

Attitudes towards the Surgical Safety Checklist and its Use in New Zealand Operating Theatres

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The researchers would like to acknowledge and express gratitude to the theatre personnel and patients who contributed their time and views to this study.

1. Executive Summary

1.1 Introduction

The Safe Surgery Saves Lives initiative was established by the World Alliance for Patient Safety as part of the World Health Organization's (WHO's) efforts to reduce the number of surgical deaths across the world. The **surgical safety checklist** (the checklist) is intended to give surgical teams a simple, efficient set of priority checks for ensuring patient safety and facilitating team work and communications in every operation performed. The checklist was launched in New Zealand in August 2009.

The Health Quality and Safety Commission New Zealand commissioned Litmus to undertake a study with theatre personnel to explore attitudes towards the checklist and how it is used in a range of hospitals in New Zealand.

Specifically, the study explored:

- attitudes towards the checklist amongst theatre personnel
- the extent to which the checklist is being used in operating theatres
- facilitators and barriers to the use of the checklist in operating theatres
- changes required that could improve the use of the checklist in operating theatres.

A total of **68** theatre personnel including surgeons, anaesthetists, nurses and anaesthetic technicians were interviewed in five hospitals (study sites). A group of patients who had undergone elective surgery in a North Island main centre during the past six months were asked about their perceptions and experiences of the checklist. Fieldwork was undertaken between July and August 2012.

1.2 Checklist overview

Theatre personnel across the sites report routinely using components of the checklist in most cases, including in routine and lengthier complicated procedures, and in major event situations (eg, after the February 2011 Canterbury earthquake). However, personnel note that the checklist is used less in emergency trauma surgery or emergency caesareans.

In general, there is a lack of understanding of the overall intent of the checklist. Most personnel are not seeing the checklist as a *team tool to ensure patient safety and facilitate team work and communications*; rather they see it as a *compliance document that individuals and teams are accountable for*. Despite the checklist's widespread use across the sites, some theatre personnel feel they, and other team members, are becoming blasé about the checklist and 'ticking the boxes', rather than actively conducting the checks.

Theatre personnel take their cues from surgeons and, to a lesser extent, anaesthetists and senior nurses on how to engage in the checklist. Where these personnel are champions of the checklist, the phases and checks are more robustly followed and there is greater engagement across the team. However, if these senior personnel are less engaged or feel

the checklist is undermining their professional judgement, there is far less of a focus on teamwork and communication, and the checklist is conducted less rigorously.

Some theatre personnel feel that the checklist has become unmanageably complex, containing too many checks that are not critical to the majority of surgical procedures conducted in New Zealand. The inclusion of non-applicable answers and spaces for comments and signatures also complicates the checklist and can make it unmanageable. The introduction of The Productive Operating Theatre Programme (TPOT) quality improvement tool into four of the five hospitals in 2010 has resulted in some perceived duplication between this tool and the checklist.

Supporters of the checklist relayed examples where the checklist has contributed to their individual safe surgical practice, for example, incorrect spelling of patient names, incomplete consent for procedures, picking up allergies and receiving timely reminders about antibiotic prophylaxis. The checklist is considered by many theatre personnel to have greater relevance in developing countries that have fewer resources, weaker health systems and lower capacity amongst health workers than developed countries.

As encouraged by the WHO Implementation Guide, all study sites had adapted the checklist template for the specific needs of their own hospital or district health board, both in terms of content and look and feel. Take up and engagement with the checklist is enhanced where it has a colour or form that distinguishes itself from other paperwork and there is a strong presence of the WHO logo.

1.3 Sign In, Time Out and Sign Out

Sign In is routinely conducted as part of the surgical safety checklist. The team member who greets the patient is generally the person responsible for coordinating Sign In (a nurse or anaesthetic technician). Coordinators consider that the main function of Sign In *is to ensure that the correct procedure is being performed on the right patient.*

Coordinators modify the Sign In checks according to how relevant they perceive the checks are to the procedure, their level of comfort performing the checks, the anxiety of the patient and the order of the patient on the surgery list. Checking surgeon availability, anaesthetic safety and equipment are reported to be more relevant at the start of the list, especially when there is continuity for the rest of the list. Some of the Sign In checks are rigorously undertaken while others are glossed over or just ticked without the checks being confirmed.

Time Out was a known concept before the introduction of the checklist, and was conducted in some form by surgeons or teams at more than one study site. It is considered by most theatre personnel to be an *important final safety check and ensuring everyone is on the same page before knife to skin.* It is reported to be the most effectively implemented phase of the checklist.

Time Out is mainly coordinated by a circulating nurse. The participation of surgeons and anaesthetists during Time Out is varied. While a few are reported to take an active role in Time Out, by asking for it to be called and fully participating in the checks, others are reported to be less engaged in the process, consider it a burden and prefer it is done concurrently with other activities (eg, scrubbing).

Sign Out is the least well implemented phase of the checklist. The end of the procedure is a busy time for theatre personnel and is a particularly critical time for the anaesthetic team because they are waking up the patient. There is also pressure to progress through the lists in a timely manner and with short turnaround times between patients.

Theatre personnel comment that having everyone physically present after wound closure to conduct Sign Out is also challenging. Often, the surgeon has left the operating room, to dictate his/her notes or to take a break before the next patient, and has left his/her registrar to close the wound. When Sign Out is conducted, it is generally a discussion between the surgeon and the nursing team to confirm the counts are correct and specimens have been correctly labelled. Rarely does the coordinator verbally confirm key concerns for patient handover or whether there are equipment issues that need to be addressed.

1.4 Theatre personnel typologies

When all factors are analysed *holistically, in combination*, for all of the **68** theatre personnel interviewed across the five sites, five key typologies emerge. The typologies include:

- *Quality Improvers*: Early adopters and champions of the checklist who hold patient safety at the core of their practice and view the checklist as having system-wide benefits. Quality Improvers can be surgeons, anaesthetists and nurses.
- *Risk Protectors*: Routinely use the checklist (mainly Time Out) in their practice. They see the benefit of the checklist to protect them and their profession from risk. They may have had, or see, the potential for a near miss or adverse event or know of others who have had a near miss or adverse event. Orthopaedic and ear, nose and throat surgeons and ophthalmologists, and other specialties involving procedures with left or right distinctions or multiple structures, are often in this typology.
- *Team Players*: Engage in the checklist as it contributes to their feeling of a team and gives them a voice in theatre. Many in this typology also find the checklist beneficial for professional development as they learn more about procedures. Nurses, junior doctors and anaesthetist technicians often fall into this typology.
- *Professionally Undermined Compliers*: See the checklist as a challenge to their profession or practice and feel that the checklist unnecessarily adds to the time of the procedure. They tend to be older general surgeons and anaesthetists.
- *Day to Dayers*: Personnel just doing their job and complying with the checklist. They neither hold strong attachments to the checklist or significant criticisms. Day to Dayers are typically nurses and anaesthetic technicians.

1.5 Patients' views

Most patients found these checks comforting, particularly if the team member coordinating the checks explained that the checks were being conducted as a final safety check before going to theatre and they acknowledged that the patient would have been asked the questions several times earlier. However, where the reasons for conducting the checks was not explained, patients felt they were being conducted due to poor communication between theatre personnel.

1.6 Suggestions to improve the use of the checklist

The study has highlighted suggestions that could improve the use of the checklist in operating theatres:

- Communicating with theatre personnel and hospital management about the original focus of the checklist i.e. a team tool to ensure patient safety by facilitating team work and communications, rather than a compliance document.
- Communicating data and case studies of incidents where the checklist has enhanced patient safety and facilitated team work and communications, rather than solely communicating non-compliance with the checklist.
- Using champions to demonstrate good practice use of the checklist in the New Zealand context (eg, short video, peer review/observation).
- Keeping the checklist simple by focussing on the evidence-informed safety checks recommended by the WHO, and removing spaces for comments, signatures and dates.
- Considering introducing a shortened version of the checklist for more straightforward procedures.
- Providing the checklist in a poster, whiteboard or other more participatory format so all theatre personnel can follow the checks and engage in the process.
- Introducing critical moments or prompts to signal Sign Out, and/or encouraging surgeons to play a stronger role in this phase.

2. Introduction

2.1 Surgical safety checklist

The Safe Surgery Saves Lives initiative was established by the World Alliance for Patient Safety as part of the WHO effort 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.¹

The **checklist** is intended to give surgical teams a simple, efficient set of priority checks for ensuring patient safety and improving effective teamwork and communication in every operation performed.

It was informed by peer-reviewed evidence and expert consensus and was trialed in eight hospitals around the world. One of the hospitals that trialed the checklist was Auckland City Hospital. The use of the checklist reduced the rate of deaths and complications by more than one third across the trial hospitals.²

The checklist divides the operation into three phases, each corresponding to a specific 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).

The checklist was launched in New Zealand in August 2009.

There is increasing evidence that, to achieve the full benefit of the checklist, there needs to be an understanding of, and a strategy for, mitigating the technical, social – political and psychological barriers to using the checklist.³

2.2 Attitudes towards the surgical safety checklist and its use in operating theatres

The Health Quality and Safety Commission New Zealand commissioned Litmus to explore theatre personnel's attitudes towards the checklist and how it is used in a range of hospitals in New Zealand.

Study objectives

Specifically, the study explored:

- attitudes towards the checklist amongst theatre personnel
- the extent to which the checklist is being used in operating theatres

¹ World Health Organization, 2009.

² Haynes et al., 2009.

³ Health Quality and Safety Commission New Zealand, 2009.

- facilitators and barriers to the use of the checklist in operating theatres
- changes required that could improve the use of the checklist in operating theatres.

Approach

Views of theatre personnel

Five hospitals (study sites) were selected for the study:

- two public hospitals in a North Island main centre
- one public hospital in a South Island main centre
- one public hospital in a North Island provincial centre
- one private hospital in a North Island main centre.

These study sites had between five and 37 theatres, conducting between 4,200 and 45,000 surgical procedures per annum.

A purposeful sampling frame was adopted. Theatre managers were provided with an information sheet to circulate to theatre personnel ahead of the site visit, and an overview of the range of personnel required for the study. Theatre managers recruited a few theatre personnel (mainly checklist champions) for the study. However, most personnel were recruited via snowballing in tea rooms, common areas and corridors.

Interviews were undertaken with a total of **68** surgeons, anaesthetists, nurses and anaesthetic technicians across a range of surgery specialties (cardiothoracic, general; gynaecology, ear, nose and throat (ENT)/otorhinolaryngology (ORL), head/neck, neurosurgery, orthopaedics, ophthalmology, paediatrics, urology) as listed below⁴.

Table 1: Theatre personnel interviewed

Role	Number of interviews
Theatre nurses	30
Anaesthetic technicians	18
Surgeons	11
Anaesthetists	9
TOTAL	68

All surgeons and anaesthetists and some nurses had experience with the surgical safety checklist in other hospitals in New Zealand and overseas, and therefore also drew on their experiences in the interviews. The study included full-time, part-time, permanent and temporary personnel.

An overview of the surgical capacity at each study site was given by a theatre manager (or equivalent) in each of the study sites, before fieldwork commenced.

Interviews were conducted before and after the surgery lists or during breaks. Interviews were conducted in private meeting rooms or staff common areas in close proximity to theatres and lasted about 20 minutes. Some personnel were interviewed in pairs or groups, at their request. Interviews were not conducted in theatre to ensure candid responses.

Interviews were conducted between 3 July and 7 August 2012.

⁴ Theatre managers and nurses who had previously worked in obstetrics and gynaecology provided insight into the use of the checklist in these specialities.

Patients' views

A focus group of seven patients who had undergone elective surgery in a North Island main centre in the past six months was also conducted. The purpose was to gauge patient's experiences with being checked before the induction of anaesthesia and their perceptions of the surgical safety checklist as a tool for safe surgical practice.

Patients were recruited through a qualitative research panel.

Caveats

The information contained in this report represents the views of **68** theatre personnel across five study sites who have had involvement in the surgical safety checklist and **seven** patients who had recently undergone elective surgery. Given its qualitative nature, the findings of this report cannot be generalised to the wider population of theatre staff and patients. However, research themes are consistent across theatre personnel and hospital settings and across the patient focus group, which increases the dependability and rigour of the findings.

Throughout this report the terms 'most' refers to more than one half of all participants, 'a few' refers to less than five participants and 'some' refers to more than five but less than one half of all participants.

3. Checklist Overview

1. *There is widespread use of the checklist across the study sites*

The surgical safety checklist was introduced across the study sites in 2009/10. Within each of the five sites, clinicians and nurse educators developed the checklist form, procedure documents and training material. Training typically involved a workshop or PowerPoint presentation, and at least one of the study sites had introduced role plays. Not all personnel were available or opted to attend the training and were therefore expected to learn through participation. Since the introduction of the checklist, there has been minimal follow-up training, and it is not clear if the checklist is routinely part of theatre staff's induction programme. Within each of study sites, it was trialled by a theatre team before rolling it out across the site.

Theatre personnel across the study sites report routinely using components of the checklist in most cases, including in routine and lengthier complicated procedures. The checklist is also used in times of major events, such as after the February 2011 Canterbury earthquake, due to the high number of same or similar orthopaedic admissions and the risk of error when confirming patient identity in high-pressure situations.

Theatre personnel note that they are less likely to use the checklist in trauma surgery or emergency caesareans, and may not record that the checklist was not used on incident reports. A few also comment that they are more relaxed with using the checklist at nights and in weekends.

In the earthquake we were doing it consistently. It's habit now. However, in an emergency if it is life and death it doesn't get done. If they are a bleeder and we don't shut it off, then they are dead. (Nurse)

Despite the checklist's widespread use across the sites, some theatre personnel feel they, and other team members, are becoming blasé about the checklist and 'ticking the boxes', rather than actively conducting the checks.

It has become routine and you are not really there. Sometimes I think have we done Time Out? It's a bit like locking the door and turning the lights off. You have done it, but you can't remember doing it. It becomes hum-drum. (Surgeon)

2. *The checklist is being used as a compliance tool*

In general, there is a general lack of understanding of the overall intent of the checklist. Most personnel are not seeing the checklist as a *team tool to facilitate teamwork communication and ensure patient safety*; rather they see it as a *compliance document that individuals and some teams feel accountable for*. This perception is driven by a number of factors.

1. *The A4 format of the checklist*⁵. This format does not facilitate a participatory approach to the checklist, as only the coordinator can see the checks, and it does not allow other team members to follow and fully participate in the checks. There do

⁵ One hospital has built the checklist into the perioperative record, rather than having the checklist as standalone.

not appear to be any alternative formats for the checklist across the sites that could enhance participation, for example, laminated posters.

2. *The recording of the coordinator(s) name, signature, designation and date of checklist completion.* Recording of these details makes coordinators feel personally accountable for the checks they are responsible for coordinating (in most cases, there are different coordinators for the Sign In, Sign Out and Time Out phases of the checklist). On the other hand, personnel who are not coordinating the checks generally do not feel accountable for the checks that are not in their domain, for example, nurses feel less accountable for the anaesthetic checks. (Note: in the WHO checklist, there is no requirement to record names, delegations or dates.)
3. *The auditing of the checklist.* Most sites have, or are, conducting regular audits of teams' compliance with the checklist, both through observation and administrative audits, and the results of these audits are communicated widely. One hospital monitors individual coordinators' compliance with the checklist and issues memorandums to personnel if they are found 'not to be complying'.
4. *The longevity of the checklist.* Currently, the checklist is a document that forms part of the patient's file, rather than being a tool that belongs to and remains in the operating theatre. There is also a strong view that the checklist would be included as important evidence if there was an adverse event.

Other indications of personnel not being clear of the purpose of the checklist include some personnel's desire to record on the checklist the responses to the checks, for example, the type and dose of prophylaxis antibiotics given. Others feel there is duplication between the checks contained in the checklist and information being collected and recorded by the nursing, surgical and anaesthetic teams on their respective paperwork or communications. Common examples provided of this duplication are that anaesthetic teams brief the Post Anaesthesia Care Unit on key concerns for handover, and nursing teams document that the counts are correct on their paperwork.

3. The checklist is considered by most theatre personnel to have greater relevance for developing countries

The checklist is considered by most theatre personnel to have greater relevance in developing countries that have fewer resources, weaker health systems and lower capacity amongst health workers than developed countries. Other than personnel who were involved in the Auckland City Hospital trial of the checklist, most are not aware of evidence of positive outcomes of the checklist in developed countries.

Hospitals and district health boards are not known to be collecting information on ways the checklist is enhancing patient safety, or communicating any positive feedback to theatre personnel. Supporters of the checklist relayed examples where the checklist has contributed to their individual safe surgical practice, for example, incorrect spelling of patient names, incomplete consent for procedures, picking up allergies and receiving timely reminders about antibiotic prophylaxis.

A few personnel consider that to enhance commitment to the checklist, more data and information should be collected and communicated to teams on incidents where the checklist has enhanced patient safety (eg, surveys and stories in newsletters), rather than focusing solely on areas of non-compliance.

4. There is no gold standard example of how to use the checklist in the New Zealand context

Theatre personnel take their cues from surgeons and, to a lesser extent, anaesthetists and senior nurses on how to engage in the checklist. Where these personnel are champions of the checklist, the phases and checks are more robustly followed and there is greater engagement across the team. However, if these personnel are less engaged with the checklist or feel it is undermining their professional expertise, there is far less of a focus on teamwork and communication, and the checklist is conducted less rigorously. Anaesthetic technicians and, to a lesser extent, nurses who move between theatres frequently are more likely to recall examples of good and poor use of the checklist. However, for surgeons, in particular, they are less able to draw upon examples of how the checklist is used in other theatre settings to compare performance.

A few personnel (mainly from the United Kingdom) have seen the National Patient Safety Agency videos *How to do the World Health Organization (WHO) Surgical Safety Checklist*, and *How NOT to do the World Health Organization (WHO) Surgical Safety Checklist* and found these resources generally useful. A few personnel comment on the need to share good practice New Zealand examples on the use of the checklist to other theatre teams.

5. The checklist is considered lengthy and requires sharpening

Some personnel feel that the checklist has become unmanageably complex, containing too many checks that are not critical to the majority of surgical procedures conducted in New Zealand. Others feel that the inclusion of non-applicable answers and spaces for comments and signatures also complicates the checklist and can make it unwieldy. As a general rule, theatre personnel feel that the number of checks should be around 10 to 12. Others suggest having a cut-down version of the checklist for more simple procedures.

The introduction of The Productive Operating Theatre Programme (TPOT) quality improvement tool into four of the five hospitals in 2010 has resulted in some perceived duplication between this tool and the checklist. While TPOT has a focus on efficiency and streamlining of surgical procedures, it also covers off patient safety procedures (medical history, allergies, consent checks) and team communication objectives (team briefings and introductions). Consequently, most personnel are skipping over the checks in the checklist if they feel they have been addressed in TPOT briefings.

*I wonder whether we need a short and long version for majors and minors?
Sometimes the paperwork takes longer than the procedure. (Anaesthetist)*

6. Design elements and the presence of the WHO logo contribute to uptake

As encouraged by the WHO Implementation Guide, all sites had adapted the checklist template for the specific needs of their own hospital or district health board, both in terms of content and look and feel.

Designers of two of the five checklists have made an effort to increase the uptake of the checklist by using a bright colour that distinguishes it from other hospital paperwork and using stiff card to enhance its importance. Two have also put punch holes to enhance its credibility and for easy filing. These design features appear to be giving the checklist more substance.

Three sites' checklists have the WHO logo and the 'Safe Surgery Saves Lives' strap-line. However, the logo and strap-line are small and in black and white and, therefore, only a few personnel when promoted recall seeing these features. Consequently, for most personnel, the checklist is considered more of a district health board or hospital initiative, rather than having been founded on international evidence.

4. Checklist Phases

4.1 Sign In

The Sign In is to be completed before induction of anaesthesia in order to confirm the safety of proceeding.⁶

1. Sign In is routinely undertaken when conducting the surgical safety checklist

Sign In is routinely conducted as part of the checklist. Theatre personnel consider the main purpose of Sign In *is to ensure that the correct procedure is being performed on the right patient*. The team member who greets the patient is generally the person responsible for coordinating Sign In. In the five hospitals studied, nurses mainly coordinate Sign In in four hospitals and anaesthetist technicians mainly coordinate this phase in one hospital. Coordinators note that Sign In takes no more than a couple of minutes to complete.

The location of Sign In varies across the hospitals studied. In three of the hospitals, Sign In is mainly conducted in the anaesthetic room, in one hospital, it is mainly conducted around the operating table and in one hospital, and it is mainly conducted in a holding area before the patient is transported into the anaesthetic room.

The location of Sign In impacts on the members of the theatre team who participate in this phase. Where Sign In occurs around the operating table, the whole team is often present and conducting the checks. However, where it occurs in a holding area generally, one or two members of the team are present. In these cases, coordinators often report not having all of the information available to them to conduct all of the checks.

Coordinators are empathetic to the fact that the patient has been asked a number of questions in the hours leading up to surgery and that many of these questions are the same. Before conducting Sign In, most coordinators explain to the patient that they would like to do one final safety check before surgery. They confirm that patients appear generally reassured with this explanation.

I get the patient to verbally confirm. They seem to smile a lot when I ask the questions. A lot like the extra safety checks, as they don't want the wrong thing cut off.
(Technician)

2. Coordinators make their own assessments as to which checks are relevant and/or they are comfortable conducting

Coordinators modify the Sign In checks according to how relevant they perceive the checks to be to the procedure, their level of comfort performing the checks, the anxiety of the patient and the order of the patient on the list. Consequently, some checks are rigorously undertaken while others are glossed over or not completed. Coordinators may also add additional checks that are not part of Sign In, if they feel they are important (eg, checking for dentures and metal ware). These additional checks cause irritation amongst a few

⁶ World Health Organization, 2009.

anaesthetists who feel they draw attention away from important patient safety checks and unnecessarily add to the length of the checklist.

Having the patient awake is difficult. I am aware that the patient is awake and apprehensive and I try to gloss over things. I can see that the oximeter is working. I gloss over the airways issues. Risk of blood loss – I don't like making a big thing over blood loss and we are all aware of it. (Nurse)

3. Checking patient identity, consent and allergies are reportedly followed

Coordinators report routinely asking the patient to confirm his/her identity and checking the patient's wristband. While coordinators report that they have never checked in a wrong patient, there have been occasions where they have picked up and rectified at Sign In incorrect spelling of patients' names or dates of birth.

For most procedures, coordinators report routinely asking the patient to confirm the planned procedure. However, for gynaecological procedures, many coordinators feel uncomfortable asking the patient to confirm the procedure, as they consider this check could be distressing for the patient. Consequently, coordinators tend to ask the question discretely and away from others or gloss over the question.

There are certain procedures like "evacuation of uterine products" that are the last thing the patient wants to hear before going into theatre. In cases like these, I tend to say when I get to this part on the checklist "we all know what we are here for". (Technician)

Coordinators report routinely checking that the surgeon has marked the site for procedures involving a left or right distinction or multiple structures or levels (eg, fingers, toes and vertebrae). Coordinators note that, on occasion, the surgeon has not marked the site before Sign In and have needed to call the surgeon or registrar to mark the site before completing this phase.

Checking that the patient has consented to the planned procedure is also reported to be undertaken routinely at Sign In. Coordinators note that there have been occasions where they have picked up and rectified that the patient and/or surgeon had not signed the paperwork.

Coordinators also say they routinely check whether the patient has known allergies and communicate the response to the theatre team and note any allergies on the theatre whiteboard.

4. Checking difficult airways or potential blood loss is usually glossed over

Most nurse coordinators are not as comfortable checking whether the patient has a risk of blood loss or difficult airway for fear of alarming the patient. Often, therefore, they make their own assessment on whether to conduct these checks and the level of rigour applied to them. The few coordinators who are confident performing these checks comment that the checks often help to reassure the patient, particularly where the surgeon or anaesthetist confirms that there are no major risks or that any risks have been mitigated. Surgeons and anaesthetists who are advocates of the checklist state that they routinely prepare their patients of any risks as part of the consent process for surgery. They feel, therefore, that these checks are more likely to reassure, rather than alarm, the patient.

I often say “Are you guys happy up your end?” as I don’t want to freak the patient out. They don’t want to know if they are likely to bleed before they go to sleep. (Nurse)

I don’t ask all those questions on blood loss for a D and C. Patients don’t want to hear that and I don’t ask about oximeter, as I can see that it is working. I can see for myself that things are functioning, and I tick the boxes. (Nurse)

5. Checking surgeon availability, anaesthetic safety and equipment are reportedly done only at the start of the list

While acknowledging the importance of ensuring the availability of the surgeon, coordinators generally verbally check this at the beginning of the list, or after lunch, if it is a full day list. Most anaesthetists are known not to begin anaesthesia until they have sighted the surgeon, and a few personnel have been involved in cases, before the introduction of the checklist, where the patient needed to be woken up as the surgeon wasn’t on site.

Confirming that the anaesthesia safety check has been conducted is also only verbally conducted at the start of the list. For procedures after the first case, technicians consider the check of anaesthetic equipment should be rephrased to ‘level 3 safety check conducted’.

Generally, the availability of equipment and implants is checked at the beginning of the list and, therefore, these checks are not verbally confirmed after the first case. A few theatre personnel from the provincial hospital consider these checks should be more granular to ensure that the correct equipment is on site. They report that there have been instances where they had confirmed the equipment (which came from a main centre) was on site, however, when the scrub nurse opened the sterile wrapping an essential piece that the surgeon needed was missing. Having a more specific check to ensure the right implants are on site was also raised by personnel.

4.2 Time Out

The Time Out is a momentary pause taken by the team just before skin incision in order to confirm that several essential safety checks are undertaken and involves everyone on the team.⁷

1. Time Out is a known concept

Time Out was a known concept before the introduction of the surgical safety checklist, as it was conducted by at least one team across the five study sites. Some theatre personnel had also participated in Time Out in previous workplaces, both in New Zealand and overseas, when the patient was both awake and anaesthetised. It is considered by most theatre personnel to be an *important final safety check to ensure everyone is on the same page before knife to skin*. It is reported to be the most effectively implemented phase of the checklist. Some personnel comment that, if the checklist hypothetically disappeared tomorrow, teams would still embrace the Time Out concept.

⁷ World Health Organization, 2009.

I like it. It's the part that has most value. We all know we are on the same page and what is happening. It pulls people in to be part of the team. (Technician)

2. Active participation of surgeons and anaesthetists during Time Out is variable

The participation of surgeons and anaesthetists during Time Out is variable. While a few are reported to take an active role in Time Out, by asking for it to be called and fully participating in the checks, others are reported to be less engaged in the process and prefer it is done concurrently with other activities (eg, while putting on their gowns and scrubbing). Theatre personnel consider that having the surgeon or anaesthetist play an active role in Time Out is an important contributing factor to other people's contribution in Time Out, as the surgeon, in particular, sets the style and tone of communications in theatre.

Time Out is done differently in x hospital and here. At x hospital it is done concurrently to other things like putting on my gown. Here it is everyone together and listening. I prefer it is done concurrently for routine operations. (Surgeon)

Sometimes the surgeon is in the scrub bay and generally they are listening and occasionally repeat things. As long as I get a response I am happy. A grunt is not good enough. (Nurse)

3. Time Out is more effective if coordinated by senior, experienced nurses or technicians

Time Out is coordinated mainly by a circulating nurse and sometimes by a technician. Theatre personnel note that Time Out is more effective when it is called by a senior or confident member of the nursing team who has the respect of the team and can command their attention. However, often nurses delegate this role to a nurse who is junior, recently arrived in New Zealand and/or whose first language is not English, to build his/her confidence. In these instances, Time Out is reported to be less effective.

The surgeons' participation varies and some don't want to know about it. As I'm senior I can say "no sorry we are doing Time Out". If it is someone junior they couldn't push it. (Technician)

4. There is a fine line between Time Out and Tune Out

Coordinators say they call Time Out when the patient is positioned or draped and when he/she feels everyone is quiet and ready to participate in Time Out. Surgeons and anaesthetists comment that more experienced nurses and technicians are better at judging when Time Out should be called, while other less experienced personnel often call Time Out when the team is in the middle of critical tasks (eg, intubating the patient) or at inopportune moments (eg, explaining the procedure to a trainee). The calling of Time Out when not all members of the team are ready results in some members tuning out of the discussion or becoming agitated by the request to participate.

The timing of Time Out is hugely important, and the nurse needs to be situationally aware and not say "shut up" when we are doing a difficult intubation. (Anaesthetist)

5. Team introductions are reportedly followed

The introduction of team members is reportedly becoming more accepted in New Zealand theatres, and Time Out has facilitated this and wider team communications. However, theatre personnel are generally not aware that the intent of the introductions is to enhance team communications and therefore making it easier for personnel to speak up if they consider there to be a safety risk. The introduction of team members is usually instigated by the coordinator at the beginning of the list by asking whether the team all know each other. This is the point at which new team members (including trainees and visitors) are introduced by name to the team or introduce themselves. If new members come in part-way through a list, they are also reported to be introduced. However, introductions are reportedly rarely made when a new person enters the operating room part-way through a procedure to relieve a colleague or provide additional assistance. The inclusion of the team member's role in the introduction is reportedly patchy.

Often, theatres display the names of the team on the whiteboard and personnel find this very useful, because, despite the introductions, names can be forgotten later in the procedure or in moments of urgency.

6. Checking patient identity, procedure, site and position are reportedly followed

Theatre personnel report that, during Time Out, the team routinely confirms the patient's identity, procedure, site, positioning and that imaging is displayed.

7. Checking antibiotic or deep vein thrombosis prophylaxis are effective aide memoires

Checking for antibiotic and deep vein thrombosis prophylaxis is conducted for relevant procedures, and anaesthetists comment that it is useful when they are prompted to give antibiotics before incision.

I have found it extremely useful to have the reminder about antibiotics in the last 60 minutes. In the past, I missed a couple and gave antibiotics after the incision.
(Anaesthetist)

8. Checking anticipated critical events is generally poor

While a few surgeons and anaesthetists actively engage in checks relating to anticipated critical events, most feel these checks come too late in the process (eg, specific concerns for anaesthesia and equipment) and should have been addressed earlier. Coordinators often dread conducting these checks as they are frequently met with rebuttals or sarcasm. Consequently, these checks are often not verbally completed and the box is ticked or left blank.

There is a lot of scoffing about anticipated critical events. They say "Of course we are going to have bleeding, we are doing surgery". It's tongue and cheek. (Nurse)

And when I asked "Are there any anticipated critical events", the surgeon said "What do you mean by that?" You start to wonder why we are doing these checks. (Nurse)

4.3 Sign Out

The Sign Out should be completed before removing the patient from the operating room. The aim is to facilitate the transfer of important information to the care teams responsible for the care of the patient after surgery.⁸

1. Sign Out is poorly implemented

The end of the procedure is a busy time for theatre personnel, with nursing, anaesthetist and surgical teams each focusing on their individual tasks. It is a particularly critical time for the anaesthetic team because they are waking up the patient. Unlike Time Out, where there is a natural pause in the surgical pathway when everyone comes together before knife to skin, there is no equivalent pause in the pathway for Sign Out. Theatre personnel note that the turnaround time between patients is tight (sometimes as little as five minutes for routine procedures), and there is pressure from management and teams to progress through the lists in a timely manner.

Only a few teams are reported to be implementing Sign Out as it is intended, with the coordinator confirming with the whole team that each item has been addressed. These teams have involved a surgeon, anaesthetist or senior nurse who are champions of the checklist and highly committed to patient safety.

2. Sign Out is passive and generally doesn't involve the team

Theatre personnel comment that having everyone physically present in the operating room after wound closure to conduct Sign Out is challenging. In public hospitals, the surgeon may have left the operating room to dictate his/her notes or to take a break before the next patient, and his/her registrar is responsible for closing the wound.

Theatre personnel say that, unlike Time Out which is called and most or all of the team stop what they are doing and participate, Sign Out is generally a discussion between the surgeon and the nursing team to confirm the counts are correct and specimens have been correctly labelled. Rarely does the coordinator (usually the same circulating nurse who conducted Time Out) verbally confirm the procedure (even when this changes or expands during the course of the operation) or identify key concerns for patient handover and management or whether there are equipment issues that need to be addressed. If the surgeon is not available, the nurse either leaves the section blank or ticks the boxes.

We never do it. People want to get on with the next patient. It's the end of the case and everyone is busy waking the patient up. It's a very busy time. (Nurse)

I barely hear it. It seems to happen rarely and it's more of a discussion between the surgeon and the nurse regarding specimens and counts. Key concerns for hand over are rarely asked. It's not as verbal as Time Out, and is more surgically orientated. (Technician)

I have not heard Sign Out being called. The pressure is on and the turnaround time is quick to get the next patient in. Everyone walks away when the count is done. (Technician)

⁸ World Health Organization, 2009.

I haven't been aware of the nurse asking the questions. Maybe they have asked them, but I have been dictating my notes. (Surgeon)

3. To be more effective, Sign Out should ideally be surgeon-led

Theatre personnel suggest that Sign Out would be more effective if it was led by the surgeon or senior registrar and/or conducted earlier in the process in cases where the surgeon leaves the room before wound closure. Some personnel also suggest the introduction of other cues or prompts, to signal Sign Out, including when the surgeon removes his/her gloves or having the coordinator ring a bell in theatre to call the team's attention.

5. Theatre Personnel Typologies

5.1 Introduction

When all factors are analysed *holistically, in combination*, for all of the **68** theatre personnel interviewed across the five sites, five key typologies emerge. Each typology has different characteristics and a profile that will respond to different approaches to facilitate engagement with the checklist.

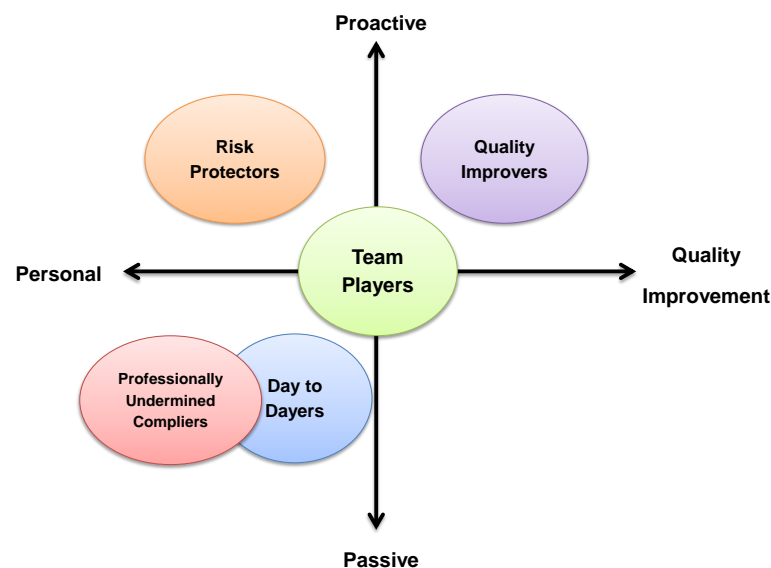
Two broad dimensions were consistently evident in defining commonalities amongst the interviews. These were:

- engagement with the checklist, ranging from proactive engagement to passive compliance, plotted on the y axis
- perceived benefits of the checklist, ranging from having a benefit to them personally to having a system-wide benefit, plotted on the x axis.

Some theatre personnel closely mirror the typologies while others have many attributes of the segments. In the study sample, there were a handful of 'Quality Improvers' and 'Professionally Undermined Compliers', and the remaining interviews were spread evenly across the other typologies. A quantitative segmentation would provide more evidence about the size and profile of different typologies.

The 'ideal' position on the matrix is, therefore, the top right-hand corner.

Figure 1: Typologies of theatre personnel



These typologies are described in further detail below.

5.2 Five typologies

#1 Quality Improvers

Quality Improvers are strong advocates of the checklist across the health system and hold patient safety at the heart of their practice. They have read widely around the WHO checklist and other patient safety literature. They have a deep understanding of the checklist's intent. Quality Improvers can be surgeons, anaesthetists and nurses.

They were early adopters of the checklist and often were using elements of it, for example, Time Out, before the introduction of the checklist. They were involved in developing the checklist, procedure documents and training, and trialling the checklist.

Quality Improvers are actively involved in the checks and encourage participation across the theatre team. Other personnel will describe the checklist administered under their watch as 'Gold Standard'.

Interestingly, many of these Quality Improvers have an association with other professions or interests that have a high reliance on quality and safety checks (eg, the airline industry, the armed forces and health and safety).

These personnel are modest of their achievements in championing the checklist. They feel the checklist needs more champions who have more flamboyant and persuasive personalities to achieve greater buy-in across the surgical team.

I am there for the patient, but sometimes we are too procedural focussed and we need pulling back by members of the team who are not intimately involved in the task. I have read Atul Gawande's book and passionately believe in the checklist.
(Anaesthetist)

The check list addresses the holes in the cheese scenario. It's an important part of the surgical pathway that saves lives. (Surgeon)

It's a safety thing and it takes the mickey out of the whole team if people talk through it. They don't understand that it is ultimately about patient safety. Inclusivity is the biggest safety thing and if you are named you are more likely to speak up. (Nurse)

#2 Risk Protectors

Risk Protectors routinely use the checklist in their theatre as they see there is a personal or professional reputational benefit in doing so. Personnel in this typology feel personally accountable for potential adverse events in theatre.

They are mainly personnel who have had an adverse event or near miss or know of others in their specialty who have had an adverse event or near miss.

Orthopaedic surgeons, ear nose and throat and ophthalmologists, and other specialties involving procedures with left or right distinctions or multiple structures, are often in this typology.

It's an excellent concept and avoids the wrong site and wrong surgery and makes us pause so we don't slip up. I have never done the wrong surgery but all through our

training the onus has been on the surgeons and if there was a cock up the media would say the buck stops with us. (Surgeon)

It's good for high volume same operation cases, hips etc. Everyone looks the same in theatre, they could be a nurse or a SHS...It's a double check and reduces error. (Surgeon)

#3 Team Players

Team Players support the use of and engage in the checklist, as it contributes to their feeling of being part of the team and gives them a voice in theatre.

Many also find the checklist beneficial from a professional development perspective, as they learn more about procedures and case-related issues.

Nurses, junior doctors and most anaesthetic technicians fall into this typology. Younger personnel whose training had a strong patient safety focus also fall into this typology.

I like the checklist and it gives the whole team time to hear everything. It's a good chance for everyone to voice concerns and expectations. It's really useful for us nurses as other teams (surgical and anaesthetic) already have the information. At best, we have had a couple of moments to hold their hands before they go to sleep. (Nurse)

I started a year and a half ago and I don't know what it was like before the checklist. Patient safety is high up on my priority and I see the checklist's purpose is to reduce human error. It's about communications. I saw the video and we are taught it in our technician's manual. (Technician)

I like it. We are all on the same page and know what is happening. Some of the information I hear from the surgeons is really interesting. In the old days surgeons were on a pedestal, and now it is pulling them into the team. Even some of the younger registrars are calling Time Out. (Technician)

#4 Professionally Undermined Compliers

Professionally Undermined Compliers view the checklist as being a challenge to their profession or practice. They perceive the checklist as unnecessarily adding to time.

Often, Professionally Undermined Compliers are described by other theatre personnel as not being open communicators or to encouraging team work in their theatres.

Theatre personnel in this typology are often older general surgeons and older anaesthetists. They can also be nurses who feel they are doing 'other people's' (namely surgeon's) jobs by conducting the checks.

I get frustrated when Time Out is called and I am holding the knife concentrating on the incision. I get impatient and say 'why didn't you do that earlier? There are too many hold ups, people going out to fetch things. It should be 'Does anyone have any concerns?' and then off we go. (Surgeon)

The checklist helps us to do less operations and has slowed productivity. It's not wrong, but comes at a cost. It's a couple of minutes on top of everything else.
(Surgeon)

The checklist is just another example of nurses doing the job of surgeons. (Nurse)

#5 Day to dayers

Day to dayers are typically nurses and anaesthetic technicians who consider the checklist as part of their job.

They don't hold strong opinions about the checklist, and neither identify significant benefits of the checklist to patient or clinical outcomes or have significant concerns.

They 'go with the flow', and undertake the checks more thoroughly, if surgeons and anaesthetists are passionate supporters and champions of the checklist or skip over the checks if surgeons or anaesthetists are Professionally Undermined Compliers.

It's a process and we just need to do it. (Nurse)

6. Patients' Views

Seven patients who had undergone elective surgery in a North Island main centre during the past six months were asked for their perceptions and experiences of the checklist.

1. Patients found the checks comforting when the purpose of the checks was made clear

On the day of the procedure, patients recall being asked to confirm their name, address, date of birth and the procedure they were having several times with different teams, including in the ward and just before anaesthetic was administered.

Most patients found these checks comforting, particularly if the team member coordinating the checks explained that the checks were being conducted as a final safety check before going to theatre and they acknowledged that the patient would have been asked the questions several times earlier. When it was a child going in, the checks provided similar reassurance – one mother found it comforting that the theatre team checked everything again with her before taking her child into theatre.

Bloody good – when you get to that stage, they need to know it is the right person and what they are there for. Don't want to go in for a shoulder reconstruction and get your heart done instead. (Patient)

In a few cases patients did not feel the reasons for conducting the checks were adequately explained. Patients therefore made up their own minds as to why the checks were being conducted. They thought the checks were carried out because some patients use more than one name, to confirm their eligibility as New Zealand citizens and/or residents for surgery, or due to a perceived lack of communication between teams, which resulted in the need for repeat questioning. These patients were more likely to find the checks annoying and drawn out.

It's annoying, being asked the same questions, they want you to repeat everything and my husband almost lost it. I thought don't you people talk? They should try and communicate with each other more. (Patient)

In addition to the identity and procedural checks, patients were also aware of theatre personnel having conversations around them, but did not recall specifics of what was being said or checked. In the final moments before anaesthetic was administered, they only recalled seeing who was directly beside them – usually the anaesthetist on one side and a nurse on the other. There was a feeling that, while all staff in the theatre may not know each other, they made an effort to show a connection and camaraderie when the patient entered the operating or anaesthetic room.

2. Patients consider the checklist to be an important safeguard

While all patients were aware that checks were undertaken, before attending the focus group, none were aware that these checks formed part of the *surgical safety checklist*. On presenting the checklist and explaining its purpose, patients were extremely supportive of it and thought it was an important safeguard for both patients and clinicians.

While discussing the checklist, patients made reference to checks and quality control used at airports and by Formula1 teams. They understood that, where there is a team working together, there needs to be effective communication and team members need to be clear on their roles and what they are accountable for. Patients thought of surgery as highly technical with staff who are on their feet 10 to 12 hours a day – it was ‘comforting’ to know they are double-checking everything.

7. Conclusions

The study of attitudes towards the surgical safety checklist and its use in operating theatres across the study sites draws the following conclusions.

Attitudes towards the checklist amongst theatre personnel

Theatre personnel across professions and specialties hold different attitudes towards the checklist and engage with it on different levels. Some view the checklist as providing system wide and team benefits, while others see benefits to their individual practice and profession. Personnel who are less positive about the checklist are those who view it as challenging their practice and expertise, and impacting on efficiency.

Across the sites there is a general lack of understanding of the original intent of the checklist and it is largely viewed as a compliance document, rather than a team tool to ensure patient safety and enhance team work and communications.

The extent to which the checklist is being used in operating theatres

Across the study sites, the Sign In and Time Out phases of the checklist are being used in the majority of procedures, including routine and complicated procedures. It is less likely to be used in emergency trauma surgery or emergency caesareans. Some study sites were doing a variation of Time Out before the introduction of the checklist.

Of the three phases, Sign Out is the least well implemented, and rarely involves the whole team.

Facilitators and barriers to the use of the checklist in operating theatres

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 team. However, if these senior personnel are less positive about the checklist, there is far less of a focus on teamwork and communication and the checks are conducted less rigorously.

Suggested changes that could improve the use of the checklist in operating theatres

The study has highlighted suggestions that could improve the use of the checklist in operating theatres:

- Communicating with theatre personnel and hospital management about the original focus of the checklist i.e. a team tool to ensure patient safety by facilitating team work and communications, rather than a compliance document.
- Communicating data and case studies of incidents where the checklist has enhanced patient safety and facilitated team work and communications, rather than solely communicating non-compliance with the checklist.
- Using champions to demonstrate good practice use of the checklist in the New Zealand context (eg, short video, peer review/observation).
- Keeping the checklist simple by focussing on the evidence-informed safety checks recommended by the WHO, and removing spaces for comments, signatures and dates.
- Considering introducing a shortened version of the checklist for more straightforward procedures.
- Providing the checklist in a poster, whiteboard or other more participatory format so all theatre personnel can follow the checks and engage in the process.
- Introducing critical moments or prompts to signal Sign Out, and/or encouraging surgeons to play a stronger role in this phase.

Appendices

1. References

Haynes et al., 2009. A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population. *New England Journal of Medicine*; 360: 491–9.

Health Quality and Safety Commission New Zealand, 2009. Programme Plan: Surgical Harm. DRAFT, Version One.

World Health Organization, 2009. Implementation Manual – WHO Surgical Safety Checklist (First Edition), Geneva, Switzerland.

2. Information sheet

Surgical Safety Checklist Research

Information Sheet Q & A

Litmus, an independent research and evaluation company (www.litmus.co.nz), has been commissioned by the Health Quality and Safety Commission to research theatre staff perceptions and experiences of the Surgical Safety Checklist.

What is the purpose of the research?	The overall purpose of the research is to explore surgical staff perceptions and experiences of the Surgical Safety Checklist.
Why have you asked me to participate?	<p>Litmus is making four DHB visits to interview surgical staff about their use of the Surgical Safety Checklist. We will visit one hospital site within each DHB, undertaking face-to-face interviews and small group discussions with a range of theatre staff.</p> <p>We will talk to staff from the roles listed below, including a range of specialties:</p> <ul style="list-style-type: none"> ▪ Surgeons ▪ Theatre nurses ▪ Anaesthetists ▪ Anaesthetic technicians <p>We are also conducting a group discussion with people who recently had surgery to explore their recall and perceptions of the use of a Surgical Safety Checklist.</p>
What's involved?	Should you agree to participate, you will be asked to take part in a face-to-face interview that will take around 20-30 minutes at a time and place that is convenient for you during the time that Litmus staff are on-site. You may also wish to be interviewed in a group.
What types of questions will you ask?	<p>We want to hear your views and experiences of the Surgical Safety Checklist. We may ask questions about:</p> <ul style="list-style-type: none"> ▪ Checklist use in operating theatres where you work ▪ The Sign In, Time Out and Sign Out stages of the Checklist ▪ Facilitators and barriers to use of the Checklist ▪ What changes would improve use of the Checklist.
Do I have to take part?	No, you do not have to take part. Your participation is voluntary.
Is the interview confidential?	<p>Litmus will seek to ensure your contribution is confidential.</p> <p>Comments made in reporting will not be linked to you directly. Any information you provide will be held securely by Litmus.</p>
Can I change my mind and withdraw from the project?	On completing an interview, you can withdraw your information at any time up until reporting begins. Please note that you do not need to give a reason to withdraw and there will be no disadvantage to you of any kind.
What if I have any questions?	<p>If you have any queries about the research, please contact: Sally Duckworth, Litmus Partner, leading the HQSC Checklist review. Phone: 04 473 3883. Email: sally@litmus.co.nz</p> <p>If you would like to talk to someone at the Health Quality and Safety Commission, please contact: Dianne Callinicos, Senior Portfolio Manager, HQSC Phone: 04 901 6051. Email: Diane.Callinicos@hqsc.govt.nz</p>

3. Clinician discussion guide

**Surgical Checklist Research
Health Quality and Safety Commission New Zealand**

CLINICIAN Discussion Guide 2 July 2012

1. To what extent is the surgical checklist being used in your operating theatres?
 - When did you first become aware/start using the checklist?
 - Is it used on all/most/some operations? How are these decisions made?
 - To what extent is it used in this hospital/other hospitals you are working in or have worked in?
 - What other checklists are being used in your operating theatres?
2. How is the surgical checklist being used in your operating theatres?
 - What roles do different members of the surgical team play? What parts of the checklist are they responsible for?
 - How are the different parts of the process working: 'sign-in', 'time-out' and 'sign-out'? What is covered in each of these parts?
 - What modifications to the surgical checklist and its operation have there been over time?
 - Is there duplication between parts of the checklist and other work practices (e.g. introductions at the beginning of the day/list and during time-out)? If so, does this impact on parts of the checklist not being followed?
3. What benefits have there been from using the surgical checklist?
 - Has using it altered communication and teamwork? Patient outcomes?
 - If there are benefits, are they being recorded/counted and/or communicated?
4. What disadvantages or unintended consequences have there been with using the surgical checklist?
5. If some surgical teams are not using the surgical checklist are you able to explain why? (also probe around reasons for not using parts of the checklist)
6. How do surgical patients feel about the surgical checklist?
 - Do they experience anxiety with the sign-in process?
 - How do you/members of the surgical team overcome patients' concerns?
7. In your opinion, how could the use of the surgical checklist be encouraged in this hospital/other hospitals in New Zealand?
8. Finally, do you have any other comments about the use of the surgical checklist?

4. Patient discussion guide

Surgical Checklist Research Health Quality and Safety Commission New Zealand

PATIENT Discussion Guide 2 July 2012

1. Introduction:
 - Introduce self/Litmus
 - Informed consent
 - Research purpose: Patients' perceptions and experience of the surgical checklist during most recent surgery. Discussion will not focus on personal health information.

2. Patient's concerns and anxieties regarding surgery:
 - What were our main concerns and anxieties about our most recent surgery?
 - What steps did we expect our surgeons and surgical teams to take to ensure the correct surgical procedure was performed on us and to reduce surgical and post-operative risk?

3. Surgical sign-in process:
 - What do we recall about the sign-in process that was performed by the nurse and anaesthetist immediately before theatre?
 - Were we asked to confirm our identity? How?
 - Were we asked to confirm the site of the operation and procedure?
 - Did we give our consent for the procedure?
 - Did we have any sites marked?
 - Were we asked about any allergies?
 - Were we asked about any possible obstructions to breathing?
 - What other checks were done prior to surgery?
 - Why do we think these questions were asked and checks undertaken?
 - How did we feel about the sign-in process?
 - On a scale of 1 to 5, where 1 is very anxious and 5 is very relaxed where would we have placed ourselves after the sign-in process and immediately before theatre?
 - What parts of the process made us feel anxious? What parts of the process made us feel relaxed?
 - How if at all could the sign-in process be improved to make patients feel relaxed before theatre?

4. WHO surgical checklist:

Briefly explain the surgical checklist, if needed.

 - How do we feel about the surgical checklist? Probe: key benefits and concerns.
 - If we were going to have an operation in future, would we want the surgical checklist being used? Probe: Key reasons.

Thank, gift, and close