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WHITE PAPER

Training in EUS and ERCP: standardizing methods to assess competence

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Postgraduate interventional endoscopy fellowships were created in response to the burgeoning portfolio of therapeutic endoscopy.[1,2] Many programs recognized that comprehensive training in ERCP and EUS could not be achieved within the 3-year curriculum of an Accreditation Council for Graduate Medical Education (ACGME)–accredited fellowship in gastroenterology, hepatology, and nutrition. Although these postgraduate fellowships initially focused on ERCP and/or EUS, these postgraduate fellowships have evolved to include various combinations of training in ERCP and EUS, complex endoscopic resection (eg, large polyp EMR and endoscopic submucosal dissection [ESD]), endoluminal stent placement, advanced closure techniques, and bariatric endoscopy. Although the breadth of training has increased, the duration of these training programs has remained the same or been shortened. Given the myriad procedures that trainees must learn and the central role of EUS and ERCP in these training programs, assessing competence in these advanced endoscopic procedures is vital. To achieve this goal, the use of validated, task-specific, skills-assessment tools is of paramount importance. The goals of this American Society for Gastrointestinal Endoscopy (ASGE) document are to (1) present the rationale and methods to assess competence in performing EUS and ERCP, (2) describe an evidence-based tool for the assessment of competence in EUS and ERCP, and (3) outline a means of tracking and assessing procedures that align with the competency-based medical education ACGME guidelines.

EARLY DAYS OF COMPETENCE ASSESSMENT: A NUMBERS GAME

Advanced endoscopy training traditionally has been based on an apprenticeship model. At the end of this training period, in lieu of a formal assessment of competence, volume is often used as a surrogate for competence. It is instructive to understand how the various volume thresholds (to ensure procedural competence) were established. Initially, minimum ERCP volume recommendations were determined by expert opinion. This resulted in early guidelines recommending as few as 35 supervised ERCPs for cognitive and technical competence.[3] Two of the first studies that attempted to correlate volume with competence were published in 1996.[4,5] In 1 study of 20 trainees,[4] the authors found that, even after 100 procedures, trainees did not consistently achieve a cannulation rate of >85%. Thus, the authors concluded that >100 ERCPs were needed to achieve competence in diagnostic ERCP; this recommendation was echoed in the contemporaneous ASGE Gastroenterology Core Curriculum. In a second study, Jowell et al[5] assessed competence in a variety of ERCP-related skills including cannulation, stent insertion, and sphincterotomy. The authors similarly found that deep biliary cannulation was not reliably achieved by all trainees, but the data suggested that trainees who performed at least 180 ERCPs achieved competence in this specific skill. Subsequent ASGE and National Institutes of Health consensus guidelines published in 2002 recommended that competence be assessed—but cannot be assured—after 200 ERCP procedures and 150 EUS procedures.[6,7] No measure to assess competence was offered. A recent systematic review of the literature on ERCP training showed that trainee competence was achieved across a wide range of procedure volumes (overall, 70-400; selective duct cannulation, 79-300; common bile duct cannulation rate, 160-400; and native papilla common bile duct cannulation, 350-400).[8,9] There is little information on ERCP training of trainees who are not gastroenterologists.[10] Based on recent quality indicators in ERCP that established a threshold of 90% for cannulation of ducts of interest in native papilla cases,[11] it should be noted that the benchmark used in

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0016-5107/$36.00
https://doi.org/10.1016/j.gie.2018.02.009

previous studies to define success in terms of cannulation rates (80%) may have been set too low.

There are few historical data on volumes required for trainees to achieve EUS competence. Early volume recommendations appeared to be based on expert opinion.[6] In part, this is most likely because of the inability to identify a universally applicable endpoint relevant to EUS. Because cannulation is central to all ERCP procedures, selective cannulation rate has always been an attractive primary endpoint. A comparable metric in EUS is less clear: successful identification and characterization of the lesion of interest? adequate cellularity from FNA or biopsy? Given the myriad indications and unique challenges associated with EUS for different pathologies, 1 or both of these questions cannot be assigned to EUS procedures unambiguously. These data highlight the fact that procedure volume thresholds—or a 1 size fits all metric—are inadequate to assure competence. Task-specific, direct observational assessment tools with strong evidence of validity and reliability are needed.

FROM VOLUME TO MILESTONES: HOW DID WE GET HERE?

Societal endoscopy credentialing guidelines have relied on the described limited available data to generate minimum procedure volumes wherein competence might be obtained (Tables 1 and 2). However, most current guidelines specify competence thresholds as opposed to absolute procedure volume requirements as a means to determine competence in EUS and ERCP, with thresholds varying between guidelines.[12-18] A competence threshold is a minimum number of supervised procedures that a trainee is required to perform before competence can be assessed; an assessment of competence then requires direct observation and the use of objective criteria. The most recent document on privileging and credentialing in endoscopy by the ASGE suggests that at least 225 hands-on EUS cases and 200 supervised independent ERCP procedures (including 80 independent sphincterotomies and 60 biliary stent placements) should be performed before learner competence is assessed.[13] It should be noted that these guidelines are not validated, and these thresholds do not account for the variable rates at which trainees learn and acquire endoscopic skills.[19-21] Thus, these recommended volume thresholds generally have been accompanied by the caveat that a minimum volume of procedures cannot ensure competence. The thresholds remain valuable to guide training programs as to the minimum case volume they need to offer trainees and when they can realistically begin to make summative skill assessment of trainees based on objective criteria.

We recognize that reliance solely on minimum procedure volumes has a number of limitations because it would require several assumptions regarding training, specifically (1) all trainees learn at the same speed; (2) trainees learn all skills at the same speed; (3) all trainers are equivalent educators; (4) trainees are exposed to procedures of similar complexity and with comparable opportunities for supervised, hands-on learning; and (5) trainees acquire cognitive endoscopy skills at the same rate as technical skills. Because these assumptions are clearly unrealistic, it is imperative that we use more rigorous methodologies to assess competence.

Based on these limitations, there has been a greater emphasis on learning curves. One of the largest studies assessing competence in cannulation for 15 trainees was prospectively performed in the Netherlands.[22] This demonstrated that trainees acquire competence in ERCP skills at variable rates based on the skill assessed. Specifically, this study recognized that trainees achieve competence in native papilla cannulation much later than other ERCP skills. Thus, competence assessment must account for the variable rates at which specific milestones are achieved. Results of a recent prospective multicenter study highlighted the learning curves in ERCP among advanced endoscopy trainees using a standardized assessment tool and cumulative sum (CUSUM) analysis.[19] This study demonstrated significant variability in the number of ERCPs performed during training and in the learning curves for cognitive and technical aspects of ERCP. We have previously demonstrated substantial variability in the number of procedures required to achieve competence in EUS and that a specific case load does not ensure trainee competence.[23]

These findings parallel a growing movement in medical education. There is an increasing emphasis on standardizing competence assessments and demonstrating readiness for independent practice, as medical training in North America transitions from an apprenticeship model to competency-based medical education. The ACGME has replaced its reporting system with the Next Accreditation System, which is a continuous assessment reporting system focused on ensuring that specific milestones are reached throughout training, that competence is achieved by all trainees, and that these assessments are documented by training programs.

There has been an evolution in the definition of competence itself. ERCP competence traditionally has been defined as the ability to cannulate the duct of choice (selective cannulation). However, this important first step does not ensure procedural success and thus is an incomplete measure of competence. In contrast, successfully completing the entirety of a procedure is a more comprehensive measure of competence. Similarly, the trainer could use a global assessment of competence wherein he or she assesses trainee competence via a single question assessing technical and cognitive skill. Although these single composite competence measures are useful, their impact during training is limited, because they do not provide specific and directed feedback. Ideally, evaluation would assess performance on individual skills (eg,