

Administration of medication to sheep

Tips For Using Antibiotics

Antibiotics are, of course, only one type of the medications that you may use to treat sheep. However, with recent concerns regarding the use of antibiotics for livestock production, it is important keep in mind how and when to use this type of medication. Using antibiotics responsibly helps maintain the effectiveness of these important drugs and helps producers save on medication costs. Some basic rules when using antibiotics are listed below:

1. As a producer, know what diseases are prevalent at particular production stages or seasons. Consult your veterinarian if you are uncertain about the diagnosis.
2. Recognize the limitations of antibiotics. Remember that some bacteria are only sensitive to certain antibiotics, and that antibiotics are not effective against diseases caused by viruses. An antibiotic will not remove scar tissue from lungs, and there is no advantage in treating some animals with persistent respiratory problems.
3. Take the sheep's temperature. If the temperature is normal (101-103°F), the cause of the disorder is not likely to be due to an infection and antibiotics will generally not be effective.
4. Monitor animals regularly and treat early. Infections are more difficult to treat once they are well established.
5. Follow label or veterinarian instructions regarding dosage and length of treatment. Do not cut the treatment time short even if the animal appears to have recovered. Although it may seem that you will save a dose or two of antibiotic by decreasing the treatment time, in the long run you could be creating even larger problems. The antibiotics may have only had time to curb the bacteria growth, but not completely eliminate the population. The remaining bacteria have a good chance of surviving and becoming resistant to the antibiotic.
6. Identify animals that have been treated. Ensure that everyone that works on the farm understands the identification system and is recording each time medication is administered.
7. Vary antibiotics if the one you are using is not effective after the first round of treatment. Maintain records regarding which medication has been effective in the past.
8. Take care of drugs and store according to label recommendations (e.g. refrigerate, store out of direct light etc.). Watch expiry dates and do not use outdated drugs. Medications that are old or not stored correctly may be less effective at eliminating all of the bacteria (possibly leading to resistance), and in some cases may become toxic to the animal you are treating.
9. Antibiotic residue in meat and milk is a major food safety concern. Maintain records regarding the withdrawal dates of all medications administered to animals. Double-check your records before shipping animals for slaughter. If you accidentally ship animals that have not met the withdrawal dates, notify the buyer as soon as possible.
- 10. Prevent problems. Do not rely on antibiotics to replace good management. Provide sheep with a dry, clean environment, ample feed and have a biosecurity plan in place.**

Injection Methods

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Do more good than harm.

Injection is the only method of administration for many medicines and vaccines. Although the purpose of an injection is to benefit your animal, each injection has the potential to do harm, besides pain or suffering. The injection could also create residues, scar tissue, or abscesses. Here are methods of giving vaccines and injectable treatments to avoid problems at injection sites and to maximize the benefits of your treatments.

Read the Label

Manufacturers guarantee their products for safety and efficacy when used according to label directions. Extensive research revealed the best site, route, and dosage for the product. The most common injectable routes are subcutaneous (SQ), intramuscular (IM), and intravenous (IV). Read the label, look for the following information, and follow the directions.

1. The **product name**, the **active ingredient** and the concentration appear on the label.
2. The **description** of its use describes a product and its purpose.
3. The **instructions for preparation** describe how to prepare a product for injection.
4. The **formulation** describes the contents of the package and tells you if the product is suitable for injection.
5. **Warning** statements show hazards to human health from handling the product, the withdrawal time, and restrictions on use.
6. The **withdrawal time** is the minimum time between the last treatment and the slaughter of the animal for food (or sale of the milk). This is the time needed to allow for residues to deplete to safe levels.
7. **Product usage** information appears on the side panels of a label.
8. The **precautions** statements alert you to **storage** and **safe handling** practices to maintain stability and potency.
9. The **indications** statements show the species, class of livestock, and the disease conditions for the product.
10. **Dosage and administration** statements show the directions for use (e.g. how much, how often, how long), and the route of administration (e.g. IM, SQ, IV), and the timing of treatment.
11. **Cautions and contraindications** statements warn about hazards to animal health and safety (e.g. known adverse reactions).
12. **Restricted uses** will appear on the labels of some products. (e.g. do not use in sheep).
13. **Read package insert for complete directions** , additional precautions or more complete instructions.
14. The **expiry date** is the date past which the product should not be used. It is valid only if the product has been properly stored.
15. The **lot number** describes the manufacturer's batch during production. It is used to trace the drug if necessary.

Keep your glasses handy for reading labels. The print is often small.

Bottles and Bottle Tops

1. Clean bottle tops with alcohol and cotton.
2. Place one sterile needle in the bottle top to fill the syringe and use a separate needle for injection.
3. Remove needles from all bottles prior to storage.

4. Write the date the bottle was opened on the label.

The Injection Site

1. Choose SQ when given a choice of IM or SQ on the product label.
2. Choose muscle tissue of lesser value to consumers (e.g. neck) for IM injections.
3. Give SQ injections in the neck in front of the shoulder or over the ribs behind the shoulder.
4. Inject through an area of clean dry skin.

Clean Equipment

1. Wash your hands before and after handling products.
2. Use sterile disposable needles and syringes.
3. If not using disposable equipment, clean and sterilize all equipment before and after use.
4. Use only hot water to rinse syringes before using modified live virus vaccines. Chemicals may destroy the live virus.
5. Use hot water and mild disinfectants to clean syringes for other injectable products.

Needles

1. Use a new, sterile, disposable needle for each animal.
2. If using the same needle for multiple injections, change the needle frequently (e.g. 10 animals) to ensure it is not bent or burred (slight bent at the point).
3. Choose the smallest needle size for the product to minimize tissue damage and reduce leakage at the injection site. Use 16 or 18 gauge needles for most injectable products (20 for lambs).
4. Choose the correct length needle, 1 inch for IM and 0.5 inch or less for SQ sheep.

Restraint

Restrain the animal to prevent injury to yourself or the animal, and to prevent needles from breaking off in tissue.

Volume of Injectable Product

1. Inject quantities no greater than recommended on the label (for one dose).
2. Split large volumes into smaller amounts and inject in different locations (e.g. opposite side of the neck). For IM injections, inject no more than 10 ml per site. For SQ injections, inject only 20 ml per site.

Multiple Injections

1. Choose different body locations (e.g. opposite sides of the neck) when repeating injections over a number of days.
2. Place repeat injections about 4 inches from a previous injection site.

Needle and Syringe Techniques

1. Eject air from the syringe before injecting the product.
2. After inserting the needle, check that it is not in a blood vessel when injecting IM or SQ. Pull back on the plunger and observe for blood. If blood appears, remove the needle and put it in a slightly different location.

3. Give SQ injections into a tent of skin. Lift a fold of skin and insert the needle through the skin into the tented space. The needle enters the skin at an angle of 30 to 45 degrees to the body. Use a 0.5 to 1 inch long needle.
4. Give IM injections deep into a muscle. Your needle must be long enough to penetrate skin, subcutaneous tissue and fat to reach the muscle. The needle enters at a 90 degree angle to the body. An 1 inch needle will suffice.
5. For IV injections, get advice and training from your veterinarian. Consider enrolling in a Livestock Medicine course (see pamphlet in this chapter)

Mixing Products

1. Do not combine vaccines or products unless the label clearly states to do so. Mixing inactivates products through changes in pH, alterations to chemical composition, or precipitation out of solution.
2. Do gently shake or agitate products to ensure that they stay in proper suspension in the bottle. Some products settle out and you need to invert and gently shake the bottles before and during use.

Adverse Reactions

Injecting medicines into sites other than the one recommended on the product label can lead to adverse reactions.

Examples include:

1. delayed absorption of the drug, achieving lower than therapeutic levels, and less-effective treatment
2. delayed absorption of the drug and extended withdrawal times due to residues from pooling of the product in tissue;
3. moderate to severe tissue reaction with pain, swelling, interruption of blood supply and delayed absorption of the product, or formation of scar tissue and excessive trim at slaughter; or
4. allergic reactions, shock, or death.

Records

1. Keep records of injections given to your herd or to individuals. (See Chapter 4 for a sample record)
2. Record the animal identification, date, product name, dosage given, the route, the site, and the withdrawal time.
3. Ask your veterinarian for written instructions when medications are being dispensed.
4. Save the box tops or labels with product names, lot numbers and expiry dates.
5. Keep a package insert for reference.

For further information, please contact your local veterinarian.

Injecting Medication:

The follow table is intended to give a brief overview of different injections methods. If you are uncertain how to proceed, contact your veterinarian.

Route	How to administer	When to use	Tips and precautions
Subcutaneous Injections (SC) (under the skin)	<ul style="list-style-type: none"> • follow instructions above for preparing the dose • SC injections are given by lifting up (tenting) the skin under front legs or on the neck and insert needle underneath the skin (into the ‘tent’) • insert the needle at an angle, rather than straight across (may go through the other side of the skin fold) or straight down (may hit the muscle) 	<ul style="list-style-type: none"> • if both IM and SC are listed on the label, always use SC • many vaccines can be given this way 	<ul style="list-style-type: none"> • using a large gauge needle will prevent loss of medication after injection (hole is smaller) • particularly with large doses there may be a lump at injection site, this not a generally problem and will disperse. • on occasion, an abscess may form at site
Intramuscular Injections (IM) (into the muscle)	<ul style="list-style-type: none"> • when giving IM injections always inject into the neck muscles (avoid neck bones and shoulder blades). Do not inject into the hindquarters as this may result in having high priced cuts of meat condemned due to injection scars or abscesses • pull plunger of syringe back after inserting needle to make sure that the needle did not penetrate a blood vessel. Injecting many medications directly into the blood stream, can cause sudden death 	<ul style="list-style-type: none"> • only use this method if no alternative is listed on the label 	<ul style="list-style-type: none"> • avoid drugs that are extremely irritating to muscles
Intravenous Injections (IV) (into a vein)	<ul style="list-style-type: none"> • before attempting this method have someone familiar with the technique show you what to do • most often given in the jugular vein in the neck (in the groove of neck) • if you are right handed, use your left hand to ‘bridge’ vein (place light pressure across the vein to cause a slowing of the blood flow) • vein should bulge above your hand (direction of the animal’s head) • with a finger of your right hand, feel for the exact location of the vein (feels spongy and springy) • once you’ve located the vein, insert the needle (no syringe) at a shallow angle (see tips and precautions) • the needle should go in with little resistance and blood should flow readily from the open end of the needle • carefully attach the syringe and give the dose slowly to avoid shock 	<ul style="list-style-type: none"> • used in emergency situations (pregnancy toxemia, polio, etc.) when medication administered by other methods will not be absorbed quickly enough to save the animal 	<ul style="list-style-type: none"> • IV delivers medication to the animal’s system very quickly; this is good as it can save animals, but the results of incorrect dosing are also more immediate – be sure you have the correct dose and medication • it is suggested to attach the syringe after the needle is in the vein to help prevent accidentally inserting the dose into a major artery near the jugular. As arterial blood flows to the cells (including the brain), medication in the artery will generally kill an animal. By injecting the needle without the syringe attached you can assess the blood flow (arterial blood is bright red and will pulse strongly out of the needle; venous blood is darker in colour and tends to flow out of the needle at a steady rate).- If in doubt, do not give the dose.
Udder Infusion	<ul style="list-style-type: none"> • read label instructions • wash udder and teat and disinfect end of teat with alcohol • insert tip of tube or syringe into teat opening and deliver dose • massage udder after injection 	<ul style="list-style-type: none"> • localized treatment of mastitis 	<ul style="list-style-type: none"> • if you are using cattle preparations, be sure you use a small size needle to avoid injuring the ewe’s teat
Intraperitoneally (IP) (Abdominal)		<ul style="list-style-type: none"> • administration of glucose to lambs 	<ul style="list-style-type: none"> • do not attempt this method unless you have received instruction; adhesions, infections, and intestinal obstructions can occur

Oral Administration

Route	How to administer	When to use	Tips and precautions
Drench	<ul style="list-style-type: none"> • always use a proper drenching 'gun' • sheep should be standing • stand behind the sheep (if you do not have a chute or an assistant to hold the sheep, you may wish to back the sheep into a corner to prevent it from backing up as the dose is given) • place your free hand under the jaw and hold the head in a natural position, avoid pulling the head too far back or to the side. • inserted the nozzle of the gun into the side of the mouth over the tongue towards the throat; give the dose gently. 	<ul style="list-style-type: none"> • Used to administer individual doses of liquid medication (i.e. liquid dewormers) 	<ul style="list-style-type: none"> • check nozzles for rough edges that may cause damage to the back of the throat. • do not insert the nozzle to far into the throat. The trachea (windpipe) lays directly beneath the esophagus (leading to the digestive system). If the liquid is forced into the trachea, the sheep will inhale the drench.
Bolus	<ul style="list-style-type: none"> • insert the bolus gun (or balling gun) as given under "drenching" • ensure that the gun is far enough in the throat, and depress the handle of the gun 	<ul style="list-style-type: none"> • Used to administer individual doses of medication in pill form 	<ul style="list-style-type: none"> • be sure proper size boluses are used in sheep (big cattle pills could become stuck halfway down and cause choking and bloat).
Stomach Tubing (lambs)	<ul style="list-style-type: none"> • specially designed tubes are commercially available or any new, flexible (3/8 " diameter) tubing can be used with a 60 cc plastic syringe to deliver the milk. • lay the tube alongside the lamb and measure from the last rib to the mouth. Make a mark on the tube at this point with a piece of tape or a marker pen, and allow an extra foot of tubing past this point • hold the lamb on your lap and ensure that the lamb's head is upright (don't tube while the lamb is laying flat on it's side). • put your thumb in the mouth, between the teeth, and gently pry the mouth open. • insert the tube through the side of the mouth and feed it slowly into the mouth as the lamb swallows. Keep a finger in the mouth while the tube goes down to prevent the lamb from chewing it. Keep passing the tube until the mark on the tube is level with the mouth. • there may be a small amount of resistance as the tube passes into the throat, however, if the lamb struggles violently or if you can only pass the tube half way to your mark, the tube may have accidentally entered the trachea (windpipe). Pull the tube out and try again. • attach a syringe full of milk to the tube and slowly inject it (10-15 seconds). 	<ul style="list-style-type: none"> • Giving colostrum or electrolyte fluids to young lambs to weak to suckle 	<ul style="list-style-type: none"> • depending on the amount inhaled, the sheep may develop pneumonia or suffocate. • unless it is absolutely necessary, avoid stomach tubing lambs. When lambs suckle they activate a reflex that by-pass the rumen and leads the milk into the abomasum. Without this reflex the milk will end up in the rumen possibly cause digestive upset and preventing the antibodies in the colostrum from being properly absorbed.
Feed and water	<ul style="list-style-type: none"> • medicated feed can be purchased premixed from the feed mill. Feed at the recommended level • if mixing medication in feed or water on farm, always follow label instructions exactly • check mixing and feed/water distribution • if mixing or administration errors are made, contact your veterinarian 	<ul style="list-style-type: none"> • Mostly used as prophylactic (preventative) treatment of certain diseases (e.g. coccidiosis or shipping fever) 	<ul style="list-style-type: none"> • do not rely on this method if animals are off-feed • label bins with medicated feed to prevent mistakes in feeding • ensure there is adequate feeder space for all animals in the pen

Oral Administration - con't

Route	How to administer	When to use	Tips and precautions
Stomach tubing (adults)	<ul style="list-style-type: none">• hold sheep as with drenching• insert a speculum (stiff metal tube) into the throat (don't force it too far); speculum prevents the sheep from chewing on the hose• pass a pliable rubber hose (3/4" in diameter and 3 to 5 feet long) through the speculum into the rumen (as with tubing lambs, mark the approximate distance on the hose)• administer medication directly into the rumen	<ul style="list-style-type: none">• treating for bloat or other digestive upsets	<ul style="list-style-type: none">• as when stomach tubing lambs, do not force tube if there is undue resistance

Topical Medications

This type of medication can be placed directly on the skin for absorption into the system (i.e. deworming medications) or to treat localized infections (eye ointment, antibiotic creams etc.). If you use topical medications, particularly dewormers, ensure that the recommended withdrawal time have been met before allowing the animals to be shorn.

Figure 1: Lamb receiving IM injection.

