

Emergency Manuals

How Quality Improvement and Implementation Science Can Enable Better Perioperative Management During Crises



Sara N. Goldhaber-Fiebert, MD^{a,*}, Carl Macrae, PhD^b

KEYWORDS

- Emergency manual • Cognitive aid • Crisis checklist • Patient safety
- Interprofessional team • Implementation science • Quality improvement
- Improvement science

KEY POINTS

- Concepts from quality improvement, implementation science, and improvement research are presented within the context of emergency manual implementation as a nascent area of successful patient safety innovation.
- Stress can cause well-trained professionals, in diverse safety-critical industries, to omit key steps and diverge from optimal management.
- Emergency manuals are tools that can help good teams to perform even better during rare critical events, with widespread dissemination and rising interest in their clinical use.
- The Emergency Manuals Implementation Collaborative (EMIC) provides a central repository for implementation and training resources, links to cost-free downloadable tools from multiple groups, and more at www.emergencymanuals.org.

DEFINING THE PROBLEM

For many rare operating room (OR) crises, such as cardiac arrest, malignant hyperthermia (MH), or local anesthetic systemic toxicity, there are stacks of published literature on optimal management. Yet, even expert clinicians often omit or delay key actions, with detrimental impacts on patient morbidity and mortality.¹ In multiple simulation-based

Disclosure Statement: The authors have nothing to disclose.

^a Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, 300 Pasteur Drive, Room H3580, Stanford, CA 94305-5640, USA; ^b Department of Experimental Psychology, University of Oxford, Tinbergen Building, 9 South Parks Road, Oxford OX1 3UD, UK

* Corresponding author.

E-mail address: saragf@stanford.edu

Anesthesiology Clin 36 (2018) 45–62
<https://doi.org/10.1016/j.anclin.2017.10.003>

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studies, correct performance of key actions during crises dramatically increased when emergency manuals (EMs), crisis checklists, or cognitive aids were used.²⁻⁴

This article examines how the principles of implementation science and quality improvement have been applied in the development, testing, and systematic implementation of EMs in perioperative care. We present evidence from simulation-based OR studies; reflect on related experiences in other safety-critical industries, such as aviation; and describe a conceptual framework for implementation along with data from early clinical uses and implementation efforts. We also explore the practical, organizational, and social processes that influence implementation, and conclude with reflections on the future role of EM implementation as a model for other quality improvement and implementation science efforts.

TERMINOLOGY

EMs are context-relevant sets of cognitive aids, such as crisis checklists, that are intended to provide professionals with key information for managing rare emergency events. Synonyms and related terms include crisis checklists; emergency checklists; and cognitive aids, a much broader term, although often also used to describe tools for use during emergency events specifically.

Throughout this article we use the term “emergency manual,” except when referring generically to any of these as tools or when describing a specific study with its own terminology. However, the previously mentioned synonyms could be used interchangeably.

ENABLING TOOLS

EMs are intended as educational and clinical tools. They represent highly condensed repositories of practical knowledge that must be carefully designed and that require training to enable rapid use under conditions of significant pressure. EMs also seek to facilitate effective teamwork and decision making within the collective practice of health care professionals.

EMs are intended to be symbiotic adjuncts with, rather than replacements for, good preparation, teamwork, and judgment, and EM use should never precede necessary immediate actions, such as chest compressions for a pulseless patient. Their intended use begins only once resources allow; either sufficient help is available for synchronous use from the beginning of a crisis, or initial clinical actions are already underway.

Fig. 1 shows EMs being used during simulated critical events.

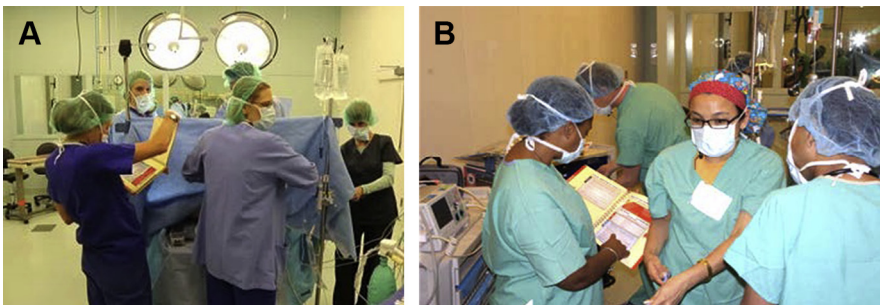


Fig. 1. Emergency manual use by anesthesiologists during simulated critical events. (A) In resident course on Anesthesia Crisis Resource Management at Stanford University School of Medicine. (B) In simulation instructor course at Stanford University School of Medicine. ([A] Courtesy of D. Gaba, with permission; [B] S. Goldhaber-Fiebert, with permission.)

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