Identifying and Addressing High Priority Issues in General Surgery Training and Education

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BACKGROUND: Complex problems are often easier to address when multiple entities collaborate. The Procedural Learning and Safety Collaborative (PLSC) was established to address complex problems in general surgery residency training by connectively engaging multiple residency programs in addressing progressive research questions.

STUDY DESIGN: Recently, PLSC members held a national symposium which included leadership from several leading surgical societies to come to a consensus on what are the most critical issues in general surgery education.

RESULTS: This paper describes the process used and the end result of this process. This paper describes the process used and the end result of this process. (J Surg Ed 76:50–54. © 2018 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: Education, Research, Surgery, Collaboration

COMPETENCIES: Patient Care, Medical Knowledge, Professionalism, Interpersonal and Communication Skills, Practice-Based Learning and Improvement, Systems-Based Practice

BACKGROUND

Surgeons must be trained adequately so that they can safely and effectively provide care for patients with surgical problems. The past decade has seen growing concern that not all graduating surgeons have achieved that goal.[1-7] These concerns may reflect the potential negative impact of several changes in health care including resident duty hour limitations, increased prioritization of faculty Relative Value Unit (RVU) generation, and increased medico-legal pressures and associated reductions in trainee autonomy.[8,9] Ultimately, the surgical educational system must be updated to address these challenges and to ensure that graduating surgical trainees are capable of safely entering independent surgical practice.

The PLSC is a nonprofit research consortium focused on investigating and developing tools, curriculum, and policy to improve the training of surgical and other procedural physicians.[10-14] PLSC was founded in 2014 by several university-based General Surgery training programs with the intent of creating an ongoing multi-institutional collaboration that could address the biggest issues in surgical training. Early efforts focused on developing an effective method to assess and provide feedback about the operative performance of surgical trainees. The consortium subsequently used that outcomes data to examine the level of competency achieved by graduating surgical trainees.[15-19] Most recently and in collaboration with national regulators, consortium members are focused on research that can be used to update existing training policies. Currently PLSC members come from 35 training programs which include multiple surgical subspecialties.

On 22 January, 2018, the PLSC in collaboration with the American Board of Surgery, Accreditation Council for Graduate Medical Education, Residency Review Committee for Surgery, and Association of Program Directors for Surgery convened a national symposium at O'Hare International Airport in Chicago, Illinois. The purpose of this 1 day meeting was to establish consensus on the highest priority research questions for multi-institutional

This symposium was co-hosted by Procedural Learning and Safety Collaborative (PLSC), The American Board of Surgery (ABS), Accreditation Council for Graduate Medical Education (ACGME), Residency Review Committee for Surgery (RRC Surgery), and Association of Program Directors for Surgery (APDS).

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research in general surgery resident education. This consensus could then be used as a roadmap for the collaborative research efforts of large research consortium such as PLSC.

METHODS

Research questions were selected and prioritized using a methodology based on the SEaRCH research expert panel process.[20] Two weeks prior to the meeting, all participants were sent the list of 40 surgical education research questions previously generated by Stefanidis et al.[21] in 2015. Every participant selected and ranked at least 6 questions based on their perceptions of their importance. Participants were also given the opportunity to write in any additional high priority issues that were not included in the list provided. A priority list was generated based on the 12 highest ranked questions from the survey plus all additional write-in questions created by the survey participants.

During the symposium, participants were invited to discuss any of the highest ranked 12 questions. Authors of write-in questions were also individually invited to comment, with time also allotted for discussion of those additional items. After this period of discussion, the participants again ranked the questions, choosing the 6 they deemed highest priority.

Participants were then assigned to 1 of 6 groups, where each group was assigned 1 of the high priority issues identified in the previous round of ranking. Each group was then sequestered for 2 hours to formulate a research plan that would best serve to address the issue. After the 2 hours, each group returned to the main meeting room where they each presented their research proposal to the entire group using a standardized format. All participants then individually ranked the 6 research proposals to generate a final rank list. Finally, all participants were invited to further develop any of the final 6 proposals as part of working groups established for that purpose.

RESULTS

Initial survey responses were provided by 33 of the 41 invited participants. The initial rank list included 18 issues—the top 12 questions from the Stefanidis paper plus an additional 6 write-in questions (Fig. 1a and b). The 6 questions deemed the highest priority after the second round of ranking are shown in Fig. 2a The final ranking after each group presented their proposal for addressing their assigned question is shown in Fig. 2b.

DISCUSSION

There is a clear need for increased research in graduate medical education.[22] Research activity in surgical education is growing but the majority of work represents single-center studies with a narrow focus and limited generalizability. Furthermore, most studies are "one-offs," not performed with the intent of building on a common, broadly focused theme with serial inter-related studies. Finally surgical education research has limited access to funding which can be a major impediment in seeking answers to more complex questions.

Multicenter collaboration provides the benefits of improved power and generalizability. Unfortunately most multicenter studies are also performed as "one-offs." Valuable data generated by these studies are not often used to guide follow-up studies that will address the questions generated or left unanswered by the initial study.

We believe an ongoing multicenter collaboration can most effectively pursue the most important questions in graduate surgical education. An ongoing collaboration benefits research efforts by: (1) incorporating expertise from multiple programs, (2) providing access to high volume, multicenter data, and (3) providing access to resources from multiple centers thereby reducing the burden on individual programs. The work of such multicenter collaborations is greatly facilitated by consensus regarding which research questions should be pursued. To help ensure broad consensus, it is also important to include national surgical leadership in the planning process. We believe that the PLSC symposium has achieved those goals.

There are some limitations of the approach described here. First, some issues selected in the process were similar to others (e.g., RQ3 and RQ6). Second, although the feasibility of the proposed studies was discussed, it was not a major determinant in the ranking of priority issues. Third, the primary results of this work are research questions and not well-defined proposals or hypotheses. While the final phase of the symposium was intended to initiate the process of developing specific research aims and/or questions to address the top 6 issues, the majority of that work was relegated to postsymposium working groups.

The goal of future working groups should be to develop a long-term strategy to address the highest priority questions. This may require a succession of closely linked studies. These studies should be designed to generate the data necessary to methodically answer the critical questions identified in this symposium. This process will ultimately improve our ability to consistently train competent surgeons.

(a)

#1) (1) What are the performance criteria a resident has to meet to be considered competent and before independent practice is allowed?

#2) (2) Which are the best methods to assess resident performance and competence (intraoperative and clinical, procedural and cognitive)?

#3) (3) What are the best milestones and assessment methods to determine if a resident should be promoted to the next PGY year?

#4) (4) What are the most effective methods to improve faculty teaching ability and promote interest in teaching?

#5) (6) Which is the best method to identify and remediate residents with poor cognitive, technical, or behavioral skills?

#6) (26) How do residents impact the safety, quality, efficiency, and costs of surgical services within their hospitals?

#7) (7) What is the optimal method to provide intraoperative teaching and feedback to residents and how is it best assessed?

#8) (9) What are the most common/important deficiencies in the training of surgery residents and fellows?

#9) (33) Would a gradual transition of residents to independent practice after training improve patient outcomes?

#10) (31) Is the apprenticeship model of surgical training more effective than the traditional team-based model in improving resident knowledge, judgement, and technical skill?

#11) (5) What is the level of perceived and actual readiness of graduating residents for independent practice?

#12) (20) What are the key procedural steps of currently taught operations based on consensus and can we use them to effectively improve resident learning of these operations?

(b)

1) How can evidence-based, effective curriculum strategies best be incorporated into surgical training programs?

2) How can rotations be sequenced most effectively to achieve good learning outcomes while maintaining quality of care?

3) Is the current structure of MOC effective in maximizing surgeon skill maintenance and improving patient safety?

4) Are process measures of operative performance related to outcomes (complications, mortality, length of stay, etc)?

5) What faculty development tools (including educational materials regarding Medicare billing rules and ACGME supervision requirements) can be developed to enhance APPROPRIATE resident supervision?

6) How do we better train and assess residents in non-technical skills such as teamwork, leadership, communication, situation awareness, and decision-making?

FIGURE 1. (a) Top 12 surgical education research issues as determined by presymposium survey of all invited participants after review of all research questions listed in Stefanidis et al.[20] (b) Additional write-in issues added via survey or verbally during symposium.

(a)

- RQ1- What are the performance criteria a resident has to meet to be considered competent before independent practice is allowed?
- RQ2- Which are the best methods to assess resident performance and competence (intraoperative and clinical procedural and cognitive)?
- RQ3- What are the most effective methods to improve faculty teaching ability and promote interest in teaching?
- RQ4- What is a competent Surgeon?
- RQ5- How do surgical residents impact the safety, quality, efficiency, and cost of surgical services within their hospitals?
- RQ6- What faculty development tools can be developed to enhance appropriate resident supervision?

(b)

- #1) RQ6- What faculty development tools can be developed to enhance appropriate resident supervision?
- #2) RQ5- How do surgical residents impact the safety, quality, efficiency, and cost of surgical services within their hospitals?
- #3) RQ4- What is a competent Surgeon?
- #4) RQ2- Which are the best methods to assess resident performance and competence (intraoperative and clinical procedural and cognitive)?
- #5) RQ3- What are the most effective methods to improve faculty teaching ability and promote interest in teaching?
- #6) RQ1- What are the performance criteria a resident has to meet to be considered competent before independent practice is allowed?

FIGURE 2. (a) Top 6 issues after voting by symposium participants. (b) Final ranking of top 6 issues after presentation of item-specific research proposals.

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SUPPLEMENTARY INFORMATION

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