The Transformation of Medical Education

Teaching the teacher

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Financial disclosures

• I have no financial disclosures

Topics

• History of medical school education
• The Flexner report
• Medical school format
• Generational changes
• Clerkship experiences
• The hidden curriculum
• Flexner report then and Flexner report now

Key questions

• Why make changes in medical education?
• What needs to change about medical education?
• Who needs to make these changes in medical education?

History of medical education

• 19th century medical education in the U.S.
  – Consisted of 8 months basic science study
  – Clinical training was based on apprenticeship model
  – No formalized Graduate Medical Education (GME)
  – Differing clinical exposure
  – This format lead to lack of standardization in education and training
• European medical education
The Flexner Report

- Commissioned by the Carnegie Foundation
- Studied in 1909 and published in 1910
- Lead to the standardization and reformation of medical school education as we know it today

The Flexner Report findings

- Training facilities were mostly inadequate
- 155 medical schools in North America in 1909
- Training experience varied widely amongst institutions
- Format of training needed to incorporate more basic science
- European medical schools incorporated more translation of basic science theory to clinical medicine

The Flexner Report- Why it worked

- Abraham Flexner
  - Educator, but more importantly, not a physician
  - His brother was a physician at Johns Hopkins
  - No external pressure when visiting institutions
  - Not constrained by punitive repercussions
  - He visited all 155 medical schools
- Ambulando Discimus
- Henry S. Pritchett

Medical School Format

- Flexnerian model
  - Two years basic science followed by two years clinical experience
  - Focuses on core basic science foundation
  - Very standardized
  - Lacks individualization for learning
- Case-Western Reserve Medical School
  - Organ systems model
- Harvard Medical School
  - Problem-based learning

Generational changes

- Baby boomers
  - Born between 1946-1964
  - Driven by work and team
- Generation X
  - Born between 1965-1983
  - Driven by lifestyle
Generation Y, “The Millennials”

- Born between 1984-2002
- They get their own slide
  - Because it wouldn’t be fair if they didn’t
- Everyone is special……and everyone gets a trophy
- Desire to be close with authority figures
- Structure and specific instructions are important
- Need for interaction and thrive with individualization of learning

Generational differences

- Understanding these differences will play an important role in the transformation of medical education
- Generation Y learners are currently trapped within the Flexnerian model of education
  - Medical content has changed significantly
  - The method in which learners desire content delivery has changed significantly
  - Cross-generational conflict
- Consumers
- Pedagogy vs. Andragogy

<table>
<thead>
<tr>
<th>Pedagogy vs. Andragogy</th>
<th>Andragogy</th>
<th>Pedagogy</th>
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<tbody>
<tr>
<td>Type of Learner</td>
<td>Adults</td>
<td>Children</td>
</tr>
<tr>
<td>Learning Environment</td>
<td>Self-directed, adult centered</td>
<td>Child-focused, adult-learner centered</td>
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<tr>
<td>Information to Learn</td>
<td>Learning as a function of interacting with the course</td>
<td>Learning as a function of the course</td>
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References vs. Activities

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<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learner</td>
<td>The learner is responsible for learning, to organize, prioritize, and take responsibility for learning</td>
</tr>
<tr>
<td>Knowledge of the learner</td>
<td>The learner is responsible for selecting resources for learning</td>
</tr>
<tr>
<td>Learning experience</td>
<td>Learning experience is the result of interaction with the learner</td>
</tr>
<tr>
<td>Learning outcome</td>
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- Pedagogy vs. Andragogy
Clerkship experiences
• Impact of educational reform on clerkships
  – Conceptual learning
    • Lecture
    • Problem-based learning vs. case-based learning
  – Practical learning
  – Inquiry and improvement
  – Professional formation

Lectures
• PowerPoint
  – “Death by bullet points” - Levinson
• Handout
• Lights down = eyelids down
• Re-creates first two years of medical school

Problem-based learning
• Began in Canada, McMaster's University, 1969
• Adopted in Australia and Europe
• Began in U.S in New Mexico, popularized at Harvard Medical School
• Objectives
  – Centered on the student
  – Critical thinking
  – Integrates across disciplines
  – Increase retention of knowledge

Case-based learning
• Similar to Problem-based learning but focused on a specific patient case presentation
• Small group format
• Student-directed or facilitator-directed

Evidence-based medical education
• The effect of a clinical problem-solving curriculum on medical student examination performance
  – Study of OB/Gyn clerkship didactic format at UT-Houston and CHRISTUS St. Joseph's Houston
  – Didactics re-structured from traditional lectures to faculty-directed learning centered around problem solving
  – Integrated basic science knowledge
  – Results revealed statistical increase in NBME shelf exam scores when using problem-solving curriculum

Evidence-based medical education

- Changing the Student Clerkship from Traditional Lectures to Small Group Case-Based Session Benefits the Student and the Faculty
  - General surgery clerkship didactic format studied
  - Decreased didactics from 33 lectures to 8 small groups
  - Faculty lead 8 two-hour case-based sessions over core general surgery topics

Cendan JC, Silver M, Den-David K. Changing the Student Clerkship from Traditional Lectures to Small Group Case-Based Session Benefits the Student and the Faculty. Journal of Surgical Education. 2011; 68:117-120.

Evidence-based medical education

- Measured student NBME scores, student subjective measures, faculty subjective measures
  - Only statistically significant increase in % score on NBME shelf exam
  - Student educational needs were adequate regardless of format based on their responses
  - Majority of faculty supervising case-based sessions were junior faculty
  - Faculty comments
    - 75% of comments were positive

Practical learning

- Working rounds or bedside rounds
- Multiple teachers including the patient, faculty, and residents
- Simulations
- Objective Structured Clinical Exam (OSCE)

Inquiry and Improvement

- Inquiry stimulated through scholarly activity
- Modeling of behavior
- Improvement
  - Observation
  - Feedback
  - Evaluation

Observation

- AAMC- 2002
  - "...lack of adequate teaching of fundamental clinical skills"
- Question
  - How many faculty or residents have observed a medical student-patient interview during the past 6 months?


Feedback

- Students’ perceptions
  - American Association of Medical Colleges Graduation Questionnaire- 2005
    - 57.8% students responded receiving adequate feedback during OB/Gyn clerkship
    - 80.8% of students reported adequate feedback during Internal Medicine clerkship
    - OB/Gyn faculty least likely of all to provide feedback

Feedback

- Gil et al
  - Faculty reported giving more feedback than students perceived receiving
  - Do students recognize feedback?


Feedback

- Faculty perceptions
  - Formative vs. Summative
  - Faculty may avoid feedback due to concern of negatively effecting teacher-student relationship


Feedback

- How to give feedback
  - Outline to the student “this is feedback”
  - Attempt to give immediately if possible
  - Avoid generalization, use specifics
  - Give feedback over observed behaviors, not second-hand observations


Feedback

- Structure
  - Request to give feedback or student requests
  - Neutral and private setting for feedback
  - Begin with student self-assessment of performance
  - Teacher assessment of performance
    - Specific examples of observed performance important here
  - Action plan
    - Focuses on ideas for student improvement
  - Summary
    - Provided by the student to allow verbalization of understanding
Feedback

- Negative feedback
  - The feedback sandwich
  - “What if your sandwich is all meat and no bun”
  - Know your student
  - Students would rather negative feedback with ideas for improvement than “good job” or “step it up”

The Feedback Corn Dog

Evaluation

- Perceptions of evaluation in longitudinal versus traditional clerkships
  - Core clerkship block vs. longitudinal curriculum
  - Students and faculty respondents
  - Both students and faculty favored longitudinal curriculum for evaluation compared to core clerkship blocks

The Hidden curriculum

- Simple definition
  - Teacher as role model
  - Student as impressionable learner
- Why is it hidden?
  - Hard to define
  - Maybe we try to hide it from students, or maybe we would like to keep it hidden


The Hidden curriculum

- Assessment of a hidden curriculum
  - Students will give you this, just ask
- Means for improvement
  - Consider all interactions with students as meaningful to them in either a positive or negative way
  - Don’t try to hide anything
  - Use this as a chance to guide students in professional formation
Flexner then, Flexner now

• What has not changed since Flexner’s report
  – Need for standardization
  – The importance of integration of basic science knowledge within the clinical training years
  – Ambulando Discimus
  – Educators, not physicians, have lead the call for reform

Educating Physicians: A Call for Reform of Medical School and Residency, Authors- Cooke, Irby, and O’Brien
Published in 2010
  – Standardization and individualization
  – Integration
  – Inquiry and improvement
  – Professional formation

So......?

• Educating Physicians: A Call for Reform of Medical School and Residency
  – Standardization and individualization
    • Strive to have standard assessment and feedback tools for all clerkships
    • Allow for elective clerkship experiences
  – Integration
    • Develop innovative ways to integrate basic science knowledge into clerkship didactics and practical learning
    • Collaborative and multi-disciplinary learning across clerkships

So......?

  – Inquiry and improvement
    • Challenge students’ clinical reasoning and force the habit of inquiry
    • Improve in timeliness and administration of feedback to students
  – Professional formation
    • Passion
    • Inspiration
Continuing Education

• Teaching the teacher
  – Hit the books
  – Medical Education Fellowship
  – Faculty Development
  – Collaborative learning across departments

Key questions

• Why make changes in medical education?
• What needs to change about medical education?
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Special thanks

• My wife
• My kids
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  – Erin Nelson
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• My students, aka my other kids