Implementation Science in Perioperative Care

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KEYWORDS

• Implementation science • Evidence-based practice • Evidence-practice gap
• Perioperative research

KEY POINTS

- The field of implementation science (IS) aims to routinize the use of evidence-based practice, narrowing the gap between evidence and real-world practice. The goal of IS is to produce generalizable knowledge to promote health through the uptake, and effective use of evidence-based practices.
- IS relies on the presence of interventions that have been studied and that have proven efficacy and effectiveness (ie, evidence-based practices).
- The use of the theories and frameworks helps guide the selection of implementation outcomes and strategies, and is essential in IS research.
- Hybrid effectiveness-implementation trials are one strategy to apply IS principles to the study of interventions with limited evidence of efficacy.
- Multiple perioperative care interventions have shown both evidence of improvements in patient outcomes and incomplete uptake and adherence (ie, an evidence-practice gap).

INTRODUCTION

There is a 17-year gap between the initial publication of scientific evidence and its uptake into widespread practice in health care.[1] This gap translates into lives lost, as well as potential waste of health care resources and unnecessary expense. The field of

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implementation science (IS) emerged in the 1990s as an answer to this what has been termed an "evidence-to-practice gap."[2] The field of IS emerged as a way to systematically study the process of translating evidence into practice.

In this article, we present an overview of implementation science, focusing on the application of IS principles to perioperative care. We also describe opportunities for additional training and discuss strategies for funding and publishing IS work. The objective of this discussion, much like other discipline-specific overviews of IS,[3–5] is to demonstrate the potential value of IS approaches in one area: perioperative care. In so doing, we hope to demonstrate how IS can improve perioperative patient care, while highlighting perioperative IS studies and identifying areas in need of additional investigation.

WHAT IS IMPLEMENTATION SCIENCE?

In the inaugural issue of the flagship journal for the field, *Implementation Science*, Eccles and Mittman[6] offer the following definition of IS: "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care." More recently, experts in IS have recommended that it include the concept of "de-implementation," or the discontinuation of practices known not to be effective.[7] Implementation is part of the spectrum of dissemination and implementation described by Rogers.[8] For the purposes of this discussion, we use the term "implementation science"; another term for the same area of study is "knowledge translation," primarily used in Canada.[9]

IS is complementary to, but distinct from, research focused on clinical efficacy and effectiveness. Studies of intervention efficacy (the degree to which an intervention works in an idealized research setting) and effectiveness (the degree to which an intervention works in the "real world") address the question: "*Does this intervention achieve the expected change(s) in health outcomes?*" In contrast, studies of implementation address questions such as "*Is the intervention being used?*" "*Are the procedures used to deliver the intervention being followed?*" and "*Can one particular strategy increase use of evidence-based practice compared with another strategy?*" These different questions make clear that effectiveness outcomes and implementation outcomes *are not the same*. Proctor and colleagues[10] published a model explaining the relationship between implementation outcomes, process outcomes, and patient outcomes. In the Proctor model, implementation outcomes influence process ("service") outcomes, which in turn influence patient ("client") outcomes. The National Academy of Medicine (formerly the Institute of Medicine) envisions IS as a key component of learning health care systems designed to iteratively develop innovations to deliver high-quality patient-centered care and to evaluate the effectiveness of this care.[11] Indeed, IS is central to addressing the "quality chasm" identified by the Institute of Medicine in 2001.[12]

HOW MIGHT IMPLEMENTATION SCIENCE ADVANCE OUR UNDERSTANDING OF PERIOPERATIVE CARE?

Implementation science is an interdisciplinary field broadly relevant to health and health care, and has been used in settings as distinct as mental, community, and public health.[13] In contrast, there are fewer IS studies relating to perioperative care. In this section, we discuss the potential for IS to facilitate the uptake and effective use of evidence-based perioperative interventions. We then highlight several perioperative studies using implementation science principles. For the