Audit of compliance with the WHO surgical safety checklist

Todd J, Hammond S.
St George's, University of London

1. Aims

The aims of this project were twofold:

1. To complete an audit on the level of compliance to the WHO surgical safety checklist in operating theatres at St George's Hospital.

2. To obtain qualitative data on compliance to the WHO surgical safety checklist in operating theatres at St George's Hospital, London.

2. Introduction

Half of all surgical complications are regarded as avoidable (1). In 2008 the WHO recommended the introduction of a Surgical Safety Checklist as a tool to ensure the safety of operations by eliminating these preventable mistakes and oversights that occur before, during and after surgery which may lead to mortality (2).

The checklist (Fig. 1) is composed of three stages. These checks are to be carried out by a checklist coordinator prior to anaesthesia (Sign In), incision (Time Out) and before the patient leaves the theatre (Sign Out). Each stage must be completed prior to progressing the surgery. The checklist implementation is aimed at improving safety practices, infection control and communication among the surgical team.

The use of the checklist has been shown to have a significant effect on patient outcomes, reducing patient death from 1.5% to 0.8% (3). The NHS has mandated its use for every patient undergoing surgery, including local anaesthesia, for this reason and has recommended the addition of a brief and a debrief to the process to improve communication (4).

This audit was done to establish compliance with this checklist. Additionally, a qualitative measure was added to record data on the communication aspect of the checklist. This was used to gain insight into how the checklist was being used in theatres to facilitate a Shared Mental Model (5).

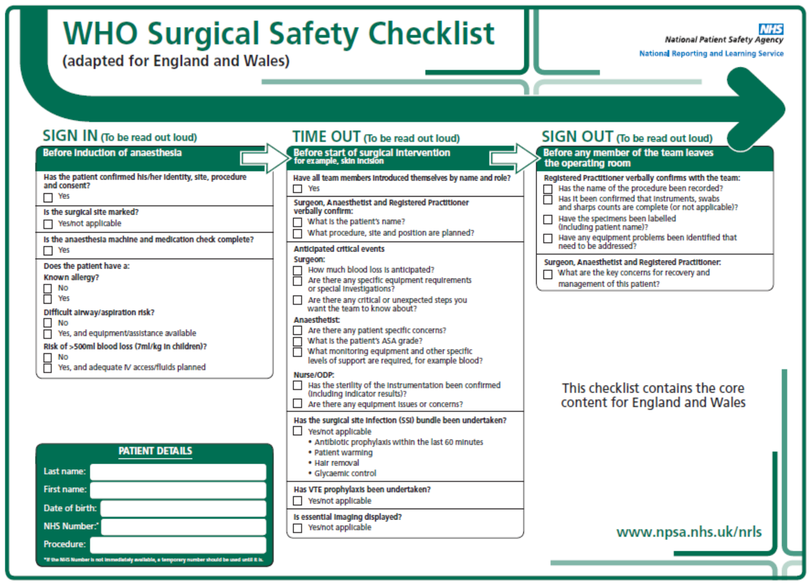


Fig. 1. WHO Surgical Safety Checklist for use in the NHS

3. Method

The data collection was by prospective observational audit. The WHO surgical safety checklist, as customised by the NHS, was used as a template and compliance to it was recorded. This was done by recording whether each aspect was completed or not (if applicable) during 34 operations conducted in day theatres at St George's Hospital, London.

Qualitative data was recorded on the manner of compliance with the checklist, giving a greater appreciation of whether it is also being used effectively. These qualitative data were graded 1-3 according to whether a set of criteria were met. These were:

a. Staff stopped tasks to engage

b. Staff were attentive and listening

c. Conducted at good volume (audible to all)

d. Understanding was checked in the briefs and questions/feedback were asked

e. All required staff present for sign in, time out and sign out

Grade 3 – all five criteria were met

Grade 2 – 3-4 of the criteria were met

Grade 1 – 1-2 of the criteria were met

Day	Surgeries	Brief	Sign in	Time out	Sign out	Debrief
1	2	Yes	100%	100%	100%	Yes
2	7	Yes	100%	86%	43%	No
3	6	No	100%	83%	67%	No
4	7	Yes	100%	100%	43%	No
5	4	Yes	50%	50%	25%	No
6	5	Yes	100%	100%	80%	No
7	1	Yes	100%	100%	100%	Yes
8	2	Yes	100%	100%	0%	No
Total	34	63%	94%	90%	57%	25%

Type	Surgeries	Sign in	Time out	Sign out	Av. Grade
Minor	28	35%	28%	30%	1.61
Major	6	56%	71%	40%	2.17
Local	7	40%	26%	34%	1.29
General	27	38%	38%	31%	1.81

Fig. 2. Results of audit presented as checklist stages complete per day (top) and average number of checklist steps completed by surgery and anaesthetic type (bottom).

4. Results

Results of the audit showed a large difference in the use of the WHO surgical safety checklist over the 5 stages. Of all the operations audited, only 57% conducted a Sign Out. This is in contrast to 94% where Sign In was done and 90% Time Out. Debrief was conducted on only 25% of days.

Additionally, many steps in the checklist were omitted dependent on the operation type. It was found that all stages were more likely to have been done more fully if the operation to be undertaken was classified as major (operating within peritoneum, pleura or meninges). Time Out was more likely to be completed more fully in general anaesthetic operations. Average qualitative grade was higher for both major operations and those using general anaesthetic.

5. Discussion

Data was collected on proper use of the checklist i.e. its communication, not whether the specific checks were carried out separately at some point. Results show that use of the checklist is limited. It is not often completed fully and Sign Out and Debrief are often omitted entirely. There were instances observed where oversights were made which would have been prevented if the checklist was used, such as failure to apply warming while the patient was under general anaesthetic.

In minor operations, the checklist stages were often limited to only a few checks which directly applied to the operation, especially in Time Out where many steps may be assumed irrelevant. This may lead to complacency that all steps are irrelevant to minor operations and hence non-compliance with the checklist.

Major operations were more likely to fully comply with the checklist. However, Sign Out and Debrief were still occasionally omitted. Brief and Debrief are important stages recommended by the NHS which improve communication, reduce instances of misunderstanding and facilitate the creation of a Shared Mental Model.

The Shared Mental model is a term used to describe a common purpose and knowledge within a team and is enabled by strong communication. It prevents mistakes, improves awareness and improves performance (5). This is enhanced through briefs, debriefs and team member communication (5). The qualitative criteria were chosen as objective measures of this. Qualitatively, communication of the checklist was most often completed while concurrent activity was being done, and so full engagement with the check was difficult. Additionally, it was often done very quietly such that it was difficult to hear other than by surgeon and anaesthetist. During briefing, team understanding of the procedures was rarely checked before starting the list. Finally, it was often the case that no specific team member took charge and the checks were left to be volunteered by the respective responsible member.

6. Conclusion

Compliance with the WHO checklist is greater in major than minor operations. However, this conclusion is limited by a small data set. Use of Sign Out and Debrief are low in all types and measures should be undertaken to improve compliance with these stages. It is the author's opinion that a focused checklist specific for minor operations should be introduced, thereby mitigating against excessive omission and reduction in mistakes. Additionally, a specific team member should be consistently responsible for the checklist.

References

1. Gawande AA, Thomas EJ, Zinner MJ, Brennan TA. The incidence and nature of surgical adverse events in Colorado and Utah in 1992. Surgery 1999;126:66-75
2. World Health Organisation. Safe Surgery Saves Lives. Second Global Patient SafeteyChallenge. [Brochure]. WHO/IER/PSP/2008.07 WHO; 2008
3. Treadwell JR, Lucas S Tsou AY. Surgical checklists: asystematic review of impacts and implementation. BMJ Qual Saf doi:10.1136/bmjqs-2012-001797
4. NHS National Patient Safety Agency. Five Steps to Safer Surgery. [Internet] NPA; 2010, December. Available from: http://www.nrls.npsa.nhs.uk/resources/collections/10-for-2010/five-steps-to-safer-surgery/?entryid45=92901
5. Renée J. Stout J. Cannon-Bowers, Salas E, Milanovich D. Planning, Shared Mental Models, and Coordinated Performance: An Empirical Link Is Established. The Journal of the Human Factors and Ergonomics Society 1999 41:1