

ADVANCES IN ENDOSCOPY

Current Developments in Diagnostic and Therapeutic Endoscopy

Section Editor: Todd H. Baron, MD

Training in Advanced Endoscopy



Sachin Wani, MD
Associate Professor of Medicine
Division of Gastroenterology and Hepatology
University of Colorado Anschutz Medical Center
Aurora, Colorado

G&H How has endoscopic training changed over the years?

SW Endoscopy has traditionally been taught using the apprenticeship model, wherein trainees develop the required skills and expertise through hands-on experience. The volume of procedures performed in combination with the trainer's subjective assessment are often used as surrogates for a formal assessment of overall competence. Guidelines stating the minimum number of procedures that a trainee must complete have been published by several gastrointestinal societies. However, it should be noted that several of these published guidelines are not validated with regard to the minimum number of completed procedures, nor do they account for the variable rates at which trainees learn and acquire endoscopic skills.

Given that trainees learn at various speeds, acquire cognitive endoscopy and technical skills at different rates, and are exposed to procedures with varying complexity, a greater emphasis has been placed on learning curves and the use of rigorous methodologies to assess competence. The Accreditation Council for Graduate Medical Education (ACGME) and gastrointestinal societies acknowledge the limitations of the apprenticeship approach to training and assessment of competence. As medical training in the United States transitions to a competency-based medical education model, more focus has been placed on standardizing competency assessments and demonstrating readiness for independent practice. The ACGME has replaced its reporting system with the Next Accreditation

System (NAS), which is a continuous assessment reporting system that focuses on ensuring that specific milestones are reached throughout training, that competence is achieved by all trainees, and that these assessments are documented by all training programs.

However, a survey study of ACGME-accredited gastrointestinal training programs in the United States showed that despite the majority of program directors and trainees believing that measuring specific metrics was important in determining endoscopy competence, most programs still rely on procedure volume and subjective evaluations. Thus, it is incumbent upon both general and advanced endoscopy training programs as well as program directors to evolve with the new ACGME/NAS requirements and assess and document competency among all trainees.

G&H Why might established endoscopists seek further training?

SW The overarching reason for established endoscopists to seek training in novel techniques and procedures is to improve the quality of care they provide to patients, which leads to improved patient-centered outcomes. The procedures that an established endoscopist may wish to learn should be based on the clinical needs of the program and should be juxtaposed with sound published clinical data that demonstrate their effectiveness and safety. Passion and the desire to keep abreast of the latest techniques are also key determinants for established endoscopists to seek further training.

G&H Should all endoscopy fellows receive further training for advanced endoscopic procedures?

SW Comprehensive training in advanced endoscopic procedures such as endoscopic ultrasound (EUS) and endoscopic retrograde cholangiopancreatography (ERCP), among others, cannot be achieved within the 3-year curriculum of an ACGME-accredited fellowship in gastroenterology, hepatology, and nutrition. Thus, postgraduate interventional endoscopy fellowships were constructed to address the burgeoning portfolio of therapeutic endoscopy and the limited exposure to advanced endoscopic procedures during the traditional 3-year fellowship. A survey demonstrated that only 9.0% and 4.5% of general gastrointestinal trainees had anticipated volumes of more than 200 ERCP and EUS procedures, respectively. Hence, in the past decade, training in advanced endoscopic procedures such as ERCP and EUS has shifted to dedicated advanced endoscopy fellowships at tertiary care centers, occurring in a fourth year of training after a standard gastrointestinal fellowship. This shift has also occurred in part because of the widespread acknowledgement that advanced endoscopic procedures are technically challenging to perform and are associated with a higher rate and wider range of adverse events compared with standard endoscopic procedures (eg, upper endoscopy, colonoscopy). Ample evidence demonstrates the operator-dependent nature of these procedures and supports the need for additional training for the development of technical, cognitive, and integrative skills beyond the skills required for standard endoscopic procedures.

G&H Which endoscopic procedures requiring specialized training are most in demand?

SW Most interventional endoscopy fellowships include various combinations of training in advanced endoscopic procedures. EUS and ERCP are typical constants, along with endoscopic mucosal resection, endoscopic eradication therapy in Barrett esophagus, endoscopic submucosal dissection (ESD), endoluminal stenting, bariatric endoscopy, advanced closure techniques, and/or peroral endoscopic myotomy (POEM). Most advanced endoscopy programs only provide exposure to some of the advanced endoscopic procedures listed above, such as ESD and POEM, and competence is not guaranteed. Further training and ongoing mentorship are required during independent practice. There is a growing interest in the field of complex endoscopic resection techniques, including ESD, POEM, advanced closure techniques, bariatric endoscopy, and interventional EUS.

G&H What is the relationship between learning curves and competency for advanced endoscopic procedures?

SW The ultimate goal of all advanced endoscopy programs is to ensure that every trainee meets the necessary thresholds and competence for independent practice. It is critical to utilize rigorous methodologies to assess competence. This goal has provided the impetus to assess learning curves in advanced endoscopic procedures and help evaluate whether trainees have achieved competence at the end of their training period. Of note, there are limited data on learning curves for advanced endoscopic procedures. One of the largest studies assessing competence in ERCP from the Netherlands showed that

Credentialing in endoscopy is extremely important and required for every endoscopist performing advanced endoscopic procedures.

trainees achieved competence in native papilla cannulation much later than in other ERCP skills. A prospective, multicenter study highlighted learning curves in ERCP among advanced endoscopy trainees using a standardized assessment tool and cumulative sum analysis. The study demonstrated significant variability in the number of ERCPs performed during training based on the center of training and on the learning curves for cognitive and technical aspects of ERCP. These results and subsequent studies have strengthened the value of using selective native papilla cannulation as the benchmark for assessing successful cannulation during endoscopic training in ERCP. Studies have also reported substantial variability in the number of procedures required to achieve competence in EUS, and that a specific caseload does not ensure trainee competence.

Another prospective, multicenter study reported the feasibility of creating a national centralized database that allows for continuous monitoring and reporting of individualized learning curves for EUS and ERCP among advanced endoscopy trainees. This is a critical step to ensure that trainers evolve with the ACGME/NAS reporting requirements and ultimately demonstrate that trainees have attained the competency required for safe, unsupervised practice in EUS and ERCP.

G&H How often should advanced endoscopy trainees undergo assessment?

SW At the present time, there are no guidelines that address the issue of an assessment schedule among advanced endoscopy trainees. In general, it is not necessary to grade every advanced endoscopic procedure but to evaluate at least 20% of the trainee's procedures distributed throughout the training period. These assessments can be performed after every fifth procedure, whereas consecutive assessments can be performed following completion of a set threshold of procedures (eg, evaluating 5 consecutive cases after completion of 25 EUS and ERCP procedures or all procedures performed on a specific day of the week).

G&H What resources are currently available to facilitate advanced endoscopic training?

SW It is suggested that trainees should spend at least 1 year in a postgraduate interventional endoscopy fellowship. Current ongoing efforts using the EUS and ERCP Skills Assessment Tool should help standardize assessments of competence in EUS and ERCP. Several educational courses and programs with hands-on training using animal and training models are currently offered, such as the American Society for Gastrointestinal Endoscopy (ASGE)'s Skills Training Assessment Reinforcement Program.

G&H What are the advantages and disadvantages of didactic training vs computer-based self-learning?

SW There are no data evaluating didactic and/or computer-based self-learning during advanced endoscopy training and the effect on achieving competence at the end of training. The role of technology in learning and its impact on the rate of competency achievement during the training period is unclear. Trainers should evolve with the developments in the field of education. Several novel concepts have been introduced, such as the flipped classroom (trainees watch video tutorials and actual time in the classroom is spent working on problems interactively with the trainer), spacing effect (repetitive on-line education spaced throughout training), and adaptive learning (computer-based technology focusing on areas in which trainees are less knowledgeable). These concepts are being used for cognitive learning but have limited data supporting their use in endoscopy training. However, data suggest that there are opportunities to incorporate technology into the current static and heterogeneous training curricula. Technology may play

a significant role in the future of advanced endoscopy training.

G&H How will the responsibilities of training directors change in the future?

SW As mentioned previously, the ACGME replaced its reporting system with the NAS, with focus on competency-based medical education. The main objectives of this reporting system are to ensure that trainees reach milestones at various points in training and achieve competence, and that all training programs document assessments in order to transparently demonstrate that trainees are ready for independent practice. Program directors will need to move forward with the adoption of competency-based medical education and show that advanced endoscopy trainees have achieved competence and attained the technical and cognitive skills that are required for safe and effective unsupervised practice in advanced endoscopy.

G&H Is credentialing currently required for every endoscopist performing an advanced endoscopic procedure?

SW Credentialing in endoscopy is extremely important and required for every endoscopist performing advanced endoscopic procedures. The ASGE published guidelines for privileging and credentialing to perform gastrointestinal endoscopy, including advanced endoscopic procedures. The guidelines provide a framework for determining the competency of practicing endoscopists and for the granting of privileges to perform endoscopic procedures. Additionally, the ASGE provides principles and guidelines to assist credentialing organizations in creating policy for the granting and renewal of endoscopic privileges. Unfortunately, significant variability exists in the credentialing process for advanced endoscopic procedures. In a survey that included 1126 respondents, 21% reported that their hospitals had no written guidelines for initial credentialing, and 59% reported that their hospitals had no written guidelines for repeat credentialing. These data call for an improvement in the credentialing process for advanced endoscopic procedures.

G&H What are the major challenges facing advanced endoscopy training?

SW One of the biggest challenges for advanced endoscopy training programs and directors is to evolve with the ACGME/NAS requirements and demonstrate in an objective fashion that trainees have achieved competence for independent, unsupervised practice. There

is a need to establish a standardized curriculum as well as minimum standards for advanced endoscopy training programs that will ensure adequate training and potentially facilitate the process of trainee assessment through competency-based milestones. Additionally, there is a need for universal adoption of a standardized competency assessment tool in EUS and ERCP and a centralized national database that provides learning curves to program directors and trainees on demand or on a periodic basis. Future studies should clarify the role of technology and advances in cognitive learning along with the role of simulators on learning curves. The impact of structured training on outcomes for trainees in their first year of independent practice should be assessed in future studies.

Dr Wani serves as a consultant for Boston Scientific and Medtronic, and is supported by the University of Colorado Department of Medicine Outstanding Early Scholars Program.

Suggested Reading

- Cotton PB, Feussner D, Dufault D, Cote G. A survey of credentialing for ERCP in the United States [published online March 30, 2017]. *Gastrointest Endosc*. doi:10.1016/j.gie.2017.03.1530.
- Ekkelenkamp VE, Koch AD, Rauws EA, Borsboom GJ, de Man RA, Kuipers EJ. Competence development in ERCP: the learning curve of novice trainees. *Endoscopy*. 2014;46(11):949-955.
- Faulx AL, Lightdale JR, Acosta RD, et al; ASGE Standards of Practice Committee. Guidelines for privileging, credentialing, and proctoring to perform GI endoscopy. *Gastrointest Endosc*. 2017;85(2):273-281.
- Khan T, Cinnor B, Gupta N, et al. Didactic training vs. computer-based self-learning in the prediction of diminutive colon polyp histology by trainees: a randomized controlled study [published online August 14, 2017]. *Endoscopy*. doi:10.1055/s-0043-116015.
- Patel SG, Keswani R, Elta G, et al. Status of competency-based medical education in endoscopy training: a nationwide survey of US ACGME-accredited gastroenterology training programs. *Am J Gastroenterol*. 2015;110(7):956-962.
- Wani S, Hall M, Wang AY, et al. Variation in learning curves and competence for ERCP among advanced endoscopy trainees by using cumulative sum analysis. *Gastrointest Endosc*. 2016;83(4):711-719.e11.
- Wani S, Keswani R, Hall M, et al. A prospective multicenter study evaluating learning curves and competence in endoscopic ultrasound and endoscopic retrograde cholangiopancreatography among advanced endoscopy trainees: the Rapid Assessment of Trainee Endoscopy Skills Study [published online June 16, 2017]. *Clin Gastroenterol Hepatol*. doi:10.1016/j.cgh.2017.06.012.