Accountable Medical Student Education

Operationalizing Accountability

Rajesh S. Mangrulkar, M.D.
Associate Professor of Internal Medicine and Learning Health Sciences
Associate Dean for Medical Student Education
The University of Michigan Medical School

Brody Medical Education Day
“It is not the strongest of the species that survives, nor the most intelligent, but rather the one most responsive to change.”

Darwin
CHANGE

When the Winds of Change Blow Hard Enough, The Most Trivial of Things can turn into Deadly Projectiles.
WE ARE HERE
Goals
Description of a Journey – Our Profession and Michigan

• Why change
  – To whom are we accountable?
  – The role of assessment in medical education

• Where are we
  – Competencies and milestones

• Envisioning the Future
  – Curricular Transformation at Michigan towards an Assessment System
Change is Coming to Medical Education

Transforming Academic Health Centers for an Uncertain Future

Academic health centers (AHCs) have long led the advancement of science and medicine by pursuing missions of clinical care, research, and education. AHCs have been places where important fundamental and translational research is performed, innovations are created. Given the dramatic acceleration ahead in health care and deteriorating research funding, can this research be performed in this environment?

Transforming the training of tomorrow's doctors: U-M Medical School wins $1.1M award from AMA
Friday, June 14, 2013
Funds will help design & implement a new flexible curriculum that will prepare medical students to lead & partner with others in a changing health care environment
Why Change?

- Our discipline is growing exponentially with regard to knowledge, skills, and attributes – far exceeding what could be covered within the confines of a medical school curriculum.
- Medical education programs are structured in serial silos: yet development must be integrated and longitudinal.
How Do We Get There? Challenges of the Current State

Longitudinal Professional Dev.

Basic Science (M1)

Clinical Science (M2)

Clinical Rotations (M3)

Electives (M4)

- Explosion of knowledge
- Lack of training in teams and systems
- Difficulty bringing science to clinical care
- Marginalization in the clinical setting
- Lack of opportunity to develop leadership
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• Assessment tools are inadequate and incomplete with regard to what students will be expected to do.
Assessment Framework

1. Recitation of facts
2. Applied knowledge to scenarios
3. Demonstration of skill
4. Performance

DOES

Assessment of Work

SHOWS

KNOWS HOW

Examinations

KNOWS

Simulation

Scripted Problems
Medical Education Assessment Context

Profession

School-Program

Medical School

Graduate

Post-Grad

Independent Practice

Decreased supervision

UME: 4y
GME: 3-7y
GME: 1-3y

DOES
SHOWS
KNOWS HOW
KNOWS
Assessment Gap—Where Do We Focus?
“Knowing what to do” vs “Doing what we know”

Improving Quality of Care for Acute Myocardial Infarction
The Guidelines Applied in Practice (GAP) Initiative

Rajendra H. Mehta, MD, MS
Cecelia K. MONTMYER, MSN
Meg Callaway, RA
Patricia Baker, MS
Angela Blount, MPH
Jessica Faul, MPH
Canopy Roycehurth, PhD
Steven Borzak, MD
Susan Fox, MSN
Mary Franklin, CNS
Mary Freund, MSN
Eva Kline-Rogers, MSN
Thomas LaLonde, MD
Michelle Ortiz, ScD
Robert Parrish, MM
Martha SAWitz, MSN
Mary Jo Smith, MSN, MPH
Paul Solotka, MD
Stuart Winstone, DO
Arthur A. Riba, MD
Kim A. Eagle, MD
for the CAP Scoring Committee of the American College of Cardiology

Context: Quality of care of patients with acute myocardial infarction (AMI) has received intense attention. However, it is unknown if a structured initiative for improving care of patients with AMI can be effectively implemented at a wide variety of hospitals.

Objective: To measure the effects of a quality improvement project on adherence to evidence-based therapies for patients with AMI.

Design and Setting: The Guidelines Applied in Practice (GAP) quality improvement project, which consisted of baseline measurement, implementation of improvement strategies, and remeasurement, in 10 acute-care hospitals in Southeast Michigan.

Patients: A random sample of Medicare and non-Medicare patients at baseline (July 1996-June 1997; n = 735) and following intervention (September 1 December 1999; n = 916) admitted at the 10 study centers for treatment of confirmed AMI. A random sample of Medicare patients at baseline (January-December 1998; n = 513) and at remeasurement (March-August 2001; n = 368) admitted to 11 hospitals that volunteered, were not selected, served as a control group.

Intervention: The GAP project consisted of a kickoff presentation; creation of customized, guideline-oriented tools designed to facilitate adherence to key quality indicators; identification and assignment of local physician and nurse opinion leaders; grand rounds; site visits; and measurement and postmeasurement of quality indicators.

Main Outcome Measures: Differences in adherence to quality indicators (use of aspirin, beta-blockers, and angiotensin-converting enzyme [ACE] inhibitors at discharge; time to reperfusion; smoking cessation and diet counseling; and cholesterol assessment and treatment) in ideal patients, compared between baseline and postintervention samples and among Medicare patients in GAP hospitals and the control group.

Results: Increases in adherence to key treatments were seen in the administration of aspirin (81% vs 87%, P = .02) and beta-blockers (65% vs 71%, P = .04) on admission and of aspirin (84% vs 92%, P = .002) and smoking cessation counseling (53% vs 65%, P = .02) at discharge. For most of the other indicators, nonsignificant but favorable trends toward improvement in adherence to treatment goals were observed. Compared with the control group, Medicare patients in GAP hospitals showed a significant increase in the use of aspirin at discharge (5% vs 10%, P = .01). Use of aspirin on admission, ACE inhibitors at discharge, and documentation of smoking cessation also showed a trend for greater improvement among GAP hospitals compared with control hospitals, although none of these were statistically significant. Evidence of tool use noted during chart review was associated with a very high level of adherence to most quality indicators.

Conclusions: Implementation of guideline-based tools for AMI may facilitate improvement among a variety of institutions, patients, and caregivers. This initial project provides a foundation for future initiatives aimed at quality improvement.

Annals of Internal Medicine
Established in 1927 by the American College of Physicians

Article
Are Physicians Doing Too Much Colonoscopy? A National Survey of Colorectal Surveillance after Polypectomy
Pauline A. Myśliwiec, MD, MPH; Martin L. Brown, PhD; Carrie N. Klabunde, PhD; and David F. Ransohoff, MD

+ Author Affiliations

Abstract

Background: Increasing use of colonoscopy for colorectal cancer screening and surveillance of colorectal adenomas after polypectomy has given rise to concerns about the availability of endoscopic resources in the United States. Guidelines recommend surveillance after polypectomy at 3 to 5 years for a small adenoma, and follow-up is not advised for hyperplastic polyps. The intensity of physicians' surveillance is largely unstudied.

Objective: To survey practicing gastroenterologists and general surgeons about their perceived need for the frequency of surveillance after polypectomy, to compare survey responses to practice guidelines, and to identify factors influencing their recommendations for surveillance.

Design: Survey study conducted by the National Cancer Institute.
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• Assessment tools are inadequate and incomplete with regard to what students will be expected to do.

• The intensity of the practice environment and its associated requirements are disconnecting our instructors and assessors from our learners.
Problem: Assessment in the Learning Environment

- Work-based assessment – current state*
  - Challenging and infrequent without structured programs (natural prevalence 25-33% of learners)
  - Quality is variable
  - Rarely followed up with reflection and learning plans

- Pressures
  - Administrative workload has exploded
  - Electronic Health Record burden
  - Enhanced regulations on work hours
  - Pressure of clinical throughput

Question – How confident are we that we understand our learners’ capabilities?

*Norcini J. Medical Teacher 2007; 29:855-71
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• Society is asking for a different kind of health system and health practitioner.
US needs a “new” system

Healthy

Prevention and health maintenance

- LPN, NP
- Dentist
- Pharmacists
- Physiatrists
- Alternative providers
- Technicians
- Physicians

Chronic disease management

- RN, NP, PA
- LPN, MA
- Pharmacists
- Physicians

Acute disease diagnosis and treatment

- Physicians
- PA

Diseased

Complex disease management

Physicians
Why Change?

“It is clear that our system of healthcare is in need of major reforms that will dramatically impact medical education programs.”

~ Dean’s charge to Curriculum Policy Committee, Dec 2012
A New Framework

• Time-based to outcomes-based
  – Fixed structure and process with variable outcomes
  – Fixed outcomes and variable structure and process

*an outcomes-based approach to the design, implementation, assessment and evaluation of a medical education program using an organizing framework of competencies.

--The International CBME Collaborators, 2009
The Journey: How do we get there?
3 steps

• Where are we as a profession?
  – Step 1 - Competencies
  – Step 2 - Milestones

• Moving forward
  – Step 3 - Curricular Transformation and an Assessment System
Step 1 – Define the Competencies

- 20 years (1993-2013)
- Outcomes Project (Residency Education - the core 6)
  - DOMAINS - Patient Care, Medical Knowledge, Interpersonal Communication Skills, Practice-Based Learning, Systems-Based Practice, Professionalism
- AAMC – medical school competencies (6+2)
  - Towards a Common Taxonomy* – Added 2 DOMAINS
  - Inter-professional Collaboration, Personal and Professional Development

Impact of Competencies

• Began the movement towards *accountability*
• Defined what is important
• Identified curricular needs (e.g., PBL, SBP)
• Challenged measurement
• Identified gaps in assessment
# Mini-Clinical Evaluation Exercise (CEX)

**Evaluator:** ___________________________  **Date:** ____________

**Resident:** _____________________________

**Patient Problem/Dx:**

**Setting:**  
- O Ambulatory  
- O In-patient  
- O ED  
- O Other __________________________

**Patient:**  
- Age: ______  
- Sex: _____  
- O New  
- O Follow-up

**Complexity:**  
- O Low  
- O Moderate  
- O High

**Focus:**  
- O Data Gathering  
- O Diagnosis  
- O Therapy  
- O Counseling

### 1. Medical Interviewing Skills (O Not Observed)

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### 2. Physical Examination Skills (O Not Observed)

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### 3. Humanistic Qualities/Professionalism

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### 4. Clinical Judgment (O Not Observed)

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### 5. Counseling Skills (O Not Observed)

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### 6. Organization/Efficiency (O Not Observed)

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**7. Overall Clinical Competence (O Not Observed)**

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**Mini-CEX Time:**  
- Observing: _____  
- Miss: _____  
- Providing Feedback: _____

**Evaluator Satisfaction with Mini-CEX**

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**Resident Satisfaction with Mini-CEX**

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**Comments:**

__________________________________________

**Resident Signature**  
**Evaluator Signature**

**DESCRIPTORS OF COMPETENCIES DEMONSTRATED DURING THE MINI-CEX**

**Medical Interviewing Skills:** Facilitates patient’s telling of story, effectively uses questions/directions to obtain accurate, adequate information needed; responds appropriately to patient’s non-verbal cues.

**Physical Examination Skills:** Follows efficient, logical sequence; balances screening/diagnostic steps for problem; informs patient sensitive to patient’s comfort, modesty.

**Humanistic Qualities/Professionalism:** Shows respect, compassion, empathy, establishes trust, attends to patient’s needs of comfort, modesty, confidentiality, information.

**Clinical Judgment:** Selectively orders/perform appropriate diagnostic studies, considers risks, benefits.

**Counseling Skills:** Explains rationale for test/treatment, obtains patient’s consent, educates/counsels regarding management.

**Organization/Efficiency:** Prioritizes, is timely, succinct.

**Overall Clinical Competence:** Demonstrates judgment, synthesis, caring, effectiveness, efficiency.
Step 2 – Milestones
What does Competency Look Like?

• 5 years (2009-2014)
• ACGME Milestone Project
  – A Focus on Performance Levels
Milestone Definition

Describes, in behavioral terms, learning and performance levels students are expected to demonstrate for specific competencies by a particular point in their education.


Milestone Criteria

• Goal - Reframe the competencies in the meaningful context of clinical care

• Pre-requisites:
  – Must be measurable and assessable
  – Must have assessable criteria for when a milestone is reached
  – Address the continuum of education, training and practice
Milestones
The Opportunity to Break Silos

1. novice
2. adv. beginner
3. competence
4. proficient
5. expert

supervision
remediation
optimization
independence

Milestones
Premedical Education
BA/BS
Medical Education
MD
Specialty Education
(Residency)
Subspecialty Education
(Fellowship)
Continuing Education/
(MOL – MOC)
Milestones
What does Competency Look Like?

• 5 years (2009-2014)
• ACGME Milestone Project – A Focus on Performance Levels

• Current state
  – Developed for every specialty
  – Mandated assessment of each resident in every residency program
Stuck At Basecamp - Operational Challenges

Unfunded mandate – scarce resources
Limited faculty availability for development
IT and visualization incredibly difficult
Incongruence with work-based assessment

How can we actualize a competency-based medical education program?
Connecting the New Core with a New Framework

CREATION & DISCOVERY
- Communications
- Self-management
- Access & Affordability

TEAMWORK & GROUPS
- Inter-personal Skills
- Technology Proficiency
- Life-long learning

LEADERSHIP & AGENTS OF CHANGE
- Equity
- Professionalism
- Inter-professional collaboration
- Trust & Intimacy
- Partnership

OUTSTANDING FOUNDATION OF KNOWLEDGE AND SKILLS
- Health data
- Value

WORKING IN & NAVIGATING SYSTEMS
- Chronic Disease Management
- Patient Centered Care
- Introspection
- Information Management

SELF-KNOWLEDGE
- Coordination of Care
- Preventative Care

COST EFFECTIVENESS
- Ethics
- Questioning

PATIENT CARE & ENGAGEMENT
- Critical Thinking

Time-based to outcomes-based

CBE Model

Health Needs of Society → Competencies Outcomes → Curriculum

Assessment
Requirement

- A new liberating structure that facilitates
  - A deeper foundation – becoming a master thinker and learner
  - Flexibility for the student to understand strengths and weaknesses and choose wisely
  - Exploration in depth
  - Leadership and becoming a Change Agent
  - Assessment throughout and across all domains (connected with the vision), that promotes the longitudinal development of the learner.
UMMS Old Curricular Model

- Longitudinal Professional Dev.
  - Basic Science (M1)
  - Clinical Science (M2)
    - Explosion of knowledge
    - Lack of training in teams and systems
- Clinical Rotations (M3)
  - Difficulty bringing science to clinical care
  - Marginalization in the clinical setting
- Electives (M4)
  - Lack of opportunity to develop leadership
UMMS New Curricular Model

M-Home
• Mentored small group learning environment
• Longitudinal professional development & learning synthesis
• Doctoring and humanistic practice of medicine

Paths of Excellence
• Choose one of the 8-10 cross disciplinary topics
• Expectation of completing a capstone or research project

Trunk
• Science foundation
• Clinical foundation
• Learning & thinking skills

Branches
• Intentional paths of professional learning
• Advanced clinical learning experiences
• Scientific depth

Year 1  Year 2  Year 3  Year 4
UMMS New Curricular Model

M-Home
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- Science foundation
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- Scientific depth

Year 1
Year 2
Year 3
Year 4

- Program designed to train the future leaders in medicine
- Forward-looking curriculum incorporating innovations in medical education
- Strong foundation with the ability to adapt to individual professional contexts and objectives
- Advanced professional development for a career in medicine and preparation for residency
- Leverages the extensive community and expertise of UMMS and the University of Michigan
UMMS New Curricular Model
“Trunk” (Scientific and Clinical Foundation)

- First two years aimed to building a foundational understanding of medicine within students
- Prepares students for life-long learning in bio-medical science and clinical skills development
- Scientific foundation includes information acquisition, calibration, and management
- Foundational clinical experiences begin on Day 1 and gradually increases
- Synergistic with professional doctoring skills (M-Home)
UMMS Curricular Model
Year 1 Schedule (Scientific Trunk)

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<th>Fall Term (Aug to Dec)</th>
<th>Winter Term (Jan to June)</th>
<th>Aug</th>
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<td>Overture (2 weeks)</td>
<td>Immunity and Defense / Skin (3 weeks)</td>
<td>Behavioral Sciences (~1.5 weeks)</td>
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<tr>
<td>Science Foundations (6 weeks)</td>
<td>Microbiology and ID (3 weeks)</td>
<td>Chief Complaint / OPCC (2 weeks)</td>
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<td>Chief Complaint / OPCC (1 week)</td>
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<tr>
<td>Diagnostics and Therapeutics (2 weeks)</td>
<td>Gastrointestinal / Nutrition (4 weeks)</td>
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<tr>
<td>Cardiovascular System (3 weeks)</td>
<td>Endocrine System (2 weeks)</td>
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<tr>
<td>Respiratory System (2 weeks)</td>
<td>Reproduction (2 weeks)</td>
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<tr>
<td>Renal System (2 weeks)</td>
<td>Chief Complaint / OPCC (1 week)</td>
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<tr>
<td>Chief Complaint / OPCC (1 week)</td>
<td>Musculoskeletal System (3 weeks)</td>
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<tr>
<td>Winter Break (2 weeks)</td>
<td>Behavioral Sciences (5 weeks - July)</td>
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- Initial Clinical Experience (ICE)
- Leadership & Paths of Excellence

- M-Home (Doctoring & Professional Identity)
UMMS Curricular Model
Year 2 Schedule (Clinical Trunk)

Phase I (3-4 Months)
- Inter-disciplinary Clinical Rotations
  - Cardiorespiratory medicine
  - Neuromusculoskeletal and Behavioral medicine
  - Reproduction, Growth and Development
  - Gastrointestinal, Endocrine, and Renal medicine
- Science in the Clinical Context
- Ldr & PoE
- M-Home (Clinical Skills)

Phase II (8-9 Months)
- Department-Based Clinical Rotations
  (e.g. Family Medicine, Internal Medicine, Neurology, OB-Gyn, Pediatrics, Psychiatry, Surgery)
- Science in the Clinical Context
- Leadership & Paths of Excellence
- M-Home (Clinical Skills)
- Inpatient and Outpatient Team-Based Learning

Implementation: Fall 2017
UMMS New Curricular Model
“Branches” (Directed Professional Development)

- Organized by related tracks (branches) of medical practice
- Students select a branch with opportunity to change
- Core activities based on meaningful clinical experiences and scientific depth for a chosen branch of medical practice
- Students will have discretion on timing and sequence to fulfill branch requirements
- Branches will provide additional preparation for residency readiness

**Branches**
- Intentional paths of professional learning
- Advanced clinical learning experiences
- Scientific depth

**Paths of Excellence**
- M-Home

**Trunk**
- Year 1
- Year 2
- Year 3
- Year 4
UMMS Curricular Model
Key Branch Components: Years 3 - ?

More Clinical Training and Exploration
- Core clinical rotations (e.g. Emergency Medicine)
- Early clinical experiences (e.g. sub-internships)
- Capstone clinical experiences (e.g. bootcamps, apprenticeships)
- Clinical electives across branches

Opportunities to Pursue Professional Interests
- Branch-specific and non-branch-specific clinical electives
- Paths of Excellence electives (e.g. global health, quality & safety, policy)
- Time for self-directed projects (incl. research)
- Coursework at other schools and programs

Science Learning Integrated with Clinical Practice
- General and Branch-specific scientific curricula
- Science in the clinics - joint rotations
- Medical Therapeutics and online modules - Just in Time
- Opportunities for scientific research

Developing a Professional Intention with a Plan
- Development of an individualized learning plan
- M-Home and Branch mentoring
- Leadership development through the lens of Branch
- Ability to change Branches, customize focus, determine time in curriculum

Competency-Based Assessments
- Assessment aligned with GME competency milestones
- M3 Milestone Assessment
- M4 Milestone Assessment (X2)
- Flexibility to conduct remediation as needed
- Graduation from Branches competency-based

Implementation: Fall 2018
Leadership

New Curriculum

- Communicating & Influencing
  - Alda Communication Training
  - AAMC Student Leadership
  - PoE issue advocacy

- Working in Teams
  - ICE Longitudinal Experience
  - Mentoring M1/M2s
  - 360 Evaluation Debriefing

- Understanding Systems
  - Healthy Policy MOOC
  - PoE Capstone project
  - Student Clinic Leadership

- Solving Problems
  - Lean QI Project
  - Facilitating Learning Cases
  - MQS Training in Problem Solving Methods

Examples

Leading Change in Health, Healthcare and Healthcare Science
UMMS New Curricular Model
“Paths of Excellence” (Applied Leadership Education)

- Leadership, IPE, and systems thinking skills
- Applied leadership contexts within medicine

- Develop foundational skills in leadership and communication
- Paths of Excellence provides a setting to engage a chosen context of healthcare in depth
- Synergistic with professional identity development (M-Home) and activities in the Branches
- Setting to integrate systems thinking and current challenges in healthcare
- Partnership with the Business School, Innovation and Entrepreneurship units, Alumni leaders, National organizations
Paths of Excellence

In Operation
- Global Health Disparities (Partner with Global reach)
- Bio-Ethics (Partner with CBSSM)

Launching / Pre-Launch
- Health Economics & Policy (Partner with IHPI)
- Scientific Discovery

Under Consideration
- Medical Education
- Medical Decision-Making
- Innovation & Entrepreneurship
- Health Systems Management
- Humanities
- Others

Continuous Implementation
# Paths towards Excellence

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<tr>
<th>Path Elements</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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<tbody>
<tr>
<td>Specialized Knowledge</td>
<td>Core Curriculum</td>
<td>Core and Advanced Curriculum</td>
<td>Core and Capstone-specific knowledge</td>
<td>Capstone-specific knowledge</td>
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<tr>
<td>Mentoring &amp; Relationships</td>
<td>Initial Advisors</td>
<td>Expanded Network of advisors and colleagues</td>
<td>Networked Path Community</td>
<td>Mentoring younger students</td>
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<tr>
<td>Experiences</td>
<td>Initial experiences</td>
<td>Scheduled clinical experiences</td>
<td>Expanded Experiences in Path area</td>
<td>Expanded Experiences in Path area</td>
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<tr>
<td>Capstone</td>
<td>Introduction Engaged summer project</td>
<td>Visioning Capstone</td>
<td>Clarify and initiate project</td>
<td>Finalize Project and disseminate Elective experiences</td>
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</tbody>
</table>
UMMS New Curricular Model
“M-Home” (Longitudinal Learning Community)

- Mentored small group learning environment
- Longitudinal professional development & learning synthesis
- Doctoring and humanistic practice of medicine

Paths of Excellence

- Safe, longitudinal developmental setting for students to practice, explore and reflect to synthesize the learning of the curriculum
- Small group format led by faculty mentors with student involvement
- Develops doctoring skills and the humanistic practice of medicine
- Promotes the development of a student’s professional identity
- Setting to integrate interprofessional education

Trunk

Branches

Year 1
Year 2
Year 3
Year 4

Launch – August 2015
The M-HOME

M-Home Integrates the Curriculum

M-Home is a Community for Learning

Launch – August 2015
The New Architecture - Benefits

• Connects science to patients – throughout ALL phases
• Deepens skills sets of the learners – helps build the new vision of the graduate
• Promotes flexibility
• Facilitates a new core
The New Model - Challenges

- Faculty Vote
- Defining What is Foundational
- Engaging Science in the Clinical Context
- Valuing Education
- Balancing Differentiation and Flexibility
- Requires an Assessment “System”
The Assessment “Gap”

**Current State:**
Limitations of current assessment system can yield an incomplete picture of learner progress and competence.

**New Curriculum:**
Multiple competency-driven assessments with early and ongoing feedback and mentoring, will enable a complete picture of progress, competence, and excellence.
An Idealized Assessment Context

**Profession**

- ... UME:4y GME:3-7y GME:1-3y ...

**School-Program**

- DOES SHOWS KNOWS HOW KNOWS

**Medical School**

- Decreased supervision

**Graduate**

**Post-Grad**

**Independent Practice**
An Assessment System and Program*

1. Accept that assessment catalyzes learning – focus on Desired Learning Behaviors, built upon competencies and milestones.

2. Look for **behaviors** widely and often in the authentic work environment.

3. Recruit and train faculty to provide judgment and develop learners over time.

UMMS Proposed Assessment System

Learner Progress

- Online portfolio – IT facilitated
- Deliberate coaching

Competence

- Assessment of each Competency multiple times, within and across multiple arenas, to inform and drive learner progress

Excellence

- Push standards, expectations, and measurement higher for specific areas for all students – towards EXCELLENCE
## UMMS Proposed Assessment System

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<tr>
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<th>M-Home, Doctoring</th>
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<th>Branches</th>
<th>Leadership &amp; PoE</th>
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More assessment more often from more sources to provide a complete picture of the competent graduate.
A Journey Towards Accountable Education

Assessment System

New Curricular Structure

Milestones

Competencies
To learn more: curriculum.med.umich.edu
Thank You

“The best way to predict the future is to invent it.”

— Alan Kay