Operating room safety in Australia – are we up to the world standard?

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Each year Australian healthcare workers perform more than 2.2 million surgical procedures[1]. Assuming that Australian surgical complication rates are similar to those of other developed countries it is likely between 3 to 17% of patients undertaking these procedures will incur a complication such as surgical site infection or even wrong surgery[2]. Also alarming is the likely number of occupational exposures to blood and body fluid including needlestick injuries (NSI) which Australian healthcare workers (HCWs) and in particular perioperative nurses, routinely sustain[3]. An early Australian study reported 2.53 NSIs per 1000 surgical procedures making NSIs one of the most significant occupational health and safety risks for operating room (OR) staff[4]. The unresolved nature of these events, their high potential for harm and the substantial economic, financial and physical burdens they pose to healthcare consumers and providers compel us to better understand them.

Accordingly, the purpose of this paper is briefly describe their epidemiology and preventability with particular focus on the respective roles of regulatory agencies, professional associations, medical manufacturers and individual HCWs.

Researchers have been studying surgical errors for several decades and repeatedly human errors are implicated in almost all such events. Types of human error implicated include distraction, excessive workload, failure to perform normal checks, haste, inadequate staffing, interruption lack of proficiency with equipment, lack of vigilance, and lack of technical experience[5, 6].

Recent data from the Australian Council on Healthcare Standards reports surgical site infection (SSI) rates ranging from <1% for lower segment Caesarian sections to >8.0% for femoro-popliteal procedures[7]. Patients who succumb to SSI and are admitted to an Intensive Care Unit can expect to spend between 3-11 extra days in an ICU compared to a non-infected patient[8, 9]. Although the true cost of SSI in Australia is unknown international data suggests that the total excess cost per patient would be in the range of $AUD12,000-$AUD40,000 per patient[10].

Like SSIs, NSIs among OR nurses are substantial and they pose significant impost on the healthcare system due to costs associated with their assessment, management, treatment and follow-up. The significant emotional cost sustained by the HCW over the extended period in which it takes to confirm transmission or non-transmission of bloodborne viral illness is difficult to quantify although there are repeated reports of HCWs experiencing substantial stress, fear, anxiety and lost productivity as a result of even the most simple of NSIs. Although safety engineered sharps devices (SEDs) have been directly linked to reductions in NSI risk in multiple international settings unlike many other developed countries Australian health policy remains silent on a national mandate requiring their routine use[11]. It is likely that without sweeping policy and practice reform that includes compulsory SED use in the operating room, surgical staff will continue to sustain NSIs and suffer harm at a rate similar to that now experienced.

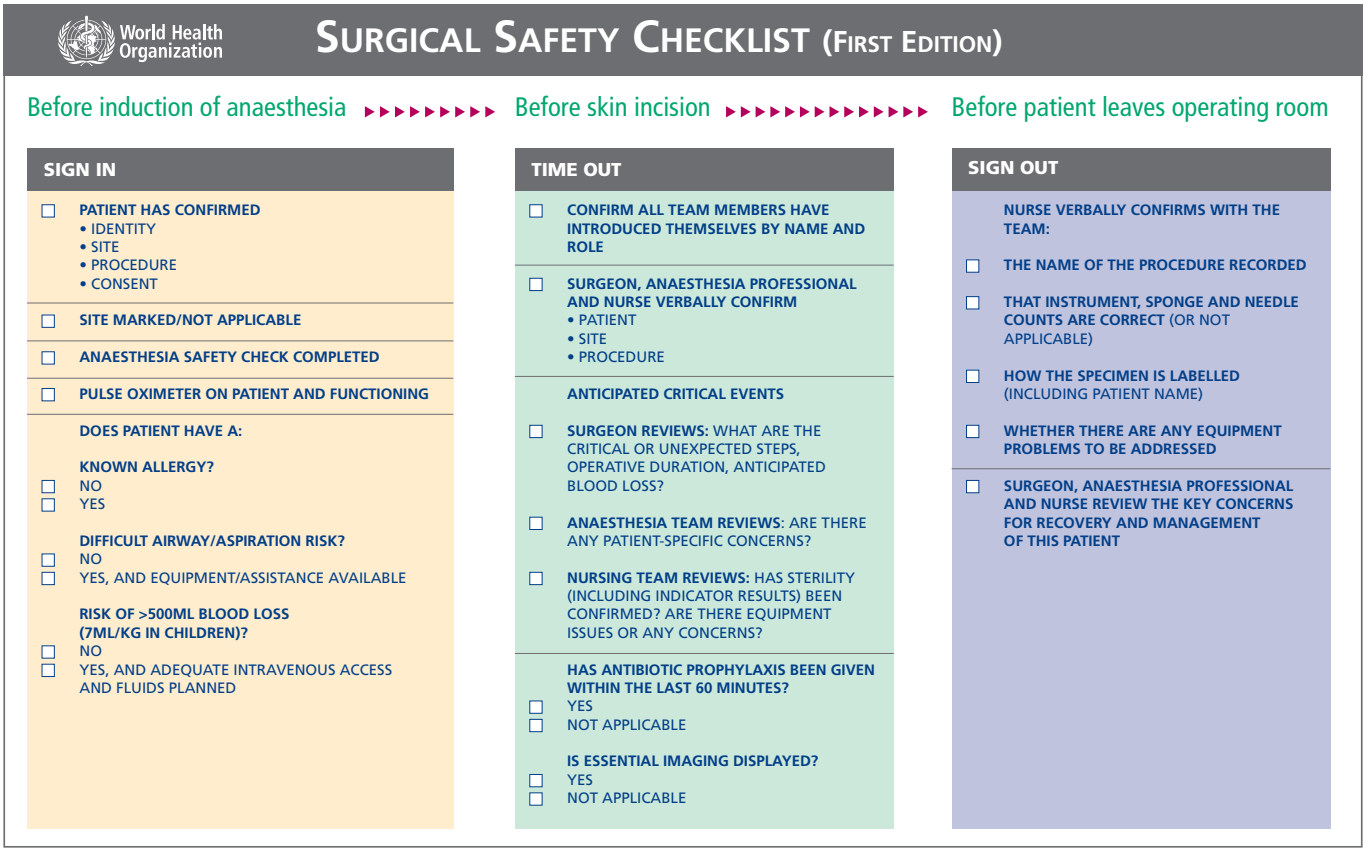
Like SSI and NSI, wrong site, wrong patient and wrong procedures are serious but preventable adverse events. In 2004/05 Australia reported 20 cases of wrong patient and 23 cases of wrong body part surgery[12]. Similar trends have been reported in subsequent years. Researchers conclude that most are associated with either failure to follow relevant policies and/or procedures, breakdowns in communication or anomalies in availability of patient information[13]. So serious is this problem on a global level that the World Health Organisation have recently developed and tested a simple but comprehensive surgical checklist which is recommended to precede every surgical procedure[14, 15]. Used consistently and followed properly by all members of the surgical team, the checklist improves patient safety by identifying systemic errors such as:

- lack of intraoperative site verification when multiple procedures are performed by the same provider;
- ineffective handoff communication or briefing process;
- removal or coverage of site marks during skin preparation or surgical draping;
- failure to mark specific digits in hand or foot surgery; and/or
- incorrect labelling or placement of X-rays.

The use of a WHO-based surgical checklist is now required prior to all surgical events in Australia.

The impact of adverse events in surgery varies depending on several patient and procedure-specific factors however almost every adverse surgical event is associated with additional stress, cost and risk. Almost always, the event itself or its report in media results in reduced public confidence in the Australian health system. For some HCWs their unintended involvement in an accidental adverse event has lead to serious claims for compensation and even expulsion or deployment from their profession of choice. The impact on patients ranges from readmission, extended stay, additional treatment to death. Adverse surgical events almost always involve some degree of increased vulnerability and stress of devastation.

Reducing the occurrence of adverse events requires the support of government through policy reform and investment in safer healthcare and medical device regulation systems and in education and resources that will reduce or eliminate the risk of surgical error.



World Health Organization

SURGICAL SAFETY CHECKLIST (FIRST EDITION)

Before induction of anaesthesia ▸▸▸▸▸▸▸▸▸ Before skin incision ▸▸▸▸▸▸▸▸▸▸▸▸▸ Before patient leaves operating room

SIGN IN

- ☐ PATIENT HAS CONFIRMED
  - IDENTITY
  - SITE
  - PROCEDURE
  - CONSENT
- ☐ SITE MARKED/NOT APPLICABLE
- ☐ ANAESTHESIA SAFETY CHECK COMPLETED
- ☐ PULSE OXIMETER ON PATIENT AND FUNCTIONING
- DOES PATIENT HAVE A:

  KNOWN ALLERGY?
  - ☐ NO
  - ☐ YES

  DIFFICULT AIRWAY/ASPIRATION RISK?
  - ☐ NO
  - ☐ YES, AND EQUIPMENT/ASSISTANCE AVAILABLE

  RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)?
  - ☐ NO
  - ☐ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED

TIME OUT

- ☐ CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE
- ☐ SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM
  - PATIENT
  - SITE
  - PROCEDURE

ANTICIPATED CRITICAL EVENTS

- ☐ SURGEON REVIEWS: WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS?
- ☐ ANAESTHESIA TEAM REVIEWS: ARE THERE ANY PATIENT-SPECIFIC CONCERNS?
- ☐ NURSING TEAM REVIEWS: HAS STERILITY (INCLUDING INDICATOR RESULTS) BEEN CONFIRMED? ARE THERE EQUIPMENT ISSUES OR ANY CONCERNS?

HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN WITHIN THE LAST 60 MINUTES?
- ☐ YES
- ☐ NOT APPLICABLE

IS ESSENTIAL IMAGING DISPLAYED?
- ☐ YES
- ☐ NOT APPLICABLE

SIGN OUT

NURSE VERBALLY CONFIRMS WITH THE TEAM:

- ☐ THE NAME OF THE PROCEDURE RECORDED
- ☐ THAT INSTRUMENT, SPONGE AND NEEDLE COUNTS ARE CORRECT (OR NOT APPLICABLE)
- ☐ HOW THE SPECIMEN IS LABELLED (INCLUDING PATIENT NAME)
- ☐ WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED
- ☐ SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT

THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.

Government can also support the development of better systems for reporting and responding to adverse events within a reporting culture of non-puniation designed to enhance our understanding of events and their subsequent prevention. The promotion and support of a culture of patient safety within individual healthcare organizations are important functions for organizational leaders and individual clinicians. Professional associations such as ACORN, can also promote and support this type of culture among their members as evidenced in a unique international model developed by the Association of Operating Room Nurses (AORN) in the USA who, with the support of medical device manufacturers, supported members through the:

- development and distribution of a comprehensive Patient Safety Tool Kit;
- establishment of an anonymous error-reporting system to provide a safe forum for perioperative healthcare providers;
- establishment of a Hotline and Web site for HCWs to post questions, comments, suggestions and reports of surgical error;
- continual assessment of the impact of these measures and their further improvement; and
- opportunity to inform medical device research and development and improve suitability of future products[16-21].

This paper has briefly outlined the compelling need for HCWs to stop and ask themselves two important questions; firstly "*am I, my organisation and my professional association doing all they can to prevent surgical error and improve patient safety?*" and secondly, "*have I and they fully explored all available options to prevent surgical errors through adoption of safety engineered sharps injury prevention devices, improved workplace ergonomics and proper use of the recommended "TimeOut" procedures prior to every surgical event?*". Until the answer to each question is and remains a resounding "Yes" our work is incomplete. We need to accept and respond to the reality that even though compared to developing countries Australian healthcare and surgery are relatively safe, every year Australians are placed at risk of surgical site infection, surgical sharps injury and wrong side, patient or procedure surgeries. However with appropriate systems, proper authority and adequate supply of innovative safety devices, these adverse surgical events are now largely preventable and we along with regulatory agencies, medical industry and professional associations, have an important role in spearheading and sustaining Australia's initial surgical adverse event prevention efforts.

Declaration of Conflicts of Interest

Prof Cathryn Murphy is a casual consultant to governments, associations and device manufacturers throughout the world. She is employed by Queensland Health. This manuscript has been written independent of all of those relationships.

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