Centre for Perioperative Care

National Safety Standards for Invasive Procedures 2 (NatSSIPs)

Short Version | January 2023

Introduction

The original National Safety Standards for Invasive Procedures (NatSSIPs) were published in 2015. Our understanding of how to deliver safe care in a complex and pressurised system is evolving. These revised standards (NatSSIPs 2) are intended to share the learning and best practice to support multidisciplinary teams and organisations to deliver safer care.

NatSSIPs 2 consists of two inter-related sets of standards:

- The Organisational Standards are clear expectations of what Trusts and external bodies should do to support teams to deliver safe invasive care.
- The Sequential Standards are the procedural steps that should be taken where appropriate by individuals and teams, for every patient undergoing an invasive procedure[1].

The NatSSIPs 2 have evolved to have less emphasis on tick boxes or rare 'Never Events' and now include cautions, priorities and a clear concept of proportionate checks based on risk. We recognise that 'teams' change or may be newly formed on the day of a procedure, and therefore require clear processes. NatSSIPs 2 should form the basis of improvement work, inspections and curricula.

This document is a summary. Please see details, including exceptions, in the full version.

[1] Invasive procedures are defined more formally in the full document, but do not include minor procedures such as intravenous cannulation.

In Summary

Key principles in NatSSIPs 2 include:

- The concept that NatSSIPs 2 will help achieve of the triple goals of improved patient safety, better team-working and enhanced efficiency.
- The categorisation of invasive procedures into major or minor procedures, each requiring different checks which are proportionate to the risk of harm.
- The benefit of 'Standardisation, Harmonisation, and Education' across invasive specialty processes.
- The need to consider human factors with systems thinking, culture, psychological safety and team-work to underpin NatSSIPs 2 implementation.
- An update of the WHO Five steps to safer surgery of Team Brief, Sign In, Time Out, Sign Out and Handover/ Debrief to include three more steps to make the Sequential Standards (Steps): Consent and Procedural verification; Safe use of implants; and Reconciliation of items (to prevent retained foreign objects). 'The NatSSIPs Eight' should be in place for every relevant patient.
- That checks performed by an engaged team enable communication and save misunderstandings, reduce risk, provide clarity and set expectations.
- The central role of the patient as a participant in safety checks.
- The need for a learning safety system supported by insight, involvement and improvement.
- A structure of People, Processes and Performance within the Organisational Standards.
- The requirement for adequately resourced organisational leadership and support for safety.

The NatSSIPs 2 have been written by practising clinicians, from across the four UK nations, across disciplines, professions and organisations, with patient and organisational input and published by the Centre for Perioperative Care (www.cpoc.org.uk). They incorporate safety science and learning from all UK nations' patient safety strategies and major reports and investigations.

NatSSIPs2 in summary; Organisational and Sequential Standards

Organisational Standards

People for safety

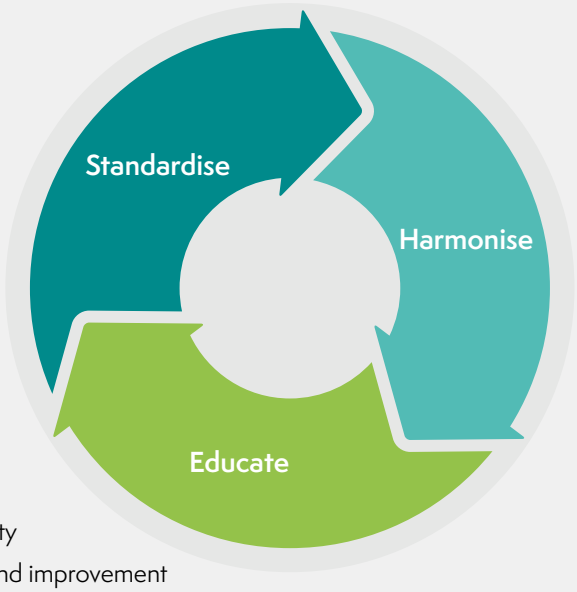
- Patients as partners
- Staff to deliver
- Roles in safety
- Training in safety
- Human factors understanding

Processes for safety

- Documentation
- Scheduling
- Induction
- Governance

Performance for safety

- Data for assurance and improvement
- External body engagement



Sequential Standards ('The NatSSIPs 8')

1. Consent and Procedural verification
2. Team Brief
3. Sign In
4. Time Out
5. Implant use
6. Reconciliation of items
7. Sign Out
8. Debrief/Handover

Organisational Standards:

Successful, sustained delivery of strong safety practices throughout an organisation is completely dependent on leadership, culture, and resources to support implementation, training, and ongoing engagement.

The Organisational Standards in NatSSIPs 2 have been strengthened to provide clarity for the expectations of organisations and external bodies, and patient involvement.

Every Trust board should ensure that they have:

- Adequately resourced, clinically-practicing senior and specialty-level leadership to enable sustained implementation of NatSSIPs 2 across every part of the organisation.
- Sufficient time and resource for multidisciplinary team training.
- Sufficient skilled and knowledgeable teams to deliver invasive care safely.
- Appropriate induction for new staff and agency staff.
- Governance processes for NatSSIPs 2 that are focussed on improvement.

For external organisations that inspect, commission, examine, educate and support:

- Inclusion of NatSSIPs 2 in training and assessment.
- Use of NatSSIPs 2 as a framework for evaluation of services.
- Use of NatSSIPs 2 in policy, reports and communications.

Patient expectations are in included in NatSSIPs 2.

NatSSIPs 2
ORGANISATIONAL STANDARDS

Organisational Standards that enable teams to deliver safe care

People *for safety*

Patients as partners
Involve patients in their care and safety
Mutual respect and compassion

Staff to deliver
Roles in safety: resourced leadership to deliver

Training in safety: appropriate and skilled staffing

MDT Teams: have safety education with human factors

Processes *for safety*

Documentation:
User friendly checklists without duplication

Scheduling:
Provides necessary information for safe care

Induction:
Covers expectations for safe reliable care

Governance:
Provides insight, learning, involvement and improvement

Performance *for safety*

Data sources:
Sequential: peer review and qualitative performance with assurance data

Organisational: education and induction delivery measures

Use of data
Quality improvement focus

Visibility of data
Board to ward with expert support and challenge

Secure in safety
Local safety strategy is visible with infrastructure following NatSSIPs

Patient involvement
Patients involved in safety improvement, education, information and design

Leadership
Senior and substantive clinical leadership
Training in safety for leaders
Sufficient support and resource

Governance
Proportionate risk assessment, organisational resource, human factors expertise

Measurement for Improvement
Triangulation
Suites of measures
QI methodology

Systems design
Safe scheduling and list management
Local induction covers NatSSIPs
IT integration

Sequential Standards

NatSSIPs 2 covers invasive procedures in all settings.

What is an invasive procedure? An invasive procedure is a procedure that is performed where a hole or incision is made in a patient or via a patient orifice, and usually where documented consent is required.

Many areas (such as Emergency Departments, Interventional Radiology suites and Outpatient treatment rooms) do not currently have a culture of using the standards or a checklist.

Successful, sustained implementation of the sequential steps will only occur in the context of full engagement with organisational standards.

Forcing teams to undertake checks that have no perceived relevance or safety benefit to their context is likely to be detrimental to patient safety overall. Standards should be applied based on the identified, known risks and previous incidents in that specialty area.

NatSIPPs 2 introduce the concept of minor or major procedures and organisations should decide which type of checks are required in each area, based on the risks:

- Major procedures require more checks and generally a 'full count' where anything that enters the field is accounted for, including swabs and instruments.
- Minor procedures require fewer checks.
  - Sign In and Time Out can be combined
  - A 'proportionate count' (rather than a full count) for procedures where there is negligible possibility of retaining swabs
- Some aspects of the checks may appear more relevant to some team members than others but team engagement and a mutual understanding, with basic, advanced, or priority checks applied proportionately provide safety and reliability based on risk and learning.

'The NatSSIPs Eight' Sequential Step Standards

1 - NEW	Consent, Procedural verification, and Site marking
2	Team Brief
3	Sign In
4	Time Out
5 - NEW	Safe and efficient use of implants (where relevant)
6 - NEW	Reconciliation of items in the prevention of retained foreign objects
7	Sign Out
8	Handover/Debrief

Consent, Procedural Verification and Site Marking

The purpose of site marking is to provide a visual alert to the whole team of the intended procedural site that has been agreed with the patient. Team awareness and engagement with correct site is an important aspect of safety.

- Site marking must be performed for all procedures for which variation is possible. i.e. where there is laterality, level or more than one operating site.
- Right, Left or Bilateral must be written in full on the consent.
- The patient gives consent - it is not taken.

Team Brief

Multidisciplinary Team Brief is a key element of practice in the delivery of safe patient care.

- The senior responsible clinicians should always be involved. Key decisions and knowledge of potential safety issues need to be conveyed by and shared with the team by senior clinicians involved in the case / list.
- Each patient should be discussed in list order from the perspective of the operator, operator's assistant, the anaesthetist (if appropriate), scrub team and other key team members.
- The Team Brief provides an opportunity to discuss items such as planned breaks, staff familiarity with equipment, kit requirements and expected behaviours.

Sign In

Sign In is the point at which the team checks that it is safe and appropriate to commence anaesthesia.
Sign In is not a replacement for safe and efficient processes in admission and ward areas.

- All patients must undergo Sign In using a checklist; this may be combined with the Time Out for 'minor' procedures. The patient should be involved.
- The minimum documents (online or paper) required are valid consent, operating list and a robust form of patient identification which includes confirming their name, date of birth and another identifier (typically a hospital / NHS number).

Time Out

Time Out is the final safety step before the procedure. The checks should involve the whole team.

- All patients undergoing invasive procedures under general, regional or local anaesthesia, with or without sedation, must undergo team Time Out immediately before the start of the procedure.
- The lead / named responsible operating consultant or Specialist holds responsibility to ensure Time Out meets the standards.
- The primary operator should summarise the key events/steps/safety issues of the procedure planned, particularly in a complex procedure or if some members of the team may be unfamiliar with the steps of the case.
- Blood loss management plan (e.g. tranexamic acid, tourniquet) replaces the previous arbitrary 500ml blood loss question.

Implant verification

Every patient should receive the correct implant(s) safely and efficiently.

These standards aim to minimise errors and take away some of the cognitive burden. The implant checks should typically be succinct, to reduce the risk of a wrong implant and keep in perspective the actual level of risk. Lengthy checks may introduce new risks, by over burden of checks, check fatigue and unnecessary delay.

Planning in advance of the procedure, standardisation of processes and education of all staff are other important elements in ensuring that the correct implant is chosen and inserted.

Single implant

- The minimum checks at the point the implant is opened are:
  - Type of implant/prosthesis/device
  - Laterality (when applicable)
  - Size
  - Expiry date
  - Sterility

More than one implant (including screws)

- The key additional factor for the second and subsequent implants that should be checked is:
  - Compatibility

Reconciliation of Items in Prevention of Retained Foreign Objects

These standards apply wherever and whenever invasive procedures are carried out. This includes all aspects of maternity care, outpatient and ward-based procedures.

The prevention of retained foreign objects is a shared responsibility. The risk of occurrence is reduced through robust education, effective teamwork and better processes.

This standard includes all potentially retainable items used in procedures, as well as those used as part of anaesthesia and sedation.

In any environment where swabs, sharps and instruments are used where there is a cavity large enough to retain them, any item that enters the surgical field must be counted. There is a particular need to account for guidewires that may be used.

Full count procedures:

- The count should include any item that enters the procedural field, including swabs, sharps, disposable items, instruments and their constituent parts.
- The count procedure in obstetric theatre or delivery room should be as in any theatre with a full count procedure and use of a count board. NatSSIPs 2 standards of counting, equipment reconciliation and training in the count and count handover apply in full to birthing / labour suite rooms.

Proportionate count procedures:

- When procedures are performed outside of theatres via incisions too small to retain objects; via needle punctures; or via natural orifices without the insertion of swabs, a proportionate count to confirm the presence of intact equipment and the removal of any guidewire or ancillary equipment such as sheaths may be sufficient. This applies to the majority (but not all) of radiology, cardiology, endoscopy, wards, outpatient areas, emergency department and minor procedures.

Sign Out

Sign Out is a specific set of checks which: support safe completion of the invasive procedure, including relevant documentation; starts the process of safe and efficient handover of care; and identifies patient, equipment, staff or process concerns that need addressing.

- All patients must undergo Sign Out using a checklist: all patients who have had procedures under general, regional, or local anaesthesia, or under sedation, must undergo Sign Out. Specialty-specific and minor procedure checklists may be used where appropriate.
- All team members should still be present: as a minimum, this must include the operator, the operator's assistant, the anaesthetist (if applicable) and the member of staff who will be handing over to the post-procedure team (if different).
- Sign Out should be completed before the patient leaves the procedure room.

Handover/Debrief

There are formal handover points in the patient pathway at which professional responsibility and accountability is transferred between individuals or teams. There will also be planned or unplanned changes in the members of a procedural team that occur during procedures or lists of procedures.

- The participants should be focussed on the handover and ensure the team are actively listening.

The Debrief allows the team to provide feedback and learning to each other and the organisation. This can be used to celebrate excellence and build teamwork. Debrief may occur on a case-by-case basis during emergency sessions or one-off minor procedures: a flexible approach is needed when the composition of the team may change.

National Safety Standards for Invasive Procedures

NatSSIPs

Standardise | Harmonise | Educate

The NatSSIPs Eight

NatSSIPs 2

SEQUENTIAL STEPS

Delivery of safe invasive procedures by the MDT in the patient pathway

Behaviours show

Patient focus
Teamwork
Kindness
Compassion
Safety knowhow
Understand HF
Leadership

Strong communication

Planning
Teamwork
Use of checklists
Better handover
Report excellence
Report incidents

Team engaged in

Solutions
Audit
Data
Improvement
Quality

Consent and procedural verification

- Laterality in full
- Consent signed by operator
- Site marked by operator

Team Brief

- Lead operator present
- Lead anaesthetist present
- Team introductions
- Plans discussed

Sign In

- Anaesthetic practitioner, anaesthetist with patient
- Checks including consent with patient

Time Out

- Whole team engaged
- Safety checks conducted
- Strong team communication

Implant check if required

- Check compatibility
- Record what is needed
- Team focus at checks
- Add to register
- Stock up

Equipment reconciliation

- Nothing unintended left behind
- Count of constituent parts
- Count at every cavity closure

Sign Out

- Confirm count correct
- Flush IV lines
- Postoperative team instructions

Debrief

- How did the day go?
- What did we learn?

NatSSIPs on a Page Performance Indicators

	Standard	Generic organisational measures	Specific organisational measures	Team level measures
1	Consent, Procedural verification, and Site marking	• Standards are explicitly addressed in trust-wide and local (e.g. site / specialty) policies and procedures. • Standards are addressed at induction. • Governance reviews for all standards. • Team-based training and education for each standard. • Human factors and systems thinking education and governance approach. • Processes in place for qualitative assessment and review of engagement with all standards.	Number of recognised episodes of actual or near miss incorrect site procedures	Consent is taken or reconfirmed by an operator who is present in theatre
				Patient is marked before arriving in theatre
				Patient understands need for mark
				Marked by the primary operator
				Marked with an indelible marker
				Mark visible after draping
				Emergency patients Sign In includes operator
2	Team Brief		Scheduling includes Team Brief time	The Team Brief starts on time
				The senior clinicians are present
				All team members present
				All team members are engaged in Team Brief 'Silent Focus'
				A Team Brief record is kept
3	Sign In			Registered practitioner (and Anaesthetist if relevant) undertake Sign In
				Provision made for patients who don't speak English or Welsh
				Open questions are used
				Patient is involved
				Consent is correct; no abbreviations, in date, patient understanding
				Marking is correct
				Appropriate safety checks occur (Basic, Advanced and Priority)
4	Time Out			Confirmation that the team members know each other's names occurs
				Whole team is present
				A checklist is used
				Key events/steps/safety issues are discussed
				Additional checks are carried out relevant to the procedure or specialty
5	Safe and efficient use of implants		Delays / cancellations / workarounds due to problems in implant processes	Minimum checks and checks for planned implant (including custom), multi-implant, evolving and unplanned implants are defined
			Number of actual / near miss wrong implant events	
6	Reconciliation of items in the prevention of retained foreign objects		New equipment risk assessment and ratification processes in place	Minimum checks and checks for planned implant (including custom), multi-implant, evolving and unplanned implants are defined
			Number of recognised failed reconciliation events	Maternity system for 'count' in birthing rooms/delivery suite and evidence of improvement support
			Count boards standardised across areas with standardised documentation and symbols	Specialty count lists and up-to-date tray lists
7	Sign Out			A checklist is used
				The count is declared correct or resolved
				Completed before the patient leaves the procedure room
8	Handover/ Debrief		Structured handover format in place	Structured handover format used
			Debrief log and action log is kept	

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