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 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. These have proved to be common, deadly and preventable problems in all countries and settings.

To assist operating teams in reducing the number of these events, the Alliance — in consultation with surgeons, anaesthesiologists, nurses, patient safety experts and patients around the world — has identified a set of safety checks that could be performed in any operating room. The aim of the resulting WHO Surgical Safety Checklist First Edition (available at www.who.int/patientsafety/challenge/safe.surgery/en/index.html) is to reinforce accepted safety practices and foster better communication and teamwork between clinical disciplines. The Checklist is not a regulatory device or a component of official policy; it is intended as a tool for use by clinicians interested in improving the safety of their operations and reducing unnecessary surgical deaths and complications.

HOW TO USE THIS MANUAL

In this manual, the “operating team” is understood to comprise the surgeons, anaesthesia professionals, nurses, technicians and other operating room personnel involved in surgery. Much as an airplane pilot must rely on the ground crew, flight personnel and air traffic controllers for a safe and successful flight, a surgeon is an essential but not solitary member of a team responsible for patient care. The operating team referred to in this manual is therefore composed of all persons involved, each of whom plays a role in ensuring the safety and success of an operation.

This manual provides suggestions for implementing the Checklist, understanding that different practice settings will adapt it to their own circumstances. Each safety check has been included based on clinical evidence or expert opinion that its inclusion will reduce the likelihood of serious, avoidable surgical harm and that adherence to it is unlikely to introduce injury or unmanageable cost. The Checklist was also designed for simplicity and brevity. Many of the individual steps are already accepted as routine practice in facilities around the world, though they are rarely followed in their entirety. Each surgical department must practise with the Checklist and examine how to sensibly integrate these essential safety steps into its normal operative workflow.

The ultimate goal of the WHO Surgical Safety Checklist — and of this manual — is to help ensure that teams consistently follow a few critical safety steps and thereby minimize the most common and avoidable risks endangering the lives and well-being of surgical patients.

HOW TO RUN THE CHECKLIST – IN BRIEF

“The Checklist divides the operation into three phases, each corresponding to a specific time period in the normal flow of a procedure.”

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 will often be a circulating nurse, but it can be any clinician or healthcare professional participating in the operation.
### SURGICAL SAFETY CHECKLIST (FIRST EDITION)

**Before induction of anaesthesia**

<table>
<thead>
<tr>
<th>SIGN IN</th>
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<tbody>
<tr>
<td>□ PATIENT HAS CONFIRMED</td>
</tr>
<tr>
<td>• IDENTITY</td>
</tr>
<tr>
<td>• SITE</td>
</tr>
<tr>
<td>• PROCEDURE</td>
</tr>
<tr>
<td>• CONSENT</td>
</tr>
<tr>
<td>□ SITE MARKED/NOT APPLICABLE</td>
</tr>
<tr>
<td>□ ANAESTHESIA SAFETY CHECK COMPLETED</td>
</tr>
<tr>
<td>□ PULSE OXIMETER ON PATIENT AND FUNCTIONING</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>TIME OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>SIGN OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ NURSE VERBALLY CONFIRMS WITH THE TEAM:</td>
</tr>
</tbody>
</table>

- 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

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**THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.**
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 anaesthesia (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. As operating teams become familiar with the steps of the Checklist, they can integrate the checks into their familiar work patterns and verbalize their completion of each step without the explicit intervention of the Checklist coordinator. Each team should seek to incorporate use of the Checklist into its work with maximum efficiency and minimum disruption, while aiming to accomplish the steps effectively.

Nearly all the steps will be checked verbally with the appropriate personnel to ensure that the key actions have been performed. Therefore, during “Sign In” before induction of anaesthesia, the person coordinating the Checklist 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 anaesthesia professional the patient’s risk of blood loss, airway difficulty and allergic reaction and whether a full anaesthesia 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 himself or herself by name and role. If already partway through the operative day together, the team can simply confirm that everyone in the room is known to each other. The team will pause immediately prior to the skin incision to confirm out loud that they are performing the correct operation on the correct patient and site and then verbally review with one another, in turn, the critical elements of their plans for the operation using the Checklist questions for guidance. 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 labelling 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. In the complex setting of an operating room, any of the steps may be overlooked during the fast-paced preoperative, intraoperative, or postoperative preparations. Designating a single person to confirm completion of each step of the Checklist can ensure that safety steps are not omitted in the rush to move forward with the next phase of the operation. Until team members are familiar with the steps involved, the Checklist coordinator will likely have to guide the team through this Checklist process.

A possible disadvantage of having a single person lead the Checklist is that an antagonistic relationship might be established with other operating team members. The Checklist coordinator can and should prevent the team from progressing to the next phase of the operation until each step is satisfactorily addressed, but in doing so may alienate or irritate other team members. Therefore, hospitals must carefully consider which staff member is most suitable for this role. As mentioned, for many institutions this will be a circulating nurse, but any health professional can coordinate the Checklist process.

Further detail on running the Checklist can be found at http://www.who.int/patientsafety/safesurgery/tools_resources/SSSL_Manual_finalJun08.pdf

**PROMOTING A SAFETY CULTURE**

> "The safety steps should inspire effective change that will bring an operating team to comply with each and every element of the Checklist."

**Modifying the Checklist**

The Checklist can be modified to account for differences among facilities with respect to their processes, the culture of their operating rooms and the degree of familiarity each team member has with each other. However, removing safety steps because they cannot be accomplished in the existing environment or circumstances is strongly discouraged. The safety steps should inspire effective change that will bring an operating team to comply with each and every element of the Checklist.

In order to ensure brevity, the WHO Surgical Safety Checklist was not intended to be comprehensive. Facilities may wish to add safety steps to the Checklist. Teams should consider adding other safety checks for specific procedures, particularly if they are part of a routine process established in the facility. Each phase should be used as an opportunity to verify that critical safety steps are consistently completed. Additional steps might include confirmation of venous thromboembolism prophylaxis...
by mechanical means (such as sequential compression boots and stockings) and/or medical means (such as heparin or warfarin) when indicated, the availability of essential implants (such as mesh or a prosthetic), other equipment needs or critical preoperative biopsy results, laboratory results or blood type. 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. Facilities and individuals are cautioned, however, against making the Checklist unmanageably complex.

**Introducing the Checklist into the operating room**

It will take some practice for teams to learn to use the Checklist effectively. Some individuals will consider it an imposition or even a waste of time. The goal is not rote recitation or to frustrate workflow. The Checklist is intended to give teams a simple, efficient set of priority checks for improving effective teamwork and communication and to encourage active consideration of the safety of patients in every operation performed. Many of the steps on the Checklist are already followed in operating rooms around the world; few, however, follow all of them reliably. The Checklist has two purposes: ensuring consistency in patient safety and introducing (or maintaining) a culture that values achieving it.

Successful implementation requires adapting the Checklist to local routines and expectations. This will not be possible without sincere commitment by hospital leaders. For the Checklist to succeed, the chiefs of surgery, anaesthesia and nursing departments must publicly embrace the belief that safety is a priority and that use of the WHO Surgical Safety Checklist can help make it a reality. To demonstrate this, they should use the Checklist in their own cases and regularly ask others how implementation is proceeding. If there is no demonstrable leadership, instituting a checklist of this sort may breed discontent and antagonism. Checklists have been useful in many different environments, including patient care settings. This WHO Surgical Safety Checklist has been used successfully in a diverse range of healthcare facilities with a range of resource constraints. Experience shows that with education, practice and leadership, barriers to implementation can be overcome. With proper planning and commitment the Checklist steps are easily accomplished and can make a profound difference in the safety of surgical care.