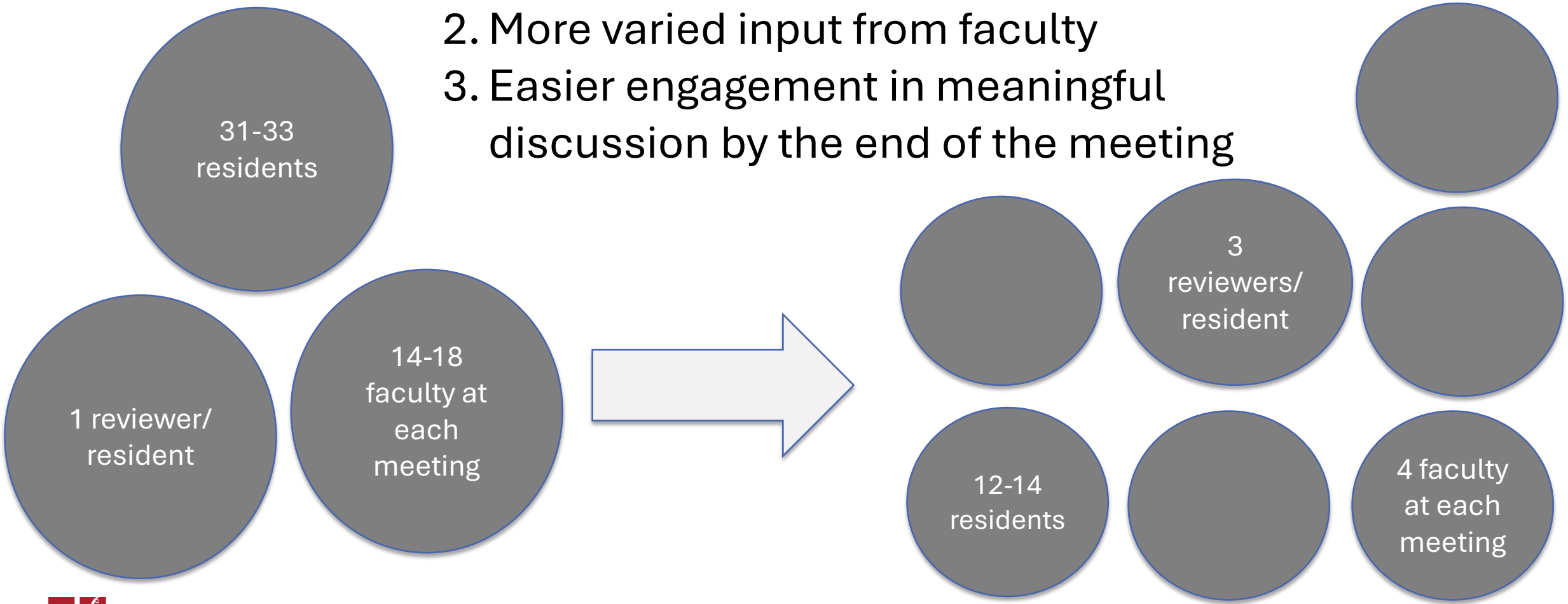
Coaching

CCC



CCC Restructure

1. More time to discuss each resident
2. More varied input from faculty
3. Easier engagement in meaningful discussion by the end of the meeting



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Outcomes competency framework	Progressive sequencing of competencies	Learning Experiences tailored to Acquisition of the Competencies	Teaching tailored to competencies	Programmatic assessment
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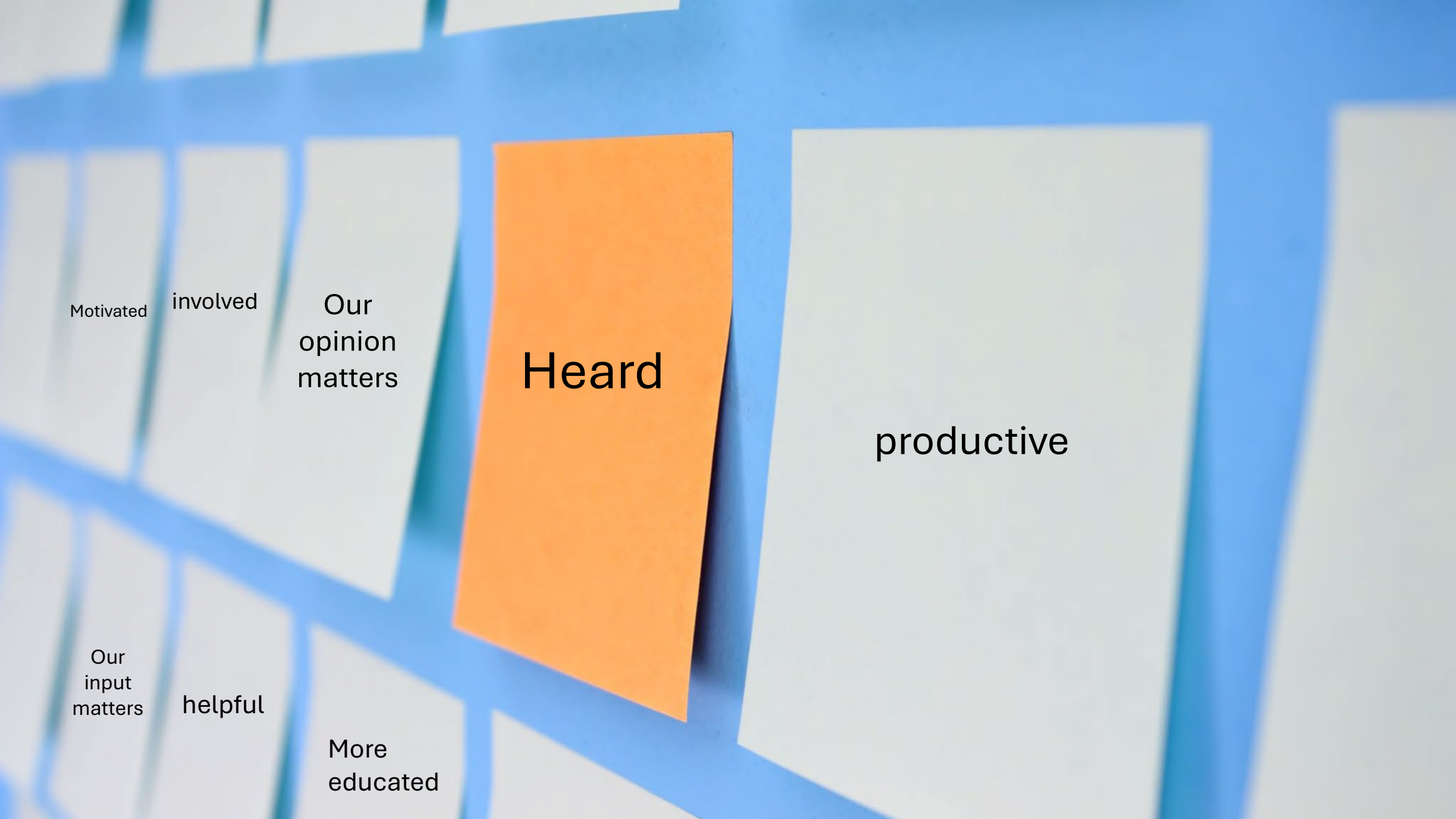
EPAC-elements in Peds Residency

Targeted Faculty & Learner Education	
Frontline Faculty	• Identification of assessment champions in each division • Written materials embedded into assessments
CCC	• Formal education at kick-off and wrap-up meetings • Informal education during CCC sessions
Residents	• Formal education: didactics, interactive brainstorming sessions • Resident Weekly Blurb • Informal education: CCC review & coaching



Resident Retreat Sessions

- Shared understanding of goals
- Education
- Co-production
  - Strategies
  - Materials for faculty development
- Obtain feedback


Motivated
involved
Our opinion matters
Heard
productive
Our input matters
helpful
More educated

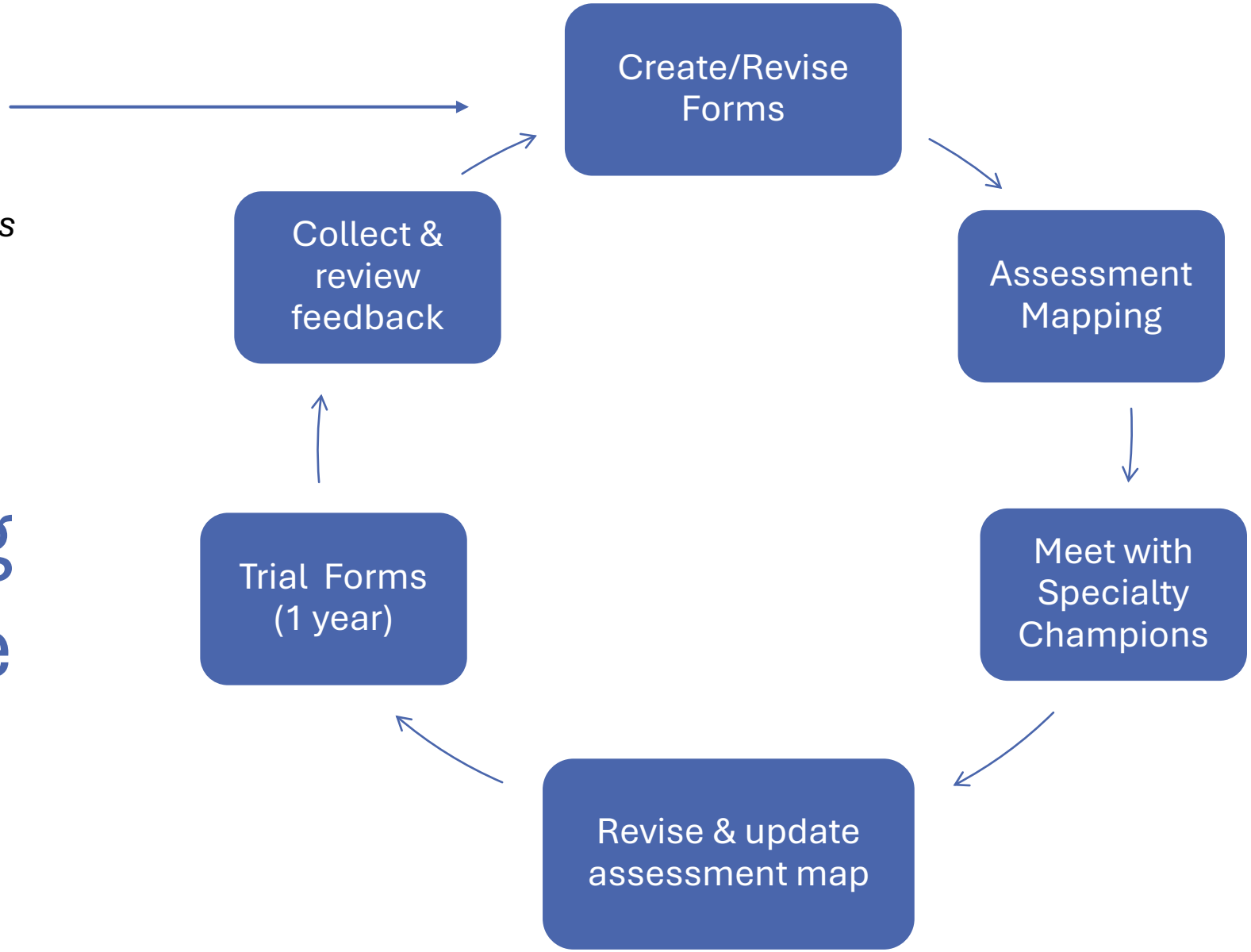
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EPAC-elements in Peds Residency

Curriculum Mapping

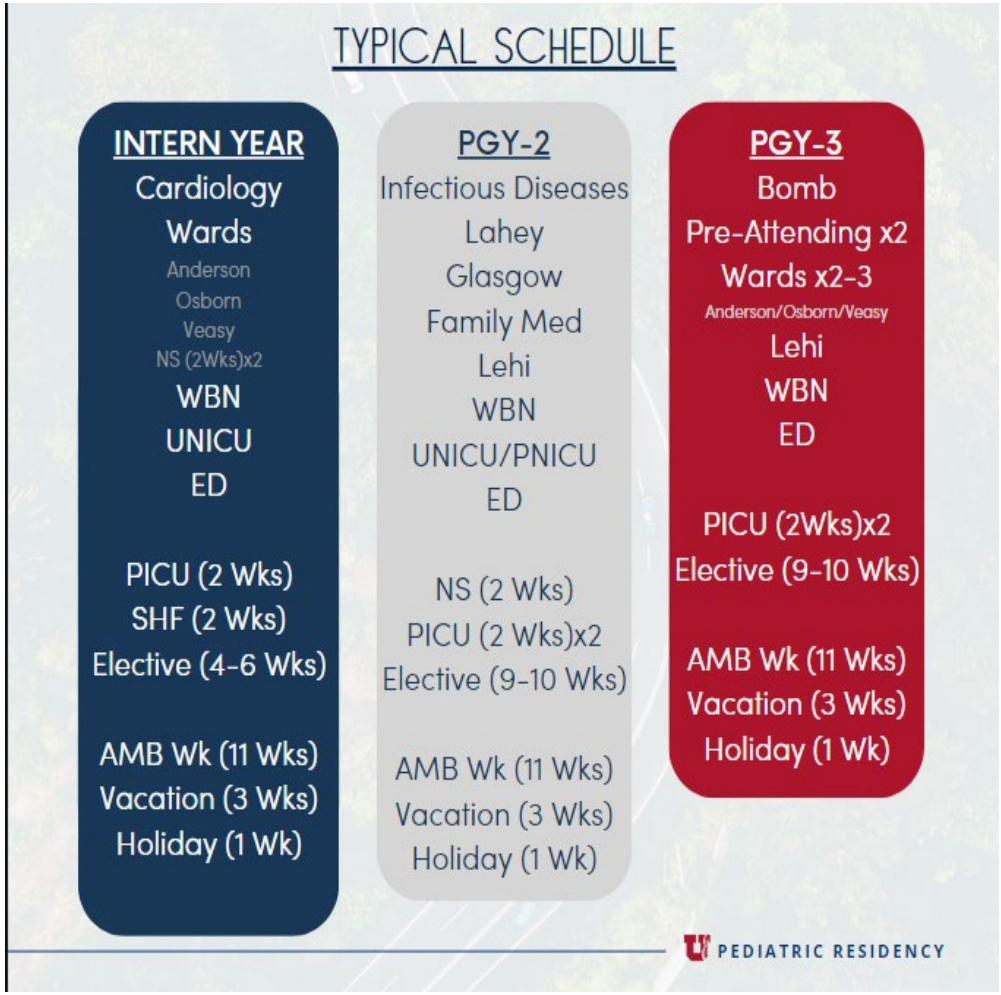
- *Where do the residents practice this EPA?*
- *How many observers/evaluators of this EPA are needed?*
- *Which EPAs are more limited in where they are practiced*?

Incorporating EPAs into the Assessment Forms



Incorporating EPAs: Assessment Mapping

	LOE Direct	LOE Direct	LOE	NICU	WBN	PICU	EM1	EM2	EM3	Wards - Ei	Wards We	Lahey - Da	Ward - Bo	Peer of int	Peer of "st	Peer of int
1					rarely 1											
2				1	1											
3						1										
4				1				1			1			1		
5				1												
6				1												
7							1			1						
8	1	1	1													
9	1															
10					1							1	1			1
11					1		1						1			
12				1	1	1	1			1	1					
13				1			1				1	1				
14											1			1	1	
15						1					1				1	
16					1	1					1	1	1	1	1	



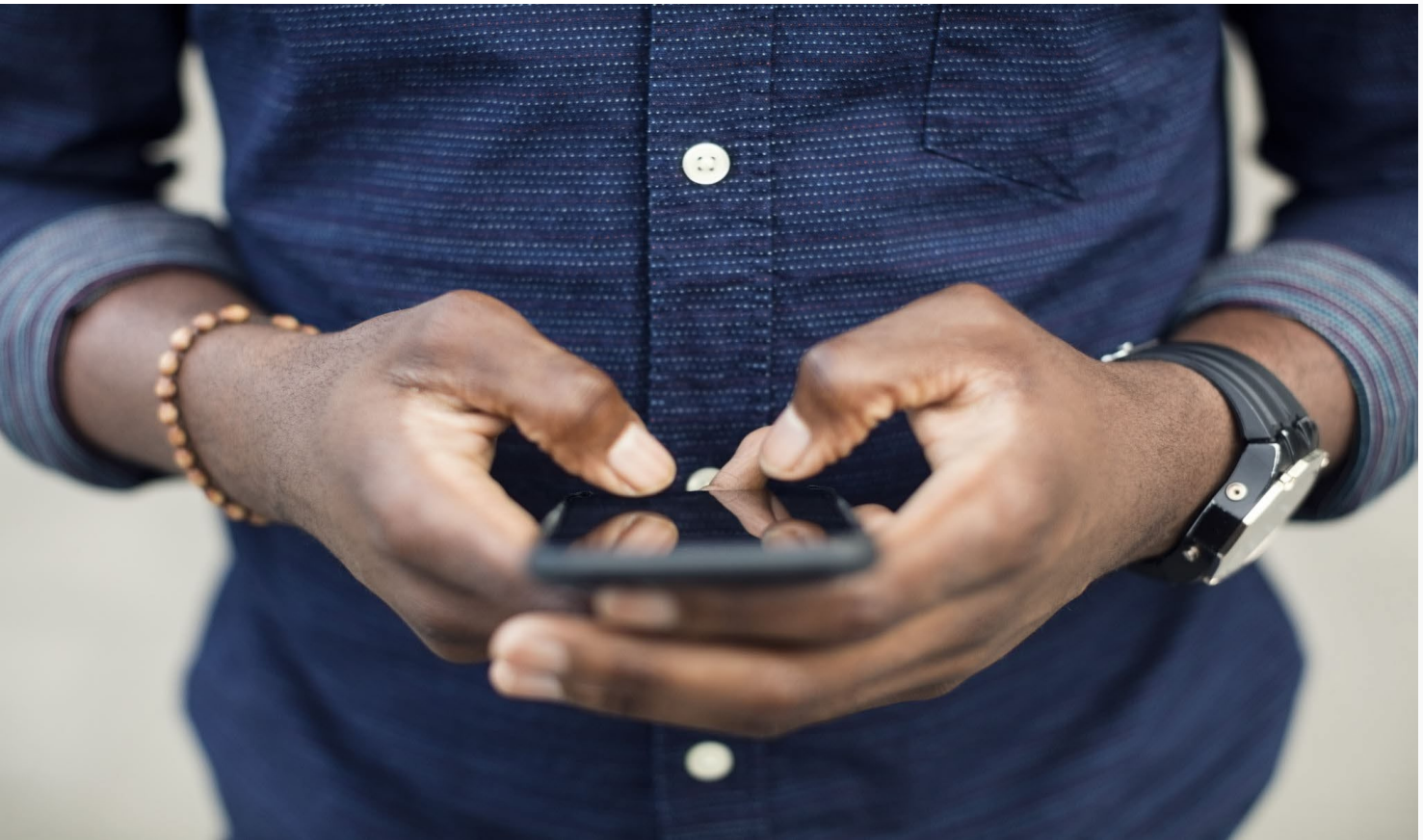
EPA	Year 1
1	4
2	5
3	1
4	8
5	2
6	2
7	2
8	7
9	6
10	5
11	7
12	9
13	7
14	10
15	4
16	12
17	5

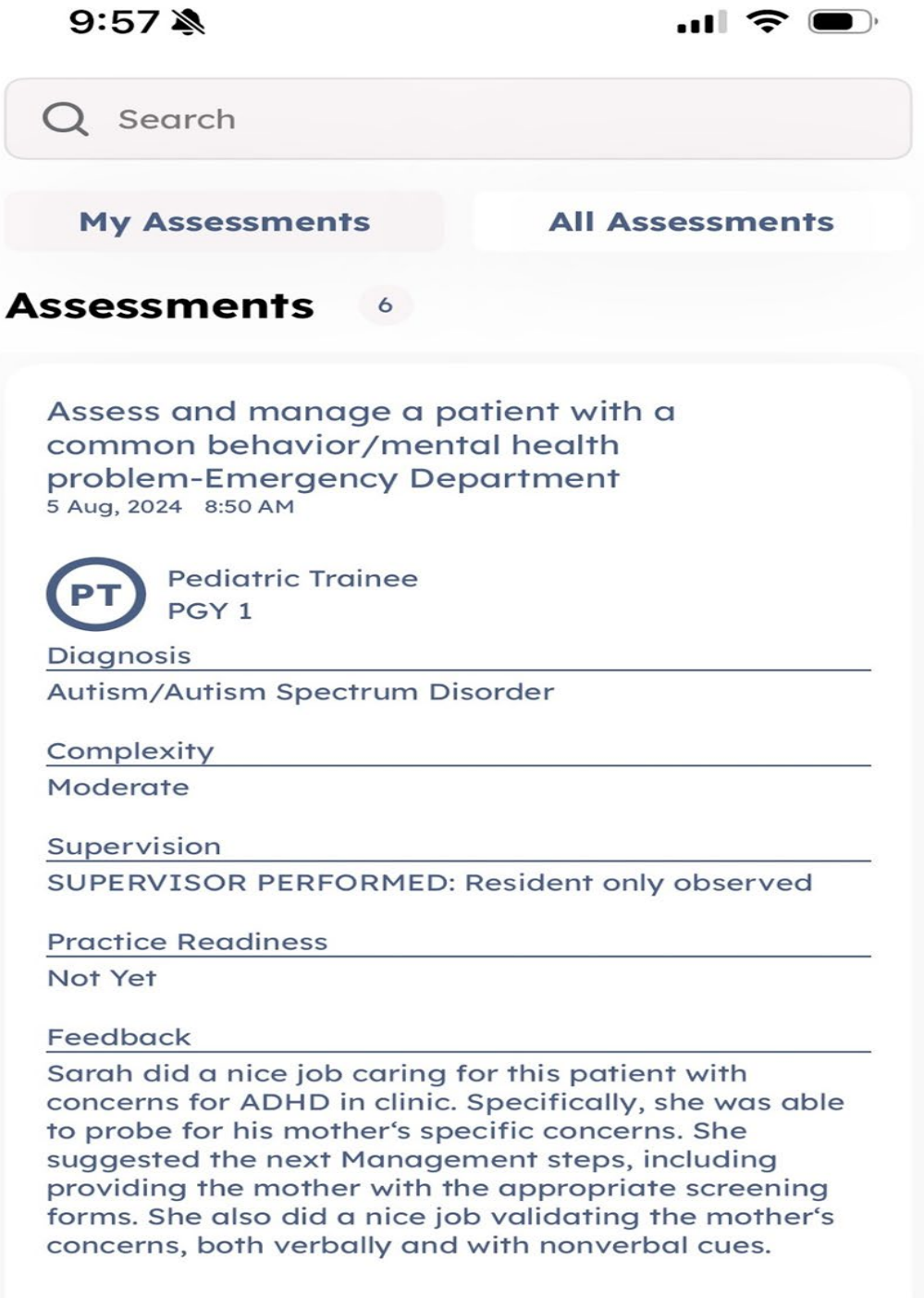
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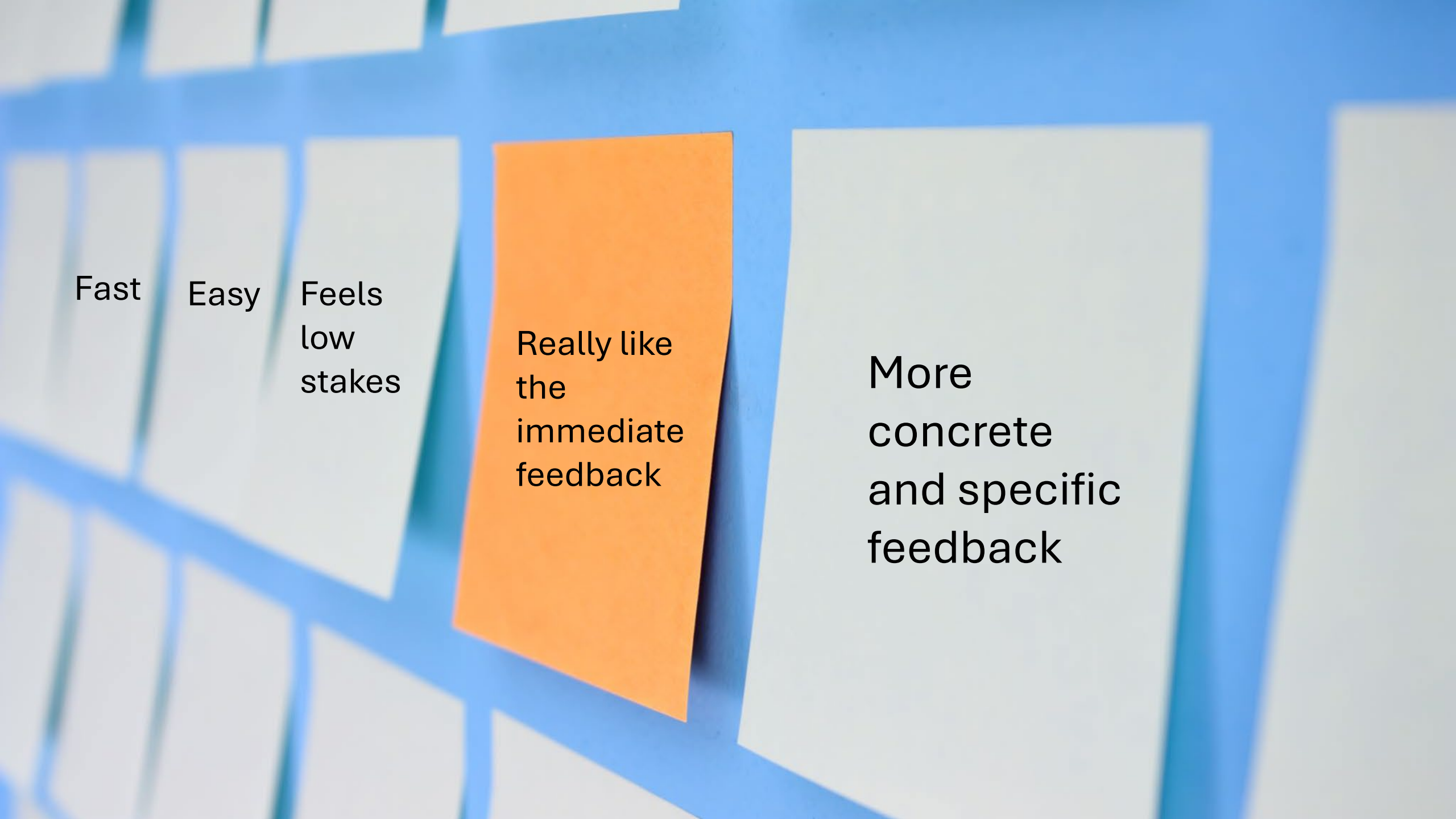
EPAC-elements in Peds Residency

SIMPL

Pediatric, EPA-based frontline assessment tool utilizing a mobile app






Fast
Easy
Feels low stakes
Really like the immediate feedback
More concrete and specific feedback

Lessons learned

Approachable	**Iterative**	**Valuable**	**Better for our residents…and our patients**



Association of Pediatric Program Directors

THANK YOU!

Association of Pediatric Program Directors

Interested in SIMPL?

Email: Ariel.Winn@childrens.harvard.edu