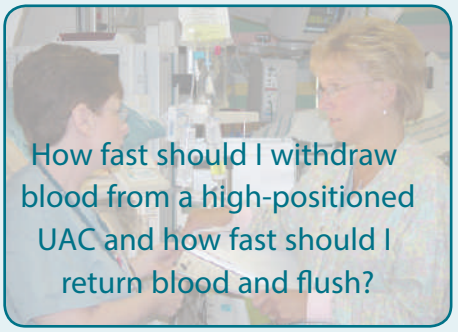
Clinical Tip



In most cases, when sampling from a UAC, the removal and return volume is between 1 and 3 milliliters (mL) per lab sampling. Davies et al. (2000) demonstrated a 1.6 mL withdrawal volume was required to clear the UAC sufficiently before obtaining lab samples. [140]

Schulz et al [141] found that withdrawing 2.5 mL of blood from a high-positioned UAC (tip between T6 and T9) over a 40-second interval prevented cerebral hemoglobin desaturation, whereas withdrawing the same volume of blood over a 20-second interval resulted in cerebral hemoglobin desaturation.

Butt et. al [142] found that returning fluid and volume into a low-positioned UAC (catheter tip located between L3 to L4) at a rate of 0.5 mL per five seconds prevented retrograde aortic blood flow and elevation of blood pressure, whereas retrograde aortic blood flow and elevation of blood pressure were observed when faster return times were used.

Gordon et al [143] implemented a practice change in umbilical catheter sampling to withdraw and reinstill at a rate of 1 mL per 30 seconds; viewing this rate as a prudent approach until more research was available that evaluated other withdrawal and re-instillation rates as well as neonatal outcomes.

Roll et al [144] evaluated 40 and 80 second withdrawal sampling times in a population of preterm infants who were smaller and more immature than Schulz's study patients. Both the 40 and 80 second withdrawal rates resulted in similar declines in cerebral desaturation and cerebral blood volume. A re-instillation time of 36 seconds was used to return the 1.6 mL draw-up volume and the 0.6 mL line flushing volume. The clinical significance of these decreases in cerebral desaturation and cerebral blood volume, particularly as regards initiating or worsening intraventricular hemorrhage, has not been established.