

Using Emergency Manuals in the OR: What is the Evidence and How to Be Most Effective

2017

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Dr. Alan Jay Schwartz: Hello. This is Alan Jay Schwartz, Editor-in-Chief of the American Society of Anesthesiologists' 2017 *Refresher Courses in Anesthesiology*, the latest research and educational findings. The focus of the *Refresher Courses in Anesthesiology*'s CME program and the modules featured is to educate learners on current developments in the science and clinical practice of the specialty of anesthesiology. Returning for a second year, we will be speaking directly with individual authors to learn about their expertise, perspective and insight regarding the featured module.

Today, we are pleased to present the following one-on-one conversation with fellow *Refresher Courses in Anesthesiology* editor Dr. Samuel Wald and author Dr. Sara Goldhaber-Fiebert. They will be highlighting the module titled, "Using Emergency Manuals in the Operating Room: What is the Evidence and How to Be Most Effective."

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Dr. Samuel Wald: Hello. Today we're lucky to have Dr. Sara Goldhaber-Fiebert with us to talk about using emergency manuals in the OR: what is the evidence, and how to be most effective. Dr. Goldhaber-Fiebert is a Clinical Associate Professor in the Department of Anesthesiology, Perioperative and Pain Medicine at Stanford University School of Medicine, and she'll be talking to us about evidence from safety-critical industries, human factors that are involved in avoiding a crisis

event, and how to manage a crisis. She'll – also talking about a manual that helps with crisis management and how to implement it. Dr. Goldhaber-Fiebert, I'll turn it over to you.

Dr. Sara Goldhaber-Fiebert: Thanks, Dr. Wald. So, the big question we were trying to address here is, how can we help our teams to manage critical events more effectively? This Refresher Course focuses on first recognizing common gaps in performance during perioperative crises, and then understanding why and how recently-available tools can be harnessed to improve our performance.

Emergency manuals are context-relevant sets of cognitive aids for critical events, in this case for perioperative or procedural settings, and are also commonly known as crisis checklists or emergency checklists, both synonyms for these types of tools. The Refresher Course contains a summary of the known evidence on emergency manuals from simulation-based operating room studies and from pertinent use in other safety-critical industries like aviation and nuclear power, a conceptual framework for clinical implementation, and data from early clinical implementations and uses.

So, first, to look at what is the need, the stress of critical events often causes well-trained professionals to omit key steps or otherwise diverge unintentionally from known best practices. This has been shown well in healthcare as well as in aviation, nuclear power, and other safety-critical industries. As an example, a 2013 *New England Journal of Medicine* simulation-based study of experienced Harvard teams showed nearly a 75% reduction in omission of key steps during operating room critical events when they used crisis checklists versus not. As more healthcare leaders and clinicians become aware of the need, there is rising interest in tools to help good teams to perform even better during rare critical events.

Secondly, in response to this need, multiple groups developed helpful tools, and the Emergency Manuals Implementation Collaborative, or EMIC, formed five years ago, providing a central repository for implementation and training resources as well as links to cost-free downloadable tools and published literature, including rationale for multiple industries. You can find all these from www.emergencymanuals.org.

So, there's been widespread interest in dissemination, with combined downloads of tools linked from the EMIC website surpassing 80,000 for English versions now. Many users said they then shared the tool with numerous colleagues at their local institutions, and there have been hundreds of thousands more downloads for translated versions globally, all implying much broader dissemination. And yet, clinical implementation and use is nascent, as the free tools have only been disseminated for five years, and downloading an emergency manual is only a first step.

So, thirdly, we come to important implementation caveats. Many local champions initially just printed out an emergency manual and placed it in each operating room, given they correctly recognized that having an accessible tool in appropriate clinical settings was necessary. However, "print and plunk," as past ASA president Alex Hannenberg has referred to this method, is clearly insufficient without additional efforts.

So, fourthly, we come to, what does work for effective implementation? There have been only a few published studies to date of clinical implementation and use, with more mixed methods studies needed, but common initial themes include the following: the importance of emergency manual familiarity among clinicians for format as well as why and how to use these tools; interactions between local safety culture and implementation process; the value of interprofessional immersive trainings, which can be low-tech simulations using screen-based vitals and role-plays of scenarios or higher-fidelity full-team and

mannequin-based scenarios; the need for someone on the team to suggest or trigger use; the helpfulness of a reader role when resources allow; and the potential for emergency manuals to improve team communication during crises.

As an example, in a 2016 anesthesia and analgesia study, Stanford residents were surveyed before and 15 months after clinical launch of an emergency manual. Forty-five percent of respondents had used an emergency manual during a clinical critical event, showing significant use for these rare events. The vast majority of users said the emergency manual helped their teams deliver better care to their patient, and when asked explicitly none said that it hurt or distracted from care. Importantly for those considering implementation, the proportion of residents that felt the local OR culture supported appropriate use of cognitive aids increased from about half pre-launch to almost three-quarters 15 months after the launch, suggesting that the implementation process itself helped to make use of these tools more acceptable.

And fifthly, an important use caveat which clinicians seem to intuitively recognize but nonetheless is worth stating in all trainings: emergency manual use should never precede necessary immediate action such as chest compressions for a pulseless patient. Their intended use begins once resources allow. Either sufficient help is available for synchronous use at the beginning of a crisis, such as a large cardiac arrest, or initial clinical actions are already underway by the individual clinicians who are present. However, one of the challenges discussed further in the Refresher Course is how teams can remember to trigger use once we are knee-deep in the crisis and immediate actions have begun.

So, in terms of conclusions and next steps, perioperative medicine has reached a tipping point for enabling effective use of emergency manuals to help teams deliver better patient care during critical events. This Refresher Course and many of the growing resources available from the EMIC website at

www.emergencymanuals.org can empower interested readers to implement effectively locally. And upcoming from a study funded by the Agency for Healthcare Research and Quality is implementations nationwide for multiple institutions and development of an expanded toolkit to support effective implementation at institutions locally, that will be available this fall both via AHRQ and via the EMIC website.

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Dr. Samuel Wald: That was wonderful. Thank you so much for your fantastic summary of this incredibly important topic, and I will turn it now back over to Dr. Schwartz.

Dr. Alan Jay Schwartz: Thank you for joining us today and participating in this insightful conversation with this month's featured author. Be sure to join us for next month's one-on-one author interview. To purchase the full subscription of the 2017 *Refresher Courses in Anesthesiology* program, please visit www.asahq.org, click on the Shop ASA link, and search for RCA.

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