

SOP: Equine Venipuncture and IV Injection

These SOPs were developed by the Office of the University Veterinarian and veterinarians at the VMCVM and reviewed by Virginia Tech IACUC to provide a reference and guidance to investigators during protocol preparation and IACUC reviewers during protocol review. They can be used as referenced descriptions for procedures on IACUC protocols. However, it is the sole responsibility of the Principal Investigator to ensure that the referenced SOPs adequately cover and accurately represent procedures to be undertaken in any research project or instructional activity. Any modification to procedure as described in the SOP must be outlined in each IACUC protocol application (e.g. if the Principal Investigator plans to use a needle size that is not referenced in the SOP, simply state that alteration in the IACUC protocol itself).

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Version: 1

Original date: 12/12/17

Version date: 12/12/17

I. Procedure Summary and Goal

Describes procedures for intravenous injections and venipuncture of the jugular veins.

Considerations

Having a basic knowledge of the animal's behavior is important in safe and humane handling. When approaching a horse, assess the horses's reaction and adjust accordingly. Avoid loud noises or quick movements; use minimal restraint necessary.

Intravenous injection and jugular venipuncture require an understanding of anatomical landmarks as well as precise technique.

II. Personal Protective Equipment (PPE) and Hygiene

- a. Ensure appropriate PPE is used to protect handler from accidental injury or exposure to blood and other body fluids.
- b. Always wash your hands after handling an animal.

III. Supply List

- a. Halter and lead rope
- b. Needles (18-23 gauge 1-1.5 inch)
- c. Syringe
- d. Small square of gauze (alcohol soaked)
- e. Blood collection tube
- f. Vacutainer system

IV. Detailed Procedure

- a. Restraint
 1. A halter and lead rope should be placed on the horse. This will help to appropriately hold the animal for the procedure allowing complete control of the animal and the head. Reference the equine restraint SOP.
- b. Intravenous Injection
 1. Visualization of the jugular vein.
 - i. If the jugular vein is difficult to visualize, the head may be raised. The patient's head can be pushed very slightly away from the individual isolating the vein. The area can also be wetted with alcohol to help with visualization.
 2. Locate the jugular furrow. This can be done on either the left or the right side.
 3. IV injections should be given in the upper portion of the neck.
 4. Occlude the vein approximately 3-6 inches below where you plan to insert the needle.
 5. Observe the rise of the vein. To help localize the jugular vein can be stroked cranial to caudal.

6. Placement of the needle should be done with the bevel toward the individual.
 7. The syringe and the needle can be utilized as a single unit or the needle can be disconnected and used alone to penetrate the vein. The needle should be at approximately a 15-45 degree angle in a plane parallel to the jugular vein
 8. Advance the needle through the skin and into the vein until blood flows slowly then reduce the angle of the needle.
 - i. Needle advancement can be in a proximal to distal or in a distal to proximal direction.
 - ii. Safety considerations
 1. It may decrease the risk of carotid injection to insert the needle without the syringe attached.
 2. It may decrease the risk of carotid injection to insert the needle in a proximal to distal direction.
 9. Attach the syringe to the needle (if not already attached), occlude the jugular vein and aspirate to ensure that the needle is still intravenous.
 10. Once blood is pulled back into the syringe confirming location, the plunger can be pushed. The angle and placement of the needle should remain unchanged. When the fluid is administered the plunger can be pulled again to ensure location by obtaining blood. Once this is confirmed the remainder of the fluid can be administered.
 11. Remove the needle and syringe and compress the venipuncture site for 30 seconds.
- c. Jugular Venipuncture
1. The jugular vein is the preferred site for blood collection in the horse. The animal should be properly restrained. The vacutainer system can be used to obtain a blood sample (consists of vacutainer holder, vacutainer needle and a vacutainer tube).
 2. Clean the skin over the jugular vein in the proximal third of the neck with the alcohol swab.
 3. The vacutainer needle should then be screwed into the holder. Preload the vacutainer tube into the vacutainer holder. Care should be taken to not puncture the tube.
 4. Distend the jugular vein by compressing the proximal third of the neck. Confirm visualization of the vein.
 5. Flatten the angle and advance the needle completely into the vein.
 6. Push the vacutainer tube into the needle protruding into the vacutainer holder. The blood will be drawn into the tube by the negative pressure.
 7. Once the tube is filled to the appropriate amount, the vacutainer tube should be separated from the needle in the holder. The needle should then be removed from the jugular vein.
 8. Compress the venipuncture site for approximately 30 seconds.

V. Variations

Alternatives for venipuncture include drawing blood into a syringe in lieu of a vacutainer system.

Alternative sites for venipuncture include cephalic vein and saphenous vein. There is personal risk of injury when using these sites, so caution and appropriate animal restraint is necessary.

VI. Potential Adverse Effects, Mitigation, or Treatment

- a. Trauma
 - a. Bruising, lacerations
 - b. Hematoma formation
 - i. Contact veterinary staff
- b. Iatrogenic arterial access
 - a. Contact veterinary staff immediately
 - b. The Office of the University Veterinarian must be informed

VII. Suggested Literature Search for Pain Category D and E Procedures

Not applicable

VIII. References

Pleasant, Scott. "Equine Clinical Techniques." Lecture.
"An Introduction to Intravenous Injections." IV Injections. N.p., n.d. Web. 28 Apr. 2017.