

## EQU\_002 Injections - Intramuscular (IM) in horses

### I. OBJECTIVE

To describe standards for administration of injectable solutions to horses via the intramuscular (IM) route.

### II. COMMENTS / RECOMMENDATIONS

- Relative to animal ethics applications, when using this SOP, the following must be described in the individual ethics application: relevant details of substances to be administered including justification for administration, dose, volume, frequency, and expected impacts must be described in the specific animal ethics application
- Consideration must be made to ensure this route is necessary and most appropriate (e.g. less invasive routes, such as oral administration (in feed), are not more appropriate)
- Consideration must be made to ensure the injection solution is as innocuous as possible (e.g. the solution must be sterile, the pH should be relatively neutral and tonicity relatively isotonic)
- IM injections in horses should be considered a quick and minimally invasive procedure. Restraint techniques (e.g. a twitch) may be required. If a horse cannot be appropriately restrained (non-chemically) for this procedure the horse should not be used for scientific purposes without specific justification
- When using animals for scientific purposes all personnel must be competent in the procedures they perform or be under the direct supervision of a person who is competent to perform the procedure

### III. EQUIPMENT

- PPE  
*Site and procedure specific. This may include overalls, boots, disposable gloves, hat, sunscreen.*
- Appropriate animal restraint equipment  
*Site, procedure, and animal specific. This will at least include a halter and lead rope, but may include additional equipment such as horse stocks, rearing bits, a sideline, hobbles.*
- Skin preparation material (fur clippers, gauge swabs, skin disinfectant)
- Syringe of required size (e.g. 1mL – 20mL), sterile and disposable
- 18-22G needle (or catheter), sterile and disposable
- Substance to be injected
- Cotton gauze
- Sharp's container

### IV. PREPARATION

1. Ensure AEC approvals cover all procedures, personnel, and animal details for the planned work
2. If working with students, teachers must ensure that students have had the opportunity to discuss the ethical and social issues, and legal responsibilities, involved in the care and use of animals for scientific purposes, at a level appropriate to their learning ability and comprehension. This must occur before the use of animals commences.
3. Ensure good hygiene practices. This includes washing hands before and between horses of different epidemiological origins, and ideally wearing disposable gloves.

#### Conditions:

- Investigators named in an animal ethics application, relative to this SOP, must be competent to implement the SOP
- Any variation to this SOP must be described in the relevant animal ethics application
- If this SOP has not been reviewed and approved by a UQ AEC within the last three years it is no longer valid and cannot be used in animal ethics applications until reapproved (see "AEC Reviewed/Approved" date in this document's header).

## V. PROCEDURE

1. The person performing the injection (the operator) ensures all required equipment is prepared and appropriate for use (e.g. substance to be injected is not expired, needle gauges are appropriate sizes etc).
2. Restrain the horse as appropriate for the procedure. If two people are present, the horse handler, holding the lead rope, should always stand on the same side of the horse as the operator.  
*Note: fractious horses, or horses sensitive to injections, may require additional forms of humane restraint such as a nose twitch, manual skin or ear twitch, a rearing bit, or sideline.*
3. Prepare the skin at the site of injection, if required.  
*Generally specific skin preparation is not required unless the fur is visibly dirty (e.g. muddy), or unless specifically advised by the manufacturer of the substance to be administered. Skin preparation may include cleaning with disinfectant, then permitting the skin to dry..*
4. Attempt to use some form of tactile stimulus (usually a gentle pinch of the skin) at the site of the injection to distract the horse from the sensation of the needle. At the same time gently guide the needle through the skin and into the muscle body.
5. Attach the needle to the syringe, if not already attached.
6. Withdraw the syringe plunger slightly to ensure that inadvertent venepuncture has not occurred. If blood flashes back into the syringe, redirect the needle within the muscle body, and repeat this step.
7. Inject the substance at a slow and steady rate.
8. Remove needle and syringe from skin and place the needle into the sharp's container at the earliest appropriate time.
9. If a large volume has been injected (e.g. >5mL) or a bead of blood or some discharge of the injected solution is present on the skin upon removal of the needle gently apply pressure to the site of injection with the gauze.
10. Observe animals for signs adverse reactions to the injection (e.g. acute swelling at the site or injection or otherwise, hives, increased respiratory rate, depression, or agitation). If unexpected adverse reactions occur immediately seek veterinary advise, and follow the appropriate institutional procedures (see the [animal ethics webpage](#) for guidance).

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## VI. REFERENCE INFORMATION

Table 1. Recommended values relative to IM injections in horses.

| INJECTION PARAMETER               | RECOMMENDED VALUE |
|-----------------------------------|-------------------|
| Needle Gauge                      | 18 – 22G          |
| Needle Length                     | 1 – 1.5 inches    |
| Maximum injection volume per site | 20mL              |

Table 2. The four common sites for intramuscular injection.

| Lateral cervical (neck) muscles   | Pectoral (chest) muscles  | Semitendinosus/semimembranosus (hind leg) muscles  | Gluteal (rump) muscles   |
|---|---|--|--|
|  <p>Image: Costa &amp; Paradis, 2018.</p> |  <p>Image: Costa &amp; Paradis, 2018.</p> |  <p>Image: Costa &amp; Paradis, 2018.</p> |  <p>Image: Bassert &amp; Thomas, 2013.</p> |

## VII. BIBLIOGRAPHY

- Bassert, JM. & Thomas, J. (2013). *McCurnin's Clinical Textbook for Veterinary Technicians*. Elsevier. ProQuest Ebook Central, <https://ebookcentral-proquest-com.ezproxy.library.uq.edu.au/lib/uql/detail.action?docID=2072315>
- Costa, LRR. & Paradis, MR. (2018). *Manual of clinical procedures in the horse*. John Wiley and Sons, Inc. Wiley Online Library, <https://onlinelibrary-wiley-com.ezproxy.library.uq.edu.au/doi/pdf/10.1002/9781118939956>
- Hepburn, R. (2012) Equine textbook for general practitioners Veterinary Record 170, 545.
- University of Melbourne. (2018) *9 Steps for Giving Intramuscular Injections*. <https://www.u-vet.com.au/equine/news-and-resources/9-steps-for-giving-intramuscular-injections>

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