

ARTERIAL LINE SAMPLING • 1/2

INDICATIONS

- Blood gas analysis
- Biochemical/and haematological investigations

CONTRAINDICATIONS

- Blood drawn from an arterial line may not be suitable for clotting studies (see [Coagulopathy and Bloodspot screening guidelines](#))

COMPLICATIONS

Haemorrhage

- Ensure all connections are secure, Luer locks tight and 3-way taps appropriately adjusted

Infection

- Maintain sterile technique during sampling to reduce risk of infection

Artery spasm

- Limb appears blanched. Stop procedure and allow time for recovery. Warming of opposite limb can elicit reflex vasodilatation

Thromboembolism

- Flush catheter with sodium chloride 0.9% 0.5 mL each time sample taken. If catheter not sampling, clot formation may be in progress. Request urgent middle grade review of arterial line for a prompt decision about removal

Inaccuracy of blood gas results

- Analyse sample immediately. After blood is withdrawn from an artery, it continues to consume oxygen
- Excess heparin in syringe can result in a falsely low pH and PaCO₂. Remove excess heparin from syringe before obtaining sample
- Do not use if air bubbles in sample – take fresh specimen

EQUIPMENT

- Gloves
- Paper towel
- Alcohol swabs x 2
- Syringes
 - 2 mL syringe (A) for clearing line
 - 2 mL syringe (B) for other blood samples as necessary
 - 1 mL syringe (C) pre-heparinised for blood gas analysis
 - 2 mL syringe (D) containing 0.5–1 mL of sodium chloride 0.9%
- Appropriate blood sample bottles and request forms

PREPARATION AND PROCEDURE

Preparation

- Record SpO₂ and TcCO₂ at time of taking blood to allow comparison with blood gas if performed
- Wash hands and put on gloves
- Place paper towel beneath 3-way tap collection port (maintain asepsis by non-touch technique rather than sterile gloves and towel)
- Ensure 3-way tap closed to porthole

Procedure

- Remove Luer lock cap, clean with alcohol swab and allow to dry, or prepare bioconnector
- Connect 2 mL syringe (A)
- Turn 3-way tap so it is closed to infusion and open to syringe and arterial catheter
- Withdraw 2 mL blood slowly. It must clear the dead space
- If bioconnector not being used, turn 3-way tap so it is closed to arterial catheter to prevent blood loss from baby
 - if bioconnector used, do not turn 3-way tap until end of procedure
- Attach appropriate syringe (B/C) needed for required blood sample
- If bioconnector not being used, turn 3-way tap to open to syringe and arterial catheter and withdraw required amount of blood for blood samples. Do not withdraw more than required amount

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- If bioconnector not being used, turn 3-way tap off to arterial catheter in between syringes B and C if both required, after taking required samples with syringes
- Reattach syringe (A)
- Clear the connection of air
- Slowly return to baby any blood in line not required for samples
- If bioconnector not being used, turn 3-way tap off to arterial catheter
- Attach syringe (D) of sodium chloride 0.9%
- If bioconnector not being used, turn 3-way tap so it is open to syringe and arterial line, clear line of air and slowly flush line to clear of blood
- Turn 3-way tap so it is closed to syringe, remove syringe (D), swab porthole with alcohol wipe and cover with Luer lock cap
- Record amount of blood removed and volume of flush on baby's daily fluid record

AFTERCARE

- Ensure all connections tight and 3-way tap turned off to syringe port to prevent haemorrhage
- If sampling from umbilical arterial catheter, ensure lower limbs are pink and well perfused on completion of procedure
- If sampling from peripheral arterial line, check colour and perfusion of line site and limb housing arterial line
- Ensure line patency by recommencing infusion pump
- Before leaving baby, ensure arterial wave form present and all alarms set