Objectives

- Discuss converging challenges characterized as the “Four Horsemen” of the medical education apocalypse
- List possible solutions including the increasing role of technology in medical education and lifelong learning
- Describe the role of community-based physician in medical education and how to overcome barriers to teaching

The Failure of Higher Education

- Grade inflation
  - In 1961, 15% of the grades were A’s
  - In 2008, 43% of the grades were A’s
- Little learning
  - 69% of college graduates could not do basic tasks like comparing opposing editorials or comparing the cost per ounce of different foods
- Unhappy employers
  - 33% of employers think that college graduates are not prepared to succeed on the job

[http://newamerica.net/publications/policy/cracking_the_credit_hour]
More Learning or More Waste?

Objectives

• Discuss converging challenges characterized as the “Four Horsemen” of the medical education apocalypse

• List possible solutions including the increasing role of technology in medical education and lifelong learning

• Describe the role of community-based physician in medical education and how to overcome barriers to teaching

The Four Horsemen of the Medical Education Apocalypse

• Teaching patient shortages
• Shortage of instructors
• Conflicting systems
• Financial problems

[Academic Medicine 2008; 83(12):1132-1139]
The Four Horsemen

• Teaching patient shortages
  – Patients are sicker and discharged quicker
  – Outpatients have little time for being a teaching case
  – Early clinical exposure requires more patients
  – Competition with other learners
• Shortage of instructors
  – Resident 80-hour work week
  – Pressure for clinical productivity

[Academic Medicine 2008; 83(12):1132-1139]

The Four Horsemen

• Conflicting systems
  – Conflicting values and metrics for education
  – Information systems are not designed for education
  – Patient safety and quality trump education
  – The problem of the hidden curriculum
  – The business of medicine comes first

[Academic Medicine 2008; 83(12):1132-1139]

The Four Horsemen

• Financial problems
  – Rising tuition
  – Clinical revenues are getting tighter
  – Direct and indirect GME payments are under scrutiny
  – Research grant indirect payments are decreasing
  – Federal grants for medical education are rare
  – Competition for gifts and philanthropy
  – ADA requirements are increasing
  – State support is drying up

[Academic Medicine 2008; 83(12):1132-1139]

Budget Cuts and the Higher Education Crisis

As states seek to reduce budget deficits, funding for higher education has experienced catastrophic cuts across the country.

Higher Education Funding change in 2010

In fiscal year 2011, funds for higher education were trimmed nationwide by $1,200,000,000. This year, that number is expected to increase to $5,000,000,000.

Potential Consequences of the Horsemen on Medical Education

- Student services decline
- Faculty teaching support goes up in smoke
- Curriculum operations may cease to exist
- Simulation and lab experiences will decrease
- Remote and hostile clinical experiences
- Crushing tuition

[Academic Medicine 2008; 83(12):1132-1139]
The World is Producing more PhDs than ever Before: Is it Time to Stop?

United States: What shall we do about all the PhDs?

The Effect of the Fiscal Cliff

<table>
<thead>
<tr>
<th>Agency</th>
<th>Estimated Amount</th>
<th>Estimated Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centers for Disease Control</td>
<td>$10.3 Billion</td>
<td>-5%</td>
</tr>
<tr>
<td>and Prevention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevention Research</td>
<td>$10.2 Billion</td>
<td>-4%</td>
</tr>
<tr>
<td>National Institutes of Health</td>
<td>$10.1 Billion</td>
<td>-3%</td>
</tr>
</tbody>
</table>

What are the Consequences?

Academia Suffers
As the job market in academia stagnates, talented PhDs have no choice but to leave universities behind for better jobs in the private sector.

Adjuncts Suffer
It is a stressful market for PhDs, and tenures are even more uncertain. These individuals, who are usually underemployed, are usually unable to save for retirement.

Students Suffer
The nation's graduate schools and the demographics of the PhD market have been shrinking.

[http://grants.nih.gov/grants/new_investigators/]
“Thirty years from now the big university campuses will be relics. Universities won’t survive. It’s as large a change as when we first got the printed book.”

Peter Drucker, Forbes

[http://grundyhome.com/blog/archives/2009/02/01/the-university-of-2030/]

Objectives

• Discuss converging challenges characterized as the “Four Horsemen” of the medical education apocalypse

• List possible solutions including the increasing role of technology in medical education and lifelong learning

• Describe the role of community-based physician in medical education and how to overcome barriers to teaching

Meta-Messages from Futurists

• Education is no longer a scarce, local craft; it is now a global commodity

• World class teachers teach everyone

• World class media at everyone’s fingertips

• Internet based with no prerequisites

• Courses anytime, anyplace, for free

• Badges will equal workplace skills and will be more important than degrees/credentials

[http://epic2020.org/]

The Future of the Academy

• Globalization of higher education
  – International student body and international faculty & staff
  – International missions and opportunities

• Cyberinfrastructure (e-everything)
  – Hardware, software, people, organizations, and policies

• Universal access to knowledge and learning
  – Open and transparent; not secretive, limited or elite
  – Less intellectual property and control of data

• Lifelong learning
  – Transition from being in school to always learning
  – Virtual campuses may replace residential experiences

[Professor J.J. Duderstadt, University of Michigan, 2011]
A Changing Landscape

- Today, students don’t need to memorize because they can pull it up on Google
- They can access course materials and watch lecture videos from their dorm rooms, filmed minutes or hours before
- They cite Wikipedia in their research papers
- Technology – and the culture it has created – has altered the landscape of higher education

[http://grundyhome.com/blog/archives/2009/02/01/the-university-of-2030/]

Learning Apps and Websites
MOOCs and Coursera

- Coursera is a “social entrepreneurship company”
  - Partners with the top universities in the world – 33 so far – to offer free courses online for anyone to take
  - Envisions a future where the top universities are educating not only thousands of students, but millions
  - Enables the best professors to teach tens or hundreds of thousands of students
- Coursera depends on massive open online courses
  - MOOCs are synchronous or asynchronous
  - Content is free, credit and assessment are typically not

[https://www.coursera.org/]

The Coursera Partners

- Berklee College of Music
- Brown University
- California Institute of Technology
- Columbia University
- Duke University
- École Polytechnique Fédérale de Lausanne
- Emory University
- Georgia Institute of Technology
- Hebrew University of Jerusalem
- Johns Hopkins University
- Mount Sinai School of Medicine
- The Ohio State University
- Princeton University
- Rice University
- Stanford University
- The Hong Kong University of Science and Technology

[https://www.coursera.org/#universities]

The Demise of the Credit System?

- Carnegie Foundation for the Advancement of Teaching
  - Foundation developed the modern credit system in 1906
  - Defined one credit as an hour of faculty-student contact per week and two hours of outside work over a 15 week semester
  - Driving force was to determine a faculty member’s eligibility to receive a pension
  - Announced on December 4, 2012 that it has obtained a grant to review the value and purpose of the old “Carnegie Unit”
  - Foundation will release a formal report in January 2014


Milestones in GME

Theoretical Competency Report Card Summary, Program X

National % at or above milestone
2 SD or more below National mean %

Professionalism
Patient Care
Communications
Medical Knowledge
Practice Based Learning and Improvement
Systems Based Practice
Theoretical Competency Report Card Summary, Program X

Will Electronic Portfolios Replace University Transcripts?


[http://www.downes.ca/cgi-bin/page.cgi?journal=JISC]
**Punch Line**

_A growing disconnect between education and assessment!

**Big Ideas**

- Every single person in the world will have completely unlimited access to education
- Time to degree will decrease substantially
  - “Education, experience, or examination”
- Formal coursework is replaced by high fidelity experiences that will emphasize individualized learning, competencies, portfolios, and real life applications
- Problem solving replaces ideological dogma

**The Mission is Alive!**

- Although the environment has changed, the fundamental mission of education is intact
  - The literature continues to explode with advances and new knowledge
  - Society will still need highly skilled persons who can help solve problems – both big and small
  - Education is a force for change that helps people transform their lives and those of others

**Some Possible Solutions to the Four Horsemen**

- Adopt standard, competency-based curricula
- Employ and utilize technology as faculty, clinical, and patient extenders
- Develop a national bank of learning objects and curriculum materials shared by many/all
- Give the learners more control over education

[Academic Medicine 2008; 83(12):1132-1139]
Objectives

- Discuss converging challenges characterized as the “Four Horsemen” of the medical education apocalypse
- List possible solutions including the increasing role of technology in medical education and lifelong learning
- Describe the role of community-based physician in medical education and how to overcome barriers to teaching

Docere: *to teach*

How do you define teaching?

- Role Model?
- Instructor?
- Evaluator?
- Consultant?
- Clinical Supervisor?
- Professional Mentor?
Definition of Teaching: Placing people into situations from which they can’t escape without thinking.

The trick to teaching is to achieve balance between:

- Support
- Challenge

Examples of Learner Support
- Maintain the relationship between the learner and the patient
- Allow flexibility & “go with the flow”

Examples of Challenging Learners
- “Homework” assignments
- Presenting case-related topics to other learners
- Have learners do self-evaluations
**Bloom’s Taxonomy**
- Level 6: *Evaluation*
- Level 5: *Synthesis*
- Level 4: *Analysis*
- Level 3: *Application*
- Level 2: *Comprehension*
- Level 1: *Knowledge*

**Teaching vs. Training**
- Critical thinking is the primary goal of teaching.
- Otherwise, teaching is the same as training.

**A Critical Thinker Must be Able to:**
- Differentiate between fact and opinion
- Identify and examine assumptions
- Distinguish between reputable and fallacious sources of evidence
- Identify specious arguments
  
  [Quellmalz, 1987]

**A Critical Thinker Must be Able to:**
- Base judgments on evidence
- Keep an open mind in seeking causes, explanations, and solutions to problems
- Focus on the whole picture while examining specifics
- Subject hypotheses and conclusions to rigorous evaluation

[Quellmalz, 1987]
Are you promoting critical thinking in your learners?

Ways to Promote Critical Thinking
- Aim for higher than just level one of Bloom’s taxonomy of cognition
- Challenge your learners
- Challenge your fellow teachers
- Promote evidence-based practice
- Learn about teaching & learning

Theories of Learning
Pedagogy
- “K-12” Learners
- Dependent learners
- Learner’s experience is not important
- Subject centered
- External motivation
  [Knowles, 1980]

Andrology
- “Adult” learners
- Self-directed learners
- Learner’s experience is a rich resource
- Task/problem centered
- Internal motivation

Structuring of Information

Global Example
- Discrete parts
- Sequential

Analytical Example
- Analytical processing
  1. Discrete parts
  2. Sequential
- Global processing
  1. Whole picture
  2. Simultaneous
Teaching Tips
- Orientation is critical
- Clarify patient introductions
- Maintain patient flow
- Maintain and promote the learner-patient relationship
  [Schwenk & Whitman, 1987]

Important Teaching Concepts
- Orient the learner (tell her or him what you would like to do that day)
- Ask questions
- Select only one teaching point
- Prime the learner immediately before seeing a patient
- Model
  [McGee & Irby, 1997]

Microteaching
- Get a commitment from the learner
- Probe for supporting evidence
- Teach or demonstrate one concept
- Specific positive feedback
- Correct mistakes
  [Wipf & Pinsky, 1994]

Feedback Tips
- Be specific
- Be positive when deserved
- Not demeaning when critical
- Be understandable
- Change behaviors, not personality
- Timing is key (sooner is better)
  [Schwenk & Whitman, 1987]
Some Elements of Effective Teaching Supported by Research

- Provide challenging and interesting assignments
- Clearly communicate expectations for student performance (there should be no surprises at the end)
- Show enthusiasm!!

Some Elements of Effective Teaching Supported by Research

- Develop objectives that emphasize higher order learning (above and beyond simple knowledge content)
- Give prompt, constructive feedback
- Use techniques that promote active involvement

Challenges of Clinic Teaching

- Tell me, I will forget
- Ask me, I will remember
- Involve me, I will understand

[McGee & Irby, 1997]
**Why Teach in the Clinic?**
- Less inpatients are available
- Better forum to teach about chronic illnesses and psychosocial issues
- Employers desire physicians who are effective and comfortable in this setting

[Schwenk & Whitman, 1987]

---

**Learning primary care medicine in a university hospital is like trying to learn forestry in a lumberyard.**

Anon., In Verby et al. 1981.

---

**Efficiency by Level of Training**
- Third year students  Most Time
- Fourth year students
- First year residents (interns)
- Pre-clinical students (first or second year)
- Second year residents
- Third year residents  Least Time

---

**Practice Characteristics that Correlate with Teaching Excellence**
- High referral rates to allied health
- Use of problem oriented medical records including medication lists
- Higher volume of patients
- Larger number of exam rooms
- Degree to which responsibility was delegated to the learner
- Group practice

[Donald & Bass, 1983]
Teaching Conferences

- Ambulatory morning report
- Journal club: critical review of literature
- Chart review
- Clinical encounter forms
- Clinic post-mortem
- Psychosocial rounds
- Topic oriented conference

[McGee & Irby, 1997]

Conclusions

- Teaching is a part of what you do everyday with patients and others
- Aim for more than knowledge content
- Orient the learners; clarify expectations
- Microteaching: less is often more!
- Feedback: give specifics and describe behaviors you directly observe

Conclusions

- Ambulatory care teaching is here to stay
- Ambulatory care teaching can be difficult to master, but mastery can be accomplished!
- Concentrating on how is as important as concentrating on what!
- Teaching resources and information are available through the university and the medical school

Thank You!!