SURGICAL SAFETY

SURGICAL SAFETY CHECKLIST

By

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Surgical Safety: Magnitude of the Problem

Patient safety has become a global concern since the publication of several studies illustrating that between 3 - 16 % of patients admitted to hospital suffer from adverse events (harm caused to a patient as a result of medical care and not the disease). These adverse events lead to permanent   disability or death in 0.7% - 3% of patients. What has further emphasized the importance of the problem and the necessity of improving patient safety in our hospitals is the fact that more than half (53%- 58%) of these adverse events are preventable.

These adverse events not only affect patients' physical and psychological sate but also have enormous negative economic consequences. In the USA, the cost of adverse events as a result of extended hospital stay, increased healthcare, and litigation has been estimated to be $17 – 29 billion a year. The total cost, including lost income and disability, has been estimated to be $38 – 50 billion a year. In the UK, the cost of the additional hospital days resulting from adverse events has been estimated to be £ 2 billion.

We surgeons have a great responsibility and obligation to make surgical care safer for our patients as at least half of these adverse events affect surgical patients during their surgical care. A WHO document on surgical safety estimates the annual global volume of major surgery to be around one operation for every 25 living humans (234 million operations). Assuming a 3% perioperative adverse event rate and a 0.5% mortality rate globally, almost 7 million surgical patients will suffer significant complications each year, 1 million of whom will die during or immediately after surgery. Surgical safety has therefore emerged as a significant global public health concern and is putting immense pressure on surgeons to act proactively to minimize this global challenge.

There are basically four challenges that will face any attempt to improve surgical safety. First, surgical safety has not yet been considered by many as a significant public health problem. Second, there is a shortage of data on surgical volume and outcome especially that on outpatient surgery and that performed in the private sector. Data from developing countries is frequently lacking. Third, basic surgical safety practices including safe anesthetic practices are not adhered to and in many locations are not known to the surgical team including anesthetists and nurses. Fourth, is the complexity of the surgical service itself as it involves dozens of steps and individuals, each with the potential of inducing an adverse event.

Lessons from Aviation

Similarly, but more than seventy years ago, the aviation industry was producing more modern and sophisticated aircrafts. Surprisingly, these aircrafts were associated with an increase in aviation accidents as it became apparent that these aircrafts were too complex for any one man's memory to fly safely. What was urgently needed was some way of making sure that everything was done and that nothing was overlooked. What resulted was a pilot's checklist. In fact, four checklists were developed for the various sections of the aircraft journey, takeoff, flight, before landing, and after landing. Learning from the aviation industry and observing the increasing complexity of surgical operations, patient safety experts have realized that a surgical safety checklist is required to ensure patient safety during the perioperative period and to help the memory of all members of the surgical team to do the right thing at the right time.

Checklist Framework

The WHO working group for the Safe Surgery Program (**www.who.int/patientsafety/safesurgery/en**) designed a surgical safety checklist aiming at promoting safety and improving quality of surgical practices. The checklist aims at ensuring the implementation of certain essential safety practices within a perioperative framework (see box) in a timely and efficient manner. The items of the framework were chosen based on their potential to improve dramatically patient safety during surgical care. The framework covers the adequacy of surgical resources and environment, safe conduction of the surgical team, safe administration of anesthesia, and measures taken to prevent surgical site infection; all performed in a manner that enables the measurement and evaluation of surgical outcome.
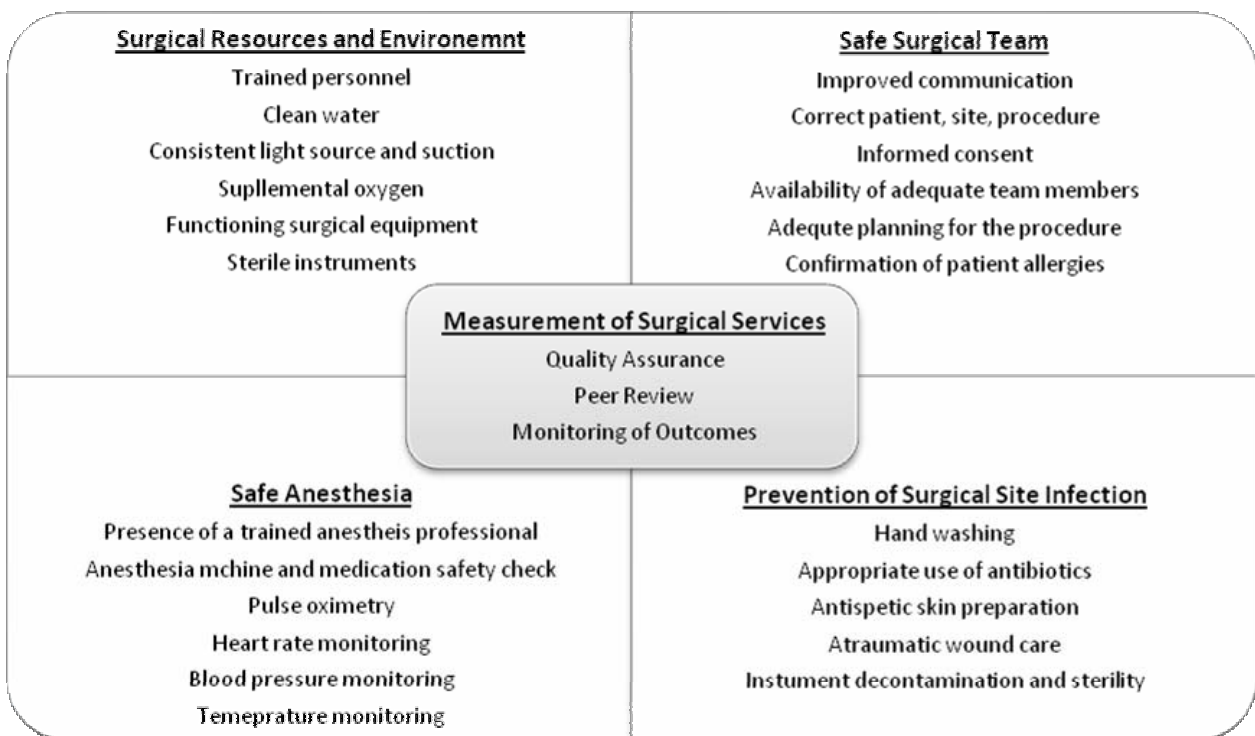
The WHO surgical safety checklist (see below) has been designed to ensure the implementation of the safety framework through a sequence of events distributed through three phases. First before induction of anesthesia (Sign in), second before skin incision (Time out), third before wound closure or before patient leaving the operating room (Sign out).

The WHO surgical safety checklist has been piloted in eight countries all over the world and its results show that its implementation was associated with a significant fall in death rate from 1.5% to 0.8% and a significant fall in complication rate from 11% to 7% (Haynes et al, N Engl J Med. 2009;360:491-9).

In order to implement the checklist successfully during surgery, a single person must be made responsible for checking the boxes on the list. The designated coordinator must be permitted to confirm that the team has completed its task before it proceeds further. As the team gets familiar with the checklist, team members will find it easier to conduct the check with maximum efficiency and minimum disruption to work.

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.

The WHO checklist can be modified to account for differences among facilities with respect to their process, the culture of the operating rooms and the degree of familiarity each team member has with one other.

The Alexandria Patient Safety Alliance in collaboration with the Egyptian Society of Surgeons has taken the advice of the WHO Safe Surgery Program and modified the Arabic version of the checklist linguistically to fit more with the local understanding of the Arabic language. This was done through a questionnaire distributed to 50 professionals including surgeons, anesthetists and nurses in Alexandria. Their comments resulted in major linguistic modifications which made the checklist more clear and user friendly (see below). Furthermore, most participants in the study agreed that the checklist if implemented would improve safe practices and decrease adverse events in their operating rooms without wasting precious time.

The checklist is not intended to be comprehensive; surgical teams may wish to add safety steps to the checklist according to local needs. However, removing safety steps because they cannot be accomplished in the existing environment or circumstances is strongly discouraged as it will negatively affect the achievement of the safe surgery objectives.

Safe Surgery Objectives

In a preliminary step during the development of their checklist the WHO working group for Safe Surgery Program has defined 10 basic essential objectives to be achieved by the surgical teams during surgical care in order to minimize unnecessary loss of life and serious complications. These objectives have been published in the form of an evidence-based guideline with recommendations.

Ten Essential Objectives for Safe Surgery

1. The team will operate on the correct patient at the correct site.

2. The team will use methods known to prevent harm from administration of anesthetics, while protecting the patient from pain.

3. The team will recognize and effectively prepare for life-threatening loss of airway or respiratory function.

4. The team will recognize and effectively prepare for risk of high blood loss.

5. The team will avoid inducing an allergic or adverse drug reaction for which the patient is known to be at significant risk.

6. The team will consistently use methods known to minimize the risk for surgical site infection.

7. The team will prevent inadvertent retention of instruments or sponges in surgical wounds.

8. The team will secure and accurately identify all surgical specimens.

9. The team will effectively communicate and exchange critical information for the safe conduct of the operation.

10. Hospitals and public health systems will establish routine surveillance of surgical capacity, volume and results.