



# Milestones Update

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# Disclosures

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Eric Holmboe works for the ACGME and receives royalties from Elsevier for a textbook.



# Outline

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- Milestones 2.0 Development
- Milestones Research
- Milestones Resources



# The Outcome Project Turns 20

COMPETENCY IN GME

## General Competencies And Accreditation In Graduate Medical Education

An antidote to overspecification in the education of medical specialists.

by **Paul Batalden, David Leach, Susan Swing, Hubert Dreyfus, and Stuart Dreyfus**

**PROLOGUE:** Medical educators these days are bombarded with teaching requirements—genetics, ethics, communication skills, molecular medicine, geriatrics, sexual health, and computer literacy, to mention a few. These demands reflect the continued growth in scientific knowledge coupled with society's expectation that physicians minister to social and psychological as well as physical infirmities. Timely and cohesive curriculum reform under these circumstances is a difficult proposition at the nation's 145 medical and osteopathic schools and even greater at the more than 7,000 residency programs at some 1,500 hospitals throughout the

### “Good Learning for Good Patient Care”

- **Described the development of the *General Competencies***
- **Concentrate on *developmental progression of residents/fellows***
- Reduce micromanagement of process
- “Chaordic,” have the field show the way

Batalden, P, Leach, D, Swing, S, Dreyfus, H, Dreyfus, S. General Competencies and Accreditation in Graduate Medical Education. Health Affairs 21(5):103-111. 2002.

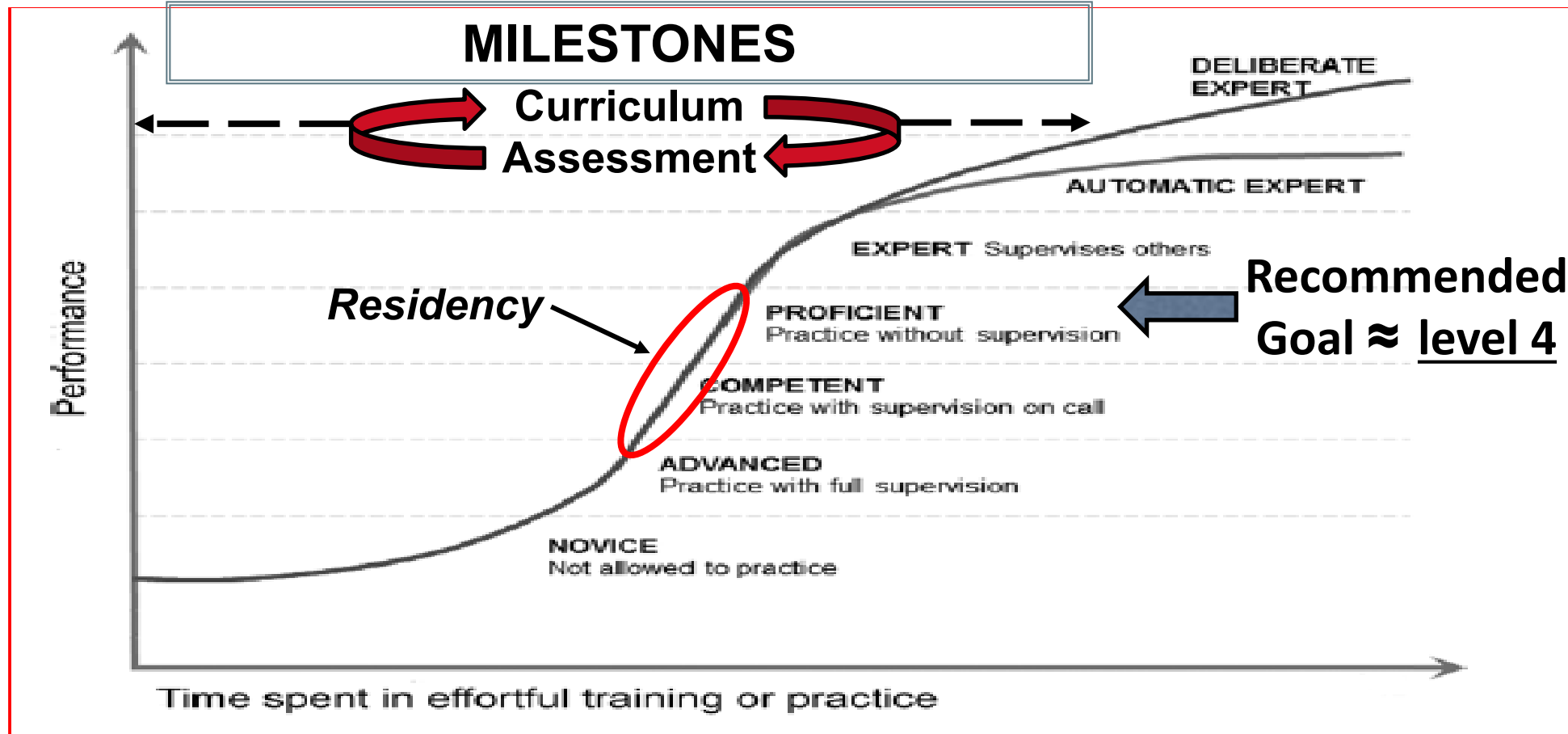




ACGME

# **Milestones 2.0 and CBME**

# Learning Curves and Milestones



From Pusic, et. al. Acad Med. 2014

# What Changed?

7. Knowledge of diagnostic testing and procedures. (MK2)				
Critical Deficiencies			Ready for unsupervised practice	Aspirational
Lacks foundational knowledge to apply diagnostic testing and procedures to	Inconsistently interprets basic diagnostic tests accurately	Consistently interprets basic diagnostic tests accurately Needs assistance to	Interprets complex diagnostic tests accurately Understands the concepts of	Anticipates and accounts for pitfalls and biases when interpreting diagnostic tests and procedures
	performance characteristics		Teaches the rationale and risks	and procedures

→ → → Uneven developmental “threads” → → →

Minimally understands rationale and risks associated with comm procedures

Comments:

Medical Knowledge 3: Knowledge of Diagnostic Testing				
Level 1	Level 2	Level 3	Level 4	Level 5
Explains the rationale, risks, and benefits for common diagnostic testing	Explains the rationale, risks, and benefits for complex diagnostic testing	Integrates value and test characteristics of various diagnostic strategies in patients with common diseases	Integrates value and test characteristics of various diagnostic strategies in patients with comorbid conditions or multisystem disease	Demonstrates a nuanced understanding of emerging diagnostic tests and procedures
Interprets results of common diagnostic tests	Interprets complex diagnostic data	Integrates complex diagnostic data accurately to reach high-probability diagnoses	Anticipates and accounts for limitations when interpreting diagnostic data	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				
				Not Yet Completed Level 1 <input type="checkbox"/>
				Not Yet Assessable <input type="checkbox"/>

# Supplemental Guide

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice	
Overall Intent: To incorporate evidence and patient values and experiences into clinical practice	
Milestones	Examples
<b>Level 1</b> <i>Demonstrates how to access, categorize, and analyze clinical evidence</i>	<ul style="list-style-type: none"> <li>Identifies evidence-based guidelines for osteoporosis screening at US Preventative Services Task Force website</li> </ul>
<b>Level 2</b> <i>Articulates clinical questions and elicits patient preferences and values in order to guide evidence-based care</i>	<ul style="list-style-type: none"> <li>In a patient with hyperlipidemia, identifies and discusses potential evidence-based treatment options, and solicits patient perspective</li> </ul>
<b>Level 3</b> <i>Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients</i>	<ul style="list-style-type: none"> <li>Obtains, discusses, and applies evidence for the treatment of a patient with hyperlipidemia and co-existing diabetes and hypertension</li> <li>Understands and appropriately uses clinical practice guidelines in making patient care decisions while eliciting patient preferences</li> <li>Elicits patient's prior experiences of racism within the healthcare system and uses it to inform conversations about diagnostic and treatment plans.</li> </ul>
<b>Level 4</b> <i>Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient</i>	<ul style="list-style-type: none"> <li>Accesses the primary literature to identify alternative treatments to bisphosphonates for osteoporosis</li> </ul>
<b>Level 5</b> <i>Coaches others to critically appraise and apply evidence to patient care</i>	<ul style="list-style-type: none"> <li>Leads clinical teaching on application of best practices in critical appraisal of sepsis criteria</li> </ul>





# Supplemental Guide

Assessment Models or Tools	<ul style="list-style-type: none"><li>● Chart stimulated recall</li><li>● Direct observation</li><li>● Evaluation of a presentation</li><li>● Journal club and case-based discussion</li><li>● Multisource feedback</li><li>● Oral or written examination</li><li>● Portfolio</li><li>● Simulation</li></ul>
Curriculum Mapping	<ul style="list-style-type: none"><li>●</li></ul>
Notes or Resources	<ul style="list-style-type: none"><li>● AHRQ. Guidelines and Measures. <a href="https://www.ahrq.gov/gam/index.html">https://www.ahrq.gov/gam/index.html</a>. 2020.</li><li>● Centre for Evidence Based Medicine. <a href="http://www.cebm.net">www.cebm.net</a>. 2020.</li><li>● <u>Guyatt G, Rennie D.</u> <i>Users Guide to the Medical Literature: A Manual for Evidence-Based Clinical Practice</i>. Chicago, IL: AMA Press: 2002.</li></ul>



# What are the Harmonized Milestones?

- Created by 4 interdisciplinary/interprofessional groups
- Thorough review of the literature
- Creation of a shared mental model of what is needed and expected of every physician across all levels (GME and CPD)
- Each specialty is asked to use and edit as needed

>90% of specialties have made minimal or no edits

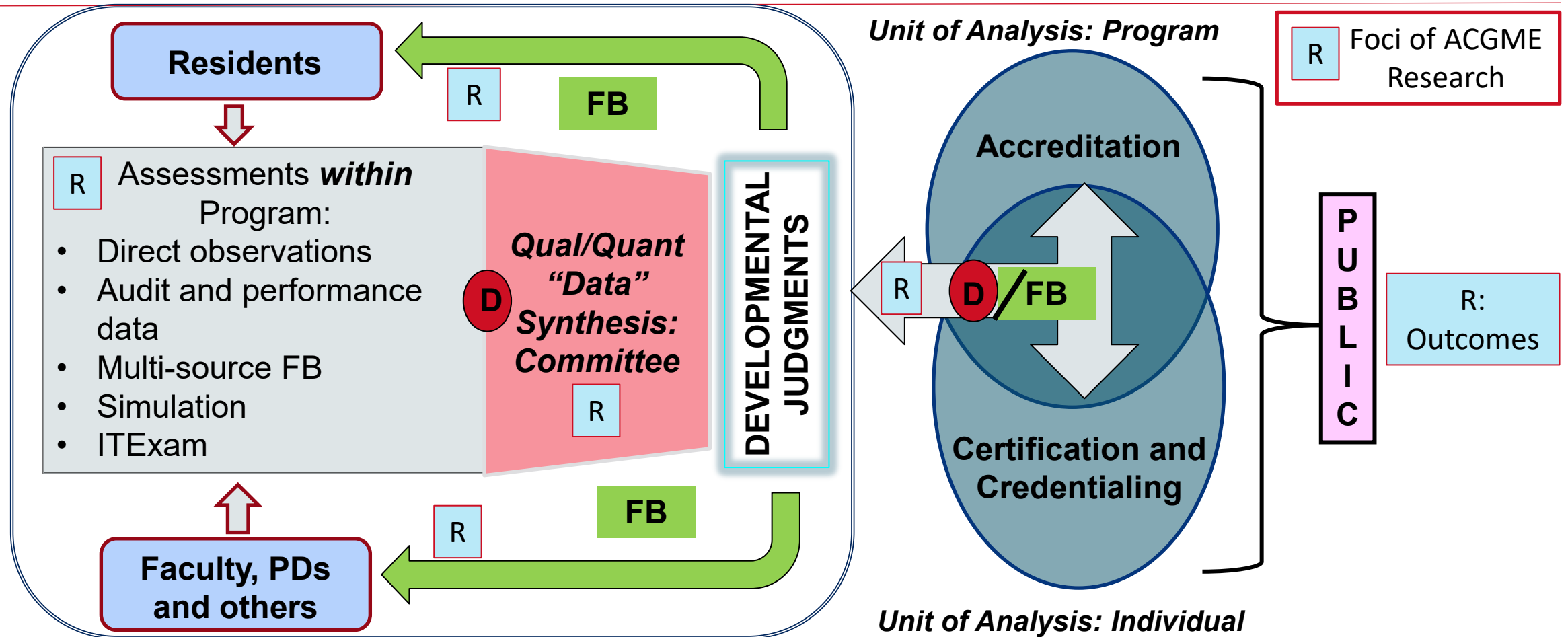




# Research & Evaluation at ACGME

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# The GME Assessment “System”



# Experiential Qualitative Studies

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Early experiences with Milestones implementation

- Longitudinal experience of IM programs over first four cycles of reporting.
- Implementation experience with Milestones in neurosurgery.<sup>1</sup>
  - Residents, PDs, and CCC chairs.
- Multi-specialty experiential study in EM, FM, IM, and Peds.<sup>2</sup>
  - Residents, PDs, and CCC chairs.
- Ethnography of CCC process and decision-making.

1. Conforti LN, et. al. The Effect and Use of Milestones in the Assessment of Neurological Surgery Residents and Residency Programs. J Surg Educ. 2018 Jan-Feb;75(1):147-155.

2. Yaghmour NA, et. al. Stages of Milestones Implementation: A Template Analysis of 16 Programs Across 4 Specialties. J Grad Med Educ. 2021 Apr;13(2 Suppl):14-44.



# Examples of Milestones Validity Studies

Messick Category	Examples of Studies
Content	<ul style="list-style-type: none"> <li>Multi-step process involved; each committee publishes on its Milestones</li> <li>Edgar L, et.al. Competency Crosswalk: A Multispecialty Review of the Accreditation Council for Graduate Medical Education Milestones Across Four Competency Domains. Acad Med. 2018 Jul;93(7):1035-1041.</li> </ul>
Response process	<ul style="list-style-type: none"> <li>Hauer KE, et. al. Ensuring Resident Competence: A Narrative Review of the Literature on Group Decision Making to Inform the Work of Clinical Competency Committees. J Grad Med Educ. 2016 May;8(2):156-64.</li> <li>Ekpenyong A, et. al. The Purpose, Structure, and Process of Clinical Competency Committees: Guidance for Members and Program Directors. J Grad Med Educ. 2021 Apr;13(2 Suppl):45-50.</li> </ul>
Reliability	<ul style="list-style-type: none"> <li>Peabody MR, O'Neill TR, Peterson LE. Examining the Functioning and Reliability of the Family Medicine Milestones. J Grad Med Educ. 2017 Feb;9(1):46-53.</li> <li>Hamstra SJ, et. al. A National Study of Longitudinal Consistency in ACGME Milestone Ratings by Clinical Competency Committees: Exploring an Aspect of Validity in the Assessment of Residents' Competence. Acad Med. 2019 Oct;94(10):1522-1531.</li> <li>Yamazaki K, et. al. An Empirical Investigation into Milestones Factor Structure using National Data Derived from Clinical Competency Committees. Acad Med.2021; in press.</li> </ul>
Relationship to Other Variables	<ul style="list-style-type: none"> <li>Hauer KE, et. al. Correlations Between Ratings on the Resident Annual Evaluation Summary and the Internal Medicine Milestones and Association With ABIM Certification Examination Scores Among US Internal Medicine Residents, 2013-2014. JAMA. 2016;316(21):2253-2262.</li> <li>Bienstock JL, et. al. Correlations between Accreditation Council for Graduate Medical Education Obstetrics and Gynecology Milestones and American Board of Obstetrics and Gynecology qualifying examination scores: an initial validity study. Am J Obstet Gynecol. 2021 Mar;224(3):308.e1-308.e25.</li> </ul>

# Studies of Bias in Milestone Judgments

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- Multiple studies of gender bias published, in press, or in process:
  - Published or in press: internal medicine (none); emergency medicine (mixed small effects); general surgery (mixed small effects).
  - In process: pediatrics
- Race and ethnicity
  - Work being led by Dowin Boatright (Yale) and team
    - Finishing analysis in internal medicine (disrupted by pandemic)
    - Other specialties to follow
  - Re-starting work examining attrition from programs



# Reliability and Analytics

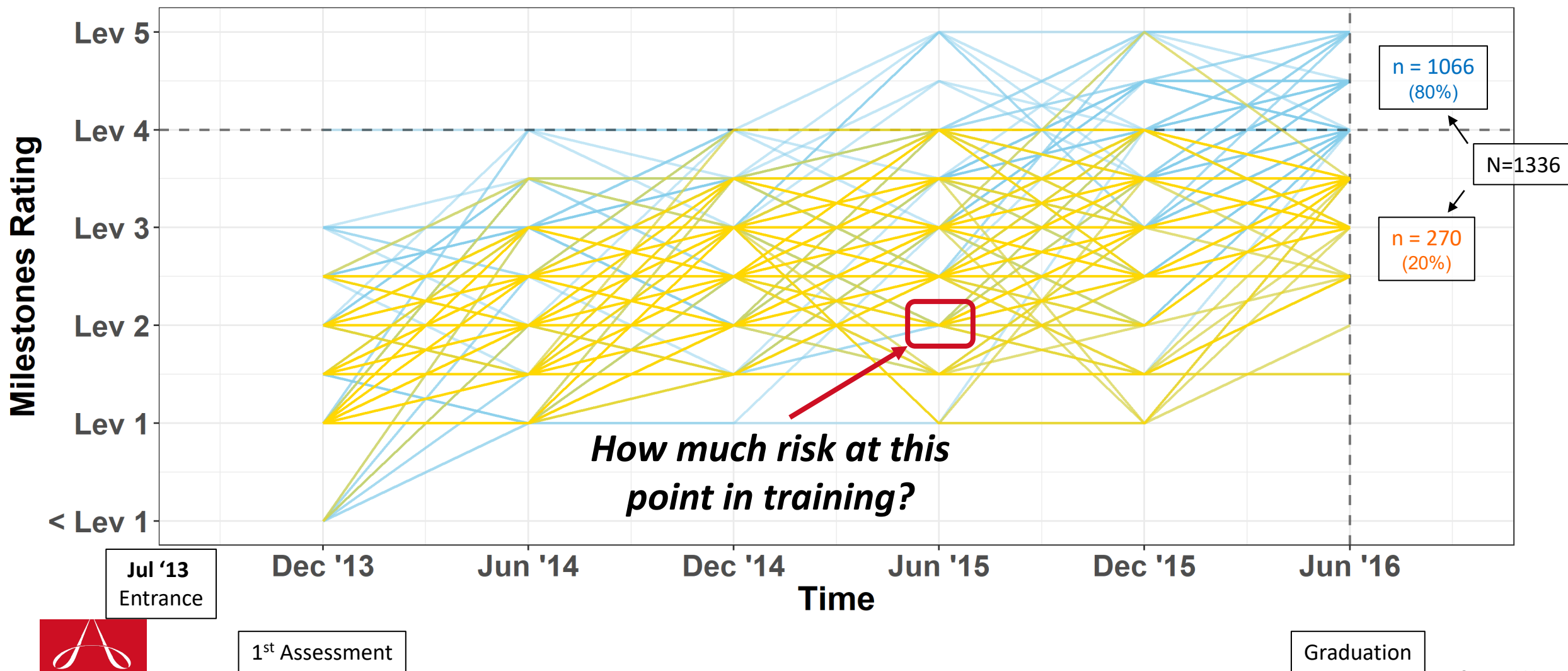
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- Exciting work in longitudinal reliability analyses and learning analytics
  - Yamazaki: unique factor analytic study of Ob/Gyn Milestones
    - 8-factor solution best fit (in press)
  - Park: first MedEd studies of growth curve and growth rate reliabilities (in press)
  - Predictive probability values (PPVs)
    - Two studies published
    - Now available in Annual Milestones Data Report





# Milestones trajectories for residents who attained Level 4 and those who did not



# Psychiatry PPV - PC01 (*Mid-Year Predictions*)

Subcompetency	Threshold	Yr1, Mid-Year	Yr1, Year-End	Yr2, Mid-Year	Yr2, Year-End	Yr3, Mid-Year	Yr3, Year-End
PC01							
	≤ Level 5.0						
	≤ Level 4.5						
	≤ Level 4.0						20.7
	≤ Level 3.5		19.5	19.9	20.3	22.4	28.8
	≤ Level 3.0		19.6	20.5	22.4	31.4	55.3
	≤ Level 2.5		20.7	24.6	30.1	50.5	73.5
	≤ Level 2.0	20.0	21.1	30.4	38.0	70.3	68.7
	≤ Level 1.5	22.1	30.0	56.8	57.7		
	≤ Level 1.0	27.1	43.6	74.7			





# Milestone Resources

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# Milestone Resources

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## **Milestones homepage**

<https://www.acgme.org/What-We-Do/Accreditation/Milestones/Overview>

## **Milestones Annual Report 2021**

[milestonesnationalreportfinal093021.pdf \(acgme.org\)](#)

## **Faculty Development Courses**

- Information available at <https://www.acgme.org/Meetings-and-Educational-Activities/Other-Educational-Activities/Courses-and-Workshops/Developing-Faculty-Competencies-in-Assessment>






# Milestones Resources

## Guidebooks

Assessment Guidebook	
Milestones Implementation Guidebook	
Milestones Guidebook	
Milestones Guidebook for Residents and Fellows	
Clinical Competency Committee Guidebook	
Clinical Competency Committee Guidebook Executive Summaries	+

## Other Resources

Resources for Assessment in the Learn at ACGME Online Learning Portal	
Use of Individual Milestones Data by External Entities for High Stakes Decisions	
Milestones FAQs	









# Research and Reports

The ACGME Milestones research team aims to provide relevant data and publications whenever possible. Not finding what you need?  
E-mail questions to [milestones@acgme.org](mailto:milestones@acgme.org).

## National Reports

-  [2021 Milestones National Report](#)
-  [2020 Milestones National Report](#)
-  [2019 Milestones National Report](#)
-  [2018 Milestones National Report](#)
-  [2017 Milestones National Report](#)
-  [2016 Milestones National Report](#)

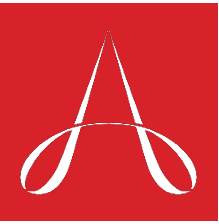
## Publications

-  [Milestones 2.0 – A Step Forward](#)
-  [Harmonizing the Approach to Milestone Assessment of Systems-Based Practice](#)
-  [Harmonizing the Practice-Based Learning and Improvement Milestones](#)
-  [Refining the Milestones for Assessment of Professional Skills](#)
-  [Strengthening Interpersonal and Communication Skills Assessment Through Harmonized Milestones](#)
-  [Appendix A and B for Milestones 2.0 – A Step Forward](#)
-  [Reflections on the First 2 Years of Milestone Implementation](#)
-  [ACGME Milestones Project: Lessons Learned and What’s Next](#)

## Milestones Bibliography

-  [Milestones Bibliography – December 2020](#)





# Open Access Assessment Tools

Accreditation Council for  
Graduate Medical Education

DIRECT  
OBSERVATION  
OF CLINICAL CARE

Accreditation Council for  
Graduate Medical Education

**TEAM: Teamwork  
Effectiveness Assessment  
Module**

A web-based assessment tool for  
residency and fellowship programs.

# Questions and Discussion

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