Ministry of Health and Family Welfare

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Safe Surgery Checklist: User Guide

Introduction

The Safe Surgery Saves Lives initiative was established by the World Alliance for Patient Safety as part of the World Health Organization's efforts to reduce the number of wrong site surgeries and surgical deaths across the world. The aim of this initiative is to harness political commitment and clinical will to address important safety issues, including inadequate anaesthetic safety practices, avoidable surgical infection and poor communication among team members.

How to use this manual

In this manual, the "operating team" is understood to comprise the surgeons, anesthesiologists, nurses, technicians and other operating room personnel involved in surgery.

How to run the checklist

In order to implement the Checklist during surgery, **a single person must be made responsible** for checking the boxes on the list. This designated Checklist Coordinator (the person designated to fill up the checklist) can be any clinician or nurse participating in the operation.

The Checklist divides the operation into three phases, each corresponding to a specific time period in the normal flow of a procedure — the period before induction of anesthesia **(Sign In)**, the period after induction and before surgical incision **(Time Out)**, and the period during or immediately after wound closure but before removing the patient from the operating room **(Sign Out)**. In each phase, the Checklist coordinator must be permitted to confirm that the team has completed its tasks before it proceeds further.

"Sign In" before induction of anesthesia, the Checklist Coordinator will verbally review with the patient (when possible) that his or her identity has been confirmed, that the procedure and site are correct and that consent for surgery has been given. The coordinator will visually confirm that the operative site has been marked (if appropriate) and that a pulse oximeter is on the patient and functioning. The coordinator will also verbally review with the anesthesiologist the patient's risk of blood loss, airway difficulty and allergic reaction and whether a full anesthesia safety check has been completed. Ideally the surgeon will be present for "Sign In", as the surgeon may have a clearer idea of anticipated blood loss, allergies, or other complicating patient factors. However, the surgeon's presence is not essential for completing this part of the Checklist.

For **"Time Out"**, each team member will introduce him or herself by name and role or the team can simply confirm that everyone in the room is known to each other. They will also confirm that prophylactic antibiotics have been administered within the previous 60 minutes and that essential imaging is displayed, as appropriate.

For the **"Sign Out"**, the team will review together the operation that was performed, completion of sponge and instrument counts and the labeling of any surgical specimens obtained. It will also review any equipment malfunctions or issues that need to be addressed. Finally, the team will review key plans and concerns regarding postoperative management and recovery before moving the patient from the operating room. Having a single person lead the Checklist process is essential for its success.

SIGN IN

The **"Sign In"** requires the presence of anesthesiologist and nursing personnel at the very least.

Patient has confirmed identity, site, procedure and consent

The coordinator verbally confirms with the patient his or her identity, the type of procedure planned, the site of surgery and that consent for surgery has been given. When confirmation by the patient is impossible, such as in the case of children or incapacitated patients, a guardian or family member can assume this role. If a guardian or family member is not available and this step is skipped, such as in an emergency, the box should be left unchecked.

Site marked/not applicable

The Checklist coordinator should confirm that the surgeon performing the operation has marked the site of surgery (usually with a permanent felt-tip marker) in cases involving laterality (a left or right distinction) or multiple structures or levels (e.g. a particular finger, toe, skin lesion, vertebra etc.).

Anesthesia safety check completed

The coordinator completes this next step by asking the anesthesiologist to verify completion of an anesthesia safety check, understood to be a formal inspection of the anaesthetic equipment, medications and patient's anaesthetic risk before each case. A helpful reminder is that, in addition to confirming that the patient is fit for surgery, the anesthesia team should complete the ABCDEs – an examination of the Airway equipment, Breathing system (including oxygen and inhalational agents), suction, drugs and devices and emergency medications, equipment and assistance to confirm their availability and functioning.

Pulse oximeter on patient and functioning

The Checklist coordinator confirms that a pulse oximeter has been placed on the patient and is functioning correctly before induction of anesthesia. Ideally, the pulse oximetry reading should be visible to the operating team. An audible system should be used when possible to alert the team to the patient's pulse rate and oxygen saturation. Pulse oximetry has been highly recommended as a necessary component of safe anesthesia care by WHO.

Does the patient have a known allergy?

The Checklist coordinator should direct this and the next two questions to the anesthesiologist. First, the coordinator should ask whether the patient has a known allergy and, if so, what it is. This should be done even if he or she knows the answer in order to confirm that the anesthesiologist is aware of any allergies that pose a risk to the patient.

Does the patient have a difficult airway/aspiration risk?

The coordinator should verbally confirm that the anesthesia team has objectively assessed whether the patient has a difficult airway. If the airway evaluation indicates a high risk for a difficult airway (such as a Mallampati score of 3 or 4), the anesthesia team must prepare against an airway disaster. This will include, at a minimum, adjusting the approach to anesthesia (for example, using a regional anaesthetic, if possible) and having emergency equipment accessible. A capable assistant— whether a second anesthesia professional, the surgeon, or a nursing team member—should be physically present to help with induction of anesthesia.

The risk of aspiration should also be evaluated as part of the airway assessment. If the patient has symptomatic active reflux or a full stomach, the anesthesiologist must prepare for the possibility of aspiration. For a patient recognized as having a difficult airway or being at risk for aspiration, the box should be marked (and induction of anesthesia begun) only after the anesthesia professional confirms that he or she has adequate equipment and assistance present at the bedside.

Does the patient have a risk of >500 ml blood loss (7 ml/kg in children)?

In this safety step, the coordinator asks the anesthesia team whether the patient risks losing more than half a litre of blood during surgery in order to ensure recognition of and preparation for this critical event. If the anesthesiologist does not know what the risk of major blood loss is for the case, he or she should stop to discuss the risk with the surgeon before induction of anesthesia.

At this point the **"Sign In"** is completed and the team may proceed with anesthetic induction.

TIME OUT

Confirm all team members have introduced themselves by name and role

Effective management of high risk situations requires that all team members understand who each member is and their roles and capabilities. A simple introduction will achieve this. The coordinator will ask each person in the room to introduce him or herself by name and role. Teams already familiar with each other can confirm that everyone has been introduced, but new members or staff that have rotated into the operating room since the last operation should introduce themselves, including students or other personnel.

Surgeon, anesthesiologist and nurse verbally confirm patient, site and procedure

This step is the standard **"Time Out"** or "surgical pause" and meets the standards of many national and international regulatory agencies. Just before the surgeon makes the skin incision, the Checklist Coordinator or another team member will ask everyone in the operating room to stop and verbally confirm the name of the patient, the surgery to be performed, the site of surgery and, where appropriate, the positioning of the patient in order to avoid operating on the wrong patient or the wrong site.

Anticipated critical events

To ensure communication of critical patient issues, during the "Time Out" the Checklist coordinator leads a swift discussion among the surgeon, anesthesia staff and nursing staff of critical dangers and operative plans. This can be done by simply asking each team member the specified question out loud.

Surgeon reviews: what are the critical or unexpected steps, operative duration, anticipated blood loss?

A discussion of "critical or unexpected steps" is intended, at a minimum, to inform all team members of any steps that put the patient at risk for rapid blood loss, injury or other major morbidity. This is also a chance to review steps that might require special equipment, implants or preparations.

Anesthesia team reviews: are there any patient-specific concerns?

In patients at risk for major blood loss, haemodynamic instability or other major morbidity due to the procedure, a member of the anesthesia team should review out loud the specific plans and concerns for resuscitation— in particular, the intention to use blood products and any complicating patient characteristics or comorbidities (such as cardiac or pulmonary disease, arrhythmias, blood disorders, etc). It is understood that many operations do not entail particularly critical risks or concerns that must be shared with the team. In such cases, the anesthesiologist can simply say, *"I have no special concern regarding this case."*

Nursing team reviews: has sterility (including indicator results) been confirmed? Are there equipment issues or any concerns?

The scrub nurse or technologist who sets out the equipment for the case should verbally confirm that sterilization was performed and that, for heat sterilized instruments, a sterility indicator has verified successful sterilization. If there are no particular concerns, however, the scrub nurse or technologist can simply say, *"Sterility was verified. I have no special concerns."*

Has antibiotic prophylaxis been given within the last 60 minutes?

To reduce surgical infection risk, the coordinator will ask out loud during the "Time Out" whether prophylactic antibiotics were given during the previous 60 minutes. The team member responsible for administering antibiotics (usually the anesthesiologist) should provide verbal confirmation. If prophylactic antibiotics have not been administered, they should be administered now, prior to incision. If prophylactic antibiotics have been administered longer than 60 minutes before, the team should consider re-dosing the patient; the box should be left blank if no additional dose is given. If prophylactic antibiotics are not considered appropriate (e.g. cases without a skin incision, contaminated cases in which antibiotics are given for treatment), the "not applicable" box may be checked once the team verbally confirms this.

Is essential imaging displayed?

During the "Time Out", the coordinator should ask the surgeon if imaging is needed for the case. If so, the coordinator should verbally confirm that the essential imaging is in the room and prominently displayed for use during the operation. Only then the box should be checked. If imaging is needed but not available, it should be obtained. The surgeon will decide whether to proceed without the imaging if it is necessary but unavailable. In such a circumstances, however, the box should be left unchecked. If imaging is not necessary, the "not applicable" box should be checked.

At this point the **"Time Out"** is completed and the team may proceed with the operation.

SIGN OUT

The **"Sign Out"** can be initiated by the coordinator, surgeon or anesthesiologist and should be accomplished before the surgeon has left the room.

Nurse verbally confirms with the team: the name of the procedure recorded

Since the procedure may have changed or expanded during the course of an operation, the Checklist Coordinator should confirm with the surgeon and the team exactly what procedure was done. This can be done as a question, "*What procedure was performed?" or as a confirmation, "Weperformed X procedure, correct?"*

That instrument, sponge and needle counts are correct (or not applicable)

The operation theatre nurse should verbally confirm the completeness of final sponge, instrument and needle counts. In cases with an open cavity, instrument counts should also be confirmed to be complete. If counts are not appropriately reconciled, the team should be alerted so that appropriate steps can be taken (such as examining the drapes, garbage and wound or, if need be, obtaining radiographic images).

How the specimen is labelled (including patient name)

Incorrect labelling of pathological specimens is potentially disastrous for a patient and has been shown to be a frequent source of laboratory error. The operation theatre nurse should confirm the correct labelling of any pathological specimen obtained during the procedure by reading out loud the patient's name, the specimen description and any orienting marks.

Are there any equipment problems to be addressed?

Identifying the sources of failure and instruments or equipment that have malfunctioned. The coordinator should ensure that equipment problems arising during a case are identified by the team.

Surgeon, anesthesiologist and nurse review the key concerns for recovery and management of this patient

The surgeon, anesthesiologist and nurse should review the postoperative recovery and management plan, focusing in particular on intraoperative or anaesthetic issues that might affect the patient.

Finally, get the signature of the relevant person, including name and designation, at the bottom of each section of the checklist.

With this final step, this safety checklist is completed. Keep the checklist with patient's record or for quality assurance review.