

The Royal College of Emergency Medicine

Best Practice Guideline

Invasive Procedures in the Emergency Department

Summary of Recommendations

1. When undertaking invasive procedures, clinicians must gain patient consent (verbal or written) unless clinical circumstances dictate this is not possible and the procedure is considered to be in the patient's best interests.
2. When undertaking invasive procedures, clinicians should ensure that two healthcare practitioners, one of whom should be ST4 or above, independently agree on the site (side) of the procedure, where appropriate.
3. When undertaking invasive procedures, the responsible clinician should ensure all assistants or team members are aware of, the proposed procedure, planned approach and requirements for post-procedure monitoring.
4. The use of checklists is strongly encouraged.
5. Departmental induction and procedure specific training should address safety issues related to invasive procedures.

Scope

This document outlines the general approach to be taken by emergency medicine (EM) clinicians who undertake invasive procedures in adults and children in the emergency department.

Reason for Development

Following the original in 2015, the revised and recently published National Safety Standards for Invasive Procedures (NatSSIPs) 2 [1] has led to concern being raised by EM clinicians that this document specifically references invasive procedures taking place in the emergency department (ED) and also newly applies to 'minor procedures' whilst appearing not to have had any formal input from EM specialists. The NatSSIPs 2 document clearly has significant applicability, particularly to those patients undergoing procedures in an operating theatre environment; however, strict adherence to all of its principles for all patients undergoing procedures in an ED is unlikely to yield significant safety benefits, is likely to overburden some and may introduce new, unforeseen risks.

The NatSSIPs 2 document [1] addresses multiple key areas of safety practice that have significant relevance to team working in the ED and beyond, including highlighting the need to model appropriate behaviours, the need to understand the importance of strong communication and involving, and engaging the whole team in all aspects of care including quality improvement. Key principles of *Standardisation*, *Harmonisation*, and *Education* are emphasised, as well as a focus on organisational standards such as training (workforce) for safety, developing safer processes, and encouraging engagement for assurance and improvement.

The aim of this document is to provide pragmatic recommendations for EM clinicians undertaking invasive procedures in the ED. This guidance refers to 'best interest' decisions in relation to the Mental Capacity Act; legislation in Scotland, especially around adults who lack capacity, differs from the rest of the UK.

Background

Emergency medicine clinicians undertake a wide range of procedures, from simple joint manipulations and wound suturing to the much more complex and time critical e.g. emergency resuscitative thoracotomy. Procedures may be undertaken on a wide spectrum of patients who are alert with full capacity or various degrees of cognitive impairment or require procedural sedation, as well as those with considerable physiological compromise. While consent is highly desirable for any procedure, the emergent nature of some procedures requires the EM specialist to act rapidly in the patient's best interest and occasionally without the benefit of explicit consent. The ED differs from the operating theatre environment in that many procedures can be undertaken by a single clinician, and the need for a team approach is neither necessary nor an effective use of resources.

The NatSIPPs 2 document describes the ED as a location in which *procedures are performed without entering cavities and with small incisions under local anaesthesia in non-theatre areas, e.g. treatment rooms* [1]. These are additionally described as 'minor' procedures. Although many of the procedures carried out in ED would fit into this generalised group, it does not include interventions such as open thoracostomy and chest drain insertion or emergency resuscitative thoracotomy. The latter are described as 'major' procedures.

Recommendations

Box 1 contains a list of invasive procedures which may be undertaken in the emergency department.

Box 1. Examples of Invasive Procedures in the Emergency Department

- Fascia-iliaca block / Femoral nerve block
- Vascular access (internal jugular vein, subclavian vein, femoral vein)
- Chest drain (Seldinger technique or open technique)
- Pleural aspiration of air
- Resuscitative thoracotomy
- Lateral canthotomy
- Resuscitative hysterotomy
- Ascitic fluid drainage
- Lumbar Puncture

Whilst not invasive, procedures such as sedation and certain types of regional anaesthesia (e.g. Biers block) should be considered **high risk** and comply where applicable with the requirements for an invasive procedure.

Emergency medicine clinicians should aim to comply with the following requirements when undertaking an invasive procedure in the ED.

- Verbal or written consent, unless clinical circumstances dictate this is not possible and the procedure is considered to be in the patient's best interests.

- Two healthcare practitioners, one of whom should be ST4 or above, independently agreeing on the site (side) of the procedure, where this is appropriate.
- Ensure any assistants or team members are aware of the proposed procedure, planned approach, and any 'plan B' in the event of complications and any requirements for post-procedure monitoring.

The use of checklists is strongly encouraged, particularly to ensure auditable compliance with the above three key recommendations but also to ensure the absence of contra-indications and that any significant risks have been accounted for when undertaking these procedures [Appendix 1]. Box 2 below contains a modification of the 'NatSSIPs Eight' checklist.

Box 2. Modification of the 'NatSSIPs Eight' checklist [1]

1. Consent and verification of site
2. Team Brief
3. Sign In
4. Time Out
5. Reconciliation of items [e.g. guide wires, suture needles]
6. Sign Out
7. Handover/Debrief

The missing step in the checklist above is the *Verification of Implant* step, which generally does not apply to the ED setting. The other key modification is the removal of 'site marking' from the first step, which needs organisational level agreement. For example, considering a patient with a hip fracture, the requirement to consent and mark the appropriate side for fascia-iliac block (FIB) may later lead to confusion when the patient arrives in theatre for the definitive procedure; the presence of site marking may lead theatre teams to believe the patient has consented for the surgical procedure when in fact she/he has only consented for the FIB.

A 'hot' debrief is also encouraged after emergency cases or where complications or learning are identified, as this allows the team to provide feedback and take action for future improvement.

It is accepted that on occasions, for example, a high level of patient acuity and / or a time critical procedure, there may be no opportunity to follow some of the key recommendations; clinicians should, therefore, document their rationale for noncompliance in the patient's record.

For patients undergoing procedural sedation, please see separate RCEM guidance [2] on Procedural Sedation, noting the recommendation for the sedationist to provide a safety brief before undertaking the procedure is undertaken (see box 3) as well as a list of relevant 'Never Events'.

Box 3. Procedural Sedation Safety Brief should include:

- Roles
- Intended plan, including intended depth and length of sedation as well as determining when the procedure can commence.
- Confirmation of correct side of patient (where applicable)
- Confirmation of equipment checks have taken place (eg. suction working)
- Confirmation of location of rescue devices and drugs - Anticipated problems

For patients with cognitive impairment who lack the ability to consent to invasive procedures, clinicians should act in the patient's best interests and, where time allows, and it is practical to do so, consult with family members of those who have Lasting Power of Attorney for health.

For issues related to consent in children and young people, please see separate RCEM guidance [3].

Departmental induction programmes and procedure specific training should address safety issues related to high risk and invasive procedures. It is important to ensure that the ED nursing team is aware of what constitutes a high risk or invasive procedure, what guidance needs to be followed, and is empowered to challenge any clinician undertaking a high risk or invasive procedure who is proceeding without the relevant safety checks.

Patients undergoing more minor procedures (often under local anaesthetic) e.g. fracture manipulation, joint reduction, suturing, incision, and drainage must provide consent. Other individual elements of the recommendations for invasive procedures described above may also be applicable on a case by case basis.

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Review

Further review is usually within three years or sooner if important information becomes available.

Update October 2023, highlighting different legislation in Scotland to the rest of the UK in relation to patients who lack capacity.

Declaration of Interest

None

Disclaimers

The College recognises that patients, their situations, Emergency Departments and staff all vary. This guideline cannot cover all possible scenarios. The ultimate responsibility for the interpretation and application of this guideline, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Research Recommendations

None

Audit standards

For invasive procedures listed in as 'common,' 100% should have site verification documented, 100% should have some form of consent documented, or else a statement in the notes explaining why consent was not possible.

100% of cases where sedation is used should have a sedation proforma completed.

Key words for search

Invasive Procedures, Checklist, Correct site, Safety Brief

References

1. National Safety Standards for Invasive Procedures. London: CPOC: 2023 (NatSSIPs 2). [CPOC_NatSSIPs_FullVersion_2023_0.pdf](#). Accessed 26.06.2023
2. Procedural Sedation in the Emergency Department. RCEM 2022. [RCEM_BPC_Procedural_Sedation_Final_Aug_22.pdf](#). Accessed 02.07.2023
3. Consent in Adults, Adolescents and Children in Emergency Departments. RCEM 2018. [Consent_Guidance_Revised_Jan2018.pdf \(cloudinary.com\)](#). Accessed 02.07.023

Appendix 1 Example of an Invasive procedure checklist

DO THIS checklist for all invasive procedures

Including chest drain, central line, LPs, all cases with sedation.

Before preparing for the intervention & before sedation Time Out

Confirm Patient Identity
Team – allocate roles

Procedure

- Consent?
- Site marked if required?
- Correct proforma used?
- Equipment confirmed?
- Imaging Reviewed?
- Monitoring applied?
- Medication prepared?
- Airway assessment?
- Additional Support required?
- Allergies?
- Coagulopathy?
- Blood loss risk?
- Retained guidewire risk?

After the procedure

Sign Out

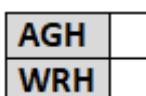
- Has the procedure been recorded?
- Guidewire/swabs/shamps accounted for?
- Have any equipment problems?
- Key concerns for continuing care documented?
- Do we need to debrief?
- Line flushed or cannula removed

WHO Checklist

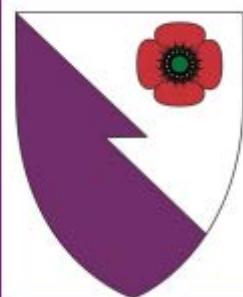
ED

Appendix 1 Example of an Invasive procedure checklist

Emergency Department CHEST DRAIN CHECKLIST

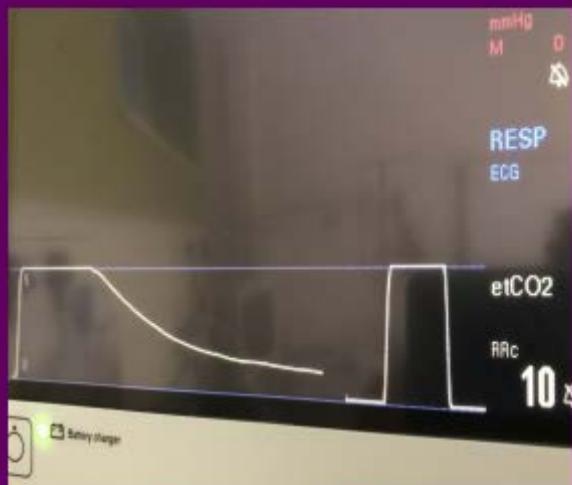


<Name>	<Age>	<DoB>	<Hosp number>	<NHS Number>	<ED episode number>
BEFORE THE PROCEDURE Indication: <input type="checkbox"/> Pneumothorax <input type="checkbox"/> Haemothorax <input type="checkbox"/> Other					
Patient Identity checked as correct?	Yes	No	Any drug Allergies ?	Yes	No
Appropriate Consent completed?			Correlates Clinical Signs with CXR ?		
In the case of pneumothorax, have you considered bullous lung disease as a possible alternate diagnosis ?			Equipment available & underwater drain / seal prepared ? Trocar removed ?		
Risk of Coagulopathy & Medicines checked?			Safe Site of drain insertion identified?		
Confirm SITE / SIDE of clinical abnormality by two clinicians – sign below			Are there any concerns about this procedure for the patient or its timing ?		
STOP BEFORE YOU BLOCK Have you got the Correct Side ?					
Clinician 1			<input type="checkbox"/> Right <input type="checkbox"/> Left	Clinician 2	<input type="checkbox"/> Right <input type="checkbox"/> Left
TIME OUT					
Patient is adequately Oxygenated ?	Yes	No	Patient adequately analgesed / sedated	Yes	No
Patient position is optimal			Anaesthetist aware if patient ventilated		
Team members identified & roles assigned			Record any concerns in the 'Notes' section		
DURING PROCEDURE - STOP if unable to aspirate air/ fluid with green needle					
<input type="checkbox"/> Hands washed and Sterile Gloves <input type="checkbox"/> Sterile Gown and Mask and Hat <input type="checkbox"/> Large Fenestrated Drape <input type="checkbox"/> Chlorprep 2% to skin and allowed to dry Local Anaesthetic: <input type="checkbox"/> Lidocaine 1% <input type="checkbox"/> Lidocaine 2% <input type="checkbox"/> Other Volume <input type="text"/>					
Technique:	<input type="checkbox"/> Seldinger	<input type="checkbox"/> Surgical	Drain Size: <input type="checkbox"/> 36F <input type="checkbox"/> 32F <input type="checkbox"/> 28F <input type="checkbox"/> 24F <input type="checkbox"/> 20F <input type="checkbox"/> 18F <input type="checkbox"/> 16F <input type="checkbox"/> 12F <input type="checkbox"/> 10F	Suture Size: <input type="checkbox"/> 1/0 <input type="checkbox"/> 2/0 <input type="checkbox"/> 3/0 <input type="checkbox"/> 4/0	
Suture:	<input type="checkbox"/> Mersilk	<input type="checkbox"/> Ethilon	<input type="checkbox"/> Other		
Adverse Events	<input type="checkbox"/> No	<input type="checkbox"/> Yes	(record below or in notes)		
NOTES					
SIGN OUT					
Sutures, tubing and dressing secured	Yes	No	Guidewire removed if Seldinger technique	Yes	No
Patient advised not to elevate drain			Analgesia prescribed		
Chest X-ray ordered			Verbal handover to Nurse		
Chest drain swinging (+/- bubbling)					
Chest X-Ray Review Clinician	PROCEDURE Date Time (24hr)			STAFF (print & sign) Operator Assistant	



February 2018 (revised)

The Importance of Monitoring After Fascia Iliaca Block (FIB)



The Coroner has issued a Regulation 28

FIB removed painful stimulus; pre-administered opiates caused apnoea, this went unrecognised.

NRLS data reveals:

- Poor or no documentation of procedure in ED
- Poor or no post procedure observations in ED

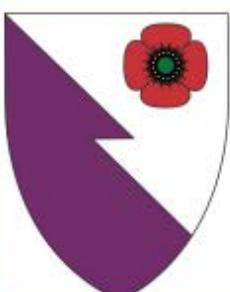
An ED LocSSIP/guideline should include documentation of:

- Site, side, dose and time of block
- Frequency of post procedure observations

A minimum would be at 5, 10, 15, 30 mins post procedure

[RCEM/FIBguideline](#)

For other RCEM issued Safety Alerts and Safety Newsflashes see:
www.rcem.ac.uk/safetyalerts

 The Royal College of Emergency Medicine

August 2017

Safety Newsflash: Retained Guidewires



8 of the 16 NEVER EVENTS (reported over the past 2 years) in the ED are RETAINED GUIDEWIRES following chest drain and central line insertion

<u>NRLS advice</u>	<u>Checklist</u>
<p>Standardised process for guidewire management during central venous access:</p> <ul style="list-style-type: none">Two person process (operator and observer)Visual confirmation of guidewire removal by both personsVerbal communication of guidewire removal by both personsDocumentary confirmation of guidewire removal by both personsTraining and education to emphasise appropriate control of guidewires	<p>Use of 'WHO' type checklist as recommended by National Safety Standards for Invasive Procedures.</p> <p>Invasive procedure checklist for EDs</p> <p>DO THIS checklist for all invasive procedures including chest drain, central line, IVPs, all cases with sedation.</p> <p>1. Immediately before the procedure (Includes 'Sign In')</p> <p>'Time Out'</p> <p><input checked="" type="checkbox"/> Confirm Patient Identity <input checked="" type="checkbox"/> Team – allocate roles</p> <p>Procedure</p> <p><input checked="" type="checkbox"/> Correct I.D. <input checked="" type="checkbox"/> Site marked if required? <input checked="" type="checkbox"/> Correct proforma used? <input checked="" type="checkbox"/> Imaging reviewed? <input checked="" type="checkbox"/> Equipment confirmed? <input checked="" type="checkbox"/> Monitoring confirmed? <input checked="" type="checkbox"/> Medication prescribed? <input checked="" type="checkbox"/> Always assessment? <input checked="" type="checkbox"/> Additional Support required?</p> <p><input checked="" type="checkbox"/> Allergies? <input checked="" type="checkbox"/> Coagulopathy? <input checked="" type="checkbox"/> Blood loss risk? <input checked="" type="checkbox"/> Retained guidewire risk?</p> <p>2. Procedure:</p> <p>Repeat 'Time Out' if any changes to team or patient</p> <p>3. After the procedure</p> <p>'Sign Out'</p> <p><input checked="" type="checkbox"/> Has the procedure been recorded? <input checked="" type="checkbox"/> Guidewires/tubes/sharps accounted for? <input checked="" type="checkbox"/> Have the specimens been labelled and sent? <input checked="" type="checkbox"/> Any equipment cleaned? <input checked="" type="checkbox"/> Key components for continuing care? <input checked="" type="checkbox"/> Do we need to debrief?</p> <p>Nottinghamshire Boroughs for Invasive Procedures NHS England</p> <p>May 2016</p> <p>Identified from University Hospitals Bristol NHS Foundation Trust checklist with permission from Dr Beetham</p>

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www.rcem.ac.uk/safetyalerts

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