Accountable Medical Student Education

Operationalizing Accountability

Rajesh S. Mangrulkar, M.D.
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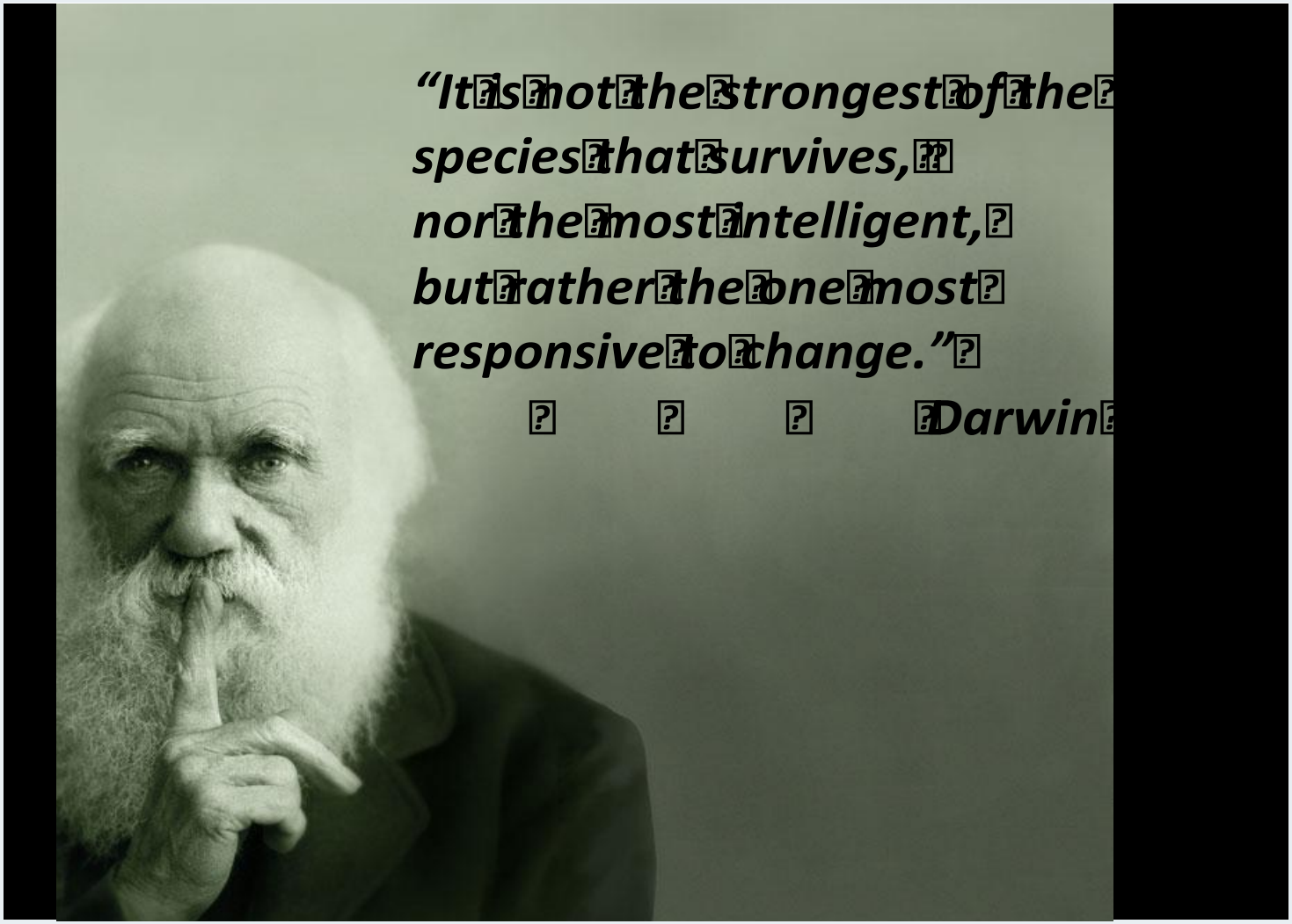
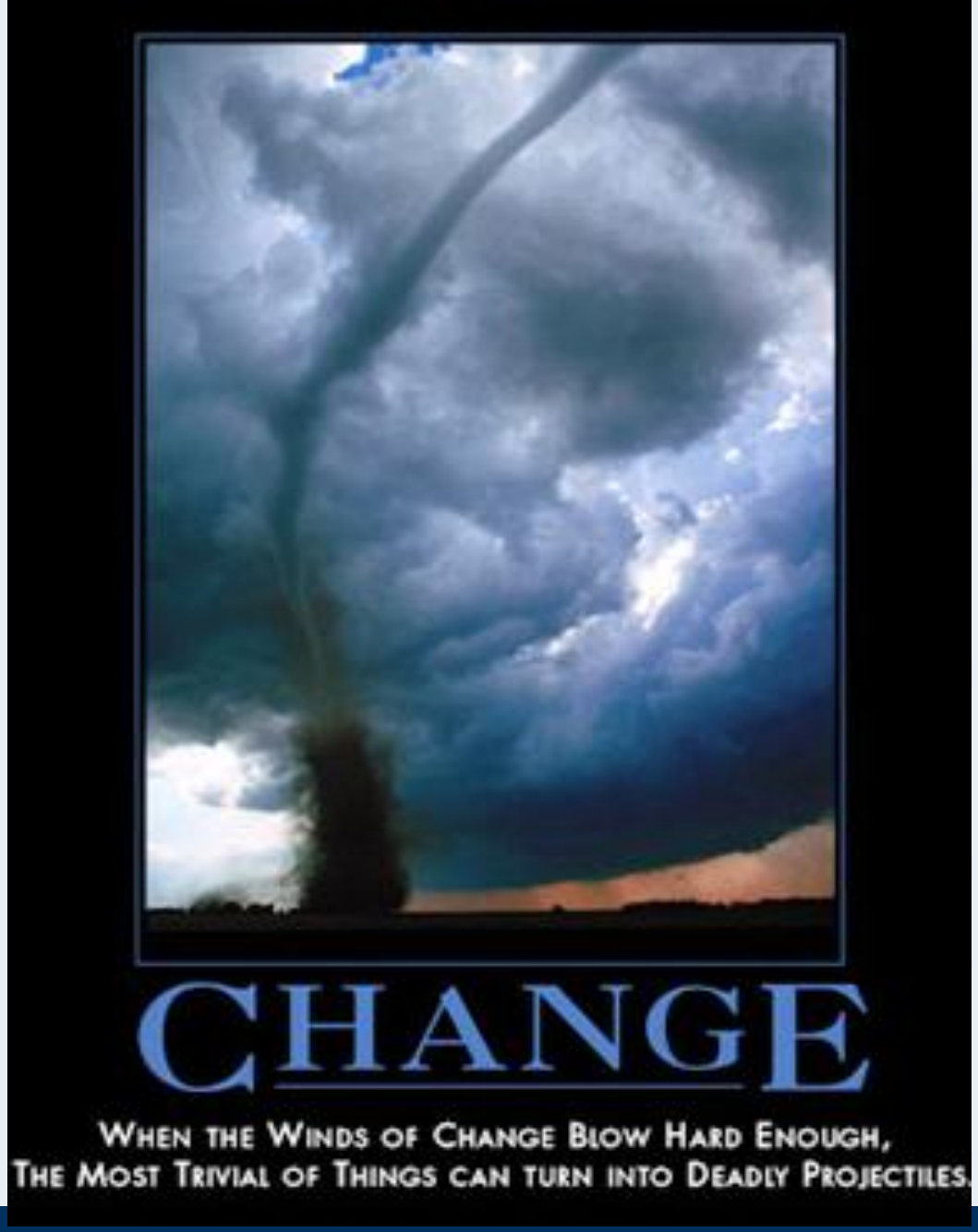
Associate Dean for Medical Student Education
The University of Michigan Medical School

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.

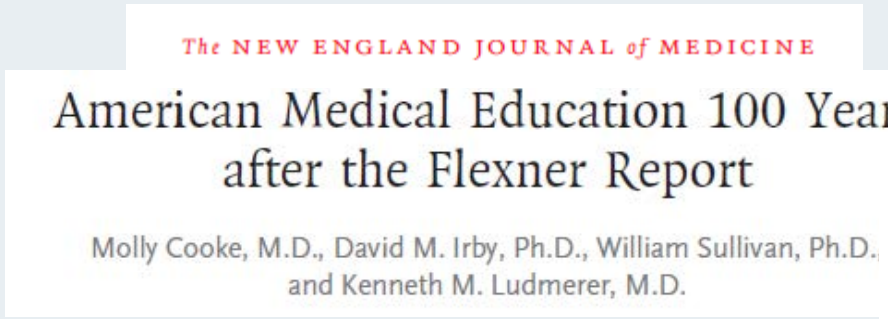

WE
ARE
HERE

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



The NEW ENGLAND JOURNAL of MEDICINE

American Medical Education 100 Years after the Flexner Report

Molly Cooke, M.D., David M. Irby, Ph.D., William Sullivan, Ph.D. and Kenneth M. Ludmerer, M.D.

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

Restructuring Medical Education to Meet Current and Future Health Care Needs

Suzann Pershing, MD, and Victor R. Fuchs, PhD

Transforming Academic Health Centers for an Uncertain Future

Victor J. Dzau, M.D., Alex Cho, M.D., M.B.A., William ElLaissi, M.B.A., M.H.A., Ziggy Yoediono, M.D., M.B.A., Devdutta Sangvai, M.D., M.B.A., Bimal Shah, M.D., M.B.A., David Zaas, M.D., M.B.A., and Krishna Udayakumar, M.D., M.B.A.

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 cre ed. Given the drar ahead in health care and deterio- rating research funding, can this

Transforming the training of tomorrow's doctors: U-M Medical School wins $1.1M award from AMA

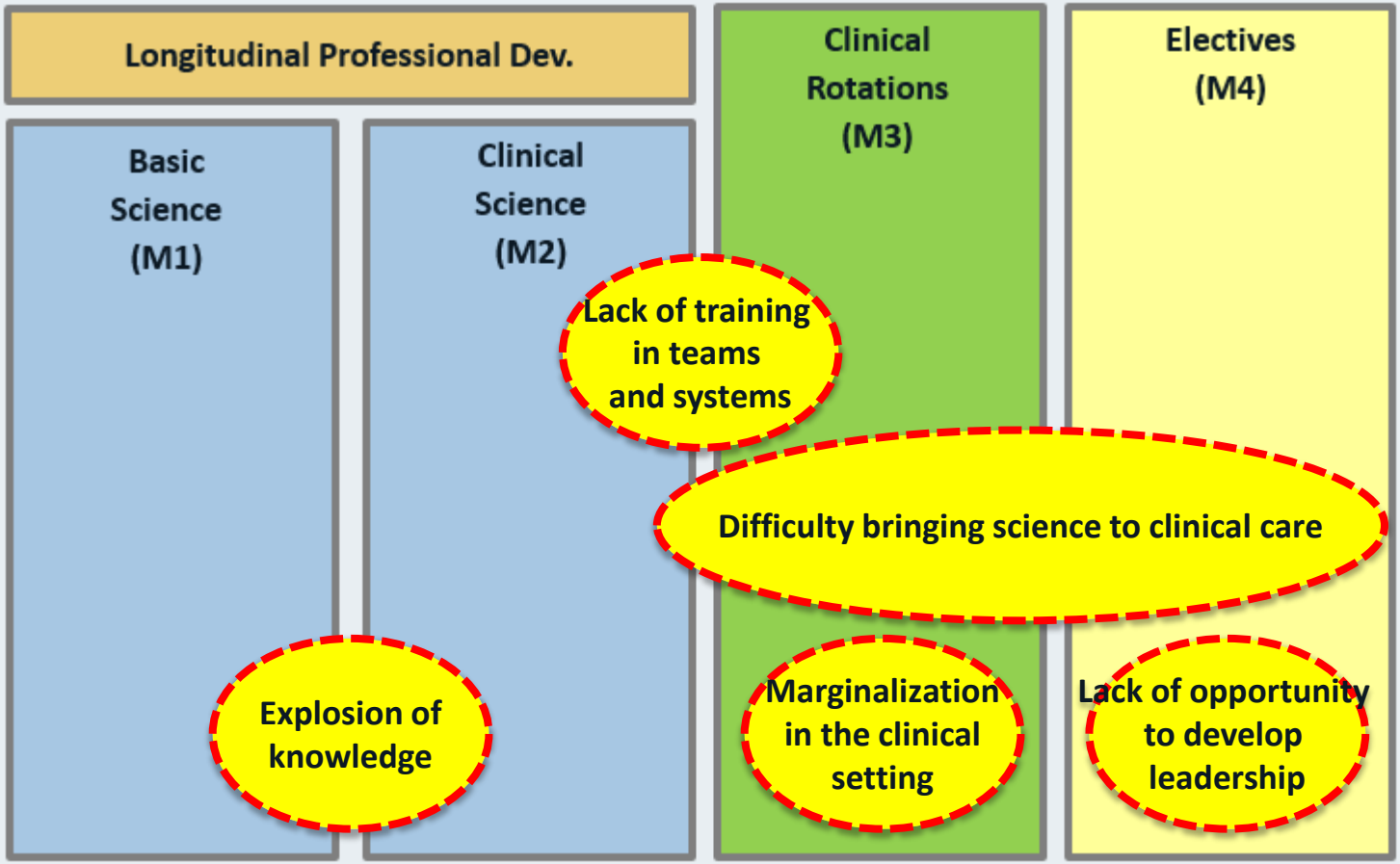
Friday, June 14, 2013

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



Why Change?

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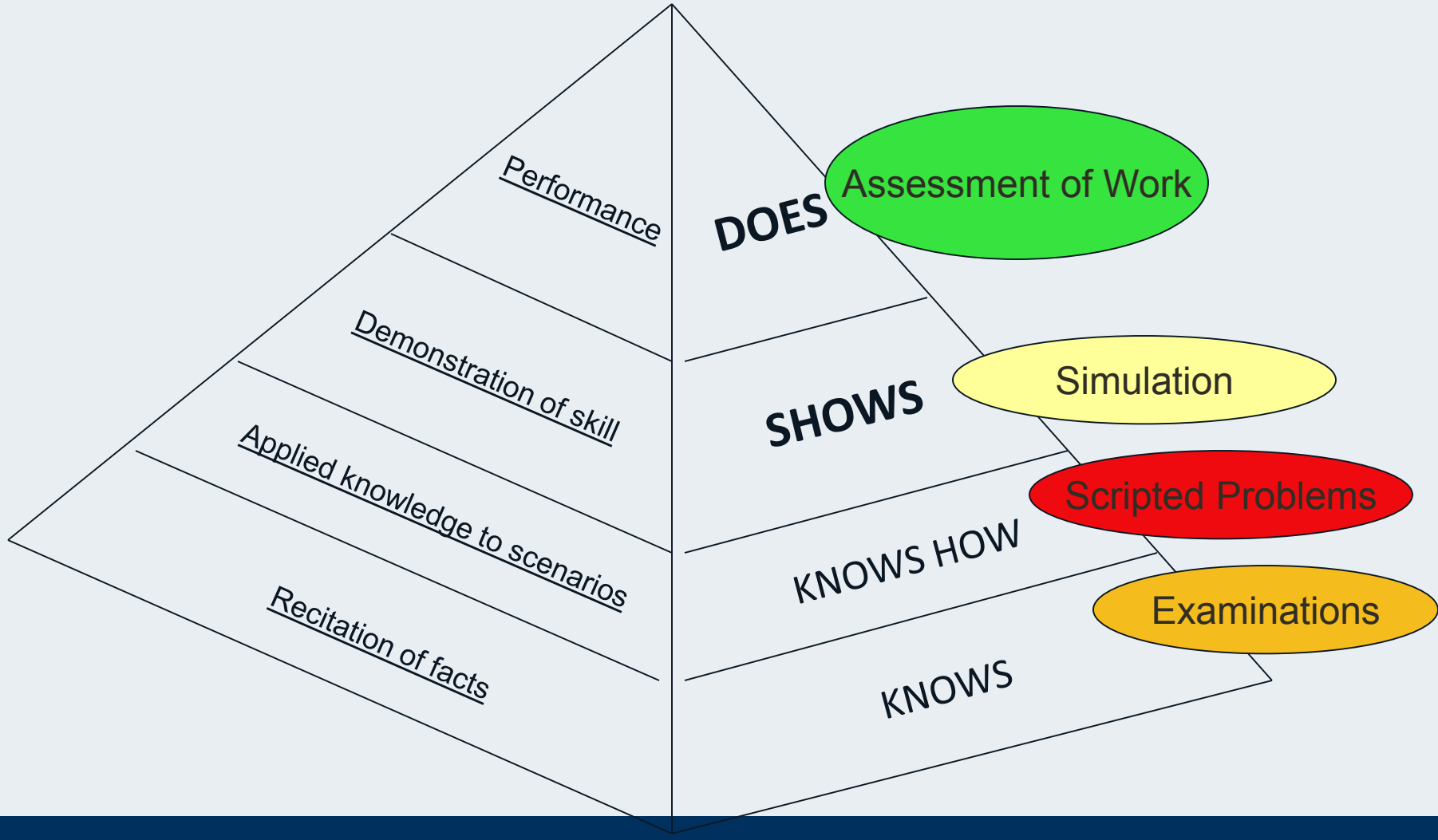
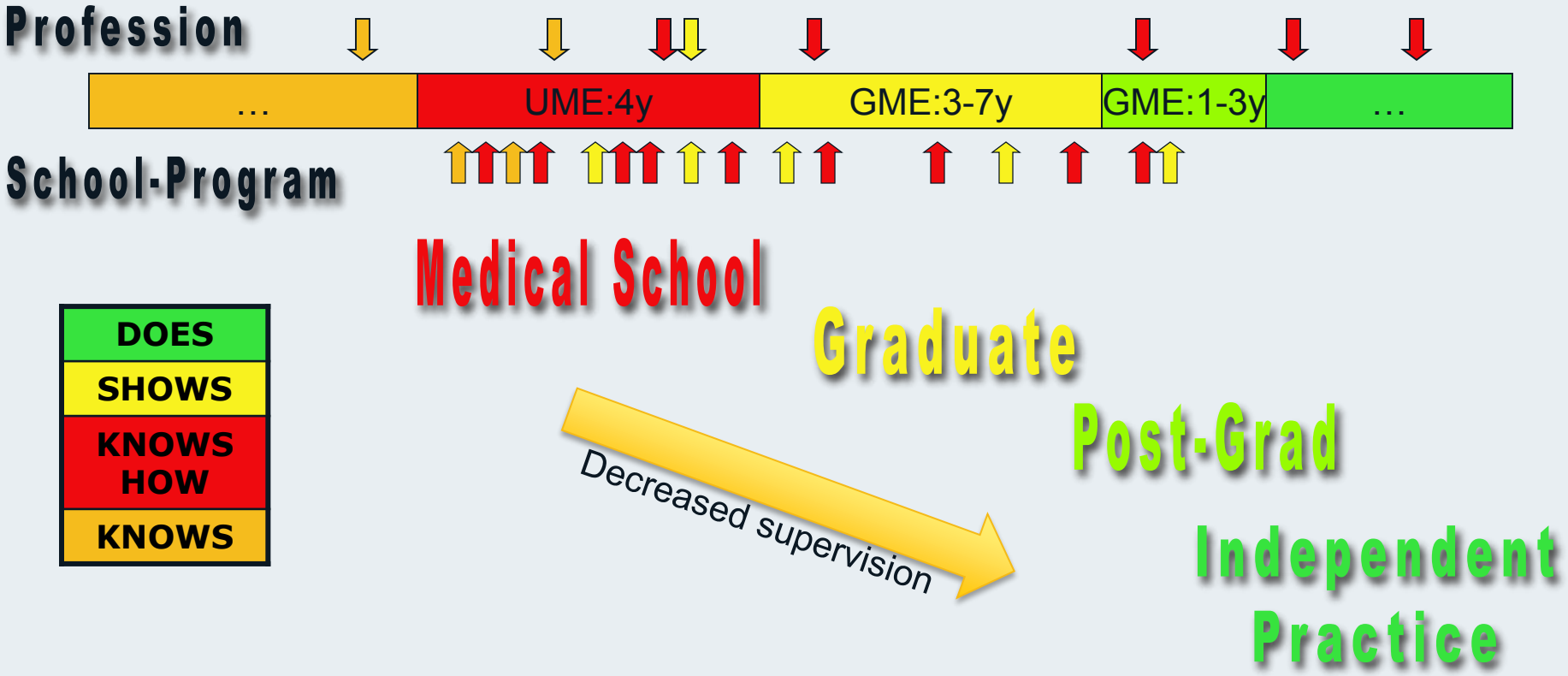
- Medical education programs are structured in serial silos: yet development must be integrated and longitudinal.
- **Assessment tools are inadequate and incomplete with regard to what students will be expected to do.**

Assessment Framework



Adapted from **Miller** GE. The assessment of clinical skills/competence/performance. *Aced Med* 1990; **65** (Suppl): S63–7

Medical Education Assessment Context



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. Montoye, MSN
Meg Gallogly, BA
Patricia Baker, MS
Angela Blount, MPH
Jessica Faul, MPH
Canopy Roychoudhury, PhD
Steven Borzak, MD
Susan Fox, MSN
Mary Franklin, CNS
Marge Freundl, MSN
Eva Kline-Rogers, MSN
Thomas LaLonde, MD
Michele Orza, ScD
Robert Parrish, MM
Martha Satwicz, MSN
Mary Jo Smith, MSN, MPH
Paul Sobotka, MD
Stuart Winston, DO
Arthur A. Riba, MD
Kim A. Eagle, MD
for the GAP Steering 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 1998–June 1999; n=735) and following intervention (September 1–December 15, 2000; n=914) 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=388) admitted to 11 hospitals that volunteered, but 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 premeasurement and postmeasurement of quality indicators.

Main Outcome Measures Differences in adherence to quality indicators (use of aspirin, β-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 β-blockers (65% vs 74%; *P*=.04) on admission and use 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*<.001). 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 quality improvement among a variety of institutions, patients, and caregivers. This initial project provides a foundation for future initiatives aimed at quality improvement.

JAMA. 2002;287:1269-1276 www.jama.com

DESPITE CONSIDERABLE INVESTment in the development and dissemination of national guidelines for the management of acute myocardial infarction (AMI),[1] the Center for Medicare and Medicaid Services' (CMS) Cooperative Cardiovascular Project recently re-

For editorial comment see p 1321.

Author Affiliations are listed at the end of this article.
Corresponding Author: Kim A. Eagle, MD, Division of Cardiology, University of Michigan Hospital, 1500 E Medical Center Dr, Ann Arbor, MI 48109 (e-mail: keagle@umich.edu).

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. Mysliwiec, 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.

Why Change?

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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

Why Change?

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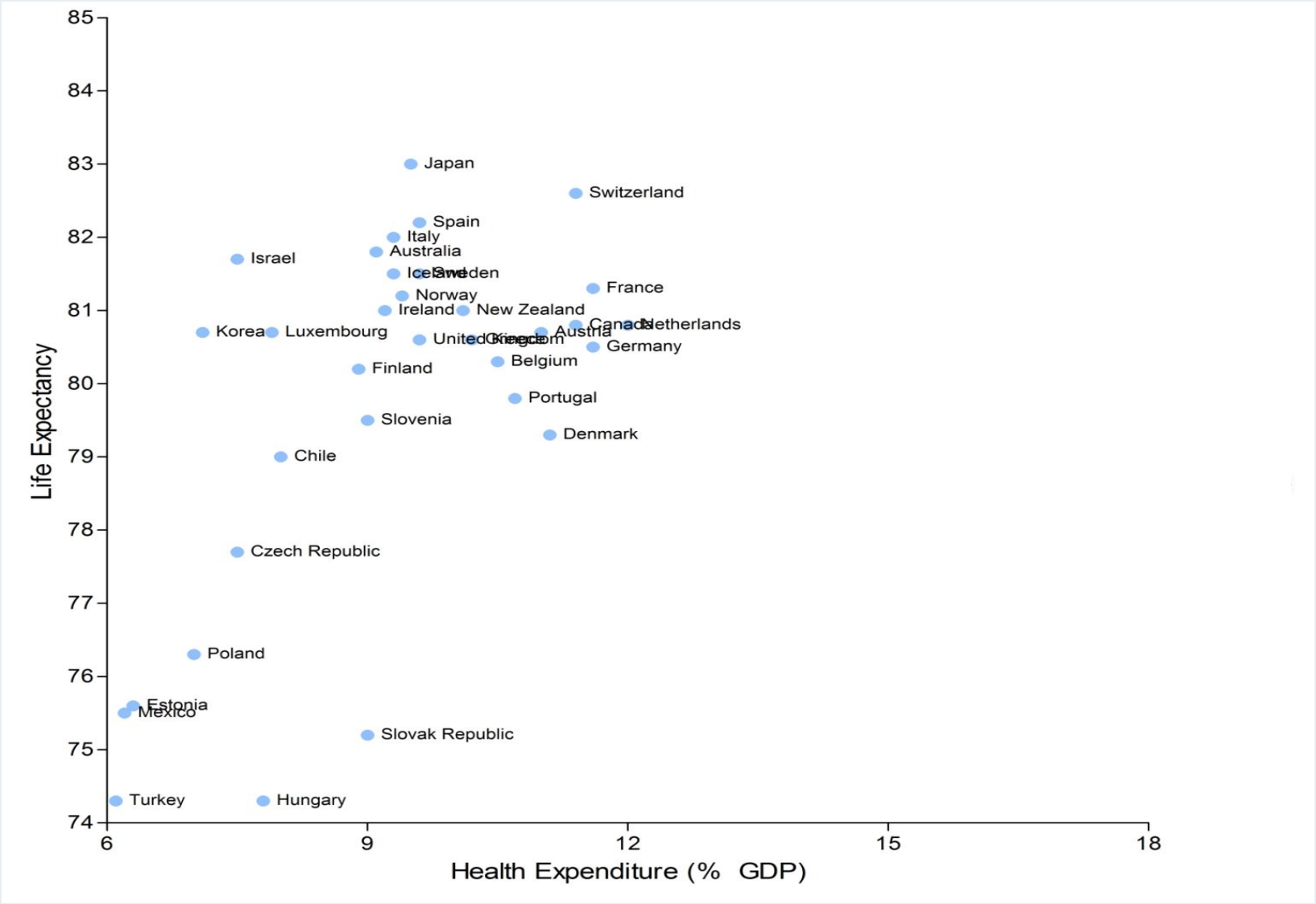
- Assessment tools are inadequate and incomplete with regard to what students will be expected to do.
- The intensity of the practice environment and its associated requirements are disconnecting our instructors and assessors from our learners.
- **Society is asking for a different kind of health system and health practitioner.**

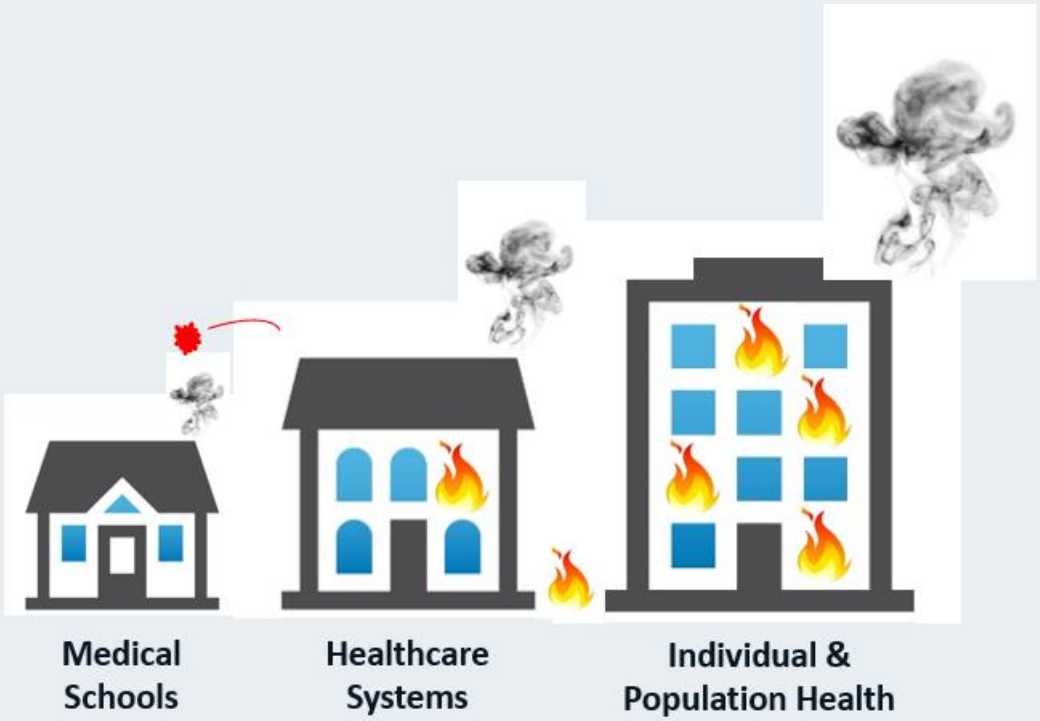
OECD Health Data



US needs a “new” system

Prevention and health maintenance	Chronic disease management	Acute disease diagnosis and treatment	Complex disease management
LPN, NP Dentist Pharmacists Physiatrists Alternative providers Technicians **Physicians**	RN, NP, PA LPN, MA Pharmacists **Physicians**	**Physicians** PA	**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

MEDICAL SCHOOL
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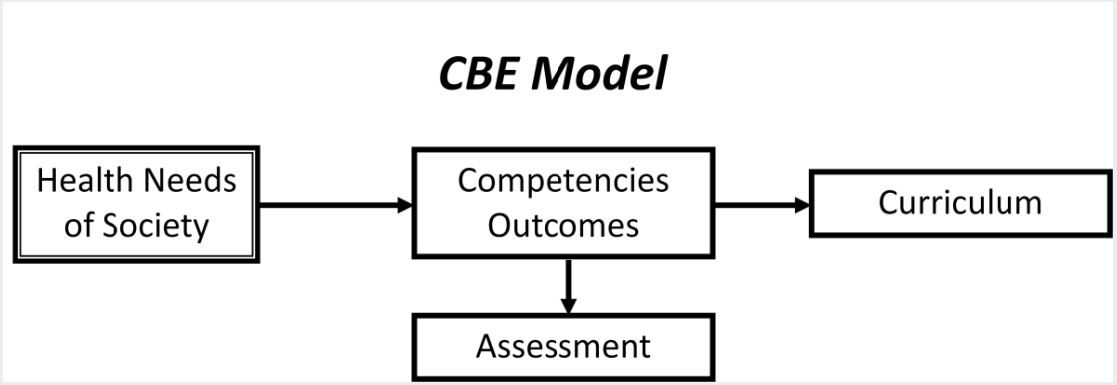
A New Core

OUTSTANDING FOUNDATION OF KNOWLEDGE AND SKILLS

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

*Englander R, et al. Toward a Common Taxonomy of Competency Domains for the Health Professions and Competencies for Physicians. Academic Medicine. 2013;88(8):1088-1094.

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

Work-Based Assessment

Mini-Clinical Evaluation Exercise (CEX)

Evaluator: _____ **Date:** _____

Resident: _____ O R-1 O R-2 O R-3

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)

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

2. Physical Examination Skills (O Not Observed)

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

3. Humanistic Qualities/Professionalism

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

4. Clinical Judgment (O Not Observed)

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

5. Counseling Skills (O Not Observed)

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

6. Organization/Efficiency (O Not Observed)

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

7. Overall Clinical Competence (O Not Observed)

1 2 3	4 5 6	7 8 9
UNSATISFACTORY	SATISFACTORY	SUPERIOR

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

Evaluator Satisfaction with Mini-CEX
LOW 1 2 3 4 5 6 7 8 9 HIGH
Resident Satisfaction with Mini-CEX
LOW 1 2 3 4 5 6 7 8 9 HIGH

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 affect, 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/performs 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.

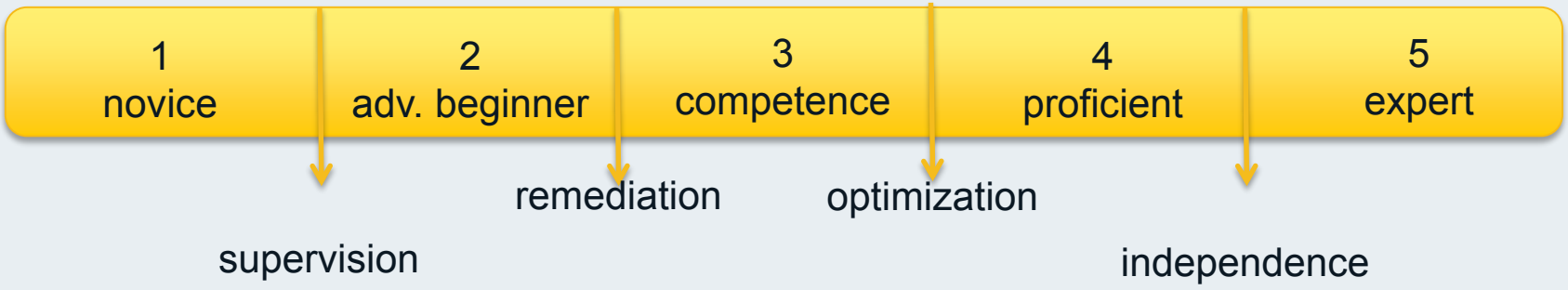
Mullan P, Lypson M. *JGME* 2011; 3(4): 574-576.
Swing SR, et al. *JGME* 2009; 1(2): 278-286.

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

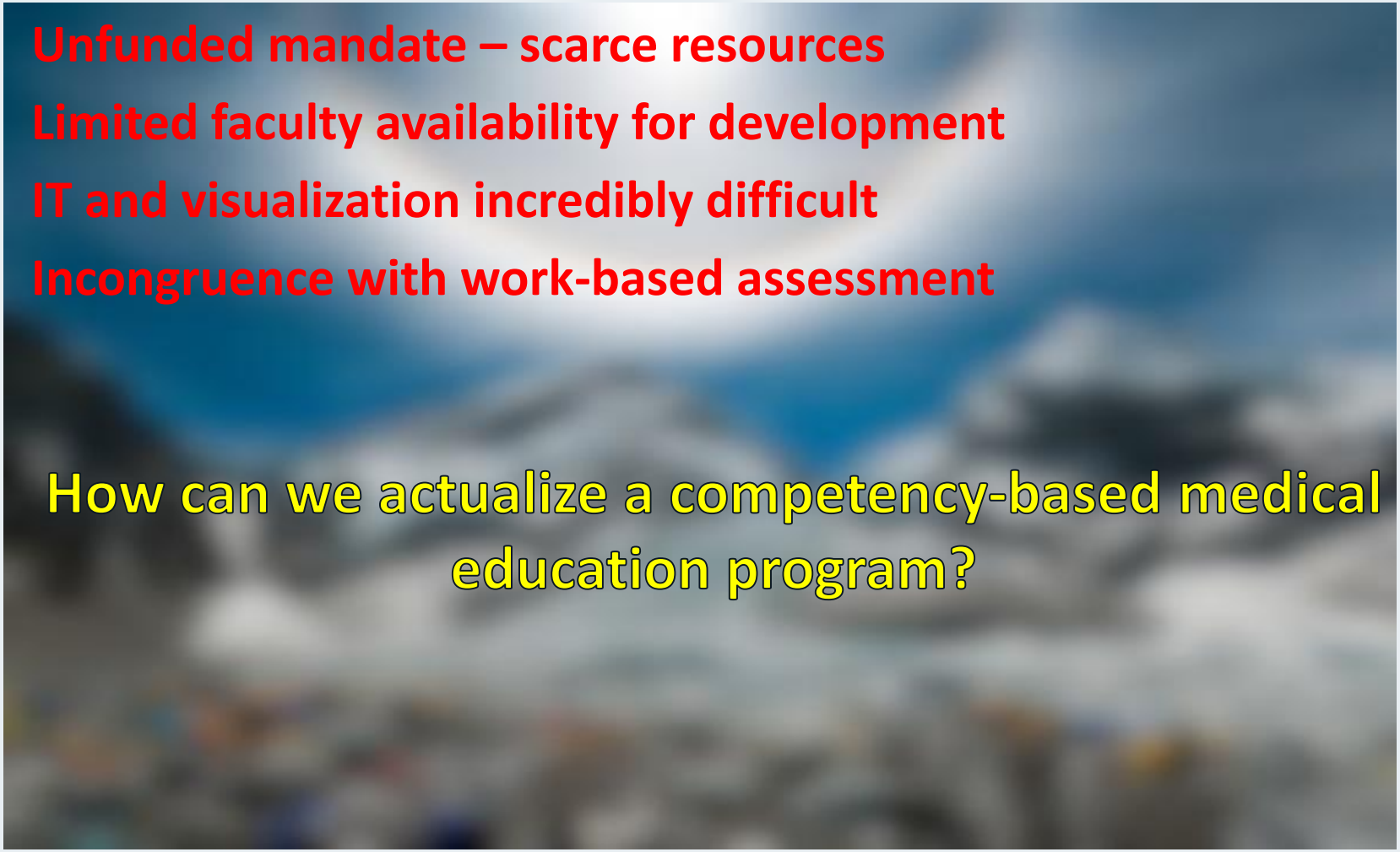


Milestones

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



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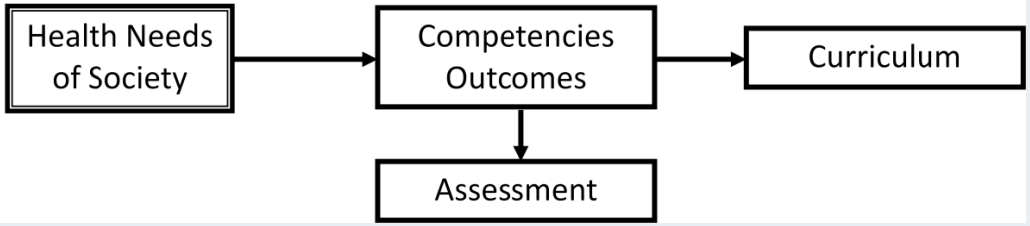
Connecting the New Core with a New Framework

OUTSTANDING FOUNDATION OF KNOWLEDGE AND SKILLS

Time-based to outcomes-based

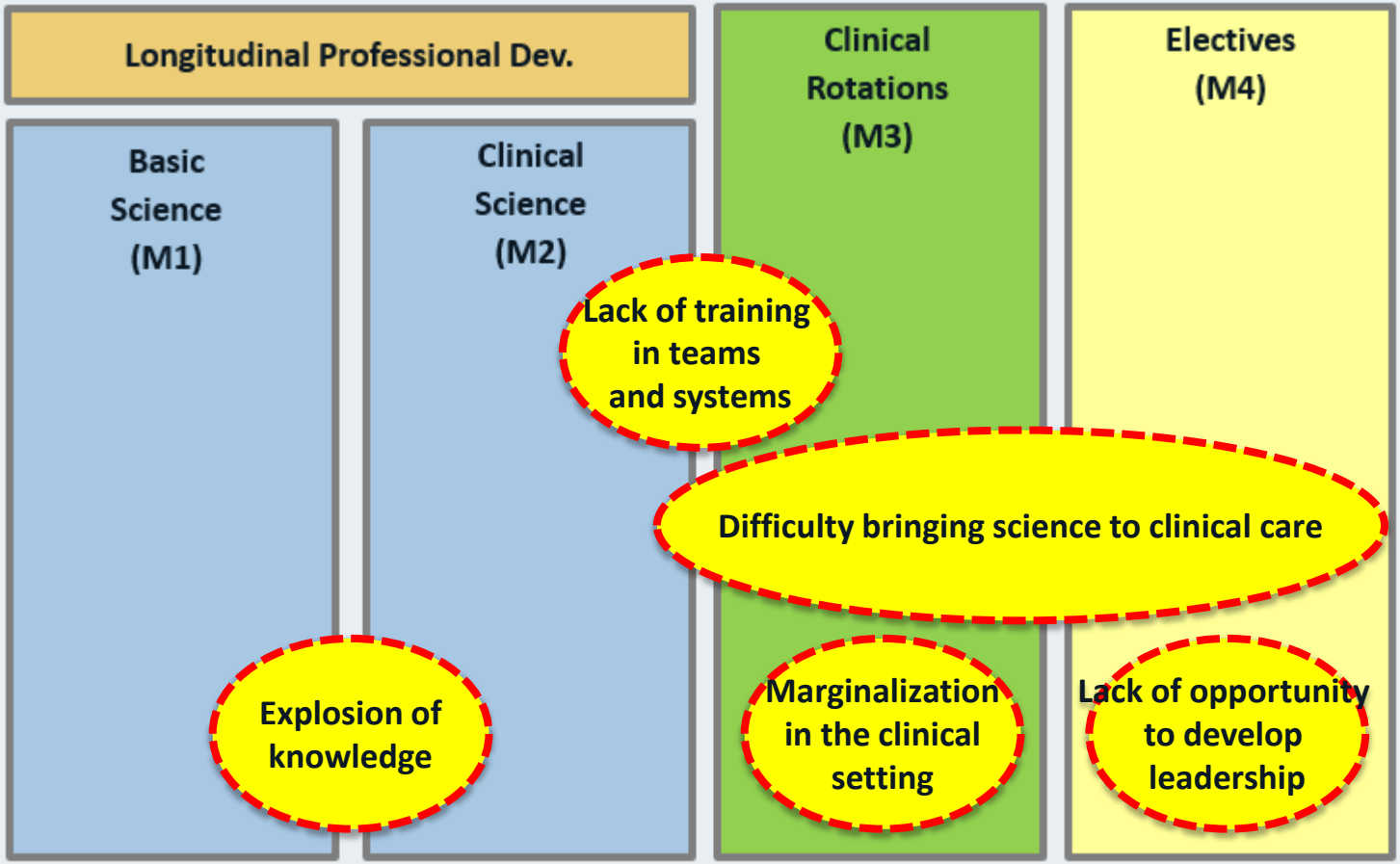
CBE Model



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



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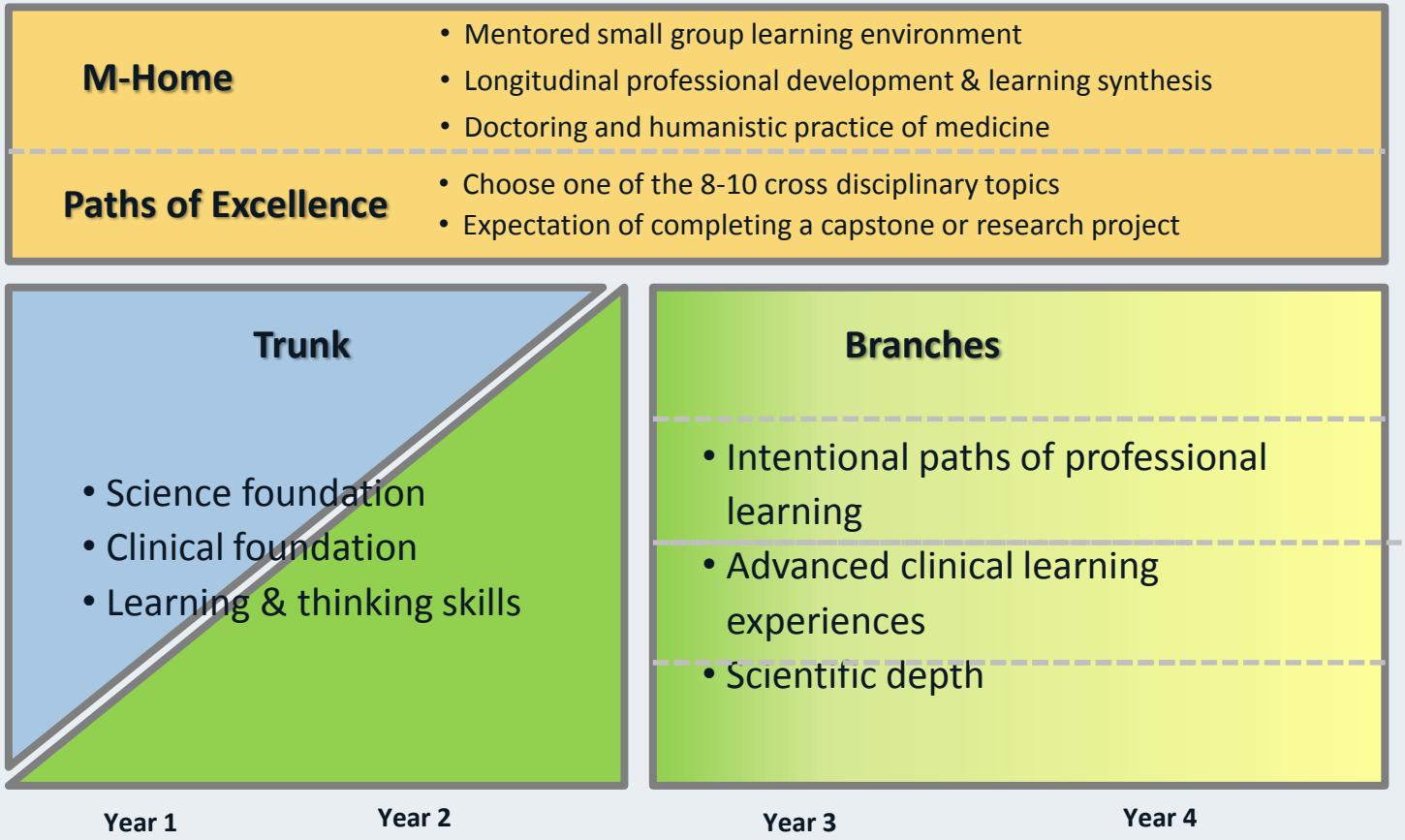

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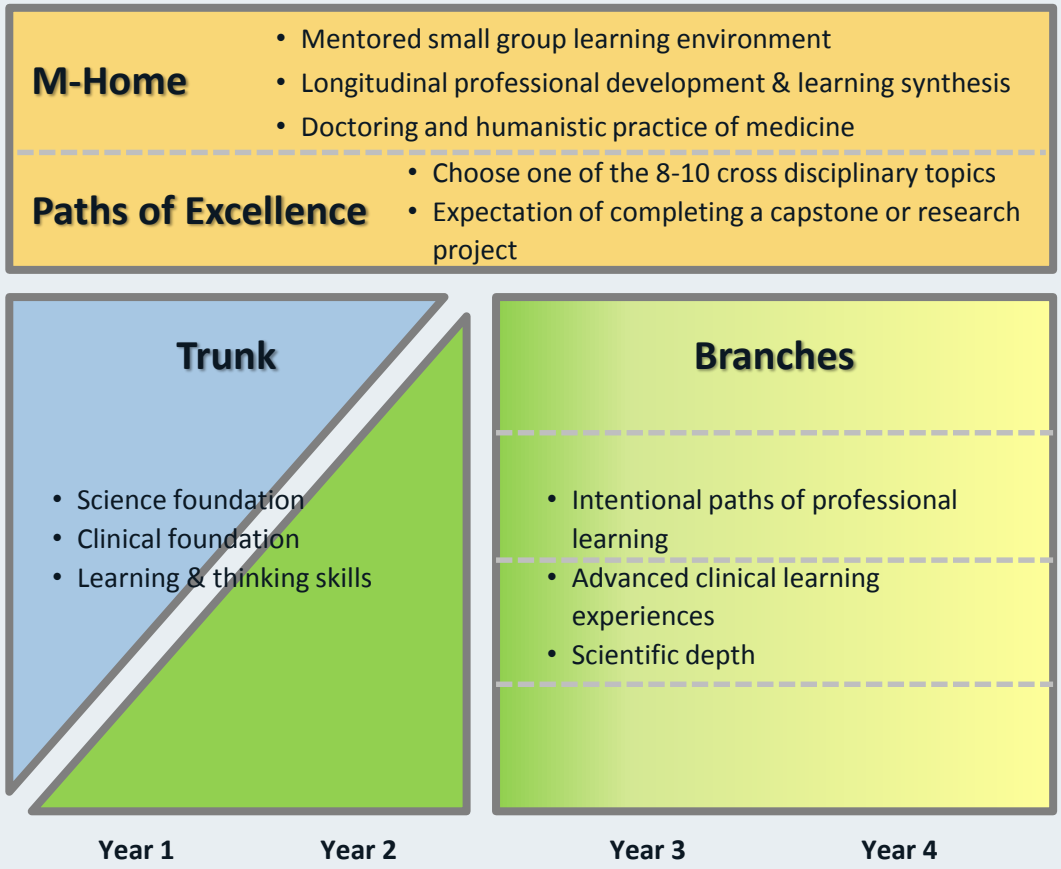
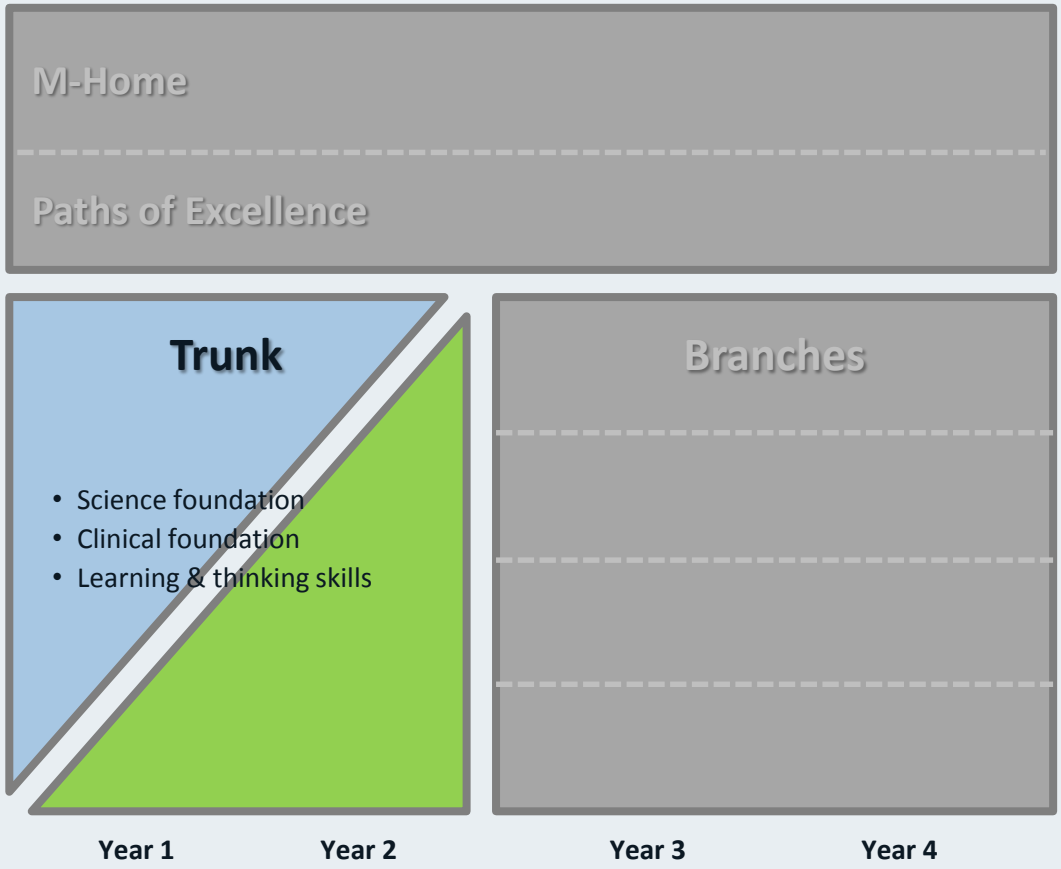


- Program designed to train the **future leaders** in medicine
- Forward-looking curriculum incorporating **innovations** in medical education
- **Strong foundation** with the ability to adapt to individual professional contexts and objectives
- Advanced **professional development** for a career in medicine 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)

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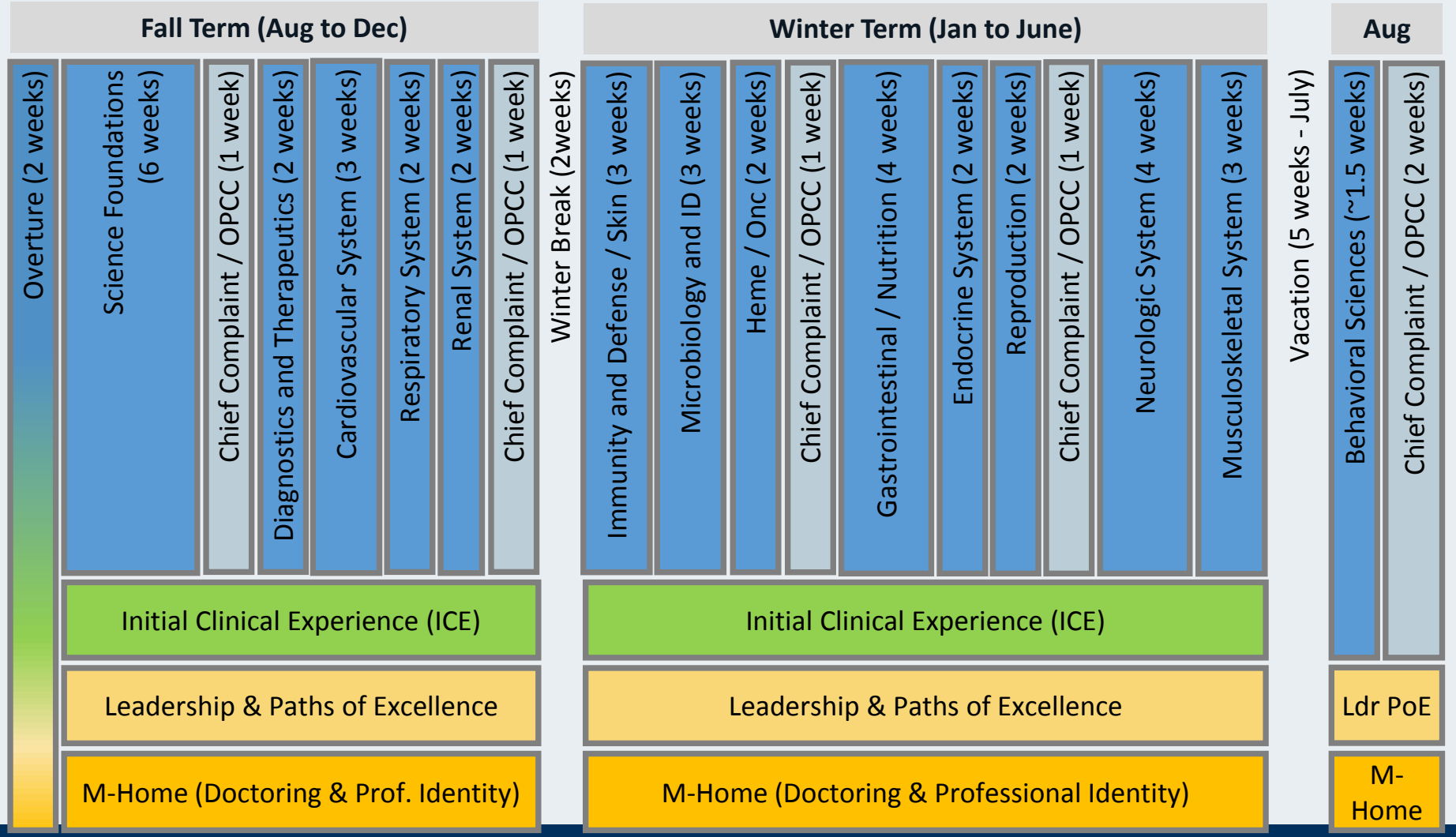
UMMS Curricular Model

Year 1 Schedule (Scientific Trunk)



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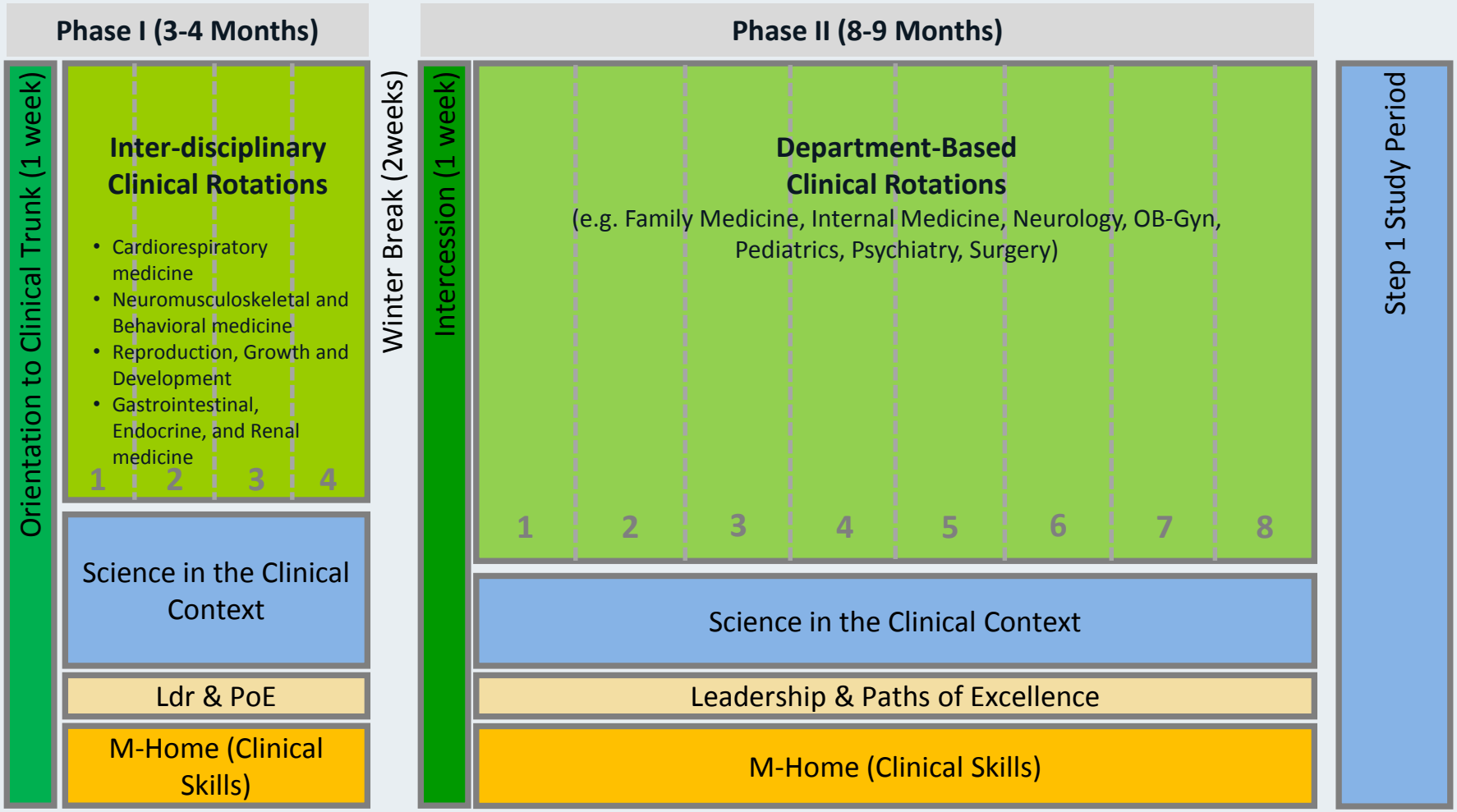
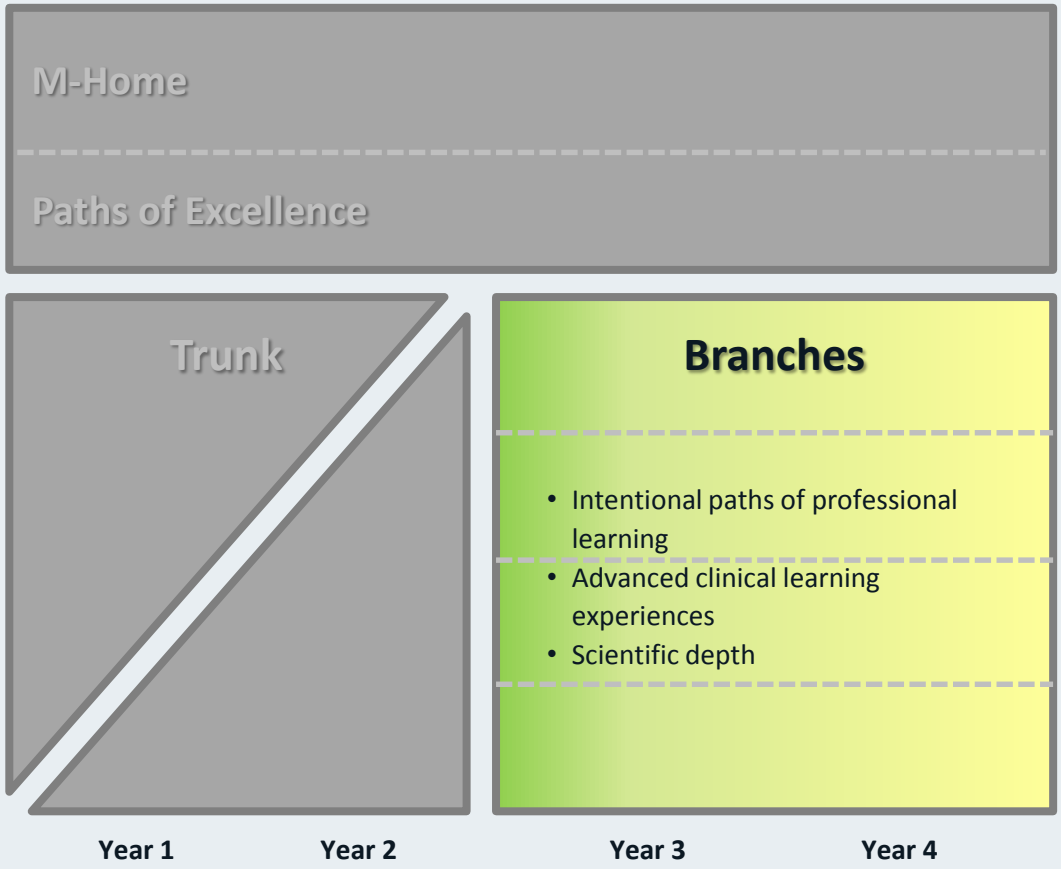
UMMS Curricular Model

Year 2 Schedule (Clinical Trunk)



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 o fulfill branch requirements
- Branches will provide additional preparation for residency readiness

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UMMS Curricular Model

Key Branch Components: Years 3 - ?

Patients & Populations

Systems Focused and Hospital-Based Practice

Procedures-Based Care

Diagnostic and Therapeutic Technologies

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

Leading Change in Health, Healthcare and Healthcare Science

Professional & Leadership Identity

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

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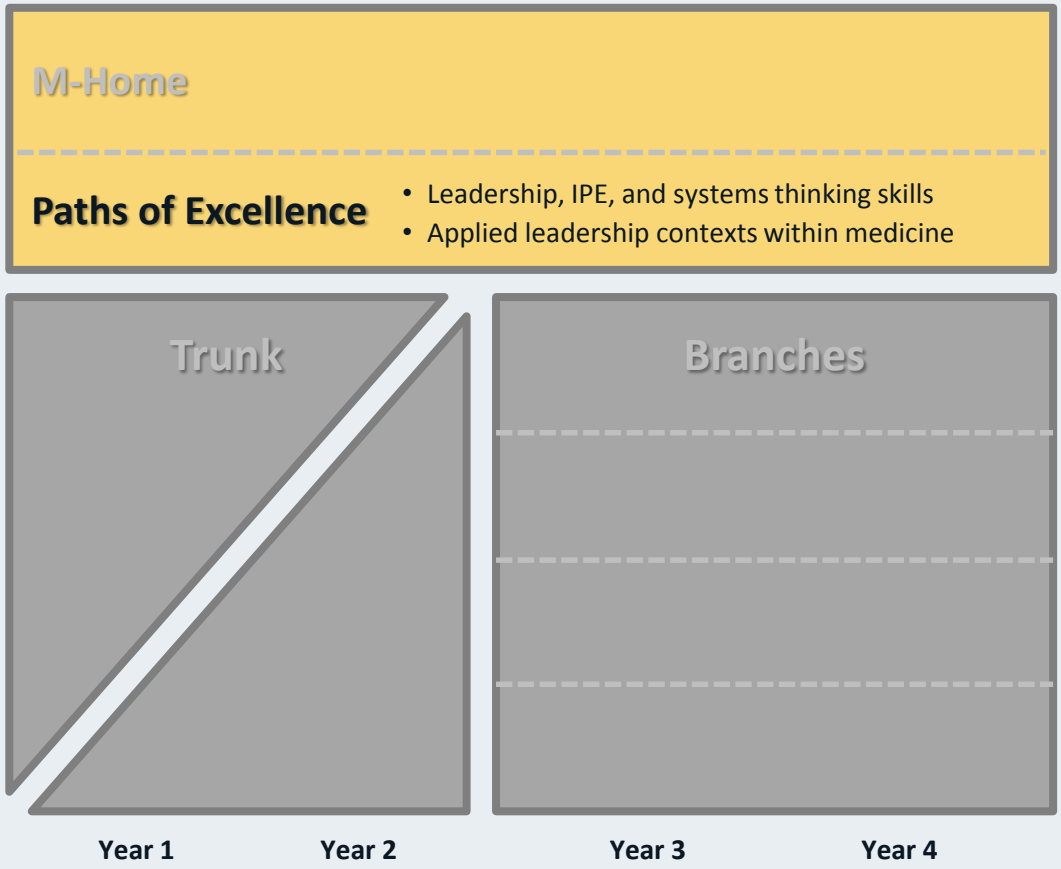
Leadership Programming

Zing TRAIN

Michigan Quality System

UMMS New Curricular Model

"Paths of Excellence" (Applied Leadership Education)



- 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**

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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 & Entrepreneur-ship
- Health Systems Management
- Humanities
- Others

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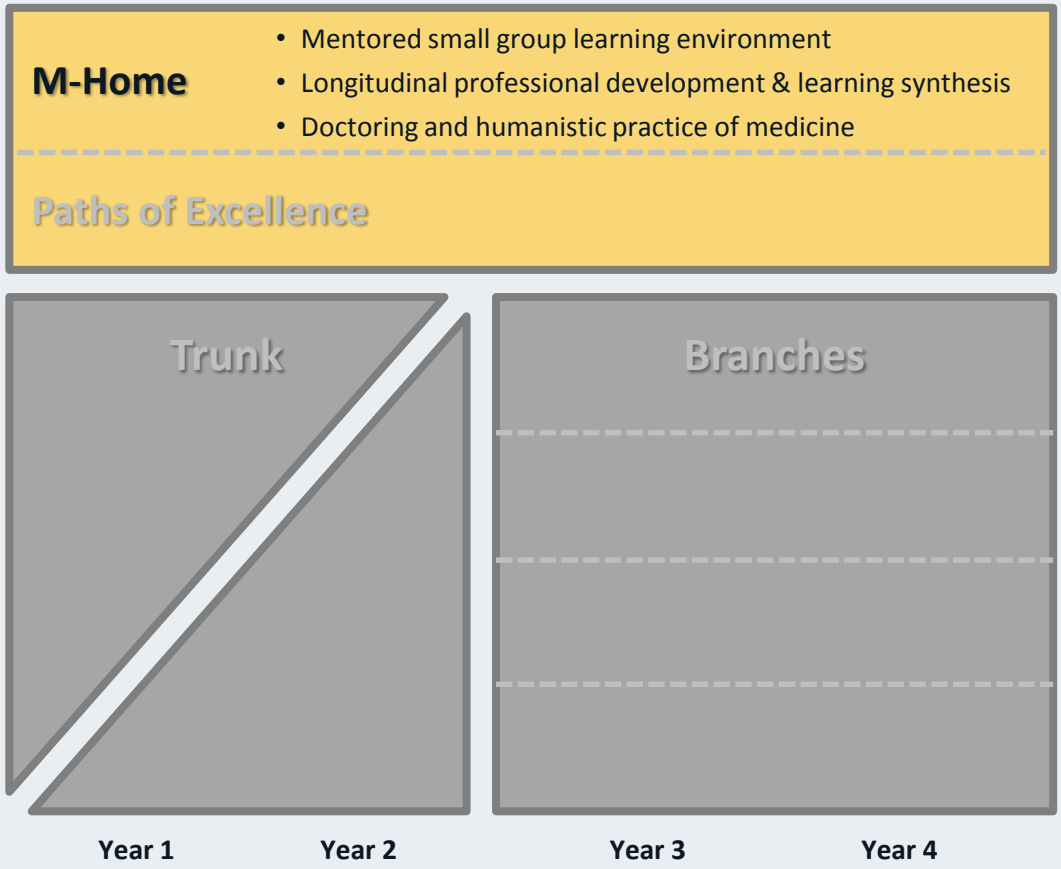
Paths *towards* Excellence

Path Elements	Year 1	Year 2	Year 3	Year 4
Specialized Knowledge	Core Curriculum	Core and Advanced Curriculum	Core and Capstone-specific knowledge	Capstone-specific knowledge
Mentoring & Relationships	Initial Advisors	Expanded Network of advisors and colleagues	Networked Path Community	Mentoring younger students
Experiences	Initial experiences	Scheduled clinical experiences	Expanded Experiences in Path area	Expanded Experiences in Path area
Capstone	Introduction Engaged summer project	Visioning Capstone	Clarify and initiate project	Finalize Project and disseminate Elective experiences

UMMS New Curricular Model

"M-Home" (Longitudinal Learning Community)



- **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 inter-professional education

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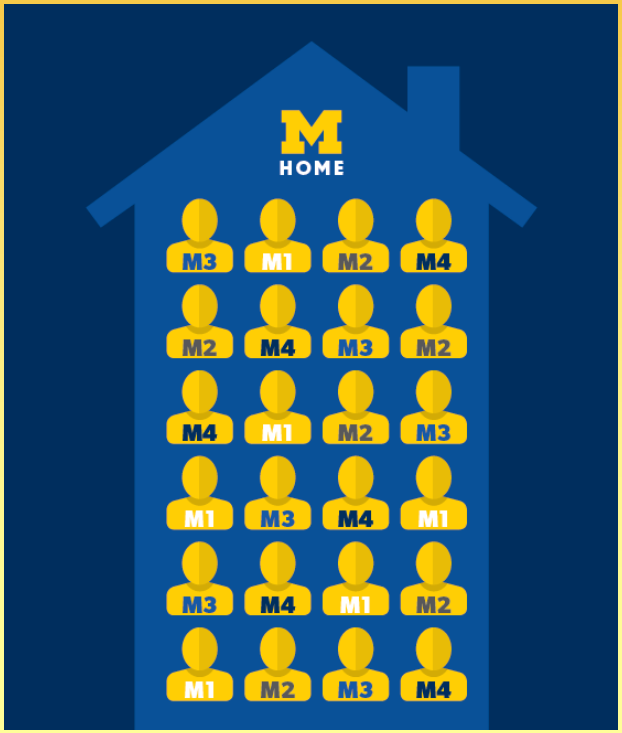
The M-HOME

M-Home Integrates the Curriculum

M-Home is a Community for Learning



Launch – August 2015

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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

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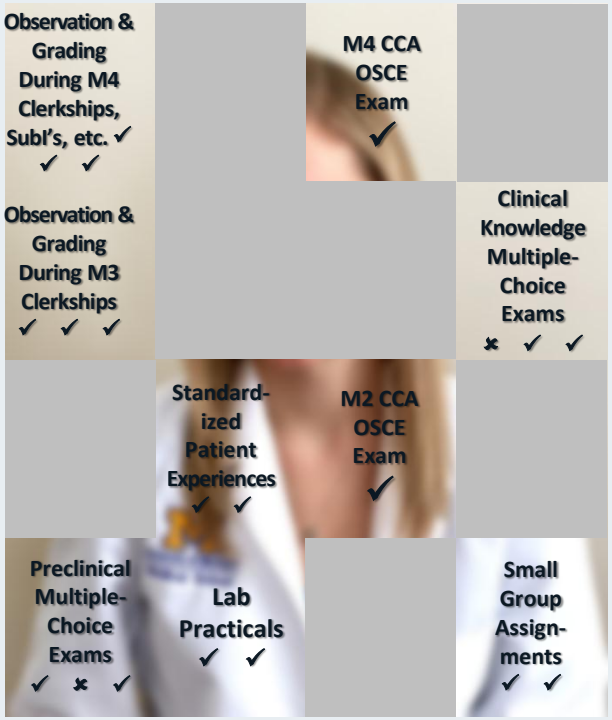
The New Model - Challenges

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

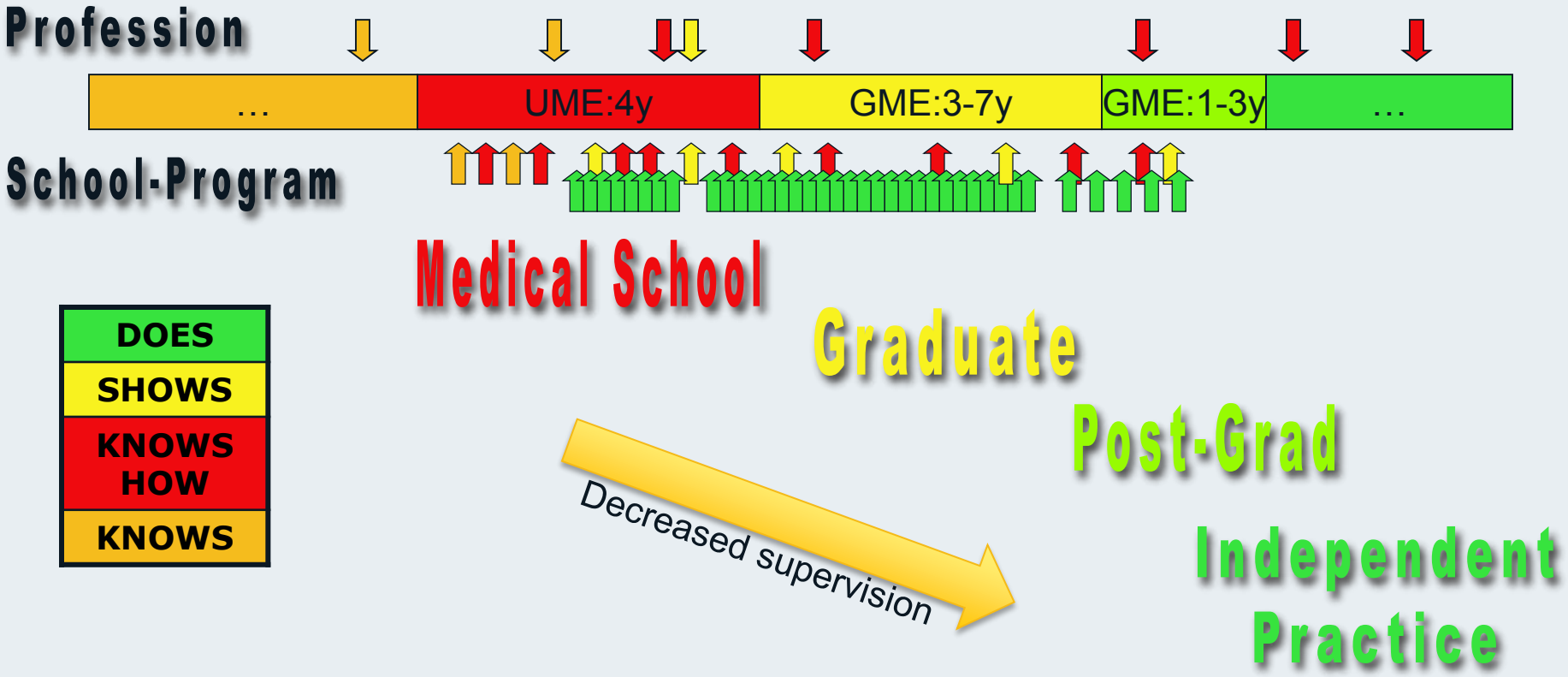
The Assessment "Gap"



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



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.

*Dijkstra, J. et al. A new framework for designing programmes of assessment. Adv Health Sci Educ Theory Pract. Aug 2010; 15(3): 379–393.

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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

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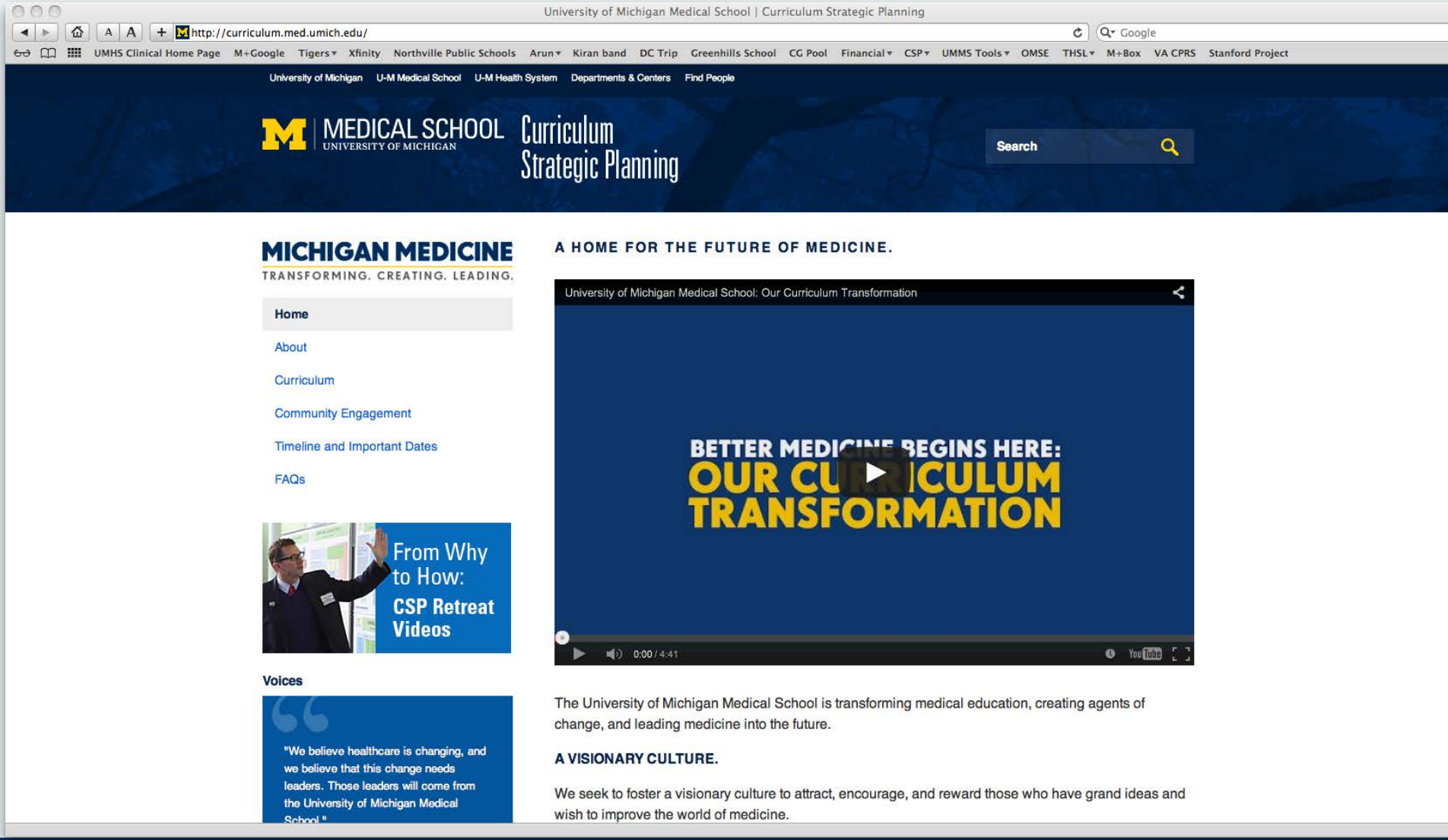
UMMS Proposed Assessment System

	M-Home, Doctoring		Trunk		IPE ICE		Branches		Leadership & PoE	
Medical Knowledge	✗	✓	✓	✓		✓	✓	✓	✓	
	✓	✓	✓	✓	✓	✓		✗	✓	✓
Patient Care	✓	✓	✓	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Communication	✓	✗	✓	✓	✓	✓	✓	✓		✓
		✓	✓	✓	✓	✓	✓	✓	✓	✓
Professionalism	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Practice-Based Learning and Improvement	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✗	✓	✓	✓	✓	✓
Systems-Based Practice	✓	✓		✓	✓	✓	✓		✓	✗
	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Leadership & Teamwork	✓	✓	✓	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓
Critical Thinking & Discovery	✓	✗	✓	✓	✓	✓	✓		✓	✓
		✓	✓	✓	✓	✓	✓	✓	✓	✓

More assessment more often from more sources to provide a complete picture of the competent graduate

A Journey Towards Accountable Education

To learn more: curriculum.med.umich.edu



MICHIGAN MEDICINE

TRANSFORMING. CREATING. LEADING.

Thank You

"The best way to predict the future is to invent it."

--*Alan Kay*