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2010 HSR Impact Awardee

WHO Surgical Safety Checklist: Surgical Safety Checklist Reduces Complications, Mortality

THE ISSUE

Surgery is a common and essential part of health care delivery in the United States and around the world, with 234 million operations performed annually. Although surgical care can save and improve lives, surgery itself can pose considerable risks – including complications and death. Internationally, the risks of surgery are poorly reported and described, but studies in industrialized countries indicate a death rate from inpatient surgery of 0.4 to 0.8 percent and a rate of major complications of 3 to 17 percent. Data also suggest that at least half of all surgical complications are avoidable. Reducing surgical harm globally has immense, positive implications for public health.



In 2006 the World Health Organization asked Dr. Atul Gawande to develop an approach to reduce surgical harm globally. Over the next two years, Dr. Gawande led a team of

international experts from surgery, anesthesiology, and nursing in defining a core set of safety standards that can be applied to high and low income countries alike. The WHO Surgical Safety Checklist was created out of this collaboration as a tool to ensure adherence to basic safety standards of care. In its initial multi-city, multinational study, the 19-item checklist developed by Dr. Gawande and collaborators reduced the rate of inpatient complications and deaths by more than a third. Uptake and adoption of the checklist has been rapid, changing the standard of care in many U.S. states and around the world. For its contribution to policy that improves patient safety and surgical outcomes, the WHO Surgical Safety Checklist is the recipient of the 2010 HSR Impact Award.

Team checklists have been used successfully in other industries to improve communication and collaboration and reduce preventable errors, yet the strategy was only minimally incorporated into health care and not at all in surgery prior to the work of Dr. Gawande and his colleagues. In developing an intervention for industrialized and developing countries alike, Dr. Gawande's team needed a tool that was simple, easily applicable to a wide variety of settings, affordable, and of high impact. The surgical checklist met those objectives.

The 19-item surgical safety checklist consists of an oral confirmation by surgical teams at the completion of the basic steps for ensuring safe delivery of anesthesia, prophylaxis against infection, effective teamwork, and other essential practices in surgery. It is used at three critical junctures in care: before anesthesia is administered, immediately before incision, and before the patient is taken out of the operating room. The checklist was translated into local languages when appropriate and was adjusted to fit into the flow of care at each institution. (Haynes, *NEJM*)

Dr. Gawande and his collaborators tested the checklist between October 2007 and September 2008 at eight hospitals in eight cities internationally (Toronto; Delhi; Amman; Auckland; Manila; Ifakara, Tanzania; London; Seattle) representing diverse economic environments and populations. This prospective study analyzed clinical process and outcome data from 3,733 consecutive adult patients undergoing non-cardiac surgery before checklist introduction and 3,955 consecutive patients after. These groups were then evaluated for changes in the rates of inpatient complications or death within 30 days of operation. The findings were published in the January 2009 *New England Journal of Medicine* (*NEJM*).

The *NEJM* publication reported that checklist use reduced the rate of inpatient complications from 11 percent to 7 percent, and deaths fell from 1.5 percent to 0.8 percent.

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WHO Surgical Safety Checklist (continued)

Policymakers and practitioners worldwide were quick to embrace the study's findings. To date more than 1,600 hospitals worldwide have confirmed that they are implementing the checklist, and more than 16 countries—ranging from the United Kingdom to Ecuador to Jordan—have announced that they are implementing the Surgical Safety Checklist as a nationwide standard of care. In the United States, hospital associations in 20 states have committed to statewide checklist adoption, with several monitoring the effect on surgical outcomes.

The reach of this work—from rich to poor settings—is unprecedented and the checklist has changed the face of surgery worldwide by promoting an environment of teamwork.

Moreover, Dr. Gawande and his team have been working to extend the checklist approach to a range of important clinical situations characterized by great complexity of care and high risk.

In the words of London-based pediatric cardiac anesthesiologist, Isabeau Walker, “If the potential for the checklist is fully realized, avoidable surgical complications will be reduced, continuous monitoring of oxygenation during surgery will become the norm and communication between teams will improve. It is my belief that Dr. Gawande’s work will change the culture in operating theatres worldwide and will improve surgical safety for millions of patients.”

What is health services research?

Health services research examines how people get access to health care, how much care costs, and what happens to patients as a result of this care. The main goals of health services research are to identify the most effective ways to organize, manage, finance, and deliver high quality care, reduce medical errors, and improve patient safety.

— Agency for Healthcare Research and Quality

RESOURCES/RELATED INFORMATION

Haynes, A.B. et al. A surgical safety checklist to reduce morbidity and mortality in a global population. *New England Journal of Medicine*, Vol. 360, No. 5, January 29, 2009, pp. 491-499.

WEB SITES

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