Implementing an EPA-based workplace curriculum

Olle ten Cate, PhD
Center for Research and Development of Education
University Medical Center Utrecht
The Netherlands

Disclosure statement
No conflict of interest reported

Creative Commons License. This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. http://creativecommons.org/licenses/by/4.0/
University Medical Center Utrecht
Overview

1. What is Competency-based medical education
2. Why can EPAs be helpful?
3. How does entrustment as assessment differ from regular WPA?
4. EPAs were conceived for GME – what makes their use in UME different?
5. Bridging the divides: UME-GME-CME

Competency-Based Medical Education

Philosophy
• Better, broader description of the physician
• From assuming to assessing competence
• Only graduate physicians meeting standards
• Based on competence, not just time in training

Practice
• Detailed description of competencies
• Struggle with teaching and assessment
Recommendations of Carnegie Report 2010

1. Fixed standards, flexible pathways
2. Integration of knowledge and clinical experience
3. Professional identity formation
4. Habits of inquiry and innovation

Features of CBME

1. **Outcome**-based, not process-based: what is *attained* is key, not just what is *done*

2. Focus on capability that *integrates* knowledge, skill, attitude

3. **Time-independent**: length of training adapted to individual differences

4. **Individualized**: trainees and contexts are not identical
What critics say

- Competencies too detailed and fragmented
- Reductionist, too simplified, insufficient
- Losing the holistic view on the physician
- Too focused on ticking-off
- Too top-down and prescriptive
- Not evidence-based
- Serving regulators rather than doctors in training
- Simply does not work in practice
The CanMEDS 2015 competency framework
739 components (across all specialties)

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

Frank et al 2015

Why is improvement needed?

• Heath care is expensive and not inherently safe
• Health care contexts change and we just need to adapt training practices
• We have neglected non-technical objectives for too long
• Standards for graduation are not clear
• Teaching and assessing medical trainees can definitely be improved
Goal: securing safer practice by improved training and assessment

TO ERR IS HUMAN FRAMED PATIENT SAFETY AS A SERIOUS PUBLIC HEALTH ISSUE (1999 ESTIMATES)

44,000 - 98,000
Annual deaths from medical error among hospitalized patients.\(^{(a)}\)

43,458
Annual deaths from car crashes.

42,297
Annual deaths from breast cancer.\(^{(a)}\)

16,516
Annual deaths from AIDS.\(^{(a)}\)

Kohn et al 2000

Radiology progress test scores 2005-2009 for all Dutch residents

PGY 1  PGY 2  PGY 3  PGY 4  PGY 5

Ravesloot et al 2012
What is needed?

- Training for the critical activities in health care
- Preferably a holistic, non tick-box approach
- Integration, not separation, of competencies
- Key: determining when learners are truly ready for unsupervised practice

Entrustable Professional Activities

Units of professional practice (tasks) that may be entrusted to a learner to execute unsupervised, once he or she has demonstrated the required competence

Enables a shift of focus from individual competencies to the work that must be done
E.P.A.

- **Entrustable**: acts that require trust – by colleagues, patients, public
- **Professional**: confined to occupations with extra-ordinary qualification and right
- **Activities**: tasks that must be done

EPAs ground competencies in daily practice

---

**Competencies versus EPAs**

- **EPAs**: units of work / tasks that must be done
- **Competencies**: qualities of individuals

- One can possess competencies; one cannot possess EPAs
## Competencies versus EPAs

<table>
<thead>
<tr>
<th>Competencies</th>
<th>EPAs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>person-descriptors</strong></td>
<td><strong>work-descriptors</strong></td>
</tr>
<tr>
<td>knowledge, skills, attitudes, values</td>
<td>Essential units of professional practice</td>
</tr>
<tr>
<td>• content expertise</td>
<td>• discharge patient</td>
</tr>
<tr>
<td>• health system knowledge</td>
<td>• counsel patient</td>
</tr>
<tr>
<td>• communication ability</td>
<td>• lead family meeting</td>
</tr>
<tr>
<td>• management ability</td>
<td>• design treatment plan</td>
</tr>
<tr>
<td>• professional attitude</td>
<td>• Insert central line</td>
</tr>
<tr>
<td>• scholarly skills</td>
<td>• Resuscitate patient</td>
</tr>
</tbody>
</table>

Ten Cate et al 2010

---

## Does it fit?

**Task (EPA) to be done**

**Person with competencies**
EPAs require multiple competencies

<table>
<thead>
<tr>
<th>Competencies</th>
<th>EPA1</th>
<th>EPA2</th>
<th>EPA3</th>
<th>EPA4</th>
<th>EPA5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical expert</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Collaborator</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Communicator</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leader</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Health advocate</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Scholar</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessment focused on EPAs

Pangaro & ten Cate 2013

Synthetic EPA framework approach

Pangaro & ten Cate 2013
Operational definition of competence

When a professional activity is mastered
• ...on a **threshold** level
• ...that permits **trust**
• ...to act **unsupervised**

Competence is a **stage** in a continuum of development

Growth of competence over time

Dreyfus & Dreyfus 1986; ten Cate et al. 2010
Competency curves of one trainee

A different trainee
EPA approach serves flexibility

- **Intra-trainee variation**: trainees do not reach competence for everything on last day of training
- **Inter-trainee variation**: different prior knowledge and skills, learning ability, general attitude
- **Context variation**: variable clinical opportunities, local practice (epidemiology, facilities, culture), education-mindedness of staff

Should one size fit all?

Entrustment decisions as assessment approach
Issues in workplace-based assessment

• Generosity error (too high scores, failure to fail)
• Halo (generalizing from observing one feature)
• Unreliable (not reproducible)
• Unclear standards (often no standards)
• Observer/rater differences
• Ratings unclearly relate to proficiency, to personal development, to effort, to reference group performance, et cetera

Moving from assessment of ability to entrustment decision-making

• Traditional psychometrics do not work well in the workplace
• Variance caused by raters and context is larger than variance caused by trainee qualities
• Worsened by lack of supervision, fragmented care, short patient stays, little observation
• A move from traditional assessment to entrustment decisions for EPAs may increase validity
Entrustment: recognizing ability + right + duty to act

Assessment traditionally is *evaluation of ability* - no consequences other than individual progress

Entrustment as assessment includes

- *permission to act*
- *making available for service*

Ten Cate, 2016

Psychology of traditional workplace assessment

She’s nice and works hard; it won’t hurt and will probably stimulate if I mark her ‘superior’

Please... mark me ‘superior’
Psychology of EPA-based workplace assessment

She’s nice and works hard, but it may hurt my patients if I mark her ‘ready for unsupervised practice’

Please... mark me ‘superior’

The trust concept in EPA-based assessment

• Trusting someone is making yourself vulnerable

• Calculated risk that adverse events are manageable

• Graduates will be certified to carry out activities that supervisors have not been able to observe and leaners may have never encountered

• Entrustment decisions require estimation of adaptive competence to cope with unfamiliar situations
Factors determining entrustment decisions

A. Trustee/trainee features - trustworthiness
B. Trustor/supervisor features - propensity
C. Benefits of entrustment
D. Risks of entrustment

A. Trainee trustworthiness based on:

1. Ability (observed competence/proficiency)
2. Integrity (truthfulness and benevolence)
3. Reliability (consistence and conscientiousness)
4. Humility (recognition of limitations and willingness to ask for help when needed)
Dynamics of the entrustment decision

B. Trust propensity of supervisor (/team):

1. Dispositional tendency to trust others
2. Content expertise
3. Situational / contextual overview
4. Experience with trainees in general

Dynamics of the entrustment decision

C. Benefits of entrustment

1. Regular healthcare service provision by trainee
2. Satisfying high need if there is no other carer
3. Educational / motivational benefit for learner
Dynamics of the entrustment decision

D. Risks of entrustment

1. Harm to patients
2. Harm to attending supervisor / team / hospital
3. Harm to the trainee

Entrustment in an equation

\[ ED = T_t \times P_s \times (\text{benefits / risks}) \]

ED= Likelihood of entrustment decision
T= trustworthiness; t= trainee
P= propensity to trust; s= supervisor

Ten Cate 2017, in press
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. EPA may be supervised with junior learners

Entrustment decisions – two modes

Ad-hoc entrustment decisions
happen every day; situationally determined; based on presumptive trust and initial trust. Formative nature.

Summative entrustment decisions*
should be based on grounded trust (multiple sources of documented information); serves as certification / license to act. Summative nature.

*sometimes called Statement of Awarded Responsibility (STAR)

Ten Cate et al 2010, 2015
Growth of competence – decrease of supervision

- Expert
- Proficient
- Competent
- Advanced
- Novice

EPA

Training

Deliberate professional practice

Summative decision for unsupervised practice

Multiple ad-hoc entrustment decisions

Shades of decreasing supervision

GME versus UME

- EPAs were conceived for the GME goal – preparing trainees for unsupervised practice
- UME has a different, less uniform, goal – preparing trainees to enter residency
- “Unsupervised practice” must be replaced for UMC EPAs
- Residencies differ in entrance expectations: Core EPAs for UME may be supplemented with elective EPAs
- EPAs for UME is a redefinition of the MD degree
Supervision scale for entrustment

1. Permission to be present, not to enact the EPA.

2. **Direct supervision.** Supervisor present in the room. Pro-active supervision.
   a. EPA conducted as a co-activity with supervisor
   b. EPA conducted alone, with supervisor in the room; ready to step in as needed

3. **Indirect supervision.** Supervisor not in the room but in health care facility and quickly available for reactive/on-demand supervision.
   a. All findings / decisions double checked
   b. Key findings / decisions double checked
   c. Findings / decisions discussed upon student request

4. **Limited supervision.** Supervisor not present in health care facility.
   a. Supervisor is available on call to come and provide supervision
   b. Supervisor is not available but may provide feedback and monitoring in hindsight

5. Permission to supervise others in practice of this EPA.

---

**USA UME EPAs**

1. Gather a history and perform a physical examination
2. Prioritize a differential diagnosis
3. Recommend and interpret common diagnostic and screening tests
4. Enter and discuss orders and prescriptions
5. Document a clinical encounter in the patient record
6. Give an oral presentation of a clinical encounter
7. Form clinical questions and retrieve evidence
8. Give or receive a patient handover
9. Collaborate as a member of an interprofessional team
10. Give urgent or emergent care
11. Obtain informed consent
12. Perform general procedures of a physician
13. Identify system failures and contribute to a culture of safety and improvement
Utrecht Core EPAs (works in progress)

1. The clinical consultation
   - History, physical examination, measuring vital signs, creating a differential diagnosis, ordering and interpreting diagnostic tests, designing a management plan, documentation

2. General medical procedures
   - Preparing and executing medical procedures including communication with the patient

3. Informing, advising & guiding patients and families
   - Discussing diagnostic options, test results or a management plan and documentation

4. Communicating & collaborating with colleagues
   - Writing discharge summary/letter, oral patient hand-overs, patient & research presentations, collaborating with health care workers and contributing to interprofessional teams

5. Extraordinary patient care
   - Basic life support, establishing death
Breadth of EPAs and responsibilities increase with stage of training

- EPA Junior medical student: Measuring blood pressure
- EPA Senior medical student: Complete physical & history
- EPA Junior resident: Management of uncomplicated patient
- EPA Senior resident: Running a regular outpatient clinic

Small EPAs become nested (integrated) within broad EPAs for entering residency
Small EPAs ‘nested’ within larger EPAs in advanced years to establish integration

New Utrecht UME curriculum: works in progress

- Mostly biomedical courses; few small EPAs to be integrated within larger ones
- 5 broad core EPAs for MD that include small EPAs
- plus elective
- Residency with preparation
- Residency without preparation
- Speciality specific EPAs for shortened residency
- Elective EPAs for upper level students
### Dynamics of EPAs across the continuum

<table>
<thead>
<tr>
<th>Practice</th>
<th>Residency</th>
<th>Medical School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>13 EPAs in medical school mastered for entering residency</td>
</tr>
</tbody>
</table>

05/05/17
Competence grows during residency: EPAs are being mastered at level 4 (unsupervised practice), building on knowledge and skill from medical school; 3 EPAs from MS have expired.

13 EPAs in medical school mastered for entering residency – 3 are less used in the specific residency

Professional practice: Two EPAs have expired, one has been added

Competence at end of residency: 8 EPAs mastered

Competence grows during residency: EPAs are being mastered at level 4 (unsupervised practice), building on knowledge and skill from medical school; 3 EPAs from MS have expired.

13 EPAs in medical school mastered for entering residency – 3 are less used in the specific residency
**Maintenance of competence**

- EPAs gained during specialty training may serve well as MOC focus
- Continued and deliberate practice of EPAs should suffice to maintain the portfolio
- Prolonged disrupted practice of EPAs should lead to temporary mandatory supervision
- New EPAs could be added after specialty registration

**Wrapping up**

- CBME: great advance, translation to teaching and assessment can be problematic
- EPAs can revitalize CBME by connecting competencies to practice and creating the flexibility CBME asks for
- Entrustment decisions deepen the nature of workplace-based assessment
- Medical competence may be envisioned as a dynamic portfolio of EPAs across a lifetime
References

- Grant, J., ten Cate, O., & Boucher, A. (Eds.). (2016). Entrustable Professional Activities for the Transition from Medical School to Residency. Ottawa, Ontario, Canada: Association of Faculties of Medicine of Canada.