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.

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

Juniors (age 8-10 as of September 1, 2025)
Body parts & foot parts
Restraint, knot tying, cross tying

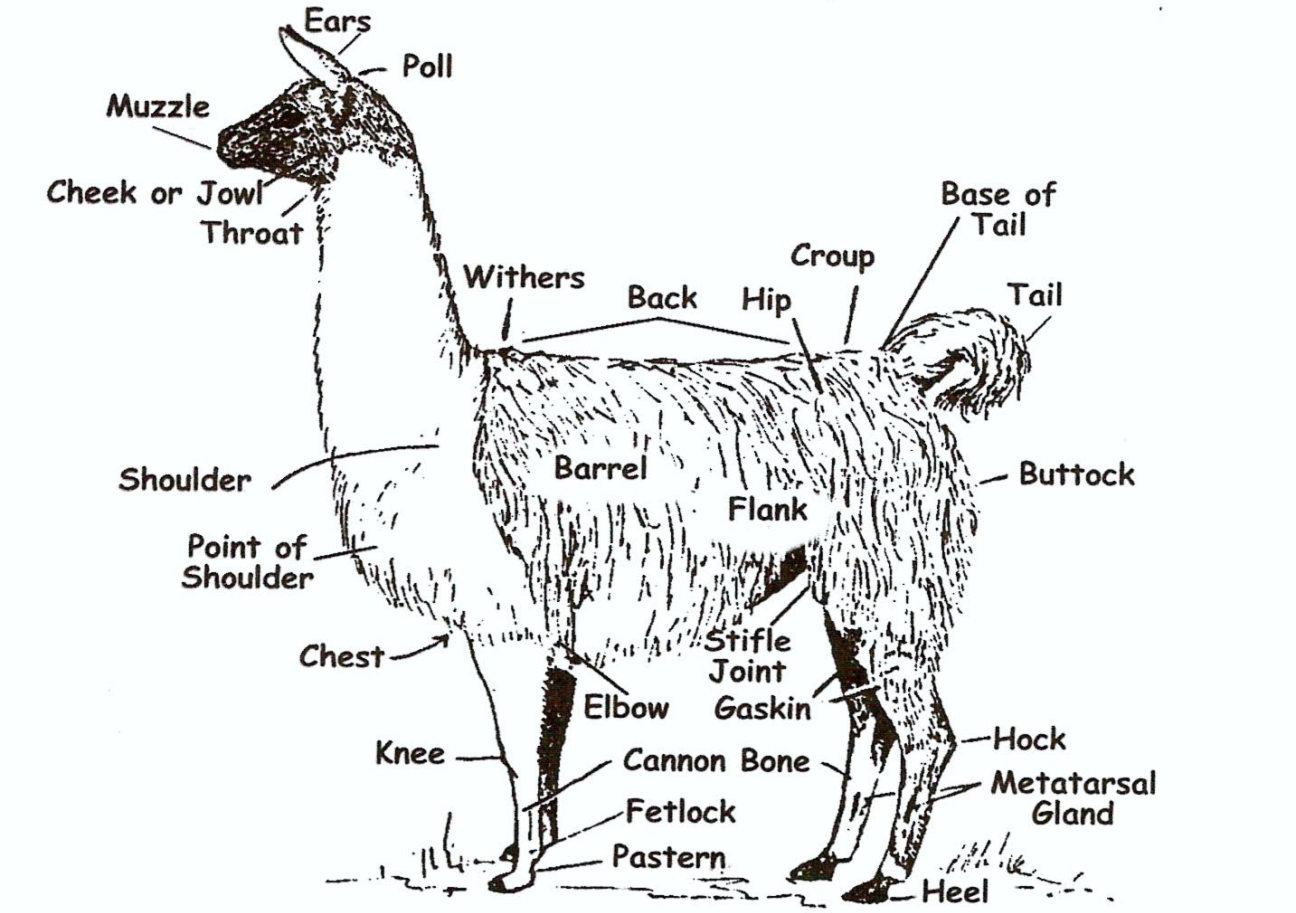
Intermediates (age 11-13 as of September 1, 2025)
all of the above plus...
Proper toenail trimming techniques
Health supplies
How to give an Injection & location of the injection sites
Parts of a needle

Seniors (age 14 and over as of September 1, 2025)
all of the above plus....
Calculating Dosages & Measurement equivalents
Medication label identification
Medical calculations

Welcome to an exciting and growing industry of llamas and alpacas! Llamas and alpacas are domesticated South American members of the Camelid family. These animals differ significantly from other species. Beyond the minimums required to sustain any life, the specifications for their care are unique. Llamas and alpacas can thrive in a wide range of environments, from ranches with vast open ranges to small suburban properties, and in almost every type of climate and geography. These animals thrive in an environment where the relationship with humans and other animals is peaceful, basic security is provided, and life activities that fit their nature are included. With proper care from responsible stewards, alpacas and llamas typically enjoy good health, with an average lifespan of 15 to 20+ years. Therefore, it is essential that owners know how to recognize normal and abnormal llama/alpaca behavior and other characteristics of good versus poor health. This recognition will enable the owner to make the educated decisions necessary to maintain optimum health, as well as seek treatment for illnesses in a timely fashion.

While Camelids are much easier to work with than many traditional livestock, these animals can be challenging at times when it becomes necessary to handle them. The Skillathon manual suggests some guidelines to make working with Camelids much easier on both you and your llama or alpaca, and make any veterinary visit go more smoothly. Also, it is suggested to review the references listed at the end of the manual for more information related to the skills listed here.

Camelid Body Parts



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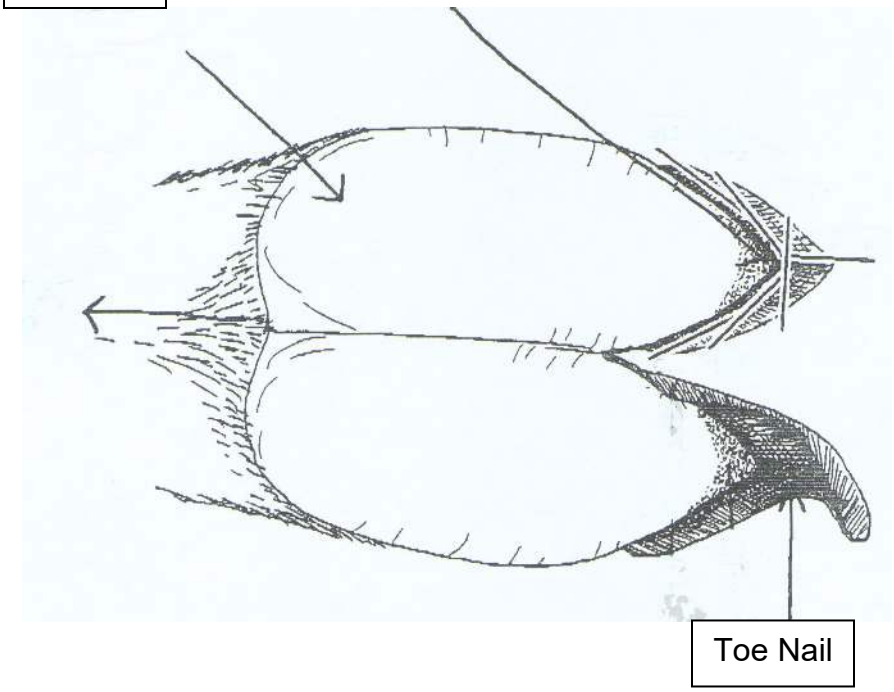
1. **poll****
2. **ears**
3. **muzzle**
4. **cheek or jowl**
5. **throat**
6. **shoulder****
7. **point of shoulder**
8. **chest****
9. **knee****
10. **pastern****
11. **fetlock**
12. **cannon bone**
13. **elbow**
14. **stifle**
15. **gaskin**
16. **hock****
17. **buttock**
18. **tail**
19. **Base of tail**
20. **croup**
21. **hip**
22. **back****
23. **withers****
24. **barrel****
25. **flank****
26. **Metatarsal gland (scent gland)**
27. **heel**
28. **neck**

(- Junior Level, Body Parts)**

Juniors, Intermediates and Seniors

Foot Parts



Lines show
Trim areas p. 8

Juniors, Intermediates, and Seniors

Knots for Livestock Handling

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

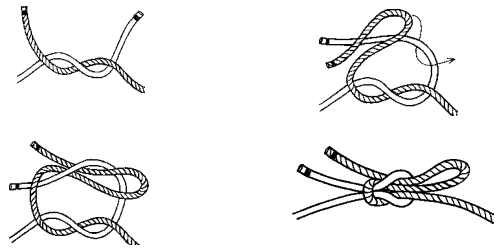
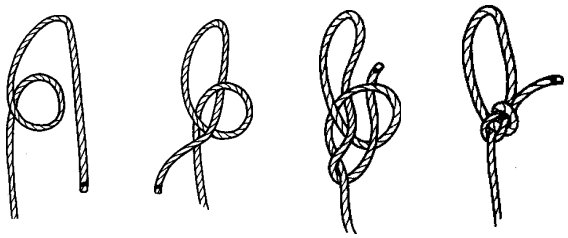
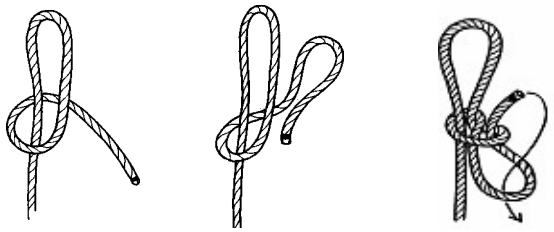
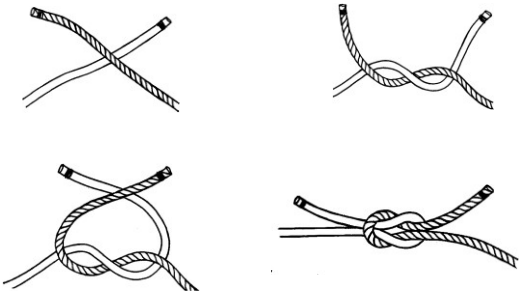
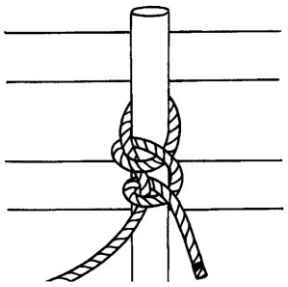
Knots join ropes together, attach ropes to a post or rail, or attach ropes to an animal.

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

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

See page 4 for instructions for tying knots.

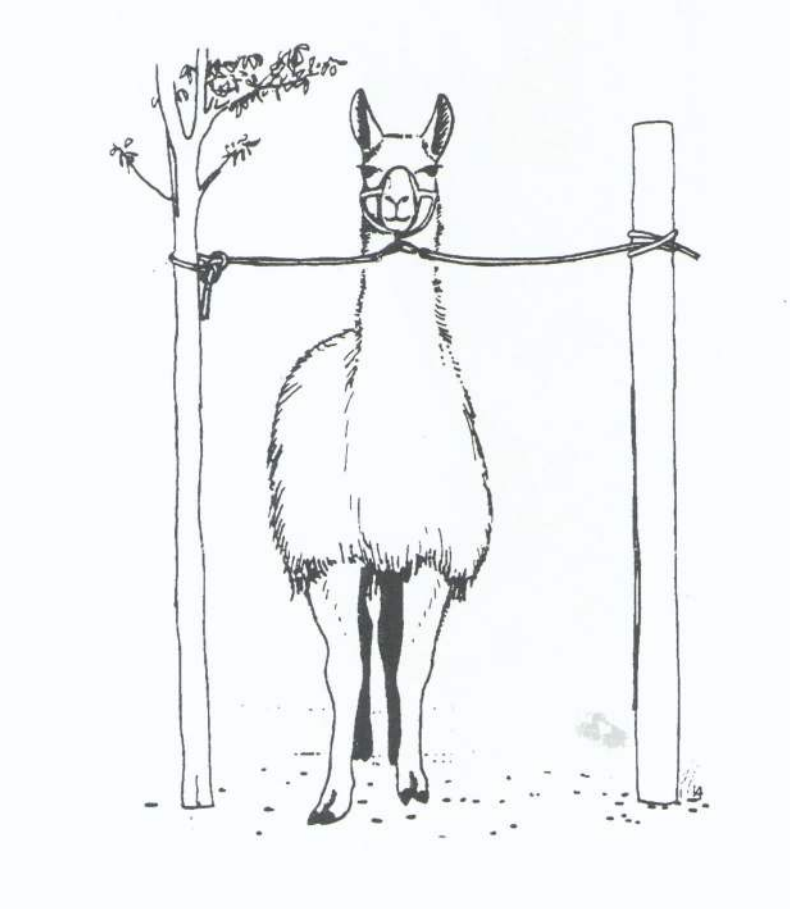
Please note: The most common knot used for Camelids is the Quick-Release.

	
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.

Cross Tying

Juniors, Intermediates and Seniors

One of the simplest ways to restrain a llama is to cross tie it. Trees or fence posts can be used. When a llama is cross tied, it will not be able to move forward or backward very far. While it can still swing its hind quarters from side to side, its head will be more stable. This may be the only restraint required to deworm an animal, treat an eye injury, or other simple procedures. Cross-tying may also be used in conjunction with other more sophisticated methods of restraints, such as chutes.

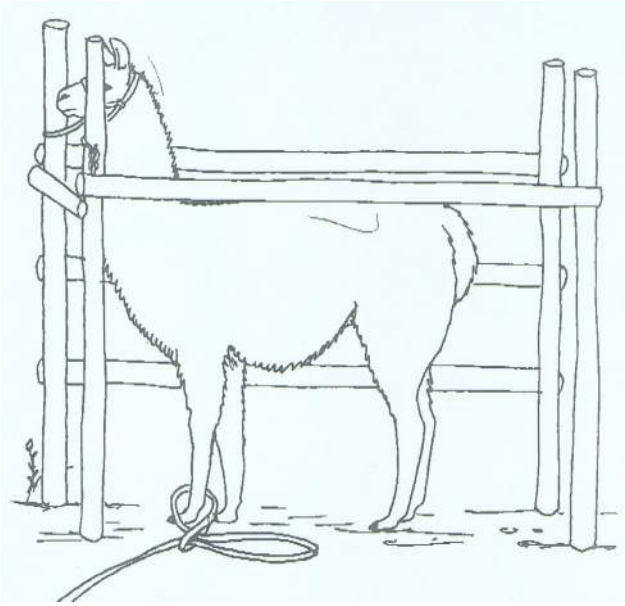


Toenail Trimming

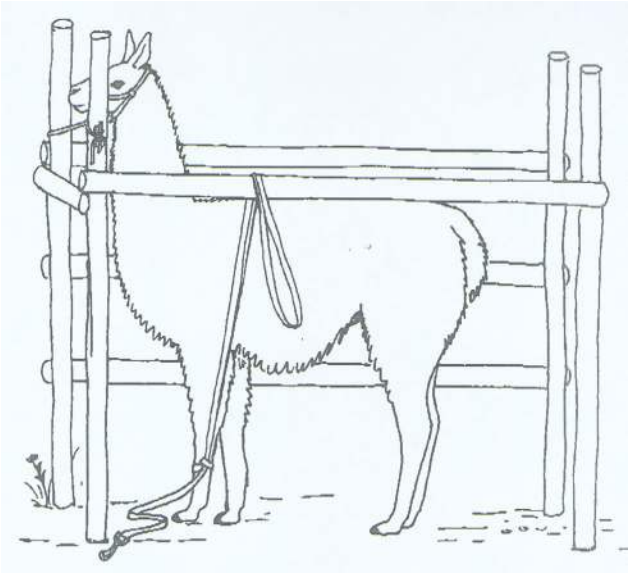
Intermediates and Seniors

Nail trimming is usually easier when the llama's feet are wet and the nails soft. Therefore, if you have a choice, a rainy day is a good time to trim nails. It is quite possible for one person to trim a camelids' nails, but it is much easier, especially when starting out, to have two people. One person will hold the animals' foot in the proper position, either by hand or with the stake line, as described on following page, while the other person will do the actual trimming. Begin with the animal cross-tied in the chute. With the holder picking up each foot and keeping it in the proper position for trimming, move around the camelid, trimming each foot before going on to the next.

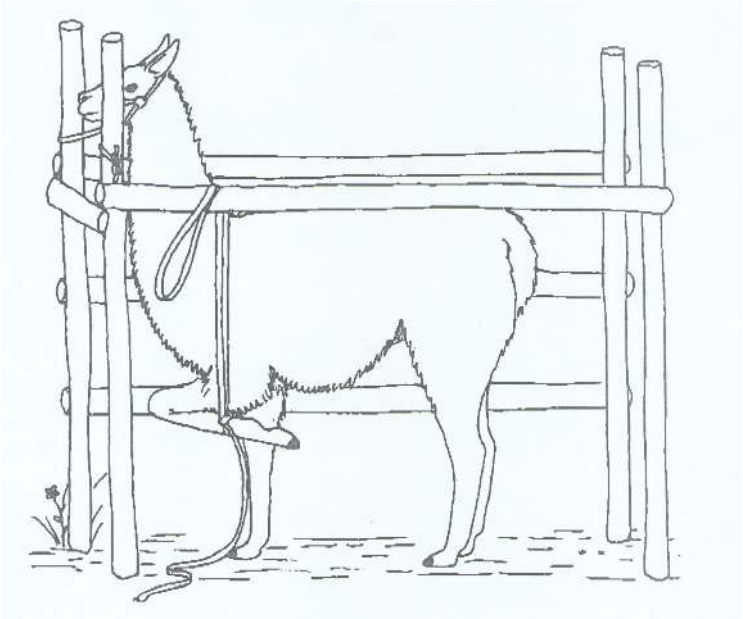
An excellent method, developed by Bobra Goldsmith, uses a twenty-foot stake or lunge rope as a tool to hold the alpaca or llamas' foot off the ground and in the proper position. The line should be made of flat woven webbing and have a small, hand-sized loop sewn in one end. An open-sided chute is required to use this method.



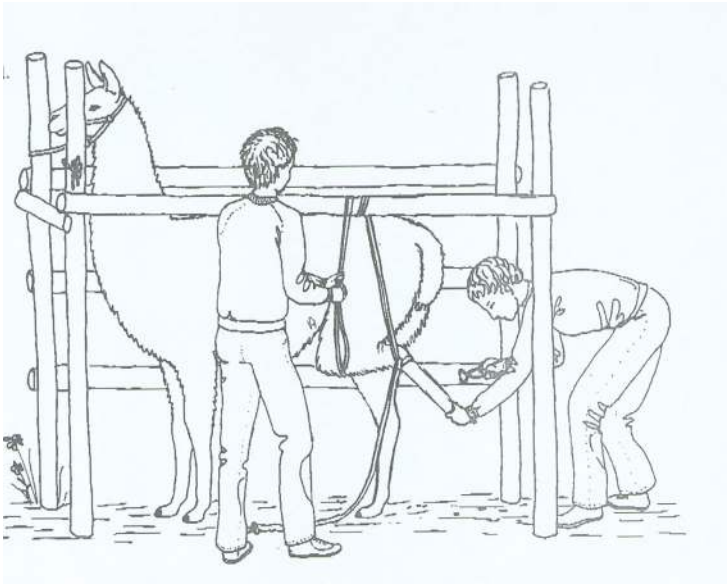
With the camelid cross-tied in an open-sided chute, pass the loop end of the twenty-foot stake line around the leg you will be working on. Next, pick up the sewn loop, pass a fold or loop of the webbing through it, and pull on the loose end of the webbing until you have an unsewn loop of webbing about five to seven feet long. A slip knot forms around the animals' leg, created out of the sewn loop and the first few inches of webbing. Pass this long, unsewn loop up the inside of the chute and over the top rail.



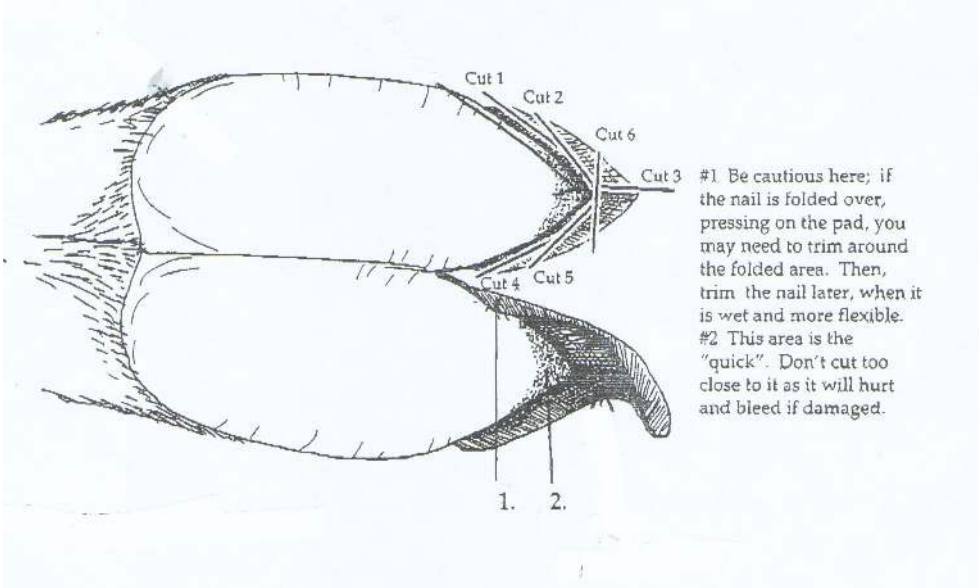
When the long loop is pulled downward, the leg will be lifted off the ground. When it is at the right height, wrap the loop two or three times around the rail, and hold it while the trimmer takes care of the toenail. The mechanical advantage produced by wrapping the stake line around the rail makes it easy to keep the foot up for as long as it takes to trim the nail.



When trimming the front toenails, the slip knot should be located at about the middle of the lower leg. For the back toenails, the slip knot should be just below the hock. The holder can easily keep the leg in the correct position for some time by wrapping the end of the loop several times around the rail. If one person is doing the entire trimming process, the end of the loop can be tied to the rail with a quick-release knot.



Start at the back edges of each nail and work forward towards the point. Avoid cutting any closer to the edge of the pad or quick (the soft tissue just behind the point of the nail) than 1/16 or even 1/8 inch, as this can cause bleeding, pain, and expose the llama to the risk of infection. It is probably a good idea for a beginner to be conservative at first and leave a larger margin for error. When trimming the insides of the toenails, it helps to use your fingers to hold the toes apart and provide more space for the nail nippers. Once both sides of a nail have been trimmed, it is time to remove the point with one final cut perpendicular to the line of the nail. Don't cut too close to the quick and avoid pinching the camelids' pad between the two sides of the nail.



Adapted from Caring for Llamas and Alpacas, A Health and Management Guide, Clare Hoffman DVM and Ingrid Asmus.

Llama Health Supplies

Intermediates and Seniors

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.

- Syringe
- Needles
- Antibiotic vs. Vaccine
- Dewormer
- Disinfectant
- Thermometer
- Nail Clippers

Reference: www.shagbarkridge.com/info/vet.html (Medical supplies to have available)

Intermediates and Seniors

How to Give Injections

In general, all injections or blood samples should be done by your veterinarian. If done incorrectly by an inexperienced person, the animal could die.

General Rules for Giving Injections:

1. The animal must be restrained.
2. Swab the injection site with an alcohol swab.
3. Do not touch the needle, except by the hub, so that it remains sterile.
4. Fill the syringe with the amount of needed medicine and then remove the air bubbles from the syringe.
5. After inserting the needle into the injection site, always aspirate the plunger before giving the drug. This means pulling back on the syringe plunger. If blood comes back into the syringe, do not give the drug. Remove the needle and start the injection process again in a different location. Some drugs are lethal if accidentally given into a blood vessel. If no blood draws back into the syringe, administer the drug.
6. Push the plunger with steady pressure to inject the medicine. Do not redirect the needle without first checking for blood by aspiration.
7. Always use a new or sterile needle for each injection.

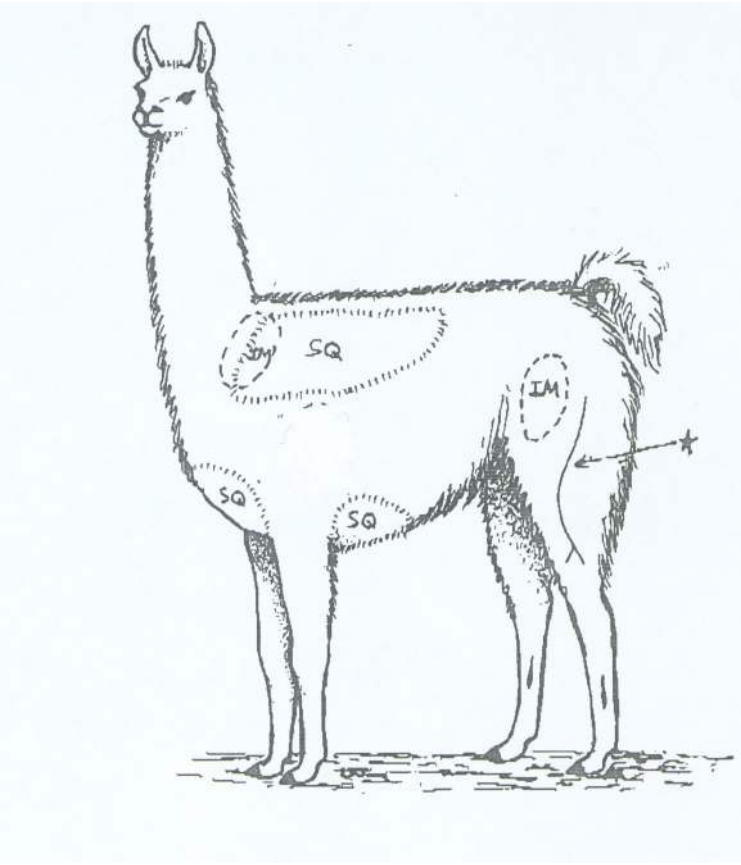
Intramuscular Injections (IM):

1. Any large muscle mass will work.
2. Use a 22 to 16-gauge needle. The thicker the drug, the larger the needle, and the smaller the gauge number
3. Avoid the sciatic nerve.
4. Avoid the neck region.
5. The needle should be inserted all the way in to make sure you are in a muscle.
6. If frequent injections are needed, rotate the muscles used to avoid soreness or, better yet, switch to SQ injections.

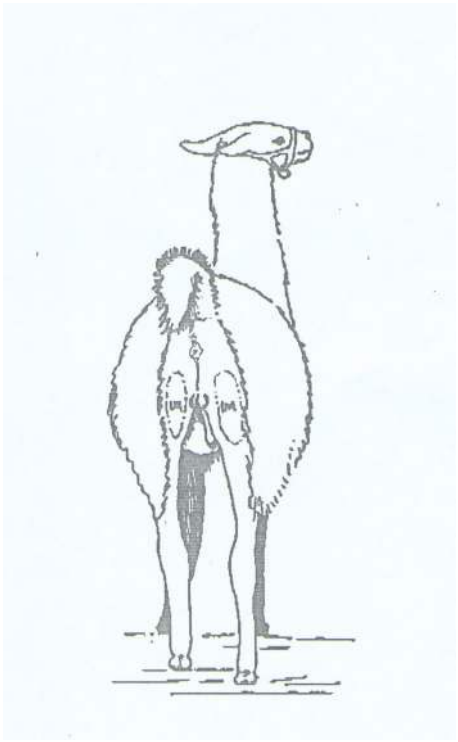
Subcutaneous Injections (SQ):

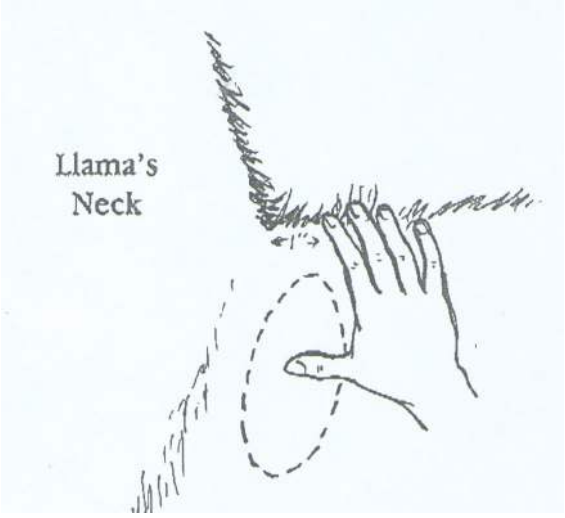
1. These injections go in the layer between the skin and the muscles below.
2. Use a 22 to16 gauge needle by 1 to 1 ½ inches long.
3. The needle should be directed through the skin. With practice, you can feel when you've gone through the skin. This is where you inject the drug. If you penetrate any deeper, you'll be in the muscle.
4. By grabbing the hair near the site of injection with your left hand (if you're right-handed), the skin can be slightly elevated. This makes it very easy to feel when you've passed through the entire thickness of the skin.

Injection Sites

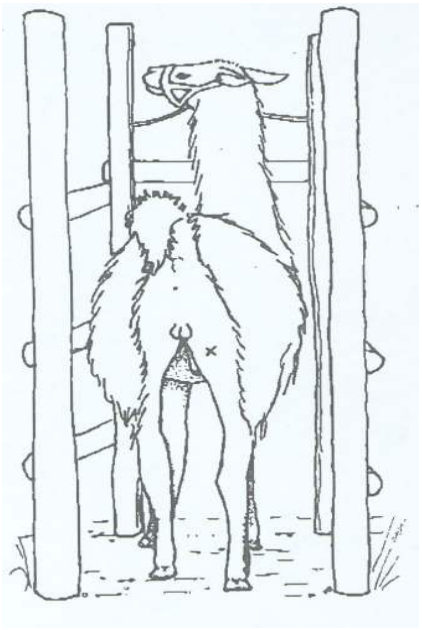


IM = Sites for Intramuscular Injections
SQ = Sites for Subcutaneous Injections
* = Sciatic Nerve

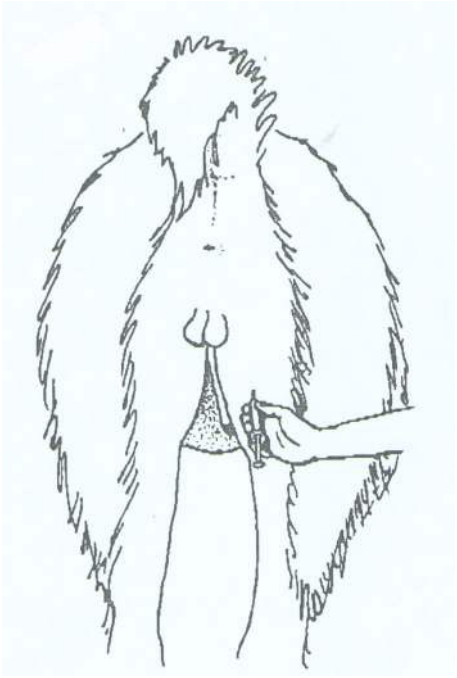




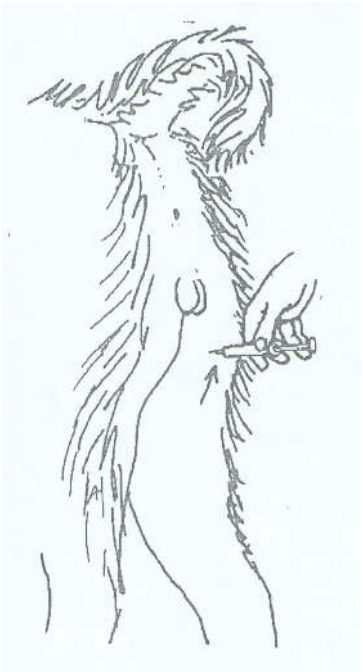
Intramuscular Injection



Select the site. Choose a site that is well-muscled and where you cannot feel the bone. Clean the site with an alcohol swab. The short-fiber area in the hind leg is shown here for purposes of illustration.



Put the needle straight in, all the way.



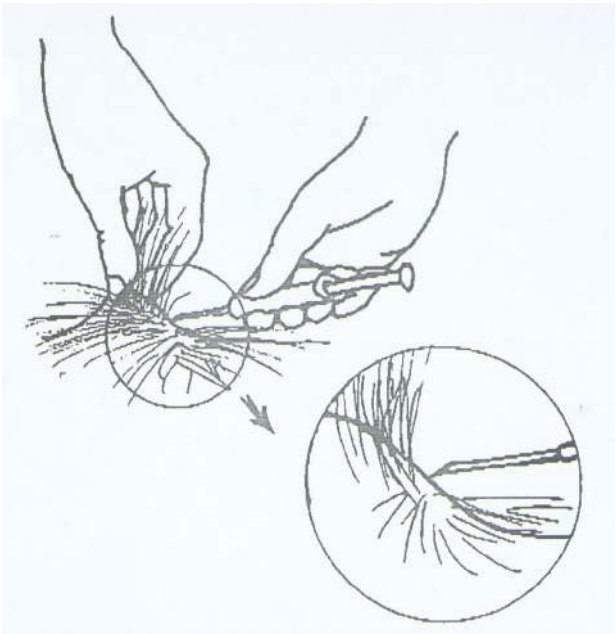
Before injecting, pull slightly on the plunger. Look for blood entering the syringe at the needle hub. If no blood is visible, inject the medication slowly, then remove the needle and syringe. If blood is visible, pull the syringe and needle out and try again.

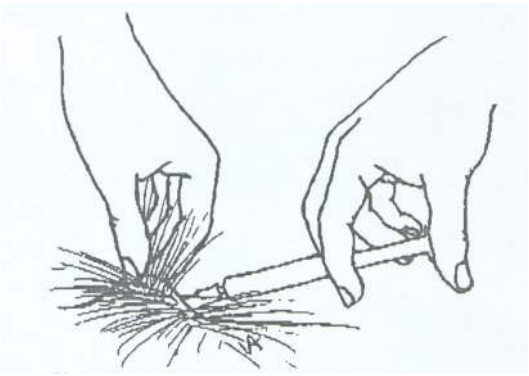
Subcutaneous Injections

Intermediates and Seniors

Choose the site. You need a place where the skin is reasonably loose, so that you can pinch a fold of skin and pull it slightly away from the body. Clean the skin thoroughly.

With the bevel up and the syringe, more or less parallel to the body, push the needle through the skin. Check to make sure the tip of the needle does not go all the way through and out the other side of the fold of skin! Pull back on the plunger to check for blood.



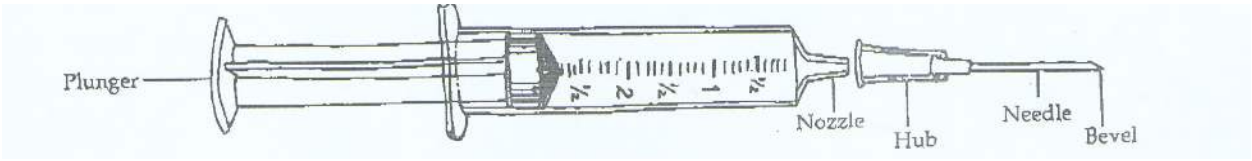


If you cannot see any blood, inject the medication slowly into the space between the lifted fold of skin and the body muscle. Withdraw the needle and syringe. Depending on the quantity used, you may be able to feel the medication as a soft bump just under the skin.

Adapted from Caring for Llamas and Alpacas, A Health and Management Guide, Clare Hoffman DVM and Ingrid Asmus.

Intermediates and Seniors

Parts of a Needle



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

Calculating Dosages

Read medication labels carefully when calculating doses.

Example: A 50-pound sick animal requires an injection of antibiotic at a dosage rate of 2,500 units/pound. The antibiotic to be used contains 100,000 units/ml.
How much antibiotic should the producer give to the animal?

Seniors

Step 1: Calculate how many units a 50-pound animal needs.
2,500 units/lb X 50 lbs = 125,000 units

Step 2: Calculate how many milligrams (ml). of the antibiotic would deliver the needed units.
125,000 units / 100,000 units/ml = 1.25 mls.

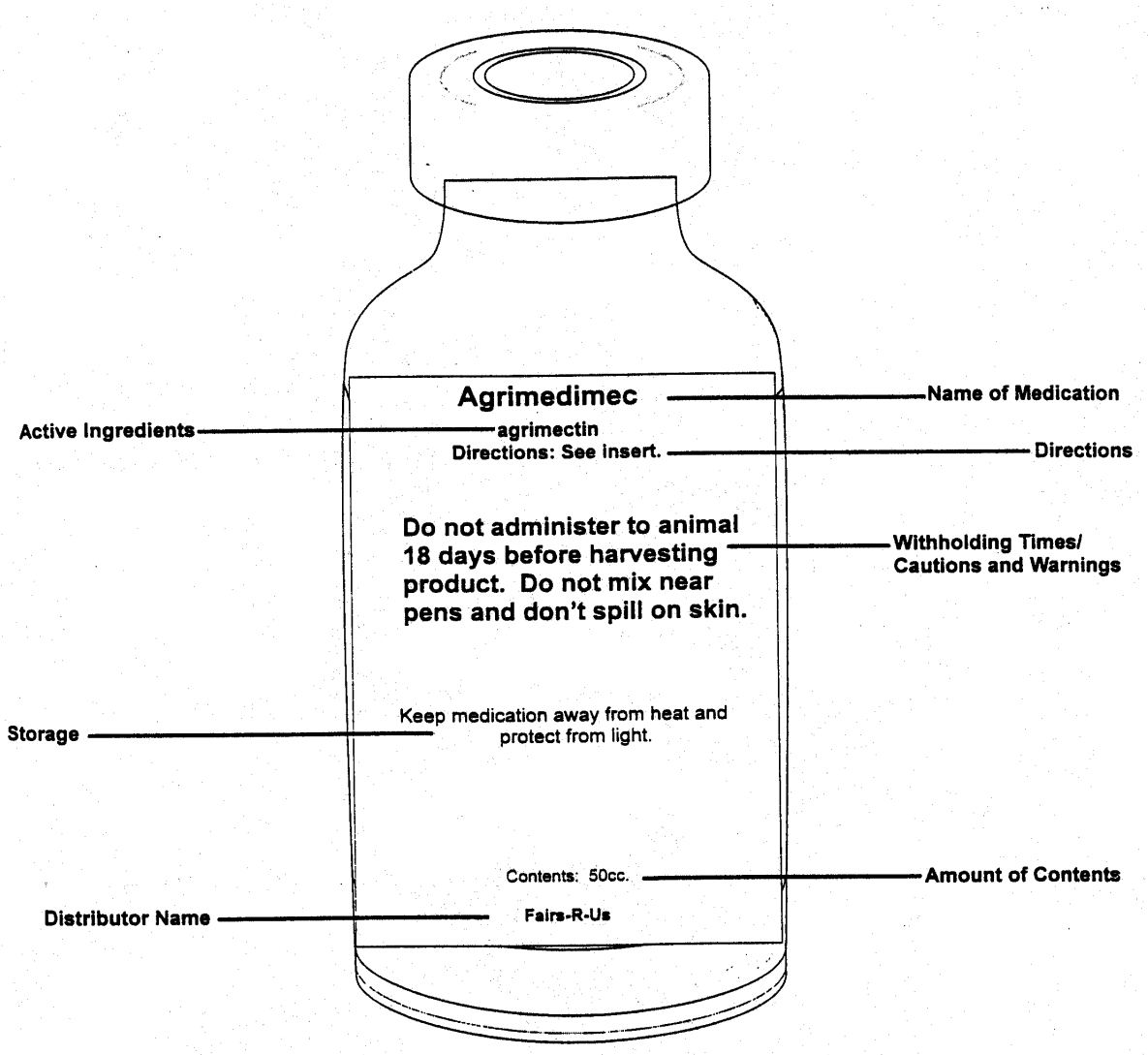
Seniors

Measurement Equivalents

1 fl oz = 30 mls = 30 cc
1 cc = 1 milliliter (ml)
1 pint = 480 mls = 16 fl oz
1 liter 2.11 pints = 1.06 quarts 33.8 fl oz
1 kilogram = 2.2 lbs
1 tsp = 5 mls
1 fl oz = 2 TBSP
1 oz = 30 grams
1 gallon = 3800 mls = 3.8 liters
1 grain = 60 mg

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.

Seniors

Medication Calculations

Be prepared to read a medication label and calculate when to administer vaccines, booster shots, worm medications to the animal.

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					

Reference Sites for additional information:

1. Dose calculations and administration of drug
http://www.icinfo.vet.ohio-state.edu
www.merckvetmanual.com

2. Llama Feet and Toenail Care/Medical Supplies
http://www.shagbarkridge.com/info/feet.html

3. No-restraint Injections for Llamas
http://vermontllamaalpacaassociation.blogspot.com/2012/04/no-restraint-injections-for-llamas.html

4. Basics of Behavior and Handling of Llamas and Alpacas
http://www.rmla.com/html/-behavior_handling.htm

5. Recommended Practices in Caring for Llamas & Alpacas
https://icinfo.vet.ohio-state.edu/sites/camelid-sta.osumc.edu/files/documents/Practices2005FINAL.pdf

6."Caring for Llamas: A Health and Management Guide," Claire Hoffman& Ingrid Asmus