

Checklists, briefings and debriefings

An evidence summary

Updated August 2016



Contents

- Introduction..... 3**
- Surgical safety checklists..... 4**
 - Evidence base 5
 - Wall-mounted checklist..... 7
 - Successful implementation..... 7
- Briefing and debriefing.....10**
 - Why brief and debrief? 10
 - Evidence base 11
- Appendix 1: Briefing and debriefing template examples..... 13**
 - Quick guide to briefing 13
 - Quick guide to debriefing 14
- Other reading 15**

Introduction

This document sets out the latest evidence for the use of surgical safety checklists, briefings and debriefings, providing an overview of research published up to August 2016.

Checklists, briefings and debriefings have become widely used in operating theatres worldwide. The aim of these teamwork and communication tools is to improve the quality and safety of health care services for patients having surgery.

The use of surgical checklists has been shown to reduce adverse events and improve patient outcomes.^{1 2 3} Briefings and debriefings support improved communication, better identification of recurring issues and a reduction in unexpected delays.^{4 5 6}

Analogies to aviation, the military, nuclear power and law enforcement,⁷ where errors are unacceptable, have helped clinicians understand principles of system safety and error causation. The Crew Resource Management (CRM) techniques adopted from aviation for the surgical field include the use of surgical safety checklists, and briefings and debriefings before and after operating sessions. The benefits of these techniques include better teamwork, better satisfaction with care, better processes and reduced error rates.⁸

Checklists were developed for pilots and co-pilots to make sure nothing was forgotten.⁹ The techniques are applicable to the operating theatre because, like in aviation, there is increasing complexity in the delivery of surgery. Even routine surgery requires complex coordination across surgeons, anaesthetists, nurses and technicians, in order to provide timely and effective care.

As the people using them become more familiar with checklists, there is an increased risk checklists are not always referred to and memory is relied upon. Aviation best practice is very clear that the checklist must be used no matter how familiar the process is to the pilot or crew. Clinicians and surgical teams, similarly, need to uphold best practice by referring to the checklist for every list and every patient.

-
- 1 Patel J, Ahmed K, Guru KA, et al. 2014. An overview of the use and implementation of checklists in surgical specialties: A systematic review. *International Journal of Surgery* 12(12): 1317-23.
 - 2 Haynes A, Weiser TG, Berry WR, et al. 2009. A surgical safety checklist to reduce morbidity and mortality in a global population. *New England Journal of Medicine* 360: 491-9.
 - 3 Treadwell J, Lucas S, Tsou A. 2014. Surgical checklists: A systematic review of impacts and implementation. *BMJ Quality Safety* 23(4): 299-318.
 - 4 Jain AL, Jones KC, Simon J, et al. 2015. The impact of a daily pre-operative surgical huddle on interruptions, delays, and surgeon satisfaction in an orthopedic operating room: A prospective study. *Patient Safety in Surgery* 9: 8.
 - 5 Allard J, Bleakley A, Hobbs A, et al. 2011. Pre-surgery briefings and safety climate in the operating theatre. *BMJ Qual Saf* 20(8): 711-7.
 - 6 Papaspyros SC, Javangula KC, Adluri RK, et al. 2010. Briefing and debriefing in the cardiac operating room. Analysis of impact on theatre team attitude and patient safety. *Interact Cardiovasc Thorac Surg* 10: 43-47, 201.
 - 7 Leonard M, Graham S, Bonacum D. 2004. The human factor: the critical importance of effective teamwork and communication in providing safe care. *Quality and Safety in Health Care* 13: 85-90.
 - 8 Catchpole K. 2013. Spreading human factors expertise in healthcare: Untangling the knots in people and systems. *BMJ Quality and Safety* 22(10): 802-8.
 - 9 National Health Service Institute for Innovation and Improvement. 2009. *Saving lives in surgery: A guide for chief executives in implementing the surgical safety checklist*. Coventry: National Health Service Institute for Innovation and Improvement.

Surgical safety checklists

In 2008 the World Health Organization (WHO) introduced the Surgical Safety Checklist as a tool for clinicians to improve safety in operating theatres and to reduce unnecessary surgical deaths and complications.

Following international consultation with surgeons, anaesthetists, nurses, patient safety experts and patients, the checklist was designed to reinforce safety practices and foster better communication and teamwork between clinical disciplines.¹⁰

Communication breakdown is reported as the root cause in more than 50 percent of operative and postoperative adverse events.¹¹ Performing safe surgery relies on the ability of surgical team members to combine professional knowledge and technical expertise with non-technical skills, including communication, teamwork, situational awareness, leadership and decision-making. Researchers observing the interaction between surgical team members have described the negative impact of poor communication on performance and safety.^{12 13 14} If performed effectively, interventions such as the checklist can help teams prevent adverse events and improve other aspects of team preparation, team work and communication.

The WHO recognises surgical care is complex and involves many steps. To minimise unnecessary loss of life or serious complications, there must be 10 essential objectives in any surgical case:

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 anaesthetics, while protecting the patient from pain.
3. The team will recognise and effectively prepare for life-threatening loss of airway or respiratory function.
4. The team will recognise 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 minimise 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.¹⁵

The WHO has specified the checklist should be used as a template and was not intended to be comprehensive. Additions and modifications should be made to fit to local practice.¹⁶

10 World Health Organization. 2008. *Implementation manual: WHO surgical safety checklist (first edition)*. Geneva: World Health Organization.

11 The Joint Commission. 2015. *Sentinel Event Data – Root Causes by Event Type, 2004–2014*. Oatbrook Terrace: The Joint Commission. URL: www.jointcommission.org/assets/1/18/Root_Causes_by_Event_Type_2004-2014.pdf (accessed June 2015).

12 Catchpole K, Mishra A, Handa A, et al. 2008. Teamwork and error in the operating room: analysis of skills and roles. *Annals of Surgery* 247(4): 699–706. PubMed PMID: 18362635. Epub 2008/03/26. eng.

13 Christian CK, Gustafson ML, Roth EM, et al. 2006. A prospective study of patient safety in the operating room. *Surgery* 139(2): 159–73. PubMed PMID: 16455323. Epub 2006/02/04. eng.

14 Wiegmann DA, ElBardissi AW, Dearani JA, et al. 2007. Disruptions in surgical flow and their relationship to surgical errors: an exploratory investigation. *Surgery* 142(5): 658–65. PubMed PMID: 17981185. Epub 2007/11/06. eng.

15 World Health Organization. 2008. *Guidelines for safe surgery (first edition)*. Geneva: World Health Organization.

16 World Health Organization. 2008. *Implementation manual: WHO surgical safety checklist (first edition)*. Geneva: World Health Organization.

The intention of the checklist is not simply a tick-box exercise or only a safety mechanism, but to generate conversation amongst teams. Once the 'habit' of working through the checklist is formed, it begins to build greater teamwork and communication. Better teamwork and conversations are key to reducing harm and error rates.

Evidence base

A number of studies have been undertaken to demonstrate the impacts of the WHO Surgical Safety Checklist. A summary of findings from selected studies is provided in this section.

The original multinational research study to measure the impact of the WHO Surgical Safety Checklist was undertaken in 2008. Nineteen items on the checklist were designed to improve team communication and consistency of care to reduce complications and deaths associated with surgery.¹⁷ Eight hospitals across eight cities were selected – London, Toronto, New Delhi, Amman, Auckland, Manila, Ifakara (Tanzania) and Seattle. Data was collected for 3955 consecutively enrolled patients (over 16 years of age and non-cardiac surgery) following the introduction of the checklist. The rate of death decreased from 1.5 percent to 0.8 percent after the introduction of the checklist. Inpatient complication rates decreased from 11 percent to 7 percent after its introduction – an average overall complication rate decrease of 36 percent.

The same group of researchers published a study two years later that found improvements in postoperative outcomes were associated with an improved perception of teamwork and safety, which may be partially the result of the effect of the checklist. The checklist was also found to be held in such high regard that the overwhelming majority of clinicians would want it used should they ever require surgery themselves.¹⁸

A review of 33 studies relating to the implementation of surgical checklists between 1 January 2000 and 26 October 2012¹⁹ found four key findings:

1. Surgical checklists, such as the WHO Surgical Safety Checklist and Surgical Patient Safety System (SURPASS, used in the Netherlands), offer promising interventions for decreasing patient morbidity and mortality due to surgical operations.
2. The WHO Surgical Safety Checklist has been successfully adapted for implementation in a wide variety of settings, including all surgical specialties, academic and community hospitals, and industrialised and developing countries.
3. Surgical safety checklists were associated with increased detection of safety hazards, decreased surgical complications and improved communication among operating room staff. Other factors independent of checklists, such as concurrent safety improvements, may also explain these improvements.
4. Key components of successful checklist implementation include enlisting support from institutional leaders, training staff on using the checklist, adapting the checklist to incorporate staff feedback and avoiding duplication of the information already routinely collected.

A 2014 systematic review of 16 studies of surgical safety checklist implementation in hospitals worldwide between 2009 and 2012 noted they 'have been shown to significantly improve patient outcomes subsequent to surgery, and therefore their use is being widely encouraged and accepted'.²⁰ The review also concludes that using the checklist improves teamwork and communication, and this may be the mechanism behind the

17 Haynes A, Weiser TG, Berry WR, et al. 2009. A surgical safety checklist to reduce morbidity and mortality in a global population. *New England Journal of Medicine* 360: 491-9.

18 Haynes A, Weiser TG, Berry WR, et al. 2011. Changes in safety attitude and relationship to decreased postoperative morbidity and mortality following implementation of a checklist-based surgical safety intervention. *BMJ Quality and Safety* 20: 102-7.

19 Treadwell J, Lucas S, Tsou A. 2014. Surgical checklists: A systematic review of impacts and implementation. *BMJ Quality Safety* 23(4): 299-318.

20 Patel J, Ahmed K, Guru KA, et al. 2014. An overview of the use and implementation of checklists in surgical specialties: A systematic review. *International Journal of Surgery* 12(12): 1317-23.

improved rates of morbidity and mortality seen in the studies. The results from each of the studies reviewed are shown in Table 1.

Table 1: Overview of the use of checklists

Study	Surgical speciality	Compliance ^a	Effect on surgical process/patient health	Staff attitudes
1	Hurtado et al. 2012	All	N/A	Checklist is beneficial
2	Kasatpibal et al. 2012	All	Variable	N/A
3	van Klei et al. 2012	All	Increased over time	Reduction in in-hospital 30-day mortality
4	Takala et al. 2011	All	N/A	Confirmation of patient identify improved
5	Vats et al. 2010	All	Variable	No significant change in morbidity or mortality
6	Bliss et al. 2012	All	Overall 97.26%	Reduction in adverse patient events.
7	Yuan et al. 2012	All	N/A	Reduced likelihood of SSIs ^b and surgical complications
8	Vogts et al. 2011	All	Variable	N/A
9	Weiser et al. 2010	All	Adherence to safety steps increased	Rate of complications and death rate decreased significantly
10	Haynes et al. 2009	All	N/A	Patient complications, SSIs ^b , unplanned reoperations and rate of death all decreased significantly
11	Levy et al. 2012	Pediatric	Variable for individual checklist items	N/A
12	Avansino et al. 2011	Pediatric	Compliance higher 12 months after inception	N/A
13	Andersson et al. 2012	Orthopedic	N/A	Reminder to administer prophylactic antibiotics
14	Sewell et al. 2011	Orthopedic	N/A	Slight decrease in mortality and overall complication rate
15	Sheena et al. 2012	Otorhinola-ryngology	Significant increase after 12 months	N/A
16	Helmio et al. 2012	Otorhinola-ryneoloey	N/A	N/A

^a Compliance relates to how many times the checklist is completed in surgeries, or if measured more specifically, how many of the checklist sections, or individual checklist items, are completed.

^b SSIs = Surgical Site Infections.

More recently a 2015 systematic review of 25 studies reported inconsistent effects of the WHO checklist on postoperative adverse events. Complications reduced significantly in 10 out of 20 studies, with 4 out of 18 studies reporting a significant decrease in postoperative mortality. The authors noted limitations due to the poor quality of published studies. Compliance with the checklist was also not well studied and where reported there was marked variability in compliance between checklist items. The authors noted the need to measure the broader impact of the checklist on safety culture rather than just checklist compliance.²¹

Several more recent studies of the checklist have focused on compliance with the intervention and understanding variation between hospitals and/or surgical specialties. An observational study in several Chicago hospitals published in 2015 reported inconsistent compliance of the checklist within hospitals and between surgical specialties, and noted that suboptimal compliance has been reported by other study authors.²² In their stepped wedge cluster randomised trial,²³ Haugen et al reported a larger reduction in complication rates when all three parts of the WHO checklist were used (43 percent reduction compared with 38 percent reduction overall).²⁴ The need for checklist implementation to be supported by an underlying safety culture change is a theme across many studies.

In 2015 Mayer et al studied the relationship between completion of the three parts of the checklist and patient outcomes, concluding that completion of all three parts resulted in the most significant reduction in complication rates (a reduction in mortality rates was not seen). The authors also adjusted their results for complexity of the case, resulting in the suggestion that the checklist may be more effective for complex surgeries compared to routine ones.²⁵

21 De Jager E, McKenna C, Bartlett L, et al. 2016 Postoperative adverse events inconsistently improved by the WHO surgical safety checklist: A systematic literature review of 25 studies. *World J Surg* 40: 1842-58.

22 Biffl W, Gallagher AW, Pieracci FM, et al. 2015. Suboptimal compliance with surgical safety checklists in Colorado: A prospective observational study reveals differences between surgical specialties. *Patient Safety in Surgery* 9(1): 5.

23 A stepped wedge cluster randomised trial involves sequential roll-out of an intervention to clusters over a number of time periods.

24 Haugen AS, Softeland E, Almeland SK, et al 2015. Effect of the World Health Organization Checklist on Patient Outcomes: A Stepped Wedge Cluster Randomized Controlled Trial. *Annals of Surgery* 261(5): 821-8.

25 Mayer E, Sevdalis N, Rout S, et al. 2015. Surgical checklist implementation project: The impact of variable WHO checklist compliance on risk-adjusted clinical outcomes after national implementation. *Annals of Surgery* Mar 13 [Epub ahead of print].

Wall-mounted checklist

In 2015–16 the Health Quality & Safety Commission's Safe Surgery NZ programme introduced a paperless surgical safety checklist. The poster is continuously present in a visible location, serving as a memory cue for team members. It is recommended the poster is referred to every time the checklist is undertaken. This helps to avoid omissions that can occur when standardised processes are not clearly written and defined.²⁶ Reading from the checklist for every case helps teams to follow critical safety steps consistently and keeps the process on track, should there be distractions.²⁷

The Safe Surgery NZ programme recommends that different professional groups take a lead in each of the three parts of the checklist: for example, the anaesthetic team leads the sign in, the surgical team leads the time out and the nursing team leads the sign out.

A 2015 study reported that use of a wall-mounted checklist, with different professional groups leading each part of the checklist, was associated with a significant improvement in team engagement and compliance with each of the checklist elements. While compliance with sign in and time out were already high, there was a significant improvement in compliance with sign out (from 22 percent to 84 percent).²⁸

Successful implementation

A 2015 qualitative study of the barriers and facilitators in implementing the checklist across hospitals in England identified the following lessons for implementation, many of which are applicable to the implementation of any quality improvement or change programme within health care systems.²⁹

- **Modification** of the initiative to suit the local context is very important (two or more different versions of the tool or process may be required).
- **Education** around the evidence base for the improvement initiative is critical. This education should be tailored to reach all stakeholders and should hold relevance to the local teams and organisation. Education should include an emphasis of the reasons why there is a need for the improvement in the first place.
- **Training** on the practical application of the improvement should be included. This should focus both on the optimal day-to-day use of the initiative as well as how to deal with resistant members of staff or other potential barriers that might emerge. Training should be multidisciplinary, rather than being delivered to different professional groups independently.
- **Data highlighting the local impact** of the initiative should be fed-back to staff periodically. This will reinforce the personal relevance of the initiative for local teams. Anecdotal staff stories highlighting the benefits of the initiative are particularly powerful and should be shared within multidisciplinary forums.
- **Champions or early adopters** should be identified, elected and nurtured to promote uptake of the initiative on the ground and to act as a 'go to' point for queries around implementation. Social forums or communication channels by which these individuals might influence others should be supported.
- **Buy-in from senior staff** should be sought at the very early stages of implementation. Senior staff members are particularly powerful advocates for the introduction of change and should be harnessed

26 WHO Safe Surgery Saves Lives Frequently Asked Questions. URL: www.who.int/patientsafety/safesurgery/faq_introduction/en/#Q15 (accessed 8 August 2016).

27 Degani A, Wiener AL. 1990. Human factors of flight deck checklist: The normal checklist. NASA. URL: ti.arc.nasa.gov/m/profile/adegani/Flight-Deck_Checklists.pdf (accessed 8 August 2016).

28 Ong AP, Devcich DA, Hannam J, et al. 2015. A 'paperless' wall-mounted surgical safety checklist with migrated leadership can improve compliance and team engagement. *BMJ Qual Saf* doi:10.1136/bmjqs-2015-004545.

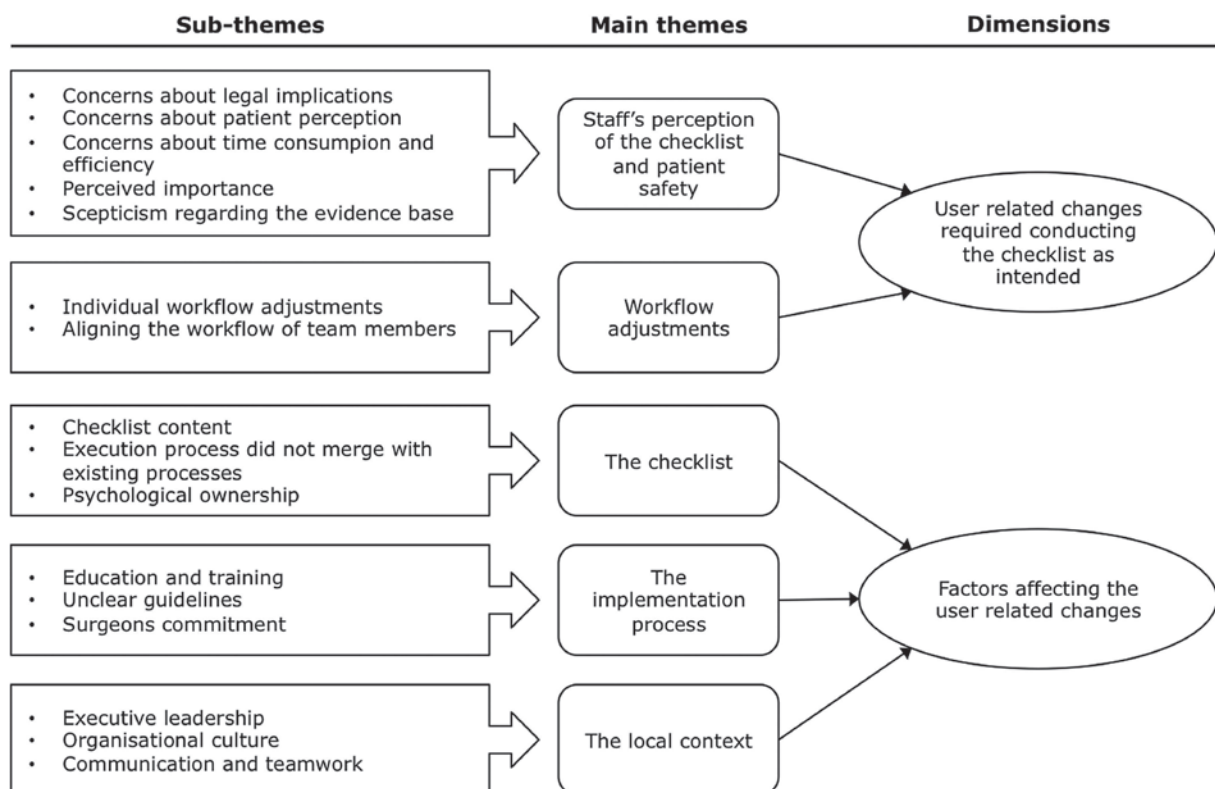
29 Russ S, Sevdalis N, Moorthy K, et al. 2015. A qualitative evaluation of the barriers and facilitators toward implementation of the WHO surgical safety checklist across hospitals in England: Lessons from the 'Surgical Checklist Implementation Project'. *Annals of Surgery* 261(1): 81-91.

wherever possible to communicate to others their commitment to the new initiative, setting the example from the top.

- **Management should be seen to be involved and supportive** of frontline staff during introduction of the initiative and beyond, such that it is seen as an organisational priority from the outset and all levels of the organisation are aligned on a common goal.
- **A system that holds people accountable** for improper behaviour or use of the initiative should be considered.
- **Auditing of the initiative should be carefully thought through** such that the 'how' it is being used can be captured as well as the 'if'. Observations of its use in practice are strongly encouraged. This will inform on specific local barriers and facilitators surrounding its use, whether it is being used in the intended manner and whether there are any unintended consequences of its introduction. It will also aid the provision of comprehensive feedback to team members for quality improvement.

A 2015 systematic review of barriers and facilitators relating to the introduction of the surgical safety checklist summarised the identified themes (see Figure 1). The authors noted, however: 'The checklist is in essence a complex social intervention aimed to improve communication and teamwork in a strictly hierarchical context. Even when initial perceptions and attitudes regarding the checklist are positive, it does not guarantee long-term improvement... [I]t is not enough to have a list of barriers and facilitating factors: we also need to deal with the interaction between them'.³⁰

Figure 1: Identified barriers and facilitators related to the introduction of the surgical safety checklist (Bergs et al 2015)



³⁰ Bergs J, Lambrechts F, Simons P, et al. 2015. Barriers and facilitators to the implementation of surgical safety checklists: a systematic review of the qualitative evidence. *BMJ Quality & Safety* 0: 1-11.

A 2016 US study has explored the relationship between operating room teamwork and checklist completion. The study highlighted that clinical leadership, surgeon buy-in and teamwork were significantly associated with improved checklist completion.³¹

The Health Quality & Safety Commission commissioned a report into attitudes to the checklist in New Zealand. The report found:

- theatre personnel across professions and specialties have different attitudes towards the checklist and engagement with it on different levels
- theatre personnel take their cues from surgeons (and to a lesser extent, anaesthetists and senior nurses) on how to engage with the checklist. Where these senior personnel are champions, the phases and checks are more robustly followed and there is greater engagement across the team³²
- across the study sites, the sign in and time out phases of the checklist are being used for most procedures, including routine and complicated ones.

A Canadian study investigated the compulsory introduction of checklists and found their mandatory implementation was not associated with significant reductions in operative mortality or complications. The study alludes to greater success where the introduction of a checklist is phased, well planned and well communicated.³³

Implementation of a checklist is most successful when it is planned, communicated and there are education sessions before the techniques are integrated into day-to-day work. Acknowledging the new way of working may not feel easy and take time to get right, but the likelihood of the techniques becoming business as usual is stronger.

The National Health Service Institute for Innovation and Improvement synopsis of the most effective way to introduce the surgical safety checklist provides a succinct summary of an approach to ensure consistent and sustained use of the techniques:

1. Acknowledge the complex nature of the task.
2. Ensure strong and visible executive leadership.
3. Develop and support clinical champions.
4. Plan and stage implementation.
5. Know when and where to seek help.³⁴

31 Singer SJ, Molina G, Zhonghe L, et al. 2016. Relationship between operating room teamwork, contextual factors, and safety checklist performance. *Journal of the American College of Surgeons* (in press) 2016.07.006.

32 Litmus. 2012. *Attitudes towards the surgical safety checklist and its use in New Zealand operating theatres*. Wellington: Health Quality & Safety Commission. URL: www.hqsc.govt.nz/our-programmes/reducing-perioperative-harm/publications-and-resources/publication/954/.

33 Urbach D, Govindarajan A, Saskin R, et al. 2014. Introduction of surgical safety checklists in Ontario, Canada. *New England Journal of Medicine* 370: 1029–38.

34 National Health Service Institute for Innovation and Improvement. 2009. *Saving lives in surgery: A guide for chief executives in implementing the surgical safety checklist*. Coventry: National Health Service Institute for Innovation and Improvement.

Briefing and debriefing

Surgical briefings and debriefings include all patients for an operating session, for both elective and acute sessions.

Briefings are a communication and teamwork tool that support the sharing of information and early identification of potential hazards. Briefings allow any issues that might affect the smooth-running of the surgical list to be identified early, such as patient, staffing or equipment issues. They also provide an opportunity to identify any human factors that can lead to error, including tiredness and fatigue, nutritional or emotional state, multi-tasking and loss of awareness.³⁵

A briefing takes place at the start of the list, before an operating session, and lasts for a few minutes. Everyone is at the same start point, surprises are avoided, and there is a positive impact on how the team works together. In a 2015 article in the *Australian and New Zealand Journal of Surgery*, Civil and Shuker noted: 'briefings are short, they generate effective teamwork and the time spent early is typically outweighed by the time saved later'.³⁶

An example of the flow of the briefing discussion is that it opens with team introductions, which include the name and role of each team member. Any staffing issues are talked through, such as sickness; anaesthetic safety checks are usually included at this stage; changes to the list or clarification about the list are discussed; equipment and instrumentation issues are communicated; and the time for the list is confirmed.

Debriefing occurs at the end of an operating session and involves all members of the theatre team. It allows the team to assess what they did well, what the challenges were and what they will do differently next time.³⁷

The debriefing discussion flow begins with what went well; discussing if the team performed effectively; discussing any communication issues; discussing what might have been done differently and other learning points; review of the timing of the operating list (was there enough time/was there too much time?); and closing with checking whether the debriefing helped the team.³⁸

Briefings and debriefings are often a simple verbal interchange, rather than a paper checklist to work through. They are not intended to replace or duplicate the surgical safety checklist. Both briefing/debriefing and checklist techniques are intended to complement each other, build teamwork, improve communication and reduce errors. This is important because patient safety is improved when teams communicate well and work well together.

There is no single or right way to brief or debrief. Like surgical safety checklists, they should be tailored for each hospital/theatre.

See Appendix 1 for an example template for briefings and debriefings.

Why brief and debrief?

Approximately half of hospital adverse events are associated with theatre procedures. Surgical complications and adverse outcomes have been linked to a lack of communication and coordination among surgical teams. These communication breakdowns may lead to team members being or feeling uninformed or misinformed.³⁹

Briefings help create a broader knowledge base for the planned surgical list so each team member has a better understanding of the tasks at hand, and can anticipate future events and plan accordingly.

35 Brennan PA, et al. 2016. Good people who try their best can have problems: recognition of human factors and how to minimise error. *British Journal of Oral & Maxillofacial Surgery* 54(1): 3-7.

36 Civil I, Shuker C. 2015. Briefings and debriefings in one surgeon's practice. *ANZ J Surg* 85: 321-3.

37 *Ibid.*

38 National Health Service Institute for Innovation and Improvement. 2009. *The productive operating theatre: Building teams for safer care, team working*. Coventry: National Health Service Institute for Innovation and Improvement.

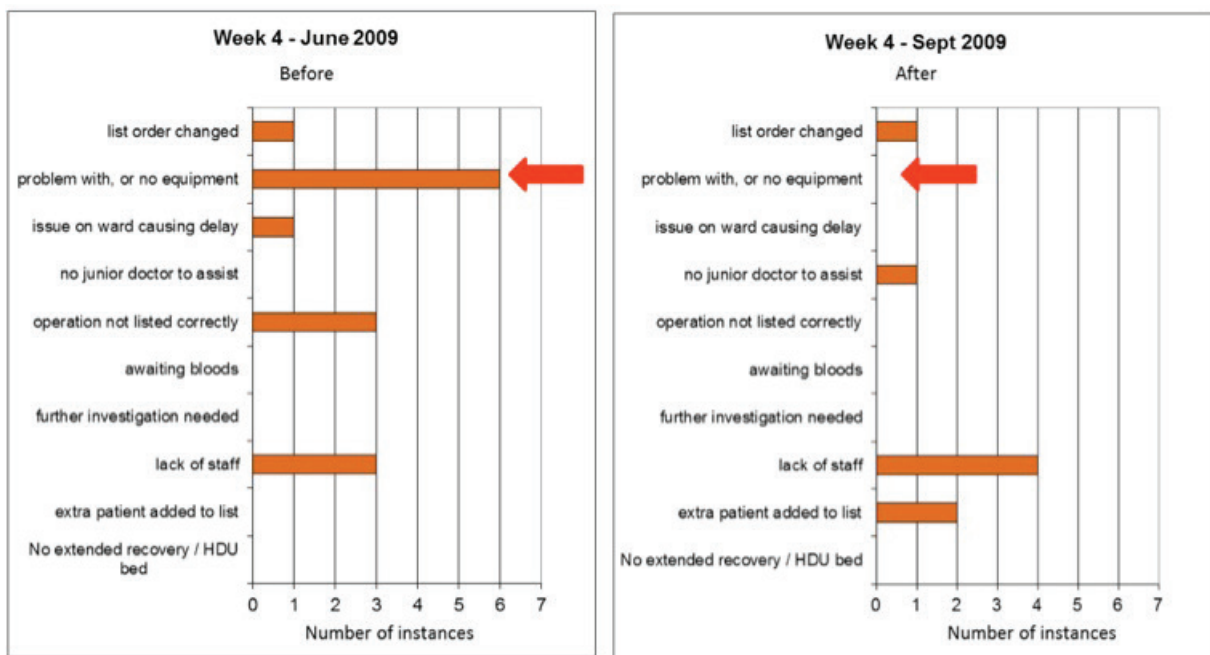
39 Einav Y, Gopher D, Kara I, et al. 2010. Preoperative briefing in the operating room: Shared cognition, teamwork, and patient safety. *Chest* 137(2): 443-9.

Debriefings enable teams to take time to learn from real-time situations that went well or didn't go to plan by discussing what happened after an operating session. They provide opportunities for improvement, learning not blaming, improvement in staff wellbeing and a forum to say thank you.⁴⁰

Like checklists, briefing and debriefing is more than working through a series of information points. It promotes discussion, which in turn builds better teamwork. These techniques have also been found to have led to efficiency gains because issues are identified at the start of the operating session and before the patient is in theatre.

To improve the uptake of these techniques, for example, some theatres visually display the glitches avoided as a result of briefing. Figure 2 provides a before-and-after snapshot of improvements that resulted from undertaking briefings.⁴¹

Figure 2: Glitches avoided by team briefing



Note: HDU = high dependency unit

Evidence base

Research has observed that the complexity of medical care, coupled with inherent limitations in human performance, make it critically important for surgical teams to have standardised communication tools, create an environment where individuals can speak up and express concerns, and share common 'critical language' to alert other team members to unsafe situations.⁴²

In their simulation-based observation study, Cumin et al found there were many instances where important information was not shared, with some team members more likely to share information than others. In particular, anaesthetists and senior surgeons were most likely to share information, while anaesthetic technicians, scrub nurses and surgical registrars were least likely to speak up. They suggest this may be influenced by tribalism, poor understanding of the importance or relevance of information or a hierarchical

40 National Health Service Institute for Innovation and Improvement. 2009. *The productive operating theatre: Building teams for safer care, team working*. Coventry: National Health Service Institute for Innovation and Improvement.

41 Health Improvement and Innovation Resource Centre. 2010. *NHS productive series*. URL: www.hiirc.org.nz/page/17675/nhs-productive-series/?q=productive%20series&highlight=productive%20series§ion=13414.

42 Leonard M, Graham S, Bonacum D. 2004. The human factor: The critical importance of effective teamwork and communication in providing safe care. *Quality and Safety in Health Care* 13: 85-90.

culture in operating room teams. They suggest a need for specific strategies to promote a more democratic environment and to facilitate speaking up in order to mobilise the full resources of the team.⁴³

A number of survey-based or observational studies have been undertaken to demonstrate the impacts of briefings and debriefings. These studies have reported the following outcomes and benefits:

- 1. Reduction in unexpected delays and interruptions during surgery:** A 2015 study in an orthopaedic setting reported a 72 percent reduction in the rate of unexpected delays per case (from 23.1 percent to 6.5 percent).⁴⁴ A US study reported an improvement in the median surgeon rated flow (from 5/10 to 9/10), and a reduction in questions asked outside of the huddle.⁴⁵
- 2. Improved communication and team work:** A simulation-based observational study found information was five times more likely to be communicated effectively if it was mentioned in a formal communication setting, such as a briefing.⁴⁶
- 3. Impact on theatre efficiency:** In an orthopaedic setting, briefings averaged at less than a minute per case, which was deemed to be non-disruptive to work flow.⁴⁷ A 2011 study into the introduction of a 5-10-minute preoperative surgical briefing found there was no significant difference in operating theatre start time after the introduction of the briefing.⁴⁸ There is growing evidence that the time taken to undertake a briefing is well spent, leading to efficiencies later in the list through reduced delays and better flow. A UK orthopaedic surgeon who regularly briefs, reported expanding his list by another hip arthroplasty.⁴⁹

Fewer studies have been undertaken on debriefings specifically. In a 2014 study in Florida, the participating hospital found that debriefing supported continuous process improvement by encouraging each team member to creatively identify solutions to issues encountered during the perioperative period.⁵⁰

Papaspyros et al found the introduction of debriefing in cardiac operating rooms in the UK helped identify multiple recurring errors, such as faulty instruments, background chatter, and excessive operating room traffic. Staff also felt that debriefings improved communication and professionalism.⁵¹

43 Cumin D, Skilton C, Weller J. 2016. Information transfer in multidisciplinary operating room teams: a simulation-based observational study. *BMJ Quality & Safety* 16: 16.

44 Jain AL, Jones KC, Simon J, et al. 2015. The impact of a daily pre-operative surgical huddle on interruptions, delays, and surgeon satisfaction in an orthopedic operating room: A prospective study. *Patient Safety in Surgery* 9: 8.

45 Allard J, Bleakley A, Hobbs A, et al. 2011. Pre-surgery briefings and safety climate in the operating theatre. *BMJ Qual Saf* 20(8): 711-7.

46 Cumin D, Skilton C, Weller J. 2016. Information transfer in multidisciplinary operating room teams: a simulation-based observational study. *BMJ Quality & Safety* 16: 16.

47 Jain AL, Jones KC, Simon J, et al. 2015. The impact of a daily pre-operative surgical huddle on interruptions, delays, and surgeon satisfaction in an orthopedic operating room: A prospective study. *Patient Safety in Surgery* 9: 8.

48 Ali M, Osborne A, Bethune R, et al. 2011. Preoperative surgical briefings do not delay operating theatre start time and are popular with surgical team members. *J Patient Safety* 7(3): 139-43.

49 Civil I, Shuker C. 2015. Briefings and debriefings in one surgeon's practice. *ANZ J Surg* 85: 321-3.

50 Marks SW, Loskove J, Greenfield A, et al. 2014. Surgical team debriefing and follow-up: Creating an efficient, positive operating room environment to improve patient safety. *APSF Newsletter*. URL: www.apsf.org/newsletters/html/2014/June/04_surgicaldebrief.htm.

51 Papaspyros SC, Javangula KC, Adluri RK, et al. 2010. Briefing and debriefing in the cardiac operating room. Analysis of impact on theatre team attitude and patient safety. *Interact Cardiovasc Thorac Surg* 10:43-47, 201

Appendix 1: Briefing and debriefing template examples⁵²

Quick guide to briefing

What is it?	<ul style="list-style-type: none"> The plan for the day is discussed by all team members
When?	<ul style="list-style-type: none"> Initiate the briefing before the first case of the day, once all team members are available in the department
Why?	<ul style="list-style-type: none"> Ensure a shared understanding of the plan for the day Anticipate and prepare for problems
Who is leading the briefing?	<ul style="list-style-type: none"> It can be any member of staff Consider rotating the lead including and encouraging junior staff/ trainees?
People	<ul style="list-style-type: none"> Team members introduce themselves Clarify roles, responsibilities, actions and interactions - who's doing, what, where, when Who's missing? Does everyone feel comfortable about today? Qualify any supervision/assessment considerations Remember - we're part of a team Everybody has a valid role, perspective and opinion Additional personnel, eg, multi-speciality case/ perfusionists/ radiography
List	<ul style="list-style-type: none"> Highlight any issues arising from the previous list's debrief Overview of the list <ul style="list-style-type: none"> Any changes? Anticipated events, eg, Fire Alarm test, Industry observer If emergency procedures are needed what changes may be necessary? Details of each case <ul style="list-style-type: none"> Be clear about the plan, expectations, special considerations, eg, latex allergy/positioning
Equipment	<ul style="list-style-type: none"> What, where, when and how Loan equipment Decontamination Issues Consumables
Questions and concerns	<ul style="list-style-type: none"> Check for any misunderstandings Ask the team to highlight potential risks and hazards Identify and discuss contingency and mitigation plans Agree when the debrief will be performed

⁵² Patient Safety First. 2014. *Surgical safety: To improve the care for patients undergoing surgical procedures in the hospital setting*. URL: www.patientsafetyfirst.nhs.uk/Content.aspx?path=/interventions/Perioperativecare/.

Quick guide to debriefing

What is it?	<ul style="list-style-type: none"> A discussion of the day's list and an opportunity to learn from what went well and what didn't
When?	<ul style="list-style-type: none"> Perform the debrief before team members start leaving the theatre/department
Why?	<ul style="list-style-type: none"> Aim is to improve rather than blame Opportunity to feedback on team learning Capture problems, trends and near misses
Who is leading the debriefing?	<ul style="list-style-type: none"> It can be any member of the team Consider rotating the lead including students and trainees? Consider giving the lead to the team member who is often the first to leave the theatre
How to debrief	<ul style="list-style-type: none"> Reflect; sharing information and perspectives Own personal views, start sentence with 'I' No direct criticism or blame Openness and honesty Encourage everyone to contribute Acknowledge, glitches, mistakes, distractions and interruptions Reflect on your own work as well as others Think about individual, team and system contributors to events End on a high/positive learning point
What went well and why	<ul style="list-style-type: none"> Did you work as well as you could have? If not, why? Did you speak up when you needed to? Was the whole team present? Did we work well as a team - were we well prepared? How was the atmosphere in theatre? Was the briefing beneficial? Was anything missed out?
What didn't go well and why	<ul style="list-style-type: none"> Were there any times when you didn't know what was going on? Were there any surprises? Were there any errors? Violations? Were there any potential errors or glitches? Were they linked to: <ul style="list-style-type: none"> - Equipment? - Leadership? - Environment? - Communication? - Process? - Decision making? - Planning? - Training? - Time pressures? - Staffing? - Distraction/interference - External influences? - What's happening in the Trust?
Close the loop: Record, feedback and actions	<ul style="list-style-type: none"> Record successes and learning points What do we need to change? Does anything require escalation? What can we do ourselves? Who will take forward? What do we need external or senior support for? Who will take forward? Record actions

Other reading

Awad S, Fagan SP, Bellows C, et al. 2005. Bridging the communication gap in the operating room with medical team training. *The American Journal of Surgery* 190(5): 770-4.

Botwinick L, Bisognano M, Haraden C. 2006. *Leadership guide to patient safety*. Cambridge, United States: Institute for Healthcare Improvement.

de Vries E, Prins HA, Crolla RM, et al. 2010. Effect of a comprehensive surgical safety system on patient outcomes. *New England Journal of Medicine* 363(20): 1928-37.

Fourcade A, Blache J-L, Grenier C, et al. 2012. Barriers to staff adoption of a surgical safety checklist. *BMJ Quality and Safety* 21(3): 191-7.

Gough I. 2010. A surgical safety checklist for Australia and New Zealand. *ANZ Journal of Surgery* 80: 1-2.

Health Improvement and Innovation Resource Centre. 2010. *NHS productive series*. URL: www.hiirc.org.nz/page/17675/nhs-productive-series/?q=productive%20series&highlight=productive%20series§ion=13414.

Karl R. 2010. Briefings, checklists, geese and surgical safety. *Annals of Surgical Oncology* 171: 8-11.

Lingard L, Espin S, Rubin B, et al. 2005. Getting teams to talk: Development and pilot implementation of a checklist to promote interprofessional communication in the OR. *Quality and Safety in Health Care* 14(5): 340-6.

McKoin S, Arbittier D, Wesner VS, et al. 2010. Building a culture of operating room safety using crew resource management. *Pennsylvania Patient Safety Advisory* 7.

National Patient Safety Agency. 2011. *The WHO surgical safety checklist: To reduce harm by consistent use of best practice*. URL: <https://arms.evidence.nhs.uk/resources/qipp/237571/attachment>.

Patient Safety First. 2009. *The 'how to' guide for reducing harm in perioperative care version 2*. London: Patient Safety First.

Royal Australasian College of Surgeons. 2009. *Surgical safety checklist (Australia and New Zealand)*. URL: [www.surgeons.org/media/12661/LST_2009_Surgical_Safety_Check_List_\(Australia_and_New_Zealand\).pdf](http://www.surgeons.org/media/12661/LST_2009_Surgical_Safety_Check_List_(Australia_and_New_Zealand).pdf).

Safe Surgery NZ. 2015. Meeting and presentation materials – presentation for surgeons. URL: www.safesurgery2015.org/presentation-materials.html.

Stawicki S, Moffatt-Bruce SD, Ahmed HM, et al. 2013. Retained surgical items: A problem yet to be solved. *Journal of the American College of Surgeons* 216(1): 15-22.

Cover photo kindly provided by Waikato District Health Board