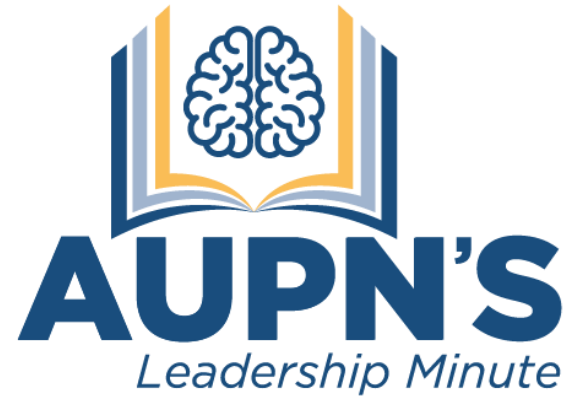




**Tracey A. Milligan, MD**  
New York Medical College



*Simulation in 21<sup>st</sup>  
Century Neurology  
Education*



**Nicholas A. Morris, MD**  
University of Maryland  
School of Medicine

## Leadership Minute Podcast Episode Description

- Simulation-based medical education holds deep roots in clinical neurology. In this Leadership Minute, Dr. Nicholas Morris details the history of simulation in neurology, describes the current state including barriers, and presents a vision for the future.

# An Old Problem

- Neuroanatomy not linked to clinical presentations
- Clinical neurology taught nosologically / “seed catalog” approach
- Overreliance on pathognomonic signs and diagnostic triads
- Underappreciation for pre-test probabilities
- Student difficulty with synthesizing patient information and applying their knowledge “in reverse” to diagnose
- Direct clinical observation necessary for accurate assessment
- Direct clinical observation limited
  - Patient availability
  - Patient consent
  - Heterogeneity in complaint, presentation, complexity
  - Time and convenience



<https://obituaries.thespec.com/obituary/howard-s-barrows-1087683524>

# Healthcare Simulation



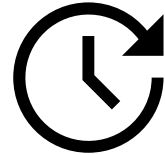
<https://med.stanford.edu/news/all-news/2010/09/5-questions-gaba-on-the-lkscs-simulation-based-learning.html>

- *“A technique, not a technology, to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real work in a fully interactive manner.”* – David Gaba, MD
- Foundations in experiential learning, behaviorism, situated learning theory
  - Appeal to adult learners
- Learners encouraged to work in growth zone
- Widely accepted in most fields
  - (Anesthesiology, EM, Surgery, OB/GYN)

# Simulation in Neurology Departments

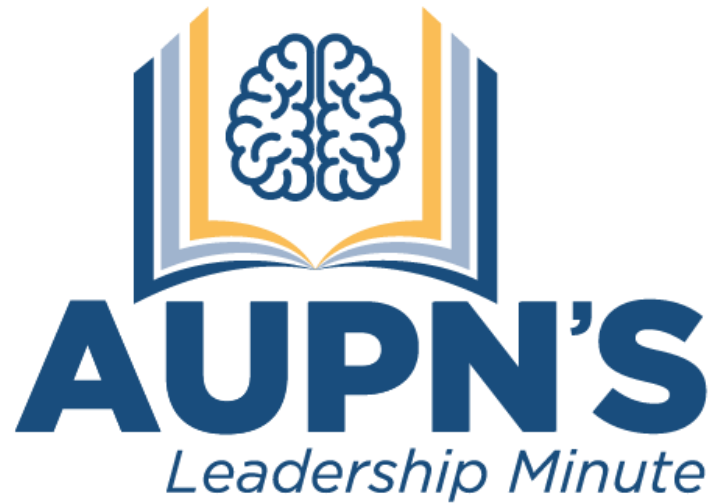
## Current State

- Most programs incorporate simulation training (1-2x/year)
- Focus on education of junior residents in technical skills and algorithmic mgmt. of emergencies (bootcamp)
- Barriers include faculty protected time, institutional support, resident availability, lack of faculty training / mentorship... skepticism



## Future State

- Simulation incorporated longitudinally during and after training. Focus on non-technical skills and meta-cognition.
- Broadened from individual to team, unit, and organization
- Expanded Uses: Competency Assessment, Interprofessional Education, Quality Improvement, Research
- Increased funding from medical schools, insurance providers, research grants.
- Standardized training in simulation development and clinical event debriefing.
- More and less (DIY) sophisticated simulators that can replicate neurological exam findings in real or virtual space.
- Gamification to promote lifelong education
- AI-assistance to decrease faculty workload



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