



Standard Operating Procedure: Equine Thoracic Sonography

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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I. Procedure Summary and Goal

Describes procedures for the thorough and systematic equine thoracic sonography.

Considerations:

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

Ultrasound is a non-invasive technique that allows the evaluation of organs and their location in the horse's body. This can be utilized to identify various pathologies.

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. Ultrasound
- b. Alcohol
- c. Halter and lead rope
- d. Clippers (if needed)
- e. Ultrasound gel (if needed)

IV. Detailed Procedure

- a. Preparation Prior to Sonography
 - i. The horse should be adequately restrained during this procedure. Please reference both the equine restraint and equine sedation SOPs.
 - ii. Depending on the length of the animal's hair coat, clipping may be required prior to the procedure. This can be cleaned if necessary and alcohol can be applied to the area to be scanned. This will allow better contact between the probe and the animal.
- b. Thoracic Sonography
 - i. A proper transducer should be chosen. Once the hair coat is wetted with alcohol the thorax should be inspected for any obvious signs of edema or swelling in the chest wall.
 - ii. The examiner can begin at the most cranial aspect of the chest also known as the thoracic inlet. The transducer should be held perpendicular to the skin surface. The transducer should then be

positioned dorsally in each intercostal region. The examiner should move the transducer ventrally within the intercostal space while looking at the ultrasound monitor.

- iii. The ribs can be evaluated by placing the transducer directly on top of the rib. The examiner can stabilize the probe to allow movement distally along the arch of the rib.

V. Variations

The order and methods of this procedure can be altered based on user preference; however, it must remain systematic and thorough.

VI. Potential Adverse Effects, Mitigation, or Treatment

- a. Distress
 - i. Physiological changes due to stress
 1. Tachycardia, tachypnea, hypertension, hyperthermia, etc.
 - a. Contact Equine Field Services OR remove from the protocol

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

Not applicable

VIII. References

Kidd, Jessica A. Atlas of Equine Ultrasonography. Chichester: John Wiley & Sons, 2014. Print. Farrow, Charles S. Veterinary Diagnostic Imaging: The Horse. St. Louis: Elsevier Mosby, 2006. Print.