Step 3. Calculate how many milliliters of the product are needed for the recommended dose. For example, if the recommended dosage is 5,000 units/kg, the proper dosage for the animal's age and weight, paying special attention to appropriate withdrawal periods, when applicable. Conscientious and effective administration of medications and vaccines is critical to the health of pigs and swine caretakers. It is important to develop standard operating procedures for handling and storage of vaccines and medications, selection of the proper syringe and needle used for injection, and hazard-free needle disposal.

INJECT WITH CARE

Effective swine health programs often require injections of vaccines, antibiotics, vitamins/supplements or other treatments. Each product has a specific, and approved route of administration for maximum effectiveness. It is important to read and understand label directions for proper route of administration, injection site and dosage for the animal's age and weight, paying special attention to appropriate withdrawal periods, when applicable.

Routes of Administration

There are four recommended routes of administration for injectables. Intramuscular and subcutaneous injection methods are the most commonly used. Intradermal and subcutaneous injection methods should be used by veterinarians only or under supervision of a veterinarian.

Intramuscular (IM) — Injection into the muscle.

It is important to use the proper size (gauge) and length of needle to ensure vaccine or medication is deposited in the muscle. It is best to position the injection in the muscle mass between the ear and shoulder. Injections too far back increases the risks that product will be deposited in a fat layer. Injections too low risks the product could be delivered into the subcutaneous tissue. To minimize leakage, pull skin slightly forward before inserting the needle, insert the needle, then release the skin, giving the injection, and remove the needle. The skin will spring back in place, covering the hole in the muscle and sealing the injected material in place. This method especially helpful when giving iron dextran injections to baby pigs. Do not inject in the hair or loin muscles.

Subcutaneous (sub-Q or SQ) — Injection administered under the skin.

Use the proper angle and length of needle to avoid injecting product into the muscle. Common sites for subcutaneous injections in small pigs (up to nursery age) are the loose skin inside the flank and along the abdominal wall or behind the elbow. For larger pigs, insert the needle at an angle in the neck. Slide the needle under the skin and away from the point of entry and, then administer the product.

Choose the correct needle and syringe.

Factors affecting the injection quality include the age and size of the pig, restraint method, volume, viscosity or flow characteristics of the product, and the proper route of administration.

Syringes

Syringes come in various sizes and are commonly made of metal or glass or plastic. Select the appropriate size of syringe to ensure an accurate dose can be delivered without mistreatment to the animal. It is important to be able to easily read the graduated dose measures on the barrel of the syringe. Metal and multi-dose injection systems allow the dose to be preset. Syringes should be durable and easy to use.

Needles

Needles are available in various diameters (gauges) and lengths. Select the proper size and length of needle according to the pig's age and the characteristics of the product to be injected. As a general rule, use the longest needle possible. For example, use the 1.5 inch needle for 500-1000 kg pigs and the 2 inch needle for 1000-1500 kg pigs.

Needle Placement and Injection

When using a syringe with needle attached, follow these five steps:

1. Fill the syringe with proper dosage or preset dosage an adjustable syringe.
2. Make sure no air bubbles are present in the syringe. Tap syringe barrel hard to make bubbles rise to the top and squeeze: syringe trigger or plunger slightly to remove air bubbles.
3. Restrain or confine animals to ensure accurate placement of the injection.
4. Locate the proper injection site, making sure the site is clean.
5. Quickly and firmly insert the needle into the animal and deliver the desired syringe.

Broken Needle Protocol

- Permanently identify any pig known to have a broken needle or needle fragment with a tag, hog tagging marker, ear notch, etc.
- Record the needle size (gauge) and length, the brand or type of needle (e.g. needle, shoulder, hip), identify persons administering the injection and the person making the report.
- Provide written or verbal information to packer or hog buyer to ensure the hog carcass is tagged. Familiar staff will be aware of broken needles.

Preventing Accidental Needle Sticks

Accidental drops or sticks to others can occur while handling, processing and treating pigs. Needle sticks can be very serious, as certain medications designed for animal use can cause severe medical reactions and even death if injected into a person. Occupational Safety and Health Act (OSHA), Section 5(a)(1), requires employers to comply with hazard-specific safety and health standards. The following guidelines will help avoid accidental needle sticks.

- Never remove needle caps by using your mouth.
- Safe needle caps must be taken when recapping a needle. Hold the cap with a forceps, pliers or other device and carefully slide the syringe (with needle attached) or push the hub of the needle (unattached) into the cap, making sure the point of the needle is covered before pushing the cap onto the hub to secure it.
- Properly disposed sharps containers should be located and used in all workplace areas where sharps are used. Never dispose of sharps in the trash.
- Dispose of used syringe with attached needle in sharps containers (e.g. when injecting live vaccines or aspirating body fluids). For most veterinary procedures, use the needle removal device on the sharps container and dispose of the syringe separately in the trash.
- Do not transfer sharps from one container to another.
- Devices that cut needles prior to disposal are not recommended because they increase the potential for contents to be aerosolized.
- Do not store needles prior to disposal for safe sharps handling and provide new hire and follow-up training for all staff handling sharps.
- Provide worker training on the proper handling of drugs, vaccines, etc.
- Develop a current protocol for documenting and reporting each needle stick injury, including a protocol to ensure medical evaluation.

Needlestick injection

Transdermal needle-free injection systems are powered by CO2 (carbon dioxide), nitrogen or compressed air. This relatively new injection option avoids the risk of broken needles or metal fragments in a carcass.

Keep it clean!
- Always be sure that needles are sterile and syringes are clean before use.
- When injecting batches of pigs with the same product, changing needles every 10-15 pigs is advised.
- Use a sterile needle to fill the syringe and a separate needle to inject the pigs.
- Remove the sterile needle before storing the unused portion of the bottle.

Keep Good Records

Whenever a pig or group of pigs is vaccinated or treated, keep a permanent record of the date of administration, the appropriate label of treated, the product, dosage administered, withdrawal time for administered product, who administered the vaccine or medication, name of herd veterinarian or supervisor directing the vaccination or treatment.

Proper Needle Disposal

Used needles and other “sharps,” such as knife blades and scalpels must be disposed of properly and according to state regulations to prevent environmental contamination and potential injury to animal caretakers, waste handlers, other livestock and pets. Information for the agency responsible for overseeing the disposal of medical waste in your state, visit the website: usda-apgsa.gov/ oasis/ncs.htm

Place needles and sharps in rigid, puncture-resistant container immediately after use.

Commercially available containers may be purchased from veterinarians, farm supply stores, farm supply catalog vendors, safety supply houses and drug stores.

Some states allow needles and sharps to be placed in containers, such as detergent bottle made of heavy plastic with screw on caps. Do not use glass containers.

Needles/sharps container should be clearly labeled: “Biohazard waste container, not for recycling.”

When the container is full, the cap or lid should be securely fastened and sealed with tamper-evident tape. Approved needles/sharps collection systems are available in some regions. Some veterinarians and hospitals offer disposal options.