

Arterial Blood Sampling Model

MATERIALS REQUIRED

- Styrofoam hand
- Styrofoam cylinder (4cm x 20cm)
- Styrofoam cutter
- 3M Coban (brown colour)
- IV tubing set (expired or used)
- Arterial cannula (expired or used)
- IA pressure monitoring kit (expired or used)
- 50ml Syringe (luer lock, expired or used)
- Tegaderm transparent dressing for IV x 2
- Red colouring (arterial blood colour)
- Water (distilled or tap)
- Scotch tape
- Micropore tape



WHERE CAN I FIND THE MATERIALS?

1. Art Friend
For Styrofoam hand, Styrofoam cylinder, Styrofoam cutter
2. Retail Pharmacy or Daiso
For 3M Coban (brown colour)
3. Retail Supermarket / Grocery Store
For red colouring: Bake King Cherry Red Food Colour (arterial blood colour)

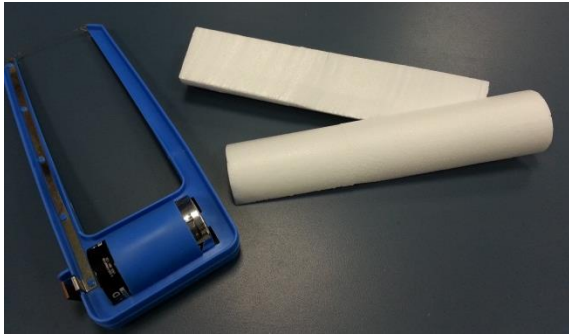


The intra-arterial blood sampling model is developed to train intensive care nurses on the following skills:

- Arterial blood sampling
- Change of arterial line dressing
- Priming of the arterial pressure monitoring kit and connection to the arterial cannula

Since this is a static model with no electronic input or controls, the instructor is required to provide minimal input to operate this model. The inputs required are:

- Push syringe to feed arterial blood when sample is drawn (when the system is new)
- Push flush syringe when flushing is initiated (this input can be relieved by replacing the flush syringe with a IV line and pressure bag at 300 mmHg)



1. Cut Styrofoam Cylinder in Half

Use the Styrofoam cutter and slice the cylinder in half.

The cylinder will be used to wedge the arterial blood feed tubing.



2. Puncture IA Cannula into Hand

Use a G20 or G21 IA cannula to puncture through the styrofoam hand.

Cannular is used to mark the location of the usual IA site for radial cannulation.



3. Dilate Cannula Site

Use a Allen key or Screwdriver tool to dilate the cannulation site.

Dilation should be sufficient for IV tubing to thread through.



4. Thread through Tubing

Thread tubing through from the base of the hand.

Use a dissection forcep if needed.

5. Insert Cannula into Tubing

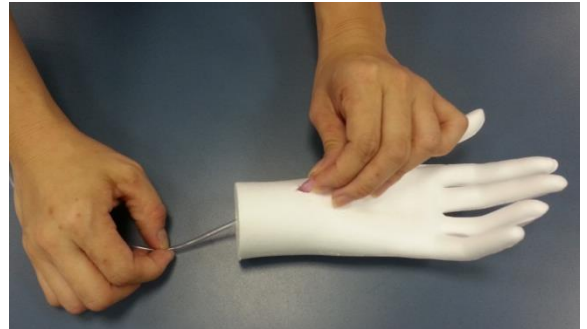
Insert cannula into tubing and secure.

Cannula should fit snugly to prevent leakage.



6. Tract Cannula in Position

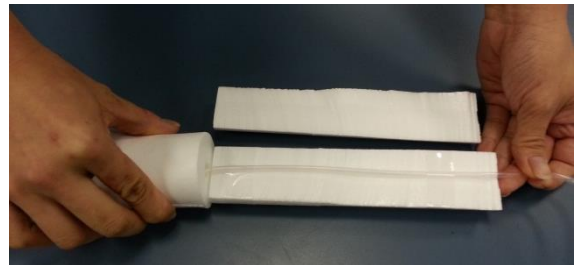
Retract tubing and place cannula in position.



7. Fix Tubing on Foam Cylinder

Fix tubing onto half sliced cylinder.

Replace the other half and tape down the cylinder.



8. Wrap Entire Arm with Skin Tone Coban™

Spiral bandage from the wrist through the entire arm length.





9. Secure Bandage

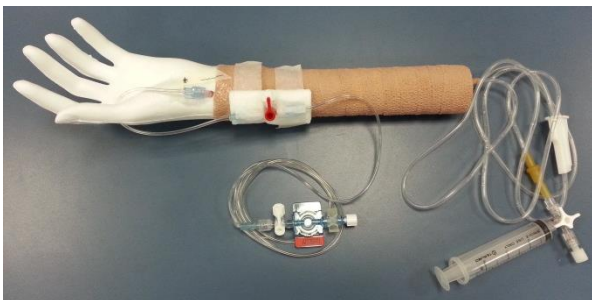
Twist end of bandage to secure Coban™ in place.



10. Ensemble Arterial Line Feed

Provide a 3-way adaptor for syringe.

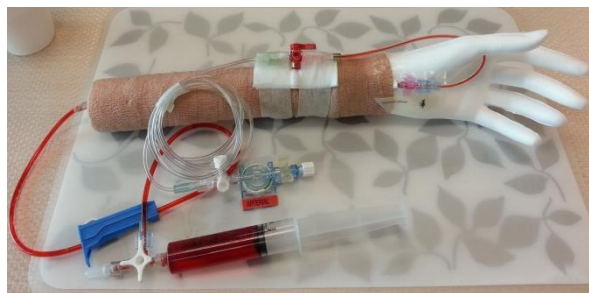
Fill line with red coloured fluid to simulate arterial blood.



11. Attach Arterial Monitoring Line

Connect arterial monitoring line to cannula.

Line may be primed prior to connection.



12. Fill Simulated Blood

Manipulate 3-way adaptor on monitoring line to allow simulated blood filling by syringe.



13. Prime Arterial Monitoring Line

Prime monitoring line with distilled water.

Priming can be done prior to step 11.

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Maintenance

The task model is expected to last with good care.

Maintenance and replacement of parts may be required. These are:

1. Simulated blood fluid – fluid may form sediments after 3 months or a period of non-use.
2. Arterial monitoring line – the flush device (actuator) may be damaged after a period of use.
3. Gauze dressing under 3-way adaptor – the clean dressing is easily stained during practices. The gauze needs to be replaced after each use.
4. Broken fingers – Styrofoam materials are generally weak, hence, some fingers may be severed under mis-handling. Fingers can be glued back in place using all-purpose glue, non-acid art/white glue. If budget allows, use skin tone Coban™ for the entire hand.

Cost of Model: <\$20
