

Results show surgical safety checklist drops deaths and complications by more than one third

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An international pilot study involving the Toronto General Hospital (TGH), a teaching hospital affiliated with the University of Toronto, and other hospitals from around the world, has found that using a Surgical Patient Safety Checklist significantly reduces surgical complications and mortality. The study, led by the World Health Organization (WHO) and Dr. Atul Gawande of the Harvard School of Public Health, appears in the New England Journal of Medicine's Online First on Wednesday, January 14, 2009. The study will appear in the journal's printed issue on January 29, 2009.

"We know that many surgical complications are preventable," said Dr. Bryce Taylor, University Health Network's Surgeon in Chief, who co-authored the study for TGH. "With approximately 234 million surgeries performed each year worldwide, we owe it to our patients to look at every opportunity to prevent complications during and after surgery."

Studies in industrialized countries have found that major complications occur in 3 to 16 per cent of inpatient surgeries and a perioperative death rates for inpatient surgery of 0.4 to 0.8 per cent. Inconsistent approaches to surgery can also lead to adverse events. For example, there is strong evidence to support using antibiotics within one hour prior to incision as a prophylaxis to reduce the possibility of wound infections. Yet, surgical teams around the world are inconsistent in their approaches.

Launched in October 2007, TGH and seven hospitals located in cities around the world (New Delhi, India; Amman, Jordan; Auckland, New Zealand; Manila, Philippines; Ifakara, United Republic of Tanzania; London, UK; and Seattle, USA) were selected by the WHO and Harvard to pilot a Surgical Patient Safety Checklist as part of the WHO's "Safe Surgery Saves Lives" initiative. Developed by an international group made up of leading surgeons, nurses, anesthesiologists and patient safety experts, the WHO Checklist was influenced by checklists used in the airline industry to reduce the incidence of airline errors.

TGH was the only hospital in Canada and one of only two hospitals in North America involved in the pilot study. Led by Dr. Taylor, UHN's Surgical Program is one of the largest in Canada with 23,000 inpatient and outpatient surgeries performed in 2007/08.

The Checklist is intended to improve communications amongst members of the surgical team during surgery and to increase the consistency in using proven standards of surgical care in order to reduce preventable complications and mortality. At three critical points during surgery (prior to anesthesia, immediately prior to incision, and prior to patient exiting the operating room), a member of the surgical team verbally confirms the completion of each step for infection prophylaxis, anesthesia safety and other essential steps in surgery (ex. confirming that the surgery site is marked, counting the number of sponges and instruments used at the end of surgery to ensure nothing has been left inside of the patient).

Each pilot site implemented the Checklist in their operating rooms and tracked changes in the rate of inpatient complication or death within 30 days of surgery. To establish a baseline, data was collected from a total of 3,733 patients before the implementation of the Checklist and 3,955 patients after it was introduced. The TGH surgical team adapted the WHO's Checklist to reflect our surgical practice. The Checklist was used

at TGH's 11 operating rooms during a variety of outpatient and inpatient surgeries.

Using the Checklist, the study found the following overall results:

The rate of major complication in the study operating rooms fell from 11.0 per cent in the baseline period to 7.0 per cent after the introduction of the Checklist - a reduction of more than one-third.

Inpatient deaths following operation fell by over 40 per cent (from 1.5 per cent to 0.8 per cent) with the implementation of the Checklist.

Similar reductions in complications were seen in both the high income and lower income sites in the study, with rates falling from 10.3 per cent to 7.1 per cent and 11.7 per cent to 6.8 per cent respectively.

"The WHO agenda is a bold one, attempting to roll out a safety checklist worldwide," said Dr. Richard Reznick, University of Toronto's Chair of Surgery, UHN's Vice President of Education and co-author of the study. "These initial and very positive results will be a huge stimulus for all countries to consider making this type of safety checklist approach a regular aspect of surgical care."

"Like an airline pilot, the surgeon is only one member of an entire surgical team. Using the Checklist, we can improve communications during surgery to make sure everyone is on the same page and to use proven standards in every single operation to reduce the risks to patients," said Dr. Taylor. "We are now using the surgical checklist at UHN's Toronto General, Toronto Western and Princess Margaret Hospitals to ensure the highest possible standards in our operating rooms."

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