



*Providing a Safe, Wholesome Product:  
Administration of Medications to Ensure Pork Quality/Safety*

*Dr. Jodi Sterle  
Assistant Professor and State Extension Swine Specialist  
Texas A&M University*

The pork industry is facing a challenge: prevention of residues and physical hazards (such as broken needles) in the meat that we eat. The National Pork Producers Council (NPPC) has established the Pork Quality Assurance program to address some of these concerns. Two management practices can greatly assist producers (including 4-H and FFA youth exhibitors) in the accomplishment of the goal to produce a *safe, wholesome product*: correct injection techniques and observation of withdrawal times.

Broken needles are a major concern in the swine industry. No one wants this physical hazard in the meat on his or her dinner plate. Prevention is the key. Common causes of broken needles include reusing bent needles, using the wrong gauge or length of needle for the route of administration (IM or sub-q), age and size of the animal, improper site of administration and improper restraint of the animals during the treatment process. Interestingly, many packers also find needles in the jowl of the carcasses. While pigs are not injected in this area, needles that are dropped or are not disposed of correctly are picked up in the mouths of curious animals and chewed upon, often embedding in the jowl. Keeping track of all needles used and disposing of them properly (in an approved "Sharps" container or possibly taken to a veterinarian for disposal) will help prevent this from happening.

Bent needles should never be reused. Even with straightening, the bent needle is highly likely to break upon subsequent injections. Saving a few cents by using the needle "just one more time" is not worth the consequence of a metal fragment in the meat. Recent research funded with check-off dollars from NPPC has also suggested that aluminum-hubbed needles are stronger and less likely to break than plastic-hubbed needles. Proper restraint during injection by restricting movement will also help to prevent bending needles. Regardless of whether a needle is bent, it should be replaced every 20 injections.

Selection of the gauge and length of needle will vary depending on the route of administration (intramuscular (IM) or subcutaneous (sub-q)) and size and age of the animal. The National Pork Producers Council recommends the following:

|                 | <i><b>Intramuscular Injection</b></i> |                      | <i><b>Subcutaneous Injection</b></i> |                      |
|-----------------|---------------------------------------|----------------------|--------------------------------------|----------------------|
|                 | <i><u>Gauge</u></i>                   | <i><u>Length</u></i> |                                      | <i><u>Length</u></i> |
| Baby pigs       | 18 or 20                              | 5/8" or 1/2"         | Nursery                              | 1/2"                 |
| Nursery         | 16 or 18                              | 3/4" or 5/8"         | Finisher                             | 3/4"                 |
| Finisher        | 16                                    | 1"                   | Sows                                 | 1"                   |
| Breeding Stock* | 14 or 16                              | 1' or 1 1/2"         |                                      |                      |

*\*depends on backfat depth and method of restraint*

Proper sites of administration are quite specific and are limited to the areas indicated in the figure. Subcutaneous administration deposits the medication under the skin. In small pigs, "tenting" or pulling up the loose skin in the *elbow* or *flank* will ensure that the drug is not deposited in the muscle or other tissues. In sows, tenting the loose skin behind the ear is deemed acceptable by NPPC. Altering the route of administration, such as depositing a subcutaneous drug into a muscle, may alter the effectiveness and withdrawal time of the medication. Once the needle is inserted underneath the skin, it should be slid away from the site of skin puncture before depositing the drug.

Intramuscular (IM) administration is limited to an area of the neck just behind and below the ear (see figure). Injections should *never* be given in the loin or ham muscles. If an infection, abscess or bruise should occur, it will have to be cut away in the packing plant. If that defect occurs in the ham or the loin, a valuable cut, substantial monetary loss can occur. Needle length is important to ensure deposition into the neck muscle.

A few medications may require intraperitoneal (IP) or intravenous (IV) administration. These routes of administration should be limited to veterinarian instruction and guidance. Serious injury to abdominal organs or other tissues can occur if administration is not done properly. Intranasal (in the nose) is the final approved route of administration. The product should be withdrawn from the bottle by needle, but the needle is then removed from the syringe and replaced by the recommended application tip for application. Keeping the animal's head tilted during and immediately following administration will assist in the efficiency and efficacy of the medication.

The National Pork Producers Council also suggests the following recommendations:

- Ensure proper syringe adjustment
- Ensure needle is properly fitted onto syringe
- Prevent swelling or abscesses at injection site by checking for burrs or other defects on the needle
- Use only properly cleaned needles
- Inject only into clean, dry areas
- Prevent contamination of the product by using different needles for injection and removal of the medication from multi-dose vials
- Consult with your veterinarian about potential adverse drug and vaccine reactions
- Identify treated animals and keep accurate records about treatment. Include drug name, who gave it, when, dose, withdrawal time, etc.

As mentioned, drug residues in meat are of public concern. These concerns could lead to an increase in regulations and restrictions on the use of medications that we currently use. These regulations and restrictions could result in increased costs of production or even the elimination of some products. This is just one reason to use the drugs as intended without abuse and to follow the withdrawal times printed on each label. Withdrawal times are established through detailed and extensive research trial to ensure that the product has sufficiently cleared the animal's system and tissues and poses no human health danger. No residues should be found in the meat of an animal that was treated properly, including proper route of administration, needle size and withdrawal time. Any time that the drug is not used *exactly* as stated on the label, including changing the dosage, route or frequency of administration, species, duration of treatment or disease to be treated could alter the withdrawal time. Any time a drug is used in this manner is considered "extra-label" and should include a veterinarian's prescription to ensure the safety of the meat from the treated animal, as well as the animal's well-being.

The responsibility of producing a safe, wholesome product rests on our shoulders. Serious consequences could result from misuse of medications. Mistakes will happen and residues may occur, but by following a few management practices and observing medication labels, you are doing your best to produce pork that is safe and acceptable to the consumer.

*For more information on Pork Quality Assurance, contact Dr. Jodi Sterle at (979) 845-2714 or [j-sterle@tamu.edu](mailto:j-sterle@tamu.edu)*