Competency-based Medical Education (CBME): Milestones and Assessment Systems

Objectives

- Purposes of Milestones
- Role of Milestones in NAS
- System perspective:
  - Assessment and Milestones
  - Clinical Competency Committees

When I say “Milestone”...

- What first comes to mind?
- Share your initial reaction with a neighbor
  - Why this reaction?
Purposes and Implications

ACGME:
- Accreditation – continuous monitoring of programs; lengthening of site visit cycles
- Public Accountability – report at a national level on competency outcomes
  - Drives accountability, public reporting

Training Programs:
- Framework for CCC
- Guide curriculum development
- More explicit expectations of trainees
- Support better assessment
- Enhanced opportunities for early identification of under-performers

Certification Boards:
- Potential use – inform eligibility decisions for certification

Residents and Fellows:
- Increased transparency of performance requirements
- Encourage informed self-assessment and self-directed learning
- Better feedback

Milestones are a Formative Assessment Framework

The Milestones and NAS in a Nutshell

- A Continuous Accreditation Model based on assessment of annual data – this list is not all encompassing and is subject to change
  - Annual program data (resident/faculty information, major program changes, citation responses, program characteristics, scholarly activity, curriculum)
  - Aggregate board pass rate
  - Resident clinical experience
  - Resident survey and faculty survey (latter is new)
- Semi-annual resident Milestone evaluations
- 10 year Self-Study and Self-Study Visit
- Clinical Learning Environment Review (CLER) Visits

Shared Mental Model Challenge

* From TeamSTEPPS/AHRQ
Milestones

- By definition a milestone is a significant point in development.
- Milestones should enable residents, fellows and the training program to better determine an individual’s trajectory of competency acquisition.

Entrustable Professional Activities

- EPAs represent the routine professional-life activities of physicians based on their specialty and subspecialty.
- The concept of “entrustable” means:
  - “a practitioner has demonstrated the necessary knowledge, skills and attitudes to be trusted to perform this activity [unsupervised].”

### Competencies, Milestones and EPAs

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Competencies</th>
<th>Milestones</th>
<th>EPAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granularity</td>
<td>Low</td>
<td>Moderate to High</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td>Synthetic/Integrated</td>
<td>Moderate</td>
<td>Low to Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Practicality</td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>Conceptual</td>
<td>High</td>
<td>Low</td>
<td>Low to Moderate</td>
</tr>
</tbody>
</table>

Milestones and EPAs as Roadmap

Observations:
1) Journey not a straight line
2) More than one path (but not infinite)
3) “If you don’t know where you are going, any road will get you there”

Dreyfus & Dreyfus Development Model

<table>
<thead>
<tr>
<th>Level</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>Time, Practice, Experience</td>
</tr>
<tr>
<td>Advanced Beginner</td>
<td>Competent</td>
</tr>
<tr>
<td>Proficient</td>
<td>Expert/Master</td>
</tr>
<tr>
<td>Expert/Master</td>
<td>Competent</td>
</tr>
</tbody>
</table>

Dreyfus SE and Dreyfus NL. 1980
Dreyfus & Dreyfus Development Model

MILESTONES

<table>
<thead>
<tr>
<th>Curriculum Assessment</th>
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<th>Curriculum Assessment</th>
<th>Curriculum Assessment</th>
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<td>Expert/ Master</td>
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<td>Time, Practice, Experience</td>
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</tbody>
</table>

Dreyfus SE and Dreyfus HL. 1980
Carraccio CL et al. Acad Med 2008;83:761-7
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Assessment System for Effective CBME

Professional Self-Regulatory Assessment System

Residents
Institution and Program

Accreditation
Certification and Credentialing

Unit of Analysis: Program

Faculty, PDs, and others
This is a Human Process
Milestones and EPAs as Guiding Framework and Blueprint

Unit of Analysis: Individual

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Linked Aims of Improvement

Better Patient (and population) Outcomes
Better Professional Development
Better System Performance

Everyone


Evaluating Residency Programs Using Patient Outcomes


Residency Program of Origin, Ranked (Quintile) by Program Complication Rate

Difference remains after correction for USMLE performance
Excess Risk = 32%
Q1 vs Q5

Care of the Vulnerable Elderly Study

Performance on Geriatric Process of Care

<table>
<thead>
<tr>
<th></th>
<th>Resident Clinics Mean %</th>
<th>Practicing Physicians Mean %</th>
<th>Univariate F</th>
<th>Structure coefficients</th>
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</thead>
<tbody>
<tr>
<td>Documentation of:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Gait evaluation</td>
<td>28.4%</td>
<td>74.2%</td>
<td>77.53**</td>
<td>.90</td>
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<tr>
<td>Balance evaluation</td>
<td>21.6%</td>
<td>66.4%</td>
<td>65.11**</td>
<td>.82</td>
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<tr>
<td>Medical surrogate</td>
<td>29.0%</td>
<td>54.4%</td>
<td>24.09**</td>
<td>.85</td>
</tr>
<tr>
<td>End-of-life preferences</td>
<td>29.5%</td>
<td>49.3%</td>
<td>12.89**</td>
<td>.55</td>
</tr>
<tr>
<td>Vision testing done</td>
<td>40.0%</td>
<td>64.7%</td>
<td>19.09**</td>
<td>.55</td>
</tr>
<tr>
<td>Hearing assessment</td>
<td>23.3%</td>
<td>40.3%</td>
<td>8.06*</td>
<td>.41</td>
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<tr>
<td>Screen for:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Falls risk</td>
<td>18.6%</td>
<td>60.8%</td>
<td>49.60**</td>
<td>.57</td>
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<tr>
<td>Cognitive impairment</td>
<td>18.3%</td>
<td>52.5%</td>
<td>29.02**</td>
<td>.60</td>
</tr>
<tr>
<td>Depression</td>
<td>33.7%</td>
<td>62.6%</td>
<td>24.09**</td>
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Linked Aims of Improvement

Better Patient (and population) Outcomes

Better Professional Development

Everyone

Better System Performance


Norcini: How do we train faculty?

Faculty development

• Methods of assessment will need to be based largely on observation
  • Faculty are the measurement instrument and they need training
  • Milestones make training easier but they are not a substitute for it
  • 2-4 hour training exercise with periodic follow-up important (deliberate practice)

From J. Norcini; AMEE 2013; FAIMER

Linked Aims of Improvement

Better Patient (and population) Outcomes

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Everyone

Better System Performance

Effective Assessment Process

- Most important component of curriculum is the clinical care residents provide and experience
  - Clarity on right outcomes linked to curriculum
  - Integration of the educational and clinical systems
- Right combination and synthesis of assessment methods
- Critical importance of shared understanding & mental models of competence
  - Competencies, milestones, entrustable professional activities (EPAs)

Assessment and Safe Patient Care

- Importance of appropriate supervision
- Entrustment

  Trainee performance* X
  Appropriate level of supervision**

  * a function of level of competence in context
  ** a function of attending competence in context

  Must = Safe, effective patient-centered care

Discussion: Your Efforts in the Triangle

Better Patient (and population) Outcomes
Better Professional Development
Everyone
Better System Performance

Competency Committees

The Assessment “System”

Assessments within Program:
- Direct observations
- Audit and performance data
- Multi-source FB
- Simulation
- ITE exam

Qual/Quant “Data” Synthesis: Committee

Milestones and EPAs as Guiding Framework and Blueprint

Accreditation
Certification and Credentialing

Residents
Faculty, PDs and others

Unit of Analysis: Program
Unit of Analysis: Individual

PD I-Resident Evaluation Period: Jan 2014
Milestones: Gastroenterology, 34

“I Think You Should Be More Explicit Here in Step Two.”
Group Decision Making

- Key Issues
  - What is the environment in which the committee performs its work?
    - What is the local culture?
    - Groups within groups
  - What are the effects of hierarchy on group decision making?
    - David Berg: Medicine one of the most hierarchical of all professions
  - Single variable of effectiveness: extent to which people are willing to say “positive” and “negative” comments and observations in a group

The Wisdom of Crowds

- The wisdom of many is often better than the wisdom of the few
- To maximize the probability of good judgments:
  - Sample
  - “Independence”
  - Diversity are important…

Basic Committee Principles

- Evidence-based versus verdict-based “jury”
  - Start and review all evidence before a decision
    - Do not start with a conclusion/decision
    - Confirmation bias
  - Be careful not to emphasize consensus over dissent
    - Minority opinions, even if “wrong”, still helpful
    - Be sure all voices are “heard” and watch carefully for negative effects of hierarchy
Committee Benefits

- Develop group goals and shared mental models
- "Real-time" faculty development
- Key for dealing with difficult residents and fellows
- Share and calibrate strengths and weaknesses of multiple faculty assessments ("observations")
- Key "receptor site" for frameworks/milestones
  - Synthesis and integration of multiple assessments

"Wisdom of the Crowd"

- Hemmer (2001)
  - Group conversations more likely to uncover deficiencies in professionalism among students.
- Schwind (2004)
  - 18% of resident deficiencies requiring active remediation became apparent only via group discussion.
    - Average discussion 5 minutes/resident (range 1 – 30 minutes)

Narratives and Judgments

- Pangaro (1999)
  - Matching students to a "synthetic" descriptive framework (RIME) reliable and valid across multiple clerkships
  - Key component: good process with facilitation
- Regehr (2012)
  - Faculty created narrative "profiles" (16 in all) found to produce consistent rankings of excellent, competent and problematic performance.
Milestone Journey: Revised Conceptual Model of Rapid Cycle Change

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Thank You and Questions

eholmboe@acgme.org