To the Editor:

We read with disappointment the updated “Guidelines for privileging, credentialing, and proctoring to perform GI endoscopy” authored by the American Society for Gastrointestinal Endoscopy (ASGE) Standards of Practice Committee and have major concerns regarding inconsistencies in the recommendations. Having recently published similar guideline recommendations from the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), we offer the following observations on this important topic.

The goal of both the ASGE and SAGES documents should be to provide guidance to institutions granting privileges to perform endoscopy, and to training programs in the curricular and assessment components necessary for graduating competent trainees. The guidelines should also share a common goal of ensuring that patients receive the highest quality of care during endoscopic procedures regardless of the educational pathway through which physicians have been trained. The SAGES guidelines recognize that cognitive and technical competency should be assessed objectively, rather than relying on case volumes as a surrogate for the minimum level of skill or knowledge. The ASGE guidelines initially cite that competency should be determined based on objective criteria and direct observation, but then state “that minimal threshold numbers may be set below which competency cannot be assessed”. In addition, they do not describe what the assessment beyond case numbers should be.

We highlight the inherent problem with utilizing procedural numbers as a surrogate for measuring technical skill, the importance of the quality of training, and point out a number of methodological issues with the ASGE guideline.

**Why procedural numbers are an inadequate measure of competence**

Individual learning curves of technical skills vary based on natural talent, dedicated and deliberate practice time, and educational exposure of learners to procedures. This variability in learners’ ability to achieve technical competence has been well established in the literature for a variety of procedures including endoscopic ones. In addition, training that is based on procedural numbers does not take into account individual learning differences. Given that learners have different baseline abilities, prior experiences, and motivation that impact skill acquisition, curricula based on procedure numbers can lead to inadequate training or unnecessary overtraining. In contrast, competency is better attained when training goals are set for learners and training is tailored to individual needs. Goal-oriented training ensures that competence is acquired uniformly by learners, independent of numbers of procedures required by each trainee.

The superiority of goal-oriented over number-based training has been highlighted by several experts in the field and is illustrated in the example in Fig. 1. By not having defined training goals, learner efforts might be misdirected and their motivation to practice negatively affected, further impacting eventual performance.

In addition to technical competency, endoscopic procedures require the cognitive skillset to identify and appropriately manage GI pathology. Such skills do not require minimum case volumes as they can be acquired through curriculum-based learning paired with clinical experience. Importantly, augmenting clinical experience with didactic tools (such as online...
modules and atlases) broadens the learners’ exposure to rare findings that may not be encountered in the ‘minimum case volume’ model.

The importance of curriculum quality

Unfortunately, none of the published studies that assessed endoscopy learning curves have examined the quality of the training provided. The quality of the endoscopic curriculum is paramount for skill acquisition and may have a dramatic impact on the learning curves of any procedure. Indeed, a number of systematic reviews have demonstrated that teaching interventions of higher quality, including simulation and mastery based training, lead to higher learning effect sizes. Thus, highly effective curricula may obviate the need for large numbers of procedures needed to achieve competency. In 2013 the American Board of Surgery implemented the Flexible Endoscopy Curriculum (FEC) for general surgery residents in training. FEC is a program that combines didactics, simulation education, clinical experience, objective skills assessment, and passage of a validated test of knowledge and skill (Fundamentals of Endoscopic Surgery) into a comprehensive curriculum with the goal of achieving competency in endoscopy. SAGES developed the Fundamentals of Endoscopic Surgery (FES) in order to provide a platform for assessing gastrointestinal (GI) endoscopic knowledge and technical skill supported by a level of validity evidence that allows it to be used as a high stakes exam. Successful completion of the rigorous FEC is required for all graduating general surgery residents to qualify for Board Certification and provides a solid foundation for the practice of flexible GI endoscopy.

Methodological Pitfalls

The ASGE standards of practice committee appropriately utilizes the GRADE system in assessing the available literature and formulating their recommendations. Unfortunately, there are a number of methodological concerns with the presented findings.

First, the results of the systematic review are not presented in the ASGE publication making it hard to verify the accuracy of the work. Second, the overall quality of the available evidence and number of published studies is extremely limited to draw meaningful conclusions let alone define robust procedural thresholds for competency or certification. Indeed, a recent systematic review of studies evaluating competency assessment in gastrointestinal endoscopy which was not included in the ASGE publication, has shown that there was significant heterogeneity in the examined evidence and that the reported minimal numbers to achieve competency in endoscopic procedures varied widely (75-275 cases for colonoscopy and 50-130 for upper endoscopy). As a result, the authors of the systematic review refrained from recommending specific minimum numbers for training in endoscopy. The ASGE recommended threshold numbers for colonoscopy, ERCP, and EUS are based on a reported moderate quality of evidence (+++). Yet, the recent systematic review found that only four colonoscopy, two ERCP, and one EUS studies reached a sufficient level of evidence. Even the two best quality studies available, which are non-randomized, single institution studies with a small volume of learners (total n=60), have demonstrated very inconsistent results: using 85% cecal intubation rate as the threshold for competence, the study by Sedlack identified a mean of 275 required procedures and <16 minutes per procedure for competence while the study by Koch identified 200
procedures and 8.5 minutes per procedure for competence – obviously vastly different findings. The ASGE document lists strong recommendations for using minimum threshold numbers, but these recommendations are not warranted given the low quality of the available literature according to the GRADE system.

Third, the ASGE guidelines do not appear to apply a consistent criterion when defining minimal number thresholds; they use the highest reported number according to the systematic review for colonoscopy procedures (n=275 with range 75-280), a higher than the highest number reported for ERCP (n=200 with range 70-185), and an intermediate number for EUS (n=225 with range 78 to >400). Furthermore, the procedural numbers recommended in the ASGE guideline for more complex endoscopic procedures such as EMR or endoscopic submucosal dissection are small (n=20-30) compared to their recommendations for the more common, and more straightforward procedures such as upper endoscopy or colonoscopy and are based on expert opinion as evidence is lacking.

Summary

All the aforementioned arguments demonstrate that setting a uniform procedural number threshold before assessing technical competency during training in endoscopy is not appropriate nor is it warranted based on the available evidence.

As the global population enlarges, the demand for endoscopic procedures will correspondingly increase. Guidelines that restrict competency assessment to case volumes may limit the number of truly competent practicing endoscopists. In addition, inappropriately defined minimum case numbers lacking scientific merit, will misguide hospital credentialing bodies, causing them to likely reject competent endoscopists and thereby further limiting access of patients to necessary procedures, especially in critical access areas.

SAGES stands firm in its criticism of ASGE’s recently published Guidelines for privileging, credentialing, and proctoring to perform GI endoscopy and is adamant that the numbers proposed in the document not be used by credentialing bodies for granting privileges for GI endoscopy. Further, we would welcome the opportunity to work with ASGE and other GI and surgical societies toward the standardization of technical and cognitive skill assessment across specialties that perform GI endoscopy. This standardization may result in medical and surgical training pathways that differ in individual elements, but include common requirements such as completion of a formal curriculum in endoscopy and the use of validated assessment tools to assess competency. Case volume requirements should not be used to determine endoscopic skill competency. Furthermore, after initial credentialing, renewal and maintenance of privileges should also include assessment of quality metrics and participation in quality improvement measures.

References
Legend: Figure illustrating the superiority of goal-oriented (proficiency) curricula over procedure number based curricula. Lines represent the individual learning curves to achieve a desired level of performance (depicted as red dotted line at 100) on a procedure. If the minimum number of needed procedures would be set at 70, 4 out of the 7 depicted learners would have received inadequate training, whereas 2 learners would have trained too long to achieve the same level of performance. If the minimum number would be set at 120 almost all learners would have achieved the desired level of performance but most of them would have been required to train unnecessarily too long. By getting rid of the number of needed procedures and focusing on the level of desired performance on this procedure training is tailored to individual needs.