



# Standard Operating Procedure: Equine Upper Airway Endoscopy

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).

## Table of Contents

- I. Procedure Summary and Goal .....2
- II. Personal Protective Equipment (PPE) and Hygiene .....2
- III. Supply List .....2
- IV. Detailed Procedure .....2
- V. Variations .....3
- VI. Potential Adverse Effects, Mitigation, or Treatment.....4
- VII. Suggested Literature Search for Pain Category D and E Procedures.....4
- VIII. References .....4

## I. Procedure Summary and Goal

Describes procedures for equine upper airway endoscopy.

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.

Endoscopic use in horses provides a non-invasive approach to diagnostics of the respiratory system. It is essential that the animal remain comfortable during the procedure to ensure adequate patient care.

## 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. Initiate the procedure while standing to the side of the horse's head to reduce the chance of being pawed by a horse during the procedure.
- c. Always wash your hands after handling an animal.

## III. Supply List

- a. Endoscope
- b. Halter and lead rope
- c. Chemical restraint (if needed)

## IV. Detailed Procedure

- a. Restraint
  - i. Be sure the animal is properly restrained during this procedure. One handler will be needed in addition to the individual performing the endoscopy.
  - ii. Please refer to the equine restraint and equine sedation SOP. Sedation may alter nasopharyngeal and laryngeal movements and affect the overall assessment of the airway.
- b. Endoscopy
  - i. Initial approach
  - ii. The operator should be in a comfortable position that allows them to look at the monitor as they are completing the endoscopy. They should also be aware of the animal's behavior to ensure no injuries are sustained.

- iii. The stance is based on personal preference. The user can pass the scope to the left or right side of the horse's head.
- iv. Once the individual is ready to proceed they should allow at least 6 inches of the length of the scope to be passed into the nasal passage directing the scope into the ventral nasal meatus.
- v. The individual's hand that is guiding the endoscope should be placed over the bridge of the animal's nose with the thumb of the hand directing the endoscope medially and ventrally allowing proper entrance into the ventral nasal meatus. Care should be taken to not inadvertently close the contralateral nostril.
- vi. The endoscope should continue to be directed into the ventral nasal meatus. The endoscope should pass ventral to the ventral nasal concha allowing the free movement through the nasopharynx.
- vii. The mucosal surfaces should be assessed at this time. The nasal septum will lie vertically and the transition from caudal nasal passage to nasopharynx is appropriately termed the nasal choana.
- viii. To fully evaluate the nasal passages the endoscope should be directed both dorsally and ventrally.
- ix. Other structures to evaluate include the middle nasal meatus, ventral nasal meatus and nasomaxillary opening.
- x. Before passage into the nasopharynx the ethmoid turbinates should be visualized in the caudodorsal nasal cavity.
- xi. The nasopharynx can be evaluated after passing the endoscope to the left or right nasal passage. When viewed from a rostral position in the nasopharynx, the fibrocartilaginous flaps in this area will mark the pharyngeal opening of the auditory tubes. The pharyngeal lymphoid tissue should be assessed at this time.
- xii. The soft palate can be examined prior to the passing of the endoscope into the trachea.
- xiii. To visualize the caudal end of the nasal cavity and nasal septum the endoscope can be passed into the nasopharynx and manipulated 180 degrees in the dorsal midline plane.
- xiv. The larynx should be evaluated for function, symmetry and form. Laryngeal and pharyngeal movements can be assessed by stimulating the horse to swallow.
- xv. A one-meter endoscope can pass into the cervical trachea. This can be assessed for symmetry and any presence of exudate or transudate.
- xvi. After completion of the endoscopy the tube should be removed from the horse with slow and steady motion outward.

## V. Variations

The order of the endoscopy can vary by individual but should remain systematic and consistent.

## **VI. Potential Adverse Effects, Mitigation, or Treatment**

- a. Trauma
  - i. Hemorrhage, bruising
    1. If significant bleeding occurs (hemorrhage that creates a stream of blood from the nostril, as opposed to dripping) the Equine Field Service should be contacted.
    2. The Office of the University Veterinarian should be notified of any adverse event.

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

Not applicable

## **VIII. References**

Matthew P. Gerard DVM BVSc PhD DACVS. "Endoscopic Examination of the Normal Equine Upper Airway at Rest (Proceedings)." Dvm360.com. N.p., 16 July 2014. Web. 28 Apr. 2017.

Slovis, Nathan M. Atlas of Equine Endoscopy. St. Louis, MO: Mosby, 2004. Print.