CSOP 036 – Early Arterial Access

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APPROVALS

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HISTORY

Effective Date	Version No.	Summary of Amendment
06/10/2023	1.0	Creation of SOP
25/10/2023	1.1	Notes re regular visual check of line, use of stickers, brachial artery being less preferred site, correction of training link in annex 2

ANNEX/APPENDIX

Document Reference Number	Document Title
Annex 1	Management of Arterial Access Equipment
Annex 2	Arterial Access Training

1. Purpose

Pre-hospital arterial access can be established for diagnostic or therapeutic purposes. It allows for accurate monitoring of haemodynamic values and optimisation of intravenous fluid, blood product and vasoactive drug resuscitation.

2. Scope

This policy applies to all clinical staff working within The Air Ambulance Service.

3. Indications

Arterial access ***should*** be considered:

- Prior to induction of anaesthesia in traumatic brain injury or medical intracranial event
- In any patient who has undergone pre-hospital emergency anaesthesia

Arterial access ***may*** be considered:

- During cardiac arrest
- In any patient with haemodynamic instability where continuous blood pressure monitoring may improve care

Arterial access in paediatric patients is a specialist skill. The risk/benefit of insertion is unlikely to favour their use by TAAS clinicians unless they have significant paediatric anaesthesia/critical care experience.

4. Contraindications

The only absolute contraindication is refusal from a patient with capacity. Consideration should be given to the following contraindications:

- Infection, trauma, or full thickness burns at the insertion site
- Presence of arterio-venous fistula in that limb
- Damage to the artery proximal or distal to the insertion site
- Thrombophlebitis/vasculitis, or vasculo-occlusive disease
- Previous arterial surgery and presence of graft

5. Procedure

Consideration should be given to the most appropriate insertion site for the patient:

Radial artery:

- The preferable site for most patients
- The LEFT radial should be used preferentially in patients who may receive primary Percutaneous Coronary Intervention (PCI)
- Ultrasound ***may*** be used to assist insertion

Brachial Artery:

- Less preferable than Radial site due to higher risk of distal ischaemia
- Consideration of positioning due to kinking of the cannula leading to an inaccurate or lost trace
- Ultrasound ***may*** be used to assist insertion

Femoral artery:

- May be easier to insert and better reflect organ perfusion in patients during/immediately following cardiac arrest, or patients who are profoundly hypovolaemic
- Ultrasound ***should*** be used to assist insertion (aiming for the common femoral artery)

- The cannula should be sutured in place (Vygon cannulae only) and secured with a dressing. The cannula should be connected to the flushed transducer circuit and zeroed on the monitor.
- The clinical team should maintain regular visual contact with the arterial line to reduce the chance of disconnection and the subsequent risk of exsanguination.
- The compression bag should be inflated to approximately 300mmHg and the transducer should be secured at the level of the heart to allow for accurate monitoring.
- An arterial line sticker should be placed on the transducer set to reduce the risk of intra-arterial injection of medications.
- Where arterial access has been unsuccessful, patient transfer should not be delayed by repeated attempts at arterial cannulation.

Drugs and hypertonic solutions must never be given via an arterial Line. Delivery of certain medications via arterial access can lead led to paraesthesia, severe pain, motor dysfunction and limb loss. The only appropriate fluid to administer via an arterial line is 0.9% saline.

6. Infection Prevention and Control

- Arterial cannulation should be performed using a sterile technique. Chloraprep applicators should be used to clean the insertion site and sterile gloves should be worn.
- Please note arterial introducer needles do not have a safety mechanism and should be safely disposed into a sharp's bin immediately after use.
- Arterial cannulation should not be attempted in a moving ambulance or within the aircraft cabin due to the high risk of sharps injuries or blood spillage onto the airframe.

7. Governance and Auditing

Where arterial access has been attempted, there should be a record made on TAASbase. This will allow for ongoing auditing of use, and effectiveness. The following information will be captured by the arterial access intervention tab on TAASbase:

- Name of Operator(s)
- Indication
- Location (multiple can be selected)
- Attempts and whether successful
- Use of ultrasound
- Sterility
- Complication(s)*
- Securing of device
- Clinicians' opinion on the Impact of intervention on overall management
- Code summary upload

*TAAS Incident Report Forms (IRF'S) should always be used to record any serious complication or equipment issues.

A quarterly report of arterial access use at TAAS will be generated by the arterial access working group and presented at the next available M&M meeting. The focus of these reports will be on frequency of use, case mix, complications, and a critical review of this SOP.
If/when TAAS introduce the use of 4Fr femoral access sheaths (for insertion into the common femoral artery under ultrasound guidance), these cases will be followed up by a nominated member of the TAAS governance team. Further information on these devices is beyond the scope of this SOP.

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