

Training and Assessment in Pediatric Endoscopy



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KEYWORDS

- Endoscopy, gastrointestinal/education • Endoscopy, gastrointestinal/standards
- Endoscopy, pediatric • Clinical competence • Educational measurement
- Education, medical, graduate/standards • Patient simulation • Assessment

KEY POINTS

- Given its unique nature, training in pediatric gastrointestinal endoscopy requires an approach that is tailored to pediatric practice to ensure delivery of high-quality endoscopic care in children.
- There remains a need for a comprehensive pediatric-specific endoscopy curriculum that incorporates best evidence in procedural skills education and reflects the current competency-based model of training.
- Current evidence supports the use of endoscopy simulation-based training for novice endoscopists to help speed up the early learning curve and reduce patient burden, although pediatric-specific data are limited.
- Assessment is an essential component of pediatric endoscopy education that drives both teaching and learning.
- Structured direct observational assessment tools, such as the GiECAT_{KIDS}, provide a framework for teaching, facilitate feedback provision, and can be used to generate aggregate assessment data across training programs to help gauge trainees' progress toward specific competency-based milestones.

INTRODUCTION

A key aspect of pediatric gastroenterology practice is the ability to perform endoscopy procedures safely, effectively, and efficiently. Similar to adult endoscopy, performance of pediatric endoscopy requires the acquisition of related technical, cognitive, and integrative competencies to effectively diagnose and manage gastrointestinal disorders in children. However, the distinctive requirements of pediatric patients and their

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families and the differential spectrum of disease highlight the need for a pediatric-specific training curriculum and assessment framework to ensure endoscopic procedures are performed safely and successfully in children. This review outlines the current state of evidence as it pertains to pediatric endoscopy training and assessment.

TRAINING

Training in pediatric gastrointestinal endoscopy largely occurs during formalized pediatric gastroenterology training programs that generally last 2 to 3 years in duration. Duty-hour restrictions and an increasing focus on patient quality, safety, and accountability have resulted in a paradigm shift across postgraduate medical education toward a competency-based system that defines desired training outcomes.¹ Resultantly, there is increasing focus on the determination of when an individual is truly competent to perform a procedure independently, how much training is required to reach this skill level, and how to optimally train.

Any practitioner wishing to perform endoscopic procedures should receive formal training in the principles and practice of safe endoscopy. To date, training in endoscopy continues to be predominantly based on the apprenticeship model with trainees learning fundamental skills under the supervision of experienced endoscopists in the clinical setting. Although adult and pediatric endoscopic practice are similar in many regards, there are key dissimilarities, such as differing procedural indications, the need for ileal intubation, and the importance of routine tissue sampling.² The unique nature of pediatric endoscopy dictates the need for endoscopists who wish to perform procedures on children to train under the supervision of certified pediatric endoscopists, as there is a steep learning curve even for fully trained adult endoscopists.²

Pediatric endoscopy training programs are obliged to ensure learners are competent to deliver high-quality endoscopic care at completion of training. To help guide and enhance training, endoscopy skills curricula have been outlined for surgical^{3,4} and adult gastroenterology⁵ trainees. However, there remains a need for a comprehensive pediatric-specific endoscopy curriculum that has been designed from a background of scientific research to ensure it is valid, efficient, and reflects the current competency-based training model. This section discusses a framework of procedural skill acquisition, describes commonly available training aids designed to enhance endoscopy education, and outlines the value of trainer education.

Endoscopy Skill Acquisition

The road to acquiring competency, and potentially expertise, in performing endoscopic procedures requires a combination of innate ability, dedicated trainers, and many hours of deliberate practice. With regard to procedures, skill acquisition has been described by Fitts and Posner⁶ as a sequential process involving 3 major phases: cognitive, associative, and autonomous. In the *cognitive* stage, learners begin to develop a mental understanding of the procedure through instructor explanation and demonstration. Performance during this stage is often erratic and error filled. Feedback during this phase should focus on explanation of how the procedure is performed correctly and identifying common errors to increase learners' understanding of the tasks. Subsequently, in the *associative* phase, learners begin to translate the knowledge acquired in the cognitive stage into appropriate motor behaviors so that tasks are gradually executed more efficiently, with fewer errors and interruptions. Feedback is essential for learning during this stage, as has been demonstrated by the study by Mahmood and Darzi,⁷ which showed no performance improvement in

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