VIEWPOINT

The Evolution of Procedural Competency in Internal Medicine Training

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Related article
page 1818

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The performance of procedures is as old as the medical profession itself. Indeed, perusing any volume of the Hippocratic Corpus reveals innovative methods for draining fluid or pus from body cavities. Millennia later, sampling fluid from the abdomen, the pleural space, the spinal canal, and joint spaces remains fundamentally important in the practice of medicine, and for decades these procedures have been largely under the purview of general internists. More recently, however, the profession has undergone a quiet but certain shift: internal medicine residents[1] and practicing internists[2] are becoming less comfortable with common bedside procedures.

The American Board of Internal Medicine's (ABIM) requirements for internal medicine physicians have shifted in parallel: as of 2005, competent performance of 9 basic procedures was mandated; since 2006, however, the ABIM, has listed only 5 procedures—advanced cardiac life support, drawing arterial blood, drawing venous blood, pap smear and endocervical culture, and peripheral venous line placement—that internists must be able to perform independently (**Table**).[3-5] Graduating internal medicine residents must still demonstrate knowledge and understanding of all 14 procedures listed in the Table, but the requisite for competent performance has been winnowed. A decade later, reduced comfort in performing procedures prompts us to reevaluate the role of procedural training in internal medicine residency programs and to examine how deemphasizing procedural competency may change what it means to become a general internist.

The shift in procedure training was likely a response to 2 important and related concerns: patient safety and time constraints. It seems intuitive that transferring procedures from trainees to more senior physicians would improve patient safety, and in an era of duty-hour restrictions, shorter hospital stays, prioritized morning discharges, increased documentation, and inordinate time spent in front of a computer screen, something had to give. Moreover, performing more invasive procedures may not be in the interest of patients. For example, reduction in the placement of pulmonary artery catheters for patients in septic shock reflects an understanding of the lack of evidence supporting their routine use. Given these concerns as well as the increasing availability of dedicated, trained proceduralists, deemphasizing procedural training during residency may seem logical.

There are reasons to pause, however, before limiting the scope of procedural competency in internal medicine training. Most importantly, having a limited number of specialists who can safely perform procedures at all times can itself put patient safety at risk. For the ill-appearing patient presenting in the middle of the night with fevers and a headache, the fact that the cerebrospinal fluid has no cells is critical information that could be available within 30 minutes of a lumbar puncture if a clinician trained in the procedure were available to perform it. Without those data, broad antibiotic and antiviral treatment may continue until a lumbar puncture is eventually performed. Implicit in this approach is the acceptance of the risks of antimicrobials, the potentially lowered diagnostic yield of a procedure performed after treatment is initiated, and a delay in the search for alternative diagnoses. Although the impact of procedural delay on patient outcomes should be informed by better data, it is an important concern nonetheless.

By performing procedures clinicians also cultivate a sense of ownership and a fuller understanding of their risks. Through experience, a well-honed intuition is developed to sense, for example, when a patient will not tolerate lying flat for the placement of a central venous catheter. Transforming the entire process of a procedure into a few clicks or keystrokes that send a patient to a radiology suite diffuses responsibility and may create new opportunities for communication errors.

There are other benefits of learning to perform procedures. Like cutting into a cadaver in gross anatomy, taking a first patient history, or pronouncing a death for the first time, performing your first procedure is a milestone in a career of memorable moments. There is physicality and an intimacy borne out of proximity to illness that transubstantiates rote task into entrusted privilege. Beyond abstract benefits, the performance of procedures represents a core mechanism of learning and teaching skills essential for all clinicians. Asking whether a future primary care physician needs to know how to cannulate the internal jugular vein misses the vast hidden curriculum related to placing central lines. Through procedure training we learn how to discuss the risks and benefits of interventions with patients and families, how to create and maintain a sterile field, and how to draw up lidocaine with a steady hand. During procedures we learn to speak up when sterility has been compromised, to mitigate periprocedural pain, and to know when to ask for help. Without procedures there are no specimens to personally carry to the laboratory because doing so feels like the only way to get the precious samples there for sure. In an era of frequent handoffs of care between physicians, the sense of ownership that comes with performing a procedure may be difficult to replace.

Advances in procedure training can make such training safer and more effective. Since 2006 the ABIM has strongly recommended that procedural training be conducted initially through simulations.[4] Simulation programs enhance procedure skills,[6] offer an objective way to assess competence,[7] and can improve patient

Table. Procedures Required for Internal Medicine Trainees[a]

Procedure	2005[3]	2006-Present[4,5]	Consideration for Expansion of Procedural Competency	
			Potentially Urgent Diagnostic or Therapeutic Procedures	Improve Access to Care
Abdominal paracentesis	X		X	
Advanced cardiac life support	X	X	X	
Arterial line placement				
Arthrocentesis	X		X	
Central venous line placement	X		X	
Drawing arterial blood	X	X	X	
Drawing venous blood		X	X	
Incision and drainage of an abscess				X
Lumbar puncture	X		X	
Nasogastric intubation	X		X	
Pap smear and endocervical culture	X	X		X
Peripheral venous line placement		X	X	
Pulmonary artery catheter placement				
Thoracentesis	X		X	

Abbreviation: ABIM, The American Board of Internal Medicine.

[a] The ABIM has identified the above procedures for which graduating residents are required to demonstrate knowledge and understanding. For a subset of procedures, marked with an X, the ABIM requires demonstration of competent performance. The third column represents the list of procedures that the authors consider candidates for competent performance.

outcomes.[8] Research in simulation suggests that programs can develop curricula that align with their needs and available resources.[9] For example, simulation training can be conducted on technologically advanced manikins in laboratories that replicate the hospital environment or on simpler models that can be deployed in any setting. Programs can enhance procedure training by engaging subspecialty preceptors, procedure-oriented outpatient clinics, and inpatient procedure services. For example, residents might rotate through an outpatient neurology lumbar puncture clinic to gain skills in a setting optimized for teaching the procedure. Finally, the increasing use of ultrasound technology in residency programs may facilitate ultrasound-guided procedures.[10]

The Table lists procedures that might be considered for the expansion of procedural competency of internal medicine trainees. Importantly, there may not be a single answer for every program. The ABIM has set a floor of procedural competency, not a ceiling. Individual residency programs and hospital systems, based on their specific needs and organizational characteristics, may be best positioned to make determinations. For example, it may be better for an on-call interventional pulmonology team to assist with an urgent thoracentesis—given the complications associated with this procedure—than to expand the number of physicians who perform it.

Current internal medicine trainees are our future teachers, and limiting the scope of procedural training may compound the challenges of training the next generation of physicians. As educators strive to balance patient safety, time constraints, and procedural competency, it is important to recognize how responsible procedure training can confer valuable lessons about weighing risks and benefits, deepen informed consent, and enhance the patient-physician connection that remains at the center of becoming a general internist.

ARTICLE INFORMATION

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