

Questions for the Camelid Consultant

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Abstract

This question and answer presentation will deal with a wide variety of subjects including reproductive, castration, herd health, some routine as well as special procedures and my approach to some various clinical presentations. Attendees are encouraged to share their opinions and experiences and we will have adequate time for some questions unrelated to my presentation.

Introduction

Over the years of my university-based practice, I have answered many queries dealing with llamas and alpacas. To lead off, I will share the reality of many of those exchanges. You as attendees are encouraged to participate in the dialogue. You will note that original questions often require more questions before an answer is given.

When is the best age to geld camelids? Assuming there to be no weird behavioral problems, I would recommend they be gelded between 18 months to three years. A concern for "early" castration is that the growth plates remain open until nearly three years of age, resulting in very tall and posty-legged individuals. This conformation predisposes to patellar luxation as well as "dropped fetlock" and arthritis early in life, especially for performance animals. Research and clinical observation at both Colorado State and Ohio State Universities have concluded early castration is contraindicated. My personal recommendation for those wanting to castrate as early as possible is to wait until the animal's fighting teeth have erupted, which seems to coincide with elevated testosterone levels. Sex hormone metabolites in both genders contribute to growth plate closure.

A 20 month maiden camelid is not getting pregnant.... What are some reasons? Your questions should include: When did they start breeding her? Are they hand or pasture breeding? If hand breeding, how often is she receptive? Are they using a proven stud? A possible reason is that she may be prepuberal. Minimally there should be an evaluation of post-breeding progesterone levels to determine if she is ovulating. To prove she is anatomically normal, vaginoscopic and transrectal ultrasound exams should be performed. If

there is suspicion that she is infected due to excessive prepuberal breeding, a uterine biopsy with culture/sensitivity is indicated.

Are topical dewormers effective against internal parasites in camelids? This has recently been a topic of conversation on the AASRP e-list. One might summarize the discussion by stating that use of topicals has been most effective in increasing resistance to the applied product. With the doses utilized and considering the slow presentation of the dewormer to the GI tract, it is ideal for development of parasite resistance. Therefore it should be concluded that topically administered dewormers are not to be used in camelids

I have a camelid client that is concerned about eradicating coccidiosis from the premises. What is the best approach? If this request is based upon some bad experiences with clinical coccidiosis, I can understand the concern and there may be a need to look at controlling the problem. If, however, the concern has arisen due to a persistent oocyst presence in routine fecal exams without clinical cases, then this owner needs to be educated about the importance for the presence of coccidia to initiate and maintain herd/flock immunity. In addition, re-emphasizing the need for good sanitation and minimizing stressful incidents, including weaning, is important. To control clinical coccidiosis, I have had the best success using parenteral sulfadimethoxine at 25 mg/lb BW initially, followed by an additional four days at 12.5 mg/lb. This may be administered as a parenteral product SQ or orally in milk if neonates are drinking adequately. For prevention/control during stressful periods, decoquinate fed at 0.5 to 1.0 mg/lb BW has proven to be effective and safe.

What are the essential camelid vaccinations? There are camelids in this country that have yet to receive any vaccines and have never looked back. There are also no vaccines approved for use in the camelid species. As such, any use is based on extrapolation of doses and frequency that have been used in domestic ruminants or in some cases horses. These animals are apparently less susceptible than other animals to the common diseases that affect conventional domestic ruminants, especially clostridial infections. Nonetheless, vaccination against *Clostridium tetani* and *Clostridium*

perfringens types C&D would make my “absolutely necessary” list. Owing to the curious nature of these animals, they have had an unfortunately high incidence of snake encounters with facial envenomation resulting. Consequently, in areas endemic for poisonous snakes, vaccination against the common Clostridials (*C. septicum/chauvei*) that complicate the envenomation site is indicated. If premises or area problems exist for which there is a safe and hopefully efficacious vaccine, then they have been used in camelids. Included in that list would be leptospirosis, rabies, chlamydial abortion and West Nile vaccines. **Others?** I have personally used a MLV parainfluenza-3 vaccine for animals with a chronic nasal discharge, but feel that if other viral vaccines are to be considered, they should be in the killed form.

I have been asked to be the official veterinarian inspecting small ruminants at the county fair.

What should I be looking for in camelids? In my experience, this is a very challenging and rewarding assignment. Your first priority is to assure the attending animal’s current health status as relates to infectious diseases. The dilemma you will face is the likely need to send a child’s 4-H project animal home, causing tears and possible wrath from parents. Ideally all animals should be inspected prior to being unloaded. Independent of the species, any evidence of nasal or ocular discharge, salivation or diarrhea should warrant a detailed examination in the arriving trailer. Camelids generally have been presented free from contagious diseases. Close inspection of the dorsal skin in several locations will detect any lice. Mange, if present, can generally be observed in the fibreless areas of the perineum, brisket and on the feet. Being involved in your community at this time can be very rewarding, particularly if there is no evidence of contagious disease concerns presented. You can influence this goal by also being available to educate 4-H leaders, parents and the kids involved in their projects.

An alpaca has a chronic ocular discharge.

What are the possible causes? The two most likely causes would be conjunctivitis and a plugged nasolacrimal duct. Regarding conjunctivitis, fortunately truly infectious cases are rare at best. The principal cause is related to foreign body (dust and plant material) irritation and subsequent secondary infection. There are cases of congenital blockage of the nasolacrimal duct that may require surgery to establish patency. However, some seem to occur later in life, resulting initially in only epiphora but often with inflammatory sequellae. If suspected, application of fluorescein dye in the eye should be followed by observation of dye from the corresponding nasal puncta. For more aggressive pursuits, some

degree of sedation and likely local anesthesia is indicated. There are two ocular puncta located at the medial canthus inside the edge of the upper and lower lids. Both should be nomograde flushed in the case of acquired blockage.

Are there diagnoses that are unique to certain areas that I need to consider in my locale?

Considering the relative mobility of these animals due to showing and sales, virtually all non-endemic conditions are considerable when faced with diagnostic challenges. The point is that animals brought to your locale may already be infected, infested or affected by conditions you don’t normally consider. Notable for your consideration are vitamin E/selenium deficiency (white muscle disease), liver flukes, coccidioomycosis, dermatophilosis, sarcosporidiosis, Lyme disease, West Nile virus and lungworms.

Give me a complete camelid herd health program!

This had been a frequent request and my response has been “Give me a Break!” You will already be aware of most truly considerable procedures dealing with herd health from dealing with other ruminant species. Camelid clients are of course extremely active in reading and attending lectures that unfortunately often has them embracing virtually every possible herd health recommendation from all parts of the country, if not the world. I have found that my job as a consultant is to challenge whether procedure X is really essential in this herd. If you have it or can gain access, consult the herd health chapter of *The Update on Llama Medicine in The Veterinary Clinics of North America Food Animal Practice* (July 1994), W. B. Saunders, ISSN 0749-0720. That gives the basic essentials, but the bottom line is to consider the guidelines that seem important for your other local critters.

Is it okay to vaccinate camelid dams in the last trimester?

I will be the first to acknowledge that varied opinions exist on this topic. There have been some reported adverse reactions to the practice, most notably abortions. Being aware that camelid pregnancies are corpus luteum dependant throughout gestation and that psychological stress or endogenous steroids can cause abortion may be a confounding factor for the concern. The indication for late gestation vaccination is directed at boosting the colostral antibodies to enterotoxemia and tetanus. As such, there is no reason to utilize vaccines that do anything more than stimulate a response to a quality CDT product. If a proposed recipient is stress prone and or facilities for accomplishing a low stress procedure are questionable, then likely vaccination, foot trimming, deworming and shearing should all be deferred till after the cria is born. **My opinion:...**Yes!

Vaccinate with CDT toxoid 1-3 months prior to "criation" to boost the dam's colostral immunity.

How urgent is the need for attention to a camelid retained placenta? During the 23+ years that I dealt with camelids, I never recognized an urgency, and in fact rarely had to deal with a retained placenta. Usually placentas are passed within an hour post-partum, and surely expected by 4-6 hours. A dangling placenta represents potential for initiating a uterine prolapse and possibly serving as a wick for infection. In reality, since they are unlike horses regarding colic and laminitis concerns, the most likely complication is metritis. If still retained after 12-24 hours, indicated therapy would include warm saline lavage and repeated doses of oxytocin (20 USP units SQ/IM q. 30 minutes) If it remains refractory, administer prostaglandin and penicillin therapy.

Can you do rectal palpation for pregnancy diagnosis in alpacas? Essentially the answer is yes, but with considerations to age/size of dam, tractability, restraint/sedation, hand size of operator and adequacy of lubrication. If rectal palpation alone is utilized, the stage is ideally 45 -75 days because asymmetry of the horns is readily evident and the gravid uterus is not too dependant. For rectal ultrasound, the stage should be at least 21 days and not greater than 90 days. In contrast, for transabdominal ultrasound, the pregnancy can be detected on the left side between 30-65 days and on the right side from 75 days onward.

What are the variables encountered in trans-abdominal ultrasound examinations? In my opinion, the greatest variable to contend with is the tractability/restraint of the animal. Most are not very fond of having hands, lubricant and probes pressed on their abdomen. Thereafter, body wall thickness, including fat, will influence speed and accuracy. The type of ultrasound equipment in use is also an important variable, with a sector probe making a diagnosis more readily than a linear probe in most circumstances. My ideal use of transabdominal ultrasound examinations is to quickly reconfirm an earlier transrectal pregnancy diagnosis.

How do you tell if a male camelid was gelded as a youngster? The phenotypic appearance will likely suggest early (<12 months) castration; most will appear to be excessively tall, possessing elevated hips with reduced stifle and hock angulations ("posty-legged"). When examined under anesthesia or at necropsy, it will be difficult to extend the penis due to the likely persistent frenulum.

Do alpacas have a similar condition to JLIDS as seen in llamas? Juvenile Lama Immunodeficiency Syndrome does occur in alpacas, but the numbers of absolute cases have been less than llamas, but not the incidence. If a case is suspected based on poor growth and predisposition to infections (respiratory, arthritis or dermatitis), parasites and anemia (*Mycoplasma hemolama* [EPE]), an evaluation of immune status is in order. The most reliable test has been to draw a blood sample, re-vaccinate with CDT, wait 10-14 days to re-bleed and then send serum samples to the Colorado State University for C-titer and IgG levels. Poor immune response would confirm the diagnosis and justify a grim prognosis.

How often do you de-worm camelids? The variables of geography, climate, season of the year, endemic problems, management (including pasture vs. confinement), herd size and animal ages all enter in to deworming decisions. For most herds in Colorado, a twice annual deworming program has sufficed due to our dry summers and freeze/thaw winters. In some moister climates such as the Pacific NW, more aggressive (4 X/year) deworming will be necessary. Herds located in areas endemic for the meningeal worm (*Parelaphostrongylus tenuis*) have to utilize an aggressive prophylactic program.

Are there any hints for viewing the middle ear/tympanic membrane in camelids? When using a routine otoscope, it is essentially impossible because the ear canal takes a very sharp right angle path. Using a small flexible "spaghetti" endoscope would definitely facilitate the examination.

Do camelids require routine floating of sharp molars/ premolars? Like cattle, sheep and goats, camelids normally have sharp points on the outside of their upper and inside of their lower molars and premolars. As animals age, they may benefit from a "touch up", but generally only animals that have lost some teeth and are "quidding" justify a floating procedure.

How do you abort a mismated camelid dam? First, it is important to confirm the pregnancy by minimally waiting 14+ days and determining blood progesterone, but ideally waiting 21-28 days for a rectal ultrasound confirmation. If found to be pregnant, administer 10-15 mg PGF2 α SQ, but be aware of dangers. A very rapid reduction of blood progesterone will occur within 12-24 hours and the abortion may not even be observed. The female can generally be properly bred within 10-14 days following a successful early abortion.

We have an 11 year old male down in the pasture with flaccid paralysis... Thoughts? Some questions come to mind, first including: Where are we located (meningeal worm)? Time of year could affect consideration of tick paralysis, heat stress, West Nile Virus or? Is he co-habiting with intact males such that trauma associated with fighting or being "bred" could have occurred? Obviously after those questions are answered, a detailed physical and neurological examination will be necessary and ideally a CBC, biochemical profile and cerebrospinal fluid analysis performed to facilitate arriving at "the diagnosis".

What are the normal thyroid levels in camelids? The ideal answer to this question refers you to the summary of research done to date as reported in Fowler's *Medicine and Surgery of South American Camelids* (ISU Press, 1998, p361, ISBN 8138-0397-7). Young animals have very high levels compared to juveniles and adults, but the following range values could prove useful: **Young** T3 (274-686ng/dl) and T4 (18-39 ng/dl); **Older ages:** T3 (48-468 ng/dl) and T4 (9.8-30 ng/dl). To date, there is little evidence to suggest that thyroid deficiency is a clinical problem in camelids.

There is an alpaca with antibiotic treatment refractory nasal discharge....any ideas? Depending on the time of year (late fall, winter and early spring), nasal bots could be an explanation. Both *Oestrus ovis* and *Cephenemyia* sp (deer bot) have been found in camelids. Diagnosis is generally made by response to treatment with ivermectin (0.4ug/kg SQ), but can be definitively made by sedation and endoscopy to visualize the bots. Endoscopy would also be of value if foreign bodies or neoplasia were the cause. If, however, these more unusual explanations are ruled out, then cytology and culture/sensitivity should be pursued, followed by indicated antibiotic therapy. As a last resort, I have used PI3 intranasal vaccine to stimulate local IgA immunity

Is there a reliable means of inducing parturition in a camelid? First, understand there is a normal range for gestation (345 +/- 15 days in llamas and 330 +/- 10 days in alpacas). Secondly, Why should we be involved in induction? I personally can think of no good reason, but do know that all that is needed is an injection of prostaglandin alone to produce labor within 24-48 hours after injection. Do not include dexamethasone in the protocol as that surprisingly will result in a dead

cria. However, the very best protocol is based on strictly "Tincture of Time."

There is a 14-year-old female llama with consistently soft stools... thoughts? Because of her age, it is unlikely to be a coccidiosis problem, so food allergy, eosinophilic enteritis and Johne's disease would be the principal differential diagnoses. As such, changing the diet would be in order as the most conservative approach. Serology and fecal culture could be initiated as well for Johne's disease, while an intestinal biopsy would be helpful for both Johne's and eosinophilic enteritis.

A 9 year old llama gelding appears to have unilateral patellar luxation. What therapeutic options are there? This is when it is desirable to know if he was an early castrate as there is no question in my mind that early castration predisposes to this diagnosis. Does he have posty-legged conformation? Over all, upfront the prognosis should be guarded to poor. The most conservative approach would be anesthesia using KXB (see companion paper in this *Proceedings* for mixture), reduction and counter-irritation followed by stall rest. Surgical approaches that we have tried with limited success include imbrication, trochleoplasty and tibial crest transfer individually and in combination. A common sequellae even with success has been that the opposite leg also develops patellar luxation.

Can camelids breed at any time of the year? The answer is a definite **Yes!** In South America, the wild guanacos and vicuna naturally breed in the spring, apparently due to the nutrition cycle. For the same nutritional reason, the domestic herds of llamas and alpacas are electively bred in the spring. Here in North America, elective breeding "seasons" are influenced by weather factors. In our northern climates, we avoid the winter freezing and summer hot/humid months as is also done in southern climates. In my opinion, fall breeding is characterized by the best fertility and most favorable time for crias to be born.

Conclusion

Hopefully this discussion provided concise and relevant answers to questions you will likely encounter. The two references cited in this paper are also excellent resources for the practicing veterinarian.