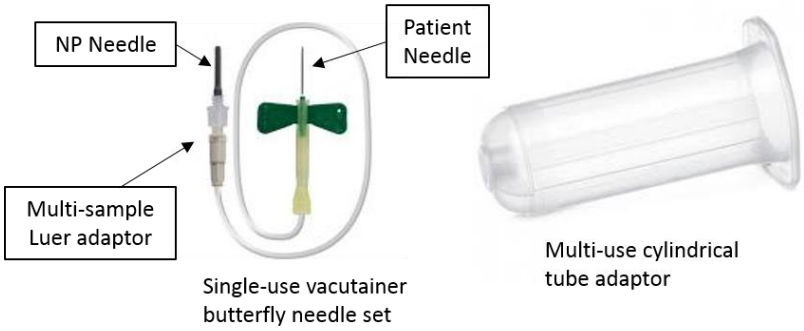
Vacutainer® Venipuncture

Updated September 2016

In any venipuncture situation, you may consider the use of a Vacutainer® blood collection system. This system is ideal for any patient that requires multiple vials of blood to be collected at once. It is especially beneficial for patients who have restrictions on jugular venipuncture due to hypocoagulable disease states. It is the gold standard for blood collection in humans. With proper technique, using a Vacutainer® can lead to more accurate results, as the blood is deposited directly into the vials with minimal trauma to the blood cells. The Vacutainer® vacuum system allows the blood to be collected with a minimal amount of pressure, thus avoiding the common problems of hemolysis and vessel collapse during traditional venipuncture. The Vacutainer® system can be used for venipuncture from any vein.

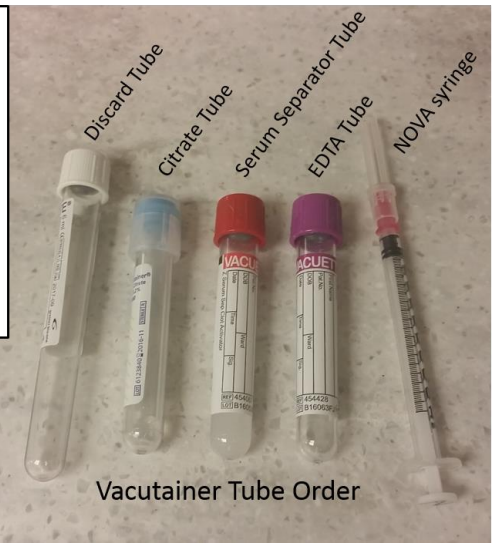
When preparing to utilize the Vacutainer® butterfly system, select either a 25 or 21 gauge single-use BD Safety-Lok™ butterfly set, which contains the specialized *multiple sample luer adapter*. This adapter contains a *non-patient* (NP) needle covered with a rubber seal that pierces the stopper of each Vacutainer® blood collection tube as it is advanced into the tube holder.



You should have all of the blood collection tubes arranged close by in order to be able to efficiently switch out the tubes. The recommended order of draw is as follows; tubes for sterile samples, tubes for coagulation profiles (e.g. citrate), serum separator (SST) tubes and then any other tubes with additives (e.g. EDTA, heparin, etc.). If any samples are to be drawn directly into a syringe (ex. NOVA), draw this sample last so that the vacuum pressure is not lost. If a citrated tube needs to be filled, the manufacturer recommends first using a *discard tube*. A discard tube is a no-additive tube that is used just to prime the butterfly line with blood. Once the line is primed, the discard tube is removed. This protocol ensures that the sample used for coagulation testing will have the appropriate blood to citrate ratio, allowing for the most accurate results.

The first blood collection tube to be filled can be placed into the tube holder before venipuncture is initiated. But, DO NOT push the sealed needle into the stopper of the tube prior to venipuncture or the vacuum inside the tube will be deactivated.

BD Vacutainer with cylindrical tube holder attached



Vacutainer Tube Order

Attach the luer adapter end of the set to the cylindrical tube holder aseptically. Holding the butterfly set by the wings (folded or unfolded), perform the venipuncture by inserting the needle through the skin and into the vein at a 20-30 degree angle. In most patients, you will see a small "flash" of blood into the tubing of the butterfly set. Keeping the needle and the tubing stationary, advance the first blood tube further into the holder until the NP needle punctures the stopper and blood is observed to be flowing freely into the collection tube. Gently agitate the tubes as they fill in order to mix the blood sample with any additive present, while taking care to keep the tubes below the level of venipuncture to prevent backflow. Ideally, avoid letting the blood sample contact the NP needle except for the last tube (usually EDTA). Once the first tube is filled to the appropriate level, remove the tube and replace the next as before. If possible, invert filled tubes as the next tube is filling. Repeat as necessary until all blood tubes are filled. If a syringe sample is needed, such as a heparinized TB syringe for a Nova Stat Profile®, simply disconnect the luer cap that attaches the needle apparatus to the end of the butterfly set and attach your syringe, drawing back gently. Once the venipuncture is complete, ensure that all vacuum pressure has been released from the system by removing the last tube from the tube holder. Withdraw the needle and apply digital pressure to the venipuncture site. Slide the Safety-Lok® shield up to cover the needle and dispose in the appropriate sharps container.

Do not discard the cylindrical plastic tube holders as they are generally considered to be multi-use in a veterinary medical setting, except in cases of possible contagious disease.