



Standard Operating Procedure: Intramuscular Injections in Swine

These SOPs were developed by the Office of the University Veterinarian 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. 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 procedure for the administration of substances via intramuscular (IM) injections.

Considerations:

Refer to SOP: Swine Restraint

Easily performed without general anesthesia, but proper restraint required.

Preferred locations are the cervical muscle groups, behind the ear and before the angle of the shoulder (Figure 1). Shoulder and hind end muscle groups should not be used in meat production animals.

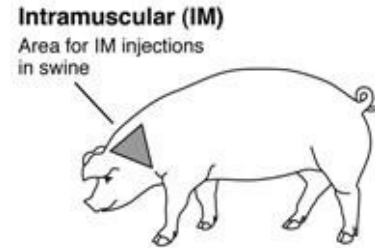


Figure 1. Intramuscular Sites

No more than 2ml per injection site in baby pigs, or 3ml in larger pigs (from Large Animal Clinical Procedures); maximum of 15 ml per site (Mosby's Comprehensive Review for Veterinary Technicians).

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, such as:
 - i. Scrubs or coveralls
 - ii. Steel-toed shoes or boots
 - iii. Optional
 1. Disposable gloves (e.g., latex, nitrile)
 2. Eye protection
 - iv. Other PPE as required by protocol/facility
- b. Ideally, hands should be washed and/or gloves changed between animals.
- c. Pigs are extremely vocal and volume can well exceed 85 decibels; therefore, it is recommended that ear protection be used when handling or working with pigs.
- d. Promptly dispose of used sharps in the provided leak-proof, puncture resistant sharps container.

III. Supply List

- a. Restraint (e.g., snare, sling, crowd board)
- b. Needles or butterfly catheters (size is dependent upon size of pig and viscosity of solution to be administered; use the smallest gauge and shortest length possible)

Needle Selection Guide for Intramuscular Injections (adapted from National Hog Farmer)		
SIZE OF PIG	GAUGE	LENGTH
Baby Pigs (up to 25kg)	18 or 20	5/8 to 1/2 inch
Grower (25 to 70kg)	16 or 18	¾ to 5/8 inch
Finisher/Breeders (>70kg)	14 to 16	1 to 2 inch*

- c. Prefilled syringes
- d. Extension set (optional)
- e. Antiseptic
- f. Gauze

IV. Detailed Procedure

- a. Anesthesia
 - i. No anesthesia needed, but adequate restraint required.
- b. Procedure
 - i. Restrain animal with snare, securely contained against a wall or corner; alternatively, swine can be placed in a sling, or smaller pigs can be held (Figure 2).



Figure 2. Restraint Methods

- i. Clean skin with antiseptic gauze to remove superficial dirt and debris.
- ii. Pinch skin slightly forward of injection site. Insert needle at a right angle into the muscle mass, pull back on syringe to ensure that needle has not entered a blood vessel, and inject solution (Figure 3).
- iii. NOTE: be careful to keep non-injection hand away from the needle so as to avoid being stuck accidentally.
- iv. An extension set may be connected to the needle to allow the pig to move freely while the drug is being injected (such as when administering anesthetic).



Figure 3. Intramuscular Injection

- v. Should a needle break during injection, follow procedures for recording broken needles, which typically include identifying animal, needle size, location, and person performing injection.

V. Variations

Alternate muscle groups, such as the semimembranous, semitendinosus, and gluteal muscles in the hind end, can be used, but are not recommended in food production animals.

VI. Potential Adverse Effects, Mitigation, or Treatment

- a. Hematoma/bruising at injection site
- b. Pain or redness at injection site
- c. Abscess
 - i. Contact veterinary personnel for treatment options
- d. Induration at injection site
- e. Hypersensitivity to injected substance
 - i. If you notice a rash or hives, fever, difficulty breathing, vomiting, facial swelling, contact veterinary personnel immediately

VII. References

American Association of Laboratory Animal Science. Assistant Laboratory Animal Technician Training Manual. (Memphis, TN: Drumwright and Co, 2012)

American Association of Laboratory Animal Science. Laboratory Animal Technician Training Manual. (Memphis, TN: Drumwright and Co, 2007)

Bollen, P., Hansen, A., and Rasmussen, H. The Laboratory Swine. (Boca Raton, FL: CRC Press LLC, 2002) Grandin, Temple. Animal Behavior and the Design of Livestock and Poultry Systems. Restraint of Livestock.

Proceedings from the Animal Behavior and the Design of Livestock and Poultry Systems International Conference. (Indianapolis, Indiana, April 19-21, 1995) www.grandin.com/references/abdlps.html

Grandin, Temple. Behavioral Principles of Livestock Handling (with 1999, 2002, and 2010 Updates on Vision, Hearing, and Handling Methods in Cattle and Pigs). Professional Animal Scientist, 1-11. (December 1989) www.grandin.com/references/new.corral.html

Holtgrew-Bohling, K. Large Animal Clinical Procedures for Veterinary Technicians (2nd ed.). (St. Louis, MO: Elsevier Mosby, 2012)

McCurnin, D., and Bassert, J. Clinical Textbook for Veterinary Technicians (5th ed.). (Saunders, Philadelphia, PA 2002)

Miller, Dale, Editor. Inject with Care, poster #04858. National Hog Farmer. www.nationalhogfarmer.com