Surgical Education Research: An IDEAL Proposition

To the Editor:

Since the publication of Richard Horton's contentious commentary in The Lancet in 1996 likening surgical research to comic opera, much progress has been made with respect to the development of a coherent and methodologically appropriate standard for the conduct of surgical research studies. In September 2009, the publication of the IDEAL framework, designed and developed by methodologists, surgeons, trialists, and evidence-based medicine experts, intends to assist in the assessment of surgical innovation. Taking a page from the book of drug development trials, the Balliol Colloquium (as they called themselves) defined 5 stages of surgical innovation: innovation, development, exploration, assessment, and long-term. Each stage has a set of recommendations on how evaluation should be conducted, for example, research question, aim, patient base, and optimal study design. Common items for agreed standard definitions are also listed, such as grading of patient risk factors, scale of surgical insult, and scope and severity of complications. The bold claim was to “...transform the current liberal approach of surgical innovation into a structured process based on the scientific principles of evidence-based healthcare.”

A contributor to the IDEAL framework is senior author for 3 systematic reviews of the literature with respect to the innovation of surgical simulation, published within this Journal. The first in 2006 sought to compare 30 randomized controlled trials (RCTs) comprising 760 participants with respect to the effectiveness of surgical simulation. The quality of the RCTs was often poor, with resultant vague conclusions for the review. A further review published in 2008, and updated just this year, considered RCTs, which reported on skill transfer to the clinical environment after simulation-based training. Both reviews suggested the transfer of skills, though only 10% of subjects were decay in these scores, indicating maintenance toward high quality multi-center studies, design and implementation of training and assessment strategies. The needle needs to move toward high quality multi-center studies, designed in a prospective manner, with outcome measures of relevance to clinicians, patients, institutions and the wider society. The design must consider future work with implementation scientists, policy makers, clinical staff and patients, to ensure widespread and definitive impact upon patient care. Rather than stifle innovation, a structured and scientifically rigorous framework can encourage an iterative process of research and development in surgical education, which has a defined pathway for clinical implementation.

Cook (another IDEAL co-author) offers a useful classification for surgical RCTs, ie, exploratory for the early assessment of new trials, explanatory to assess the intervention in favorable conditions, and pragmatic to inform clinical decision making through evaluation of the intervention in a realistic clinical setting. Whilst Cook focuses upon describing RCTs, in the context of surgical education trials those described by Arriaga et al and Arora et al would be considered exploratory in nature. High-quality RCTs to

 Disclosure: The author declares no conflict of interest in this manuscript, including financial, consult, institutional, and other relationships that might lead to bias or a conflict of interest.

Copyright © 2014 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 0003-4932/14/26102-e055
DOI: 10.1097/SLA.0000000000000681

LETTER TO THE EDITOR

Copyright © 2014 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.
assess the impact of simulation for surgical skills training would be an example of explanatory trials. Pragmatic RCTs are more difficult to perform, and absent in the surgical education literature.

It is notable that neither of the aforementioned studies on central venous catheter insertion or team training were prospective RCTs, though have had an important impact upon clinical care. Arriaga et al. rightly contest that high-reliability industries such as aviation and nuclear power have incorporated simulation into their practice without definitive evidence to prove its effect. Whilst factually correct, it is not the overall assertion that simulation is not a good idea for surgeons and their patients. The statement by Champion and Gallagher in 2003 that ‘bad science in the field of medical simulation is all too common’ is unlikely true today, but there is more work to be done.

We need to take a page from the IDEAL framework to develop a strategy, structure and definitions to assist in the undertaking of high quality surgical education research. A simple start point might be to suggest that the educational idea should have a specific goal, which through development and exploration can be shown to be efficacious in terms of learner and patient-level outcomes. The educational intervention should then undergo rigorous assessment in comparison to traditional learning strategies, which is further validated and potentially refined through long-term study of clinically relevant outcome measures.

This model would serve to take surgical education research to the next level in terms of its quality and impact. Not only would this benefit scientists working in this field, but also assist researchers who are not cognizant of the subject matter to accurately appraise its scientific quality. Funding bodies and agencies would be more confident of the nature and potential impact of proposed research trials. Such a strategy would engage surgical educationalists to effectively collaborate with relevant technology developers, trial methodologists, outcomes analysts, patient safety specialists, health economists, and implementation scientists in search of a common goal—how to assess and implement innovation in surgical education. This process can enable institutions, regulatory bodies, policy makers and society to confidently appraise the value of surgical education to improve care for all surgical patients.

Rajesh Aggarwal, MD, PhD, MA, FRCS
Department of Surgery
University of Pennsylvania
Philadelphia, PA
rajesh.aggarwal@uphs.upenn.edu

REFERENCES


Copyright © 2014 Wolters Kluwer Health, Inc. Unauthorized reproduction of this article is prohibited.
to an appropriate range of complexity of clinical problems and skills. Such education and training can be offered if the will and data are made available. The model proposed by Aggarwal deserves consideration.

Guy Maddern, MBBS, MS, MD, PhD FRACS
The Queen Elizabeth Hospital
University of Adelaide Discipline of Surgery
Woodville, South Australia
guy.maddern@adelaide.edu.au

REFERENCES
