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 additional aid to ongoing educational programs. Additional information is available on the websites that are listed as well as in the American Poultry Association Standard of Perfection and the American Bantam Standard.

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

Intermediates (age 11-13 as of September 1, 2025)
all of the above plus...
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
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.

APHIS

Disease is a departure from health. Disease may be caused by *infectious agents* like bacteria, viruses, fungi, 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 drainage, pus, feces, and/or blood. Some diseases remain viable long enough to be transferred by a third party. This is indirect contact. Contaminated feeders, waterers, shoes and clothing, farm equipment and tires, wild birds and animals, even humans handling or working in pens, can all transmit diseases. Although exposure toinfectious agents cannot be completely avoided, most of the time the animal will remain healthy, evenwith heavy exposure. On occasion, these agents overwhelm the body's immune system, and the animal becomes ill.

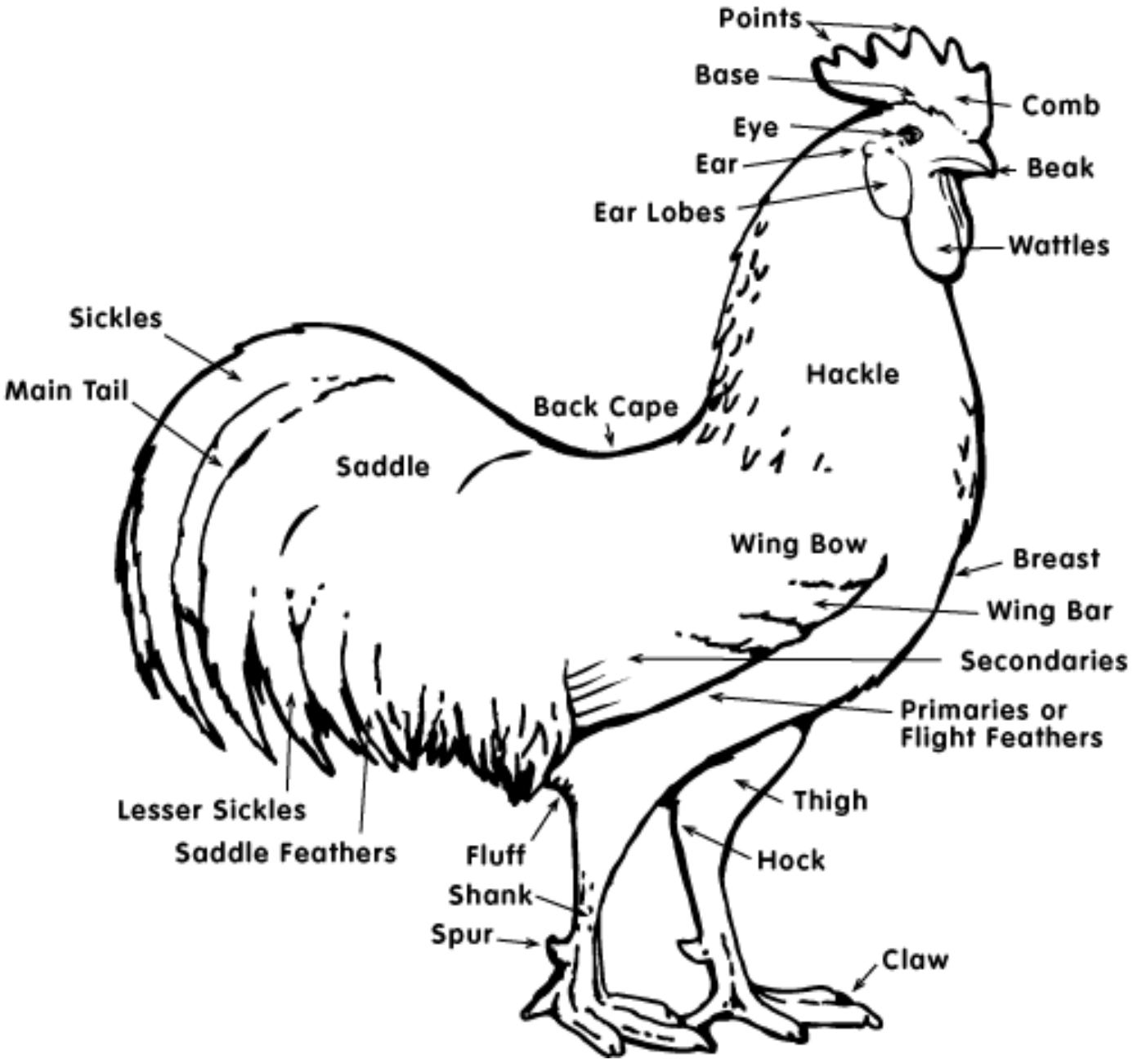
Health problems may also result from non-infectious causes. Malnutrition, trauma/injury, cancer, genetic defects, and environmental hazards like toxins, poison or extreme weather conditions can make animals sick. While these cannot be passed on to other animals, they can be stressors that lower the animal's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

How do you know if an animal is healthy or not? One of the keys is to understand what normal poultry behavior and movement look like. 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. The following are some of the characteristics that serve as the basis for assessing animal health:

- Eating Behavior
- Fecal Pattern and Consistency
- Stance, Movement, Posture and Activity Patterns
- Group (Herd or Flock) Behavior
- Sounds or Acoustical Communication
- Normal Vital Signs.

Chicken 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.



Restraint

In order to carry out routine animal health care practices, animals must be prevented from moving about freely. Methods of restraint for poultry are unlike other methods that are used in larger animals. Birds are generally confined in a small cage or held in one's hands to assess them. If the animal is flighty or very nervous, the small cage method is generally the best choice until they calm down enough to be handled. Most birds can be easily handled by resting their breast in the palm of your hand, the legs hanging between the fingers, and the head pointing toward your elbow.

When handling a bird for examination, it is important to use common sense, plan, and be safe. Gentle and quiet handling of the bird will limit the danger of injury to both the handler and the animal. Here is a video demonstrating how to properly catch and handle a chicken from a cage: https://www.youtube.com/watch?v=s1NtXdXGczQ.

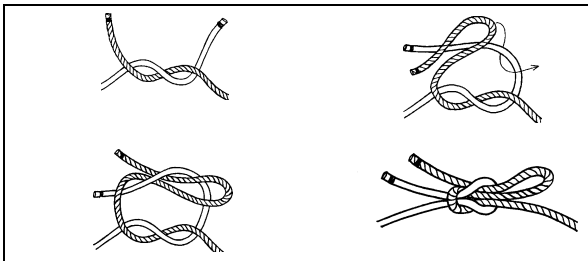
Ropes used in Restraint

Rope is one of the tools used most often by livestock producers. Though rope is rarely used to restrain poultry, knowledge of rope, knots, and hitches is an indispensable farm skill. There are many circumstances in animal agriculture 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.

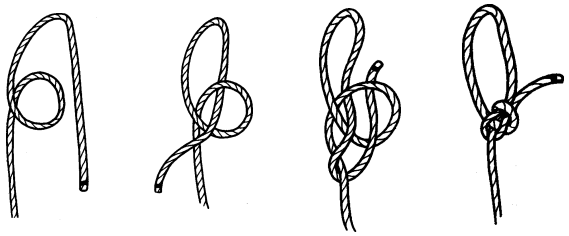
Knots join ropes together, attach ropes to a post or rail, or attach ropes to an animal. The quick-release knot is preferred for use with most animals.

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.

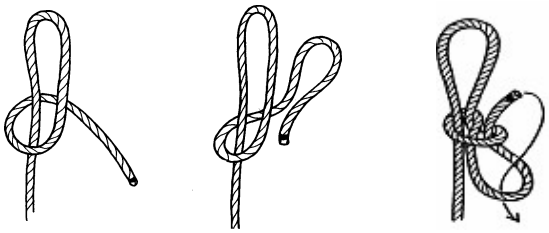
Splices are used to permanently join ropes to one another - individual strands from each rope are interwoven with strands from the other.



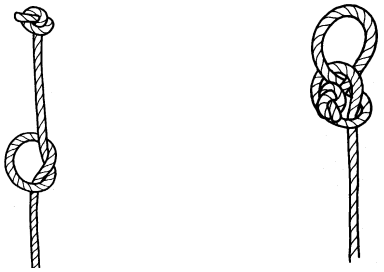
Reefer's Knot *(Quick-Release Square Knot)*
A good non-slip knot for tying ends of rope together and can easily be released. An advantage is that it can be tied under tension - an important feature for a knot used to restrain livestock.



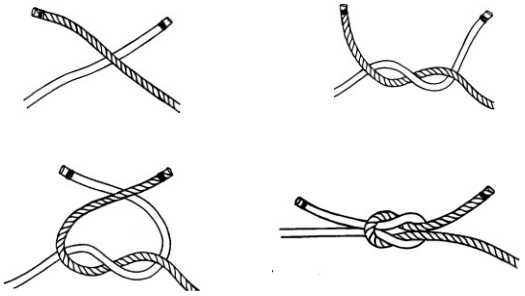
Bowline Knot
A non-slip knot used to form a loop that will not tighten or draw down when placed around an animal's body or a post.



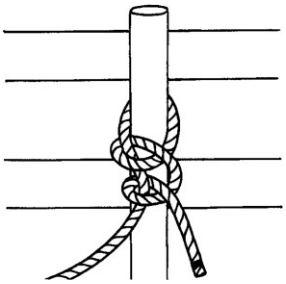
Quick-Release Knot
The standard way to tie an animal to a post. A variation of a slipknot that can be released very quickly, even when under tension. This knot should never be tied around the neck or body of an animal.



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 NAIS is a national program intended to identify specific animals, or in the case of poultry, specific flocks, in the United States and record their movement overtheir lifespan. This will help to ensure rapid disease containment and maximum protection of America's animals. For more details you may visit the following websites:
http://www.aphis.usda.gov/traceability/downloads/rule_movement_poultry.pdf

https://www.aphis.usda.gov/livestock-poultry-disease/traceability

Bands are a popular way to identify poultry, examples:
http://www.nationalband.com/nbtpoult.htm

Only a few options exist for identification of poultry. Whatever method is chosen, it should be visible, easy to apply, unalterable, inexpensive and not cause harm or discomfort to the animal. Possible methods of poultry identification include toe punching, wing banding and leg banding.

TOE PUNCHING

- Advantages - This is the simplest of the permanent identification methods.
- Disadvantages - The older the chick, the more likelihood for bleeding and other chicks to pick at the toes. Also, only 15 ID patterns are possible, which limits the amount of information thatcan be transmitted.
- Equipment Necessary - Toe Punch

Procedure

1. Toe punching should be done on chicks between hatching and 4-wks of age. Hold the chick with one hand, using your thumb and index finger to steady the leg and shank and expose the web between the toes for punching.
2. With your free hand, apply the toe punch to the web between the toes. Center it in the web. Make a clean-cut hole.
3. Remove the punched-out skin from the hole.
4. Using the web on each foot, in all possible combinations, 15 identification patterns are possible.

As the bird matures, the hole enlarges and becomes more visible. However, these holes often tend to close as they mature.
Example: https://www.youtube.com/watch?v=hiY-D0iaE3M

WING BANDING

Chicks

Advantages - Lightweight and can be stamped with any combination of letters or numbers and/or color coded, which enables a relatively large amount of information to be transmitted. Theletters and/or numbers are pre-stamped by the manufacturer. Bands should be attachedto chicks between hatching and 4-wks of age.

Disadvantages - Some chicks may catch their band on a pen, cage, or by one of their toes, and may be unable to free themselves. The chick may eventually free itself by tearing the band through its wing web. Also, bands that are improperly inserted in the wing web maydislodge and be lost.

Equipment Necessary – Win Bands, Pliers

Procedure

1. Pick up the chick with your left hand, with its head up and pointed toward your fingertips. Position its body in the palm of your hand, with its head up between your middle and ring fingers. Use your ring and little fingers to hold the body, with your little finger between its legs.Place your middle and index fingers over the chick's back and over the top of its wing so thatthe web is under your fingertips. Use your thumb and index fingers to grasp and spread thewing to expose the web.
2. Grasp the band with the rivet and bent end between the thumb and index finger of your free hand, with the pointed end free and facing up and away from the thumb, ready for insertion in the web.
3. With the pointed end, come up through the web from the underside, aiming the point between your index and middle fingers, which lie on top of the web.
4. Bring together the open ends of the bands so that the rivet goes into the hole in the pointed end. The thumb and index finger of the hand holding the chick can be used to press and hold the open ends together until the rivet is set.
5. Use the hand that inserted the band to pick up the banding pliers and flatten the head of the rivet so that it cannot slip out of the hole.
6. To help in finding the bands on the birds later on, band all chicks on the same wing.

Example: https://www.youtube.com/watch?v=4u_0VkPk5_A

Adults (wing-badges)

Procedure

1. One person holds the bird by its legs in one hand, with the palm of the other hand under its keel. Hold the bird out in front with its body upright and facing a badger at the height convenient for him/her to work on the wing.
2. The badger slips the clasp of the badge over the wing at the shoulder so that it can be read from the side.
3. Lock the ends of the clasp together.
4. Adjust the feathers of the wing so that they fit under the badge and clasp in such a manner that the numbers are not hidden.

Example: https://www.youtube.com/watch?v=wLQFGCYx6O8

LEG BANDING

Advantages - Lightweight and can be stamped with any combination of letters or numbers and/or color coded. The letters and/or numbers are pre-stamped by the manufacturer. Less likely to be lost than wing bands. Easily slipped around the shank. Fits loosely enough not to cut shank. If the correct size of band is used, the leg bands can be attached to birds of any size.

Disadvantages - The need for a two-person approach is recommended. The bands need to be replaced by larger ones as the birds grow.

Equipment Necessary -Leg Bands (there are various types), Leg Rings, Pliers

Procedure

1. Sit with the bird in your lap facing you, its legs stretched to its rear and its hock joints positioned above one knee.
2. Cross one of its legs over the other, bringing it down between your knees. Hold the shank and
3. foot of this leg with your knees.
4. The other leg remains stretched out across your knee and is held in place by the crossed- over leg.
5. Slip the spiral band around the shank as you would slip a key onto a spiral key ring.
6. With an aluminum band, wrap it around the shank and put the rivet of the one end in the hole of the other end, then compress with banding pliers just enough to cause the rivet to mushroom and form a seal.

Here is a video explaining all these identification methods from Stromberg Hatchery: https://www.youtube.com/watch?v=l7cxP9btwXk.

Recognizing Illness

The best way to notice if there is a health problem in your flock is to keep good records of feed and water intake, death loss, and egg production rate (for laying hens) or growth rate (for broilers). Major changes from day to day can mean there is disease in the flock. Caretakers should take time each day to walk through the flock and notice the birds' actions and reactions, how they are moving about, what sounds they are making, and if they are sneezing or coughing.

Monitoring health in farm animals that are mammals often includes assessing vital signs like body temperature, heart rate, and respiration rate. We do not typically monitor vital signs in chickens. Since birds are designed to fly, they are very different from land animal species in these signs. They have a relatively high body temperature with an average of 107.1 (105.0 – 109.4) ˚F and a very rapid heart rate of around average 275 (250-300) beats per minute. Chicken(s) normally take about 12-36 breaths per minute. Since chickens don't have sweat glands, respiration is important for getting rid of heat and moisture from the body. Therefore, chickens pant when they are hot.

Molting is often confused with symptoms of a disease. While the main purpose of feathers is protection from exposure to the elements they are often used as nesting building material. They also identify the breed, variety, and sex of a bird. Feathers are designed to be strong, lightweight, and long lived, yet at the same time, they are fragile and easily damaged or even destroyed. Once a year birds will lose their feathers and slowly replace them. During this time, a bird may exhibit symptoms that could be interpreted as the beginnings of a disease. Careful observation is needed to know and recognize this normal and essential process.

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.

1. Buy healthy birds.
2. Quarantine all newly acquired birds away from the flock for a minimum of 10 days to allow time for birds that have been exposed to a disease to show symptoms.
3. Isolate sick birds and give the correct medication at the correct dosage, for the correct length of time to not only help heal the sick animal but to also protect the other birds in the flock.
4. Use the correct feed for the age of the animal.
5. Provide a constant supply of fresh water. Daily checks should be made to ensure that the water is clean, fresh, and within easy reach of every animal.
6. Provide for the safety of your animal with proper pens, checking for predators, being vigilant about repairs, maintaining a proper temperature and atmosphere, and preventing exposure to pesticides and harmful chemicals.
7. Reduce stress.
8. Provide good sanitation.
9. Vaccinate and deworm according to your veterinarian's recommendations.
10. Keep excellent records.

Poultry Health Supplies

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

- Beak trimmer
- Catching hooks
- Dewormer
- Disinfectants/sanitizers
- Heat lamp
- Leg bands, wing bands
- Pliers
- Toenail clippers
- Toe punch
- Needles
- Probiotic
- Seven Dust
- Syringes
- Vaccine
- Wing Web Vaccinator

Examples: https://miller-mfg.com/collections/poultry/

Administering Medications and Vaccinations

As an owner/caretaker of poultry, one must be prepared to eliminate parasites and to administer medication and/or vaccines. When choosing how and where to give these medications and vaccines, your decision must be based on the following considerations: following the manufacturer's instructions, the safety of the administrator and reduction of stress on the birds.
Each type of medication, anti-parasitic, and vaccine that you use will come with directions from the manufacturer on how to administer them. The following are the most common methods: intramuscular (in the muscle), subcutaneous (under the skin), ocular (eye drops which flows through duct to respiratory tract), nasal (drops in the nostrils), oral (water or food supply), wing web (puncture the skin on the wing web with a double needle dipped in vaccine) aerosol (sprayed in air over birds), in-ovo (through the shell of an 18 day incubated egg) and powder (sprinkled on and under the feathers). Some of these methods are used frequently, (orally, wing web, powder) by small flock owners, while others, (in-ova) are generally reserved for larger industrial poultry compounds. Medications, anti-parasitic treatments, and vaccine labels will include withdrawal times for the consumption of the meat or eggs.

Keeping accurate records of treatments is crucial.

Because most eggs and broiler chickens end up utilized for human consumption, the poultry industry has established Quality Assurance standards for producers. 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).

USDA/APHIS along with state partners has established the National Poultry Improvement Plan (NPIP) to help ensure the health of breeding flocks. More information about this voluntary program is available here: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/nvap/NVAP-Reference-Guide/Poultry/National-Poultry-Improvement-Plan and here: http://poultryimprovement.org/ .

How to Give an Injection

Some medications for poultry must be given by injection. 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. To practice safely, start with an orange or banana—these fruits don't feel pain and can help you get used to handling a syringe. Think of the peel as the bird's skin, the fruit inside as muscle, and the space between as the area for subcutaneous (under the skin) injections.

Live animals are different, they may move, and their skin can be tougher. Always be calm, gentle, and prepared. The discomfort that an animal getting a shot feels is like the discomfort that you feel when you get shots from your doctor.

Drawing Up Medication

1) Clean the vial:
2) Wipe the rubber top with alcohol.
3) Attach the needle: Twist it securely onto the syringe.
4) Add air: Pull back the plunger to match the dose you need.
5) Insert needle into vial: Push in the air to prevent a vacuum.
6) Draw the medication: Turn the vial upside down and pull the plunger.
7) Cap the needle until you're ready to inject.

Subcutaneous (Sub-Q)

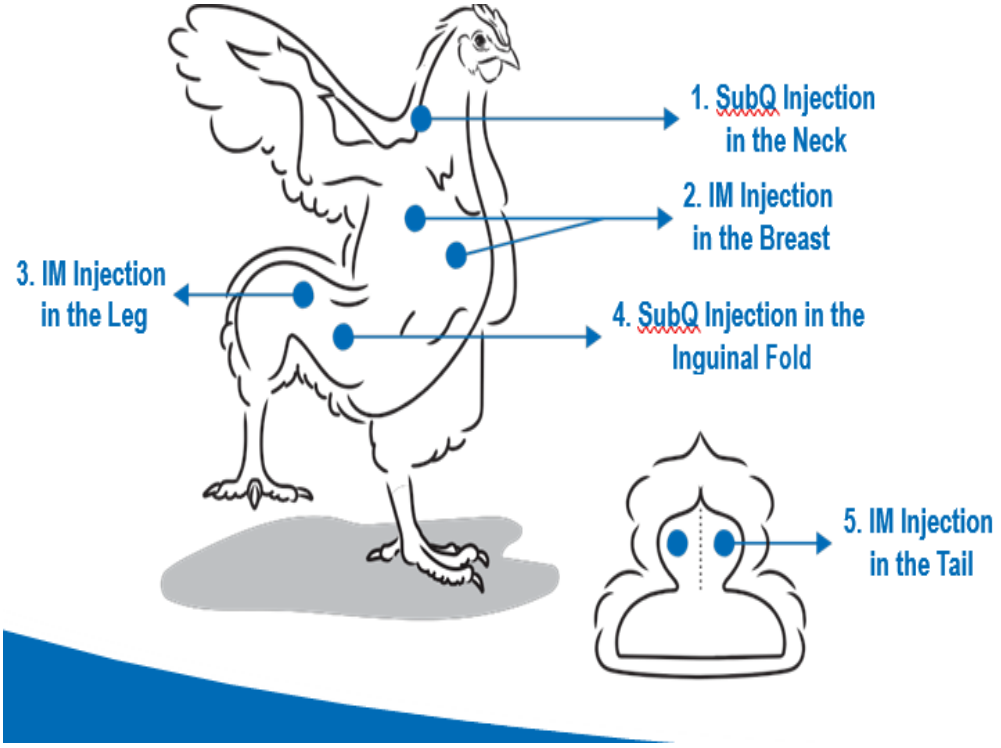
Lift a fold of skin (neck or leg fold). Insert the needle just under the skin.

Location: Featherless areas such as the inguinal region (inside of the thigh) or axillary region (under the wing).

Intramuscular (IM)

IM injections may leave blemishes—use Sub-Q when possible.

Location: Pectoral muscles (breast), on either side of the keel bone.



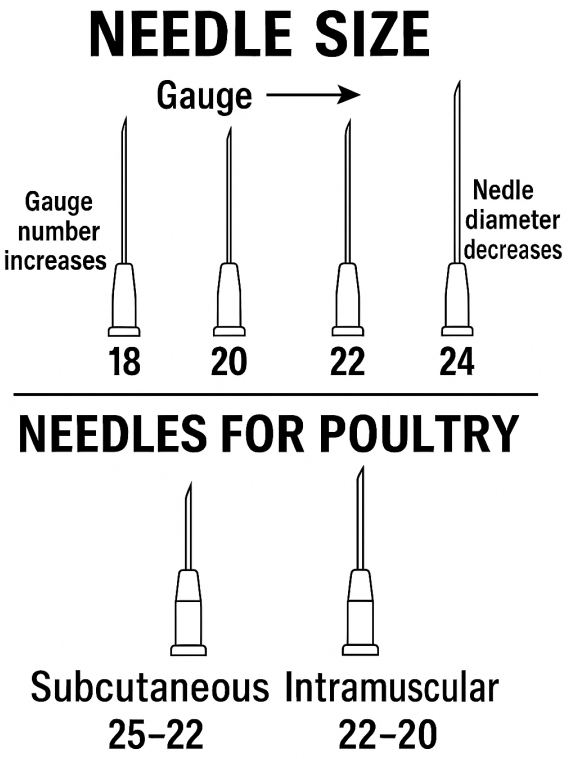
Safety First

- Always use sterile equipment to avoid infections.
- Dispose of needles and waste properly.
- Consult your veterinarian before giving any shots.
- Read labels carefully and follow instructions.
- Keep records of every treatment—write it down!

Needle Selection

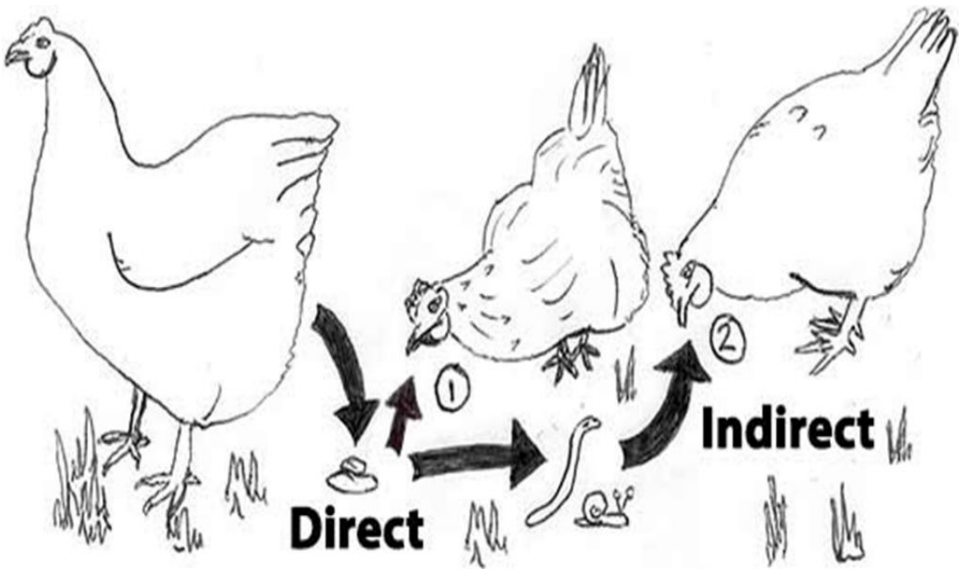
Choosing the correct needle size is important for safely and effectively giving injections. **Needle gauge** refers to the thickness of the needle—**the higher the gauge number, the thinner the needle**. **Needle length** also varies depending on the type of injection and the size of the bird.

For poultry, many caretakers use **pre-packaged diabetic syringes (1cc)** with fine needles, which are suitable for small birds and common medications. Always match the needle size to the bird's age, size, and the type of injection (subcutaneous or intramuscular) being given.



- **Smaller gauge and shorter length**: Poultry needles are typically finer and shorter than those used for larger livestock to accommodate the bird's small size and delicate tissue.
- **Common gauges**:
  - 22-to-25-gauge needles are most often used.
  - These are thinner and cause less tissue damage, ideal for small birds.
- **Common lengths**:
  - 3/8" to 5/8" for subcutaneous or intramuscular injections.
- Pre-packaged diabetic syringes (1cc) are popular for poultry due to their fine gauge and ease of use.

Internal Parasites in Poultry



Internal parasites live inside the bird and feed on its tissues or fluids. The most common types are **worms** (like roundworms and tapeworms) and **protozoa** (such as coccidia, which causes coccidiosis). Young birds are especially vulnerable, and some starter feeds include medication to help prevent this disease.

Parasites are mainly spread through **indirect contact**—birds can ingest parasite eggs or larvae from contaminated feeders, waterers, bedding, soil, or feces. Dirty equipment or human hands can also carry parasites. Keeping coops clean and practicing good biosecurity helps reduce the risk.

Signs of infestation include weight loss, diarrhea, anemia, depression, and labored breathing. Diagnosis is usually done by examining fecal samples under a microscope. Treatment options are limited, so always consult a veterinarian and follow medication labels carefully.

Learn more: UF Extension Publication on Poultry Parasites

External Parasites in Poultry

External parasites live on the bird's skin, feathers, or feed on its blood. Common types include **northern fowl mites**, **scaley leg mites**, **sticktight fleas**, **poultry lice**, **chicken mites**, **fowl ticks**, and **bed bugs**. These pests cause discomfort, stress, and reduced weight gain.

Parasites spread in two ways:

- **Direct transmission**: Parasites move from bird to bird through physical contact, especially in crowded pens or during grooming and nesting.
- **Indirect transmission**: Parasites are carried via contaminated bedding, cages, tools, clothing, or even wild birds and rodents that enter the coop.

Maintaining clean housing, practicing good biosecurity, and regularly inspecting birds are key to prevention.

Learn more: UF Extension Publication on External Parasites

Selected Major Poultry Diseases

Disease	Cause	Signs	Prevention	Treatment
Avian Influenza	Virus	Drop in egg production;sneezing; coughing; drowsiness; death	Vaccine; select eggs and poults from clean flocks	No effective drug available
Coccidiosis	Protozoa Coccidia	Weight loss; unthriftiness; palor; blood in droppings; lesions in intestinal wall	Use coccidiostat (kills coccidia organism)	Sulfa drugs in drinking water
Fowl Cholera	Bacteria	Fever; reduced feed intake;purplish head, greenish- yellow droppings; death	Sanitation; rodent control; isolation of new stock; vaccination	Sulfonamides and antibiotics
Fowl Pox	Virus	Small clear to yellow blisteron comb and wattles that soon scab over, decreasedegg production; reduced feed efficiency	Vaccination; Control mosquitoes	None
Infectious Bronchitis	Virus	Gasping; wheezing; nasal discharge; drop in egg production; soft-shelled eggs	Inactivated and live vaccines	None
Lymphoid Leukosis	Virus	Combs and wattles may beshriveled, pale, and scaly; enlarged, infected liver; lesions common in liver andkidneys.	Sanitation; development of resistant strains through breeding methods	None
Marek's disease	Herpes-virus	Sudden death; weight loss;paralysis; diarrhea	Vaccination of day old chicks	None
Newcastle Disease	Virus	Gasping, coughing, hoarsechirping; twisting of the neck; paralysis; sever dropin egg productions; soft- shelled eggs; death	Vaccination- Young Chicks only	None
Tuberculosis	Bacteria	Unthriftiness; decreased egg production; death	Sanitation; put disease-free birds in a clean house or on clean ground	None

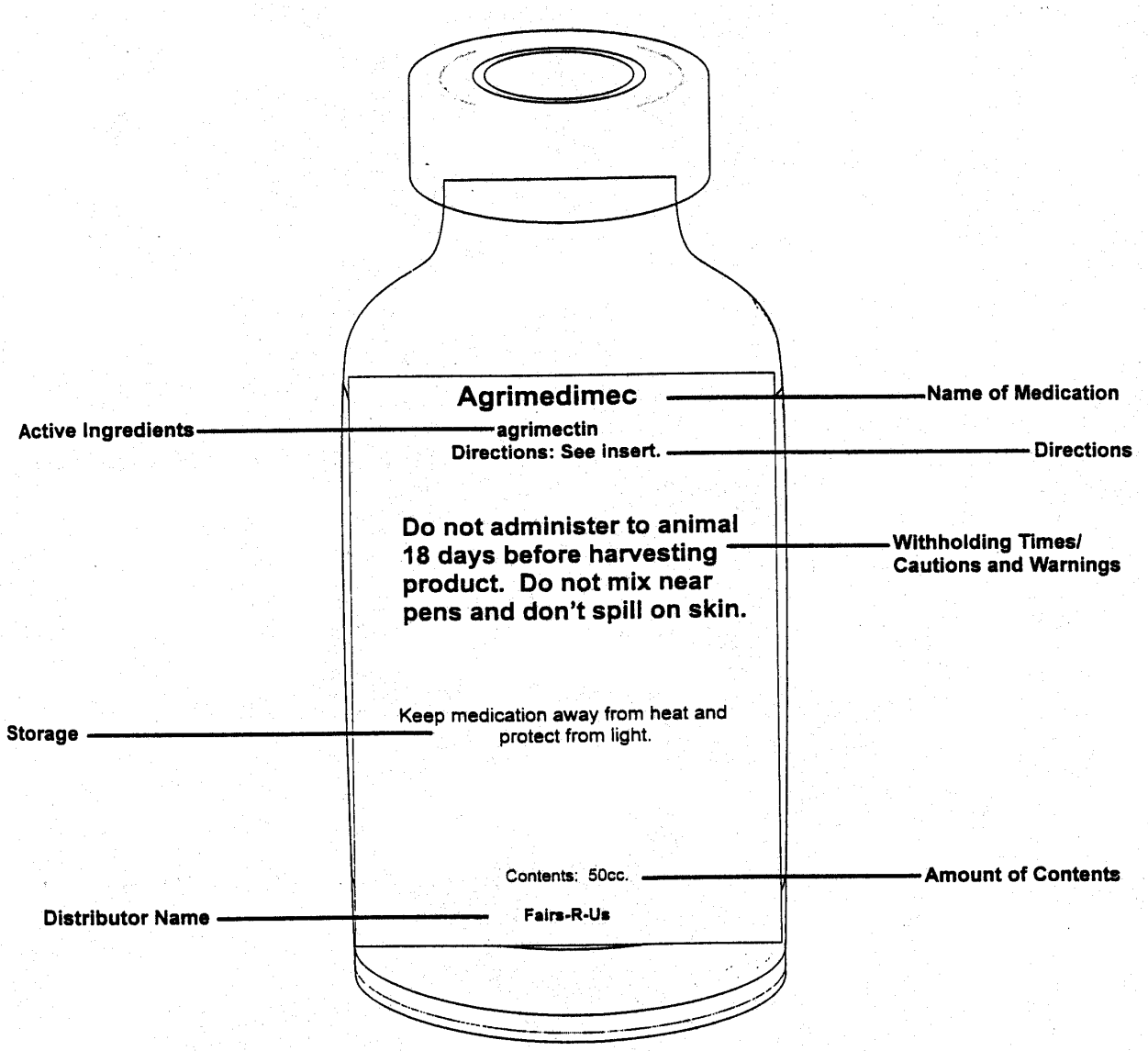
1. **The Poultry Site – Disease Guide**:
   Comprehensive list with causes, symptoms, and prevention

2. **Poultry Hub Australia**:
   Categorizes diseases by type and includes detailed explanations

3. [Diseases of Poultry – The Poultry Site]: A deeper dive into pathology and treatment

Medication Labels

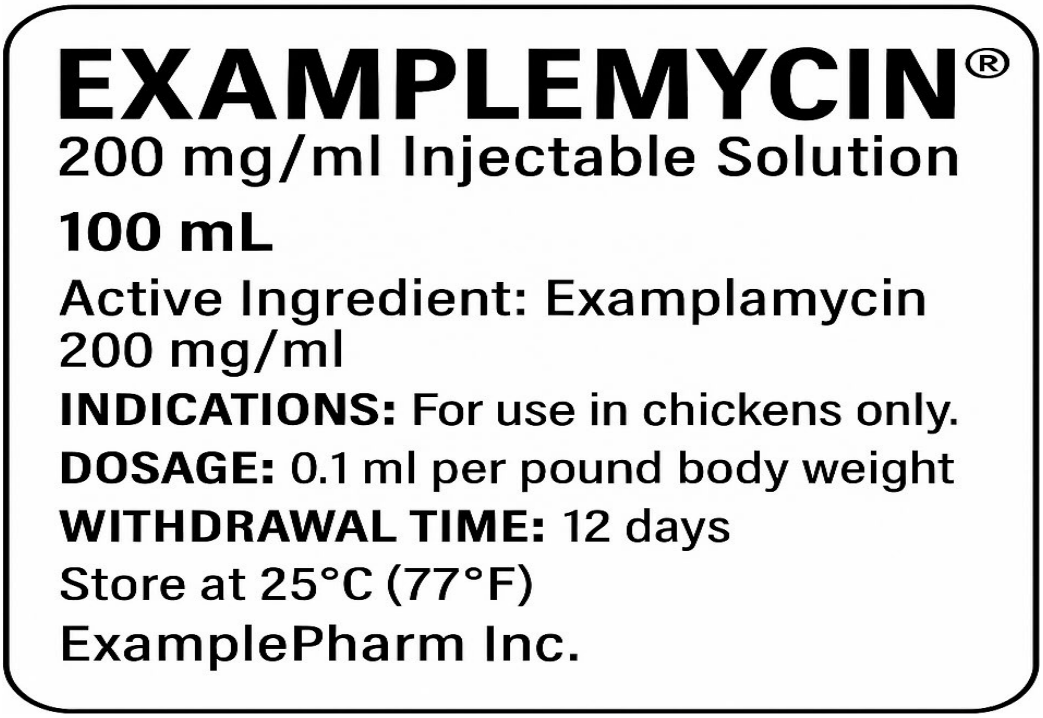
Manufacturers of pharmaceutical products follow strict guidelines in labeling their products. Understanding what is on the label and how to use the information is a critical skill for livestock health care management. Using the picture shown here, study the labels on the products you routinely use on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

Calculating Dosages

Proper dosing is critical for medications to be effective and to prevent problems from too much medication. Always read medication labels carefully when calculating doses.



Example: A sick 3-pound (Lbs.) laying hen (chicken) requires an antibiotic injection of EXAMPLEMYCIN at a dosage rate of 0.1 units/pound. The antibiotic to be used contains 100 units/milliliters (ml). How much antibiotic should the producer give to the animal?

Step 1: Calculate how many units a 3-pound animal needs.

$$\frac{\mathbf{0.1}\boldsymbol{units\ per\ Lbs}}{\mathbf{3}\ \boldsymbol{Lbs}} = \mathbf{0.3}\ \boldsymbol{units}$$

Step 2: Calculate how many milliliters (ml). of the antibiotic would deliver the units needed?

$$\frac{\mathbf{0.3}\boldsymbol{units}}{\mathbf{100}\boldsymbol{units\ per\ Ml}} = \mathbf{.003}\boldsymbol{ml}$$

Calculating Withdrawal Times

Drugs that are not eliminated from the chicken can accumulate in muscles and eggs. Drugs and their by-products in food are called residues and can be harmful to humans if they are consumed. Withdrawal periods times on labels tell how many days must pass before the meat or eggs are safe to eat. 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:

1) Using the calendar above, if you gave the chicken a shot of EXAMPLEMYCIN on the 3rd what is the withdrawal time and the safest date to consume the eggs from the chicken?

2) 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?

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