

VIEWPOINT

The Responsibility of Physicians to Maintain Competency

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Physician education during residency and fellowship has shifted from a model based on how long a physician trains to one that emphasizes assessing and encouraging measurable competence.¹ There needs to be a similar shift to ensuring competency for physicians who have completed their training, with an emphasis on maintaining knowledge and clinical skills to ensure patient safety. This leads to several questions. Who must be competent in what? Who decides? Does experience count? How does aging affect competence? In medicine, an expansive range of competencies are considered important, and not every physician maintains every competency. Achieving, assuring, and maintaining competency across medicine requires time and effort and involves perseverance for individual physicians and the health care system. In this Viewpoint, we discuss 2 forces that can lead to diminishing competence over time: deterioration in ability with age and decrease in opportunities for maintenance and self-improvement.

Deliberate practice, as described by Ericsson² and demonstrated in many fields, including music, chess, and surgery, is the sequential, mindful repetition of a training task with feedback that leads to effective improvement in performance. Early in training, there is a rapid learning trajectory in which large gains in performance occur through intentional learning activities. However, for some individuals, when formal training ceases performance can eventually degrade and can be documented by a *forgetting curve*,³ in which the rate of decay depends on a number of factors, including the complexity of the skill in question, opportunities for practice, and support from the health system. For example, in many specialties, residents are intensively trained in procedural skills, such as intubation and central line placement; however, these skills decay without continued practice and repeated training.⁴ It is important to recognize that there is a threshold for competency that must be maintained. This skill decay over time may be compounded by the aging of the physician population, which has made maintenance of competency an important issue in medicine in the United States and around the world.⁵ The literature on aging and its effects on professional performance is mixed with evidence of cognitive and physical decline of abilities in some individuals. However, there is evidence that competency in medicine can be successfully maintained through intentional deliberate practice and mastery learning with procedural simulation training.^{2,4,6}

Advances in medicine and clinical procedures continue to change practice, and some physicians may not have the opportunity to keep up with new diseases, diagnostics, and therapies or may not be able to achieve sufficient mastery of technical skills required for performance of new procedures.⁷ While physicians may retain the expertise from years of experience, in some areas

(especially in procedurally oriented disciplines), some physicians may be subject to the trajectory of skill decay. Yet, their identity as physicians is an important self-concept and supports their professional credibility. As some physicians mature in their careers, they may choose to decrease their clinical time as they move toward retirement; spending more time with their family; or increasing professional administrative, research, or teaching activities. Even though these physicians have accumulated comprehensive expertise from thousands of patient encounters and a complementary understanding of the health care system, teamwork, and patient-centered care, physicians who decrease their clinical time must maintain a certain equipoise, balancing their nonclinical time against the important need to maintain skills in procedures they may be called on to perform, even if only rarely. For example, emergency physicians might need to refresh their skills in intubation, cricothyrotomy, central line placement, thoracotomy, or focused ultrasonography if they have not performed these procedures recently.

As physicians practice into their sixth, seventh, and eighth decades of life, there is a balance between their increasing depth of expertise gained through experience and the forces such as aging, other causes of cognitive decline, and decreased opportunity for deliberate practice that can lead to skill decay. Can the balance tip in a way that results in risks for the care of the patient? What can be done to mitigate risks and protect patients? The following 5 proposed considerations may be helpful to addressing competency decline.

First is the mandate for lifelong learning and the controversial issue of mechanisms to ensure maintenance of certification.⁸ Even though some aspects of maintenance of certification are unpopular and perhaps ineffectively implemented, the underlying principle is sound and reflects the importance of maintaining knowledge and competency as a professional responsibility. Physicians must continuously refresh their foundational knowledge and stay up-to-date with new and evolving knowledge as well as procedural competence. This continued learning can occur through formal continuing medical education courses, informal learning activities (such as listening to educational podcasts or reading), Just In Time Medicine clinical references, and interactions with consultants and colleagues. Helping physicians identify what they do not know and make knowledge gaps transparent is essential to this process.

Second is the responsibility to keep training. While some procedures are routine, there are uncommon and complicated procedures or new techniques for procedures that require additional training, especially in procedural specialties, such as surgical fields, emergency medicine, and critical care, all of which include common and rare procedures, such as cricothyrotomy,

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thoracotomy, and new laparoscopic techniques. These less commonly performed procedures require disproportionate time for maintenance of skill that must be acknowledged in physician work schedules. Simulation is widely available but unevenly used by practicing physicians and usually not considered part of the department's or simulation center's budget for simulation or the time physicians spend retraining, relying on the volunteerism of the physician. Retraining opportunities allow physicians to refresh their procedural skills and develop familiarity with new equipment and methods. There are some national-level pressures for maintenance of skills; for example, the Joint Commission requires appropriate credentials for procedural sedation. In addition, some departments have faculty-specific procedural training that is voluntary, or may be mandated, including annual procedural sedation certification. Also, some specialties, such as electrophysiology, have delineated the knowledge and procedural competencies expected.⁹

However, less clear is where the locus of responsibility should lie for ensuring competency through apportioning of work hours between the time demands of nonclinical work and time for retraining to maintain and enhance clinical skills. How can continued training opportunities be designed that are proactive, judicious, individualized and transparent? To what extent should retraining depend on the physician?

Third, physicians can choose practices that involve less exposure to procedures or content for which they believe are no longer expert, such as in lower acuity areas with parallel coverage of a procedural team, more reliance on colleagues to assist when needed, or both. Maximizing collective competence is in alignment with systems-based approaches, but requires policies that do not feel punitive. The optimal solution is likely to differ between settings. Meanwhile, there is the possibility that even with diminished competency, some physicians with perhaps limited skills for some procedures may still be needed in some areas.

Fourth is the importance of self-assessment and reflection. Honest and objective self-assessment at the individual level can be challenging to achieve, especially given that professional identity is wrapped in the physician persona, and for a physician to be able to

admit that he or she is not competent in something is a loss of self. It is critical that physicians intentionally seek assessment data via external metrics, such as number of patient complications, patient morbidity, or peer feedback regarding their practice.

Fifth, beyond the individual physician, the health care system has a critical responsibility for ensuring competency of physicians and surgeons for performing procedures. As medical education becomes more capable of determining competency through work-based assessments, it may be possible to determine which physicians no longer meet a competency threshold. Health care systems need to have triggers that initiate exploration of physician competence, which might include frequency of safety events and complications, low volume of complicated procedures, patient reported outcome measures, patient and staff complaints, and low referral patterns from colleagues.¹⁰ These triggers should launch a more extensive examination of practice, including peer assessments, direct observation, health record analytics, cognitive testing, procedural testing, and other methods of competency assessment.⁶ It is important to recognize that the competencies that allow a physician the ability to practice are complex and multifactorial and, therefore, difficult to measure. Once an issue becomes apparent, the physician and health care system have a joint responsibility to ensure that the physician can demonstrate the necessary competency for practice skills or procedural expertise, retrain for the necessary skills, or retire that procedure from his or her practice.

Given the reality of forgetting curves, the medical profession has an important responsibility to ensure quality of care and to protect patients from potential harms. This requires physicians to understand how they acquire and maintain expertise, including the time, practice, and self-challenge necessary to achieve and maintain peak performance. Physicians also must understand that when they cease to perform certain clinical activities, such as uncommon procedures, previous experience can only go so far and performance may decline unless deliberate retraining steps are taken. However, it is first essential for physicians to be willing to recognize that safety for patients requires complete transparency about competency in clinical skills and performance.

ARTICLE INFORMATION

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REFERENCES

- Cooke M, Irby DM, O'Brien BC. *Educating Physicians: A Call for Reform of Medical School and Residency*. John Wiley & Sons; 2010.
- Ericsson KA. Acquisition and maintenance of medical expertise: a perspective from the expert-performance approach with deliberate practice. *Acad Med*. 2015;90(11):1471-1486. doi:10.1097/ACM.0000000000000939
- Pusic MV, Boutis K, Hatala R, Cook DA. Learning curves in health professions education. *Acad Med*. 2015;90(8):1034-1042. doi:10.1097/ACM.0000000000000681
- Laack TA, Dong Y, Goyal DG, Sadosty AT, Suri HS, Dunn WF. Short-term and long-term impact of the central line workshop on resident clinical performance during simulated central line placement. *Simul Healthc*. 2014;9(4):228-233. doi:10.1097/SIH.0000000000000015
- Moazed F, Cohen ER, Furiase N, et al. Retention of critical care skills after simulation-based mastery learning. *J Grad Med Educ*. 2013;5(3):458-463. doi:10.4300/JGME-D-13-00033.1
- Dellinger EP, Pellegrini CA, Gallagher TH. The aging physician and the medical profession: a review. *JAMA Surg*. 2017;152(10):967-971. doi:10.1001/jamasurg.2017.2342
- Hastings RH, Rickard TC. Deliberate practice for achieving and maintaining expertise in anesthesiology. *Anesth Analg*. 2015;120(2):449-459. doi:10.1213/ANE.0000000000000526
- Teirstein PS. Boarded to death—why maintenance of certification is bad for doctors and patients. *N Engl J Med*. 2015;372(2):106-108. doi:10.1056/NEJMp1407422
- Tracy CM, Crossley GH, Bunch TJ, et al. 2017 ACC/HRS lifelong learning statement for clinical cardiac electrophysiology specialists: a report of the ACC Competency Management Committee. *J Am Coll Cardiol*. 2018;71(2):231-250. doi:10.1016/j.jacc.2017.11.016
- Hickson GB, Peabody T, Hopkinson WJ, Reiter CE III. Cognitive skills assessment for the aging orthopaedic surgeon: AOA critical issues. *J Bone Joint Surg Am*. 2019;101(2):e7. doi:10.2106/JBJS.18.00470