

# WHO safe surgery checklist: Barriers to universal acceptance

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## Abstract

Development of the Safe Surgery Checklist is an initiative taken by the World Health Organization (WHO) with an aim to reduce the complication rates during the surgical process. Despite gross reduction in the infection rate and morbidity following adoption of the checklist, many health-care providers are hesitant in implementing it in their everyday practice. In this article, we would like to highlight the hurdles in adoption of the WHO Surgical Checklist and measures that can be taken to overcome them.

**Keywords:** Adoption barriers, Safe surgery save lives, World Health Organization safe surgery checklist

## Introduction

“Safe Surgery Save Lives” was initiated by the World Health Organization (WHO) in 2007 with an aim to reduce the number of surgical deaths across the world.<sup>[1]</sup> To accomplish the target of improving patient safety without additional resource utilization, the WHO surgical safety checklist was introduced in 2009.<sup>[2]</sup>

The WHO 19-item checklist program [Annexure 1] emphasizes on performing safety checks and good team communication at various stages in the perioperative period to reduce the complication rates during the surgical process. It has played a pivotal role in decreasing the surgical morbidity and mortality globally. Despite substantial evidence advocating the need of the WHO checklist in reducing the infection rate and morbidity, the hesitancy among many health-care providers to implement it in everyday practice is a matter of concern. In this article, we would like to highlight the barriers in universal adoption and implementation of the WHO Surgical Checklist and measures that can be taken to overcome these hurdles.

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Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/joacp.JOACP_307_16

## Why do We Need Checklist?

A systematic review suggested that in the hospital, the majority of the adverse events take place in the operating theater and 43% of these mishaps were preventable using the current standards of care.<sup>[3]</sup> According to one survey, 234 million people are operated on each year, out of which one million die because of complication and among all at least half of these complications are avoidable.<sup>[4]</sup> Data from the developed nations revealed the complication rate of 3%–16% in inpatient surgical procedures, and the death rate was 0.4%–0.8%<sup>[5]</sup>

Despite this data, the need for surgical safety is not recognized as a significant health problem, especially in middle- and low-income group countries where the resources are limited. Furthermore, the reliability and timely issuance of basic routine steps to decrease infection-related complications such as administration of antibiotic remains doubtful.

A Checklist helps ensure that teams consistently follow a few critical safety steps, and thereby minimize the avoidable risks endangering the lives of surgical patients.<sup>[6-8]</sup> The WHO Surgical Checklist is intended to give surgical teams a simple and efficient set of priority checks to ensure patient safety, effective teamwork, and communication in every operation performed.

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**How to cite this article:** Jain D, Sharma R, Reddy S. WHO safe surgery checklist: Barriers to universal acceptance. *J Anaesthesiol Clin Pharmacol* 2018;34:7-10.

## Effectiveness of Checklist: Evidence in Support

Following its inception in 2008, the WHO Checklist was piloted in eight hospitals globally including both developed and developing nations. The initial results of implementation of the WHO Checklist in these hospitals showed a decrease in surgical site infections from 6.2% to 3.4% and decrease in death rate from 1.5% to 0.8%. About 79% of the staff involved thought it easy to use, 79% thought it improved care, 84% thought it improved communication, and 78% thought it reduced errors.<sup>[9]</sup> Greater benefit from the adoption of WHO checklist was seen in low- and middle-income group countries compared to the high-income group countries.

The initial results generated an awareness about surgical safety and were followed by reports about significant reduction in surgical complications all over the globe.<sup>[10,20]</sup> The Netherlands Surgical Patient Safety System found a significant reduction in in-hospital mortality (1.5%–0.8%) and in overall complications (27.3–16.7/100) after implementation of a comprehensive surgical checklist.<sup>[10]</sup> Introduction of the checklist in the hospitals in Liberia was associated with significant ( $P < 0.05$ ) improvements in terms of overall surgical processes and surgical outcome.<sup>[11]</sup>

Recent meta-analysis of seven trials on the effect of surgical checklist on complication rate and postoperative mortality found the evidence highly suggestive of a reduction in postoperative complications and mortality following implementation of the WHO surgical checklist.<sup>[20]</sup>

The maiden study from India reported reduction in mortality and improved postoperative outcomes following implementation of the WHO Surgical Safety Checklist in a tertiary care hospital.<sup>[21]</sup>

## Who Checklist: Why we do not follow?

Adoption of a new concept into practice is always a challenge. There would be a few who would be fast at imbibing the concept, whereas there would be some who would be reluctant. The effective implementation requires not only technical change but also cultural or an organizational change. Fourcade *et al.* identified eleven organizational barriers to implementation such as poor communication between the anesthetic and surgeon, lack of leadership, inappropriate timing for checking an item, time taken up by checklist completion, and difficulty in identifying the role and responsibility of each staff member.<sup>[22]</sup>

## Challenges or Hurdles in implementation

### Hierarchy

The hierarchy among operation theater personnel acts as a major hindrance in successful implementation of the checklist.

The lead taken over by the staff nurse during the sign in phase is generally not well taken by the surgeon or the anesthesiologist. Checklists can be completed thoroughly only if the surgeon and the anesthesiologist are supportive.<sup>[23]</sup> Inculcating the team dynamics through proper training can help to overcome this barrier.

### Delays

The surgeon and staff exposed to checklist programs resent the delay before the start of surgery and interruption to workflow, especially during the sign phase of the checklist. The importance of these delays to prevent any avoidable errors for the safety of the patient needs to be emphasized. In a study conducted in UK clearly showed that Safe Surgical Checklists do not have any significant impact on theater start time.<sup>[24]</sup>

### Increase the workload

Paramedical staff working in the operation theaters with huge turnover of cases, consider checklist as an unnecessary interruption of their streamlined routine work and addition to the burden of the already overburdened staff.

### Lower applicability in emergency situations

There is often reluctance to follow the 19-item checklist during urgent or emergent surgeries. Contrary to the common belief of inapplicability of checklist in these setting, there is a greater need for safety checks due to high error rate in the emergency departments. Implementation of checklist in a setting of urgent operations showed a 36% decrease in complication rate from 18.7% to 11.7% and 62% reduction in mortality from 3.7% to 1.4%.<sup>[19]</sup>

### Raises the anxiety in awake patient

There have been concerns that patient might become restless or anxious hearing the checklist protocol, especially if deficiencies in preparation of the operation theater are revealed. However, these issues can be prevented by appraising the patient about the importance of checklist before surgery. In a survey, 68% agreed that they would feel comfortable with a nurse caring checklist.<sup>[25]</sup> Beside all, when patients are aware of the checks before performed this does not provoke anxiety.

### Tick-box exercise

Accountability of each team member during the checklist protocol has a crucial role in the success of the checklist. The most common lacunae in following this program is that most of the healthcare provider are not perceiving it as an important tool in their armamentarium to ensure patient safety by better teamwork and communication, rather considering it a tick the box exercise.<sup>[26]</sup>

### Sign out time most common barrier

Practically thinking, “Sign out” time is one of the biggest barriers in the implementation of the checklist. The reason

being the varied timeout between surgeon and anesthetist. At the end of the surgery, surgeon leaves the operation theater to take a break before next case or dictate notes, the nurse staff is occupied with packing and labeling of the samples, and for anesthesiologist, it is most critical time. As the result, the key concerns for the recovery and postoperative management of the patient are often not discussed by the operative team.

### Overcoming the problem

There is a need to identify the barriers in implementation and then develop strategies to overcome them.

#### Developing local champions

To float a new idea, we need to identify the people who are enthusiastic. The initial team should be formulated with these local champions. Over time, seeing the intervention being used with positive results, people who are initially reluctant would drop their objections and start to adopt it in their practice. Owing to the strong association of age and experience with the usage of WHO checklist,<sup>[27]</sup> leadership and championing by senior staff might help in the successful implementation of the checklist.<sup>[28]</sup>

#### Training

Before implementing, a training programs led by the local champions can help in the successful implementation. The workshops on how to conduct a checklist not only makes the team members aware of their role during checklist protocol but also inculcates the team spirit. In a study conducted at Children's Hospital in Brasov, 40 surgeries were observed over 10 days to record the compliance of the WHO surgical safety checklist to identify the barriers in adoption. They highlighted the need for training of staff to improve knowledge and compliance days for the successful implementation of the Surgical Safety Checklist.<sup>[29]</sup>

#### Start small

A more practical form is to implement the checklist in one or two operation theaters. The results obtained can act as a catalyst for its future spread.

#### Straight forward format

Measures should be taken for making checklist more of a straightforward, in a more participating format involving all theatre personnel rather making it one person job. One of the constrains is lack of encouraging data and other evidence of avoiding patient complications which do not provide evidence of fidelity in implementing checklist.

#### Local adjustment and adaptation

To increase the feasibility and usefulness of checklist, emphasis is on the importance of local adjustment and adaptation.<sup>[2,30,31]</sup>

#### Regular audits

Regular audits help to monitor the progress of a program. The results and complications should be discussed so that an early solution can be sought. The feedback obtained from these audits can help in the success of the program.<sup>[2,30,31]</sup>

## Conclusion

The WHO Surgical Checklist is a promising tool to reduce the surgical complications worldwide. The surgeons, anesthetists, and the paramedical staff need to work together to overcome the sociocultural and organizational hurdles to ensure successful implementation of the WHO surgical checklist.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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## Annexure

Surgical Safety Checklist		
World Health Organization		Patient Safety <small>A World Alliance for Safer Health Care</small>
<b>Before induction of anaesthesia</b>	<b>Before skin incision</b>	<b>Before patient leaves operating room</b>
<small>(with at least nurse and anaesthetist)</small>	<small>(with nurse, anaesthetist and surgeon)</small>	<small>(with nurse, anaesthetist and surgeon)</small>
<p><b>Has the patient confirmed his/her identity, site, procedure, and consent?</b></p> <input type="checkbox"/> Yes	<p><input type="checkbox"/> <b>Confirm all team members have introduced themselves by name and role.</b></p> <p><input type="checkbox"/> <b>Confirm the patient's name, procedure, and where the incision will be made.</b></p> <p><b>Has antibiotic prophylaxis been given within the last 60 minutes?</b></p> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	<p><b>Nurse Verbally Confirms:</b></p> <input type="checkbox"/> The name of the procedure <input type="checkbox"/> Completion of instrument, sponge and needle counts <input type="checkbox"/> Specimen labelling (read specimen labels aloud, including patient name) <input type="checkbox"/> Whether there are any equipment problems to be addressed <p><b>To Surgeon, Anaesthetist and Nurse:</b></p> <input type="checkbox"/> What are the key concerns for recovery and management of this patient?
<p><b>Is the site marked?</b></p> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	<p><b>Anticipated Critical Events</b></p> <p><b>To Surgeon:</b></p> <input type="checkbox"/> What are the critical or non-routine steps? <input type="checkbox"/> How long will the case take? <input type="checkbox"/> What is the anticipated blood loss? <p><b>To Anaesthetist:</b></p> <input type="checkbox"/> Are there any patient-specific concerns? <p><b>To Nursing Team:</b></p> <input type="checkbox"/> Has sterility (including indicator results) been confirmed? <input type="checkbox"/> Are there equipment issues or any concerns? <p><b>Is essential imaging displayed?</b></p> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	
<p><b>Is the anaesthesia machine and medication check complete?</b></p> <input type="checkbox"/> Yes		
<p><b>Is the pulse oximeter on the patient and functioning?</b></p> <input type="checkbox"/> Yes		
<p><b>Does the patient have a:</b></p> <p><b>Known allergy?</b></p> <input type="checkbox"/> No <input type="checkbox"/> Yes		
<p><b>Difficult airway or aspiration risk?</b></p> <input type="checkbox"/> No <input type="checkbox"/> Yes, and equipment/assistance available		
<p><b>Risk of &gt;500ml blood loss (7ml/kg in children)?</b></p> <input type="checkbox"/> No <input type="checkbox"/> Yes, and two IVs/central access and fluids planned		

Annexure 1: The WHO 19-item checklist