see this as being a Certification of Neurointraoperative Monitoring (or a Canadian equivalent when/if available) technologist placing electrodes, running the tests and providing an impression and a doctor or clinically trained doctoral-level neurophysiologist providing real-time interpretation to the surgeon (MRP). It is the surgeon's responsibility to decide what to do with the interpretation.

In our survey most surgeons did not want to provide interpretation of the data, and we believe most are not suitably trained or experienced to do so. Although our practice patterns differ from those in the United States it is worth noting that the American Medical Association (Policy H-410.957) states that IOM is the practice of medicine and that its interpretation requires a suitably trained individual (Policy H-35.971). The Canadian Medical Association does not have equivalent policies, but also does not define what is the practice of medicine.

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Endoscopy training in Canada in general surgery residency programs: ways forward

As former residency directors and endoscopists interested in teaching and quality improvement, we applaud the article written by Bradley and colleagues (DOI: 10.1503/cjs.008514) for their work on this topic. We agree that endoscopy training is an essential component of general surgical training and the challenges that they have put forward are achievable. We would like to offer potential solutions.

As noted by Bradley and colleagues, there is variability across the country in terms of resident exposure to endoscopy. Unfortunately, procedure volumes are not always recorded and quality outcome measures, such as colonoscopy completion rates and adenoma detection rates, are rarely tracked. This must change.

One method to record procedure volumes and quality outcomes data would be to use a synoptic reporting program that has been modified to account for resident involvement.

Some in the surgical community resist setting minimum endoscopy procedure volumes for trainees. A recent British study, which used a modified synoptic reporting system involving more than 36 000 patients and 297 trainees, found that only 41% of the trainees achieved a colonoscopy completion rate of 90% after 200 colonoscopies.[1] This result is consistent with the recommendation by Cancer Care Ontario of a minimum of 300 cases to achieve competency.[2] Given that a general surgical residency is 5 years long, we feel that this number is achievable through increased use of community surgery rotations.

Many of us were never taught how to teach flexible endoscopy aside from role modelling. To improve and standardize training, we feel that the Canadian Association of General Surgeons (CAGS)–sponsored Skills Enhancement for Endoscopy (SEE) program should be adopted. This program includes a Colonoscopy Skills Enhancement (CSE) course and a Train the Endoscopy Trainer (TET) course.[3] The CSE course improves skill in all aspects of colonoscopy. For example, in a recent randomized trial, endoscopists who took this course had a significant improvement in their adenoma detection rate.[4] The TET course is designed to improve teaching skills for endoscopists who teach endoscopy. We have taken both courses and firmly believe that they deliver on their objectives. Ideally, all faculty members who train residents in flexible endoscopy should take the CSE course, and at least 2 faculty members from each training program should become certified trainers. In the interim, senior surgical residents should also be required to take the CSE course.

To increase our trainees' exposure to emergent and therapeutic upper gastrointestinal endoscopy, we feel that there needs to be increased collaboration with the gastroenterology specialty. In many large teaching centres, surgeons are not involved in the management of emergency cases. The result is that many trainees to do not get adequate exposure to these cases. One approach to solving this problem is to have our trainees rotate through a gastroenterology consultation service with the expectation of participating in the daytime service as well as after-hours call.

It has been recognized that there is variation in the quality of endoscopy services across the country.[5] As our patients deserve high-quality endoscopy services, CAGS must play a central role in improving the training of our residents.

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Current use of live tissue training in trauma: a descriptive systematic review

I was pleased to read the article by da Luz and colleagues (DOI: 10.1503/cjs.014114) addressing the increasingly important and controversial issue of live tissue training (LTT) versus simulation-based medical training. The authors rightly acknowledged that the anatomic differences between animals and humans is a disadvantage of LTT, that LTT does not confer a "clear benefit" in improving providers' self-confidence when performing emergency procedures whereas manikin and patient experience does, and that simulators have been developed that "have already replaced some use of live animals in many areas of trauma training." Yet, da Luz and colleagues concluded that LTT cannot be fully replaced until "more realistic simulators" are developed, a statement not supported by the evidence in the paper or elsewhere.

For instance, a recent Canadian Forces Health Services study found that a human patient simulator is as effective as LTT at teaching traumatic injury management to military medical technicians.[1] Also, researchers at the University of Toronto conducted a study that found simulator-based trauma training was superior to animal-based training and that students and instructors overwhelmingly preferred the simulator-based training. As a result, the researchers ended animal use in their trauma program, stating that they "could not justify identifying animals as the only suitable source for providing the necessary training in [their] ethics application for renewal."[2]

Similarly, last year the United States military found that a human simulator teaches trauma skills as well as LTT and concluded that "if the goal for trainers is to produce individuals with high self-efficacy, artificial simulation is an adequate modality compared with the historical standard of live animal models."[3] In a related commentary, one of the authors noted, "we have entered into an age where artificial simulator models are at least equivalent to, if not superior to, animal models. …. [T]he military should make the move away from all animal simulation when effective equivalent artificial simulators exist for a specific task. For emergency procedures, this day has arrived."[4]

There are ethical, educational and economical advantages to ending LTT in favour of simulators for teaching trauma skills. It's time to follow the evidence where it leads and replace the use of animals in medical training.

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Current use of live tissue training in trauma: a descriptive systematic review — author response

We thank Dr. Green for the insightful comments on our manuscript, which reviews the current evidence on the use of live tissue for trauma training.

We agree with Dr. Green that "there are ethical, educational and economic advantages to ending [live tissue training (LTT)] in favour of simulators for teaching trauma skills." We also support the idea that "simulation should replace LTT where it leads the use of animals in medical training." However, the conclusion that simulation is clearly superior to LTT across the spectrum of surgical trauma training based on the current literature may be disputed by some. While less complex surgical procedures conducted in the Advanced Trauma Life Support (ATLS) course[1] were replaced by simulation devices, in the Acute Trauma Operative Management (ATOM)[2] course LTT is still essential for teaching complex surgical procedures and manoeuvres. In the study mentioned in Dr. Green's letter, a pilot randomized controlled trial of simulation and