

Gastrointestinal Endoscopy Competency Assessment Tool: development of a procedure-specific assessment tool for colonoscopy

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Background: Ensuring competence remains a seminal objective of endoscopy training programs, professional organizations, and accreditation bodies; however, no widely accepted measure of endoscopic competence currently exists.

Objective: By using Delphi methodology, we aimed to develop and establish the content validity of the Gastrointestinal Endoscopy Competency Assessment Tool for colonoscopy.

Design: An international panel of endoscopy experts rated potential checklist and global rating items for their importance as indicators of the competence of trainees learning to perform colonoscopy. After each round, responses were analyzed and sent back to the experts for further ratings until consensus was reached.

Main Outcome Measurements: Consensus was defined a priori as $\geq 80\%$ of experts, in a given round, scoring ≥ 4 of 5 on all remaining items.

Results: Fifty-five experts agreed to be part of the Delphi panel: 43 gastroenterologists, 10 surgeons, and 2 endoscopy managers. Seventy-three checklist and 34 global rating items were generated through a systematic literature review and survey of committee members. An additional 2 checklist and 4 global rating items were added by Delphi panelists. Five rounds of surveys were completed before consensus was achieved, with response rates ranging from 67% to 100%. Seven global ratings and 19 checklist items reached consensus as good indicators of the competence of clinicians performing colonoscopy.

Limitations: Further validation required.

Conclusion: Delphi methodology allowed for the rigorous development and content validation of a new measure of endoscopic competence, reflective of practice across institutions. Although further evaluation is required, it is a promising step toward the objective assessment of competency for use in colonoscopy training, practice, and research. (*Gastrointest Endosc* 2014;79:798-807.)

(footnotes appear on last page of article)

Over the last 2 decades, there has been a movement in medical education, both in North America and around the globe, toward an approach based on competencies.¹⁻³ The goal of competency-based education is to ensure that



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trainees attain the knowledge, skills, values, and attitudes required to practice as competent, independent physicians.⁴ Potential benefits to this approach include increased public accountability, promotion of learner centeredness, transparent and consistent standards, and individualized flexible training.^{4,5} In response to this movement, there has been an effort to create evaluation tools that allow for objective, valid, and reliable assessment of clinical performance throughout the learning cycle. The integration of objective and reproducible assessment tools into training is essential because they can serve to monitor skill acquisition, provide a basis for structured evaluations and

constructive feedback, aid with promotion and credentialing decisions, and afford a form of quality assurance for the future.⁶

Competence in performing GI endoscopy requires demonstrated proficiency in 3 domains: (1) technical (psychomotor); (2) cognitive; and (3) integrative competencies required for safe, intelligent performance in varied contexts (eg, communication, judgment, clinical reasoning, and ethical integrity). Traditionally, the number of colonoscopy procedures completed has been used to assess competence on completion of training and subsequently to document maintenance of competence in practice.⁷⁻⁹ Although adequate volume is necessary to achieve competence, performance of a set number of procedures alone does not provide an indicator of level of ability, because there is wide variation in skill among endoscopists with similar levels of experience.¹⁰ Another possible marker of competence is adverse event data; however, adverse events are too rare to track as a meaningful indicator of quality and are influenced by patient characteristics.¹¹ Training programs have typically relied on supervising staff to provide ongoing formative feedback and global impressions of trainees' competence toward the end of training, without the use of predefined criteria. However, this type of non-criterion-based rating is largely subjective and unreliable^{12,13}; therefore, it cannot be considered an optimal means by which to assess competency.

There is a growing appreciation in the field of medical education that the addition of structure to components of the assessment process makes the process more objective, valid, and reliable.¹⁴ Similarly, there has been an augmented focus on evaluation of real-world events, such as procedures, through direct observation.¹⁵ By use of Delphi methodology,²⁹ this study aimed to develop and establish the content validity of the Gastrointestinal Endoscopy Competency Assessment Tool (GiECAT), a structured multiple-item measure of endoscopic performance designed to assess the full breadth of technical, cognitive, and integrative competencies required to perform colonoscopy safely and proficiently. Although measures of clinical ability in performing colonoscopy have previously been produced,¹⁶⁻²⁸ our instrument adds to the existing literature in that it is developed in a comprehensive and systematic manner by using an international panel of endoscopy experts, thus reflecting clinical practice across institutions.

METHODS

Study design

Delphi methodology was used to achieve consensus among a panel of endoscopy experts regarding standardized criteria for the assessment of competence of clinicians performing colonoscopy. The Delphi method is a research technique that draws on the collective intelligence of a

Take-home Message

- Use of the Delphi consensus technique allowed for development of the Gastrointestinal Endoscopy Competency Assessment Tool, a structured, multiple-item measure of endoscopic performance designed to objectively assess the full breadth of technical, cognitive, and integrative competencies required to perform colonoscopy safely and proficiently.
- The comprehensive and systematic approach to tool development that the authors used provides evidence of content validity of the resultant measure.

panel of experts to achieve consensus on a specific topic through the use of iterative rounds of anonymous questionnaires.²⁹ Content validity is “the degree to which elements of an assessment instrument are relative to and representative of the target construct for a particular assessment purpose.³⁰” Delphi methodology, through the provision of expert professional judgment, can be used to generate content-related validity evidence.³¹ Approval for this study was obtained from the institutional review board at the University of Toronto.

Delphi panel recruitment and sample

In order to finalize item generation and aid with item reduction and gradation, a Delphi group of international endoscopy experts was established. To ensure that appropriate experts were invited to participate, we used purposive and criterion sampling, selecting Delphi panelists according to the nature of our study question. To help establish content validity of the resultant instrument, panelists were identified based on predefined criteria and were selected to represent a wide geographic area including North America and Europe. First, we identified individuals with a strong publication record in the field of endoscopy assessment and/or performance. Second, some panelists were identified as experts as evidenced by their role as opinion leaders within organizations such as the American Society for Gastrointestinal Endoscopy, the Society of Gastrointestinal and Endoscopic Surgeons, and other gastroenterological and surgical societies. In order to increase the reliability of the Delphi group's composite judgment, our goal was to include a multidisciplinary (eg, gastroenterologists, surgeons, endoscopy nurses), international sample of approximately 30 experts with broad expertise reflective of current knowledge and perceptions in areas related to endoscopy assessment.^{32,33} Sixty-eight prospective panelists were sent e-mail invitations explaining the study purpose and methodology. The membership of the Delphi panel was kept anonymous.

Item generation

A list of potential checklist and global rating items was generated by the authors based on (1) a systematic literature review and (2) an open-ended survey of steering

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