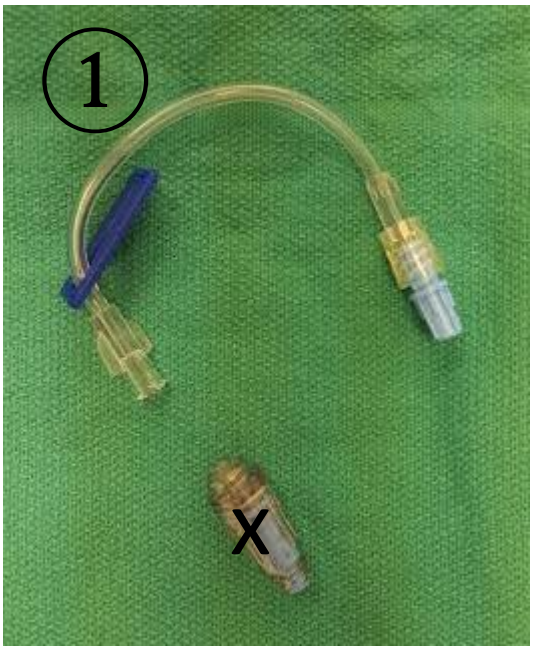
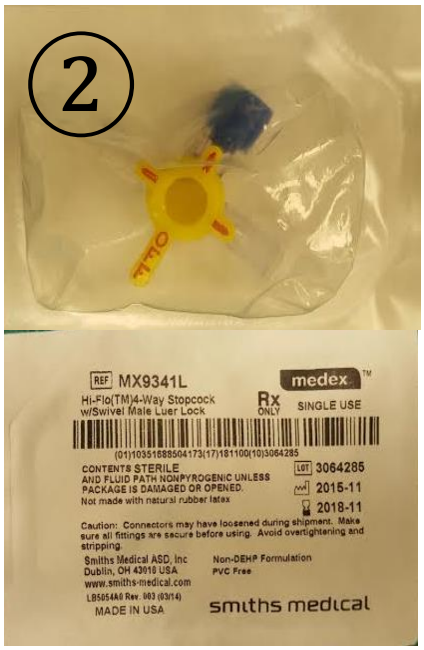
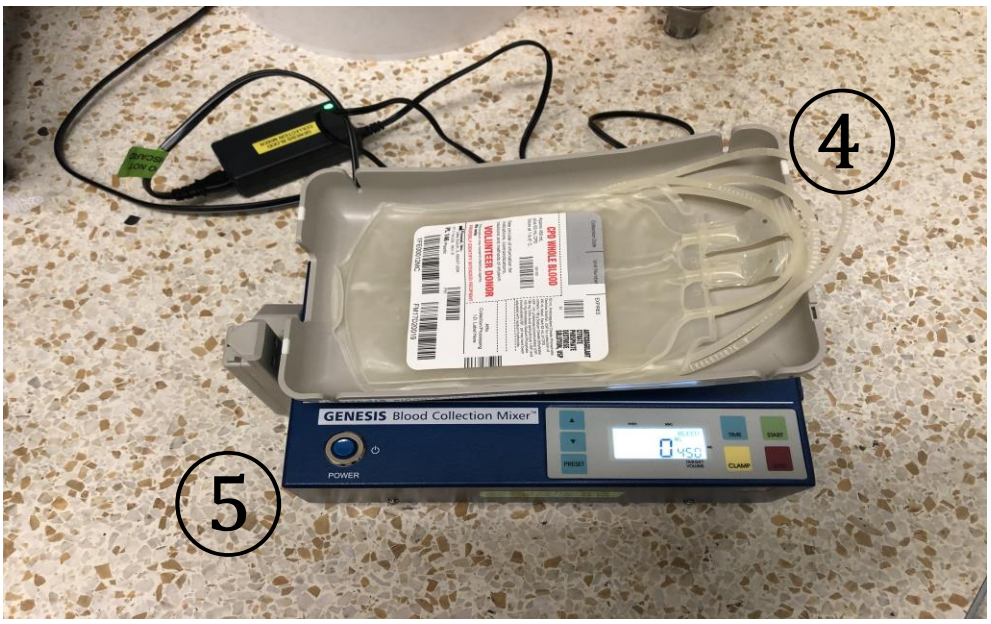
Phlebotomy/Acute Normovolemic Hemodilution (ANH) Kit

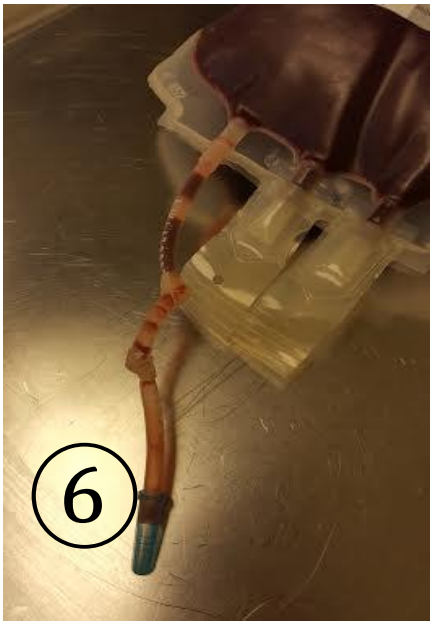
What you need to phlebotomize in the OR:

- Access (CVC, Large Bore Proximal Peripheral IV or Arterial Line)
- Extension tubing (anesthesia cart) ①
- Hi flow stop cock (ANH kit) ②
- Interlink(R) injection port (ANH kit) ③
- CPD bag (ANH kit) ④
- Blood Collection Mixer (ANH kit) ⑤ - Further instructions listed on page 4
- Syringe cap (anesthesia cart) ⑥



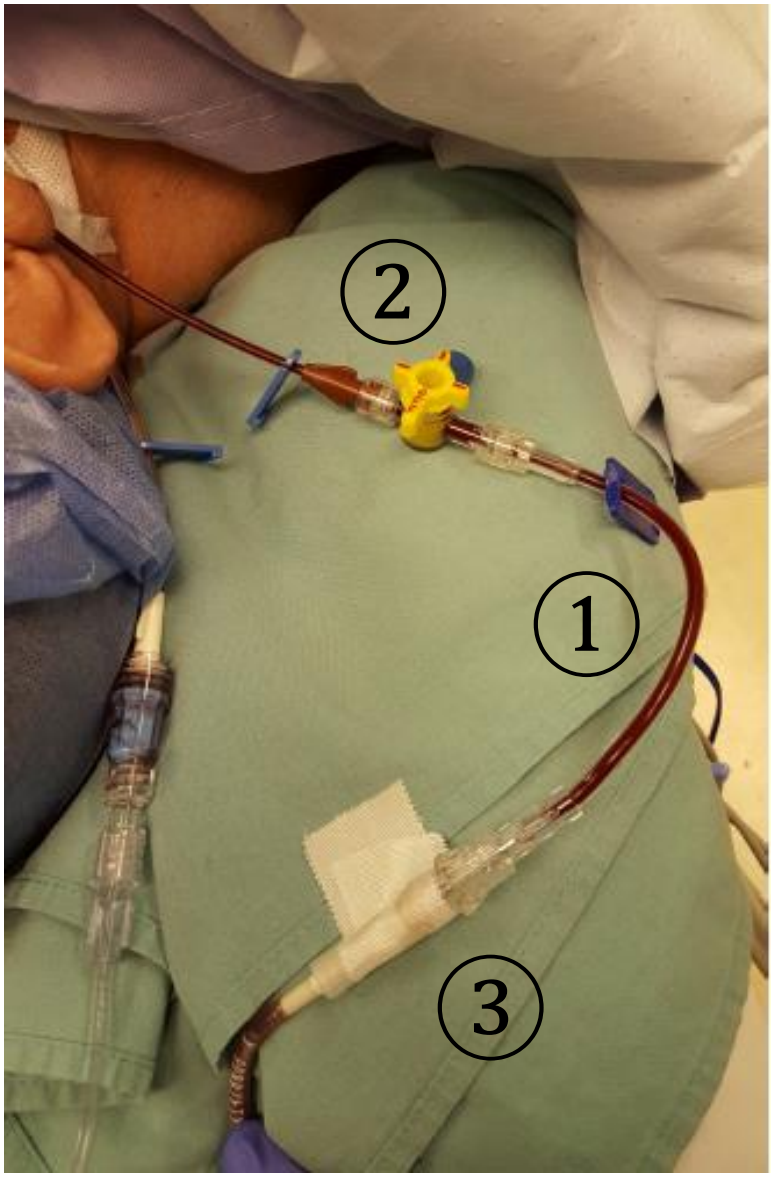






Autologous blood can be collected intraoperatively, ideally prior to the start of the operation, through a CVC, arterial line or large bore peripheral IV. Collection through CVC is reliable but slow. Peripheral IV access is a good option if the IV is large and proximal. Arterial line collection produces good flow, however you loose ability to monitor blood pressure continuously during collection. Specific instructions for the different collection methods are listed below:

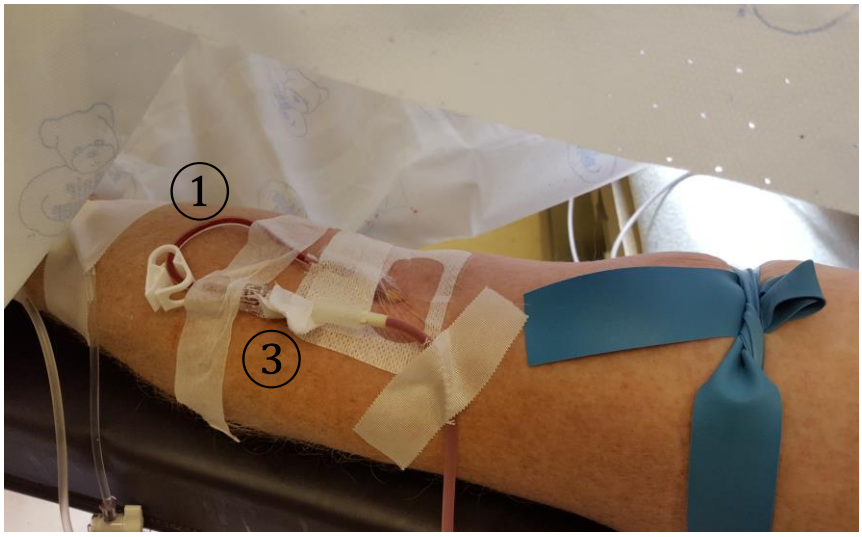
CVC Phlebotomy Instructions:



1. Obtain central access (larger is better for flow; MAC > 2 lumen CVC > 3 lumen CVC)
2. Attach high flow stopcock (②) to CVC port
3. Attach extension tubing (①) to high flow stopcock (②) (with MaxPlus valve removed).
4. Attach Interlink(R) injection port (③).
5. Place the blood collection mixer (⑤) on the floor at the patient's head. Turn the mixer on with the CPD collection bag (④) on the mixer and wait for it to zero.
6. In a sterile fashion, insert needle on the CPD collection bag (④) into Interlink(R) injection port (③). Place a small sterile tegaderm over connection to fasten.
7. Press START on blood collection mixer and collect up to 450 mL of blood by gravity (= 450 g on the scale). Do not exceed this amount, as the blood may clot (mixer will beep when target volume is achieved).
8. If blood collection slows or stops, gently aspirate using the stopcock to verify ongoing blood flow.
9. When collection is complete, remove the sharp. Carefully tie the collection tubing in a knot (or two) to seal, cut (beware: potential blood splash), and close with a syringe tip cap as shown (⑥).
10. Label blood with patient label, date and time of collection, and store at room temperature for up to 8 hours (from initiation of collection). Blood can only be stored with the patient in the operating room. It is not necessary to continually agitate the blood once collected. Blood must be transfused (or ongoing transfusion) prior to leaving the OR. Autologous blood cannot leave the OR, and should never be placed in the OR blood fridge.
11. Blood should be transfused through a blood giving set.

Peripheral IV Phlebotomy Instructions:

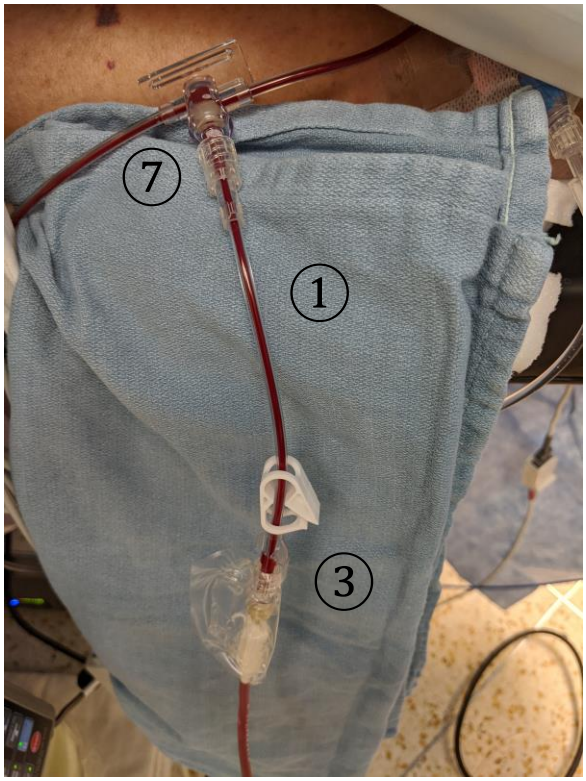
1. Obtain large bore proximal peripheral IV access (minimum 18G IV).
2. Remove connector MaxPlus valve from IV extension tubing (①) and replace with Interlink(R) injection port (③).
3. Apply tourniquet proximal to IV site.
4. Repeat steps 5-11 listed above in CVC instructions.
5. If/when blood flow slows, release tourniquet, rest for ~ 1 minute prior to resuming collection.

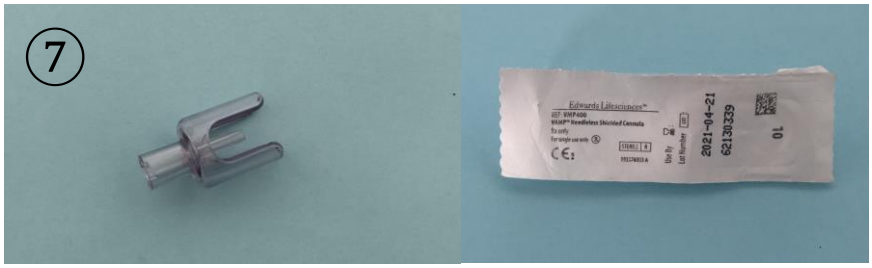


Arterial Line Phlebotomy Instructions:

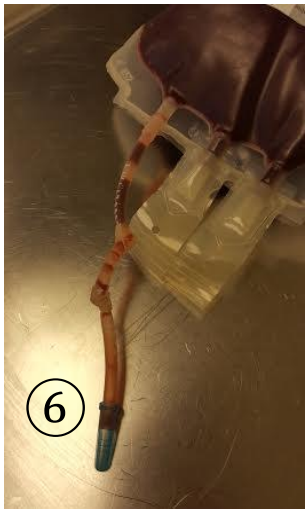
Caution as arterial line blood pressure will be lost during this process

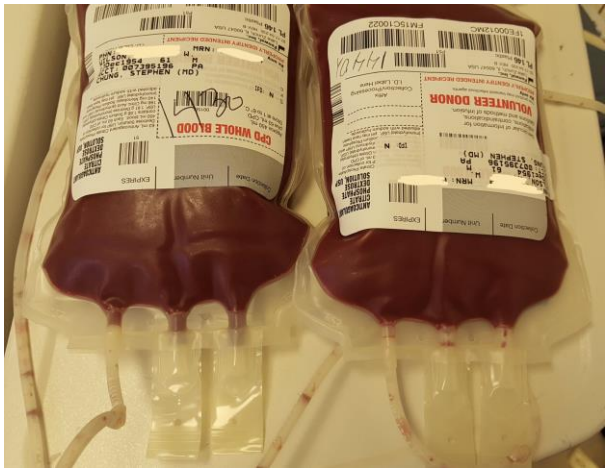
1. Obtain arterial line access in a standard fashion.
2. Attach IV extension tubing (①) to the Needleless Shielded Cannula (⑦). Replace the MaxPlus Valve on IV extension tubing (①) with Interlink injection port (③).
3. Attach Needleless Shielded Cannula to arterial line sampling port (⑦) once the scale is on and zeroed.
4. Repeat steps 5-11 listed above in CVC instructions.





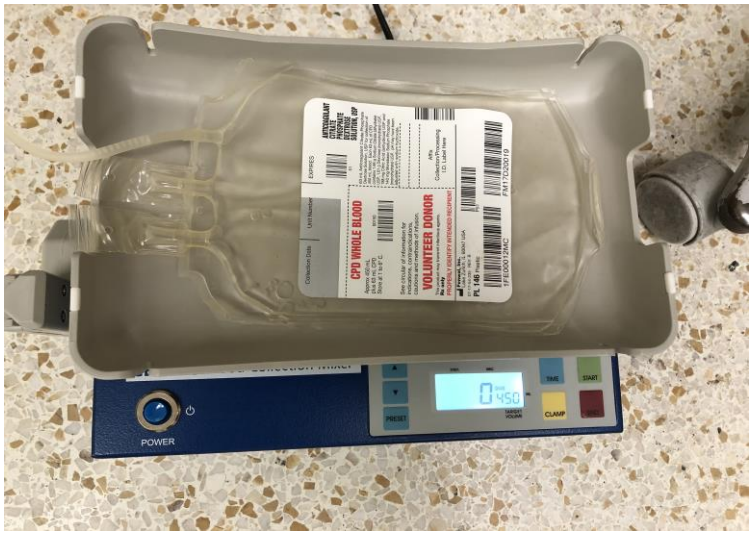
ANH Blood Storage:





1. When collection is complete, remove the sharp. Carefully tie the collection tubing in a knot (or two) to seal, cut (beware: potential blood splash), and close with a syringe tip cap as shown (⑥).
2. Label blood with patient label, date and time of collection, and store at room temperature for up to 8 hours (from initiation of collection).
Blood can only be stored with the patient in the operating room. Blood must be transfused (or ongoing transfusion) prior to leaving the OR. Autologous blood cannot leave the OR, and should never be placed in the OR blood fridge.
3. There is no need to continue to mix the whole blood units after they have been collected.
4. Blood should be transfused through a blood giving set.

Blood Mixer:



1. Set up scale, plug into wall, press power button to turn mixer on.
2. Place the CPD collection bag on the scale and wait for the scale to read zero.
3. Press start to begin blood collection.
4. The scale will increase as blood is collected. Do not exceed 450 g (450 mL of whole blood). The scale will beep when 450ml is reached.
5. When finished, press end and remove the CPD bag from the scale.

Troubleshooting Alarms
Many different causes of beeping with the mixer, a brief summary is listed below:
1. Slow flow (< 30 ml/min) results in 5 short beeps every minute.
2. 10 min since start of collection time results in 20 rapid beeps in 10 seconds.
3. 20 min since start of collection time results in continuous very rapid beeps.
4. Other causes of beeping:
    - tray dislodged
    - end of collection (450 mL)
    - low battery - ensure plugged in

To fix alarms, address the underlying cause. There is no silence button for alarms. Avoid pressing END as this will clear the volume previously collected.