



Standard Operating Procedure: Equine Physical Exam (Including the Use of Rebreathing Bag)

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 physical examination.

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.

Handlers should be vigilant at all times so as to avoid injury to animals or themselves.

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. Stethoscope
- c. Chemical restraint (if needed)
- d. Penlight
- e. Thermometer and lubricating jelly
- f. Nose twitch

IV. Detailed Procedure

- a. Mechanical Restraint
 - i. In horses that are unable to be handled for the physical examination, mechanical restraint can be utilized. This can include the use of a nose twitch or twitch applied to the neck of the horse. Please refer to the equine restraint SOP. There should be one handler and one individual who will be completing the procedure.
- b. Chemical Restraint
 - i. Some horses may need chemical restraint due to behavioral reasons. Reference the equine sedation SOP for details on how to adequately perform this.
- c. Observation from a Distance
 - i. The general examination will begin with observation of the horse from a distance to detect abnormalities. Both the horse's stance and general behavior should be observed at this time.

- ii. A body condition score can be determined during this time in addition to a normal respiratory rate prior to handling the animal.
- d. Examination of the Head and Neck
- i. Examine the mucous membranes by raising the upper lip. Evaluate for moistness, icterus, hyperemia, cyanosis, pallor, ulceration and petechial. Capillary refill time is evaluated by blanching the mucous membrane.
 - ii. Evaluate the nares for symmetry and airflow.
 - iii. Percuss the maxillary and frontal sinuses.
 - iv. The tongue can be isolated through the interdental space to evaluate for oral ulceration. The normal movement of the tongue should be noted.
 - v. The sclera should be evaluated by placing the thumb over the upper lid and grasping the bottom of the bottom of the halter. The cornea should be evaluated. Elicit a menace response by bringing your hand close to both eyes, a normal blinking response should occur. Pupillary light reflexes can be evaluated with the use of the penlight.
 - vi. The ears can be gently palpated for temperature and if there are suspicions of cardiovascular shock or poor peripheral perfusion.
 - vii. The intramandibular space can be palpated for submandibular lymphadenopathy.
 - viii. In normal horses the retropharyngeal lymph nodes are not readily palpated. Assess this area under the mandible for any noticeable swelling.
 - ix. The facial artery can be palpated at the ventral aspect of the mandible and a pulse can be felt.
 - x. The thyroid gland can be palpated in older horses. The left jugular vein can be occluded and assessed for jugular fill.
- e. Thoracic Auscultation
- i. Lung auscultation
 - 1. Compare lung sounds in the ventral, dorsal and middle thorax. A comparison of the left vs. the right side of the thorax should be completed.
 - 2. A rebreathing bag can be utilized to better assess the lungs. The bag should be held away from the nose so that it does not block the nostrils and inhibit inspiration. Be sure to note how the horse tolerates this procedure and if any coughing can be elicited. Also note how quickly the animal is able to recover after the cessation of the procedure.
 - a. The thorax must be listened to while the rebreathing bag is in place. Deep breathing can reveal abnormal lung sounds. Normal inspiratory sounds are louder in comparison to expiratory sounds.
 - ii. Cardiac auscultation

1. The heart can be auscultated on the left cranial ventral thorax assessing the pulmonic, aortic and mitral valves. The heart rate can be determined at this time. The right cranial ventral thorax can be auscultated to assess the tricuspid valve.
- f. Examination of Ventral Thorax and Abdomen
 - i. Assess the animal the ventral thorax and abdomen for any ventral edema by placing upward pressure on the ventral thorax on midline.
 - ii. The abdomen should be auscultated for borborygmus. This can be done by placing the stethoscope to the left and right paralumbar fossa and ventrally.
 - g. Musculoskeletal Examination
 - i. The forelimbs and hindlimbs should be evaluated for any signs of swelling heat or pain. The joints should also be evaluated for swelling, heat and fluid.
 - ii. All four limbs should be evaluated for digital pulses.
 - iii. Overall musculature of the horse should be evaluated for symmetry.
 1. Palpation can be done to confirm and detect muscle atrophy.

V. Variations

The order of the physical examination may be altered for individual preference and animal behavior. This can be done as long as the physical examination remains systematic and thorough. Some parts of the physical exam can be eliminated if only a brief exam is needed to establish cardiovascular health for sedation or use purposes.

- a. The heart, lungs, mucus membranes, and demeanor can be examined for a shortened exam.

VI. Potential Adverse Effects, Mitigation, or Treatment

A physical exam is a safe procedure for the animal. Some individuals may experience some mild stress secondary to the handling necessary for the exam.

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

Not applicable

VIII. References

“Equine General Physical Exam.” Equine PE. N.p., n.d. Web. 28 Apr. 2017.

Sanchez, Chris. Equine Physical Examination and Restraint Review (n.d.): n. pag. University of Florida Veterinary Medicine. Web.