

## Blood Collection for Blood Gas Analysis

# Arterial Puncture Procedure

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### Radial Artery Procedure

1. Perform a modified Allen's test to determine sufficient collateral circulation. If positive, proceed with the arterial sampling procedure.
2. Flex the patient's wrist slightly, locate the radial artery, and clean the puncture site. Do not use a cleaning agent with quaternary ammonium substances such as benzalkonium as it may impact the electrolyte results.
3. Select the appropriate dry electrolyte-balanced lithium heparin auto-venting syringe and preset the plunger to the required blood volume.
4. Position the needle bevel so that it is facing up. If using the needle protection safety syringe, the bevel of the needle should face toward the orange safety sheath. Hold the orange safety sheath and rotate the needle to the desired bevel orientation.
5. Hold the barrel of the syringe in one hand and push firmly on the needle cover to ensure that the luer connection is tight. Then remove the needle cover by pulling it directly off. Do NOT twist the needle cover when removing it from the device.
6. Relocate the radial artery and, while holding a finger over it, puncture the skin at a 45° angle (**Figure 1**).

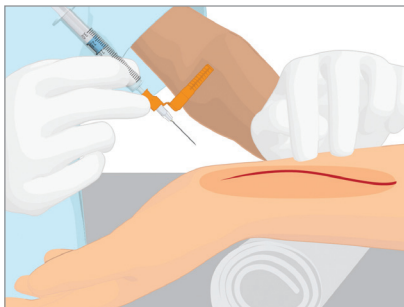


Figure 1.

7. Advance the needle until blood enters the syringe (**Figure 2**).

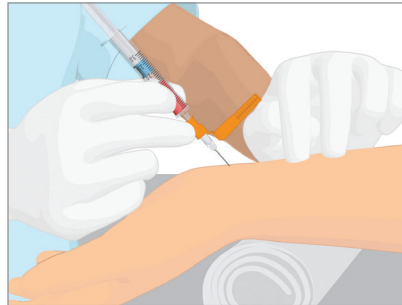


Figure 2.

8. After the blood is obtained, place a gauze pad over the puncture site and withdraw the needle. Immediately apply and maintain pressure to the site for at least 5 minutes.
9. As quickly as possible (while continuing to apply pressure to the puncture site), close the needle protection safety device (**Figure 3**) and remove and dispose of the needle according to hospital protocol.

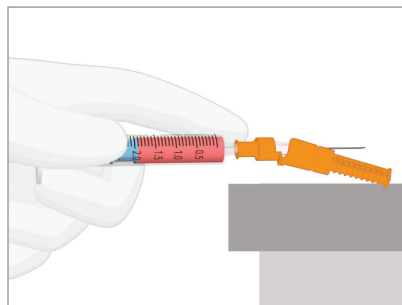


Figure 3.

10. Fit the filter cap to the syringe luer. With the luer end up, gently tap the syringe to dislodge any air bubbles and slowly expel the air bubbles into the filter cap (**Figure 4**).

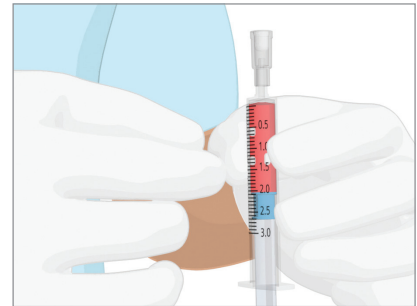


Figure 4.

11. Mix the sample thoroughly to dissolve the heparin and minimize clots from forming in the syringe by rotating your wrist back and forth for a minimum of 20 seconds or approximately 8 to 10 times (**Figure 5**). Label the syringe and transport it immediately to the blood gas system for analysis.

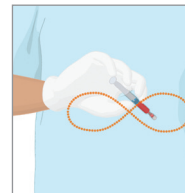


Figure 5.

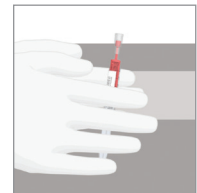


Figure 6.

12. According to the CLSI guidelines,\* blood gas testing should be completed within 10 minutes and not longer than 30 minutes of drawing the sample. If testing is delayed longer than 30 minutes, samples should be placed in an ice slurry. Always remix the sample immediately prior to the analysis following a two-step process, first rotating your wrist back and forth and then rolling the sample between your hands approximately 10 times (**Figures 5 and 6**).



\*CLSI Guideline C46-A2.

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