



Vaccinations in Camelids

- All vaccinations are “**off label**” in alpacas therefore effectiveness and safety are not guaranteed by the manufacturers.¹ Consult with your veterinarian to determine an appropriate vaccination protocol. **The following is provided as information only.**
- Avoid modified-live vaccines in pregnant animals.
- Vaccines may not completely prevent infections but often moderate the disease symptoms experienced by the animal.
- Vaccinations should be used to complement not replace management techniques for disease prevention.
- Individual animal response to a vaccine is variable and can be affected by many factors such as stress, immune status at time of vaccination, and proper storage and administration of the vaccine. A sick animal will not respond as well as a healthy animal. Vaccinate a week or two prior to a stressful event such as shipping or weaning.
- Initial vaccinations generally require boosters to generate adequate protection due to the need to prime the immune system and the potential for interference from waning maternal colostral antibodies.
- A general guide explaining vaccinations is available from the University of Nebraska-Lincoln Extension office at <http://www.ianrpubs.unl.edu/epublic/live/g1445/build/g1445.pdf>.

Vaccinations Commonly Used in Camelids

CD/T

- *Clostridium perfringens* type C, D, and *C. tetani*
- A commonly used vaccine. *C. perfringens* has been implicated in diarrhea and sudden deaths in crias and occasionally adults. All animals are at risk for tetanus following infection primarily through wounds, castrations, etc.
- One common vaccination schedule is vaccination of adults yearly; pregnant females 4-6 weeks prior to parturition; crias at 3-4 months old and again 4 weeks later then yearly thereafter.¹ Other protocols are also used and can be tailored to suit individual farm situations.

Clostridium perfringens Type A Toxoid

- Recently developed vaccine for use in cattle.
- Evaluated at WSU VTH on alpacas
 - No vaccine site reactions were seen.
 - This product was NOT evaluated on pregnant animals.

- Titers were measured and results indicated an immune response occurred but the degree of protection provided is unknown at this time.

Other Clostridial Vaccines

- “7 way” and “8 way” clostridial vaccines available. The number refers to the number of diseases the vaccine prevents.
- Vaccinates against a broad spectrum of clostridial bacteria.
- Some contain tetanus.
- Vaccine site reactions have been reported with some products.

West Nile Virus

- Alpacas are considered at low risk of developing clinical signs after infection with this virus. However the most common signs of infection are neurological usually progressing to death of the animal even with intensive medical treatments.²
- Only consider use in areas with known West Nile virus.
- Adverse reactions to the vaccine have ranged from mild injection site reactions to anaphylaxis.² Try to avoid vaccinating breeding females within 60 days of breeding or 30 days of parturition.
- There are two vaccine products that have been used in alpacas:
 - Ft. Dodge West Nile-Innovator® - Research showed 3 doses, 3 weeks apart, generated the highest titer response.² Challenge studies evaluating vaccine protection in camelids have not been performed.
 - Merial Recombitek Equine WNV vaccine® - No published research but the product has been evaluated on alpacas.

Leptospirosis

- Consider in areas where the disease is endemic. May need to revaccinate up to 3-4 times a year.¹
- Clinical signs vary from fever and anorexia, kidney and liver damage, and abortions.^{3,4}
- There are many serovars or types of *Leptospira*. Vaccines only include the more common serovars found in cattle so protection may be incomplete.
- Prevention can be increased by limiting rodent and wildlife contact and vaccinating dogs that may have contact with the herd.³

Rabies

- Rabies has been reported in camelids.⁵
- There are currently no licensed vaccines for use in alpacas.
- Vaccinations can only be performed by veterinarians.
- Consider yearly vaccinations in endemic areas which can be given as early as 3-6 months of age.¹
- Proof of vaccination may not be sufficient if an animal is exposed leading to quarantine or euthanasia.

Equine Herpes Virus 1

- This disease has been infrequently reported in camelids. Infected animals exhibit neurological signs or blindness.⁶
- Consider vaccination if camelids are kept in close proximity with horses or other equines. If needed, use the killed vaccine product and vaccinate every 12 weeks.¹

BVD

- Bovine viral diarrhea virus vaccines are available as products labeled for use in cattle.
- Currently we do not recommend use due to difficulties with current diagnostic techniques.⁷

Miscellaneous Products Commonly Used

Vitamin E & Selenium

- Injectable vitamin E and selenium is commonly given to newborn crias in areas of the country known to be deficient in selenium.⁸
- The most common product used is Bo-Se® (1 mg/ml). A common dose is 1 mg given subcutaneously for alpaca crias and 2 mg for llama crias.
- Proper supplementation of the dam during gestation can aid in preventing deficiencies in the developing fetus.

Vitamin A & D

- Vitamin D deficiency in neonates can lead to a metabolic condition known as hypophosphatemic rickets.⁹ The condition is most commonly seen in darker pigmented crias during the winter in more northern states.
- Injectable and oral supplements are available. The injectable form is often in combination with vitamin A and requires less frequent dosing than the oral product. A common dose is 1000-2000 IU of vitamin D/pound of body weight given subcutaneously.¹⁰ One dose will last approximately 60-90 days. The oral product is typically dosed at 30,000 IU of vitamin D every 2 weeks.⁸

Who to contact for more information?

- Please call WSU-VTH Agriculture Animal Department, Ms. Sallie Bayly, RVT (509-335-0711) to contact a veterinarian regarding vaccination questions.

References

1. Vaccination guidelines for small ruminants (sheep, goats, llamas, domestic deer, and wapiti). Council on Biologic and Therapeutic Agents and the American Association of Small Ruminant Practitioners. *J Am Vet Med Assoc* 1994;205:1539-1544.
2. Kutzler MA, Baker RJ, Mattson DE. Humoral response to West Nile virus vaccination in alpacas and llamas. *J Am Vet Med Assoc* 2004;224:414-416.
3. MacAllister, C. Leptospirosis. <http://osueextra.okstate.edu/pdfs/F-9130web.pdf>.
4. Thedford TR, Johnson LW. Infectious diseases of new-world camelids (NWC). *Vet Clin North Am Food Anim Pract* 1989;5(1):145-157.

5. Centers for Disease Control (CDC). Rabies in a llama—Oklahoma. *MMWR Morb Mort Wkly Rep* 1990;39(12):203-204.
6. Long, P. Llama herd health. *Vet Clin North Am Food Anim Pract* 1989;5(1):227-232.
7. Washington State University Veterinary Teaching Hospital and Washington Animal Disease Diagnostic Laboratory. Bovine viral diarrhea virus in camelids. <http://www.vetmed.wsu.edu/depts-vth/camelids/BVD.asp>
8. Fowler ME. *Medicine and Surgery of South American Camelids*; Iowa State Press; May 1998, 2nd edition.
9. Van Saun RJ, Smith BB, Watrous BJ. Evaluation of vitamin D status of llamas and alpacas with hypophosphatemic rickets. *J Am Vet Med Assoc* 1996;209:1128-1133.
10. Judson GL, Feakes A. Vitamin D doses for alpacas (*Lama pacos*). *Aust Vet J* 1999;77:310-315.