NHS
Institute for Innovation and Improvement

Saving lives in Surgery

A Guide for Chief Executives in implementing the Surgical Safety Checklist

Why this matters

Within health care we now have a term for those events that should never happen, can have catastrophic consequences and are largely preventable; we call them "Never Events". These include wrong-side surgery, or an injection of drugs into the spine when they are designed to be put in a vein.

We also learn from the global evidence that in almost every single case of wrong-side surgery, someone in the operating theatre felt that something was not quite right, but did not feel able to speak out. These are the human factors that have a huge impact on surgical safety and errors. We know that hierarchies can be powerful, and that reducing the potential negative effect of hierarchy within the operating team is a critical aspect of increasing patient safety. However, for many clinicians, the idea of hierarchy flattening is challenging and there can be cultural issues that mean leaders and staff find standardisation difficult.

The Surgical Safety Checklist ensures that the full operating team spend time together before, at the start and at the end of each case, to ensure collectively that all steps have been followed. This is one of the ways the aviation industry has improved its safety record beyond recognition over recent decades; genuine teamwork alongside the use of a flight team checklist.

This Guide for Chief Executives provides a concise outline of the issues you may wish to consider in order to achieve a more effective implementation, and signposts at **Resources** other support available to you.

"The beauty of the surgical safety checklist is its simplicity and – as a practising surgeon – I would urge surgical teams across the country to use it. Operating theatres are high-risk environments. By using the checklist for every operation we are improving team communication, saving lives and helping ensure the highest standard of care for our patients.
The amazing results from the global pilot puts this beyond any doubt."

Health Minister Lord Ara Darzi

1 PATIENT SAFETY FIRST

The Results

In January 2009 some truly spectacular results from a year-long global study were published in the New England Journal of Medicine. These results demonstrated that using a three-part checklist during operations can cut deaths by more than 40% and complications by more than a third. The use of the Surgical Safety Checklist and the behaviours it supports, serve to improve the safety, quality and reliability of surgical care by covering essential safety checks and underpinning excellent teamwork.

The Surgical Safety Checklist - What is it?

The Surgical Safety Checklist details the good practice stages at three critical points:

- Before anaesthesia is administered - ***Sign In***
- Immediately before the surgical incision is made - ***Time Out***
- Then again before the patient is removed from the operating theatre - ***Sign Out***

The Surgical Safety Checklist is on the final page of this Guide.

The Checklist is designed to promote effective teamwork and prevent problems such as infection, unnecessary blood loss, ITU admission and returns to theatres. It was tested in hospitals in Seattle, Toronto, Tanzania, Auckland, Amman, Delhi, Manila and London. The rate of major complications fell from 11% to 7%, and the rate of inpatient deaths following surgery was reduced from 1.5% to 0.8%.

Application within the NHS

The leadership of the NHS has been so impressed with the results of the global study, that it has committed to implement the Surgical Safety Checklist across the service. The National Patient Safety Agency has issued a Safety Alert instructing all acute Trusts to start this process from February 2009 with it being used in every operating theatre by February 2010[1]. Patient Safety First, the national campaign for patient safety improvement in England, is leading on implementation across the NHS.

The facts are so impressive that they speak for themselves. Why would a health service that aspires to be consistently excellent, not want to implement these findings as rapidly as possible?

However, the overwhelming case for doing so should not be confused with ease of implementation. And as the Surgical Safety Checklist is a key element of a Trust's patient safety strategy it is important to give thought upfront as to the best way of ensuring sustainable implementation and clinical buy-in.

It isn't only clinical staff who can find standardisation challenging. As Sophia Christie wrote recently "Culturally, we continue to resist systematisation at a local level. We acknowledge the existence of variation, whether in incident definition and reporting, investigations, prescribing or performance management, but remain reluctant to acknowledge the link between differential approaches and variable outcomes for patients"[2] .

How best to introduce the Surgical Checklist in your Trust

Each acute hospital Trust is individual however there are a number of themes that apply to all. Mandating the checklist in your organisation could mean simply delegating the task to middle management and clinicians. This is not to be recommended. The literature on changing cultural expectations and sustaining change advocates strong Executive leadership.

[1] Patient Safety Alert issued by the National Patient Safety Agency 15 January 2009

[2] Sophia Christie, Chief Executive of Birmingham East and North PCT, "*On Two Kinds of Thinking*", Health Service Journal, 12 March 2009

When quality improvement efforts fail to deliver, it is rarely an "approach" problem or a "tool" problem. Rather it is a "human dynamics" or "leadership" problem.

Professor Helen Bevan, Chief of Service Transformation at the NHS Institute for Innovation and Improvement

Patient Safety First and the NHS Institute for Innovation and Improvement have produced this guide to assist Chief Executives and Boards succeed in this important task. We believe that the most effective way of introducing the Surgical Safety Checklist is to give consideration to the following five areas

1) Acknowledge the Complex Nature of the Task The senior team of the organisation needs to understand that the introduction of the Checklist represents a cultural change which has the potential to alienate some clinicians and will require support in implementation.

2) Ensure Strong and Visible Executive Leadership As Chief Executive you will need to provide personal leadership and ensure a high level of Board advocacy to make sure that the change endures and the tool is applied consistently.

Ways of doing so include:

- Discussing the implementation of the Surgical Safety Checklist as a Trust Board
- Reviewing this Guide at a Board meeting
- Stating the Trust's commitment to using the Checklist within Corporate Objectives
- Providing strong and visible support to the implementation team and clinical champions
- Using all forms of internal media: team briefs, magazines, online bulletins
- Building in visits to theatres, ideally during one or more of the sessions with clinicians, as part of your Leadership WalkRounds[3]
- NEDs and other Board members being visible within theatres is a powerful way to underline Board commitment
- Following up progress to ensure the change continues and spreads
- Reviewing the number of issues highlighted by the Checklist or "glitch rate"
- Planning formal reviews into the audit programme
- Publishing reports on progress

3) Develop and Support Clinical Champions Having a small number of credible Champions who will endorse this work, try it in their practice at an early stage, and convince sceptical colleagues, will bring strength to both the effectiveness and speed of implementation. Identify candidates and provide ongoing support to them at a senior level, involving Medical and Nursing Directors as well as Operational Directors in this.

Sharing the improvement data locally can be important in developing and maintaining 'organisational will', as well as creating a local evidence base. It is to be recommended; however, moving to this level of transparency will also take courage as you will be publishing levels of harm to patients.

4) Plan a Staged Implementation We recommend that you put the Surgical Safety Checklist into use in planned stages, team by team and theatre by theatre. This also provides an opportunity for tailoring to meet sub-specialty needs best and engaging each theatre team in understanding the purpose and reasons to implementation.

The WHO[4] states "This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged". By making the most of this, Trusts will co-produce a tool with their clinical teams creating best fit and team ownership. Designing cycles of improvement based around theatre teams mean that issues can be resolved at an early stage.

5) Know when and where to seek help Be realistic when assessing your organisation's capacity to implement this change within the timescale. There are a range of further resources as well as organisations that are well placed to support your Trust in implementation, and these are signposted under **Resources**.

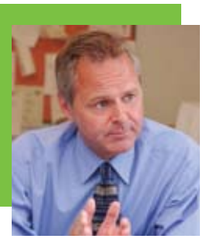
Patient Safety First seeks to provide NHS staff with the knowledge and support they need to improve the safety of patients and have developed excellent tools to assist in implementation of the Checklist and reduce the potential for harm.

[3] For more on this see Patient Safety First Leadership WalkRound guide www.patientsafetyfirst.nhs.uk

[4] World Health Organisation

"The Chief Executive cannot delegate accountability for patient safety. Other directors play important roles, but it is crucial the Chief Executive takes this personally"

Stephen Ramsden, Chief Executive of Luton and Dunstable Hospital Foundation Trust, member of the Core Team for Patient Safety First.



Learning from aviation and supporting memory:

In aviation, checklists came into their own after the crash of Boeing's new aeroplane, the 299, in 1934. Everyone was horrified when at the launch event, and with Boeing's most experienced test pilot in the cockpit, the plane fell out of the sky and burst into flames. It was described by the press as "too much plane for one man to fly". Four checklists were developed to ensure that each stage was signed-off before proceeding. A team of former pilots who lead work with clinicians on increasing reliability and safety say:

"The model 299 was not 'too much plane for one man to fly', it was simply too complex for one man's memory. These checklists for the pilot and co-pilot made sure that nothing was forgotten."[5]

In the end, the model 299 became the US Army Air Force's plane of choice with over 12,000 of them built, and became known as the B-17, the Flying Fortress.

The activities within the operating theatre are complex and yet require standardisation. Clinicians are highly intelligent human beings, but human short term memory can store around seven facts at one time, and that is it. Human error will be built into our processes if we don't support the human memory with useful and simple to use tools.

[5] Atrainability: Medical/Surgical Checklists: A Practical Review of Checklist Construction, Chris Williams, Jan 2009 www.atrainability.co.uk

A tool to engage the intelligence and skill of all members of the theatre team:

We know that the best care is provided by individuals who are expert in their own area working as a highly effective team. The issue of members of the team feeling unable to voice their concerns is critical to this; we need to ensure that the student nurse on the first day of her rotation, the operating department assistant, the anaesthetic middle grade from the locum agency, and the consultant surgeon are able to contribute to the team effort ***equally*** if we are to ensure that care is consistently excellent.

The Surgical Safety Checklist helps support this; however there is considerably more that can be done to "build one team" including techniques that can help flatten hierarchy in the operating theatre and beyond. "In error-speak this is referred to as 'flattening the authority gradient', and it has been shown to be an effective way to reduce errors"[6].

Patient Safety First and the NHS Institute Safer Care Team have together produced a number of tools that are valuable in this wider task. The Productive Operating Theatre programme will be launched by the NHS Institute this summer, and aims to help Trusts tackle these issues and improve the reliability and safety of surgical care, beyond the implementation of the Checklist. There is more about this in the final section: **Resources.**

What we know about achieving significant change in clinical behaviour:

The literature and research tell us that:

- Achieving changes in clinical behaviour is one of the hardest tasks there is
- In terms of patient safety the benefits of standardisation and use of the checklist approach are very clear

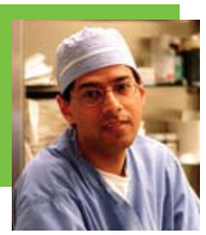
Some clinicians are alert to the latter point and will adopt the Surgical Safety Checklist readily. For others, perhaps the majority, it will be a huge cultural change, and this is underestimated at our peril. This is one reason that strong Chief Executive, Executive and Clinical Leadership in the implementation of the Surgical Safety Checklist is key[7].

While there have been dramatic improvements in the reliability and safety of anaesthesia in recent years, among medical staff clinical independence is typically rated as more important than consistency. Particular attention then needs to be given to how discussions are framed to reflect the concerns of clinicians from all disciplines and to best meet their needs and desire for the highest quality care. Involvement of teams also enables the tailoring of the Checklist for the sub-specialty making it as relevant, and useful, as possible.

We have focused in this guide on making care safer for patients as our imperative. It is important to note that surgical errors and in particular Never Events in surgery can be devastating for the individuals involved in the care, and we also want to protect clinical teams from having to experience this.

"When asked "If I were having an operation would I want the Checklist used on me?" a resounding 93% clinicians agreed that they would."

Dr Atul Gawande, a surgeon from Harvard involved in the global study



[6] Joseph T Hallinan *Why We Make Mistakes*, Feb 2009, p7

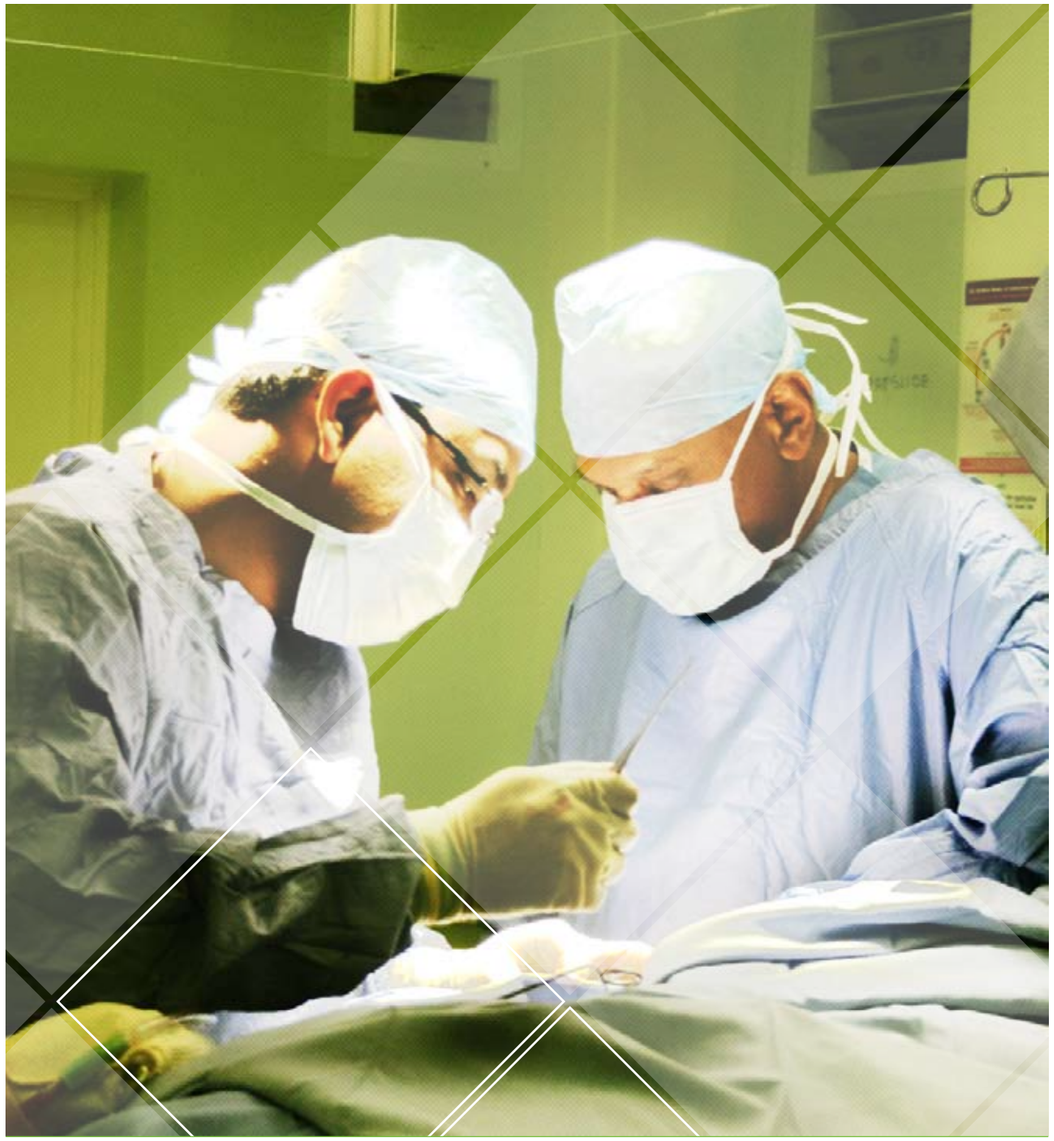
[7] Leadership and Safety – for more on this see Patient Safety First www.patientsafetyfirst.nhs.uk

Why top leadership support matters

… Because change on this scale is necessary and will not be achieved without it.

As a former vascular surgeon, currently involved in work with the Institute to improve the reliability of surgical care, I recognise how important the Surgical Safety Checklist is. I strongly believe that the CEO needs to endorse the Checklist and engage with clinicians and clinical leaders to turn the theory into everyday practice.

Dr Mark Goldman, Chief Executive, Heart of England Foundation Trust



Resources

Patient Safety First

An NHS with *no avoidable death and no avoidable harm* is the vision of *Patient Safety First*, the national campaign for patient safety improvement in England.

With a cause of *making patient safety everyone's highest priority*, and led by NHS staff for the NHS, *Patient Safety First* is set to make positive and sustainable changes in culture and practice.

This is an initiative with a difference. *Patient Safety First* is led by a team of experienced NHS clinicians and senior leaders who are passionate about the safety of patients and want to mobilise large numbers of people to take positive action. Participation is entirely voluntary but it has already seen very high levels of uptake from NHS Organisations.

The campaign focuses efforts on five key clinical and leadership interventions known to to reduce avoidable risks and harm associated with healthcare. These enable NHS staff to use tried and tested approaches from improvement science to reduce human error and increase the reliability of the systems within which they work.

These include two which are particularly pertinent:

- Leadership for safety – getting Boards fully engaged with patient safety with the aim of demonstrating that it is their highest priority
- Reducing harm in perioperative care - including prevention of surgical site infection and the Safer Surgery Checklist

Patient Safety First is also leading on the implementation of the Surgical Safety Checklist across the NHS.

There is a wealth of resources available via its website: www.patientsafetyfirst.nhs.uk

We would draw your attention to the excellent "How To Guide for Implementing Reducing Harm in Perioperative Care" located on the website at Campaign Support/Intervention resources which provides a step-by-step guide to support implementation of the Checklist, other helpful support materials are available at Interventions/ Perioperative Care. These are valuable both for Board leaders and your local Checklist Implementation team.

NHS Institute for Innovation and Improvement

The Productive Operating Theatre

This is the next programme in the NHS Institute's productive series. Its aim is to give frontline staff the knowledge and practical improvement tools they need to improve theatre performance dramatically, giving patients a better experience, increasing the reliability and safety of care, developing more effective team working and leadership, and improving efficiency by reducing waste, and driving down waits. The product is currently in co-production with the NHS and is planned for release in the summer of 2009. For more see www.institute.nhs.uk/theatres

Safer Care

The NHS institute runs courses for executive teams on Leading Improvement in Patient Safety (LIPS) Also the Safer Care section of the NHS Institute's website is well worth reviewing, and includes a concise guide for Chief Executives on reducing mortality at www.institute.nhs.uk/ram

The National Patient Safety Agency

There are a number of valuable resources on the NPSA website.

www.npsa.nhs.uk/nrls/alerts-and-directives/alerts/safer-surgery-alert details the alert and contains useful supporting information including a video of the James Reason Inaugural Lecture given by Dr Atul Gawande, and a section on "Implementing the WHO Surgical Safety Checklist Alert". The NPSA also published a "Never Events policy" in March 2009 and this can be referenced by using the search facility on the website.

WHO Surgical Safety Checklist

(adapted for England and Wales)

NHS
National Patient Safety Agency
National Reporting and Learning Service

SIGN IN (To be read out loud)

Before induction of anaesthesia

Has the patient confirmed his/her identity, site, procedure and consent?
- ☐ Yes

Is the surgical site marked?
- ☐ Yes/not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway/aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and adequate IV access/fluids planned

TIME OUT (To be read out loud)

Before start of surgical intervention
for example, skin incision

Have all team members introduced themselves by name and role?
- ☐ Yes

Surgeon, Anaesthetist and Registered Practitioner verbally confirm:
- ☐ What is the patient's name?
- ☐ What procedure, site and position are planned?

Anticipated critical events

Surgeon:
- ☐ How much blood loss is anticipated?
- ☐ Are there any specific equipment requirements or special investigations?
- ☐ Are there any critical or unexpected steps you want the team to know about?

Anaesthetist:
- ☐ Are there any patient specific concerns?
- ☐ What is the patient's ASA grade?
- ☐ What monitoring equipment and other specific levels of support are required, for example blood?

Nurse/ODP:
- ☐ Has the sterility of the instrumentation been confirmed (including indicator results)?
- ☐ Are there any equipment issues or concerns?

Has the surgical site infection (SSI) bundle been undertaken?
- ☐ Yes/not applicable
  - Antibiotic prophylaxis within the last 60 minutes
  - Patient warming
  - Hair removal
  - Glycaemic control

Has VTE prophylaxis been undertaken?
- ☐ Yes/not applicable

Is essential imaging displayed?
- ☐ Yes/not applicable

SIGN OUT (To be read out loud)

Before any member of the team leaves the operating room

Registered Practitioner verbally confirms with the team:
- ☐ Has the name of the procedure been recorded?
- ☐ Has it been confirmed that instruments, swabs and sharps counts are complete (or not applicable)?
- ☐ Have the specimens been labelled (including patient name)?
- ☐ Have any equipment problems been identified that need to be addressed?

Surgeon, Anaesthetist and Registered Practitioner:
- ☐ What are the key concerns for recovery and management of this patient?

This checklist contains the core content for England and Wales

www.npsa.nhs.uk/nrls

PATIENT DETAILS

Last name:

First name:

Date of birth:

NHS Number:*

Procedure:

*If the NHS Number is not immediately available, a temporary number should be used until it is.

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