Future Directions for Graduate Medical Education

DAVID M. IRBY, PHD
UCSF
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1910: Flexner’s Observations
- Great variability
- Lax admissions standards
- Passive learning, anemic curricula, poor facilities
- Faculty of practitioners
- No accreditation, certification or residency training

Flexner. Medical Education in the United States and Canada (1910).

Flexner’s Legacy
- High standards for admission
- College degree with science requirements
- Expanded science-based curriculum
- Two years basic sciences
- Two years clinical experience
- University/teaching hospital

Medical Education Then and Now

1910
- Dissecting Room, medical students and professor

2010
- Multi-disciplinary lab with media support

Reforming Medical Education
1.0
- Medical Education in the United States and Canada
2.0
- Educating Physicians: A Call for Reform of Medical Education

UC Medical Department 1910
The Carnegie Research Team

2010 Carnegie Study

- Part of 5 profession study
- Included 14 site visits
- Based on research in the learning sciences and medical education

Observations about Residency Education

- Residents mired in service
- Program directors oppressed by compliance responsibilities
- Startling silo-ing of programs
- Next-to-no dissemination of innovation

Four Recommendations

- Standardization and individualization
  - Set performance outcomes and allow flexibility in learning
- Integration
  - Connect formal and experiential knowledge
- Habits of inquiry and improvement
  - Focus on excellence
- Identity formation
  - Develop professional values and dispositions

Standardization Refocused

Mapping Educational Processes: 1910

Third Year Curriculum
Primarily Didactic

<table>
<thead>
<tr>
<th>Course</th>
<th>Women's Reserve</th>
<th>Yale</th>
<th>UAB</th>
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<tr>
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Mapping Competencies, Milestones & Tools: 2010

Standardization and Milestones

- Competency-based progression, milestones and merit-based advancement
  - Bay State Med Center – Hinchey
- Criterion-referenced competency assessment
  - Southern Illinois University - Varney
Competency-based assessment and the duration of residency training

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Traditional training (mo.)</th>
<th>Competency-based training (mo.)</th>
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<tbody>
<tr>
<td>Lumbar laminectomy</td>
<td>6-9</td>
<td>3-6</td>
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<tr>
<td>Laminectomy</td>
<td>24-36</td>
<td>18</td>
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<td>Ant. cervical fusion - exposure</td>
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<td>Pterional craniotomy</td>
<td>36-39</td>
<td>18</td>
</tr>
<tr>
<td>Suboccipital craniotomy</td>
<td>36-39</td>
<td>18</td>
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</tbody>
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Individualize Learning Process

- Build on learner’s prior experience and expertise
- Progressively advance learner responsibilities as competencies attained
- Increase educational flexibility and develop alternate tracks

Individualization

- Individual learning plans, reflection, and portfolios
  - Duke – McNeil
  - Pathways to Discovery
  - UCSF – Adler

Individualization

Creating a Flexible Continuum in Internal Medicine

- Flexible Boundaries
- Residency
- Fellowship
- Medical School

- 1 year clinical core + 1 year in depth (Pathway, Clinical)
- 2 years core + 1 year in depth (Pathway: Hospitalist, Primary Care, Subspecialty)
- 3 years integrated + 1 year in depth (Pathway: Clinical, Internship)

Recommendations for the Future

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Integration

- Connect knowledge and experience
- Engage in multiple forms of reasoning
  - Analytical reasoning
  - Pattern recognition
  - Creative and adaptive reasoning
Examples of Integration

- Ambulatory Long Blocks and QI integration
  - UC Cincinnati - Warm
- Localization of patients and teams and QI integration
  - BJ Deaconess - Reynolds
- Interprofessional teams and patient-centered medical homes
  - VA - OHSU, UCSF, UW-Boise and Seattle, Yale

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Habits of Inquiry & Improvement

- Develop habits of learning and innovation
  - Metacognition and adaptive expertise
- Advance expertise through deliberate practice & feedback
  - Experts vs experienced non-experts
- Participate in communities of inquiry and improvement

Inquiry and Improvement

“How can we improve our transitions of care?”

Examples: Inquiry/Improvement

- Patient safety, QI, system redesign
  - Summa/NEU/COM – Sweet
- Resident leadership as consultants to Pacific Business Group on Health
  - UCSF – Vidyarthi and Ranji
- Resident scholarship

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Professional Identity Formation

- Formation
  - Process of taking on identity
  - Commitment to values, dispositions and aspirations
- Learned through
  - Participation in a community of practice
  - Observation of role models, interactions
  - Coaching, instruction, assessment and feedback

Strategies for Formation

- Characterizing professionalism
  - Mayo – West and Shanafelt
  - UCSF - Papadakis

- Simulations, communication and professionalism
  - Northwestern - Wayne

- Appreciative inquiry
  - Indiana University - Inui

Institutional Culture

Summary

1. Need to move beyond Flexner
2. Standardize on outcomes and individualize the learning process
3. Integrate knowledge and clinical experience
4. Develop habits of inquiry and improvement
5. Focus on professional identity formation

References