An Update on the AMA ACE Initiative: Emerging Themes of Innovative UME Curricular Change at the Three-Year Mark
Presenters

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American Medical Association

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Penn State College of Medicine

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The Brody School of Medicine at East Carolina University

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American Medical Association
Presentation Outline

• Overview of the AMA Accelerating Change in Medical Education (ACE) initiative
• Meaningful immersion of medical students in health care systems
• Preparing faculty for teaching and assessing competence in ‘system’ domains
• Using technology to facilitate student learning and assessment in ‘system’ domains
Calls for Reform of Medical Education by the Carnegie Foundation for the Advancement of Teaching: 1910 and 2010
David M. Irby, PhD, Molly Cooke, MD, and Bridget C. O’Brien, PhD

Calls for Change in Medical Education

A Decade of Reports Calling for Change in Medical Education: What Do They Say?
Susan E. Strochelski, MD, MPH

Abstract

Purpose
To review the recommendations of 15 U.S. and Canadian reports, published in the last decade, that call for significant change in medical education.

Method
The author selected for review 15 reports published over the last ten years that emphasize general recommendations for change in medical education in the United States and Canada and that represent a broad spectrum of sources.

Results
The purpose, methods, and content of each report are briefly described. The reports were selected because they address comprehensive change in medical education and have been recently published. The reports are categorized based on their inclusion of eight major themes: integrating the educational continuum, need for evaluation and research, new methods of financing, importance of leadership, emphasis on social accountability, use of new technology in education and medical practice, alignment with changes in the health care delivery system, and future directions.

Conclusion
There is remarkable similarity across these reports. They reflect a growing concern about the workforce and the implications of new technologies. They provide a valuable overview of the emerging issues and reveal themes to be addressed in the next decade.

Gaps In Residency Training Should Be Addressed To Better Prepare Doctors For A Twenty-First-Century Delivery System

Francis J. Crosson¹, Jean Leu², Beth M. Roemer³ and Murray N. Ross⁴

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ACCELERATING CHANGE IN MEDICAL EDUCATION
Accelerating Change in Medical Education

• $11 million, five-year grant initiative (launched January 2013)
• Goals:
  – Competency-based programming with individualized learning plans
  – Exemplary methods to achieve patient safety, quality improvement and team-based care
  – Understanding of health care system and health care financing
  – Optimize the learning environment
• Significant interest in med ed community: 83% of schools applied
• 11 schools selected to join ACE Consortium (September 2013)
AMA Accelerating Change in Medical Education
Consortium Innovation Themes

• Integration of medical education and health care systems
  – Value-added roles for medical students (and faculty)
• Faculty Development
  – Quality and safety
  – Mentoring / coaching
• Innovations in Technology
  – tEHR
  – Medicine by the Numbers
  – Virtual Portfolio
AMA Accelerating Change in Medical Education Consortium Innovation Themes

• Competency-based programming
  – Focus on ‘systems’ competencies
• Workforce solutions to improve population-based care
  – Accelerated training in primary care
  – Focus on leadership and population management
• Envisioning the Master Adaptive Learner
ACE Consortium: A Community Supporting Collaboration and Scholarship

• Annual and thematic meetings
• Interest groups – communication, benchmarking, collaboration
• Collaboration on a national evaluation plan
  – Learner achievement – NBME HSS subject exam, OSCE cases, ACGME milestones
  – Sustainability of innovation – qualitative research
• 17 publications / 175 invited and peer-reviewed presentations
• Health Systems Science textbook
  – Published by Elsevier in Fall 2016
  – ACE Consortium members as editors & authors
AMA ACE Consortium Expansion: Beginning 2016

- Goals:
  - Spread and add innovation
  - Small grants to support participation and collaboration
  - RFA – 108 applications
  - 21 additional schools to join Consortium in January 2016

The American Medical Association is pleased to announce a Request for Applications (RFA) from MD- and DO-granting schools in the United States to promote and adopt new models in medical education. Successful applicants will become members of the AMA Accelerating Change in Medical Education Consortium and disseminate and implement bold, innovative projects that promote systemic change in medical education to train future physicians to succeed in our rapidly evolving health care system.

Visit changemeded.org for information about the projects currently underway.
Contributions of the New Schools

Enhanced focus on ‘systems’ competencies:
- Quality, safety, HVCCC, IPP, advocacy

Working with HC delivery systems in novel ways:
- Immersive learning in PCMHs, ACOs, community-base sites
- Underserved populations and socio-ecological determinants

Advancing the use of technology:
- Adoption / enhancement of the tEMR
- IPE and teamwork through telemedicine
- Communication with remote, culturally diverse populations

Value-added roles for medical students

Development of metrics – value of medical education innovation
Meaningful Early Immersions in Medical School

Jed D. Gonzalo, MD, MSc
Assistant Professor of Medicine and Public Health Sciences
Associate Dean for Health Systems Education
Penn State College of Medicine
What is Health Systems Science?

Core Domains
- Structures/Processes
- Policy and Economics
- Clinical Informatics
- Public/Population Health
- Value-Based Care
- Health Systems Improvement

Cross-Cutting Domains
- Leadership and Change Agency
- Teamwork
- Scholarship
- Professionalism and Ethics
- Evidence-Based Medicine

Linking Domain
- Systems Thinking
Are Medical Students an Asset or Liability?

Shea et al. Compensation to a dept. of medicine for the teaching of medical students. NEJM, 96.
Jones et al. On the cost of educating a medical student. Academic Medicine, 97.
“Experiential roles that have the potential to positively impact individual patient and population health outcomes, costs of care, or other processes within the health system, while also enhancing student knowledge, attitudes, and skills in Clinical or Health Systems Science.”
Current Education Model: The Mini Physician Model

Preceptorships

Student-Run Free Clinics

Service Learning

“Chasm”

Physician

Social Worker

Nutritionist

Nurse

Physician Assistant

Care Coordinator

Patient Navigator

Physical Therapist

Patient

Physician
Adding Value: The “Ball Bearing” Model

<table>
<thead>
<tr>
<th>Enhancing Current Roles</th>
<th>“New Roles”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient-Care on Clerkships</td>
<td>Patient Navigator</td>
</tr>
<tr>
<td>History-taking</td>
<td>Care Transitions Facilitators</td>
</tr>
<tr>
<td>EBM contributors</td>
<td>Safety and Patient-Care Analysts</td>
</tr>
<tr>
<td>Clinical process extenders</td>
<td>Quality Improvement Team Extenders</td>
</tr>
<tr>
<td>Patient advocates</td>
<td>Population Health Managers</td>
</tr>
<tr>
<td>Educators</td>
<td>Patient-Care Technician</td>
</tr>
<tr>
<td>Patients, team members, peers, school</td>
<td>Medical Scribes</td>
</tr>
<tr>
<td>Service Learning</td>
<td></td>
</tr>
<tr>
<td>Systems Research Projects</td>
<td></td>
</tr>
</tbody>
</table>

Systems Navigation Curriculum

Patient Navigation
Experiential component

Fosters relevance
and motivation

Health Systems Course
Conceptual component

Prepares students
for practice

Student Patient Navigator Network

Inpatient Setting
- Rehab Hospital Transitions Program
- Emergency Department
- Internal Medicine Discharge Program
- Psychiatric Hospital Discharge Program
- Skilled Nursing Transitions Program
- Surgical-Oncology Transitions Program

Hershey

Outpatient Setting
- Breast Cancer Program
- Heart Failure Clinic
- HIV Clinic
- Inflammatory Bowel Disease Clinic
- Internal Medicine Clinic
- Family Practice Outreach Program
- High-Risk Outreach Clinic
- Patient-Centered Medical Home
- Spine Clinic
- Surgical Weight Loss Program
- DOH Tuberculosis Clinic
- Palliative Care Program

- 36 Clinical Sites
- 6+ health systems
- 144 medical students

Harrisburg
- 12

Lebanon
- 3

Lancaster
- 1
Faculty Development and Curricular Change

Luan Lawson, MD, MEd
Assistant Dean, Curriculum, Assessment, and Clinical Academic Affairs
The Brody School of Medicine at East Carolina
Curricular Transformation Goal:

*Preparing the Workforce for the Future of Healthcare Delivery*

- Teachers of Quality Academy
- Leaders in INnovative Care (LINC) Scholars
- New Longitudinal Core Curriculum in PS/QI
Need for Educational Change

Deficiencies in UME and GME teaching
  – Systems-based practice
  – Utilization of quality indicators
  – Evidence based care
  – Working within teams
  – Safety and Improvement science
  – Response to errors

Limiting Factor for Change...

Lack of a critical mass of clinically-based faculty members who are ready to teach health systems science
Clinical Teachers Face Complex Challenges

Teaching while simultaneously learning about redesigning clinical delivery systems while simultaneously delivering care, and working more closely in interprofessional teams.

Clay MA, Sikon AL, Lypson ML, et.al. Teaching while learning while practicing: reframing faculty development for the patient centered medical home. Acad Med. 2013;88:00–00.
Desired Program Components

- Interprofessional faculty
- Strong sponsorship
- Experiential learning
- Protected time
- Faculty contribution to curricular design
TQA Recruitment Design

• Honorific
• Sponsorship with chairs, deans and health system
• Voluntary, but “no department left behind”
• All health science schools
### TQA Demographics, N=27

<table>
<thead>
<tr>
<th>Academic Rank</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistant Professor</td>
<td>7 (26)</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>13 (48)</td>
</tr>
<tr>
<td>Professor</td>
<td>2 (7)</td>
</tr>
<tr>
<td>Resident</td>
<td>2 (7)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (11)</td>
</tr>
</tbody>
</table>

### Demographic Characteristics

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, female</td>
<td>15 (56)</td>
</tr>
<tr>
<td>Ethnicity, Hispanic/Latino</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>4 (15)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>8 (30)</td>
</tr>
<tr>
<td>White</td>
<td>17 (63)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (4)</td>
</tr>
</tbody>
</table>

### # by School/College

<table>
<thead>
<tr>
<th>School/College</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Medicine</td>
<td>21 (78)</td>
</tr>
<tr>
<td>College of Nursing</td>
<td>4 (15)</td>
</tr>
<tr>
<td>College of Allied Health</td>
<td>2 (7)</td>
</tr>
</tbody>
</table>

Mean Age, years: 46
Mean years since terminal degree: 14
TQA Faculty
Quality Officers

Transmission of content knowledge, attitudes and skills in the areas of PS/QI/IPE
"CONTENT"

Pre-Work, assessment, online modules
Learning Session 1
Mar 24-25
Quality Improvement
Learning Session 2
May 12-13
Measuring for Quality
Learning Session 3
June 16-17
Leading Change
Learning Session 4
August 11-12
Patient Safety
Learning Session 5
Sept 29-30
Interprofessionalism
Learning Session 6
Nov 3-4
Population Health

Preparation for necessary knowledge, skills and attitudes to support
Innovation in Teaching and Assessment
"PROCESS"

Submission of Academic Products
(MedEd Portal, Presentations, Publications)

Introduction to Medical Education Course
Instructional Strategies Course
Evaluation Course

Quality Project Planning
Data Collection and Pilot
Project Implementation and Report
# Credential in Medical Education

- ADED 7580
  - Intro to Medical Education
  - Covered Topics:
    - Historical roots
    - Continuum of medical education
    - Instructional methods
    - Accreditation requirements
    - Research on medical education
    - New pedagogy models

- ADED 6487
  - Instructional Strategies
  - Covered Topics:
    - Examines methods/techniques for effective teaching of adult learners, both formal & informal
    - Develops a framework for making instructional decisions
    - Develops self-awareness as an instructor

- ADED 6495
  - Educational Program Evaluation
  - Covered Topics:
    - Focuses on individual and program evaluation
    - Examines types of evaluation and the evaluation process
    - Design and implement successful evaluation strategies

- Faculty reflection
- Extended timeline
- Scholarship
Participation

- 31 – fully participated after LS1
  - Subsequent attrition of 4 (13%) over course of program
- All 27 completed QI initiatives, enrolled in graduate education courses and submitted education products for use in the curriculum
  - 8/27 – completed full Credential in Medical Education
- 26/27 – completed IHI Open School Certificate and participated in all Learning Sessions
Program Outcomes

- Faculty learning community
- Collaboration among health science faculty
- > 20 clinical improvement projects in health system
- Enhanced engagement in curricular change
- Scholarly translation of projects
# Medical Education Products

<table>
<thead>
<tr>
<th>PBL/TBL Cases</th>
<th>Educational Modules</th>
<th>Exercises/Simulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizing and acknowledging medical error</td>
<td>TeamSTEPPS training + QI Olympics</td>
<td>Improving transitions of care simulation</td>
</tr>
<tr>
<td>QI/Patient safety of inpatient insulin dosing</td>
<td>Flipping the clerkship didactic re: patient safety</td>
<td>Improving safety in the surgery clerkship: A system’s approach</td>
</tr>
<tr>
<td>Cancer care – med error, IPE, EBM</td>
<td>Simulation modeling of patient flow through system</td>
<td>Simulated RCA to teach Error Analysis and QI</td>
</tr>
<tr>
<td>Poverty, Privilege, &amp; Professionalism</td>
<td>Safe prescribing practices and med reconciliation</td>
<td>Social determinants of health and community resources exercise</td>
</tr>
<tr>
<td>Team-based care with CON students</td>
<td>Creating high value, cost-conscious care</td>
<td>Hotspotting exercise in PCMH, with IPE, pop health aspects</td>
</tr>
</tbody>
</table>

**ACCELERATING CHANGE IN MEDICAL EDUCATION**
Broader Impact

• 26 projects received PI-CME, for 375 AMA PRA Category 1 credits (MOC potential)
• 12 taught in LINC Scholars summer immersion
• 7 became “teachers” in TQA Learning Sessions
• 7 working on REACH Longitudinal Curriculum
• 2 assumed major health system leadership roles
• Numerous new educational initiatives in GME, Nursing and Allied Health curricula
Broader Impact

• Established annual Med Ed Day and QI Symposia
• 11 local presentations
• 9 national presentations, 11 fellows
• > 20 regional & national presentations by Project Team
• 6 fellows/faculty contributing to Healthcare Systems Science text supported by AMA-ACE initiative
Broader Impact

• Additional grants and state dollars for ongoing efforts
• Established Credential in Health Professions Education
• Two fellows joined GEMS writing group
• Initiated process of “QI review” with ECU IRB
Career Transformation

• Improvement in surgical outcomes
• TQA changed my life and career
• Now I look at my work differently every day…
Faculty development recommendations

1. Faculty and learners learn together while practicing in the workplace
   Abandon the tradition of “learn first, then teach”

2. Expand the definition of faculty
   Broaden to include entire clinical team

3. Support interprofessional and intraprofessional development simultaneously

4. Manage change and uncertainty
   Use positive, asset-based approaches to develop adaptability skills
Key Lessons Learned

• Horse before the cart approach = > engagement, and more innovative ideas

• Teaching while practicing while learning is hard: Cohort selection requires clear expectations for time and effort

• Design, cognitive preloading and ongoing mentoring are critical features

• Interprofessional faculty enhanced team approach to learning and established teaching partnerships
Technology-based Consortium Activities

Mellie Villahermosa Pouwels, MA
Director, Medical Education Collaborations
American Medical Association
Technology-based Consortium Activities

- teachingEMR
  Indiana University School of Medicine
  in conjunction with the Regenstrief Institute

- Health Care by the Numbers
  New York University School of Medicine

- REDEI System
  Oregon Health & Science University School of Medicine

- Vstar ePortfolio
  Vanderbilt University School of Medicine
teaching Electronic Medical Record (tEMR)

Enables learner access to:
• Patient data – Unique to each student
• Patient data – Shared across practice settings, medical school campuses, and academic years
• Educational sources – internet, YouTube, Khan Academy, MOOCs, and edX

Enables learner to:
• Enter individual/unique actions
• See actions entered across practice settings
• Receive alerts
• Pull logs and reports
Teaching Electronic Medical Record (tEMR)

Enables learner assessment of:
• knowledge application in patient & population care
• critical thinking skills
• clinical decision-making skills
• self-directed learning habits
• UME EPAs

Dissemination:
• Eastern Virginia Medical School
• University of Connecticut School of Medicine
• Sidney Kimmel Medical College at Thomas Jefferson University
Health Care by the Numbers

3-Year Curriculum

• Engages students in evaluating actual clinical datasets from the healthcare system and EMR
  – Introduction Course: Panel Management, Value, and Patient Experience
  – Mentoring of student panels during clerkships
  – Student-driven QI Project

http://education.med.nyu.edu/ace
Health Care by the Numbers

Key Elements:
• Uses authentic clinical data from local practices
• Creates resources that give students access to big and small clinical data
  – SPARCS Database (Statewide Planning and Research Cooperative System)
    • Patient level detail on patient characteristics, diagnoses and treatments, services, and charges
    • Every hospital discharge, ambulatory surgery patient, and emergency department admission
• Supports student-generated questions and active learning

http://education.med.nyu.edu/ace
REDEI System
Research and Evaluation Data for Educational Improvement

Dynamic Data System
• Includes a viewing portal
• Allows student and faculty access
• Contains measures of student performance
• Contains measures of educational program evaluation
• Generates customized dashboards automatically update upon log-in
REDEI System
Research and Evaluation Data for Educational Improvement

Student Data Components
• Select AMCAS data points
• OHSU and AAMC Matriculation Survey
• Process Assessments
  ▪ Formative Assessments
  ▪ Reflective Essays
  ▪ Self- and Peer-assessments
  ▪ Clinical educational exposures (inc E-value)
REDEI System
Research and Evaluation Data for Educational Improvement

Student Data Components
• Select AMCAS data points
• OHSU and AAMC Matriculation Surveys
• Process Assessments
• Attitudes/Professionalism/Lifelong Learning/Student Wellness
• Outcome Assessments
• Learning environment setting
• Post-graduation information
Vanderbilt Vstar ePortfolio

A technology infrastructure to enable a learning health system
- Uses competencies as organizing framework
- Data repository (Administrative View)
  - Curriculum mapping
  - Aggregated student performance
  - Normative development curves
  - External reporting
  - Student performance
  - Course and curriculum evaluations
  - Graduation Questionnaire
  - System improvements
  - Resident performance
  - Patient Outcomes
Vanderbilt Vstar ePortfolio

- Data repository con’t (Individual View)
  - Learning portfolio
    - Artifacts
    - Assessments
  - Individual entry
    - Reflective summary
    - Personal Learning Plan
    - Reflective Summary Aggregated student performance
  - Both allow for guided self-assessment
    - Strengths
    - Gaps
    - Interests
    - Normative development curves
Vanderbilt Vstar ePortfolio

• Unique features
  – Video hosting capabilities
  – Online forum and discussion functionality
  – Mobile data collection apps
  – Mobile data access apps
  – Flipped classrooms applications
  – Dashboards and social learning network
  – Central help desk component
University of North Dakota Telemedicine

• Identified as unique aspect of rural practice
  – Teaching telemedicine skills through developed scenarios
  – Assessing telemedicine skills through developed scenarios
  – Incorporating IPE component in majority of scenarios

• Identification of competencies supporting the consulting physician to local physician to patient relationship

• Identification of competencies supporting the consulting physician to other types of local providers to patient relationship

• Use of simulation on regional campuses

• Use of robots on regional campuses
University of Texas RGV Experiential Learning

Use of iPads to enhance interpersonal communication education

• With care team members
• With patients and their families
  o Collection of oral histories
  o Statistics and demographics related to health status
  o Information on care needs of family members
  o Field notes about experiences for IPE meetings and small group learning sessions
  o Audio and video recordings of interactions
  o Peer and self-reflections

Compilation becomes iBook for evaluation purposes and reference for next cohort
**PIs/Project Leads**

- **Blaine Takesue, MD**, Clinical Assistant Professor of Medicine, Indiana University School of Medicine
- **Marc Triola, MD**, Associate Dean Educational Informatics, New York University School of Medicine
- **George Mejicano, MD**, Senior Associate Dean for Education, Oregon Health & Science University School of Medicine
- **Anderson Spickard, III, MD, MS**, Assistant Dean of Educational Informatics and Technology, Vanderbilt University School of Medicine
- **Gwen W. Halaas, MD, MBA**, Senior Associate Dean, University of North Dakota School of Medicine and Health Sciences
- **Valerie Terry, PhD**, Disciple Coordinator for Communication, University of Texas Rio Grande Valley School of Medicine
QUESTIONS?