

# Endoscopy services and training: a national survey of general surgeons

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**Background:** Delivering high-quality endoscopy services depends largely on the competence of endoscopists. General surgery residency training in endoscopy and the associated quality of endoscopy services being delivered by general surgeons have been the subject of considerable controversy. In conjunction with the Canadian Association of General Surgeons (CAGS) executive board, we formulated a survey to evaluate the general state of endoscopy practice and training among general surgeons in Canada.

**Methods:** The study was designed as a cross-sectional survey. General surgeons who are members of CAGS were selected to participate in the study and were emailed a link to the online questionnaire regarding the importance of endoscopy. They were asked to compare their training to resident training today.

**Results:** Sixty-nine surveys were completed. The majority of general surgeons (95.7%) indicated that endoscopy was an important skill to possess, and more than 85.5% used endoscopy in their own practices. However, nearly half (46.4%) felt that general surgery endoscopy training in Canada is currently inadequate to produce competent endoscopists. The main qualitative themes emerging from the survey were the inadequacy of current postgraduate endoscopy training (37.5%) and the absence of standardization in training (25.0%).

**Conclusion:** Endoscopy is considered integral to academic and community general surgeons' practices; however, the adequacy of training seems to be questioned. Post-graduate training in endoscopy needs to be formalized and standardized, with a greater emphasis placed on teaching endoscopy.

**Contexte :** La qualité des services d'endoscopie est largement tributaire de la compétence des endoscopistes. La formation en endoscopie pendant la résidence en chirurgie générale et la qualité connexe des services d'endoscopie fournis par les chirurgiens généraux font l'objet d'une importante controverse. En collaboration avec le conseil de direction de l'Association canadienne des chirurgiens généraux (ACCG), nous avons produit un sondage pour évaluer l'état global, chez les chirurgiens généraux au Canada, de la pratique et de la formation en matière d'endoscopie.

**Méthodes :** L'étude s'est effectuée sous forme de sondage transversal. Des chirurgiens généraux membres de l'ACCG ont été choisis pour participer à l'étude et ont reçu par courriel un lien vers le questionnaire en ligne sur l'importance de l'endoscopie. On leur a demandé de comparer leur formation à celle que reçoivent maintenant les médecins résidents.

**Résultats :** En tout, 69 questionnaires ont été remplis. Les chirurgiens généraux ont indiqué en majorité (95,7 %) que l'endoscopie constituait une importante technique à maîtriser, et plus de 85,5 % l'utilisent dans leur pratique. Presque la moitié (46,4 %) étaient toutefois d'avis que la formation actuelle en endoscopie en chirurgie générale au Canada ne peut produire des endoscopistes compétents. Les principaux thèmes qualitatifs que dégage le sondage portent sur la déficience de la formation en endoscopie que reçoivent actuellement les résidents (37,5 %) et sur le manque de normalisation de la formation (25,0 %).

**Conclusion :** On considère que l'endoscopie fait partie intégrante des pratiques universitaires et communautaires des chirurgiens généraux, mais on semble douter que la formation soit adéquate. Il faut structurer et normaliser la formation en endoscopie que reçoivent les résidents et insister davantage sur son enseignement.

Endoscopy is an integral component of the Canadian health care system in the diagnosis and treatment of gastrointestinal (GI) disease, particularly colorectal cancer (CRC). The demand for endoscopy has steadily increased,<sup>1</sup> and in 2012–13 more than 1.7 million GI endoscopic procedures were performed in Canada alone.<sup>2</sup> Endoscopic services in Canada are mainly delivered by general surgeons and gastroenterologists. General surgeons perform about 50% of all procedures.<sup>3,4</sup> Service delivery is disparate in Canada. Gastroenterologists almost exclusively provide endoscopic services in academic centres, whereas general surgeons provide the majority of these services at community sites.<sup>1,3,4</sup>

Recent reports have called into question the quality of endoscopy services in Canada. An editorial by Rabeneck,<sup>5</sup> the Vice President of Prevention and Cancer Control for Cancer Care Ontario (CCO), stated that overall, gastroenterologists are more competent at colonoscopy than other endoscopists, including general surgeons.

A competent endoscopist must be able to view the entirety of the colon, assess suspicious lesions and obtain pathology specimens while maximizing patient safety and comfort.<sup>6</sup> Competence has been defined as a greater than 90% success rate of cecal intubation in all cases (> 95% of screening colonoscopies).<sup>6</sup> To deliver high-quality endoscopy services, CCO guidelines published in 2014 recommend performance of a minimum of 200 colonoscopies per year before being granted access to the endosuite.<sup>7</sup>

The Canadian Association of General Surgeons (CAGS) is committed to providing quality endoscopic services and training across the entire country. We invited all general surgeons in Canada to provide their opinions as to the importance of endoscopy in general surgical practice today and to comment further on their competence as endoscopists, their own training and the competence of current trainees.

## METHODS

### Questionnaire

The questionnaire comprised 6 multiple-choice questions and 1 open discussion question. The questionnaire was designed and then pretested by members of the CAGS Executive ( $n = 6$ ) and revised accordingly.

### Survey design and population

The survey was attached in 2 consecutive monthly general surgery newsletters emailed to all CAGS members. Respondents had to click a link to the web-based version of the questionnaire. The survey was conducted between Dec. 1, 2013, and Feb. 1, 2014. To participate in the survey, respondents had to be active CAGS members with a valid email address.

### Qualitative data analysis

Qualitative survey responses were analyzed using grounded theory. Data were coded, written into memos and finally formulated into 4 themes.

## RESULTS

Sixty-nine surveys were completed and received over 8 weeks, for a response rate of less than 5%. We received 32 optional qualitative comments.

The largest respondent group was general surgeons practising for more than 10 years (56.5%), while the smallest group (7.6%) had practised for less than 1 year (Table 1). Surgeons practising for 1–5 years and 5–10 years made up 15.9% and 20.3% of respondents, respectively.

Surgeons practising in academic centres provided 40.6% of survey responses. All other responses (59.4%) were obtained from community-based surgeons serving populations ranging from fewer than 50 000 to more than 100 000 people. Community surgeons serving populations of fewer than 50 000 people made up the largest subset of community-based respondents (27.5%). Surgeons who served populations of between 50 000 and 100 000 people made up the smallest community-based subset (10.1%).

**Table 1. Quantitative survey responses**

Question	Response rate, %
How long have you been a practising general surgeon?	
< 1 yr	7.2
1–5 yr	15.9
5–10 yr	20.3
> 10 yr	56.5
What type of hospital do you serve?	
< 50 000 community hospital	27.5
50 000–100 000 community hospital	10.1
> 100 000 community hospital	21.7
Academic hospital	40.6
Do you think endoscopy is an important skill for today's general surgeon?	
Yes	95.7
No	4.3
Is endoscopy a part of your practice?	
Yes	85.5
No	14.5
Do you feel that you have received adequate training to be a competent, practising endoscopist?	
Yes	88.4
No	11.6
Do you feel that general surgery residents today receive adequate training to be a competent, practising endoscopist?	
Yes	53.6
No	46.4

Most surgeons (95.7%) believed that endoscopy is an important skill for general surgeons to possess. In addition, 85.5% of surgeons reported using endoscopy in their practices, with 88.4% feeling that they received adequate training during their residencies to perform competent endoscopy. However, nearly half the surgeons (46.4%) felt that current endoscopy training is inadequate to produce competent surgical endoscopists.

Four qualitative themes emerged from the survey. Illustrative comments of each theme can be found in Table 2. The most prevalent theme was that current postgraduate endoscopy training is inadequate and fails to consistently produce competent endoscopists (37.5%). The second theme showed that surgeons reported an absence of standardization in surgical endoscopy training (25.0%), citing variable endoscopy experiences across centres and the absence of a formal accreditation program as examples. Poor interest among surgery residents to become competent endoscopists was the third theme (15.6%). Finally, respondents also highlighted that limited access to the endoscopy suite (15.6%) affects resident learning experiences, as privileges are shared with gastroenterology.

**DISCUSSION**

Endoscopy has remained an essential component of general surgery for more than 3 decades.<sup>8</sup> The majority (95.7%) of surgeons in our survey considered endoscopy to be an important skill, and many (85.5%) still actively use endoscopy in their practices. Our results are similar

to those of previous studies that found that 89%–97% of general surgeons reported endoscopy as a necessary skill for practice.<sup>9,10</sup> Endoscopy is the fourth most common procedure performed by urban general surgeons and, on average, comprises 46% of all rural general surgery cases.<sup>11</sup> Considering the rapid expansion of endoscopic technology and growing indications for therapeutic intervention, endoscopy continues to be an active tool in general surgical practice and comprises a significant portion of procedural billings.

In our study 88.4% of surgeons believed that they had received adequate endoscopy training and could perform endoscopy competently. However, whether general surgeons are objectively competent endoscopists is controversial, and the data are mixed. Studies have reported that general surgeons have higher rates of missed CRC, are more likely to require the assistance of anesthesiologists for colonoscopy and incorrectly perform surveillance colonoscopy at shorter intervals than current guidelines recommend.<sup>12–17</sup> While the strength of these studies can be debated, the criticism toward general surgeons needs to be addressed, and this begins by critically analyzing general surgery residency training programs.

Surgical training has been criticized for its inability to adequately prepare surgical endoscopists for practice. Roughly half (47%) of the surgeons we surveyed reported that current postgraduate surgical endoscopy training is inadequate. This notion was also reinforced in 35% of the qualitative comments. Surgical residents themselves have previously indicated shortcomings in

Theme	Response rate, %	Representative comments
Current endoscopy training is inadequate	37.5	<p>“Three months of endoscopy as an R2 or R3 is inadequate.”</p> <p>“[Residents] feel that after their 1–2 month GI rotation in their PGY3 year they are capable endoscopists and fail to keep up their skills throughout their residency.”</p> <p>“Basic endoscopic skills are inadequate in new surgeons (...).”</p> <p>“Our residency training program has inadequate exposure to justify accreditation for endoscopy at the completion of training.”</p>
Absence of standardization	25.0	<p>“It seems that [training] is not standard across the country and certainly some centres are not providing the same amount of training.”</p> <p>“We should make sure our residents are surpassing well-defined quality standards prior to passing them.”</p> <p>“(...) there is a variable endoscopy experience for current surgical residents among the programs.”</p>
Poor resident interest	15.6	<p>“Those [students] motivated to learn and be competent are able to do so, while others probably do not reach adequate skill to perform quality colonoscopy.”</p> <p>“Major lack of interest in endoscopy.”</p>
Limited access to the endoscopy suite	15.6	<p>“Gastroenterology is restricting surgery residents opportunities to learn endoscopy.”</p> <p>“Unfortunately the turf war between GI and surgery is ever present.”</p> <p>“Gastroenterologists are reluctant to teach [endoscopic skills] to our surgical residents and are squeezing the rotations down to numbers of scopes, which they will soon be able to say that our residents did not do enough volume to be competent...”</p>

GI = gastrointestinal/gastroenterology; PGY = postgraduate year; R = residency.

surgical endoscopy training.<sup>18</sup> Most recently, an unpublished study by the CAGS Residents Committee found that 39% of graduating surgery residents in Canada felt unprepared to perform endoscopy because of inadequate training.

The most obvious explanation for the underpreparedness of general surgery residents is the lack of sufficient training time and exposure to endoscopy within residency training. General surgery residents generally receive approximately 0.5–4 months of formal endoscopy education during the second or third year of residency,<sup>1,10,19</sup> with additional, if somewhat limited, exposure throughout the remainder of their training. During this time, they are expected to achieve the minimum threshold number of colonoscopies (50) and upper GI endoscopies (35), as per the requirements of the American Board of Surgery.<sup>18</sup> On the other hand, gastroenterology fellows receive 18 months of formal training in endoscopy, with fellowship training programs requiring a minimum of 140 colonoscopies and 130 upper GI endoscopies for minimal competence.<sup>20</sup> Yet, even this threshold has been shown to be too low to achieve competence in colonoscopy, as Spier and colleagues<sup>20</sup> have shown that GI fellows need 500 cases to achieve competency thresholds. One Canadian study found that merely 17% of surgery residents were able to attain the minimum number of 140 colonoscopies required by the American Society for Gastrointestinal Endoscopy (ASGE).<sup>1</sup> Another study revealed that only 21% of surgical residents had performed more than 100 colonoscopies during their training.<sup>19</sup> Accordingly, surgical endoscopy training suffers from insufficient endoscopy volume.

Potential solutions exist. The introduction of a longitudinal endoscopy curriculum — one that encompasses the entire duration of a surgical residency program — may be a way to improve inadequate endoscopy exposure. For example, 4 years after the implementation of a dedicated longitudinal endoscopy training program, Morales and colleagues<sup>21</sup> were able to increase endoscopy procedural volumes nearly 10-fold, with graduating residents performing 161 endoscopies on average.

The Fundamentals of Endoscopic Surgery (FES) program created by the Society of American Gastrointestinal and Endoscopic Surgeons offers a promising option to introduce a quality standardized endoscopy training program. In conjunction with sufficient clinical experience within postgraduate training the FES program could prove to be an answer to the inconsistent numerical competency targets that currently drive endoscopy training.<sup>22,23</sup>

A lack of resident interest in endoscopy is another factor considered to be associated with inadequate endoscopy training. Similarly, Spier and colleagues<sup>18</sup> found that only 43% of residents from an urban tertiary

care hospital were considering using endoscopy in their practices following graduation. Interestingly, the argument has been raised that as general surgeons continue to subspecialize (e.g., aspiring breast and endocrine surgeons), it may not be necessary that all surgery residents receive training in endoscopy. In this case, residents choosing to specialize in areas where endoscopy is integral to their practices would have to complete an endoscopy training program and perform the minimum number of recommended endoscopies before graduating.

The absence of standardized endoscopy training programs in Canada may also explain poor endoscopy performance. No standards currently exist for surgical endoscopy training,<sup>22</sup> and in some cases a dedicated endoscopy curriculum has only been reported in 50% of residency programs.<sup>10,19</sup> A standardized certified endoscopic training curriculum from the Royal College of Physicians and Surgeons of Canada mandating completion by residents before completion of final certification exams is clearly needed.

Limited access to the endoscopy suite further exacerbates this issue and was identified by our survey as a potential problem. The proposed turf war over endoscopy resources between general surgery and gastroenterology has been documented in the past, with studies reporting that gastroenterology holds monopolies over endoscopy services at most tertiary centres.<sup>9,24</sup> Although the question of whether the turf war affects surgical endoscopy training is controversial, it is known that gastroenterologists provide training to surgical residents.<sup>10,25</sup> Therefore, it is important to not focus on a turf war, but rather work together among specialists to ensure the preparedness of all trainees for clinical practice.

### Limitations

Our study is not without limitations. First, our findings are limited by the subjective nature of our survey-based data. We did not carry out an official thematic analysis on qualitative survey data. We are also affected by poor response rate. While the exact number of active CAGS members is variable, achieving a response rate lower than 5% is not ideal. Low response rates can potentially lead to marked sampling bias, but studies have supported the validity of low-response survey studies.<sup>26</sup> Email could have been a poor vehicle for gathering survey results. As personal email volume increases it is often difficult to find time to complete a survey beyond regular duties. The response rate also raises the question of whether there is a lack of interest in endoscopy among general surgeons in Canada.

An opinion-based questionnaire submits itself to inherit biases. There is a natural tendency for the introduction of the “Lake Wobegon,” or above-average effect. In this case, surgeons seem to overestimate their own

abilities and downgrade the abilities of the trainee when they feel there is a comparison directly to themselves.<sup>27</sup>

Overall, further investigation into endoscopy training in Canada and how it may be improved is needed to ensure the quality of future endoscopy service in Canada.

## CONCLUSION

Endoscopy remains an important skill for general surgeons to possess, and current surgical endoscopy training needs to be readdressed. The absence of a standardized endoscopy curriculum, poor resident interest in endoscopy and limited access to the endoscopy suite contribute to the issue of inadequate endoscopy training for surgical trainees. Although both the training and competence of surgical endoscopy has previously been questioned, our study proposes and synthesizes novel ideas as to why surgical endoscopy training may be inadequate. As medical and surgical training moves toward competency-based training,<sup>23,28</sup> CAGS needs to be committed to efforts to ensure high-quality training in endoscopy.

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**Competing interests:** None declared.

**Contributors:** All authors designed the study. D. Skubleny and N. Switzer acquired the data, which N. Switzer analyzed. D. Skubleny and N. Switzer wrote the article, which all authors reviewed and approved for publication.

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