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Title	Emergency general surgery inter-hospital variability of structures, processes and models of care in Ontario: a cross-sectional survey
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Reviewer 1	Dr. Mohamad Hussain
Institution	Brigham and Women's Hospital
General comments (author response in bold)	In a cross-sectional survey of 109/114 of adult acute care hospitals in the Ontario, the authors found that established EGS (emergency general surgery) processes of care varied significantly between hospitals, and those with EGS processes had greater access to resources to care for EGS patients. In the spirit of peer-review, I have a few comments/questions for the authors about their study: 1) Can the authors define EGS for the readers? Is it a collection of generally accepted diagnoses, procedures, or case urgency/severity? **The first sentence in paragraph 2, page 3 has been reworded to clarify the definition of EGS.** 2) The authors mentioned volume-outcome relationship as one potential justification for regionalization of EGS care. I assume many EGS procedures are low risk (i.e. standard appendectomy, cholecystectomy, etc.), outcomes of which are not impacted by volume. Can the authors further comment on which types of patients/procedures could benefit from referral to a system-based EGS centre vs. treatment at a low volume hospital? **On page 12, paragraph 2, we cite several studies that have shown that there is a volume-outcome relationship for EGS procedures, even those that are low risk. We further cite a study that shows that elderly patients are at especially high-risk when treated by low-volume surgeons. We have added to the next sentence to explain that elderly and medically comorbid patients are specific examples of patients who may benefit from EGS models of care.** 3) Could the authors comment on the financial challenges/requirements to establish and maintain EGS process-based care? **On paragraph 3, page 4, we reference 2 studies that have demonstrated a decreased cost associated with EGS models of care. Anantha et al demonstrated the decreased system cost due to more procedures taking place during the daytime vs night. Cubas et al reported for appendicitis and cholecystitis, that EGS models of care decrease complications and length of stay. From our literature review, these were the only studies that assessed the question of cost benefits of EGS models of care. We have been unable to find a paper describing the cost associated with establishing EGS models of care for a hospital.** 4) Is there is a role for quality databases (such as NSQIP) to record & track outcomes of patients treated at EGS centres to determine if they are experiencing better outcomes? **We feel strongly that there is a role for this. Comparing these outcomes for EGS vs non-EGS hospitals and between them based on their specific resources is the next step of this project.**
Reviewer 2	Dr. David Pichora

Institution	Queen's University, Kingston Health Sciences Centre
General comments (author response in bold)	The premise is interesting but the data derived from the survey does little to inform surgeons, hospital leadership, or healthcare system leaders of the relative impact of the structural elements you have defined. A key challenge is the absence of a robust definition for EGS models of care. This is only defined in the appended survey tool. I find this definition rather vague to guide objective evaluation: An EGS model of care is defined as an organizational structure that provides protected time for surgeons to focus on the care of patients with surgical emergencies as well specific structures and processes designed to improve the care of patients with general surgical emergencies. **The first sentence in paragraph 2, page 3 has been reworded to clarify the definition of EGS.** Who was the respondent type at the various hospitals? **Table 1 has been added to address this.** How robust and reliable is their determination that their hospital qualifies as having an EGS Model of Care? How do you account for selection bias and quality of reporting in the respondents? It is essential that you specifically address this in the intro and discussion sections? **All respondents were identified and contacted because we believed they would have an in-depth knowledge of their hospitals structures and processes that relate to the care of EGS patients. The vast majority were chiefs of general surgery, chiefs of surgery and general surgeons who participated in the call schedule. We feel that these individuals are ideally positioned to assess whether their hospital qualifies as having an EGS model of care.** **We recognize this as a limitation of this study is that it relies on the reporting of one individual at each institution. We have added to the limitations section on page 10, paragraph 3 to address this.** What are the specific elements and their relative importance to an EGS Model of Care? **As described on page 5, paragraph 3, the specific elements of an EGS model of care were captured in our survey and are i) organizational structure and staffing; ii) operating room availability; iii) interventional radiology and interventional endoscopy availability; iv) ICU availability and staffing; and v) regional participation.** What is the evidence to support better value – cost and quality—for EGS Models of Care. **This literature is summarized in paragraph 2 on page 3. There is significant evidence that EGS models of care improve the quality of patient care. On paragraph 3, page 4, we reference 2 studies that have demonstrated a decreased cost associated with EGS care. Anantha et al demonstrated the decreased system cost of formal EGS procedures due to more procedures taking place during the daytime vs night. Cubas et al reported for appendicitis and cholecystitis, that EGS models of care decrease complications and length of stay.** Why did you pick the surgeon and hospital elements included in the survey.

	The specific elements in the survey were selected based on literature review of factors that affect outcomes for EGS patients as well as our own institutional experience. What is the evidence for this survey tool's validity? **Our aim with this survey is to categorize the important variables that relate to EGS models of care. By carefully selecting individuals with intimate knowledge of their institutions relevant structures/processes we hope to maximize the validity of this data.** How does each element rank in importance to an EGS Model of Care? **This is an important question and future direction of this study.** What next steps are the authors planning? How will this lead to outcomes that improve quality and cost for patients, hospitals, and the system? **This database of EGS-specific structures and processes of care will be linked at ICES to evaluate the association between EGS models of care and its components to the outcomes of patients with EGS conditions at a population-based level.** How frequently did you allocate a 'No' response and does this bias the results? **Responses left blank are no longer reported as no. Table 2 and the corresponding text has been adjusted to reflect this.** Why is it better to have more surgeons participating in a hospital's call schedule? Might not a core group of high volume EGS Surgeons provide better quality and consistency? **We don't know if the proportion of surgeons participating in the call schedule will have any effect, positively or negatively, on quality. At this stage, we only aimed to collect the data so that in our future directions we can compare this to outcome data. We agree with the reviewer that a core group of dedicated surgeons will lead to higher volume/per surgeon and likely better outcomes.** What if low volume hospitals could implement an EGS Model? Would this bring up their quality to match high volume centers? **This is a very interesting question that we aim to address in future work. Volume alone is likely just a proxy for all the structures and processes that are created at high volume hospitals. Implementation of EGS models of care will lead to standardization of processes, access to the required resources, and improved flow to higher level centres if required.** How will the results of your survey impact how surgeons practice? How hospitals organize their resources? Or how the health system is designed? **Organization of EGS care in Canada is decades behind other acute conditions such as trauma and stroke. In stark contrast to the care of injured patients, which has undergone decades of rigorous research, protocol standardization, and regionalization at the pre-hospital, hospital, and regional-levels, current EGS models of care have been established ad hoc at most hospitals and care of EGS patients has remained largely in the purview**

	of the on-call general surgeon. Currently, where EGS patients receive care is based on geographic proximity to a hospital and not on patient or disease factors, or capabilities of the closest hospital. This is the first step towards characterizing what resources are available and what variability exists across the province. This survey will be the foundation of population-based work that will attempt to identify which structures and/or processes are associated with improved outcomes.