Venipuncture Technique

Arteries

Arteries are the blood vessels that are responsible for creating the human pulse. The tissue composition of an artery is elastic, allowing for contraction and relaxation of the vessel. The smallest artery that connects directly with capillaries is called an arteriole, and the largest artery is the aorta. All arteries, except for the pulmonary artery, carry oxygenated blood.

Veins

Veins are not elastic. They depend on valves in the vessels and diaphragm and skeletal muscle movements to return blood to the heart and lungs. Valves move the blood toward the heart for re-oxygenation, flowing against the pull of gravity. The valves prevent backflow of the blood, keeping blood moving in only one direction. They are thin membranes made up of epithelium, much like the semilunar valves in the heart. All veins, except for the pulmonary vein, carry deoxygenated blood. Oxygen-poor blood will appear darker and bluer in color than oxygen-rich blood. The tiniest veins are called venules, and they join to the capillaries. The largest veins are the venae cavae. The connecting bridge between arterioles and venules are capillaries, and they are one-cell thick and visible under a microscope.

Oxygen is drawn in through the capillaries’ thin walls, and carbon dioxide is released back into the pulmonary circulation system. This process is called oxygen exchange.
Arteries and Veins of the Arm

One main artery, called the brachial artery, runs down the medial part of the arm. As it gets closer to the wrist, it branches off into the radial artery and the ulnar artery. There are two main veins running through the upper arm. These are called the basilic and the cephalic veins. The basilic vein runs along the anterior portion of the upper arm. As it approaches the elbow or ante cubital space, a branch called the median cubital appears and runs down the middle of the arm. For the venipuncture procedure, the medial cubital vein is the preferred vein. Arterial blood is used for some testing. However, only physicians perform arterial blood draws.