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 Skillathon 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, 2025)
Body parts
Restraint, knot tying
Animal Identification (methods)

Intermediates (age 11-13 as of September 1, 2025)
all of the above plus...
Animal Identification (procedures)
Recognizing Illness
Preventing Illness
Health supplies
How to give an Injection, injection sites
Internal Parasites
External Parasites

Seniors (age 14 and over as of September 1, 2025)
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, blood, and/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, andthe animal becomes ill.

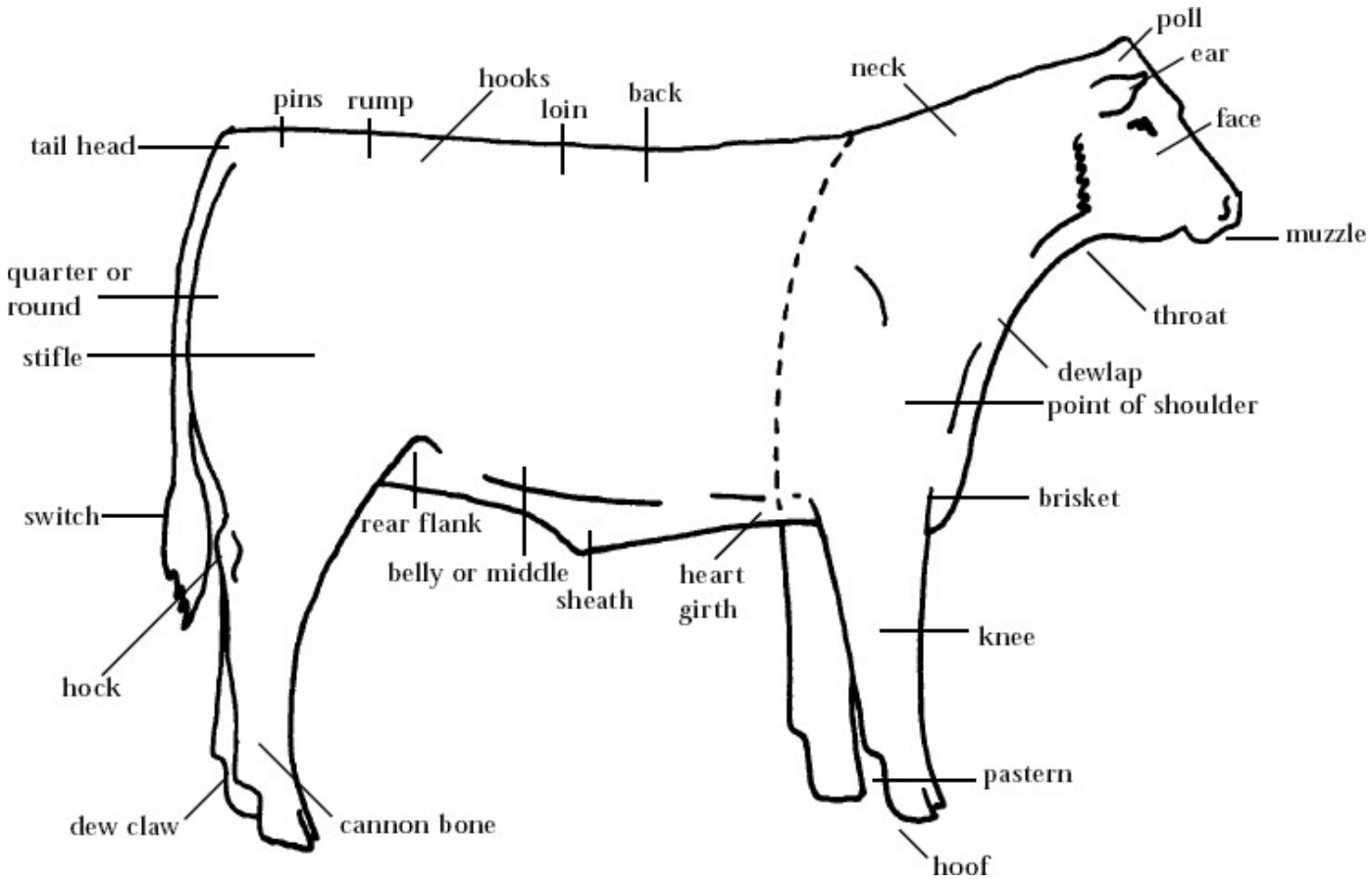
Health problems may also occur from *non-infectious* causes. Malnutrition, trauma/injury, cancer, genetic defects, and environmental hazards like toxins, poison or extreme weather conditions can cause illnesses. While these cannot be passed on to other animals, they can be stressors that lower the animal's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

APHIS

Juniors, Intermediates and Seniors

Beef Cattle 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.



Juniors, Intermediates, and Seniors

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 – pens, 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 selected method minimize 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.

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 cause rope burn. It makes the strongest lead rope and is excellent for slinging and total restraint. Regardless of the fiber, ropes should have a fairly wide diameter, soft-surface and free of knots. Webbing should be free of rust and dirt and have smooth surfaces. Ropes should be kept clean, dry and untangled.

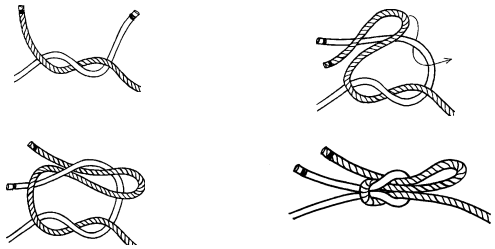
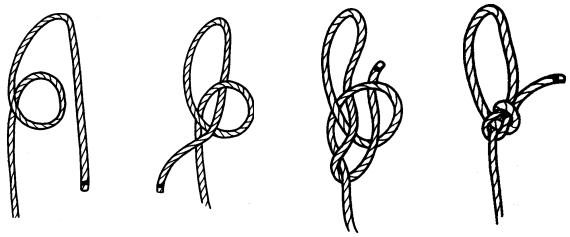
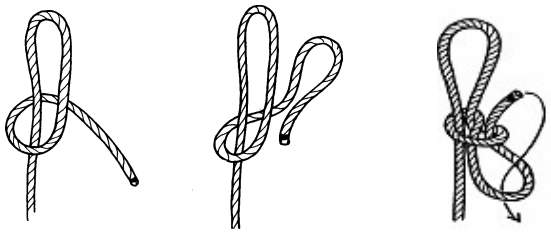
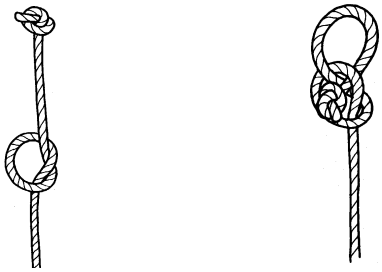
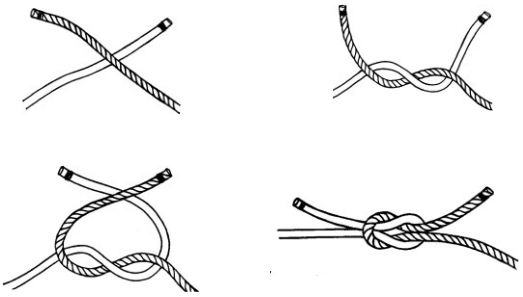
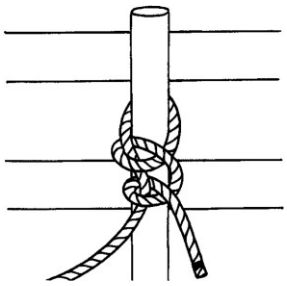
Knots for Livestock Handling

There are many circumstances in handling cattle that will require you to tie knots. Takethe 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 – the 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 is a convenient way to tie up theend of a rope.

Juniors, Intermediates, and Seniors

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. The Animal Disease Traceability website is located here: http://www.aphis.usda.gov/traceability/.

On January 1, 2014 the FDACS Division of Animal Industry adopted a Florida Cattle Identification Rule (5C-31): https://www.fdacs.gov/Agriculture-Industry/Livestock/Cattle-Bovine/Florida-Cattle-Identification.

Many options of permanent and temporary identification exist for cattle. All identification methods should be visible, easy to apply, unalterable, inexpensive and not cause harm or discomfort to the animal. Possible methods of cattle identification include: ear tattooing, ear tagging, hot branding, freeze branding, Electronic Identification Tags (EID)/Radio Frequency Identification Device (RFID) tags, sometimes also referred to as 840 tags (because each animal has a unique 16-digit number starting with a three-digit country of origin number and the USA is 840), or implanted transponders (electronic). Here is more information on EID/RFID tags: http://nwdistrict.ifas.ufl.edu/phag/2019/05/17/usda-switching-to-eid-tags-for-cattle-identification-in-2021/.

APHIS Traceability

Florida Cattle Identification Rule

EID/RFID

TATTOOING

Advantages - It is permanent and does not disfigure the animal.
Disadvantages - Animal must be confined in order to read tattoo. Tattoos are hard to read ondark-skinned animals.

Equipment Necessary -

- Squeeze Chute or Head Gate
- Tattooing Instrument
- Tattooing Numbers &/or Letters
- Tattooing Ink or Paste
- 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 top third of the ear just above the cartilage rib and equal distance from the base and the tip of the ear. 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 or for a brucellosis vaccination tattoo in the right ear of heifers.
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 inside the ear so that the needlepoint dies are above the ribs as described in step three. Squeeze the handles of the tattooing instrument together completely and quickly; then release them fully.
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 alcohol after each day of use.

Juniors, Intermediates, and Seniors

EAR TAGGING

Advantages - Economical; can be read from a distance; flexible.

Disadvantages - Plastics tend to become hard and brittle in cold weather; Easily lost; pre-numbered tags with block-type numbers are difficult to read if they get soiled.

Equipment Necessary -

Squeeze Chute or Head Gate
Antiseptic
Clothe
Ear Tag and Applicator
Marking Fluid

Procedures -

1. Select tag style and size.
2. Select contrasting ink and tag colors.
3. Select a numbering system for the ear tags.
4. The next decision will be whether to purchase pre-numbered or blank tags. Pre-numbered tags are more convenient, but not as adaptable to your "system" as the blank tags can be. Make this decision based upon the unique needs of your operation. If you choose the blank tags, number the plastic tags with marking fluid recommended by the tag manufacturer. Plastic tags should be numbered the day before they are inserted into the ear. Number the tags with large numbers along their bottoms so that they can be seen from a distance when hair grows in the ear.
5. 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.
6. Select the ear to be tagged.
7. Select 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, approximately halfway between the base and tip of the ear.
8. 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 plier-type applicator by squeezing the handles until the ear tag snaps together.
9. Treat the pierced ear around the tag with an antiseptic to prevent infection and fly irritation or soak the tag and button prior to application.
10. Release the animal.

Juniors, Intermediates, and Seniors

HOT BRANDING

Advantages - Easy to read; Unique to producer; Can be used on any color cattle; Permanent.

Disadvantages - Lowers the market value of the hide. It can also be very difficult to read, especially on haired cattle. Stressful for cattle.

Equipment Necessary -

- Branding Irons
- Small propane tank with burner or wood fire
- Squeeze Chute
- 30-gallon Drum

Procedure -

1. Assemble and prepare the necessary equipment. The iron used in hot branding should be iron or steel, and should be free of dirt and hair.
2. Heat the branding irons. The lowest cost method of heating branding irons is to use the hot coals of a wood fire. A second and more convenient way to heat irons is to use a small propane tank and burner. A third method is to use electric branding irons.
3. Restrain the animal in a squeeze chute. Most chutes are designed with hinged side bars that allow access to the hip and shoulder regions of the animal. One ortwo of these should be lowered to allow access.
4. Put on a pair of leather gloves to prevent burning your hands when handling hot irons.
5. Take the branding iron out of the fire or drum and check the number or character to be used to be sure it is the right one.
6. Check the irons for temperature. The amount of heat required for a good brand is difficult to describe. The color of the hot iron is a good indicator of the temperature. A black iron is too cold. A red-hot iron is too hot. Using this type of iron causes a large sore, which results in an indistinct or blotched brand. An iron that is the color of gray ashes is at the proper temperature to do a good job of branding.
7. Firmly press the ash gray colored branding iron against the hide **on the hip** and rock the handle slightly to vary the pressure and obtain uniform application of the entire character. The color of the branded hide should be light tan, or the color of a new saddle leather. If the cattle have a light hair coat and the iron temperature is correct, the time required to brand should only be 3 to 5 seconds. Don't brand wet animals as it will cause a blotched brand.
8. Apply one iron at a time. If two irons are applied at once by the same person, the chances of slipping and blotching the brand is increased greatly.
9. Place the iron back in the heat source as in step 2. Make sure the iron is clean.
10. Release the animal.

Juniors, Intermediates, and Seniors

FREEZE BRANDING

Advantages - Permanent; Limited Hide Damage.

Disadvantages - Takes more time to brand an animal, does not work on white cattle.

Equipment Necessary -

Copper or Copper alloy branders
Liquid Nitrogen or Dry IceStyrofoam Cooler
99% Isopropyl Alcohol
Electric Clippers
One Quart Squeeze Bottle
Stiff Bristle Brush
Clock (with second hand)

Procedure -

1. Prepare the branders. They should be clean and free of debris.
2. Cool the irons in a refrigerant. One method is to place the branders in liquid nitrogen. Place 3 to 4 inches of liquid nitrogen into a Styrofoam cooler or insulated bucket before the irons are added. Second method of cooling branders involves placing them in a mixture of 99% isopropyl alcohol and dry ice. Both methods require more refrigerant to cool the branders initially than to re-chill between animals.
3. Fill the quart squeeze bottle with 99% isopropyl alcohol.
4. Restrain the animal in a squeeze chute.
5. Clip the area to be branded as closely as possible. A stiff bristle brush can be used to remove dirt and debris.
6. The irons are ready for use when the refrigerant stops boiling.
7. Put on a pair of leather gloves, take the brander out of the refrigerant, and check the character to be used to be sure it is the right one.
8. Check the clock to ensure the proper brand application time.
9. Liberally apply 99% isopropyl alcohol from the squeeze bottle over the branding site. Soak the area but don't waste alcohol.
10. Apply the brander to the clipped, alcohol-soaked area and apply pressure to the brander by leaning on it. The minimum time of application for dark cattle is 30 seconds. For white cattle you must apply brander for approximately 2 ½ minutes to kill the hair follicles.
11. Place the brander back into the refrigerant and make sure that the refrigerant covers the iron. If it does not cover the irons, add more liquid.
12. Release the animal.

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 allow 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 each day to drive through the herd and notice the cattle's 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 101.5 (100.4 – 102.8) ˚F. Pulse is the surging of blood through arteries and is usually defined as the heartbeats occurring in a minute (bpm). It can be felt in the artery under the tail in cattle and averages 50 (40 – 70) bpm. In some animals you cannot feel the pulse, but you can feel the heart beating under the ribs, or you may use a stethoscope to listen to the heartbeat. Respiration rate can be measured by simply counting the expansion and relaxation of the rib cage and abdominal wall (averages 30 breaths/minute). 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. You can check for dehydration by pinching the skin on the side of the neck and releasing it. If the skin goes back into place quickly (less than 3 seconds), the animal has good skin pliability and is likely not dehydrated.

Intermediates and Seniors

Preventing Illness

While all animal owners will likely experience losses due to illness and death, there aremany things that can be done to limit illness and injury. There are many disease prevention practices that cattle 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 thirtydays to allow for cattle 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 repairschedule 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

Beef Cattle 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 ae a good study resource. Some have photographs on their web sites.

- Antiseptic
- AI equipment
- Bleach
- Balling gun
- Blood stopper
- Epsom salts
- Dewormer
- Emasculator/Elastrator
- Ear tags
- Disbudding iron/dehorner
- Disinfectant
- Dose syringe
- Drench bottle
- Fly tag
- Ear tag, tattoo, electronic implanter (ID)
- Hoof trimmers
- Mineral oil
- Needles
- Paint stick
- Penicillin
- Probiotic
- Stomach tube
- Syringes
- Thermometer
- 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 so that the animal does not choke, and fluids are not forced intothe lungs.

Intermediates and Seniors

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.

The two most common types of injections given on the farm are *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 an 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 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 (unless using modified live vaccine). 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. Push the needle (with syringe) through the rubber stopper of vaccine. 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 on the neck or shoulder 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 waste properly. Since animal species differ, the route of injections and the types of vaccines and medications needed are different. 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 livestock management program. Remember to always WRITE IT DOWN.

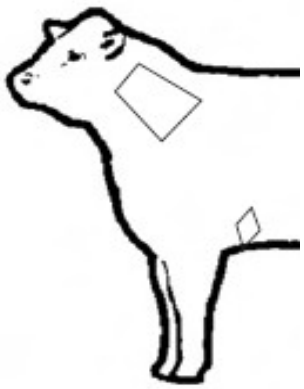
Injection Site Management

Intermediates and Seniors

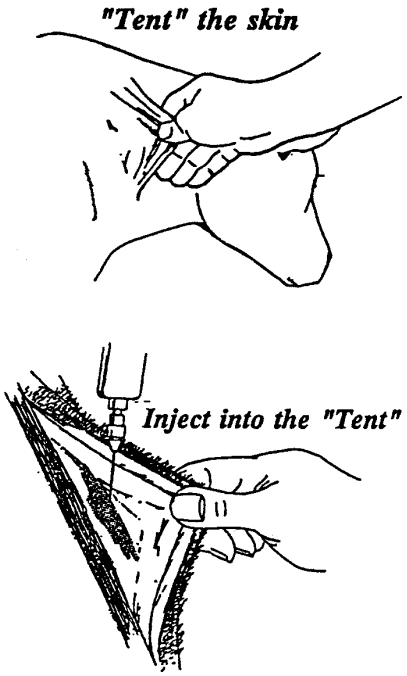
Selection of appropriate injection sites is very important for the well-being of the animal to avoid abscesses and nerve damage. Since most livestock eventually end up in the retail case, it is also important to choose injection sites wisely so there is no adverse effect on the products for sale. Problems 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 Cattlemen's Beef Association has developed the ***Beef Quality Assurance Standards*** for beef cattle managers: https://www.bqa.org/resources/manuals . For a training video visit: https://www.youtube.com/watch?v=4MwrabpLMWk. Also, you can download the handbook: Florida Beef Quality Producer Program at: http://edis.ifas.ufl.edu/an170

Relative to injections, keep in mind the following:

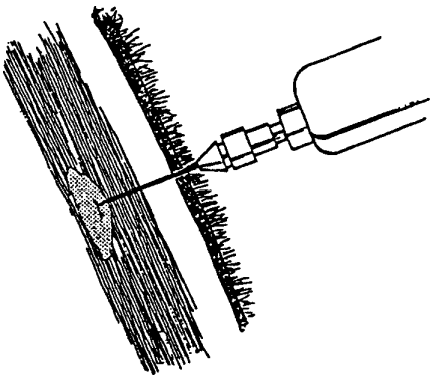
- Products labeled for subcutaneous (SQ) administration should be administered SQ in the neck region (ahead of the shoulders). *As a last resort*, in the elbow pocket is an acceptable SQ site.
- All products labeled for intra-muscular (IM) use shall be given in the neck region only (no exceptions, regardless of animal age).
- All products cause tissue damage when injected IM. Therefore, all IM useshould be avoided if possible.
- Products cleared for SQ, intravenous (IV), oral or topical administration are recommended.
- Products with low dosage rates are recommended and proper spacing should be followed (4 inches apart).
- No more than 10 cc of product is administered per IM injection site.
- Use a BQA processing map to record information each time cattle are treated



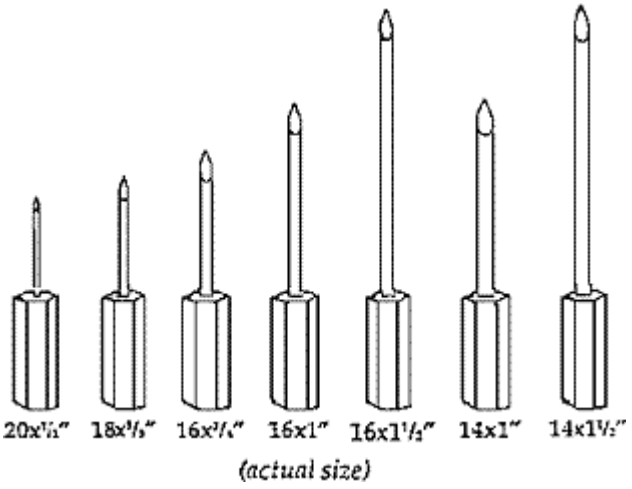
Giving Injections



Subcutaneous “Tent” Method



Intramuscular Technique



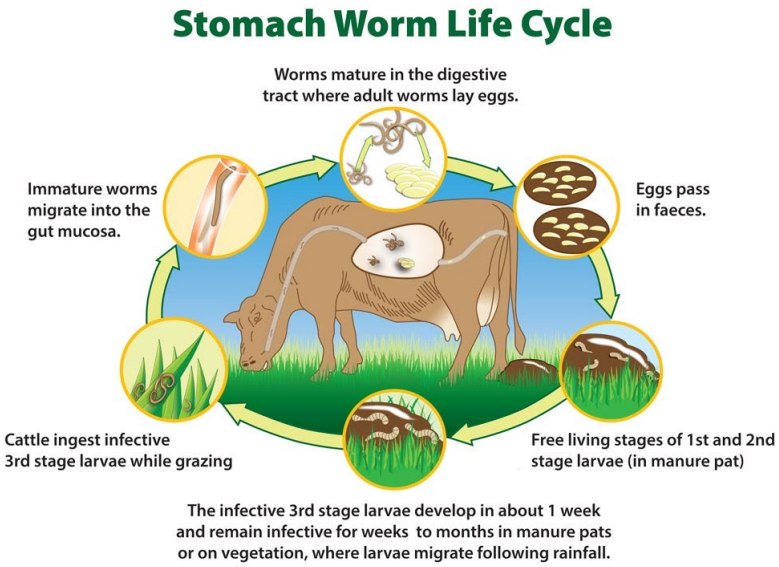
Investigate needle gauges to find the correct size for your project animal. (Gauge number increases as needle diameter decreases.)

Internal Parasites in Cattle

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 concerns for one's cattle will likely be controlling internal parasites. Worms are a common internal parasite in cattle. Roundworms such as the brown stomach worm, are the major internal parasite concerns in cattle. Lung worms and tape worms can also infect cattle. Protozoal diseases, usually coccidiosis, can also be a problem in cattle. A healthy animal in a clean pen or pasture typically will not develop coccidiosis. Liver flukes can also be an issue in cattle.

Keep pens or pastures as clean as possible. This will help protect animals from parasites and disease. Worms and other internal parasites can rob the animal of weight gain and thriftiness. Several anthelmintics (dewormers) are approved to use in cattle. As with any drug, follow label directions.

Symptoms of internal parasite infestation in cattle include weight loss, diarrhea, anemia, depression, listlessness, fast breathing, and even bottle jaw. To diagnose parasite infestation, most will analyze a fecal sample under a microscope. For more information read these Extension publications: https://agrilifeextension.tamu.edu/library/ranching/common-cattle-parasite/, https://extension.missouri.edu/publications/g2130, and https://dairy-cattle.extension.org/internal-parasites-in-beef-and-dairy-cattle/.



External Parasites in Cattle

External parasites live outside the body and feed on the skin/hair/skin/blood of the animal for at least one part of its life cycle. External parasites can make an animal extremely uncomfortable and affect weight gains. Black flies, horn flies, horse flies, deer flies, sand flies, stable flies, cattle grubs, lice, mites, mosquitos, and ticks are a common external parasite in cattle. Insecticides are available to treat external parasites in some cases, check with your veterinarian or county Extension agent for advice. For more information on external parasites read this publication: https://edis.ifas.ufl.edu/publication/IG130.

Seniors

Estimating Body Weight

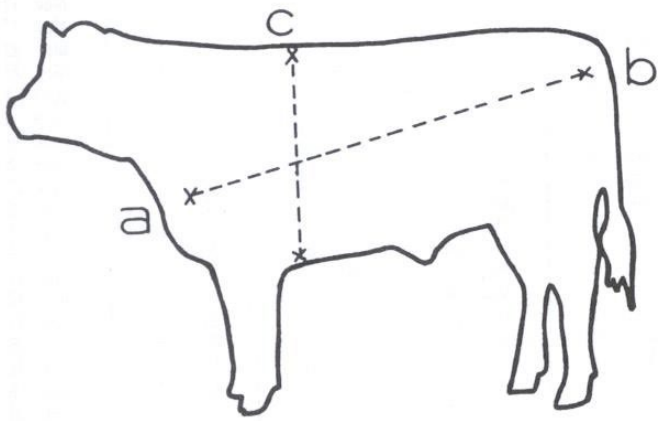
One challenge in administering medications is determining the proper dose. Many medications base the dose on the animal's body weight. If you do not have a scale available, you should havea method of estimating weight that is fairly accurate, so you do not overdose or underdose your animal. Always follow 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. There are weight tapes available that are fairly accurate, or you can measure your animal and calculate weight.

Step 1: Measure the circumference (heart girth) from a point slightly behind the shoulder blade, hence down over the foreribs and under the body, behind the elbow (distance C of figure below).

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 ÷ 300 = weight in pounds



Calculating Dosages

Read medication labels carefully when calculating doses.

Example 1: Your 500 pound weaned calf needs to be treated for internal parasites. The recommended dose is 1 ml/100 pounds body weight of dewormer. How much dewormer should you administer to your calf?

500lb X 1ml/100lb = 5ml

Example 2: A 300 pound sick animal requires an antibiotic injection at a dosage rate of 2,500 units/pound. The antibiotic to be used contains 150,000 units/ml. How much antibiotic should the producer give to the animal?

Step 1: Calculate how many units a 300 pound animal needs.

2,500 units/lb X 300 lbs = 750,000 units

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

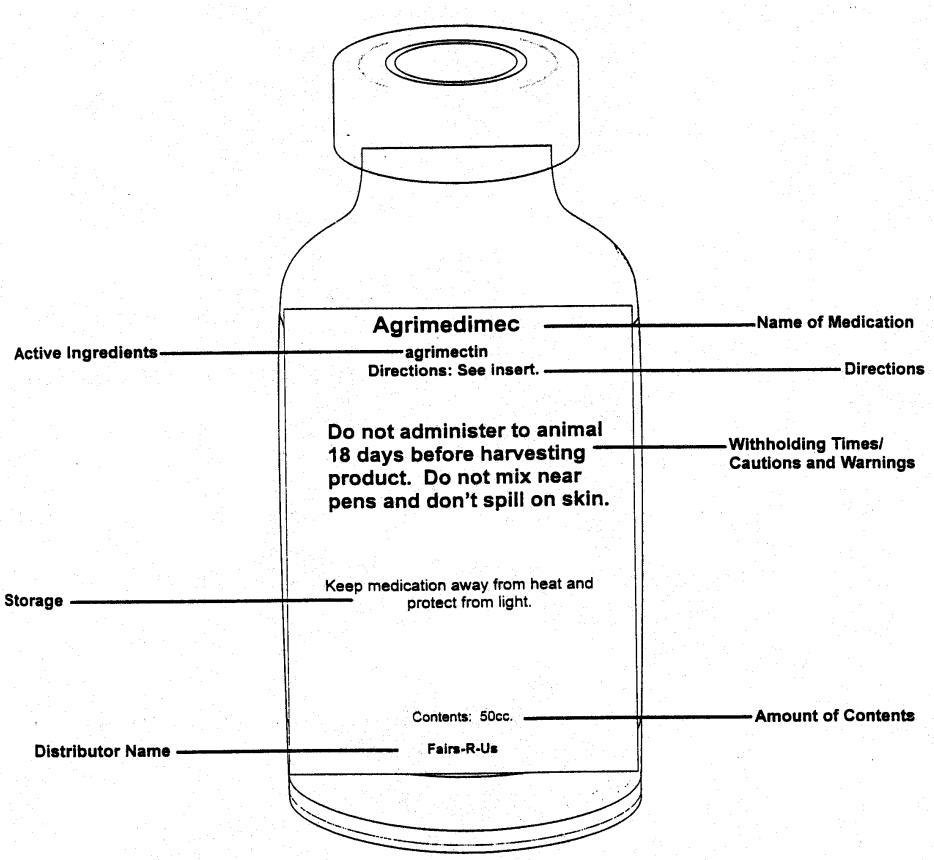
750,000 units / 150,000 units/ml = 5 mls.

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 safely be harvested if administered the antibiotic on the 3rd?

Cattle Diseases

Seniors

- Name: Brucella Abortus Disease
    - Common Name: Brucellosis
    - Cause: Bacteria, *Brucella abortus*
    - Major Symptoms: Abortion of first calf in last third of pregnancy and retained afterbirth. Someinfected cows show no signs, but calves may be born weak.
    - Prevention: Testing for the disease at stages in the cattle's life, such as on the farm, atthe stock market, and at the slaughter facilities. Once infected, animal should be culled. If more than one is infected, the whole herd should be quarantined. Good herd management and regular vaccination can help with prevention of outbreaks. Note: Florida is currently a "Brucellosis freestate".

- Name: Bovine Respiratory Synctial Virus
    - Common Name: BRSV
    - Cause: Virus
    - Major Symptoms: Temperatures of 103-105 degrees F, coughing, and some nasal discharge.In adult cattle that are susceptible, clinical signs are fewer and usually arenot noticed until the cattle begin collapsing and die within a few hours.
    - Prevention: Vaccination when an outbreak has occurred will only aid in slowing downthe spreading of the virus. If the herd is known to not be infected, then vaccination will help in preventing an outbreak.

- Name: Infectious Bovine Rhinotracheitis
    - Common Name: IBR, or Red Nose
    - Cause: Virus
    - Major Symptoms: Watery to yellow colored discharge from the nose and eyes along with coughing, increased respiration rate and fever. This infection usually follows or is included with other infections such as BVD and or BRSV. So,many of the vaccines come with a strain of the IBR virus to aid in prevention.
    - Prevention: Vaccination

- Name: Bovine Viral Diarrhea
    - Common Name: BVD or BVDV
    - Cause: Virus
    - Major Symptoms: Cattle infected with this disease do not usually show any symptoms, butthe immune system is weakened, and other diseases are more likely.
    - Prevention: Good herd management and good sanitation are the best ways to combatthis disease. Vaccination will help prevent outbreaks but will not stop the infection.

- Name: Parainfluenza 3
    - Common Name: PI3
    - Cause: Virus
    - Major Symptoms: Watery to yellow-colored discharge from nose and eyes, coughing, fever,and an increase in respiration rate.
    - Prevention: PI3 usually infects cattle that are already infected with other diseases such as IBR, BVD, or BRSV so a strand of PI3 is usually pre-mixed with another vaccine. Along with vaccination, good herd management is needed along with good sanitary practices to prevent an outbreak.

- Name: Leptospirosis Common Name:
    - Cause: Bacteria, Leptospira interrogons, subclassification, “serovars” hardjo
    - Major Symptoms: Infected cattle with a chronic or long-lasting infection will usually abort the fetus, have a stillborn, or give birth to a weak calf. In rare acute infections, often in calves, the signs are high fever, jaundice (yellowing of the skin), and death.
    - Prevention: Regular herd vaccinations twice a year will help along with the vaccination of any new replacement heifers or bulls. In chronic cases, once abortion has occurred it is too late to vaccinate.

- Name: Clostridial Disease
    - Common Name: Blackleg
    - Cause: Bacteria, Clostridium chauvoei
    - Major Symptoms: Depression, swelling of muscles or groups of muscles, skin may become discolored and crackle when touched. Adult cattle may show signs of lameness before any other signs appear. Many calves are found dead before any signs appear.
    - Prevention: Vaccination of the whole herd is important, not just for Clostridium chauvoei, but for all Clostridium bacteria. This is accomplished through vaccinating with 7 or 8 way Clostridium.

- Name: Bovine Spongiform Encephlopathy
    - Common Name: BSE, “Mad Cow Disease”
    - Cause: Prion, an abnormal form of a normal protein
    - Symptoms: Cattle tend to show signs of progressive degeneration of the nervous system and changes in temperament. Abnormal posture, incoordination and difficulty rising are also observed due to the degeneration of the nervous system. There is a decrease in milk production and a loss in body weight, but there is no loss of appetite.
    - Prevention: There is no cure for BSE, but there are some guidelines to help prevent an outbreak. Do not feed meat bone meal, or other feed stuff that contains parts from ruminants. Ensure good slaughter and processing procedures so as not to contaminate edible products. Though BSE is not contagious, monitoring the offspring of an infected cow is recommended, even though the transmission of the prion from cow to calf is low. Finally, the humane destruction of infected cattle to prevent any possible spreading due to contamination is required. Still rare in the United States.