INTRODUCTION

This manual has been developed as a study guide for the Florida State Fair Skillathon which is part of the Champion Youth Program. The topic for this year's Skilathon is **Health care management**.

The Florida State Fair recognizes that agricultural education instructors, 4-H agents, parents, and leaders provide the traditional and logical instructional link between youth, their livestock projects and current trends in the animal agriculture industry. **PLEASE NOTE:** This manual is provided as a ***study guide*** for the skillathon competition and should be used as an additional aid to ongoing educational programs. Additional information is available on websites that are listed throughout the manual.

Sections are labeled **Junior, Intermediate & Senior, Intermediate & Senior, or Senior** to help exhibitors and educators identify which materials are required for their age level.

If you qualify for the "Champion of Champions event, you will want to visit the State Fair website to download and study the skillathon manuals for the other species shows.

Juniors (age 8-10 as of September 1, 2021)
Body parts
Restraint, knot tying
Animal Identification (methods)

Intermediates (age 11-13 as of September 1, 2021)
all of the above plus...
Animal Identification (procedures)
Recognizing Illness
Preventing Illness
Health supplies
Internal and External Parasites
How to give an Injection, injection sites

Seniors (age 14 and over as of September 1, 2021)
all of the above plus....
Disease Identification
Weight estimation & Dosages
Medication label identification
Withdrawal times & Medical Calculations

GOOD LUCK!

Animal Health

Assuring animal health is a primary responsibility of livestock managers. Failure to do so results in animal suffering, decreased productivity and could even pose a threat to human health. Animal health is so important that the United States Department of Agriculture has an Animal and Plant Health Inspection Service (APHIS) to work with the livestock industry in disease prevention: https://www.aphis.usda.gov/aphis/home/. Concerns over bioterrorism and potential threats to human health have brought animal health concerns into the spotlight in recent years.

Disease is a departure from health. Disease may be caused by infectious agents like bacteria, viruses, fungi, prions, protozoa and parasites. Infectious diseases might be contagious, passing from one animal to another. Transmission occurs through direct or indirect contact with the diseased animal. Direct contact transmission happens when the diseased animal physically touches or is very close to another animal. Transmission is passed through saliva, nasal discharge, sexual contact, pus, feces, and/or blood, or can be airborne. Diseases may also be transmitted indirectly by a third party or mechanically. Contaminated feeders, waterers, shoes, and clothing, farm equipment and tires, biting insects, wild birds and animals can all transmit diseases. Although exposure to infectious agents cannot be completely avoided, most of the time the animal will remain healthy. On occasion, these agents overwhelm the body's immune system and the animal becomes ill.

Health problems may also occur from noninfectious causes. Malnutrition, trauma/injury, cancer, genetic defects, and environmental hazards like toxins, poison or extreme weather conditions can cause illnesses. While these cannot be passed on to other animals, they can be stressors that lower the animal's resistance to any of the infectious diseases.

Juniors, Intermediates and Seniors

Swine Body Parts

It is important for livestock producers to share a common language. Using the correct names for various body parts is one way to be certain your message is understood. Study the pictures with the names of the body parts labeled so that you can communicate with other producers using correct terms. Study this picture then go the website below and click on "Next Page" to practice. http://www.geauga4h.org/swine/swine_body.htm

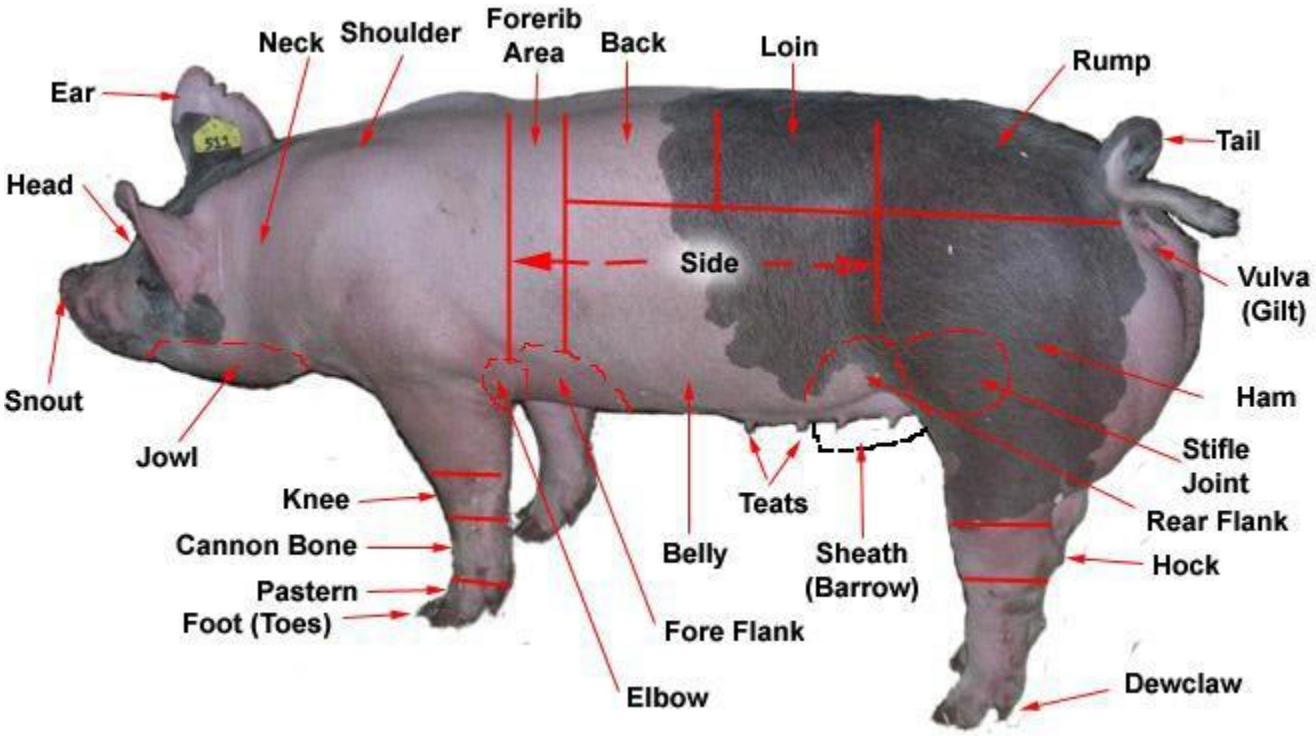


Image produced by Nita Judd.

Restraint

In order to carry out routine animal health care practices, animals must be prevented from moving about freely. Methods of restraint could be put into five categories.

1. Psychological – knowledge and anticipation of natural behaviors to accomplish task
2. Train or desensitize – repeat exposure to stimulus, cotton in ears, blind fold
3. Confinement - chutes, alleys, stalls, or barriers
4. Tools and physical force –ropes, snares, nose tongs, canes, prods and whips
5. Chemical sedation or immobilization – potentially dangerous, should not be used without veterinary supervision.

Whichever method or methods are employed, it is important to use common sense, plan ahead, be safe and always use SELF CONTROL. Haste is the enemy. Ask the following questions: Will the method minimize the danger to the handler? Will the method minimize danger to the animal? Will the method cause unnecessary pain or fright? Will the method allow the management technique to be completed as necessary? If any of the questions are answered negatively, other restraint methods should be used.
http://www.thepigsite.com/articles/2392/handling-and-restraining-pigs.

Ropes used in Restraint

Rope is one of the tools used most often by livestock producers. Knowledge of rope, knots, and hitches is indispensable. The most common type of rope used by livestock producers is the three strand braided rope which can come in many diameters and be made of man-made or natural fibers. Cotton ropes are soft, flexible and are least likely to cause rope burn though not as strong as other fibers and will rot and deteriorate over time. Cotton ropes are good for tying up limbs, for neck ropes and for lead ropes (if 5/8 inch or larger). Nylon is the strongest type of rope and will not rot from water or mildew but will stretch and often causes rope burn. It makes the strongest lead rope and is excellent for slinging and total restraint. Regardless of the fiber, ropes should be of fairly wide diameter, soft-surfaced and free of knots. Webbing should be free of rust and dirt and have smooth surfaces. Ropes should be kept clean, dry and untangled.

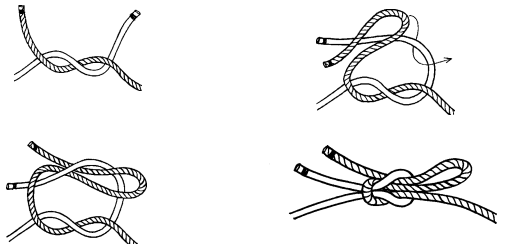
Knots for Livestock Handling

There are many circumstances in swine handling that will require you to tie knots. Take the time to learn to tie several types of knots and hitches so that you will have the right knot for the right circumstance. Practice often so that it becomes second nature. In an emergency situation, you do not want to have to think about which knot to choose and how to tie it.

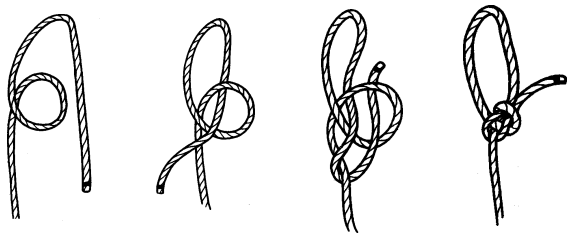
Knots join ropes together, attach ropes to a post or rail, or attach ropes to an animal.

Hitches are used to attach a rope to a post or rail - only thing securing the rope to post is the pressure of one rope coil wrapping upon the others.

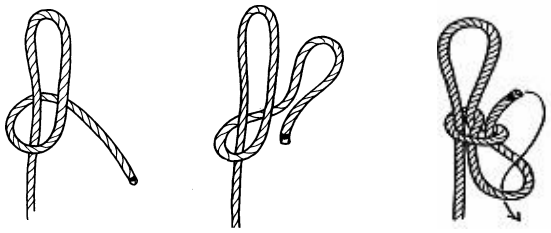
Splices are used to permanently join ropes to one another - individual strands from each rope are interwoven with strands from the other.



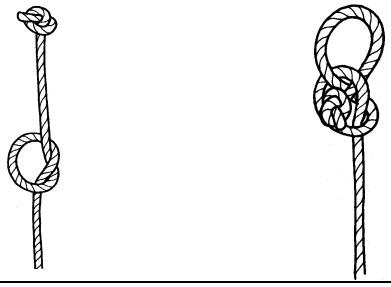
Reefer's Knot *(Quick-Release Square Knot)*
A good non-slip knot for tying ends of rope together and can easily be released. An advantage is that it can be tied under tension - an important feature for a knot used to restrain livestock.



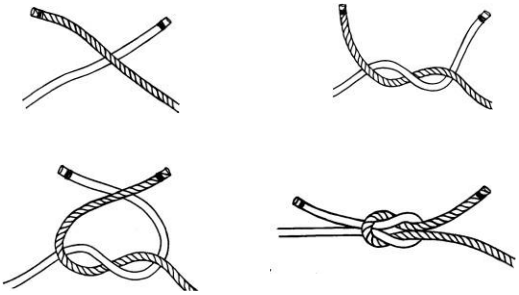
Bowline Knot
A non-slip knot used to form a loop that will not tighten or draw down when placed around an animal's body or a post.



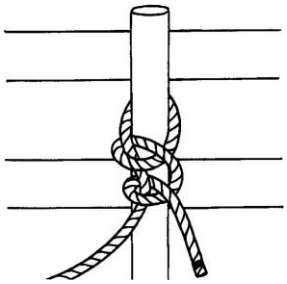
Quick-Release Knot
The standard way to tie an animal to a post. A variation of a slipknot that can be released very quickly, even when under tension. This knot should never be tied around the neck or body of an animal.



Honda Knot
Knot used to form small loop in the end of a rope in order to pass the rest of the rope through, forming a much larger loop, or lariat.



Square Knot
Excellent for tying two nearly equal size ropes together or for tying the ends of a single rope together to form a loop. Used mainly to secure gates or cage openings. Also used to tie a cloth or gauze bandage around the limb of an injured animal.



Double Half Hitch
A quick and easy knot which acts like a slipknot and is a convenient way to tie up the end of a rope.

Methods of Animal Identification

Proper animal identification has always been essential for record keeping and for efficient execution of normal management practices. In recent times, the threat of bioterrorism and the potential for rapid spread of diseases affecting livestock and human populations has led to the development of the **National Animal Identification System (NAIS).** The intent was to enable 48-hour trace back of the movements of any diseased or exposed animal to help ensure rapid disease containment and maximum protection of America's animals. Opposition to the program has led to less restrictive regulations for improved traceability of U.S. livestock moving between states. *Animal Disease Traceability* website: http://www.aphis.usda.gov/traceability/
A description of swine premises ID and biosecurity options can also be found at:http://www.pork.org/programs-and-events/swine-id/.

Many identification options exist for swine, some permanent, and some temporary. Whatever methodI s chosen, ideally it should be visible, easy to apply, unalterable, inexpensive and whenever possible, not cause harm or discomfort to the animal. Possible methods of swine identification include: tattooing, ear notching, ear tagging, or transponders.

EAR TATTOO

Advantages - It is permanent and it does not disfigure the animal.

Disadvantages - Pig must be restrained in order to read tattoo. Tattoos don't show up on dark-skinned animals.

Equipment Necessary -

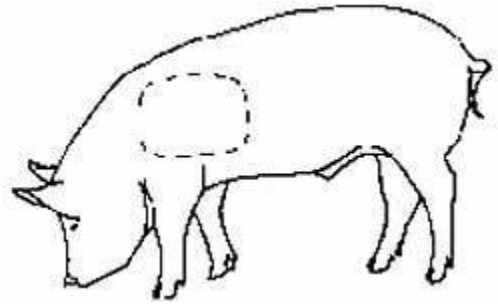
Tattooing Instrument	Tattooing Ink or Paste
Tattooing Numbers &/or Letters	Hog Snare (Swine)
Alcohol	Clean Cloth

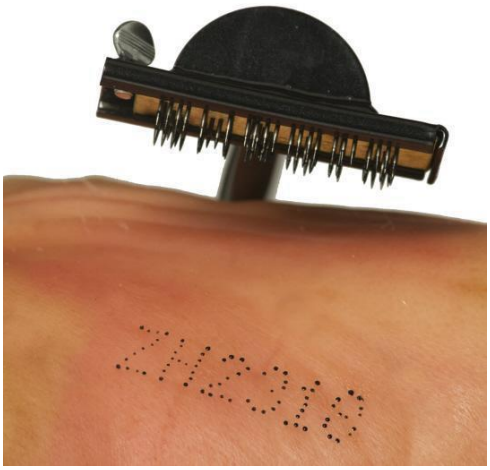
Procedures -

1. Assemble the necessary equipment. It is important that the numbers and/or letters be placed into the tattooing instrument in the proper order. As you look at them in the tattooing instrument, they should appear backward. Always check the numbers and/or letters on a piece of paper or cardboard before you begin to make sure they are correctly placed.
2. Restrain the animal.
3. Two ribs of the cartilage divide the ear into top, middle and bottom thirds. The tattoo should be placed in the thinner part of the lower ear (inside or out). Tattooing on the edges of the ear or in the hair portion of the ear can make reading the tattoo difficult. Do not tattoo between the two cartilage ribs; this area is reserved for some types of ear tags.
4. Clean the inside of the ear, where the tattoo will be placed, with a cloth soaked in alcohol. Infections or warts can result if a tattoo is placed in a dirty ear.
5. Position the tattoo instrument, squeeze the handles of the tattooing instrument together completely and quickly; then release them fully. Avoid veins.
6. Rub tattoo ink or paste into all of the needle marks. Work the ink or paste well into the marks.
7. Release the animal.
8. Clean the tattooing equipment with a disinfectant such as Nolvasan after each day of use.

TATTOO BRANDING

Slap marker is sometimes used prior to slaughter or on breeding stock. The process is similar to ear tattoo but done over shoulder or on the back near the tail.





EAR TAGGING

Advantages – Economical; can be read from a distance.

Disadvantages - Plastics tend to become hard and brittle in cold weather. Frequent loss of tags. Pre-numbered tags with block-type numbers are difficult to read if they get soiled.

Equipment Necessary -

Ear Tag Applicator Cloth Marking Fluid Hog Snare Antiseptic

<u>Procedures</u>

1. Select tag style and size, contrasting ink and tag colors.
2. Select a numbering system for the ear tags.
3. Select pre-numbered or blank tags. Pre-numbered tags are more convenient, but not as adaptable to your "system" as the blank tags can be. If you choose the blank tags, number the plastic tags with marking pens recommended by the tag manufacturer. Number the tags with large numbers along their bottoms so that they can be seen from a distance when hair grows in the ear. Soak the tag and button in antiseptic prior to application.
4. Insert the ear tag into the appropriate applicator. Each tag manufacturer has an applicator designed specifically for its type of tag. Two-piece tags require that the male portion of the tag be slid over a pin and the female portion inserted into a clip. Be sure to follow the manufacturer's directions when inserting the tag into the applicator. When using two part tags make sure that the male portion of the tag lines up with the female portion of the tag.
5. Select the ear to be tagged and the tagging site on the ear. The site selected will vary with the style of tag selected. Two-piece tags should be placed between the cartilage ribs or below the ribs approximately halfway between the base and tip of the ear. Since the male part is the piercing part, it is easier to locate exactly where you want to place the tag if the male part of the tag is placed in front of the ear.
6. Hold the ear with one hand while using the other hand to insert the ear tag. Pay particular attention to the proper ear tag site. The two-piece tag is applied with a pliers-type applicator by squeezing the handles until the ear tag snaps together.
7. Release the animal.

EAR NOTCHING

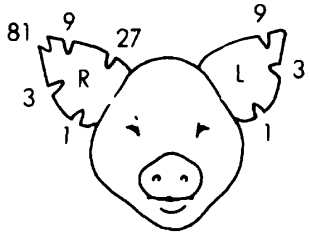
Advantages - Permanent; Can be read from a distance.

Disadvantage – May disfigure the animal; requires training (math skills) to read.

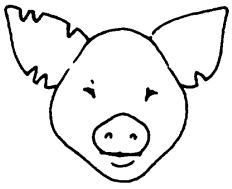
Equipment Necessary -
Ear Notcher Hog Snare Disinfectant Cloth Farrowing Records.

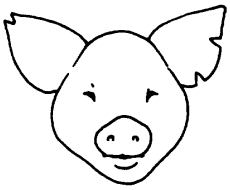
Procedure –

1. Separate the litter of newborn pigs from the sow.
2. Separate pigs by sex if your ear notch numbering system or record keeping system requires this. Notch gilts first. Replacement gilts then have low numbers that are easier to read later.
3. Count the pigs and record the pig numbers for this litter on a farrowing record form.
4. Of the management skills done on newborn pigs, ear notching should be done last because more bleeding occurs. Grasp the pig firmly but gently taking care not to choke him. Put your thumb on one side of the head or face and the other four fingers on the opposite side. The pig may resist the operation slightly. (The pig's right and left ears are on the pig's right and left side). The notching system used will determine the location of the litter number and the individual pig number. The right ear shows the litter number and the left ear shows the individual number. Use an ear notcher that is designed for newborn pigs. Notching too shallowly can result in errors in reading the numbers. If the notch is too deep, the pig may lose or more easily tear off part of the ear. Do not put notches too close together. Leave at least 1/4 inch between notches.
5. Grasp the disinfected ear notcher. Check the record form for the number of the pig to be notched. Notch the ear with the litter number first.
6. Proceed to notch the pig number in the other ear.
7. After notching, double check the notch to make sure it is correct.
8. Release the animal.



KEY


PIG NO. 47-1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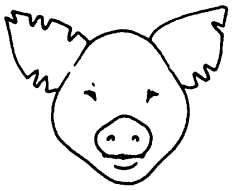
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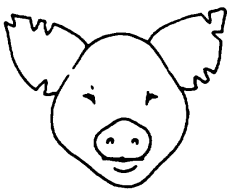
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Intermediates and Seniors

Recognizing Illness

How do you know if an animal is healthy or not? One of the keys is to understand what is normal so that you can recognize what is abnormal. Once this skill is learned, it becomes easier to recognize abnormal behavior. This is a skill that develops after working with and caring for livestock over time. Deviation from normal can be an early indicator that something may be wrong. This knowledge and close observation allows early intervention. Some of the characteristics that serve as the basis for assessing animal health include: *Normal Eating Behavior, Group (Herd) Behavior, Normal Vital Signs, Normal Fecal Pattern and Consistency, Sounds or Acoustical Communication, Normal Stance, Movement, Posture and Activity Patterns*

Keeping good records of feed and water intake, death loss, reproduction rate, and/or growth rate can help you notice if there is a health problem in your herd. Major changes over time may mean a disease is present. Managers should take time to observe animals daily and notice the animals' actions and reactions.

Monitoring health in farm animals that are mammals often includes assessing *vital signs* such as *body temperature, pulse rate and respiration rate*. The body's response to an infectious agent or some other problems often results in a change from normal in one or more of the vital signs. Recognizing these changes along with other symptoms may allow early identification and treatment of a problem before it gets out of hand. Body temperature is measured with a rectal thermometer while the animal is properly restrained and averages 102.0 (101.5-102.5) ˚F; info on taking temperature is located here: https://www.aasv.org/pedv/RecExhibitor.pdf. Pulse is the surging of blood through arteries and is usually defined as the heartbeats occurring in a minute (bpm). There is no place on the pig where pulse can be felt by finding an artery so the heart must be felt directly over the chest, or you may use a stethoscope to listen to the heart beat. Pulse rate averages 70 (60 – 80) bpm. Respiration rate changes with age and can be measured by simply counting the expansion and relaxation of the rib cage and abdominal wall (ranges 8 – 60 breaths/minute depending on age. Older pigs have lower rates). It is also helpful to examine the mucous membranes (inner eye lid, inside the nostrils, inner lips and gums) checking for a moist, pink appearance.

Preventing Illness

While all animal owners will likely experience losses due to illness and death, there are many things that can be done to limit illness and injury. There are many disease prevention practices that swine managers should follow. Some are listed below:

1. Purchase healthy animals.
2. Quarantine all newly acquired animals away from the rest of the herd for a minimum of thirty days to allow for pigs that have been exposed to a disease to show symptoms.
3. Isolate sick animals: give the correct medication at the correct dosage for the correct duration.
4. Work with your veterinarian to develop and follow an appropriate **herd health program** that involves the use of testing, vaccinations, and antiparasitic compounds
5. Provide a constant supply of clean, fresh water.
6. Provide for the safety of your animals with proper fencing, predator control, vigilant repair schedule, and preventing exposure to harmful chemicals.
7. Reduce stress by following proper handling procedures and maintaining good sanitation.
8. Provide appropriate nutrition for the age and stage of production of your herd.
9. Observe regularly in order to identify early signs of trouble.
10. Keep excellent records.

Intermediates and Seniors

Swine Health Supplies

Research the following items and practices to gain knowledge of their purpose in livestock production. Be prepared to identify these items and explain their use. Livestock equipment supply catalogs are a good study resource. Some have photographs on their web sites.

- Antiseptic
- Bleach
- Snare, crooks, canes
- Dewormer
- Disinfectant
- Dose syringe
- Ear notcher
- Ear tags
- Heat lamp
- Injectable iron
- Needles
- Paint stick
- Penicillin
- Scalpel
- Stomach tube
- Syringes
- Tattoo
- Thermometer
- Tincture of Iodine
- Vaccine

Administering Medications and Vaccinations

As a routine part of herd health management, livestock producers must administer medicine. This is considered a critical control point in the production chain. The best way to avoid problems associated with this critical control point is simply to follow the drug's label and package insert and to identify each animal that receives the drug at the time you administer it. This way you won't forget to identify the animal and risk sending an animal to slaughter with tissue residues.

It is important to **administer** drugs properly. There are two key elements: (1) route of **administration** (the way you get it into the animal), and (2) dosage (the amount you give to the animal and the interval at which you give it). There are seven ways drugs can be **administered**:

- Oral
- Intramuscular
- Intramammary
- Topical
- Subcutaneous
- Intravenous
- Intrauterine

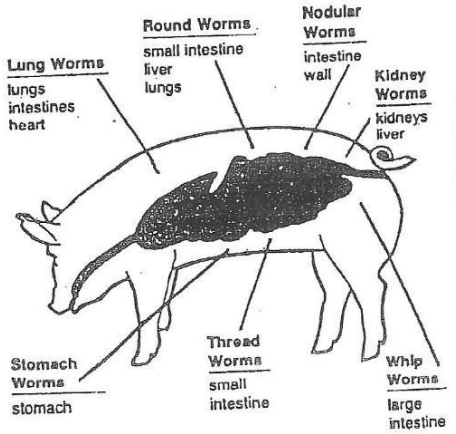
Each of these techniques may bring about undesirable behavioral responses so you must properly restrain the animal and protect yourself. Topical treatments may be dangerous to humans so you should wear gloves and follow all safety precautions of the manufacturer. Medications given by mouth may be fed, loaded into a balling gun, or mixed into a drench or a dose syringe. Care should be taken that the animal does not choke and fluids are not forced into the lungs.

Internal Parasites in Swine

Internal parasites are organisms which live in and feed on internal body tissue or fluid for at least a portion of their life cycle. One of the largest health concern for your hog will likely be controlling internal parasites. Roundworms (nematodes) are one of the major internal parasite concerns in hogs. The most common of all is the large roundworm, or ascarid. Other worms can inflict more damage, like nodular worms, whip worms, thread worms, kidney worms, stomach worms, and lung worms. Usually cestodes, like tapeworms, aren't as big a concern in hogs. Protozoal diseases, usually coccidiosis, can also be a problem in pigs. A healthy pig in a clean pen typically will not develop coccidiosis.

Keep the pig pen as clean as possible. This will help protect hogs from parasites and disease. Flooring can be an issue as pigs on concrete, hog slats, etc. are easier to prevent from getting worms than hogs kept on dirt. However, hogs raised on concrete can still get worms.

Worms and other internal parasites can rob the pig of weight gain and thriftiness. This illustration shows which specific organs are targeted by internal parasites in a pig.



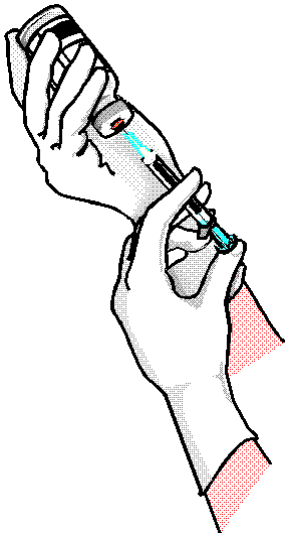
External Parasites in Swine

External parasites live outside the body and feed on the skin/hair/outside surface of the animal for at least one part of its life cycle. External parasites can make a hog extremely uncomfortable and affect weight gains. The hog louse is a common external parasite in swine. In extreme infestations one might observe damage in the form of sores or lesions on the hog's ears and neck. Infested hogs will also scratch and rub a lot. Some hogs will spend time rubbing and scratching that they should spend eating. This constant rubbing causes the skin to get rough and the coat to grow coarse. This makes the hog look bad for the show. Bathing a hog and keeping its pen clean will help control lice. Insecticides are available in extreme cases; check with your veterinarian or county Extension agent for advice.

Mange is another external problem in hogs. Mange is a skin infection caused by mites. Hogs that are housed in the same pen or near each other can pass the mange mites to one another. Insecticides are available to treat mange mites, and baths and a clean pen can help prevent mange mite infestations.

Source: https://edis.ifas.ufl.edu/publication/4H407.

How to Give an Injection



Vaccines and many medications must be given by injection. When learning to give an injection, some of you may find it easier to practice on an orange or banana because fruit cannot feel pain. The discomfort that an animal getting a shot feels is similar to the discomfort that you feel when you get shots from your doctor. When giving an injection to an orange or banana, we must remember that it is somewhat different than giving an injection to a live animal. The live animal may move around and the skin may be harder to get the needle through.

There are two main types of injections on the farm - *subcutaneous* (Sub-Q) or *intramuscular* (I.M.). The subcutaneous injection is given just under the skin and the intramuscular injection is given within the muscle tissue. On your orange, the peel is comparable to the skin on an animal, the orange sections are comparable to the muscles and the area in between these two is the comparable to the subcutaneous space.

To draw up an injection, wipe the vial top (rubber stopper) with an alcohol moistened cotton ball to disinfect it. Make certain the needle is securely attached to the syringe by inserting the plunger portion of the syringe into the open end of the syringe and twisting the needle onto the syringe tip. Remove the cap - do not touch the needle. Draw the plunger back to fill the syringe with an amount of air equal to the amount of vaccine you want to inject. Push the needle (with syringe) through the rubber stopper of vaccine and inject air - this prevents a vacuum from forming as you draw the vaccine out. Turn the vaccine vial (with needle/syringe still inserted) upside down, and draw out the desired amount of vaccine. Turn vial right-side up, remove needle/syringe, and cap needle until ready to use.

To give a subcutaneous injection:
Place the needle just under the skin by picking up a fold of skin from the elbow pocket or flank between your fingers and insert the needle just under the fold of skin. Push the plunger to expel the injection into the animal.

To give an intramuscular injection:
The needle must penetrate the muscle. Draw up the material as before. You may wish to rub the animal vigorously with your fingertips where you are going to give the shot to desensitize them to the stick and then quickly put the needle through the skin and into the muscle. After the needle is in the muscle, push the material into the animal with the plunger. When the syringe is empty, remove the needle and syringe from the animal making sure that the needle is still attached and replace the cap to prevent injury. Intramuscular injections should be given in the neck region. Injection site blemishes may include abscesses or scar tissue. Packers and processors have problems with injection sites in the hip area because they have to trim away product from this high value area. If given the option of subcutaneous or intramuscular, always choose subcutaneous.

Always use sterile equipment as dirty equipment could cause infections at the injection site. Remember to dispose of all needles and biological wastes properly. It is important that you consult your veterinarian before giving any shots and always READ THE LABEL and FOLLOW INSTRUCTIONS. Proper animal identification and record keeping are vital components of your swine management program. Remember to always WRITE IT DOWN.

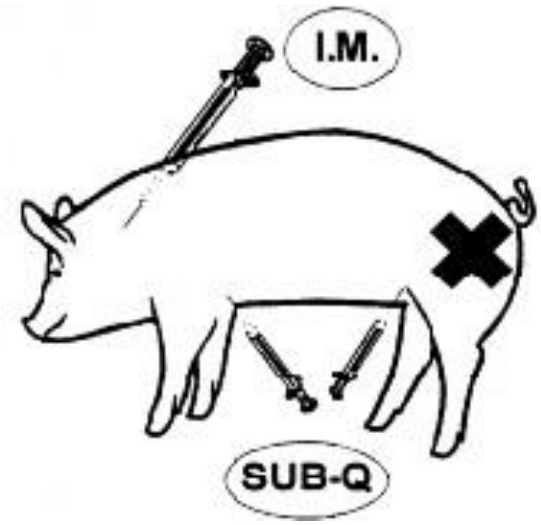
Intermediates and Seniors

Injection Site Management

Selection of appropriate injection sites is very important for the well being of the animal to avoid abscesses and nerve damage. Since most livestock eventually end up in the retail case, it is also important to choose injection sites wisely so there is no adverse effect on the products for sale. Problems and concerns for food safety fall under 3 areas: injection site management, residue avoidance (antibiotics, chemicals and feed contaminations) and foreign object avoidance (broken needles). The National Pork Producer's Council has developed the ***Pork Quality Assurance Plus® Standards*** for swine managers. For detailed information visit: http://www.pork.org/pqa-plus-certification/pqa-plus-frequently-asked-questions/.

There are five ways to give injectable medications to pigs:

- All products labeled for **intra-muscular (IM)** use shall be given in the neck just behind and below the ear but in front of the shoulder. All products cause tissue damage when injected IM. Never inject in the ham or loin. Use the proper size needle to ensure the medication is deposited in the muscle, not other tissues.
- Products labeled for **subcutaneous (SQ)** administration should be given SQ in the flank or elbow. Inject only into clean, dry areas. Use proper length needle and angle to avoid injecting into the muscle. This technique should be used only upon veterinary instruction and guidance as serious injury to the pig can occur.
- Tilt the pig's head upward and administer products labeled for **intranasal (IN)** using the recommended application tip, making sure the product reaches deep into the nasal passages.
- **Intraperitoneal (IP)** meaning in the abdominal cavity and **intravenous (IV)** meaning in the vein should be used only upon veterinary instruction and guidance as serious injury to the pig can occur.



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Needle Usage

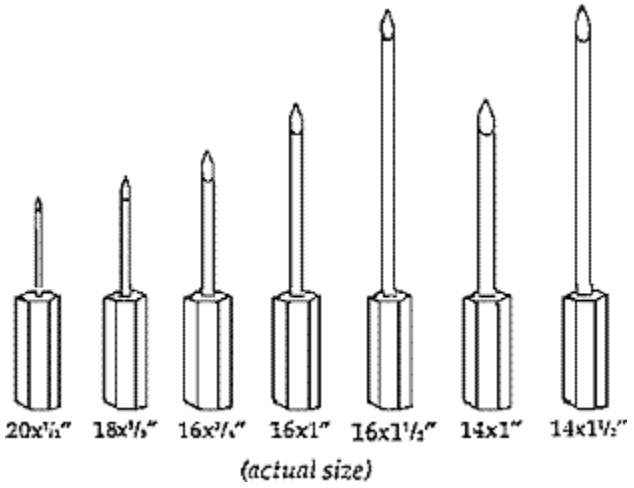
Intermediates and Seniors

Develop a Standard Operating Procedure (SOP) for needle usage to include: needle handling, injection technique, animal identification and packer notification procedures.
If a needle breaks off in an animal, report it to the packer.

Prevention:
Ensure proper animal restraint.
Select the proper site for injection
Select the proper size and length of needle based on the pig's age, injection site, and product.
Change the needle as needed to maintain cleanliness and sharpness.
Retrieve dropped needles.
Change bent needles – NEVER STRAIGHTEN A BENT NEEDLE.

The following are recommended needle sizes and lengths:

	Gauge	**Length**
Intramuscular Injection		
Baby Pigs	18 or 20	5/8" or 1/2"
Nursery	16 or 18	3/4" or 5/8"
Finisher	16	1"
Breeding Stock	14, 15,or 16	1" or 1 ½"
Subcutaneous		
Nursery	16 or 18	1/2"
Finisher	16	3/4"
Breeding Stock	14 or 16	1"



(actual size)

Estimating Body Weight

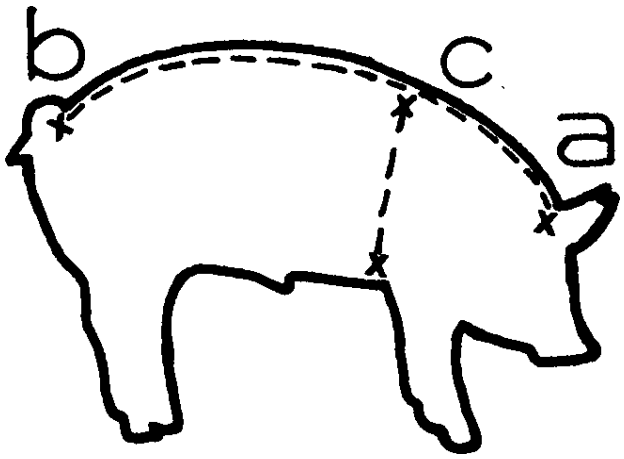
One challenge in administering medications is determining the proper dose. Many medications base the dose on body weight. If you do not have a scale available, you should have a method of estimating weight that is fairly accurate so you do not overdose or underdose your animal. Always follow label directions. Too much of a good thing is often very bad but underdosing of products like dewormers can speed up resistance by the parasites.

Step 1: Measure the circumference (heart girth) of the animal (C in diagram).

Step 2: Measure the length of body, from the point of the shoulder to the point of the rump (pinbone), in inches (distance A-B of figure below).

Step 3: Take the values obtained in steps 1 and 2 and apply the following formula to calculate body weight:

Heart girth^2 X body length ÷ 400 = weight in pounds



Calculating Dosages

Read medication labels carefully when calculating doses. Keep in mind 1ml = 1cc.

Example 1: A 75 pound pig needs to be treated for internal parasites at a rate of 2ml/100 lbs. How much product will you need to give this pig?

75lb X 2ml/100lb = 1.5ml

Example 2: A 100 pound sick animal requires an injection of antibiotic at a dosage rate of 2,500 units/pound. The antibiotic to be used contains 100,000 units/ml. How much antibiotic should the producer give to the animal?

Step 1: Calculate how many units a 100 pound animal needs.

2,500 units/lb X 100 lbs = 250,000 units

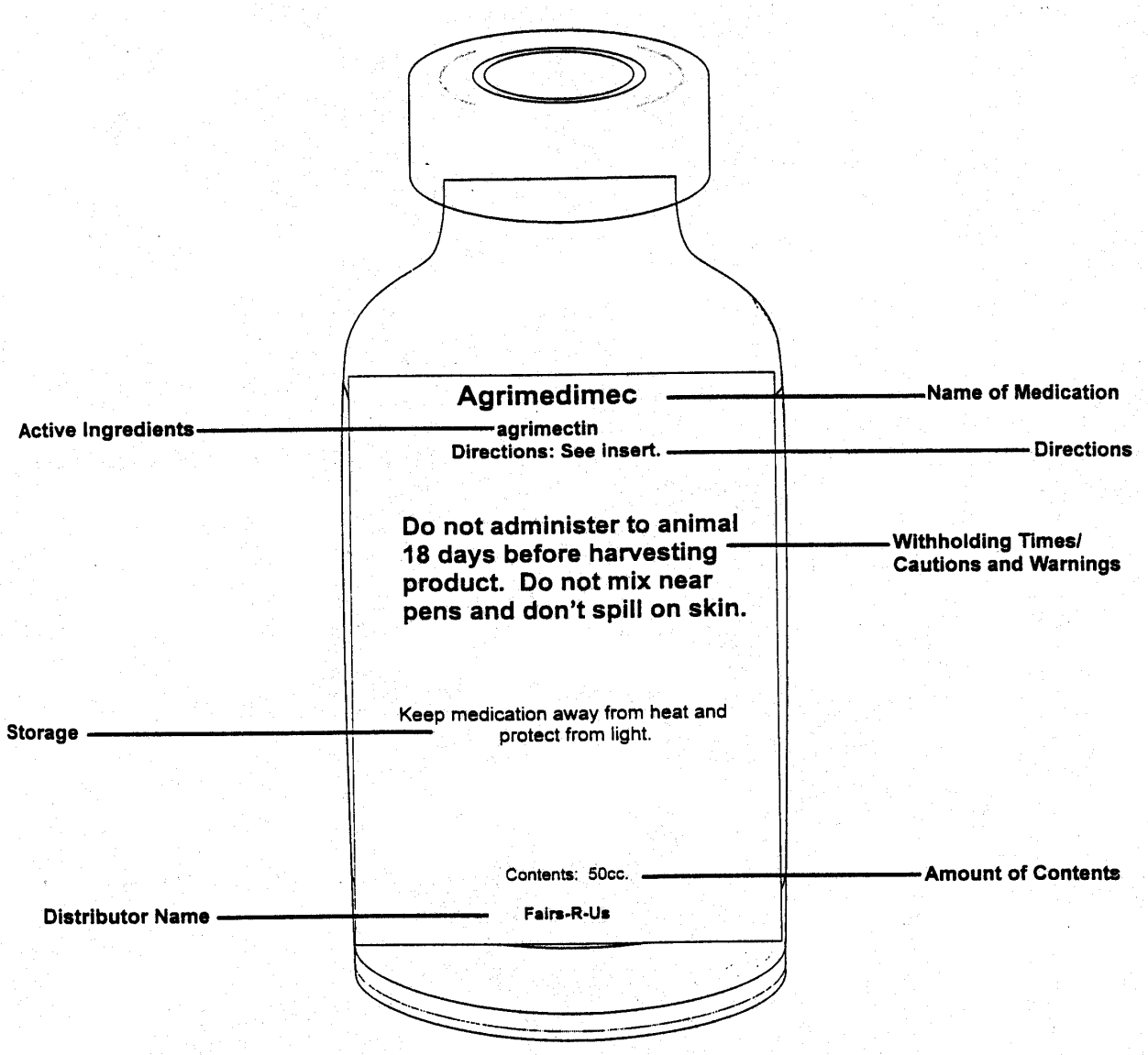
Step 2: Calculate how many mls. of the antibiotic would deliver the needed units.

250,000 units / 100,000 units/ml = 2.5 mls.

Seniors

Medication Labels

Manufacturers of pharmaceutical products follow strict guidelines in labeling their products. Understanding what is on the label and how to use the information is a critical skill for livestock health care management. Using the picture shown here, study the labels on the products you routinely use on your project animals.



The use of trade names in this publication is solely for the purpose of providing specific information. It is not a guarantee, warranty, or endorsement of the products named and does not signify that they are approved to the exclusion of others.

Medication Calculations

Seniors

Be prepared to read a medication label and calculate when to administer booster shots, withdrawal times, etc.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3 Gave Animal Antibiotic Shot	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18 Harvested Animal	19	20	21
22	23	24	25	26	27	28
29	30					

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

QUESTIONS:

Looking at the first calendar, if a medication that had a 32 day withdrawal time was administered on the 3rd, is it proper protocol for the animal to be harvested on the 18th? Why?

Using the calendar above, when could your animal be safely harvested if administered the antibiotic on the 3rd?

Swine Diseases

Like all livestock species, pigs are susceptible to a wide range of diseases and parasites. A well planned herd health program will help prevent these but knowing the potential threat and how to recognize them is useful in making timely decisions. Details on several diseases are outlined below. Several sources for learning about swine diseases are listed here:
http://www.thepigsite.com/diseaseinfo/
http://www.aphis.usda.gov/animal_health/animal_dis_spec/swine/

Name:	Colibacillosis
Cause:	Bacteria, toxin producing strain of *Escherichia coli*
Major Symptoms:	Listlessness, diarrhea dehydration and emaciation, and rough hair coat are noticeable with infected swine. Death often occurs 12-24 hours after the onset of diarrhea.
Prevention:	Ensure the pigs get an early feeding of colostrum. Good sanitary practices around new born pigs, as well as good sanitary conditions in the farrowing house. Ensure that the new born pigs are warm, clean, and dry. There are also vaccines for gilts and sows to ensure some antibodies in the colostrum.

Name:	Transmissible Gastroenteritis (TGE)
Cause:	Virus
Major Symptoms:	In baby pigs roughing of the hair coat, shivering, vomiting, refusal to nurse, and extreme thirst are all signs that TGE may be present.
Prevention:	Avoid exposure to dogs, foxes, bids, or feeder pigs, all of which can transmit this virus, especially during the farrowing season.

Name:	*Colstridium perfringens* Type C Enteritis
Common Name:	enterotoxemia, hemorrhagic enteritis, and bloody scours
Cause:	bacteria, *Colstridium perfringens*
Major Symptoms:	Occurring during the first week of life the disease begins with diarrhea that leads to watery, yellow scours which may contain blood this generally leads into bloody feces. The pig will usually die within a few hours of the diarrhea starting.
Prevention:	Injection of Type C antitoxin given to the newborn pig as soon after birth as possible.

Name:	Leptospirosis
Cause:	Bacteria, *Leptospira interrogons,* subclassification, “serovars” pomona
Major Symptoms:	Typically there are not any symptoms other than the infected sow will generally abort about 2-3 weeks before farrowing date. Confirmation of infection for the disease must be done in a laboratory.
Prevention:	Good sanitation, and herd management are effective in preventing an out break as well as vaccination of the entire herd.

Name:	Parvo virus
Cause:	Virus
Major Symptoms:	Gilts, sows, and boars are not affected by the parvo virus, only pigs. Sows pregnant with infected pigs will show signs of anestrus, false pregnancy, have small litters, or mummified feti. Sows may also have infrequent abortions.
Prevention:	Gilts and Sows should be vaccinated with a dead vaccine at 6 weeks and 3 weeks prior to breeding.

Name:	Swine influenza
Cause:	Virus, Type A influenza
Major Symptoms:	Symptoms that show signs of infection in the respiratory tract are, hard deep coughing, labored breathing, and a fever of 105 degrees F or higher. If the infection is in the reproduction tract then the sow may have small litters, abortion, or the embryos may be absorbed. Litters that survive farrowing, may have slow growth rates, or die during the suckling period, or after weaning.
Prevention:	There is not a vaccine so it is recommended that you infect and recover a gilt prior to breeding, by exposing her to an infected sow.

Name:	Erysipelas
Cause:	Bacteria, *Erysipelothrix rhusiopathiae*
Major Symptoms:	Light pink to dark purple diamond shaped splotches of discolored skin may appear on the infected swine. Temperature will increase to about 108 degrees F. Pregnant gilt or sow infected then they will abort.
Prevention:	Vaccinate sows and gilts before breeding, and then a booster is suggested 4 weeks prior to farrowing.

Name:	Porcine Reproductive and Respiratory Syndrome (PRRS)
Cause:	Virus
Major Symptoms:	In breeding females depression will occur along with a loss in appetite, and a sudden drastic increase in still born pigs. In nursery pigs labored, rapid breathing, poor performance, and other sicknesses will intensify. Finishing pigs infected with PRRS will go off their feed, have depression and a fever, and coughing. Infections in finishing pigs is less severe than nursery pigs.
Prevention:	Vaccination will not give 100% protection but will help to lessen the disease. The use of a strict All-in All-out (AIAO) program will also help to reduce spreading between herds. A strict program of quarantine for all new replacements will help to ensure that there is not an introduction of the disease.

Name:	Atrophic rhinitis
Cause:	Bacteria, *Bordetella bronchisep*
Major Symptoms:	Sneezing, sniffling, snorting, coughing, twisting their snouts, and a nasal infection.
Prevention:	Good sanitation, and proper living environment as well as watching for contact of animals outside of the herd.

Name:	Mycoplasma pneumonia
Cause:	bacteria *M. hyopneumoniae*
Major Symptoms:	Hacking cough. Mycoplasma adhere to cilia of the trachea and bronchial epithelium, causing them to slough which makes the pig prone to secondary infections.
Prevention:	Reduce stress, avoid overcrowding and temperature extremes, provide good sanitation, nutrition and ventilation, vaccinate

Name:	Circovirus
Cause:	Virus
Major Symptoms:	Wasting, slow growth, enlarged lymph nodes, jaundice, diarrhea, anemia.
Prevention:	Vaccinate, reduce stress, good sanitation

Name:	Pseudorabies
Cause:	Virus
Major Symptoms:	Signs of an outbreak include sudden death of pigs under 3 weeks of age. Fever, loss of appetite, labored breathing, trembling and incoordination of hind legs can be seen in an infected pig over the age of 3 weeks. In mature pigs there is a less server fever, loss of appetite, abortion and other reproductive issues.
Prevention:	Good sanitation of the environment and handlers aids in prevention of spreading the virus. Infected swine should be quarantined, after the infection has run its course they will be immune to the virus but should be treated like carriers of the virus.