

# **The Surgical Safety Checklist: A Must for Hospitals Performing Surgery**



**Information and Privacy  
Commissioner of Ontario**

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# Table of Contents

Introduction .....	1
Information Privacy .....	3
The Accuracy Principle .....	3
Accuracy and Completeness in Action: The WHO Surgical Checklist .....	4
Improving Patient Safety in Canada .....	5
The University Health Network: An Early Adopter.....	6
Conclusion .....	6
Surgical Safety Checklist.....	7

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## Introduction

Better health care – safer, more effective, more cost-efficient, and more accessible – is a priority that people all around the world share. It is an issue that appeals to us not only in policy terms, but also in real human terms, as each of us face times of illness and health in our own lives, and the lives of those around us.

In North America, where we are collectively seized by both the promise and the peril of health care technologies, medical dramas are among the most popular shows on prime-time TV. There, we can watch the human side of health care, as stories of sickness and recovery unfold.

Certainly, the health-care sector is evolving. Rapid technological advancement in this arena brings with it the promise of better health care and improved health for patients.

As a patient, I welcome the potential of new techniques and technologies to improve our quality of care. As a Privacy Commissioner, I have a continuing interest in advancing the development of a positive-sum approach to privacy in the health-care sector, particularly where the deployment of new technologies is involved. This is, in my view, critical to encouraging the development of a culture of privacy throughout the health-care sector. The days of zero-sum thinking are numbered – a paradigm shift is badly needed, and needed now.

While much of the focus in health care has been placed (understandably) on high-tech, evolving solutions such as Radio Frequency Identification (RFID) technologies,<sup>1</sup> we should not abandon the pursuit of simple, low-tech solutions which can hold the key to profound changes.

Such is the case with the outstanding *Surgical Safety Checklist* developed by the World Health Organization<sup>2</sup>, which was recently featured on one of the last episodes of the hit TV medical drama *ER*. This simple, 19-point Checklist, designed to be completed in three phases, has been shown to dramatically reduce complications in surgery, and at times, save lives. Indeed, in the *ER* episode in question, use of the Checklist ultimately resulted in a nurse ordering missing reperfusion solution to be delivered to the operating room. The solution was later needed when a kidney transplant started to go wrong. While clearly a dramatization, it was based on a real-life story.

The Checklist includes both personal and non-personal information covering such things as confirmation of patient identity prior to the administration of anesthesia; review of patient allergies; instrument, sponge and needle counts, and wrap-up procedures. It is an excellent illustration of the simple but powerful principle that information should be as accurate, complete, and up-to-date as necessary, for the purpose at hand. When it comes to your health care, the accuracy of health information is vital – at times, resulting in life-and-death outcomes.

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1 See our paper on RFID in health-care settings at [http://www.ipc.on.ca/images/Resources/up-1rfid\\_HealthCare.pdf](http://www.ipc.on.ca/images/Resources/up-1rfid_HealthCare.pdf)  
2 [http://www.who.int/patientsafety/safesurgery/ss\\_checklist/en/index.html](http://www.who.int/patientsafety/safesurgery/ss_checklist/en/index.html)

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Toronto General Hospital, part of the University Health Network (UHN), participated in a pilot study to test the effectiveness of the Surgical Safety Checklist from October 2007 to April 2008. Early in the process, when it became apparent that it was the right thing to do, UHN decided to also implement the Checklist in its other two hospitals: Toronto Western and Princess Margaret. The Checklist is now used in over 23,000 operations performed in these facilities every year!

I applaud UHN in moving so quickly to implement the Checklist for all surgeries performed throughout all of their hospitals. I hope that other health-care providers will join them in leaping at the opportunity to implement this simple, cost-free, and profoundly effective technique in their operating rooms. By doing so, they will ensure that they have the right information, about the right patient, available to the right practitioner, at the right time. What could be better!

***Ann Cavoukian, Ph.D.***  
***Information and Privacy Commissioner***

## Accurate, Complete, and Timely: Better Information = Better Results

### Information Privacy

Information privacy relates to an individual's right to exercise control over the collection, use and disclosure of his or her personal information, including his or her health information. It is this right that forms the foundation of Ontario's access and privacy laws, including the *Personal Health Information Protection Act (PHIPA)*, which came into effect in 2004.

The concept of information privacy is generally elaborated upon in a set of privacy principles embodied in what are commonly referred to as Fair Information Practices. There are several variations of Fair Information Practices, including the Canadian Standard Association's *Model Code for the Protection of Personal Information* and the *Global Privacy Standard* developed by a Working Group of International Data Protection Commissioners in 2005, to create a single harmonized set of principles.<sup>3</sup>

### The Accuracy Principle

Whatever their origins, virtually all articulations of Fair Information Practices include the critical concept of "accuracy." The accuracy principle provides that organizations must ensure that personal information is as accurate, complete, and up-to-date as is necessary to fulfill the specified purposes. It is closely linked to other principles, such as defining purposes, limiting collection and use, and providing individuals with a right of access and correction.

While, taken as a whole, Fair Information Practices emphasize the *limitation* of collection, use, disclosure, and retention of personal information as a way of protecting information privacy, the accuracy principle is where it all begins – without accurate and timely information, everything else crumbles. The information used must be sufficiently accurate to support the purposes at hand.

Especially in the context of health care, the case can be made that data accuracy and completeness warrant even greater attention than limiting collection, use, and disclosure. In an environment where personal health information is increasingly shared among multiple service providers, a complete, accurate, and timely chart can make a vital difference in the quality of care provided.

This principle is at the core of the development of Electronic Health Records (EHRs), which many people support as being a strong improvement over paper-based records in terms of enhancing the effectiveness of the health system. But people are also wary of the possible erosion of their privacy that may accompany ill-conceived implementations of these technologies. The Information and Privacy Commissioner of Ontario (IPC) is currently working with the Government of Ontario to develop an effective approach to EHRs that identifies privacy as a key objective.

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3 <http://www.ipc.on.ca/images/Resources/up-gps.pdf>

The accuracy principle is also relevant in less technology-intensive situations, such as surgical operating rooms. Here, as in airplane cockpits, simple measures to ensure that the right people review the right information, at the right time, can make tremendous differences in the safety of the desired outcomes.

## Accuracy and Completeness in Action: The WHO Surgical Checklist

According to the World Health Organization (WHO), surgical care has been an essential component of health care worldwide, for well over a century. An estimated 234 million operations are performed around the world every year, and surgical complications are still common (occurring in three to 15 per cent of all surgeries).

With the incidence of traumatic injuries, cancers and cardiovascular disease continuing to rise, the WHO predicts that the impact of surgical intervention on public health systems will also continue to grow. For this reason, the WHO has undertaken a number of initiatives to address surgical safety. Its World Alliance for Patient Safety started working on the Second Global Patient Safety Challenge: Safe Surgery Saves Lives, in January 2007.<sup>4</sup>

The focus of the Challenge was the WHO Surgical Safety Checklist. The Checklist identifies three phases of an operation, each corresponding to a specific period in the normal flow of work:

1. before the induction of anesthesia (“sign in”),
2. before the incision of the skin (“time out”), and
3. before the patient leaves the operating room (“sign out”).

In each phase, a checklist coordinator must confirm that the surgery team has completed the listed tasks, before it can proceed. This is not simply an exercise in “ticking off” boxes; it brings the whole surgical team together, engaging them in a dialogue, opening up channels of communication, and providing an opportunity to clarify, question, and align, before the surgery actually begins. The Checklist facilitates a change in culture within the operating room which traditionally tended to be very “pyramidal,” with the surgeon at the apex, and others somewhere below. This subtle but important tool “flattens the pyramid” in business terms and, in fact, *demand*s that each member of the team contributes – each member of the team must be accountable.

To be clear, most Canadian health care facilities have been using various kinds of checklists in their operating rooms for many years. The important distinction between these existing checklists and the WHO approach, however, is that the WHO Checklist involves the entire surgical team, *working as an integrated whole*. Other checklists are generally focused on the role of one particular group, such as operating room nurses, who are responsible for ensuring that patient identity is confirmed and that instruments are ready. As such, they do not drive the same kind of team cohesiveness and engagement that the WHO Checklist does.

The WHO’s research has allowed the effectiveness of the Checklist to be empirically measured in a systematic way, for the first time. The results of a pilot study were published in the *New*

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4 <http://www.who.int/patientsafety/safesurgery/en/index.html>

*England Journal of Medicine* in January of 2009. The pilot was conducted between October 2007 and April 2008, and involved eight hospitals in eight cities (Toronto, Canada; Seattle, WA; New Delhi, India; Amman, Jordan; Auckland, New Zealand; Manila, Philippines; Ifakara, Tanzania; and London, England), representing a variety of economic circumstances and diverse populations of patients.

The study showed that the actual rate of death of 1.5 per cent before the Checklist was introduced declined significantly to 0.8 per cent afterward. Inpatient complications were reduced from 11 per cent before the Checklist, to an astounding seven per cent after its introduction. These impressive results can be largely attributed to the simple step of ensuring that the right information, about the right patient, was available to the right health-care practitioner, at the right time and that all health-care practitioners in the operating room functioned as a true *team*.

## Improving Patient Safety in Canada

When the WHO developed its “Safe Surgery Saves Lives” campaign, several Canadian organizations endorsed it, including the Canadian Patient Safety Institute (CPSI). Through a partnership with key Canadian organizations, including the UHN, CPSI has since led the push in Canada to define minimum standards for surgical care, create practical tools to support implementation, and develop a voluntary measurement system to monitor improvements in safety.

The Working Group created by the CPSI achieved its first milestone in December 2008: an adaptation of the WHO Checklist for the Canadian context that is now available for download at [www.safesurgerysaveslives.ca](http://www.safesurgerysaveslives.ca).<sup>5</sup> CPSI subsequently organized a workshop that brought together health-care professionals, leaders, safety officers, and patients, working towards the implementation of the Checklist across the entire country. In fact, hospitals are encouraged to design their own Checklists to reflect local processes, the culture of their operating rooms and the degree of familiarity among their surgical teams. However, removing the essential safety steps in the original Checklist is strongly discouraged. As stated in the *WHO Implementation Manual*, “each locale is encouraged to reformat, reorder or revise the Checklist to accommodate local practice while ensuring completion of the critical safety steps in an efficient manner.”

The Working Group is now finalizing tools that will help teams implement the Checklist in their operating rooms. They are also working on developing standardized systems that will enable measurement of the Checklist’s effectiveness in various environments. Future workshops are also planned, as is ongoing support for organizations working toward implementation.

CPSI is advocating the implementation of the Checklist in all health care facilities in Canada, as are several other key health-care organizations in Ontario. Dr. Michael Baker, Executive Lead – Patient Safety for the Ministry of Health and Long-Term Care says “This is a highly worthwhile initiative and I strongly support the advice that every hospital should be implementing a patient safety checklist.” As the Physician-in-Chief at UHN, Dr. Baker’s words must be taken very seriously. His years of direct, hands-on experience speak volumes.

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<sup>5</sup> The original Checklist was modified to improve legibility, organization and comprehension and to improve specific items to reflect the needs of Canadian surgery. For example, in the final version of the Checklist, the colour, font and use of white space were modified and items were added to incorporate additional recommended best practices in Canada.

“The Ontario Hospital Association (OHA) believes any tool that improves communication within health care teams is certainly worth exploring,” says Tom Closson, President and CEO of the OHA. “Ontario’s hospitals are working hard to make patient care even safer, and the Surgical Safety Checklist should help surgical teams produce positive clinical outcomes.”

It is estimated that 1.3 million surgeries are performed each year in Canada. Implementation of the Checklist in all Canadian hospitals could, therefore, translate into roughly 40,000 fewer cases of surgical complications, including pneumonia, stroke, and kidney failure, annually. Such complications are both devastating to patients and costly to the health-care system, but can often easily be prevented by using this Checklist. Imagine if a surgery that you might be scheduled for could be one that was free of all complications, due to this Checklist. What could be better?

## The University Health Network: An Early Adopter

Canada was represented in the WHO pilot study by Toronto General Hospital, one of three hospitals in the University Health Network (UHN).

Under the leadership of Dr. Bryce Taylor, the UHN’s Chief Surgeon, the WHO’s Checklist has been tailored to UHN’s context, and its implementation has been extended to the UHN’s two other hospitals, The Toronto Western and Princess Margaret.

The UHN is the first health-care facility in Canada to implement the Checklist in all of its operating rooms. It is now used in all of the operations performed at UHN – over 23,000 operations performed in the UHN’s three hospitals, every year.

“This is a simple and inexpensive tool,” says Dr. Taylor, “and we know that it can dramatically reduce the incidence of complications associated with surgery. With these kinds of results, there is really no reason why every hospital in the country shouldn’t be implementing the surgery Checklist, right away.”

As an early adopter, the UHN is reaching out to other health care organizations, supporting implementation with regional tours of health care facilities. In the past few months, more than 500 health professionals have participated in these meetings.

## Conclusion

The very impressive results associated with the implementation of the WHO Surgical Safety Checklist illustrates the power of making the right information about the right patient, available to the right health-care practitioner, at the right time. This premise, which forms the foundation of much of the work associated with Electronic Health Records, clearly has widespread relevance throughout the entire health-care system.

In the context of operating rooms, having complete, accurate, and timely information at each stage of a surgical procedure, the Surgical Safety Checklist provides great support to practitioners in achieving better outcomes for patients, and for the health care system overall.

The IPC joins CPSI and the UHN in urging all health care facilities, where surgeries are performed, to adopt the Checklist and reap its many rewards. We applaud UHN for being an early adopter, as no doubt do the countless patients who have benefitted greatly from their leadership in this area.





# Surgical Safety Checklist



## Briefing - Before induction of anesthesia

- Hand-off from ER, Nursing Unit or ICU*
- All team members introduce themselves by name and role
  - Anesthesia equipment safety check completed
  - Patient information confirmed
    - Identity (2 identifiers)
    - Consent(s)
    - Site and Procedure
    - Site, Side, and Level marked
    - Clinical documentation
      - History and Physical, labs, biopsy, x-rays
  - Review final test results
  - Confirm essential imaging displayed
  - ASA Class
  - Allergies (drugs, latex)
  - Medications
    - Antibiotic prophylaxis: Double dose?
    - Glycemic control
    - Beta blockers
    - Anticoagulant therapy (e.g., Warfarin)?
  - VTE Prophylaxis
    - Anticoagulant
    - Mechanical
  - Difficult Airway / Aspiration Risk
    - Confirm equipment / assistance available
  - Monitoring
    - Pulse oximetry, ECG, BP, arterial line, CVP, Temperature; urinary catheter draining?
  - Blood loss
    - Anticipated to be more than 500 ml (adult) or more than 7 ml/kg (child)
    - Blood products required and available
    - Patient grouped, screened, cross matched
    - blood fridge eligible?

## Briefing - Before induction (continued)

- Surgeon(s) review(s)
  - Specific patient concerns, critical steps, special instruments / implants,
- Anesthesiologist(s) review(s)
  - Specific patient concerns, critical resuscitation plans, possible MH?
- Nurses(s) review(s)
  - Specific patient concerns, sterility indicator results, equipment / implant issues
  - Family and visitors expectations
- Patient positioning and support / Warming devices
- Communicable disease?
- PPE required? N95, isolation cart
- Expected procedure time / Postoperative destination
- Is this an oncology case?

## Time Out - Before skin incision

- Surgeon, Anesthesiologist, and Nurse verbally confirm
  - Patient
  - Site, Side, and Level
  - Procedure
  - Antibiotic prophylaxis: Repeat dose?
  - Final optimal positioning of patient
- "Does anyone have any other questions or concerns before proceeding?"

## Debriefing - Before patient leaves the OR

- Surgeon reviews with entire team
  - Procedure
  - Important intra-operative events
  - Fluid balance / management
- Anesthesiologist reviews with entire team
  - Important intra-operative events
  - Recovery plans (including postoperative ventilation, pain management, glucose and temperature)
- Nurse(s) review(s) with entire team
  - Instrument / sponge / needle counts
  - Specimen labelling and management
  - Important intraoperative events (including equipment malfunction)
  - any concerns re skin integrity?
- Changes to postoperative destination?
- What are the KEY concerns for this patient's recovery and management?
- Could anything have been done to make this case safer or more efficient?
- Incident report to be completed?

*Hand-off to PACU / RR, Nursing Unit or ICU*



## University Health Network

Toronto General Hospital | Toronto Western Hospital | Princess Margaret Hospital

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