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PHLEBOTOMY TIPS

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Phlebotomy is a skill practiced daily by veterinary technicians. Blood samples are used for numerous diagnostic tests that guide patient care. While it seems some technicians can “hit” every vein they look at, it is a skill that can be developed and mastered by any technician with time and practice. During a session at the recent Atlantic Coast Veterinary Conference, Karen Roach, RVT, VTS (ECC), of Mount Laurel Animal Hospital in New Jersey, discussed phlebotomy tips for technicians.

MAXIMIZING SAMPLE QUALITY

The ability to obtain blood samples rapidly without altering cells in the sample is essential to maximize diagnostic quality. Syringe, vacutainer, and needle size should be appropriate for the size of the patient. Syringes that are too large can damage cells and vessel walls with excessive vacuum. Roach reminds technicians to fill tubes appropriately, especially lavender top tubes, which contain EDTA, as an inappropriate ratio of EDTA to sample can alter cell morphology.

The timing of sample collection is also important to maximize accurate results. Cell degradation can begin as soon as the sample is collected. Additionally, administration of fluids and medications can alter results, so samples should be drawn from patients prior to administration of fluids and medications when possible. Patients who have eaten recently may have lipemic samples, which can interfere with some test results. Consider recommending a fast prior to scheduled blood draws when scheduling appointments.

When preparing a site for venipuncture, ensure that the skin is free from obvious infection and inflammation. Roach notes that wiping the site with alcohol prior to venipuncture not only removes superficial contamination but also improves visualization by wetting down the fur and causing vasodilation of the vein beneath the surface of the skin. Full sterile preps should be performed if sampling is being done for blood cultures.

Finally, patient fear, stress, excitement, and struggle can alter some values, such as white blood cells (ie, presence of a stress leukogram), cortisol, and blood glucose (especially in cats). Repeated sampling from the same site can also increase leukocytes and platelets in the area, which could confound results. If a technician notes that any of these events are occurring, they should note it on the patient chart and inform the veterinarian in charge of the case to help aid in the most accurate interpretation of results.

PATIENT HANDLING

There are numerous sites available for venipuncture in canine and feline patients. The most common sites are the cephalic and jugular veins, the lateral saphenous vein in dogs, and medial saphenous vein in cats. For patients who may be hospitalized, the cephalic vein should be avoided for venipuncture as it is the preferred side for placement of an intravenous catheter.

Roach reminds technicians that proper restraint is critical for successful phlebotomy. The handler is responsible for positioning the patient in a way that maximizes visualization of the vein while maintaining patient and staff safety and minimizing patient stress. If a vein cannot be palpated or visualized, Roach does

not recommend poking blindly as it is “doomed to failure and causes unnecessary discomfort to the patient.” Following sample collection, pressure should be applied to the site for a minimum of 30 seconds. For patients with known coagulopathies, additional pressure will be needed.

Roach shared several positioning tips with her audience:

- For jugular venipuncture, patients can be in sternal or lateral recumbency with the head and neck extended. This vein tends to roll less than other veins.
- For neonates, holding the patient with the head down and inserting the needle in a caudal direction for jugular venipuncture will allow blood to pool in the direction of the needle and improve sample yield.
- For the lateral saphenous, placing the patient in lateral recumbency is ideal, though some patients will tolerate this from a standing position. The vein will roll easily and will need to be stabilized, usually by the phlebotomist.
- The medial saphenous vein can be used in both dogs and cats and requires patients to be placed in lateral recumbency. A butterfly catheter and vacutainer are helpful to use when drawing blood from this site.

Finally, Roach discussed handling considerations for fractious and fearful patients. “We really need to get away from the culture of calling in 5 staff members to lay on a dog to get blood from it,” she said, “By causing undue stress to our patients, we are just making things worse for the next time.” Instead, she recommends using Feliway spray for cats, spending time with canine patients to improve trust, and using minimal restraint and distraction when possible. In cases where a blood draw is planned, pre-medicating patients with trazodone and/or gabapentin, depending on the species, can be very helpful. In some cases, chemical restraint in the form of injectable sedation will be necessary.

TIPS FOR HARD TO HIT VEINS

Some patient characteristics or disease conditions can make venipuncture especially challenging, even for the most skilled technicians. Roach shared several tricks to improve outcomes:

- Severe dehydration: administration of fluids by intravenous or subcutaneous routes may be necessary prior to sample collection.
- Hypotension: warm pack the site for 10 to 15 minutes prior to sampling, use 2 tourniquets, and pump the limb.
- Peripheral Edema: massage of the limb can redistribute fluid temporarily to improve visualization.
- Obesity: use a longer needle for jugular venipuncture and don't be afraid to press hard on the neck over the vein.

In some cases, other sampling sites must be considered when traditional venipuncture sites are not easily visible, scarred, swollen, or bruised. When a small sample size is needed, such as for a blood glucose or lactate reading or creation of a blood smear, the marginal ear vein can be used. Roach also notes the dorsal pedal vein can be helpful in obese patients or patient with peripheral edema, as the foot is usually less swollen and has less fat present.

CONSIDERATIONS FOR ARTERIAL BLOOD SAMPLING

In some cases, arterial blood samples are needed. These samples provide the best assessment of pulmonary function. There are several considerations when sampling arterial blood. First, a syringe containing a heparin anticoagulant should be used. These are available commercially or can be created by coating a syringe with lithium heparin prior to blood draw. Second, pressure should be applied for at least 1 minute following sampling and the site should be monitored for 5 minutes for hematoma formation or continued hemorrhage.

The dorsal metatarsal artery is used most commonly to collect these samples. Patients should be positioned in lateral recumbency. The needle should be inserted at the site where the pulse is best palpated. Alternative sites include the femoral artery and, for anesthetized patients, the sublingual artery.

IN CONCLUSION

Phlebotomy is an important skill for veterinary nurses to master. Taking a few moments to plan an approach through site selection, patient positioning, and collecting the appropriate-sized equipment can maximize outcomes. Reducing patient stress should be a priority when obtaining samples from dogs and cats to minimize alteration to the sample and prevent the patient from becoming more reactive for future blood draws. When blood draws become difficult, technicians should not get discouraged, but instead consider alternative approaches and sites to obtain the needed samples.

Dr Kaitlyn Boatright, a 2013 graduate of the University of Pennsylvania, is a practicing veterinarian and freelance speaker and author in western Pennsylvania. She is passionate about mentorship, education, and addressing common sources of stress for veterinary teams and recent graduates. Outside of clinical practice, Dr Boatright is actively involved in organized veterinary medicine at the local, state, and national levels.