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Leveraging Artificial Intelligence to Innovate Scenario Development for the ABEM Certifying Exam

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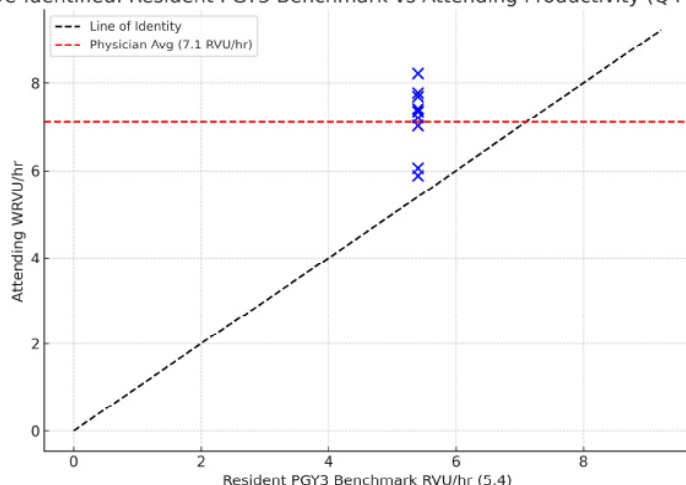
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Methods: This retrospective study analyzed institutional productivity data from 2017–2024. Aggregate PGY3 productivity (2024 benchmark: 5.4 RVU/hr) was obtained from program dashboards. Attending productivity was extracted from departmental billing data, excluding physician assistants and outliers. Nine recent graduates were compared to the PGY3 benchmark and to the physician average (7.1 RVU/hr).

Results: All graduates demonstrated productivity above the PGY3 baseline. Seven of nine achieved performance at or above the physician average. 2 (8.2 and 7.8) exceeded benchmarks by >1.0 RVU/hr, while 2 Bodner (6.1 and 5.9) improved modestly. The average increase across all graduates was +1.9 RVU/hr. Scatter plot analysis demonstrated a consistent upward shift from residency to attending practice.

Conclusions: Resident productivity at graduation appears predictive of early attending efficiency. Most recent graduates surpassed both their PGY3 baseline and departmental average within one year of practice. Productivity metrics may provide valuable benchmarks for competency-based assessment and workforce readiness.

Figure 1: Resident PGY3 Benchmark vs Attending Productivity (Q4 2024)



Innovation Abstracts

1 Reproducible Mock Certifying Exam Sessions: Improving Emergency Medicine Residents' Confidence and Readiness for Boards

James Chiang, Julia Hutchison, Ravi Sumer, Nathan Stuempfig, Kyle Herout

Introduction: ABEM will launch a new Certifying Examination in 2026, replacing the oral boards. The format includes timed stations in clinical care, communication, procedures, and ultrasound. Few published resources exist currently help residencies prepare trainees. To address this gap, we created a high-fidelity mock exam based on ABEM's publicly

released sample videos, case structures, and scoring rubrics.

Objective: Our goals were to replicate the ABEM format for EM residents, assess readiness with aligned rubrics, provide realistic timed simulation exposure, and measure whether familiarity improved performance.

Curricular Design: Faculty reviewed all ABEM sample materials and developed twenty cases with standardized scripts and prompts matching ABEM formatting. Two full-day sessions included four fifteen-minute clinical care cases and six ten-minute stations covering reassessment, communication, conflict management, ultrasound, procedures, and patient-centered care. Actors portrayed patients and family members. Procedural and ultrasound stations used task trainers and structured prompts modeled on ABEM demo videos. Performance was scored using the ABEM 1 to 8 scale, with passing defined as 5.25 or higher. PGY-3 residents were assessed individually; PGY-1/2 residents were assessed in groups but not scored. After completing all stations, residents received individualized debriefing. Pre- and post-surveys measured understanding, confidence in key domains, and overall confidence on a 10-point scale.

Results: Twenty-seven pre-tests and thirteen post-tests were analyzed. Mean overall confidence increased from 6.00 to 7.08. Understanding of the exam format improved notably. Gains in ultrasound, procedures, and communication were modest but positive. Residents valued realistic exposure and requested refinements in logistics and scoring.

Impact/Effectiveness: PGY-3 pass rates improved from 3 of 6 in the first session to 5 of 6 in the second (9 of 12 overall). Residents noted unfamiliarity as a major barrier that improved with practice.

Next Steps: We plan to validate scoring with more examiners, expand to larger cohorts, test sessions in unfamiliar locations, and share case files and scoring tools so other residency programs can easily implement this model.

2 Leveraging Artificial Intelligence to Innovate Scenario Development for the ABEM Certifying Exam

Ravi Sumer

Background: The American Board of Emergency Medicine (ABEM) Certifying Exam, launching in 2026, replaces the traditional oral exam with a hybrid format combining clinical reasoning cases and OSCE-style stations. These cases assess competencies beyond knowledge, including communication, prioritization, and procedural skills, using standardized patients and simulation. Developing realistic, high-stakes scenarios is resource-intensive, requiring expert input, standardized patient training, and iterative validation. Artificial Intelligence (AI) offers a novel approach to streamline scenario creation, ensuring diversity, fidelity, and adaptability while

reducing development time and cost. [abem.org], [abem.org]

Objectives: To describe an innovative process using AI-driven tools to generate, refine, and validate clinical and communication scenarios for the ABEM Certifying Exam.

Methods: We designed a pilot framework integrating large language models (LLMs) with expert review. AI was tasked to create case prompts aligned with ABEM's EM Model and Knowledge, Skills, and Abilities (KSAs), incorporating undifferentiated presentations, prioritization challenges, and difficult conversations. Generated cases were iteratively refined through faculty feedback for accuracy, cultural sensitivity, and alignment with scoring rubrics. Scenarios were tested for variability, clarity, and adaptability for standardized patient scripts and simulation environments (Supplement 1).

Innovation: AI enables rapid generation of diverse, evidence-based cases that mirror real-world complexity. Features include dynamic branching logic for evolving patient conditions, embedded communication challenges, and customizable difficulty levels. This approach supports scalability, reduces cognitive load for case developers, and allows continuous updates as exam content evolves. Integration with simulation platforms and standardized patient

- o "How can you speak about him like that? He was my father—he deserves better!"
- o "He might be just another patient to you, but he's my dad. Show some compassion!"

Condescending Manner:

- **Physical cues:** Stand straighter, assertive posture, maintain firm eye contact.
- **Lines:**
 - o "I'm grieving, not ignorant. Don't speak down to me."
 - o "I'm here for answers, not to be treated like a child."

Excessive Medical Jargon:

- **Physical cues:** Lean forward, confused, shaking head slightly, voice pleading.
- **Lines:**
 - o "Please stop—I don't understand these medical terms. Can you explain clearly?"
 - o "None of that makes sense right now. Just plainly tell me what happened to my father."

Acting Tips:

- Transition naturally from initial hopefulness to shock, disbelief, grief, and desperation.
- Allow your emotional state to evolve authentically based on physician's tone and clarity.
- Maintain emotional authenticity and vulnerability throughout, enhancing realism and challenging the physician's empathy and communication skills.
- Use physicality and facial expressions deliberately to convey your internal emotional turmoil clearly and convincingly.

training enhances realism and standardization.

Conclusions: By accelerating scenario development under expert oversight and enhancing realism, this approach strengthens exam validity and fairness while reducing resource demands. Future evaluation will examine scenario quality, scoring consistency, and candidate experience during pilot testing.

3 Bridging the Practical Teaching Gap: A Needs-Based Faculty Development Curriculum in Emergency Medicine

Riley Grosso, Andrew Golden, Adam McFarland

Introduction: Academic Emergency Medicine (EM) faculty are expected to function as effective educators regardless of formal educational roles or training. However, practical teaching skills are rarely emphasized in traditional faculty development. A needs assessment of our academic EM faculty revealed significant discomfort and limited formal training in these areas. As expectations for inclusive, learner-centered clinical environments increase, a structured, practical, and accessible faculty development model is needed to address these gaps and strengthen day-to-day teaching practices.

Educational Objectives: Our primary educational goal is to provide continuing education on practical teaching topics to academic faculty. At the completion of our curriculum, our faculty should be able to (1) describe best practices regarding bedside teaching and procedural supervision, (2) model essential education leadership skills, and (3) develop and utilize a community of practice of likeminded academic emergency medicine educators.

Curriculum Design: Our curriculum design utilizes Kern's conceptual framework. Our targeted needs assessment included

Across Performance Script: Difficult Conversation Scenario

Character: Sarah White, 30-year-old female

Context and Background: You are Sarah White, the devoted daughter of George White, a healthy and active 65-year-old. He was brought to the Emergency Department about 2 hours ago with chest pain. You've only been informed that he experienced chest discomfort and was taken to the hospital. You have a strong emotional bond with your father and are currently anxious, hopeful, and deeply worried.

Physician Enters the Room:

- **Physical cues:** Stand up slightly, anxious posture, wringing hands gently, eyes searching physician's face.
- **Tone:** Urgent but hopeful.
- **Line:** "Yes, I'm Sarah. Please, how is my dad? What's happening?"

Upon Receiving Clear and Empathetic News of Your Father's Death:

- **Initial shock:** Freeze momentarily, eyes widen, breath quickens.
 - o **Tone:** Trembling, disbelief.
 - o **Lines:** "No, that can't be right. Please, check again. There's been a mistake."
- **Seeking Information:** Lean forward slightly, voice urgent and distressed, tears forming.
 - o "How could this happen so quickly? Was he in pain?"
 - o "Was someone with him? Did anyone help him right away? Did he ask about me?"
- **Emotional Breakdown:** Allow yourself to visibly and audibly become emotional, breaking into tears, voice cracking.
 - o "I don't understand! He was always so careful with his health. We had plans... He was my everything."
 - o "How am I supposed to accept this? I just spoke to him."
- **Next Steps:** Attempt to compose yourself slightly but remain overwhelmed, searching physician's face for comfort.
 - o "I need to see him. Can I go to him now?"
 - o "What am I supposed to do now? Who should I call first? Please guide me."

If Physician's Explanation is Unclear:

- **Show confusion mixed with desperation:**
 - o "Is there something else I need to know right now?"
 - o "Are there papers to sign, or anything immediate I need to handle?"

Alternate Responses Based on Physician's Approach:

Lacking Empathy or Cold:

- **Physical cues:** Draw back slightly, defensive posture, voice hurt and raw.
- **Lines:**