



Standard Operating Procedure: Equine Sedation

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 equine sedation.

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 as minimal restraint as is necessary.

Sedation can be used for medical procedures to allow safe control of the animal. Care should be taken to use a proper protocol based on the health status of the animal, duration needed and amount of sedation necessary.

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. Hearing protection (optional)

III. Supply List

- a. Sedatives (Xylazine, Acepromazine, Detomidine, Romifidine, Butorphanol)
- b. Halter and lead rope
- c. Needles and syringes

IV. Detailed Procedure

- a. Sedation Protocol
 - i. Prior to the initiation of a sedation protocol, a thorough physical examination should be performed. The cardiovascular and respiratory system should be fully assessed. Depending on the age and condition of the horse, blood work may be warranted at the discretion of the veterinarian.
 - ii. Reference the equine intramuscular and intravenous administration SOP prior to performing sedation.
 - iii. The animal should be properly restrained for this procedure. Please reference the equine restraint SOP.
 - iv. The type of sedation should be chosen prior to use. This is based on the time it will take to perform the particular procedure as well as the amount of sedation needed.
- b. Sedation options
 - i. Alpha-2 agonists
 1. Xylazine

- a. Dose 0.2-0.5 mg/kg IV or 0.5-1 mg/kg IM
 - b. Calming effects/sedation, muscle relaxation and analgesia lasts approximately 20-40 minutes IV and 40-60 minutes IM.
 - c. Can cause ataxia.
2. Detomidine
 - a. Dose 0.005-0.01 mg/kg IV or 0.01-0.02mg/kg IM
 - b. Calming effects/sedation, muscle relaxation and analgesia lasts at 45 minutes when given IV and 60-90 minutes IM.
 - c. Can cause ataxia.
 3. Romifidine
 - a. Dose 0.04-0.12 mg/kg IV or IM
 - b. Longer sedation effect than xylazine.
- ii. Phenothiazine
 1. Acepromazine
 - a. Dose 0.02-0.06 mg/kg IV or IM
 - b. Duration 2-3 hours
 - c. Not a sedative. This drug is an anxiolytic.
 - d. Requires approximately 20 minutes for good effect after IV injection, 30- 45 minutes after IM injection
 - iii. Opioids
 1. Butorphanol
 - a. Dose 0.005-0.02 mg/kg IV or IM
 - b. Should NOT be used alone, but in combination with an alpha-2 agonist.
 - c. Potentiates the sedative effects of alpha-2 agonists.
 - iv. Combinations of drugs
 1. Combinations of drugs provide synergistic effects and usually require lower doses of each drug.
 2. Common mixtures include
 - a. Xylazine OR Detomidine OR romifidine AND butorphanol
 - b. Xylazine OR detomidine OR romifidine AND butorphanol AND acepromazine
 3. Specific combinations of drugs need to be described specifically in the IACUC protocol.

V. Variations

- a. Sedation can be given intramuscularly or intravenously.
 - i. IM sedation usually requires larger doses of drugs, takes longer to have an effect and results in a longer duration of action.
 - ii. IV sedation usually requires lower doses of drugs and has a faster onset of action.
- b. Sedation may be repeated 1-2 times if the resultant sedation is not adequate to perform the procedure.

VI. Potential Adverse Effects, Mitigation, or Treatment

- a. Iatrogenic side effects
 - i. Bruising, punctures, trauma
 - ii. Iatrogenic administration into carotid artery
 - 1. Causes immediate seizure activity
 - 2. Immediately contact Veterinary Teaching Hospital Clinician
 - 3. Contact the Office of the University Veterinarian
- b. Profound sedation/recumbency
 - i. Ensure the animal is safe by clearing the immediate space around the horse of objects
 - ii. Time will allow the drugs to be metabolized

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

Not applicable

VIII. References

Equine Sedation, Anesthesia and Analgesia (n.d.): n. pag. Web.

Muir, William W. III., and John A. E. Hubbell. Handbook of Veterinary Anesthesia. London: Elsevier Health Sciences, 2014. Print.

"Equine Anesthesia." (n.d.): n. pag. Center for Veterinary Sciences. Web.