Royal Cornwall Hospitals
NHS Trust

LocSSIP Guideline for: Arterial and Central Lines in The Emergency Department

V1.0

November 2023

Summary

This guideline outlines the process to be followed for procedures involving insertion of arterial or central lines in the Emergency Department.

It applies to all patients undergoing the listed procedures.

This Guideline has been written as a result of the LocSIPPs Requirement (Local Safety Standards for Invasive Procedures)

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Data Protection Act 2018 (UK General Data Protection Regulation – GDPR) Legislation

The Trust has a duty under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and UK General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team

Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

1. Introduction

1.1. The Royal Cornwall Hospital Trust (RCHT) is committed to providing high quality patient centred care and a safe environment for all patients requiring insertion of an arterial or central line.

1.2. This version supersedes any previous versions of this document.

2. Background

This guideline builds on the principles outlined in the existing Royal College of Emergency Medicine guidance for insertion of arterial and central lines. It will provide evidence of what additional requirements are needed i.e., training and education to fit with local working practices and staffing. This will enhance the National Safety Standards for Invasive Procedures (NatSIPPs) and mitigate risk of never events, serious incidents or near misses. It will also provide a process for analysis or learning.

3. Definitions

An Arterial Line is a type of catheter inserted into an artery in order to measure blood pressure more accurately. A Central Venous Line is a type of catheter that is placed in a large vein that allows multiple IV fluids to be given and bloods to be drawn. It is also used to monitor central venous pressure in critically ill and perioperative patients.

4. Governance and Audit

4.1. The Urgent, Emergency and Eldercare Care governance group will monitor the implementation of this guideline and commission a bi-annual audit of adherence. See appendix 1 and Section 16.

4.2. This document incorporates the process undertaken as part of the WHO safer surgery checklist

4.3. Patients must be assessed prior to the procedure and informed consent gained.

4.4. The procedure will be documented within the patient's medical record.

4.5. Significant morbidity events will be followed up via the Emergency Department morbidity and mortality process.

5. Workforce

5.1. Minimum workforce requirements for these invasive procedures are as follows: Insertion requires a minimum of 2 people, an operator and an assistant.

5.2. All procedures should be discussed with the Consultant or Senior Doctor on shift beforehand, with particularly attention to factors that make insertion more difficult e.g. obesity, short neck or abnormal vascular anatomy.

5.3. Operator: Arterial and Central Line insertion should be performed by an operator with appropriate competence and supervision for the proposed insertion.

Assistant: This is a sterile procedure, and a dedicated assistant must be available throughout the procedure. This is usually the nurse caring for the patient. Their role is to support patient comfort, pass equipment aseptically, ensure the safety checklist is completed and that the environment is appropriately managed to reduce distractions for the operator.

Supervisor: The operator may (or may not) require either direct or indirect supervision from a supervisor.

5.4. It is the responsibility of each member of staff involved i.e. doctors/nurses involved in the procedure outlined, to work within their scope of competence under the terms of their professional body i.e. the General Medical Council 'Good Medical Practice' or the Nursing and Midwifery Council 'Code of Professional Standards for Conduct'.

5.5. It is the responsibility of each member of staff to comply with these set of standards and escalate any concerns regarding competence. Incidents, near misses must be reported in the Datix system. All staff will communicate and work as a team and speak out if they have any concerns underpinned by undertaking annual training i.e. WHO, Patient Safety (human factors) Freedom to Speak up on ESR.

6. Scheduling and List Management

These procedures will be performed as necessary when safe to do so in an appropriate environment.

7. Handovers and Information Transfer

7.1. The whole team is responsible for the safety of the patient. Insertion should proceed in a WHO safety checklist style as detailed on the 'Invasive Procedure Safety Checklist: Arterial/Central Line Insertion' (see appendix 1).

7.2. **Prior to the procedure:**

7.2.1. Ensure the patient is continuously monitored with pulse oximetry and electrocardiography. For ventilated patients, ensure ventilation settings are appropriate.

7.2.2. Before inserting a CVC, anticipate the future management of the patient, for example, avoid subclavian if likely to need fistula formation for haemodialysis, etc.

7.2.3. Confirm the correct central line is available (e.g. 12.5cm, 16cm or 20cm). The length used should be discussed with a Critical Care consultant. May there be a requirement for renal filtration- consider whether a double vessel placement may be required.

7.2.4. Ensure patient is positioned in such a way to optimise vein exposure and reduce the risk of air embolism. This is usually a slight Trendelenburg for internal jugular or subclavian access or head up with slight external rotation of the hip for femoral approach. It is advisable to use an ultrasound to assess venous anatomy prior to creating a sterile field so you can pre-determine the best approach.

7.2.5. The operator must ensure they maintain a strict aseptic technique throughout. This includes thorough hand washing with antiseptic soap, use of a sterile gown, gloves, mask, and hat and place a sterile full body drape over the patient. Lay out all equipment from the central line pack on a procedure trolley. Use a sterile ultrasound probe cover and single use sterile conductive jelly. Ensure appropriate 3 way taps and bungs are attached to each lumen of the central line and each line is flushed with sterile saline (the 3 way taps and bungs provided in the standard central line packs are to be discarded and replaced with the Vygon Vadsite blue bungs and 3 way taps).

7.2.6. Confirm if the patient has any allergies.

7.2.7. The skin is prepared with a solution of 2% Chlorhexidine in 70% isopropyl alcohol (Chloraprep swabstick). This should be applied and allowed to evaporate twice prior to insertion. Do not shave hair at insertion site unless it interferes with dressing adhesive, as it may increase the risk of infection from disruption of the epidermal barrier.

7.2.8. Ensure appropriate ventilator settings, analgesia, sedation and paralysis (if appropriate). If the patient is awake, a maximum of 3mg/kg of 1% lidocaine should be prepared, ready for real time ultrasound guided local infiltration prior to commencing the procedure.

7.3. **Time out:** The non-sterile assistant should lead this and can be found on ED Resus Screens under ‘WHO Safety Checklist”.

7.4. **Sign Out**

7.4.1. Ensure the guidewire was confirmed as being in the vein prior to dilating.

7.4.2. Ensure the removal of the entire guidewire, this should be a 2 person check to avoid a never event.

7.4.3. Using ultrasound, confirm correct placement of the catheter in the vein.

7.4.4. Confirm that all ports aspirate freely.

7.4.5. Ensure all ports are flushed with 0.9% saline. Secure the catheter with two- four suture points and place an occlusive dressing (Tegaderm/ Opsite 3000) over the insertion site with date and time clearly legible.

7.4.6. Ensure a chest X-Ray has been performed to confirm tip position (upper torso lines only). A femoral or upper torso CVC can only be used prior to a chest x-ray in emergency situations AND if the following criteria have been met:

- Guide wire position was confirmed as venous in 2 planes on ultrasounds.
- The guidewire was removed with a 2-person check.
- All ports aspirate freely.
- A CVC blood gas is compatible with venous placement and a venous waveform is visible on transduction of the proximal port.

7.4.7. If any adverse events were encountered (e.g. arterial puncture, pneumothorax), the Consultant or Senior Doctor on Shift must be immediately informed and should be clearly documented.

7.4.8. Clear handover to nurse responsible to patient, and when it is safe to use.

8. Procedural Verification and Site Marking

The team involved in the procedure will participate in the combined safety check as per the relevant checklist in the appendices. The following information should be confirmed and agreed by the team with the involvement of the patient where possible. Marking of the site is not usually required for central line insertion.

9. Safety Briefing

If any issues have arisen or problems such as equipment difficulties, a debriefing is to be undertaken and recorded by the responsible practitioner in the patient note, and a Datix completed if appropriate.

10. Sign In

See section 7.2.

11. Time Out

See section 7.3.

12. Prosthesis Verification

When a patient has an arterial or central line inserted in the Emergency Department, this needs to be documented. line length, location (e.g. left internal jugular), time inserted and length secured at skin must be documented clearly.

13. Prevention of Retained Foreign Objects

Any sharps used during the procedure need to be safely accounted for and/or disposed of by the Anaesthetist/ Intensivist undertaking the procedure. Sharps should be disposed of in accordance with the Trust Sharps Policy.

14. Sign Out

See section 7.4.

15. Debrief

All members of the team must feel comfortable to contribute to the discussion and raise any queries or concerns.

16. Dissemination and Implementation

16.1. The document is available on the document library. Significant updates will be communicated via Trust wide email.

16.2. Implementation of the policy will be via Trust wide communication and supported by appropriate training for the relevant members of staff.

17. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	The effectiveness and safety of procedures undertaken during care of the acutely unwell patient.
Lead	Dr Mark Jadav (Emergency Department Consultant).
Tool	Audits to be planned in for any emerging trends, areas of failure within this procedure list will be discussed and rectified.
Frequency	This is monitored for each patient.
Reporting arrangements	The report will be shared with the ED Governance Meeting.
Acting on recommendations and Lead(s)	Dr Mark Jadav in conjunction with Governance service lead and matron/service lead appropriate to the findings.
Change in practice and lessons to be shared	Change in Practice will be shared through the ED team and wider Trust if appropriate via Team Brief, Governance Days and email.

18. Updating and Review

18.1. The document review process is managed via the document library. Document review will be every three years unless best practice dictates otherwise. The author remains responsible for the policy document review. Should they no longer work in the organisation or in the relevant practice area then an appropriate practitioner will be nominated to undertake the document review by the designed director.

18.2. Revision activity will be recorded in the versions control table to ensure robust document control measures are maintained.

19. Equality and Diversity

19.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the Equality Diversity And Inclusion Policy or the Equality and Diversity website.

19.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	LocSSIP Guideline for: Arterial and Central Lines in The Emergency Department V1.0
This document replaces (exact title of previous version):	New document.
Date Issued/Approved:	17 November 2023
Date Valid From:	November 2023
Date Valid To:	November 2026
Directorate / Department responsible (author/owner):	Dr Mark Jadav, Emergency Department Consultant.
Contact details:	01872 253115
Brief summary of contents:	Process to be followed for insertion of arterial and central lines on patients within ED.
Suggested Keywords:	LocSSIPs, arterial line, central line, safety, invasive.
Target Audience:	**RCHT:** Yes **CFT:** No **CIOS ICB:** No
Executive Director responsible for Policy:	Chief Medical Officer.
Approval route for consultation and ratification:	Emergency Department Governance Meeting. Care Group Governance Meeting. Safer Surgery Group.
General Manager confirming approval processes:	Nigel D'Arcy (Interim)
Name of Governance Lead confirming approval by specialty and care group management meetings:	Paul Evangelista
Links to key external standards:	None Required.
Related Documents:	Invasive Procedure Safety Checklist.
Training Need Identified?	No.
Publication Location (refer to	Internet and Intranet.

Information Category	Detailed Information
Policy on Policies – Approvals and Ratification):	
Document Library Folder/Sub Folder:	Clinical / Emergency Department

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
September 2023	V1.0	Initial issue.	Dr Mark Jadav, Emergency Department Consultant

All or part of this document can be released under the Freedom of Information Act 2000

All Policies, Strategies and Operating Procedures, including Business Plans, are to be kept for the lifetime of the organisation plus 6 years.

This document is only valid on the day of printing.

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust The Policy on Policies (Development and Management of Knowledge Procedural and Web Documents Policy). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form

The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people.

For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity, and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	LocSSIP Guideline for: Arterial and Central Lines in The Emergency Department V1.0
Directorate and service area:	Emergency Department, UEE.
Is this a new or existing Policy?	Existing.
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Dr Mark Jadav, Emergency Department Consultant
Contact details:	01872 253115

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To give safety and process guidance to Emergency Department staff performing arterial and central line insertion.
2. Policy Objectives	Process to be followed for central line insertion within the Emergency Department Team, ensuring safe and effective use.
3. Policy Intended Outcomes	To ensure all staff are following an accepted safe method of arterial and central line insertion.
4. How will you measure each outcome?	Audit and debrief following each patient.
5. Who is intended to benefit from the policy?	Staff, Patients, RCHT.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: Yes • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** Approved.
6c. What was the outcome of the consultation?	Emergency Department Governance Meeting.
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff, or patient surveys:** No

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	
Religion or belief	No	
Marriage and civil partnership	No	

Protected Characteristic	(Yes or No)	Rationale
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Dr Mark Jadav, Emergency Department Consultant.

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis