Competency based education across the UME-GME continuum : the EPAC program

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EPAC is . . .

A pilot project that seeks to establish a model for competency-based medical education through variable-time, meaningfully assessed demonstration of competence across the continuum of undergraduate and graduate medical education using pediatrics as a test specialty.

The Purpose of EPAC

- EPAC was intended to be a new educational model which would explicitly connect the continuum of UME and GME as a distinct pathway
- It was intended to be a test of a competency based, time variable model of medical education through UME to GME to fellowship/practice in a particular specialty

What EPAC Was Not

- EPAC was never intended to be a model for all medical education but rather a model to prove the feasibility of CBME and to provide some outcomes which might be important for future different medical education innovations

- Example: Early career decisions and tracks

Participation

- 4 Schools:
  - University of California, San Franci
  - University of Colorado
  - University of Minnesota
  - University of Utah
- Sponsor:
  - Association of American Medical Colleges
- Grant support:
  - Macy Foundation

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Why Pediatrics?

- Pediatrics was selected as the specialty to pilot this project for 2 reasons
- 1) The American Board of Pediatrics was involved in educational innovation initiatives and was interested in considering time variable advancement
- 2) Pediatrics and surgery had been identified in previous studies as two specialty areas where a relatively high percentage of students could remain committed to the specialty throughout medical school

EPAC in a Nutshell

- 4 cohorts of medical students (up to 4 per cohort) at 4 participating medical schools would be selected before their first clinical year and offered a pediatrics residency position at the institution at that time
- EPAC curriculum designed by a school team which included pediatrics clerkship director, pediatrics residency program director and EPAC faculty director
- Data collected on cohort students and non –cohort peers interested in pediatrics
- Longitudinal outpatient pediatrics clinic with designated preceptors begun in Year 2 or 3 and continued into GME
- In addition to required school specific assessments, a common assessment system will be used for all EPAC students (core EPAs, specific pediatrics EPAs and milestones as well as common standardized tests) with specific uniform thresholds for advancement to GME
- 8 of 12 students in cohort 1 met the threshold for advancement to GME during the first semester of their fourth year in medical school in a time variable progression
- 3 students in cohort 1 left EPAC during or after their first clinical year using the pre-designed opt-out path
- Students are being followed in GME in comparison with their non-EPAC peers

EPAC Teams

- All four schools assembled educational teams composed of both pediatrics clerkship directors and pediatrics GME program directors as well as others
- All schools have included educational specialists and have hired program coordinators for EPAC
- Two part-time national evaluation and assessment consultants work with sub-committees of the larger EPAC group

Curricular Plans

Consistent for all 4 schools

1. Longitudinal continuity pediatric clinic, beginning in Year 2 or 3, extending through all residency
2. Residency slots guaranteed at each school when a student is selected for an EPAC cohort
3. Emphasis on pediatrics throughout curriculum (early pediatric clinic experiences, service learning projects, summer "internships" after Year one) starting in year 1
4. Each school agreed to take 4 annual cohorts of students with up to 4 students per cohort. First group of students entered medical school in 2013

Differences

1. Third year LIC in Minnesota and San Francisco (MN LIC is pediatric centric)
2. Selection of final cohort at end of Year 1 in Colorado, mid Year 2 in Utah and Minnesota, end of Year 2 in San Francisco
3. Special pediatrics clerkship and other pediatric focused clerkship experiences in Utah

Year 1 – EPAC Explore

- Students are introduced to pediatrics and to the EPAC program in a variety of ways in the different schools, including pediatric interest groups, targeted sessions with pediatric faculty, school service learning projects, etc.
- MN offers a summer 2 week internship in pediatrics with a general pediatrician

Year 2 EPAC Focus and EPAC Match

- In EPAC Focus students are offered different activities in each school which immerse them more in pediatrics as a specialty – these may include focused pediatric physical exams, evening sessions with pediatric faculty, etc.
- EPAC Match is the selection of the final cohort. All schools have an application process that includes interviews.
- One school (CO) selects candidates at the end of year 1 so phases are accelerated

“Year 3” and beyond
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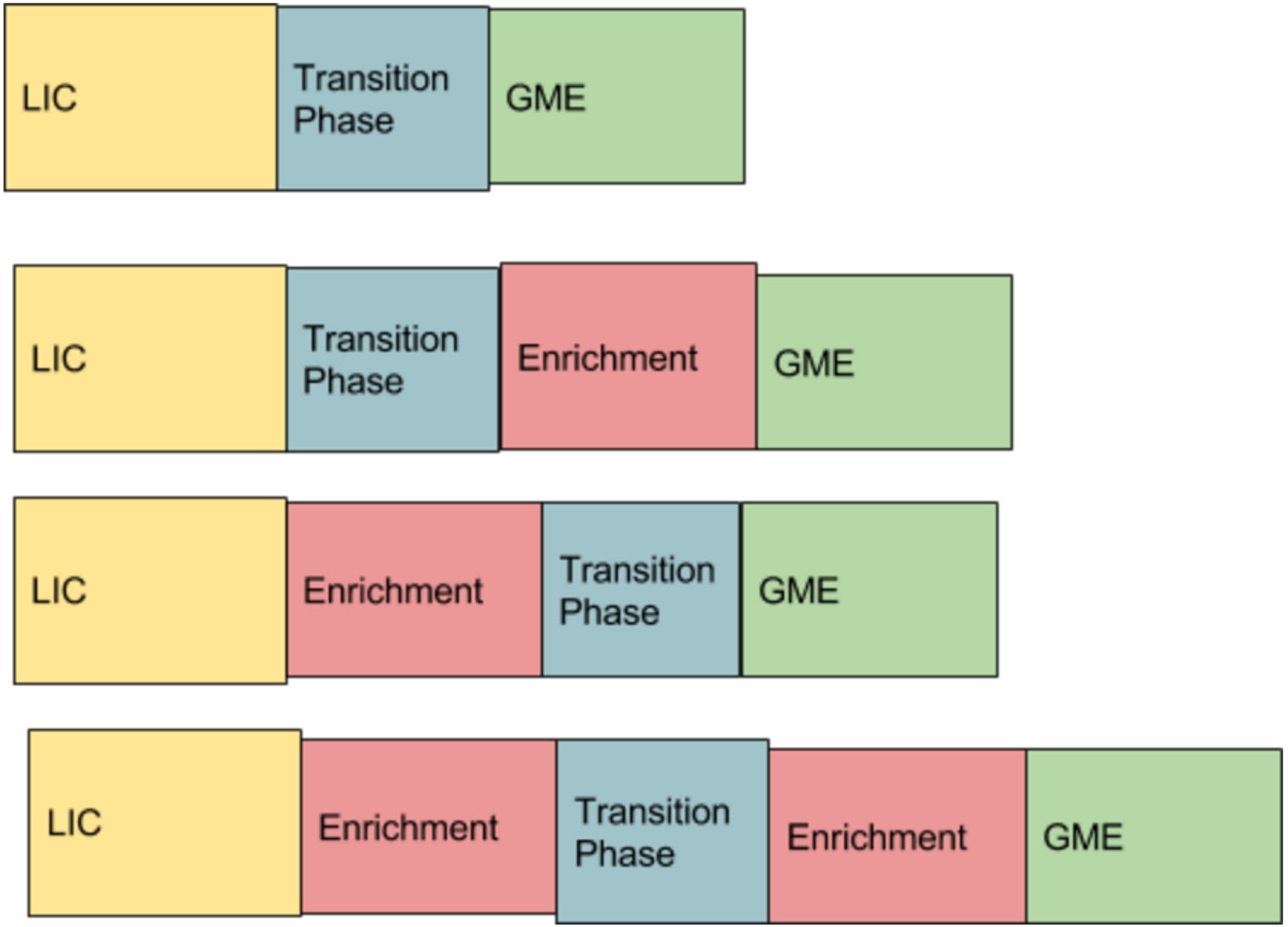
- **Longitudinal Integrated Clerkship (LIC)**
  - Meets the requirements of all the standard core clerkships with exception of the sub-internship
  - Up to 12-month prototype but time-variable depending on student achievement
- **Transition Phase Curriculum:**
  - “Preparation for residency” experiences focusing on inpatient medicine
  - Includes required sub-internship (NICU) and pediatric hospitalist “sub-internship”
  - USMLE Step 2 CK and Step 2 CS
- **Enrichment:**
  - Time-variable experiences tailored to address specific competency areas requiring further development
- **Pediatric Residency at the University of Minnesota (GME)**

“Year 3” and beyond: Possible paths



Transition Phase—EPAC Cohort 1

Student	April 15-April 29	May 2-May 27	May 31-June 10	June 13-June 24	June 27-Jul 24	Jul 25-Aug 21	Aug 22-Sep 18	Sep 19-Oct 16	Oct 17-Nov 13	Nov 14
A	LIC	LIC	Step 2 CK	Intern orient	Step 2 CS	Elective	Elective	Hospitalist	NICU	GME
B	LIC	LIC	Step 2 CK	Intern orient	Step 2 CS	Hospitalist	NICU	Elective	GME	
C	LIC	LIC	Step 2 CK	Intern orient	Step 2 CS	NICU	Hospitalist	GME		
D	Step 2 CK	Hospitalist	Step 2 CS	Intern orient	NICU	Elective	GME			

Guiding Principles about Assessment

- AAMC Core EPAs and EPAs for a general pediatrician are the
- framework for the program – we focus on 5 of the Core EPAs in
- particular which are mapped to the corresponding pediatric EPAs

- EPAC students will meet all of the school and LCME graduation requirements

  AND
- Common learner assessments for all EPAC sites will be performed
- Advancement according to demonstrated ability that results in
- entrustment will be the primary criterion. Learner progress in the
- program must be based on performance against specific outcomes
- (the competencies as demonstrated through certifiable or entrustable activities), *not only on time. Have agreed on specific*
- *EPA milestone level (3a) for progression to residency across the 4 schools*
  - Specific outcomes
  - Individualized progress

- In addition, in order to assure the entrustment needed for advancement to GME, the EPAC group decided to evaluate the core EPAs in a variety of clinical settings
  - Well care
  - Simple acute illness
  - Chronic care, single disease
  - Chronic care, complex
  - Urgent, emergent or escalating care

Core EPAs for Entering Residency

1. Gather a history and perform a physical examination
2. Develop a prioritized differential diagnosis and select a working diagnosis following a patient encounter
3. Recommend and interpret common diagnostic and screening tests
4. Enter and discuss patient orders/prescriptions
5. Provide documentation of a clinical encounter in written or electronic format
6. Provide an oral presentation/summary of a patient encounter
7. Form clinical questions and retrieve evidence to advance patient care
8. Give or receive a patient handover to transition care responsibility to another health care provider or team
9. Participate as a contributing and integrated member of an interprofessional team
10. Recognize a patient requiring urgent or emergent care, initiate evaluation and treatment and seek help
11. Obtain informed consent for tests and/or procedures that the day 1 intern is expected to perform or order without supervision
12. Perform general procedures of a physician
13. Identify system failure and contribute to a culture of safety and improvement

17 Core EPAs for General Pediatrics

- Manage patients with acute, common diagnoses in an ambulatory, emergency or inpatient setting
- Manage information from a variety of sources for both learning and application to patient care
- Facilitate handovers to another healthcare provider either within or across settings
- Lead and work within interprofessional health care teams
- Resuscitate, initiate stabilization of the patient and then triage to align care with severity of illness (Entrustment decisions for this EPA may require stratification by two age groups: neonate and non-neonate
- Demonstrate competence in performing the common procedures of the general pediatrician
- Apply public health principles and quality improvement methods to improve care and safety for populations, communities and systems
- Refer patients who require consultation
- Provide consultation to other health care providers caring for children
- Provide recommended pediatric health screening
- Provide a medical home for patients with complex, chronic or special health care needs (Entrustment decisions for this EPA may require stratification by age group)
- Provide a medical home for well children of all ages (Entrustment decisions for this EPA may require stratification by age group)
- Recognize, provide initial management and refer patients presenting with surgical problems
- Facilitate the transition from pediatric to adult health care
- Assess and manage patients with common behavior/mental health problems
- Care for the well newborn
- Contribute to the fiscally sound and ethical management of a practice (e.g., through billing, scheduling, coding and record keeping practices

CEPAER (13)	Pediatric EPA (17)
#2 Develop a prioritized differential diagnosis and select a working diagnosis following a patient encounter	#1 Manage patients with acute, common diagnoses in an ambulatory emergency or inpatient setting
#7 Form clinical questions and retrieve high-quality evidence to advance patient care	#2 Manage information from a variety of sources for both learning and application to patient care
#9 Participate as a contributing and integrated member of an interprofessional team	#4 Lead and work within interprofessional work teams
#10 Recognize a patient requiring urgent or emergency care, initiate evaluation and treatment and seek help	#5 Resuscitate, initiate stabilization of the patient and then triage to align care with severity of illness
#13 Identify system failures and contribute to a culture of safety and improvement	#7 Apply public health principles and quality improvement methods to improve care and safety for populations, communities, and systems

Assessment:
EPAs and Entrustment Scale

Table 2

Current Graduate Medical Education and Proposed Undergraduate Medical Education Entrustment and Supervision Scale

GME entrustment and supervision scale[15] (five levels)	Proposed UME entrustment and supervision scale (expanded to nine levels)	Example: CEPAER—perform general procedures of physician[1] (e.g., intravenous line insertion)
1. Not allowed to practice EPA	1. Not allowed to practice EPA	1a. Student needs training in patient confidentiality and universal precautions
	a. Inadequate knowledge/skill (e.g., does not know how to preserve sterile field); not allowed to observe	1b. Student observes supervisor insert IV line
	b. Adequate knowledge, some skill; allowed to observe	
2. Allowed to practice EPA only under proactive, full supervision	2. Allowed to practice EPA only under proactive, full supervision	2a. Student and supervisor work together to insert IV: student applies tourniquet and inserts IV with active verbal guidance from supervisor who points out target vein, hands over equipment, and secures IV with tape
	a. As coactivity with supervisor	2b. Student inserts and secures IV alone with supervisor observing closely and ready to step in and assist if necessary; supervisor provides feedback afterwards
	b. With supervisor in room ready to step in as needed	
3. Allowed to practice EPA only under reactive/on-demand supervision	3. Allowed to practice EPA only under reactive/on-demand supervision	3a. Student inserts and secures IV with supervisor outside room; supervisor closely double checks IV site for position, function, security, and any complications before IV is used
	a. With supervisor immediately available, all findings double checked	3b. Student inserts and secures IV with supervisor outside room; supervisor takes quick look at IV before or as IV is used
	b. With supervisor immediately available, key findings double checked	3c. Student inserts and secures IV with supervisor not on ward and reports completion of task to supervisor; supervisor only checks IV before IV is used if difficulty or problem is reported
	c. With supervisor distantly available (e.g., by phone), findings reviewed	
4. Allowed to practice EPA unsupervised	4. Allowed to practice EPA unsupervised	4. Student independently inserts, secures, and begins use of IV without contact with supervisor (may not be achievable or allowed at some institutions)
5. Allowed to supervise others in practice of EPA	5. Allowed to supervise others in practice of EPA	5. Student supervises junior students in basic steps of IV insertion (may not be achievable or allowed at some institutions)

Adapted from Chen, et al. Acad Med, April 2015

- National EPAC group decided on Core EPAs for assessment framework and the Entrustment and Supervision Scale from Chen, et al.
- Threshold for transition from UME→GME is 3a for each CEPAER
- At Minnesota, we developed an electronic assessment tool that is student initiated and done in real time to gather assessment data

University of Minnesota LIC: "just in time" Assessment

- Online form
  - Student initiated, real-time, filled out with the preceptor
  - Verbal and written
  - 2 minutes to complete
- Expectation of $\geq$ 1 EPA assessed at each half-day clinical experience
  - Ideally selected at the start of the clinical experience

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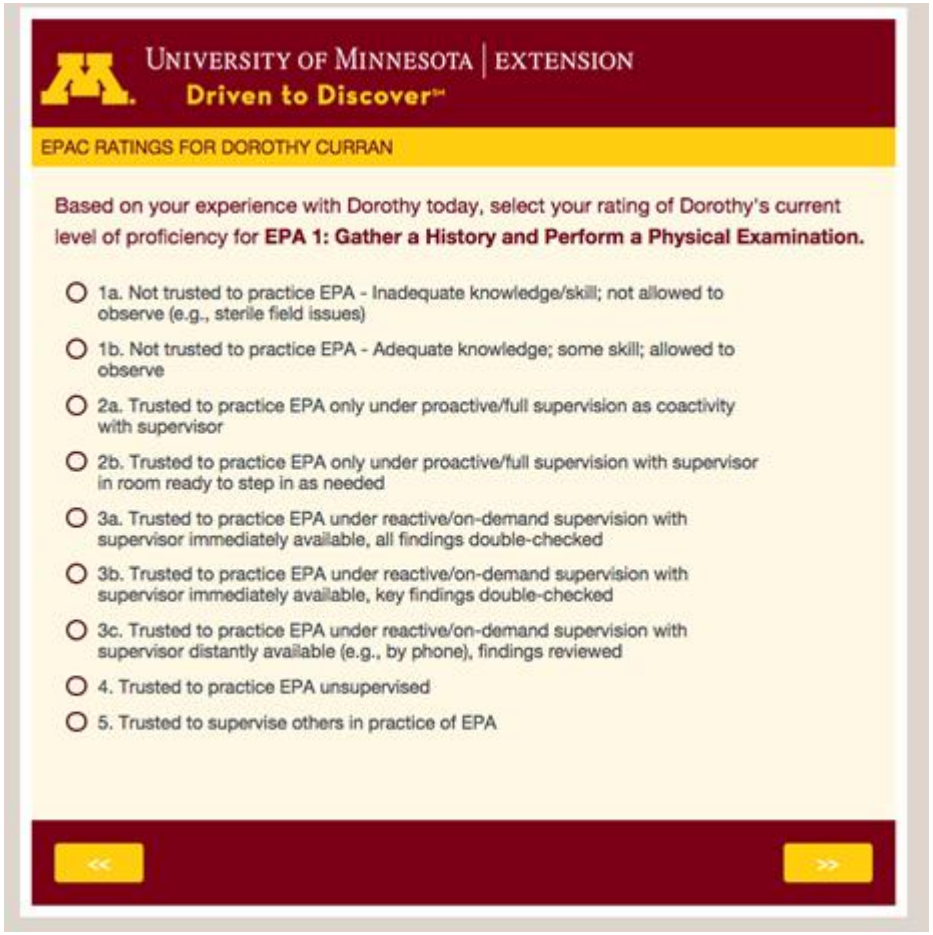
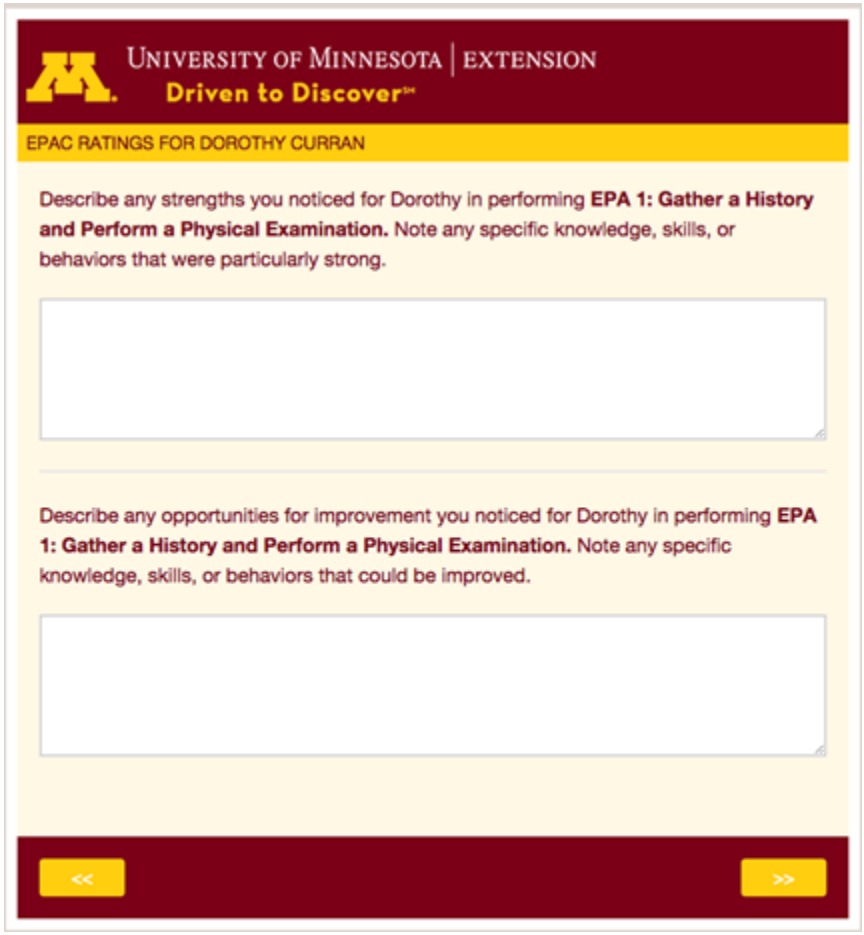
- Student and faculty collaboration on assessment and feedback is a real strength of EPAC
- Students initiate the on-line form, tell faculty what they would specifically like feedback on during their clinical experience

Example: “Today I would really appreciate your feedback on my performance on EPA 1”

Assessment

Entrustment scale





Adapted from Chen, et al. Acad Med, April 2015

Sample LIC data from first cohort: Assessment "Just in Time"

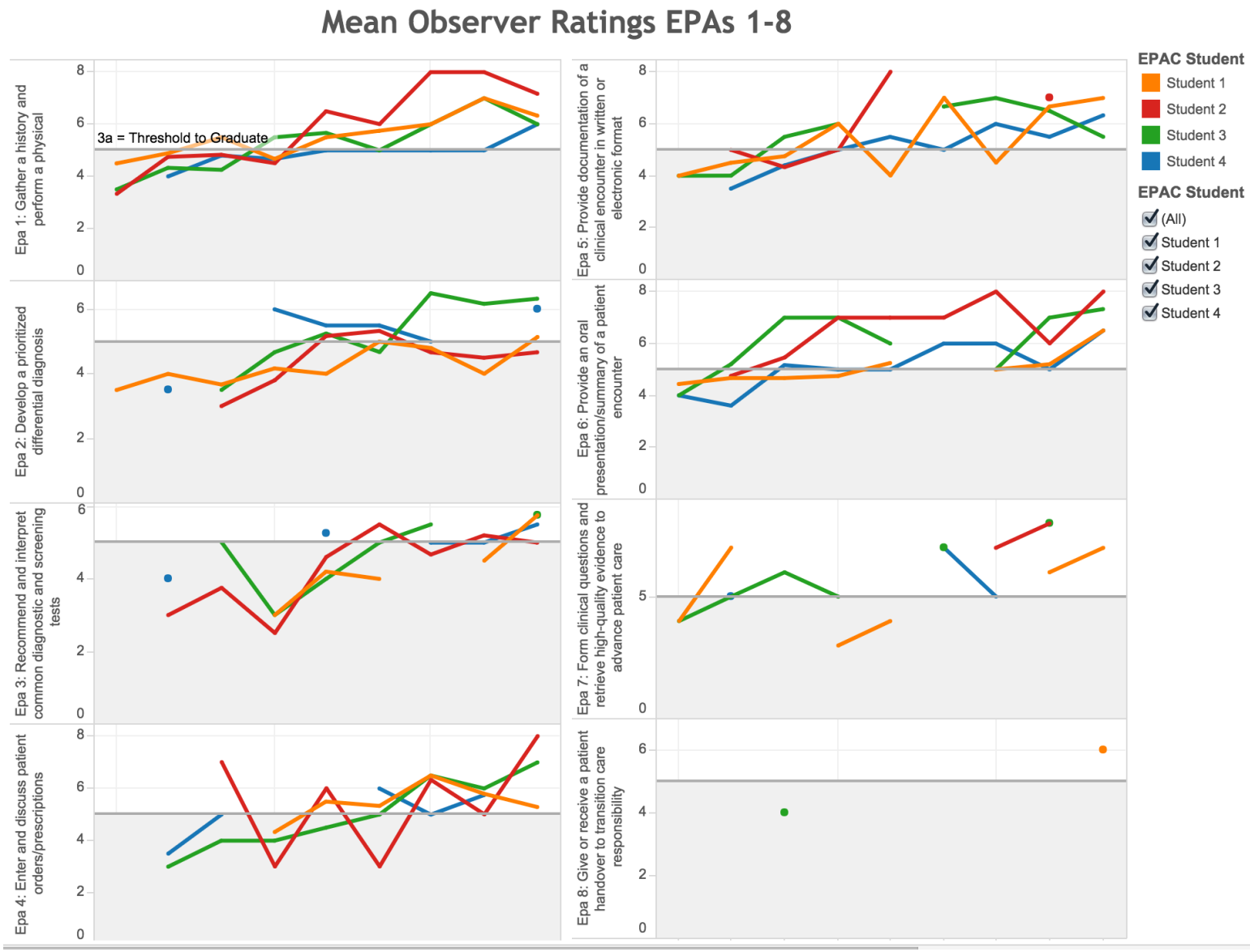
- Average of 105 assessments per student [range 91-112], assessing an average of 1.5 EPAs/assessment over 9 months
- Done by 10-11 preceptors across 8 specialties
- Students have real-time access to assessments to date
  - Ratings, on which EPAs, comments dashboard
  - Assessment over time dashboard

Assessment: Dashboards

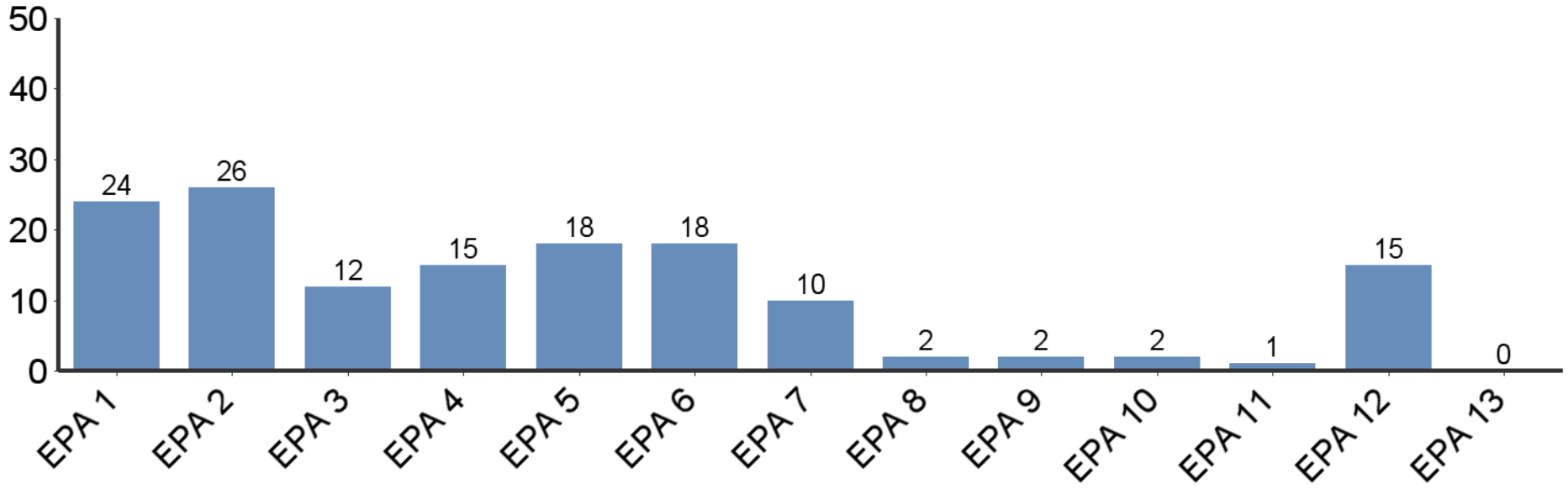
X-axis: time in months

Y-axis: level of entrustment (1 = 1a, 5 =3a)

In real-time can hover over a point and see how many evals contributed to it



Assessment: Dashboards



Students and the EPAC course director use this to help identify which EPAs need more assessment.

Also used by the EPAC leadership for improving the curriculum, faculty development, etc.

Assessment: Summative

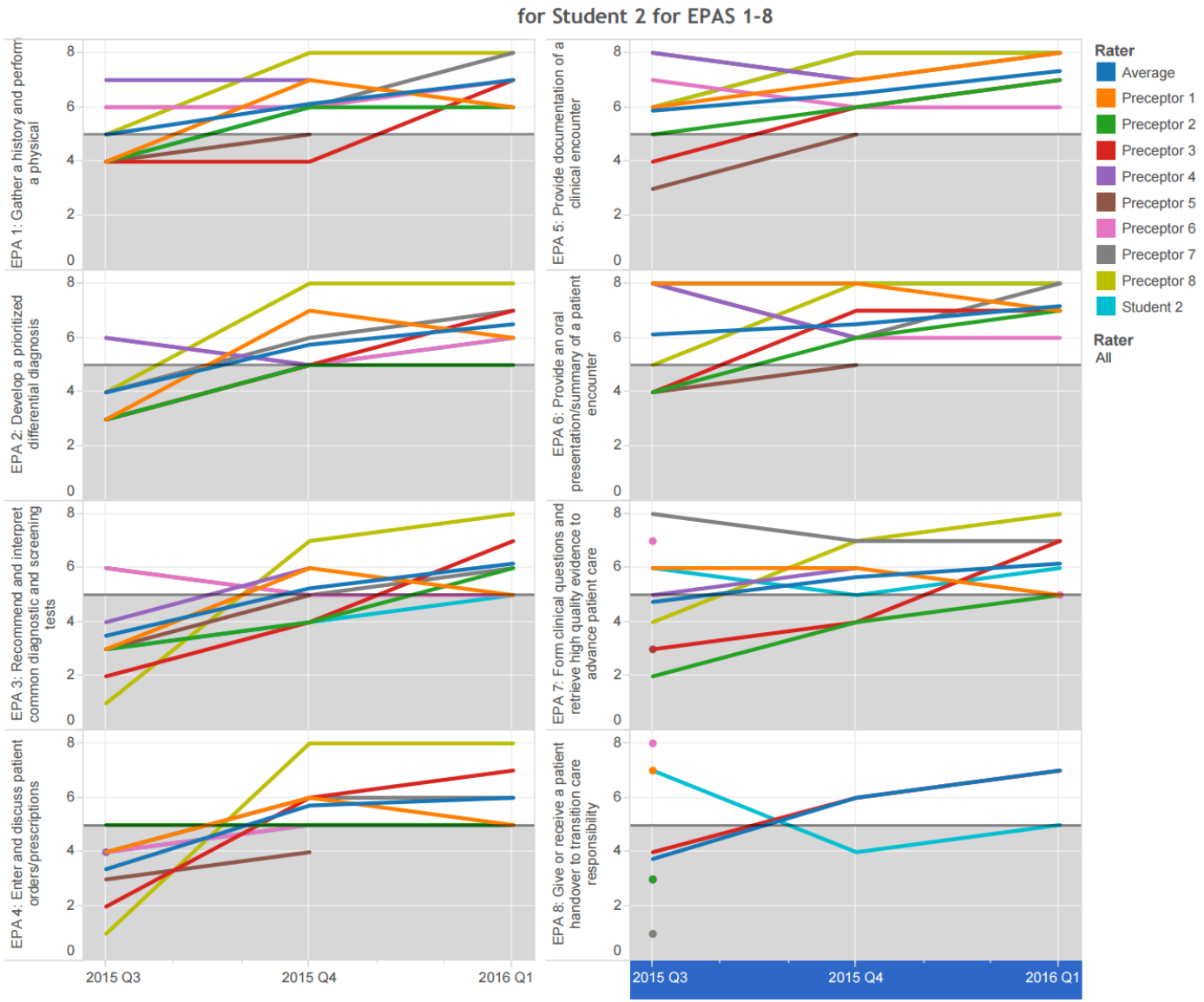
- Each continuity preceptor also completes quarterly summative assessment of student on the 13 core EPAS
- Can display each preceptor's data, average and self-assessment over time for any given student

Assessment: Summative

Same x/y axis

Each line is a continuity preceptor, self-assessment, or average (blue)

Used in faculty development as well as in student assessment



Assessment
Clinical Competency Committee (CCC)

- Quarterly: September, December, March and May
- Modeled after residency CCCs
- Committee composition (at MN): EPAC leadership team and continuity preceptors
- Reviews all assessment data for each student
- Reports de-identified ratings for each student to APPD LEARN database to allow tracking of student progress over time from all schools

Assessment
Clinical Competency Committee (CCC)

- Longitudinal, developmental, individualized assessment
- Feedback given to student in individual meeting with EPAC course director
- Shared with preceptors

Sample Reporting to APPD Learn

EPA 9: Collaborate as a member of an interprofessional team

Effective teamwork is necessary to achieve the Institute of Medicine competencies for care that is safe, timely, effective, efficient, and equitable. Introduction to the roles, responsibilities, and contributions of individual team members early in professional development is critical to fully embracing the value that teamwork adds to patient care outcomes.

[]Select the learner's level on this EPA. *

Please choose the appropriate response for each item:

	Well care	Simple acute	Chronic single diagnosis	Chronic complex	Urgent/emergent /escalation of care
No evidence yet	○	○	○	○	○
1a. Not trusted to practice EPA - inadequate knowledge/skill even to trust to observe	○	○	○	○	○
1b. Not trusted to practice EPA - trusted to observe	○	○	○	○	○
2a. Trusted to practice EPA with coaching as coactivity (supervisor guides learner through entire presentation)	○	○	○	○	○
2b. Trusted to practice EPA with coaching (learner takes the lead in interactions with other team members and supervisor guides as needed)	○	○	○	○	○
3a. Trusted to practice EPA without coaching but with review (all team interactions double-checked)	○	○	○	○	○
3b. Trusted to practice EPA without coaching but with review (key team interactions double-checked)	○	○	○	○	○
3c. Trusted to practice EPA without coaching but with review (overall practice of EPA reviewed)	○	○	○	○	○
4. Trusted to practice EPA without coaching or review (or would be, if local policy permitted)	○	○	○	○	○
5. Trusted to coach others in practice of EPA (or would be, if local policy permitted)	○	○	○	○	○

Provide a narrative of a few sentences explaining the learner's entrustable behaviors for this EPA summatively.

Narratives may be omitted for EPAs not yet assessable, and for EPAs already entrusted (although data on whether students remain entrustable could be valuable).

Please DO NOT USE THE LEARNER'S NAME IN THE NARRATIVE.

Where applicable, consider using the expected behaviors from Appendix B of CEPEAR curriculum development guide.These are available in the help that appears below the text box.

Please write your answer here:

Expected behaviors for a pre-entrustable learner

- Prioritizes one's own goals over those of the team.
- Demonstrates limited understanding of the roles of other team members besides physicians (e.g., seeks counsel from the other physicians to the exclusion of other team members).
- Typically communicates in a unidirectional manner and in response to a prompt.
- Displays limited ability to modify communication based on audience, venue, receiver preference, or type of message.
- Demonstrates difficulty reading one's own emotions and struggles to anticipate or read the emotions of others.
- Succumbs to lapses in professionalism particularly when stressed or tired.
- Is typically a more passive member of the team.
- Has limited interaction with other team members, with the unintended consequence of not being able to optimally support patients through transitions of care.

Expected behaviors for an entrustable learner

- Acts as an active and integrated member of the team who in most situations prioritizes team goals over one's own professional goals.
- Understands the roles of other team members, seeks their counsel, actively listens to their recommendations, and incorporates them into practice.
- Typically communicates in a bidirectional manner and keeps all team members informed and up to date.
- Modifies and adapts communication content and style based on audience, venue, receiver preference, or type of message.
- In most situations, is able to read one's own emotions and anticipates and reads the emotions of others.
- Maintains a professional demeanor in all but the most trying of circumstances.
- Actively engages with the patient and other team members to coordinate care and provide for seamless transitions between care providers and from one setting to another.

Faculty Development (UMN)

- Three times yearly "Roadshows"
  - Face-to-face meetings between EPAC leader(s) and continuity preceptors (n =~16-20)
  - Development sessions on Core EPAs, assessment tool
  - Show student data, especially:
    - Summative dashboard with faculty assessments tracked (e.g, explore consistent high scores from a faculty, etc)
    - EPAs needing focus for a given student
    - Summary of CCC assessment for their student

Program Evaluation

In addition to individual student assessment, we are working on evaluating the EPAC program across the 4 schools.

Goals are to address the following issues with a variety of methods including surveys, site visits and focus groups and for a varied group of stakeholders (including faculty, trainees, regulatory bodies and funders):

- Feasibility – can we do it
- Fidelity – can we do it equally well at all sites
- Safety – will we do no harm
- Significance – professional identity, burn-out, etc. using standardized survey instruments and controls

Where are we with the EPAC cohorts?

U of CO – Cohort 1 - 3 students in GME year 1
Cohort 2 – 2 students in year 4
Cohort 3 – 4 students in year 3
Cohort 4 – 4 students in year 2

UCSF – Cohort 1 – 3 students in GME year 1
Cohort 2 – 4 students, 3 in year 4
Cohort 3 – 4 +1 students, now in year 3
Cohort 4 – 4 students, all in LIC as of Jan. 2

UMN – Cohort 1 – 4 students in GME year 2
Cohort 2 – 4 students; 3 in GME year 1 and 1 transitioning soon
Cohort 3 – 3 students in year 3 LIC
Cohort 4 – 4 students in year 2

U of Utah – Cohort 1 – 2 students in GME year 2
Cohort 2 – 4 students in GME year 1
Cohort 3 – 2 students in year 3
Cohort 4 – 4 students to be selected this spring

Some Students Have Left EPAC

- To date, 7 students have left the EPAC program after being selected for a cohort
- Of a possible 61 selected students in 4 cohorts from the 4 schools, 6 have left the EPAC program in year 3 to pursue residencies in other specialties
- Two students selected for EPAC have decelerated but remained in EPAC
- One student is leaving in GME to enter anesthesia training

Where did students who left EPAC go?

- Two Internal Medicine
- Two Pediatric Neurology (one student who is going into pediatric neurology stayed in EPAC)
- One Family Medicine
- One Pediatric Otolaryngology
- One Anesthesiology (leaving after 1 year of residency)

Why is EPAC Working?

1) Dedication of the medical educators involved with the project

2) Willingness of students to trust and experiment with something new

3) Support of regulatory groups – in particular
   - AAMC
   - American Board of Pediatrics (ABP)
   - ACGME
   - FSMB
   - NRMP

Continuing Work

- We are continuing to follow our EPAC students in GME and compare them to their non-EPAC GME peers (Stemmler grant)
- We need to show that our EPAC students are at least comparable to their non- EPAC peers in their progress through GME and into fellowship or practice

What Can We Learn from EPAC (and projects like EPAC)

- Regulations can be flexible for pilot projects
- When (how early) can students make lasting decisions about career choice? How are those decisions made?
- Better definition of readiness for residency
- Can we assess "competency (clinical competency)" accurately
- Can we move trainees into and through residency "early"? Is four years of medical school necessary?
- Can we redefine the "generalist" education of medical school
- What do we really need out of our UME tracks?
- Can we develop more pathways/choices for our students
- What are the long term effects of these efforts. Better? Worse?

- On behalf of all my colleagues in the EPAC group, thank you for listening to this presentation.
- Questions?