

# ARTERIAL LINE INSERTION

## PERIPHERAL ARTERIAL LINES

### Indications

- Frequent monitoring of blood gases
- Direct monitoring of arterial blood pressure
- Exchange transfusion (peripheral venous and arterial catheters 'continuous' technique) or partial exchange transfusion

### Contraindications

- Bleeding disorder
- Inadequate patency of ulnar artery on transillumination or failed Allen's test (if cannulating radial artery) **or previous attempt in same limb**
- Pre-existing evidence of circulatory insufficiency in limb
- Local skin infection
- Malformation of limb being considered for line insertion

### Possible sites of arterial entry

- Radial (most used); the only procedure discussed in this guideline
- Posterior tibial
- Dorsalis pedis

## EQUIPMENT

- Gloves
- Cleaning solution **as per unit policy**
- 24 G cannula
- T-connector with Luer lock
- Adhesive tape
- Splint
- Sodium chloride 0.9% flush in 2 mL syringe, primed through T-connector
- Transillumination fibre-optic light source
- 3-way tap

## PROCEDURE USING RADIAL ARTERY

### Preparation

- Wash hands
- Check patency of ipsilateral ulnar artery using Allen's test and proceed only if patent
- Put on gloves
- Extend baby's wrist with palm of hand upwards
- Transilluminate radial artery with fibre-optic light source behind baby's wrist or palpate pulse
- Clean skin with antiseptic cleaning solution

### Procedure

- Enter artery with 24 G cannula just proximal to wrist crease at 25–30° angle
- Remove stylet from cannula and advance cannula into artery
- Connect cannula to T-connector primed with sodium chloride 0.9%, and flush gently
- Secure cannula with tape, ensuring fingers are visible for frequent inspection, and apply splint
- Connect T-connector to infusion line (sodium chloride **0.45%** with heparin 1 unit/mL), with 3-way tap *in situ* for blood sampling

### Documentation

- Document clearly in notes all attempts at cannulation, including those that are unsuccessful in **BadgerNet** and 'Peripheral vascular device' form

## AFTERCARE

### Monitor

- Inspect distal digits regularly for circulatory status; if blanching does not recover after 5 min, discuss further management with consultant
- Avoid excessive hyperextension of wrist, as this can result in occlusion of artery
- Ensure a continuous pressure waveform tracing is displayed on monitor screen at all times; if flushing line does not restore lost tracing, change position of limb/dressing

### Usage

- Do not administer rapid boluses of fluid as this can lead to retrograde embolisation of clot or air; use minimal volume when flushing after sampling and inject slowly
- Use cannula only for sampling or removal of blood during exchange transfusion, and infuse sodium chloride 0.45% with heparin 1 unit/mL
- Remove cannula as soon as no longer required

### Removal

- Aseptic removal of arterial line: apply pressure for  $\geq 5$  min (longer if coagulopathy/low platelets), until no bleeding
- dressings do not prevent bleeding or bruising
- do not send tip for culture routinely

## COMPLICATIONS

- Thromboembolism/vasospasm/thrombosis
- Blanching and partial loss of digits (radial artery)
- Necrosis
- Skin ulceration
- Reversible occlusion of artery
- Extravasation of sodium chloride infusate
- Infection (rarely associated with line infection)
- Haematoma
- Haemorrhage
- Air embolism