

INJECT WITH CARE

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 10-20 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.

Routes of Administration

There are four recommended routes of administration for injectables. Intramuscular and subcutaneous injection methods are the most commonly used. Intraperitoneal and intravenous 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 salivary gland. To minimize leakage, pull skin slightly forward before inserting the needle, insert the needle, then release the skin, give 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 is especially helpful when giving iron dextran injections to baby pigs. Do not inject in the ham 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.



Calculating Dosage

Always follow label directions for vaccines and medications. Often, dosages are expressed in units per kilogram (units/kg) or units per milliliter (units/ml). Milliliter is abbreviated as "ml" or "mL." (1 ml = 1 cc.)

Step 1. Convert pig's weight to kilograms (1 kg = 2.2 lb.).

For example, a 300-lb. pig = 136 kg (300 lb. divided by 2.2 = 136 kg).

Step 2. Determine dosage rate, commonly expressed in units/kg of body weight.

For example, if the recommended dosage is 5,000 units/kg, the proper dosage for the 136 kg pig is 680,000 units (5,000 x 136 kg = 680,000 units).

Step 3. Calculate how many milliliters of the product are needed for the recommended dose.

For example, if a product contains 200,000 units/ml, the dosage would be 3.4 ml (680,000 units divided by 200,000 units/ml = 3.4 ml.) Again, 1 ml = 1 cc., so the dosage is 3.4 cc.

Sometimes dosage rates are given in milligrams per kilogram (mg/kg) instead of units/kg of body weight. For example, if the recommended injection rate for the product is 6 mg/kg of body weight, and the product contains 200 mg/ml, the dosage calculation for a 300-lb. pig would be: 136 kg x 6 mg/kg = 816 mg of product needed. Therefore, 816 mg divided by 200 mg/ml = 4 ml or 4 cc., the proper dosage.

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.

Conscientious and effective administration of medications and vaccines is a high priority for all pork producers and swine caretakers. It is vital 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.



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.

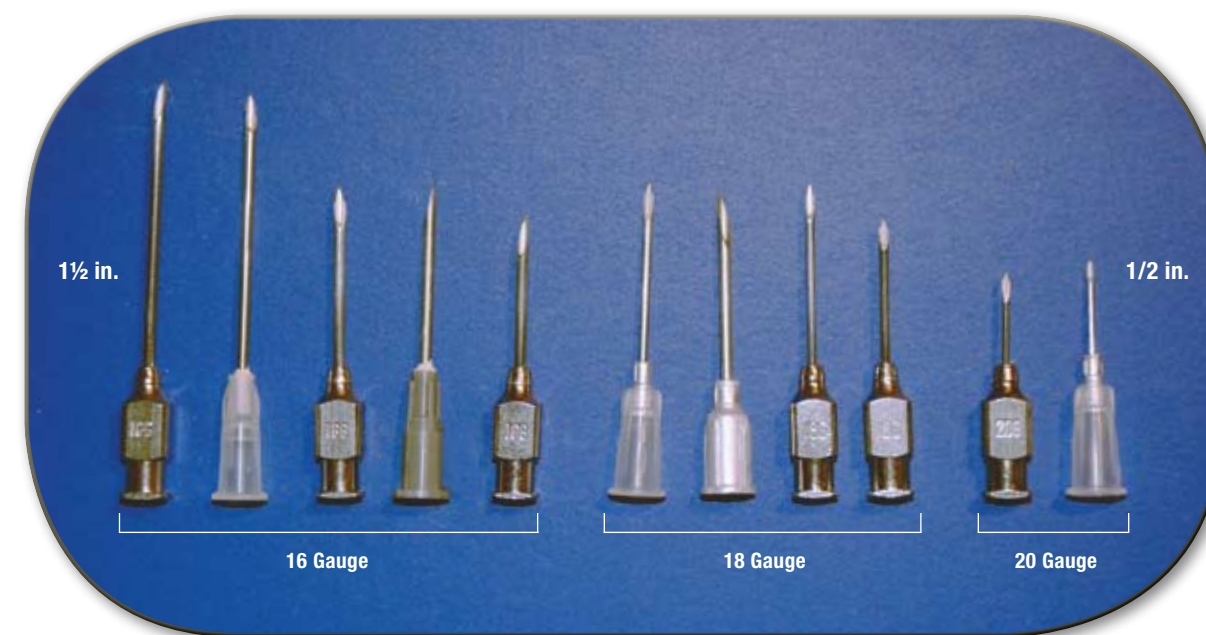
Syringes

Syringes come in various sizes and are commonly made of metal and glass or plastic. Select the appropriate size of syringe to ensure an accurate dose can be delivered with minimal stress 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 smallest diameter (largest numerical gauge) and shortest needle length possible. As needle length increases, diameter should also increase to provide added shaft strength to avoid bent and broken needles. Two types of needles are available — reusable stainless steel with metal base and disposable with plastic or aluminum base. Needles are also available in detectable metal that allows metal detectors in plants to identify needles in meat on the processing line.

Needle Selection Guide		
The following are recommended needle sizes and lengths:		
Intramuscular injection	Gauge	Length
Baby pigs	18 or 20	5/8 in. or 1/2 in.
Nursery	16 or 18	3/4 in. or 5/8 in.
Finisher	16	1 in.
Breeding stock	14, 15 or 16	1 in. or 1 1/2 in.
Subcutaneous injection	Gauge	Length
Nursery	16 or 18	1/2 in.
Finisher	16	3/4 in.
Breeding stock	14 or 16	1 in.



Needle Selection and Use

- ❖ Provide needle use guidelines to all animal caretakers.
- ❖ Evaluate the strength and detectability characteristics of the needle to be used.
- ❖ Count the number of needles to be used for treatment or vaccination of a group of pigs.
- ❖ Count the needles again when the job is done to ensure all needles are accounted for.
- ❖ Ensure proper animal restraint before injection.
- ❖ Change needles, as needed, to ensure sharpness and cleanliness.
- ❖ If you drop a needle, find it and dispose of it properly. Packers report finding needles lodged in the mouth, tongue, throat and jaws of market hogs and sows.
- ❖ Do not straighten and reuse bent needles.

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 on adjustable syringe.
2. Make sure no air bubbles are present in the syringe. Tap syringe barrel 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 injection site, making sure the site is clean.
5. Quickly and firmly insert needle into the animal and deliver the preselected dosage.

Broken Needle Protocol

- ❖ Permanently identify any pig known to have a broken needle or needle fragment with a tag, long-lasting marker, ear notch, etc.
- ❖ Record the needle size (gauge) and length, needle brand or type, location of needle (e.g. neck, shoulder, hip), identify person administering the injection and the person making the report.
- ❖ Provide broken needle information to packer or hog buyer to ensure the hog carcass is flagged. Familiarize staff with packer's policies regarding broken needles.



Preventing Accidental Needle Sticks

Accidentally injecting yourself or 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 they are 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.
- ❖ Great care 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.
- ❖ Puncture-proof 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 container (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.
- ❖ Develop standard operating procedures 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 and implement a policy for documenting and reporting each needle stick injury, including a protocol to ensure medical evaluation.

Source: National and State Public Health Veterinarians (also see: <http://www.nasphv.org/Documents/VeterinaryPrecautions.pdf>).

Needleless 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 Good Records

Whenever a pig or group of pigs is vaccinated or treated, keep a permanent record of the date of administration, the age/size of pigs treated, the product used, 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. For information about the agency responsible for overseeing the disposal of medical wastes in your state, visit the website: www.epa.gov/epawaste/index.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 bottles made of heavy plastic with screw-on caps. Do not use glass containers.
- ❖ Needle/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 heavy tape.
- ❖ Approved needles/sharps collection stations are available in some regions. Some veterinarians and hospitals offer disposal options.



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