

## Canadian credentialing guidelines for esophagogastroduodenoscopy

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A series of credentialing guidelines for gastrointestinal endoscopic procedures performed in the management of adult patients has been developed by the Canadian Association of Gastroenterology (CAG) Endoscopy Committee. The guidelines were approved by the Clinical Affairs Committee, and reviewed and endorsed by the Executive Board. In the present article, the CAG suggests specific guidelines for credentialing esophagogastroduodenoscopy (EGD), also known as gastroscopy or upper gastrointestinal endoscopy. It is intended to be read in conjunction with the introductory article that outlines the principles of credentialing (1).

The CAG does not credential individuals for EGD; that is the responsibility of the endoscopist's local institution or facility. The purpose of these guidelines is to provide a framework that will allow organizations to assess the training and competence of applicants to perform EGD, as part of the credentialing process for the granting of privileges. Credentialing for EGD, addressed in previous guidelines from the CAG (2), the American Society for Gastrointestinal Endoscopy (3) and others (1,4) will be reviewed with respect to issues relevant to Canadian practice.

The CAG credentialing criteria for EGD apply to the investigation of adult patients, aged 18 years or older. The basic principles also apply to EGD in pediatric patients but, because the number of procedures required to achieve and maintain competence may differ, guidance on credentialing for pediatric endoscopy is considered to be the responsibility of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition.

EGD is performed with a specialized flexible endoscope that is passed via the mouth and advanced, generally, to the

second or third part of the duodenum to visualize the upper gastrointestinal tract. EGD may be undertaken for diagnosis (encompassing written documentation, photodocumentation and, when appropriate, mucosal biopsy) or for therapy (including polyp removal, percutaneous endoscopic gastrostomy [PEG] tube insertion, stricture dilation, variceal ablation, endoscopic mucosal resection, photodynamic therapy and hemostasis), while minimizing procedure-related risks such as excessive sedation, cardiorespiratory compromise, bleeding and perforation.

### TRAINING IN EGD

#### Subspecialty gastroenterologists

Endoscopy training for gastroenterologists in Canada typically occurs in the context of accredited residency programs according to the specific objectives described by The Royal College of Physicians and Surgeons of Canada (5). Subspecialty gastroenterology trainees are given graded responsibility as their observed endoscopic skills improve; at the outset, they

are assisted by a member of staff and, as their skills improve, they function with progressively greater independence. Training encompasses the technical skills needed to perform EGD, as well as the administration of conscious sedation, discharge planning and patient management.

#### Nongastroenterologists

Training for endoscopists who are not subspecialty gastroenterologists generally occurs over a shorter period of time than the standard subspecialty gastroenterology program in Canada. Under these circumstances, the acquisition of skills for routine EGD may not be accompanied by appropriate experience with advanced procedures, such as endoscopic hemostasis. There



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**TABLE 1**  
**Requirements for the demonstration of competency in esophagogastroduodenoscopy (EGD)**

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- A broad knowledge of the indications for and contraindications to EGD
  - Knowledge of acceptable and, potentially preferable alternatives to EGD
  - Appropriate preparation of the patient, including prophylactic use of antibiotics and anticoagulation, as appropriate
  - Appropriate preparation of the equipment
  - Adoption of universal precautionary measures
  - Mastery of the technical aspects of EGD
  - Interpretation of findings
  - Integration of findings into patient management
  - Mastery of the technical aspects of common endoscopic therapeutic interventions
  - Avoidance, recognition and management of complications
  - Assessment and management of the patient after the procedure
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are very limited data on the extent of training of nongastroenterologists for advanced EGD procedures but, for example, a survey (6) in the United Kingdom, completed by 52 (82%) of 63 specialist surgical trainees in southeast England, concluded that the respondents were poorly trained with respect to providing emergency services for upper gastrointestinal hemorrhage, because only 50% had received more than six months of endoscopy training and less than 50% were able to perform therapeutic injections.

### COGNITIVE ASPECTS

In addition to technical skills, endoscopists require a full understanding of the cognitive aspects of EGD such that the procedure is performed for appropriate reasons with due regard for the safety of the patient, as well as for all individuals who perform or assist with the procedure. Credentialing for EGD should ensure that the applicant possesses an acceptable level of understanding and proficiency in a number of areas (Table 1).

#### Appropriate indications

The indications for EGD and its use have evolved with the publication of new guidelines for the management of gastroesophageal reflux disease, dysphagia, dyspepsia, peptic ulcer disease, *Helicobacter pylori* and other upper gastrointestinal diseases. In 1998, the European Panel on the Appropriateness of Gastrointestinal Endoscopy (7) used the RAND appropriateness method (8), combining expert opinion with a detailed literature review, to assess the appropriateness of gastrointestinal endoscopy procedures in a variety of clinical cases. The panel's review of 292 hypothetical upper gastrointestinal case scenarios determined that EGD was needed for only 31 (11%) of the cases and, although there were limitations due to the theoretical nature of the review, the results underscore the need for appropriate training in the application of endoscopic procedures (7).

EGD may be indicated as part of initial management or as part of ongoing monitoring or surveillance for a variety of conditions. In general, EGD is indicated when the results obtained could alter management, after an unsuccessful empirical trial of therapy for a suspected benign upper gastrointestinal disorder

or when a primary upper gastrointestinal therapeutic intervention is being considered (9-11). Therapeutic interventions may be nonurgent, including dilation for strictures or achalasia, snare resection of polyps, botulinum toxin injections for achalasia and PEG tube placement. Foreign body or food bolus removal is generally more urgent. Endoscopic band ligation and sclerotherapy for esophageal varices may be performed electively or as an emergency, as may techniques for treating nonvariceal upper gastrointestinal hemorrhage including injections, clips, laser, electrocautery, thermocoagulation and argon plasma coagulation. Physicians requesting privileges to perform these therapeutic interventions should be aware that additional training is required beyond that required to perform EGD. Competence for interventional EGD encompasses cognitive aspects including knowledge of the indications for and contraindications to the intervention; alternative, less invasive management options; the risks and complications of the procedure; and the treatment of adverse sequelae, based on published guidelines relevant to the management of specific conditions such as dyspepsia (12,13), gastroesophageal reflux disease (14), Barrett's esophagus (15,16), esophageal stricture (17), variceal (18,19) and non-variceal (20-22) upper gastrointestinal hemorrhage, esophageal and gastric cancer (23), and enteral feeding (24,25), as well as the management of anticoagulation during endoscopic procedures (26).

#### Other cognitive aspects

Common core principles pertinent to training and credentialing endoscopists include using noninvasive procedures when appropriate (7,8), avoiding unnecessary endoscopy, maintaining adequate records on patient demographics, risk factors, procedural indications and outcomes, and the use of prophylactic antibiotics and/or anticoagulation. Photodocumentation of duodenal intubation, retroflexion in the stomach and relevant abnormalities is encouraged for quality assurance purposes. Competence in endoscopy should also encompass the adoption of universal precautionary measures which, in a recent survey, were reported to be observed by less than 50% of endoscopists and gastrointestinal endoscopy nurses (27).

Cognitive, nontechnical components of competence (knowledge of expected pathology, judgment regarding biopsy and therapy, indications, contraindications, informed consent and immediate postprocedural management) require a training program that generally involves a minimum of six to 12 months in training allied to the acquisition of technical skills.

### TECHNICAL ASPECTS

#### Technical skills

Competence in EGD requires technical proficiency in several areas including hand-eye coordination, endoscope tip manipulation using control wheels and torque, landmark and lesion recognition, and various therapeutic manoeuvres. Furthermore, procedures should be completed in a timely manner with minimal patient distress. In addition, competence in EGD generally requires both the ability to perform appropriate diagnostic interventions and the ability to perform standard therapeutic interventions including hemostasis, food bolus disimpaction, foreign body removal, stricture dilation and PEG tube insertion.

Research on endoscopic training has generally focused on estimating the number of supervised procedures necessary to achieve procedural competence. However, to date, there is no consensus on the definition of procedural competence – although it is often defined as a 90% success rate (28) – or on the number of EGDs to be completed before procedural competence can be documented. The *Specific Standards of Accreditation for Residency Programs in Adult Gastroenterology* adopted by the Royal College of Physicians and Surgeons of Canada (29) outline the requirements needed to ensure ‘the attainment of the technical skills required for the practice of the specialty’, including ‘endoscopy of the upper and lower gastrointestinal tract’, but there is no specific recommendation regarding the number of procedures that should be performed before competence can be assessed or documented.

When surveyed in 1990, 510 gastroenterology members of the American College of Physicians estimated that 50 supervised EGD procedures were adequate for training (30). Although trainees learning basic EGD and colonoscopy may have initial success, intubation rates may decrease when trainees are exposed to a case mix involving more difficult patients, representative of routine gastroenterology practice, returning to 90% only when more than 100 procedures have been performed (31). Previous Canadian guidelines (2) proposed the completion of 100 routine EGD procedures as a minimum threshold for assessing competence during training although, in fact, virtually all subspecialty gastroenterology trainees in Canada exceed this threshold. In recognition of the need for adequate experience, current United States recommendations (32,33) specify a minimum number of procedures – 130 for EGD and 140 for colonoscopy – to achieve competence, although there are limited data to show that this ensures the competence of most trainees. Consistent with the current Canadian credentialing guidelines for colonoscopy (34), it is recommended that technical competence for EGD be assessed after the trainee has completed 150 procedures, at least 100 of which should have been performed without assistance. There are very limited data on which to base specific evaluation criteria for competence. However, it is expected that competent endoscopists should intubate the second part of the duodenum in virtually all cases (35). The optimal inspection or withdrawal times for EGD have not been determined, but retroflexed views of the gastric fundus and cardia should be documented and there should be an emphasis on methodical, careful inspection to maximize lesion detection, balanced against the need to minimize patient discomfort. Routine EGD procedure times will rarely exceed 15 min, although procedures may take longer if, for example, multiple biopsies are required in surveillance of long-segment Barrett’s esophagus (15,16,35). Complication rates should be comparable with those reported in the literature; that is, an immediate complication rate that is less than one in 1000 for all patients (13,36-41).

Additional experience is required to establish competence for more advanced or invasive EGD interventions including the management of nonvariceal (20 procedures) and variceal hemorrhage (20 procedures), esophageal guide wire dilation (20 procedures) and PEG tube placement (20 procedures). However, endoscopic mucosal resection is a more complex procedure that should not be included in standard credentialing for EGD (33).

Although completion of a specified number of procedures does not guarantee competence, a record of procedures performed does, as a minimum, provide a measurement of a trainee’s experience. A supplementary record of procedures documenting unaided completion, successful completion, ancillary interventions and associated complications would provide a more useful measurement of the trainee’s competence.

It has been proposed that the procedural aspects of gastroenterology are becoming too complex for many trainees to attain the necessary level of proficiency during standard two-year gastroenterology fellowship programs and that third-tier fellowship training programs, focusing almost entirely on procedures, may be needed (42). As a result, endoscopy training programs may have to be reorganized to incorporate new training strategies (43), including simulators. Virtual reality computer simulators, both for EGD and colonoscopy, have been reported to improve operator skills (44-47), allowing transfer of these skills from virtual reality to physical reality (47). In one study (48), residents used a training simulator for one day to learn to perform upper gastrointestinal endoscopic hemostasis and demonstrated a highly significant improvement in endoscopy performance. In another study (49), residents who received prior training with a simulator performed significantly better during subsequent clinical EGD procedures than did residents who had not received training on a simulator. Moreover, a combination of classical clinical training and virtual reality training appears to be more effective in teaching a broader range of skills than clinical training alone (50). Although endoscopic simulators may shorten the early phase of technical training, it remains unproven that they will replace individual mentoring of the trainee or promote competence at EGD in clinical practice. The role of simulators in formal endoscopic training programs remains uncertain, either to improve skills or to document proficiency.

### MAINTENANCE OF COMPETENCE

It is tempting to assume that, once physicians have attained a certain level of skill at endoscopy, they will maintain this level of proficiency throughout their career. However, a systematic review of 62 studies (51) suggests that, in fact, there is an inverse relationship between the quality of care delivered and the number of years in practice. Although the review did not evaluate technical skills, the results would support a process for monitoring physician competence and for providing periodic ‘refresher courses’ to teach new skills and to re-establish or enhance skills (52). An approach such as this would, perhaps, address public demands for both increased accountability and transparency in medicine (53). It would also be consistent with the abolition of lifelong certification and, for example, the introduction of time limits, ranging from six to 10 years, for certification by the American Board of Medical Specialties (54).

Success rates for colonoscopy are greater for practitioners with greater experience and those who perform at least 100 to 200 procedures annually (55,56) and, in the absence of evidence to the contrary, it is reasonable to consider that this also applies to EGD. The development of credentialing and monitoring programs for endoscopy will be driven, not only by the need to improve the quality of endoscopy services but also by physicians’ needs to maintain their licences and college affiliations, and by the threat of litigation (57). Most Canadian physicians are now required to document participation in a specified number of

accredited continuing professional development activities. Assessment of learning needs is crucial for effective continuing medical education (58); as a result, endoscopists will increasingly need to monitor and document their practice so that they can maintain and improve the skills needed to perform important invasive procedures, minimize the potential for harm and adopt new techniques that will continue to change the practice of endoscopy.

Regrettably, the absence of firm guidelines for EGD training is mirrored by the absence of guidelines for maintenance of privileges, and most hospitals do not monitor the number or quality of procedures performed by endoscopists in their institutions. Indeed, a survey (59) of 479 gastrointestinal endoscopy centres in the United States suggests that credentials may be granted without appropriate consideration for the endoscopist's experience.

Given the broadening indications and rapid advances that are occurring in endoscopy, a formalized system of ongoing training and monitoring is warranted. Institutions that grant privileges for EGD should be encouraged to develop endoscopic reporting mechanisms and databases so that practitioners may monitor the quality of their practice and effect improvements if they identify deficiencies (60,61). American Society for Gastrointestinal Endoscopy guidelines on quality and outcomes assessment for gastrointestinal endoscopy (62) recommend the use of endoscopic records, and a record of outcomes for all patients undergoing endoscopy; such data would allow benchmarks to be established for the evaluation of endoscopists' subsequent performance.

The use of outcomes data for credentialing would require prior validation, as well as the establishment of an agreed upon process, acceptable to the institution, the endoscopists and other stakeholders (including patients). The selection of appropriate measures and implementation strategies is critical because administrative data feedback does not lead inevitably to a significant improvement in outcomes, as has been demonstrated in a study (63) of hospital 'report cards' on the management of acute myocardial infarction. Failure to achieve the desired outcome may be due to ineffective provision of feedback to the relevant caregivers (64), and endoscopy skill evaluation programs will require clear validation if they are to undergo widespread implementation (65). Furthermore, assessment of endoscopic competence, with the corollary that credentials may be withheld in some cases, implies that there should be a mechanism for retraining or remediation for endoscopists who are deemed not to be competent. Brief courses in endoscopy may serve as a means to develop observational (66)

and technical skills, even among experienced endoscopists, but there are few, if any, formal programs that permit established endoscopists to address specific procedural deficiencies.

## SUMMARY

Acquisition of the nontechnical components of competence for EGD requires a training program that should generally last a minimum of six to 12 months. Technical competence for EGD can be assessed after 150 procedures, acknowledging that the completion of a specified number of procedures does not guarantee competence. It is recommended that documentation of competence should be based on the completion of at least 100 unassisted procedures. Competent endoscopists should be able to intubate the second part of the duodenum in virtually all cases (35); a methodical, careful inspection of the upper gastrointestinal tract should be documented and photodocumentation of duodenal intubation and retroflexion in the stomach is encouraged for quality assurance purposes. There are no data on optimal inspection or withdrawal times, but the need for multiple biopsies in, for example, Barrett's esophagus surveillance (15,16,35) may prolong the procedure. Competence in EGD requires the ability to perform all standard diagnostic and therapeutic interventions when indicated. At least 20 supervised, unassisted procedures should be performed for the management of each of nonvariceal hemorrhage, variceal hemorrhage and esophageal stricture requiring dilation (33), as a basis for documenting competence.

It is likely that success rates for EGD will be greater for practitioners who perform at least 100 to 200 procedures annually. Immediate complication rates for EGD should be less than one in 1000 for all patients (13,36-41). Given the rapid advances that are occurring in endoscopy and the need to maintain endoscopic privileges, a formalized system of ongoing training and monitoring is warranted. Institutions that grant privileges for EGD should be encouraged to develop endoscopic reporting mechanisms and databases so that practitioners may monitor the quality of their practice and effect improvements if they identify deficiencies (60,61).

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