Accreditation Council for Graduate Medical Education

# *Realizing the Promise of Competency-based Medical Education*



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# Disclosures

- Employed by the ACGME
- I receive royalties from Mosby-Elsevier for a textbook on assessment
- I am a member of the board of NBME and Medbiquitous



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# Outline

- Rationale and theories supporting a competency-based medical education
- The critical importance of the institutional environment on clinical and learning outcomes
- Describe and discuss importance of assessment and review the early EM Milestones data.

# What Exactly is Competency-based Medical Education(CBME)



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# Competency-Based Medical Education

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

- the unit of progression is ***mastery*** of specific knowledge, skills and attitudes

Frank, JR, Snell LS, ten Cate O, et. al. Competency-based medical education: theory to practice. Med Teach. 2010; 32: 638–645



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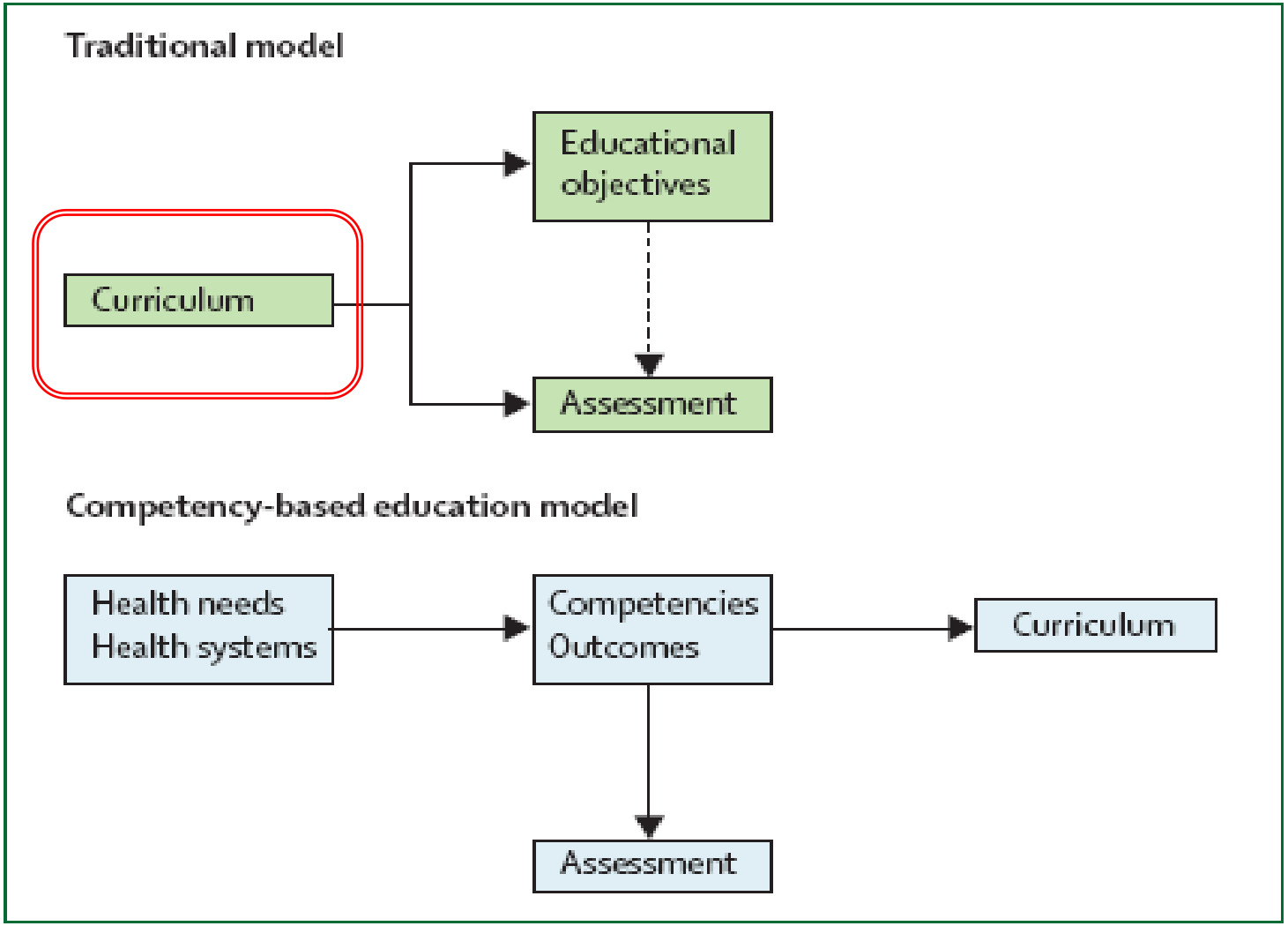
# CBME: Start with System Needs



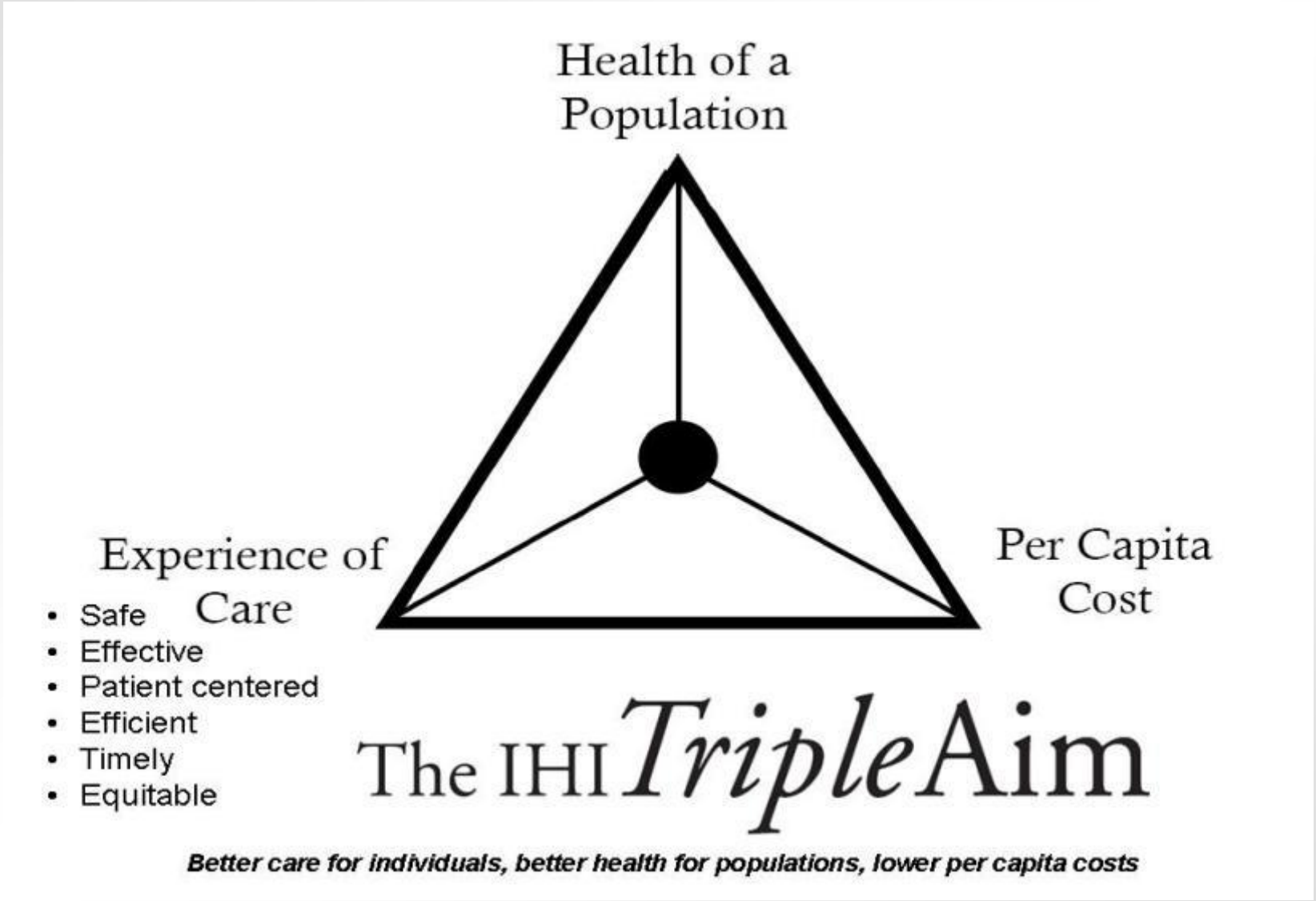

Frenk J, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010

# Early Principles: CBME

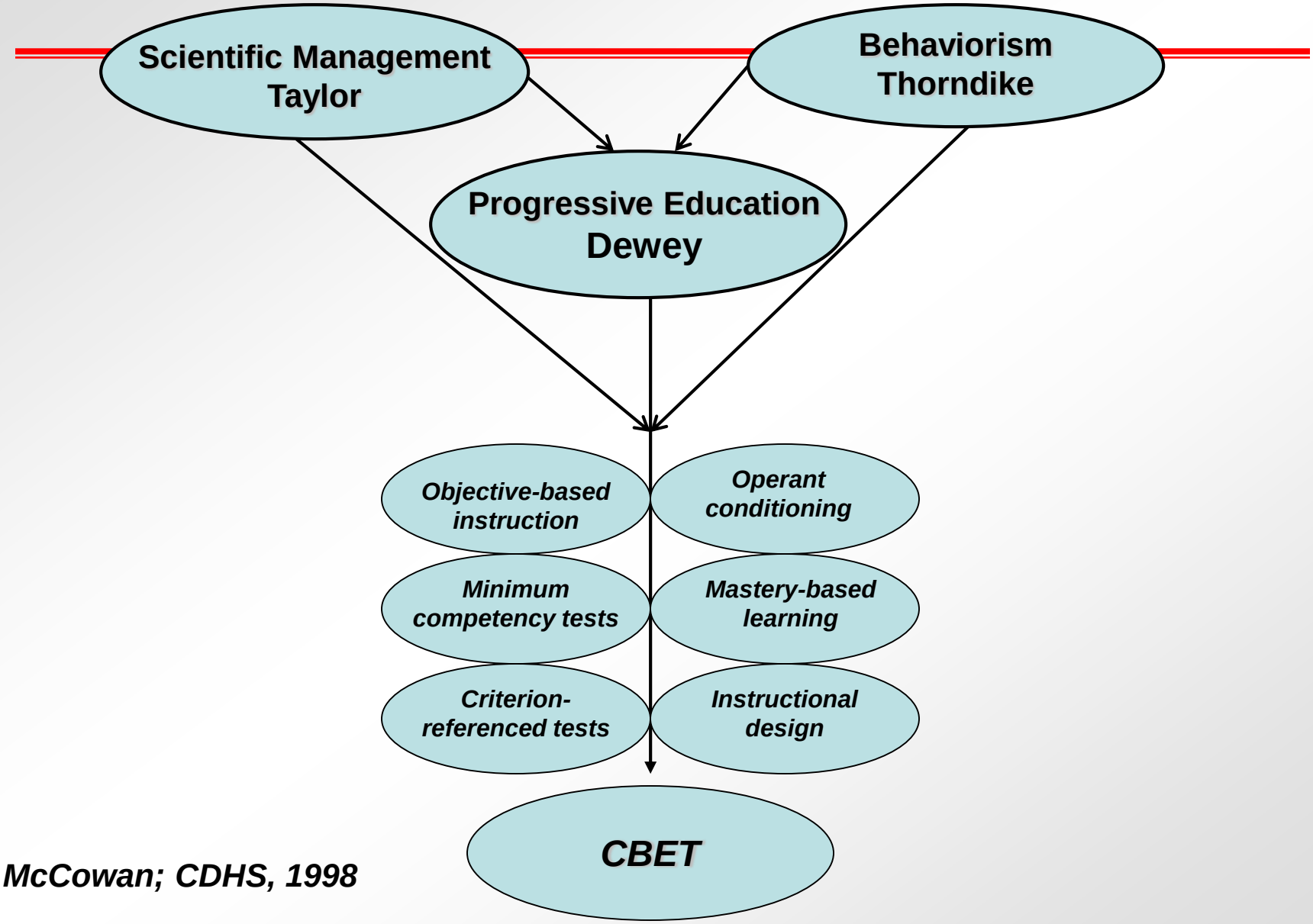
- World Health Organization (**1978**):
  - *"The intended output of a competency-based programme is a health professional who can practise medicine at a defined level of proficiency, in accord with local conditions, to meet local needs."*

***McGaghie WC, Miller GE, Sajid AW, Telder TV. Competency-based Curriculum Development in Medical Education. World Health Organization, Switzerland, 1978.***

# What Are The Outcomes?

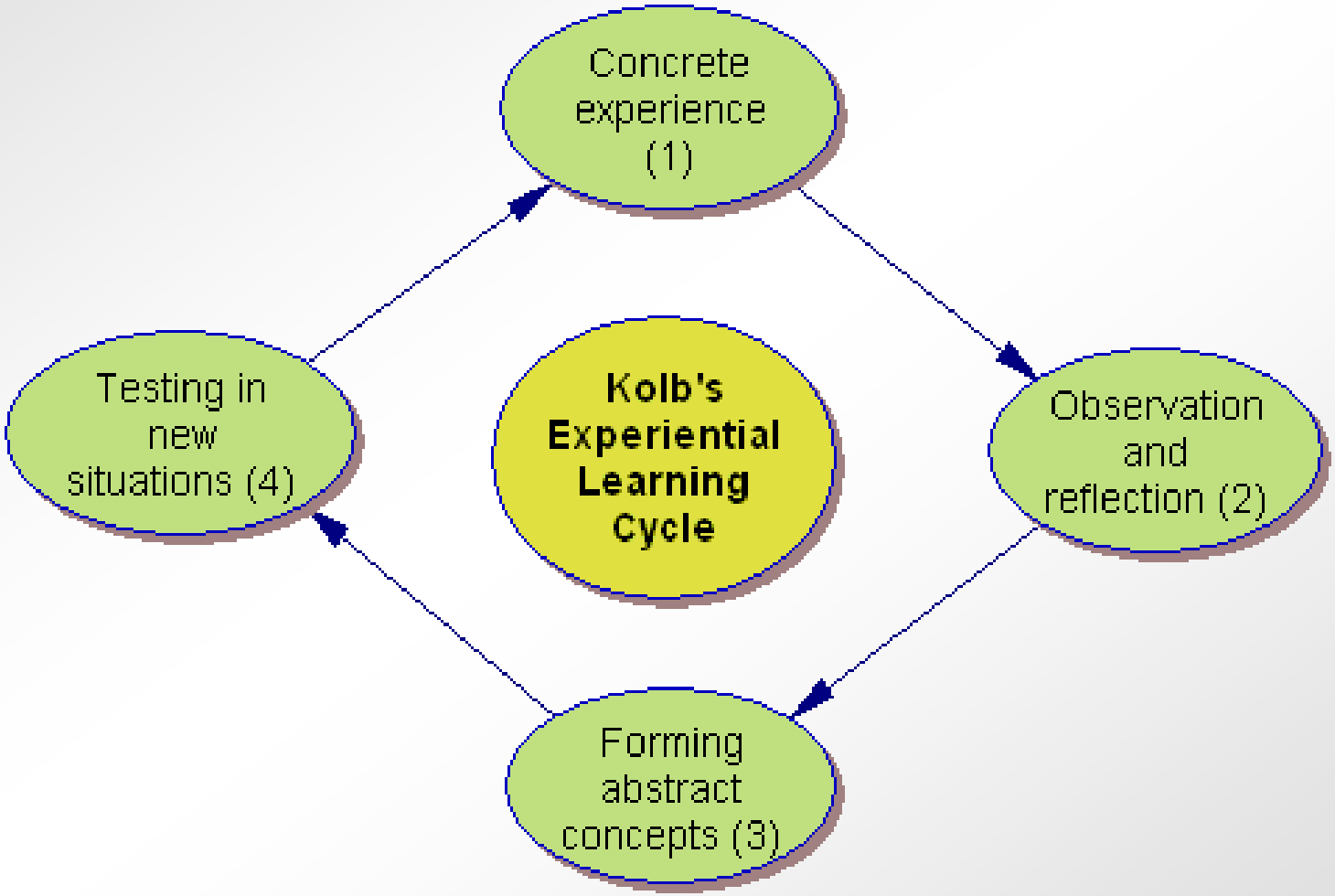


# Origins of CBET




*McCowan; CDHS, 1998*

# Experiential Learning: David Kolb



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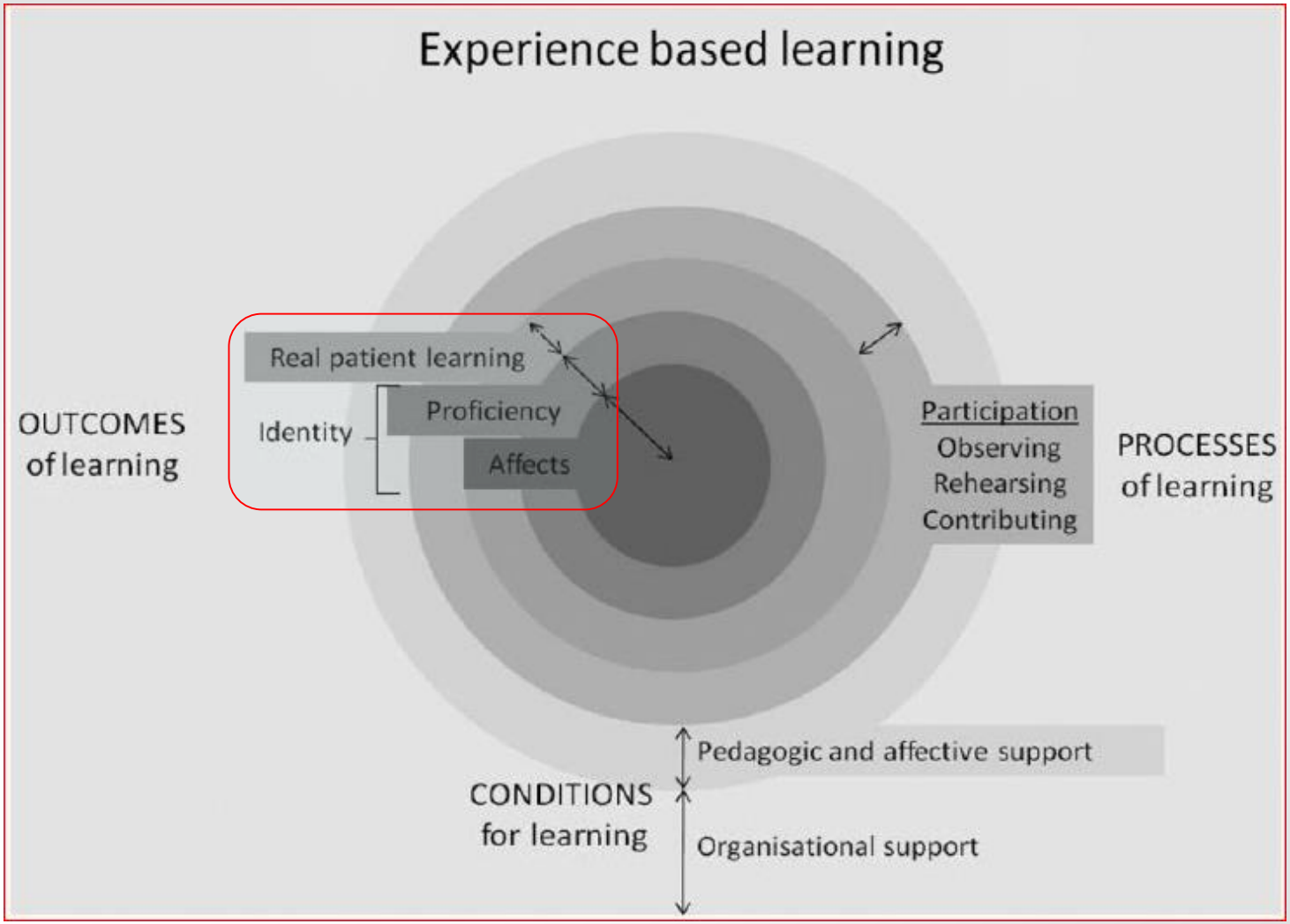
# Socio-cultural Theory: Key Principles

- Subject matter and learning processes not uniform: diverse as the people
- Learning highly influenced by social milleau
- Learning mediated by artefacts and “sign” systems (e.g. language)
- Learning situated within context where it occurs
  - Subject matter, content and process inseparable
- Adversarial interactions (people or institutions) produces different learning

Yardley S, Teunissen PM, Dornan T. Experiential learning: AMEE guide 63. Med Teach. 2012; 34:e102-115.

# Experiential Learning



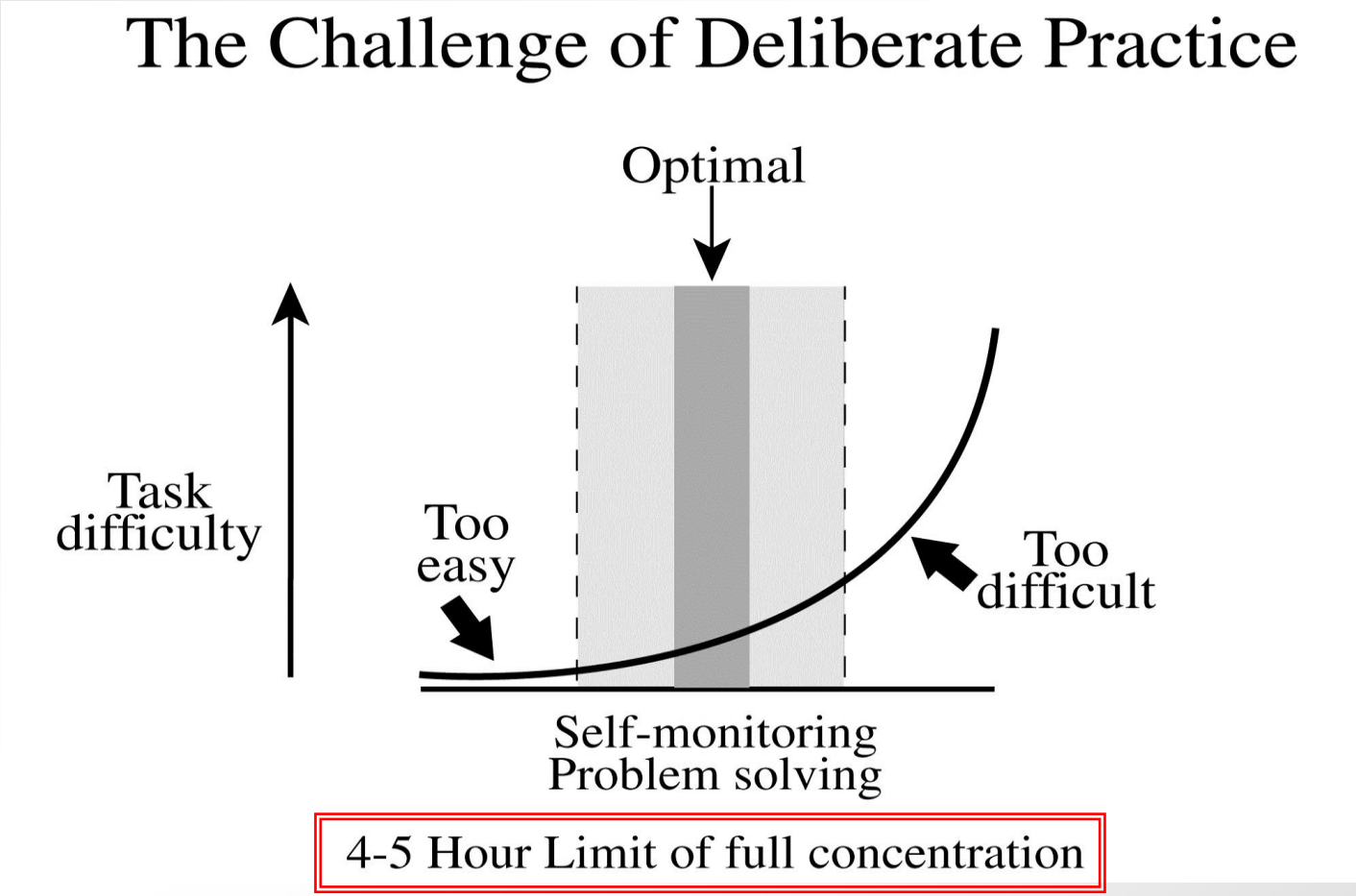

Yardley S, Teunissen PM, Dornan T. Experiential learning: AMEE guide 63. Med Teach. 2012; 34:e102-115.

# Deliberate Practice

Ericsson & Lehmann, 1996:

- "Individualized training activities especially designed by a coach or teacher to improve specific aspects of an individual's performance through repetition and successive refinement."

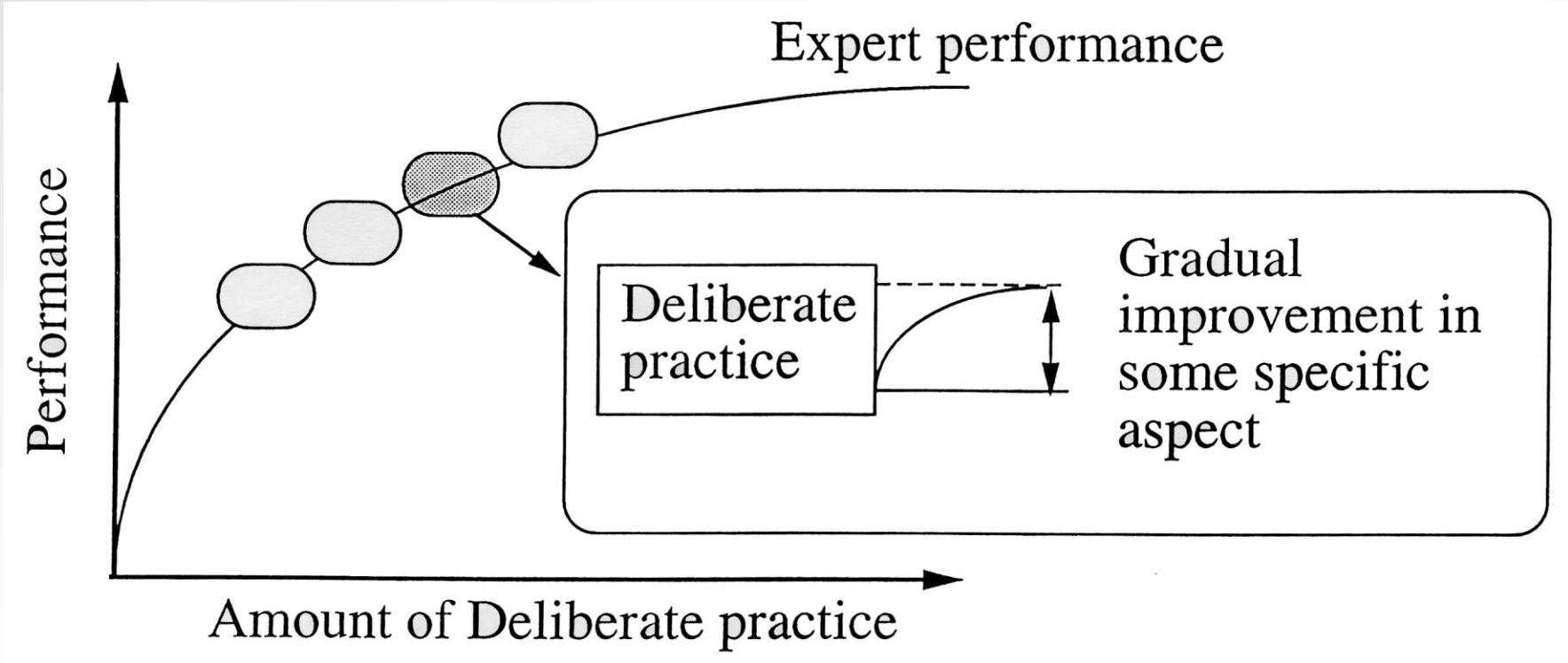
# Deliberate Practice and Expertise




***From Anders Ericsson: Used by Permission***

# Design and Sequencing of Training Activities

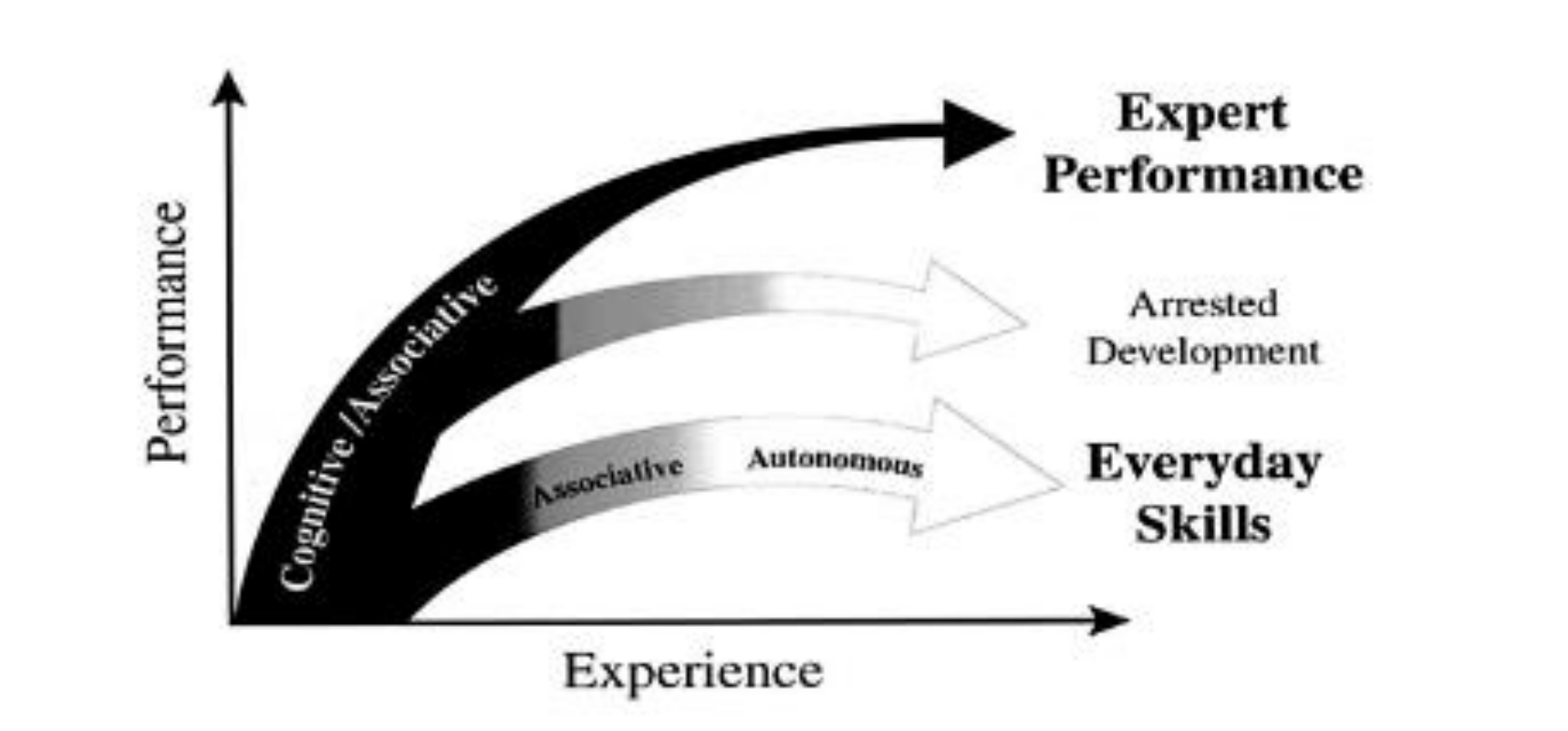
* Monitor students' development
* Design and select training tasks for individual students




**Professional teachers and coaches**

***From Anders Ericsson: Used by Permission***

# Expert Performance vs. Everyday Skills




Ericsson KA. Acad Med. 2004

# The Role of the Coach

- “They observe, they judge, and they guide”
- “That one twenty-minute discussion gave me more to consider and work on than I’d had in the past five years”
- “Medical practice is largely unseen by anyone who might raise one’s sights. I’d had no outside ears and eyes.”

Atul Gawande, New Yorker 10/3/2011

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# Providing High Quality Care: Does It Really Matter Where Residents and Fellows Train?



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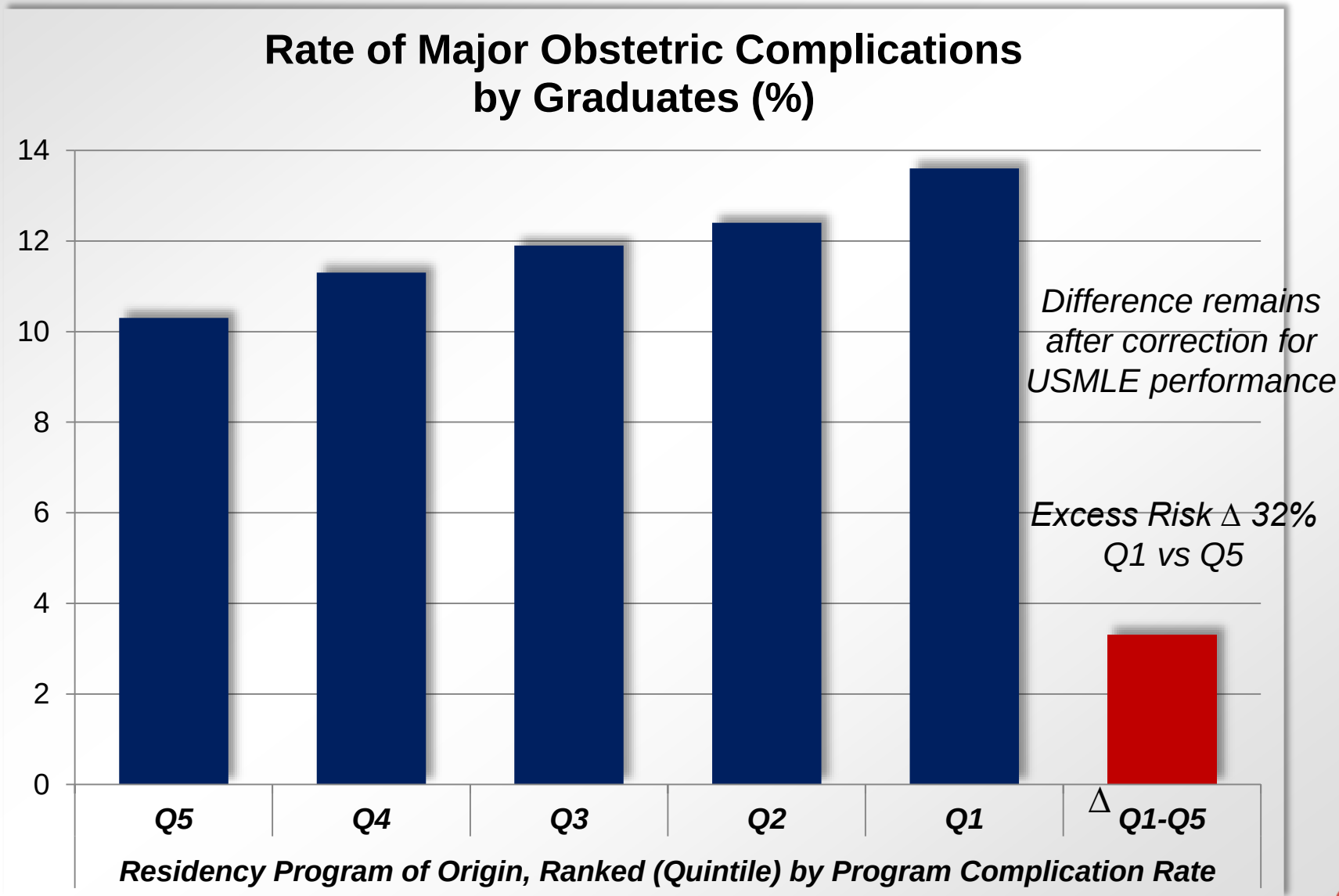
# Evaluating Residency Programs Using Patient Outcomes

*JAMA 2009;302(12):1277-1283. Asch, DA, et.al.*



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# Choosing a Residency

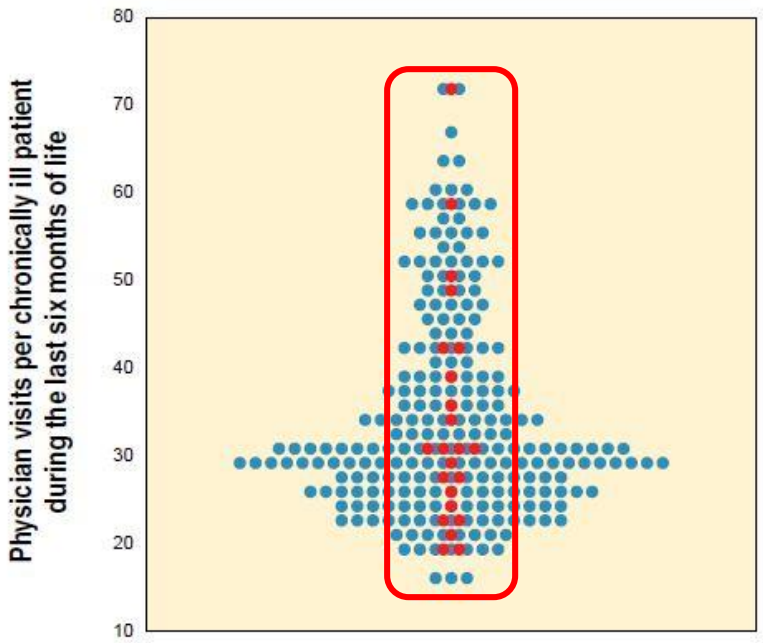


Figure 2. Average number of physician per chronically ill Medicare patient during the last six months of life among patients receiving most of their care at teaching hospitals (2010 deaths)

**Average # of physician visits in last six months of life (teaching hospitals in red)**

**From:**

***What Kind of Physician Will You Be?***

**Variation in Health Care and Its Importance for Residency Training**

**Dartmouth Institute for Health Policy & Clinical Practice 2012**



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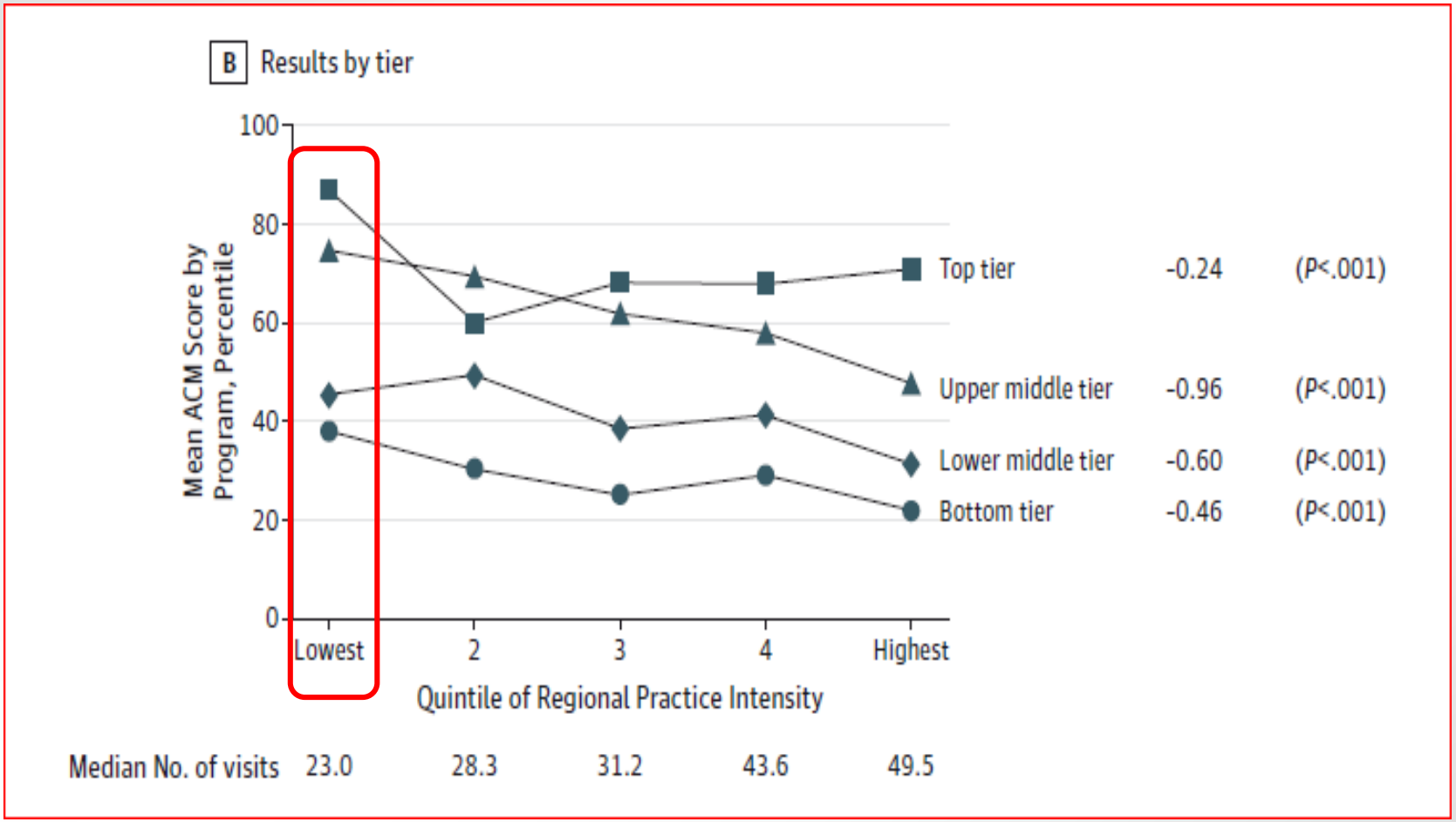
# Environment and Conservative Practice




Sirovich BE, Lipner RS, Johnston M, Holmboe ES. The Association Between Residency Training and Internists' Ability to Practice Conservatively. JAMA IM. 2014.



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# Environment and Conservative Practice

Table 3. Adjusted Patient Expenditures for Primary Care[a]

| | All Physicians | | Years of Practice | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-7 Years | | 8-15 Years | | 16-19 Years | |
| | β (95% CI)[b] | *P* Value | β (95% CI) | *P* Value | β (95% CI) | *P* Value | β (95% CI) | *P* Value |
| Physicians, No. | 2851 | | 480 | | 1694 | | 677 | |
| Medicare beneficiaries, No. | 491 948 | | 60 996 | | 302 869 | | 128 083 | |
| Training HRR spending[c] | | | | | | | | |
| Low | Reference | | Reference | | Reference | | Reference | |
| Average | 0.05 (0.00 to 0.09) | .04 | 0.22 (0.01 to 0.44) | .04 | 0.01 (−0.04 to 0.07) | .70 | 0.06 (−0.04 to 0.17) | .23 |
| High | 0.07 (0.02 to 0.12) | .007 | 0.29 (0.13 to 0.45) | <.001 | 0.08 (0.02 to 0.15) | .02 | −0.02 (−0.12 to 0.07) | .63 |

Chen C, et. al. Spending Patterns in Region of Residency Training and Subsequent Expenditures for Care Provided by Practicing Physicians for Medicare Beneficiaries. *JAMA*. 2014;312(22):2385-2393. doi:10.1001/jama.2014.15973.

# Nostalgialitis Imperfecta

- Syndrome characterized by the following signs and symptoms:
  - "When I was an intern…<*insert superlative*>"
  - "Medicine was so much better 25 years ago"
    - Reality: *Not really…*
  - "Younger physicians today are less professional, skilled, etc. because of <*insert favorite complaint*>"

# Harvard Medical Practice Study

- Methods:
  - Investigated prevalence of adverse events due to medical management
  - Review of 30,121 medical records from 51 randomly selected acute care hospitals
- Results:
  - Adverse events occurred in 3.7% of hospitalizations
    - 27.6% due to medical negligence
    - 13.6% resulted in death

# Harvard Medical Practice Study

- Study conducted in 1984 in the state of New York
  - My senior year (1984-85) as a medical student at the University of Rochester

# Past, Present and Future

*"Those who forget the past are condemned to repeat it"*
George Santayana

*"The blind spot of contemporary [education] is experience"*
Francisco Varela



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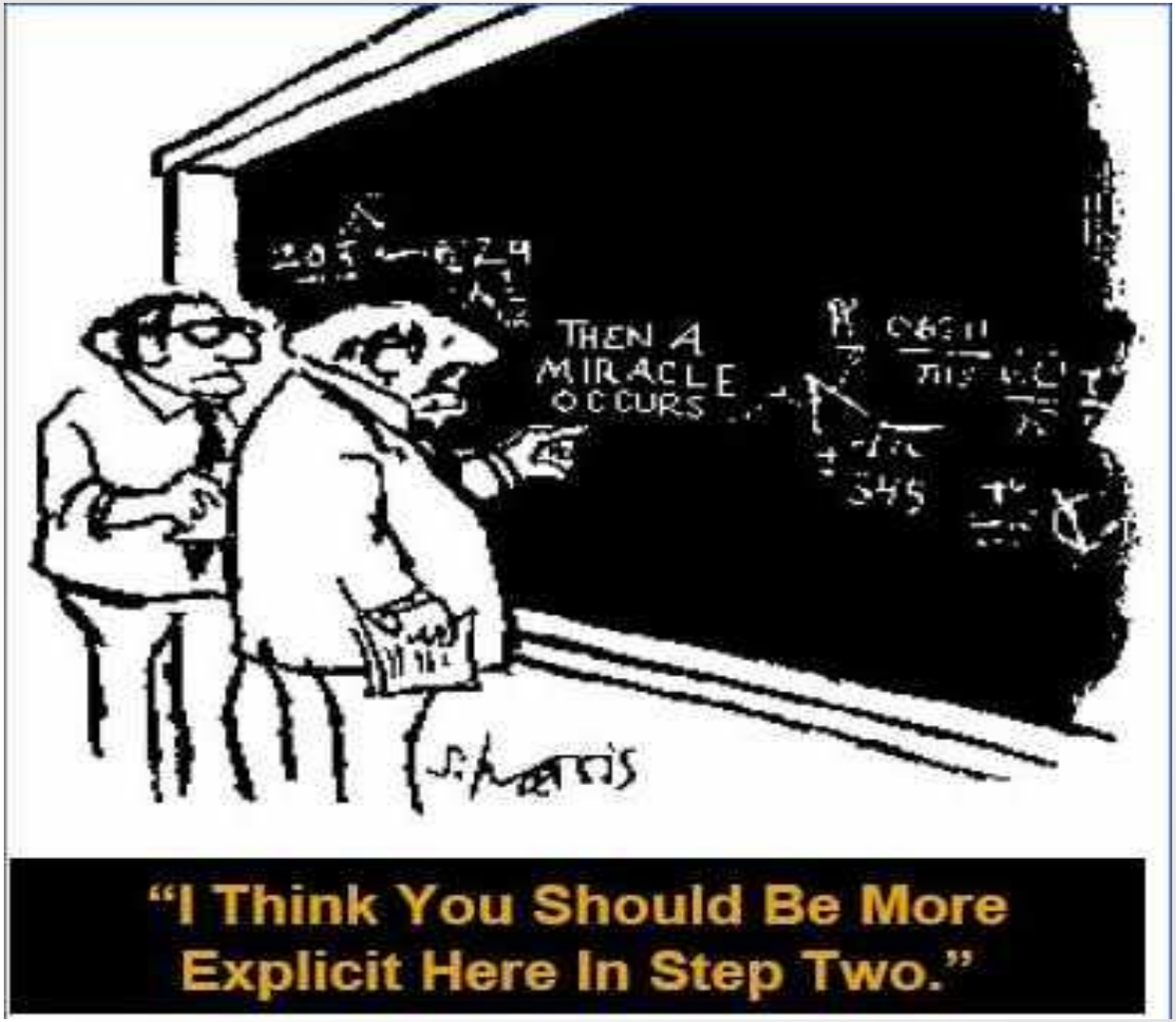
# The “Miracle” of Medical Education



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*"Every system is perfectly designed to achieve the results it generates."*

**Paul Batalden**



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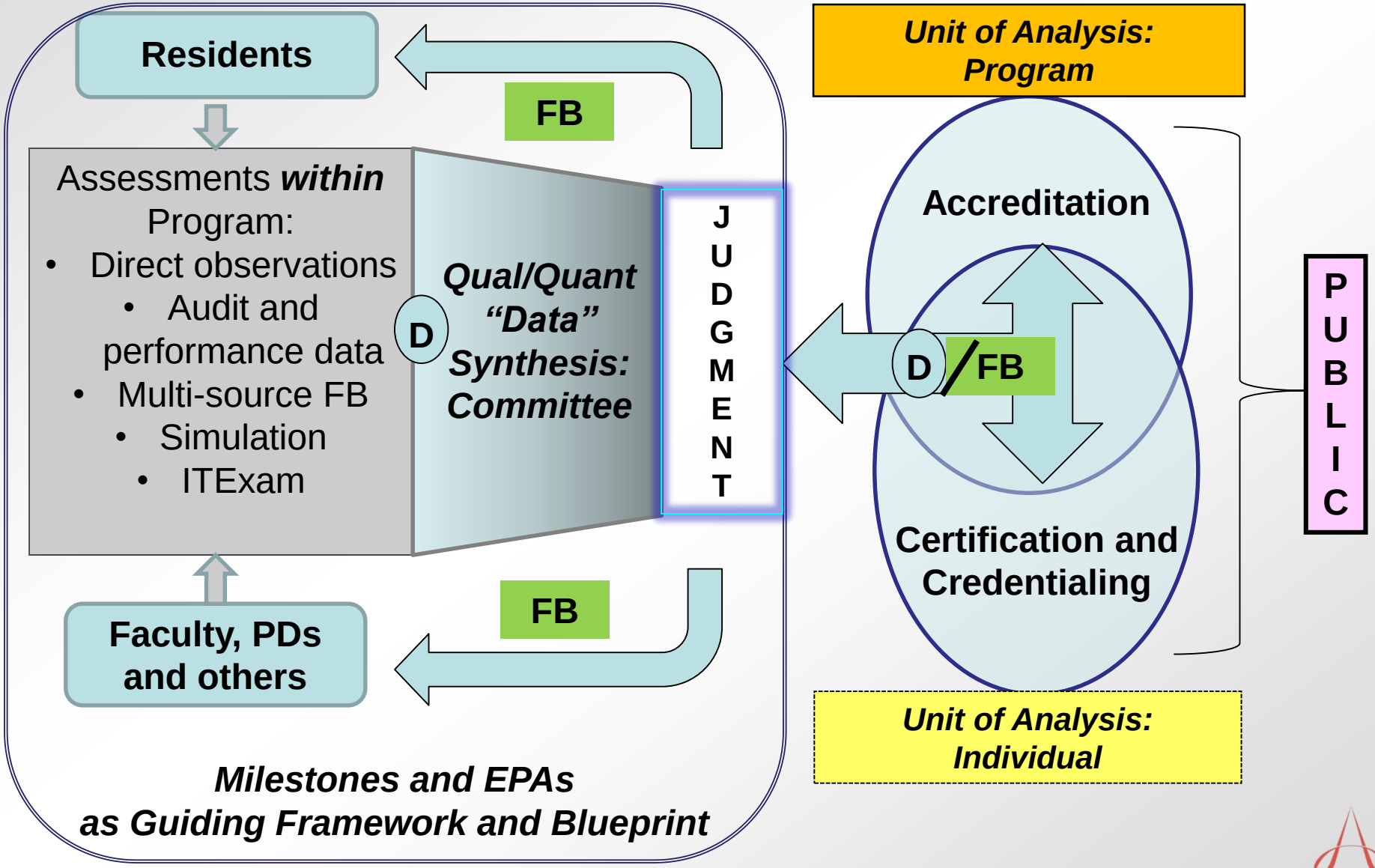
# The Professional Self-Assessment "System"



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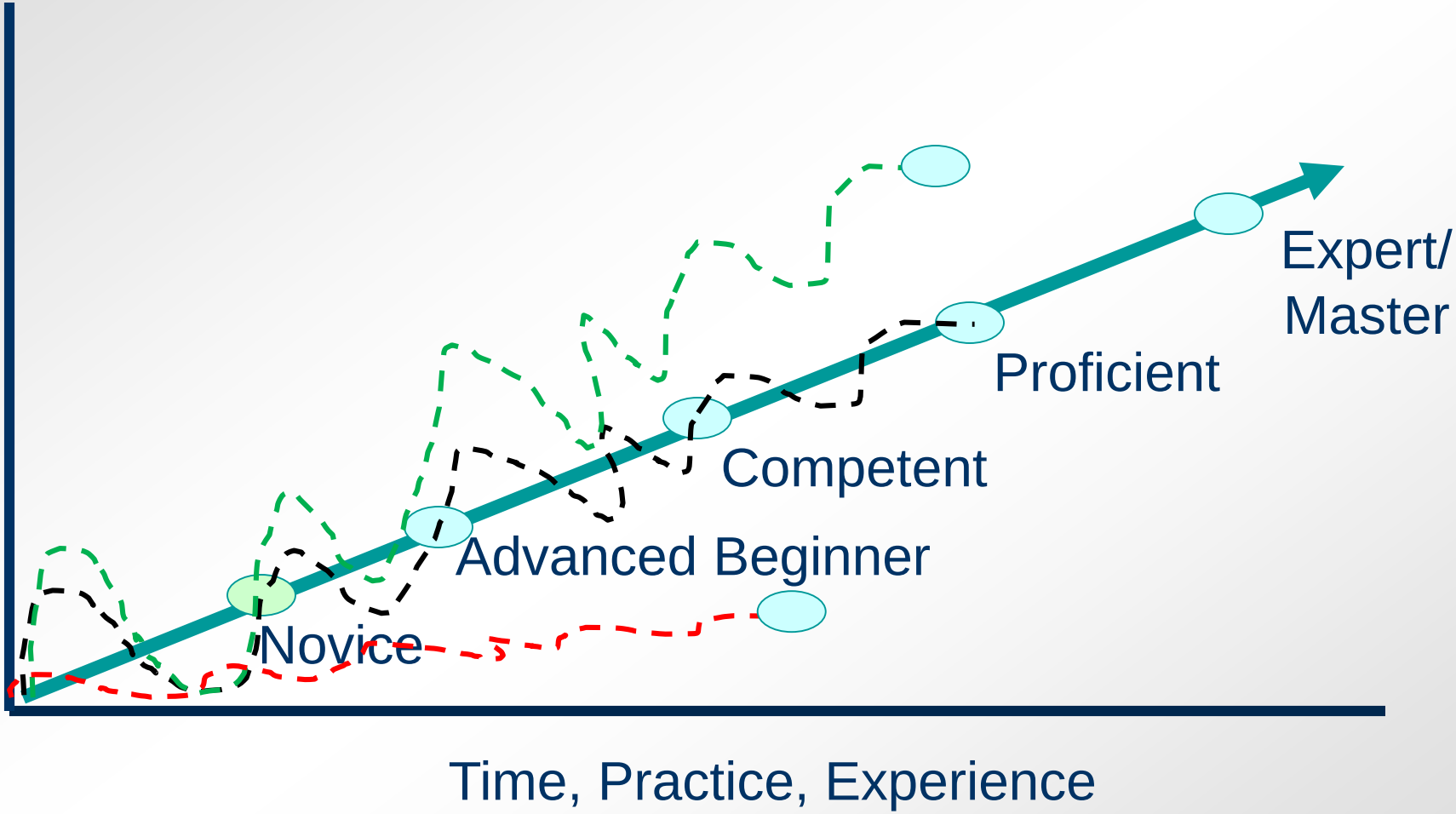
# Dreyfus & Dreyfus Development Model




*Dreyfus SE and Dreyfus HL. 1980*
*Carraccio CL et al. Acad Med 2008;83:761-7*



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# The Milestones and NAS in a Nutshell

- A Continuous Accreditation Model based on assessment of annual data – this list is not all encompassing and is subject to change
  - Annual program data (resident/faculty information, major program changes, citation responses, program characteristics, scholarly activity, curriculum)
  - Aggregate board pass rate
  - Resident clinical experience
  - Resident survey and faculty survey (latter is new)
- ***Semi-annual resident Milestone evaluations***
- 10 year Self-Study and Self-Study Visit
- Clinical Learning Environment Review (CLER) Visits



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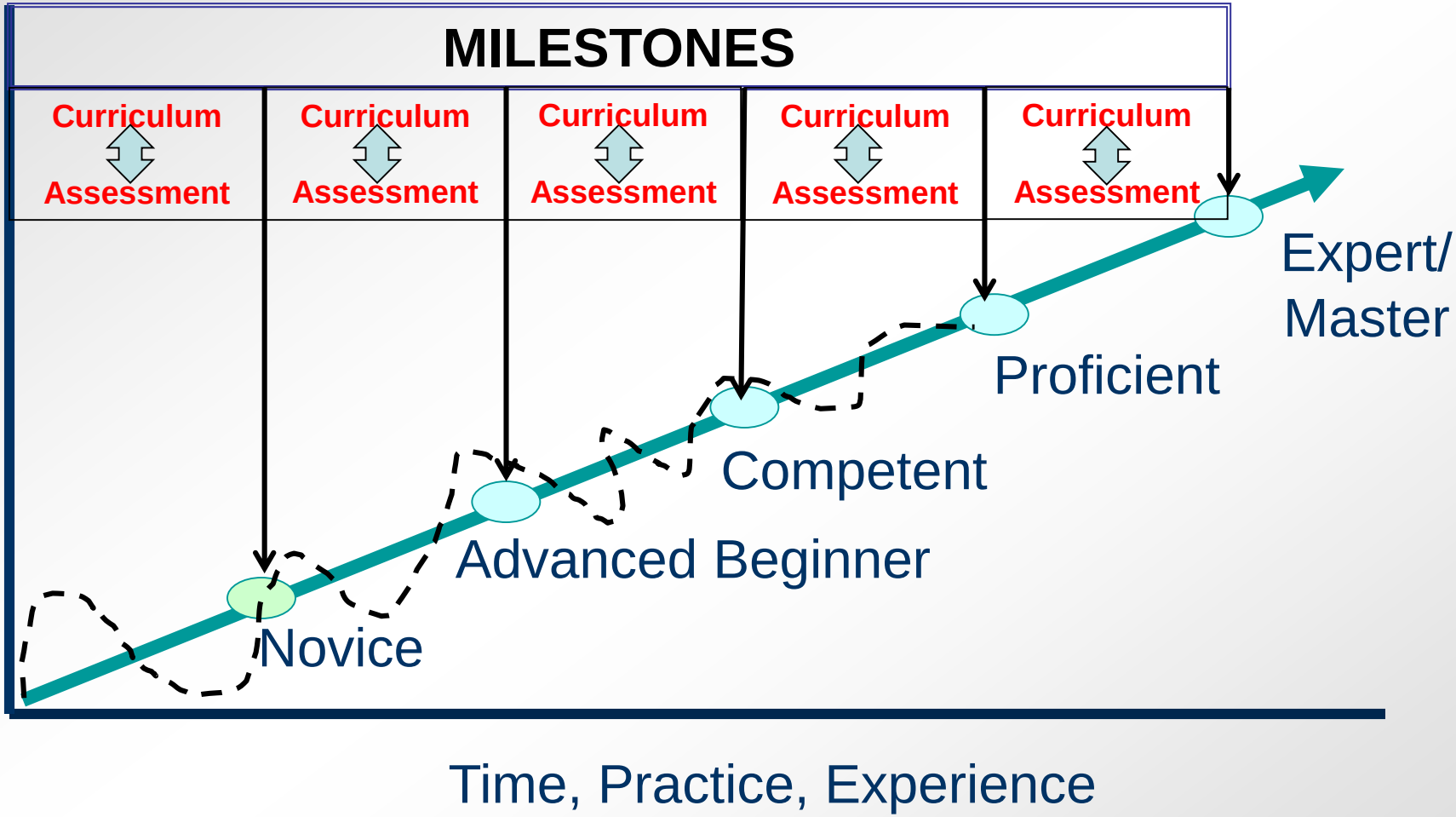
# Dreyfus & Dreyfus Development Model




*Dreyfus SE and Dreyfus HL. 1980*
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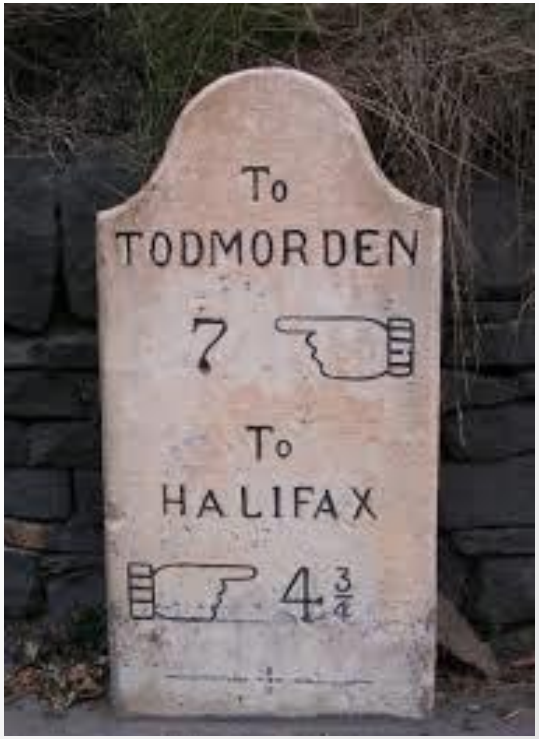
# Milestones

- By definition a milestone is a significant point in development.
- Milestones should enable the trainee and the program to know an individual's trajectory of competency development.



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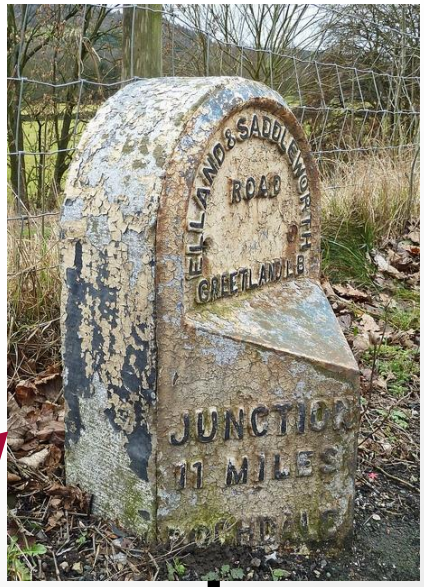
# Defining Competency Based Education






**Observable & Assessed**

**Defined outcome**

Frank JR et al. *Med Teach*. 2010;32:631-7



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# Emergency Medicine Milestone: Example

**EMERGENCY MEDICINE MILESTONES**

**PC1. Emergency Stabilization**

| Prioritizes critical initial stabilization action and mobilizes hospital support services in the resuscitation of a critically ill or injured patient and reassesses after stabilizing intervention. | | | | |
|---|---|---|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| Describes a primary assessment on a critically ill or injured patient<br><br>Recognizes abnormal vital signs | Recognizes when a patient is unstable requiring immediate intervention<br><br>Prioritizes vital critical initial stabilization actions in the resuscitation of a critically ill or injured patient<br><br>Performs a primary assessment on a critically ill or injured patient | Discerns relevant data to formulate a diagnostic impression and plan<br><br>Reassesses after implementing a stabilizing intervention | Manages and prioritizes critically ill or injured patients<br><br>Recognizes in a timely fashion when further clinical intervention is futile<br><br>Evaluates the validity of a DNR order<br><br>Integrates hospital support services into a management strategy for a problematic stabilization situation | Develops policies and protocols for the management and/or transfer of critically ill or injured patients |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Comments: | | | | |



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# Milestones as Roadmap


## Observations:

1) Journey not a straight line
2) More than one path (but not infinite paths)
3) "If you don't know where you are going, any road will get you there"



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# What Milestones Are *Not:*

- A complete description of:
  - Clinical Competence of any individual
  - The elements of competence in a specialty/subspecialty
  - Promotion Criteria
  - Graduation Criteria
- The totality of a discipline
- The sole determinants to be used in Competency Based Medical Education
- “Tools” to Close Programs



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# There is No Holy Grail…


***CBME relies heavily on the judgments of humans.***

***The goal is to enhance the probability of making better judgments for the benefit of both patients and learners***



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# Entrustment in GME

- As faculty, we “entrust” trainees to do many things without direct supervision
  - Admit patients to hospital from the ED
  - Night float
  - Clinic preceptor sign-out (without seeing the patient)
- What justifies these “entrustments”?
- How do we know when and if to make such entrustments?

# Dyad Conversation

- What do you entrust your residents to do with only reactive (indirect) supervision?

- How do you decide?

# Early Look at the Evidence



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# Evidence of “Learning”: Year 1

- PC Q1, EM, (n=162)


Mid-Year

Year-End



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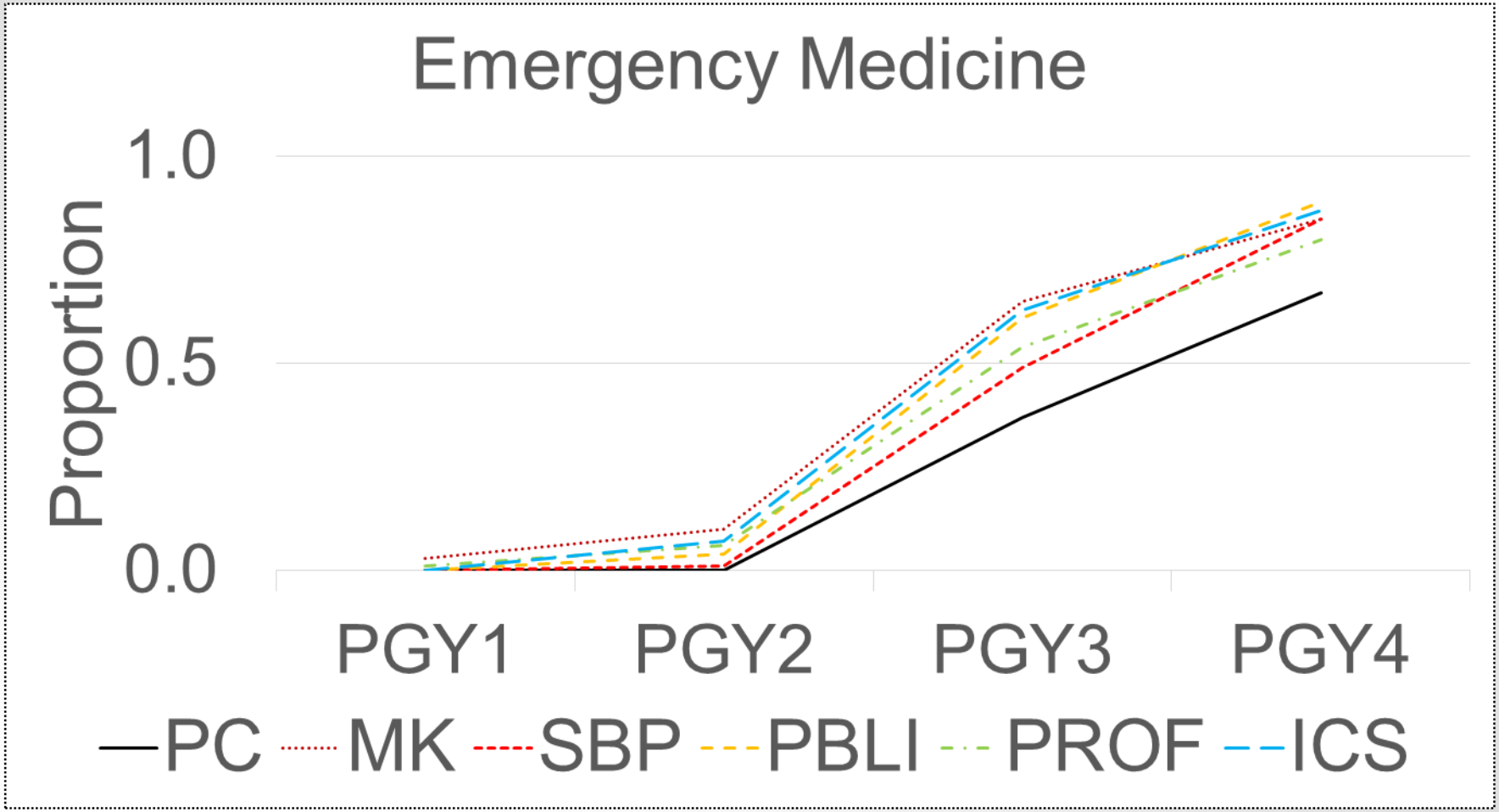
# Residents Attaining Level 4 or Higher



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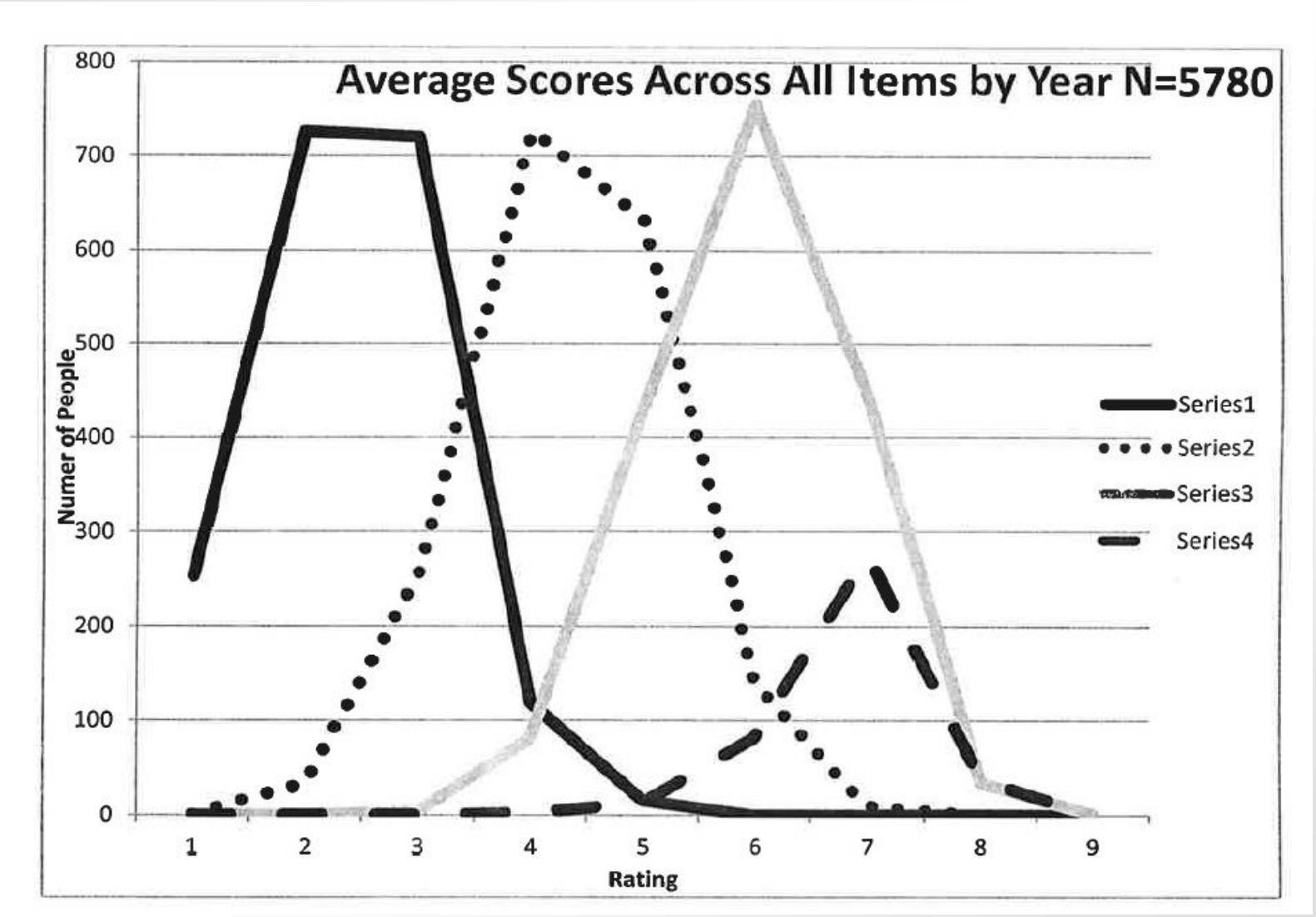
# Milestone Distributions by PGY



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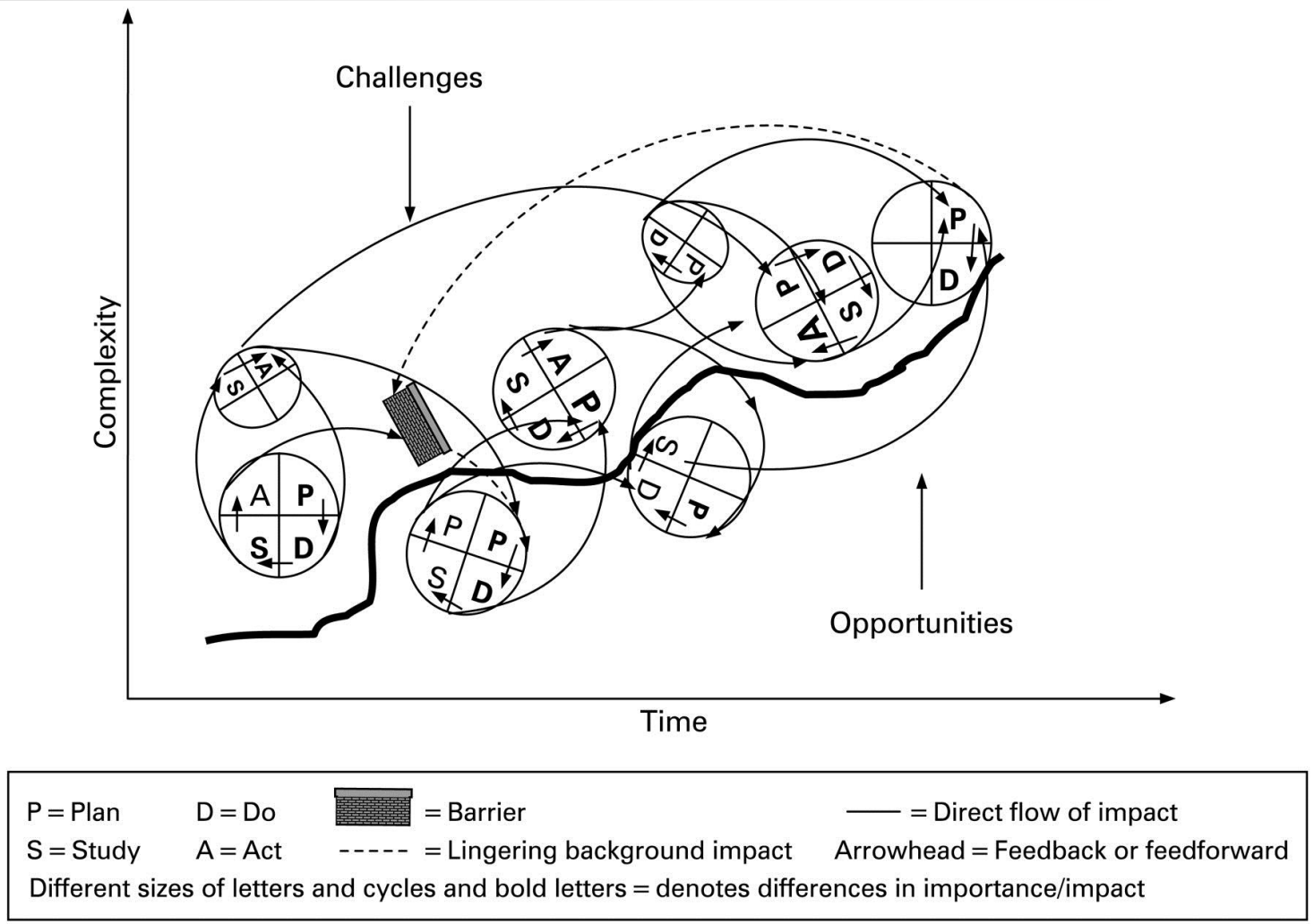
# Initial EM Validity Study[1]

- Performed as anticipated
  - Higher scores associated with greater experience, including 4 year programs
- Reliability high across PG years
- Factor analysis demonstrates factors associated with topic and source and consistent with certification program

[1]Beeson MS, Holmboe ES, Korte RC, Nasca TJ, Brigham T, Russ CM, Whitley CT, Reisdorff EJ. Initial Validity Analysis of the Emergency Medicine Milestones. Acad Emerg Med. 2015; in press.

# Milestone Journey:
# Revised Conceptual Model of Rapid Cycle Change




**Tomolo A M et al. Qual Saf Health Care 2009;18:217-224**



BMJQS ACGME

# Thank You and Questions

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