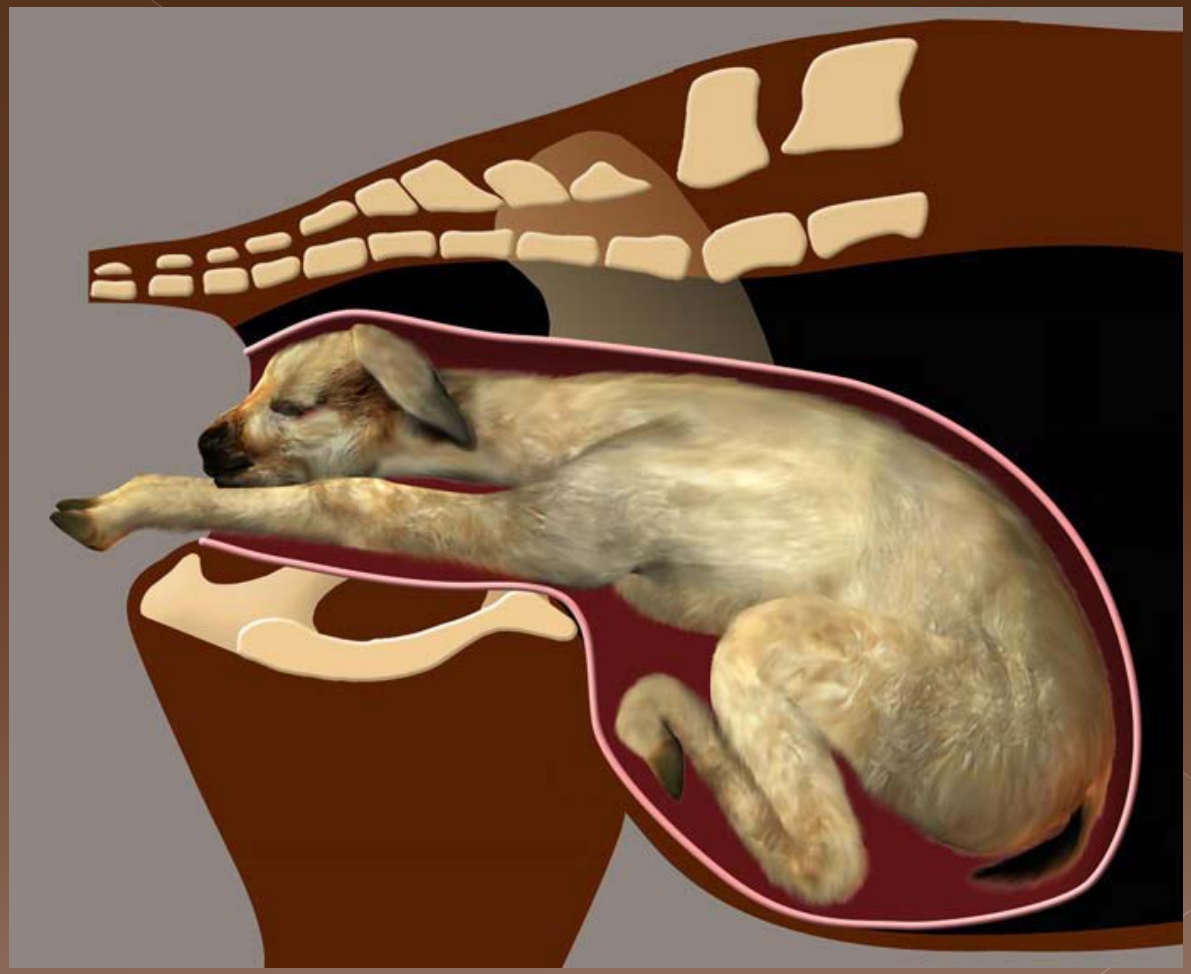
Updates on Crias

Dr. Christine Cocquyt
Large Animal Medicine Resident
University of Tennessee

The Newborn Cria



The Basics

- Normal gestation length
- Normal birth weights

Alpacas	Llamas
>5.5 kg	>7 kg
Ave 7 kg	Ave 9 kg

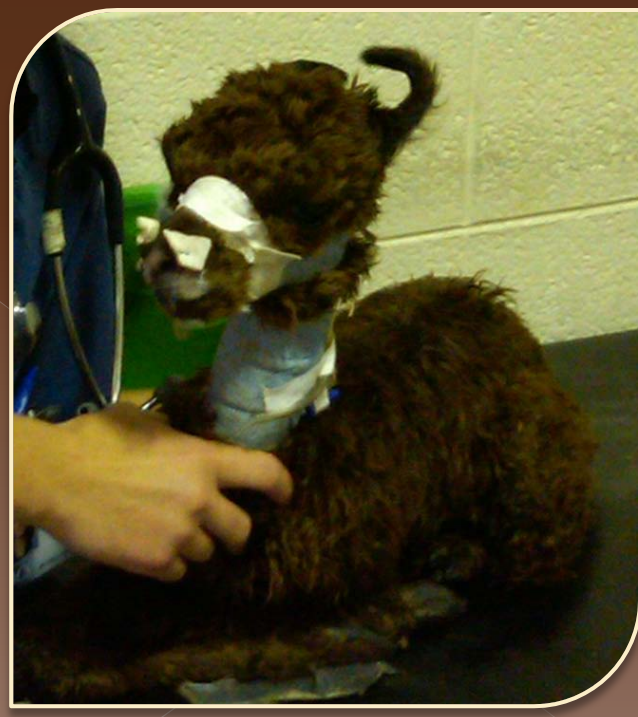
- May lose up to 0.5 pounds in first day
- Should gain 0.5-1 pound per day after

Cria Birth Weights

- Study in South American alpacas
- Trend of increasing birth weight as dam's age increased from 3 to 9 years of age
- Declined after 12 years of age
- May not apply to more intensively managed alpacas in US

Signs of Prematurity

- Weak, unable to hold head up, lateral
- Low birth weight
- Weak/absent suckle
- Floppy ears
- Silky coat
- Tendon laxity
- Incisors not erupted
- Soft hooves

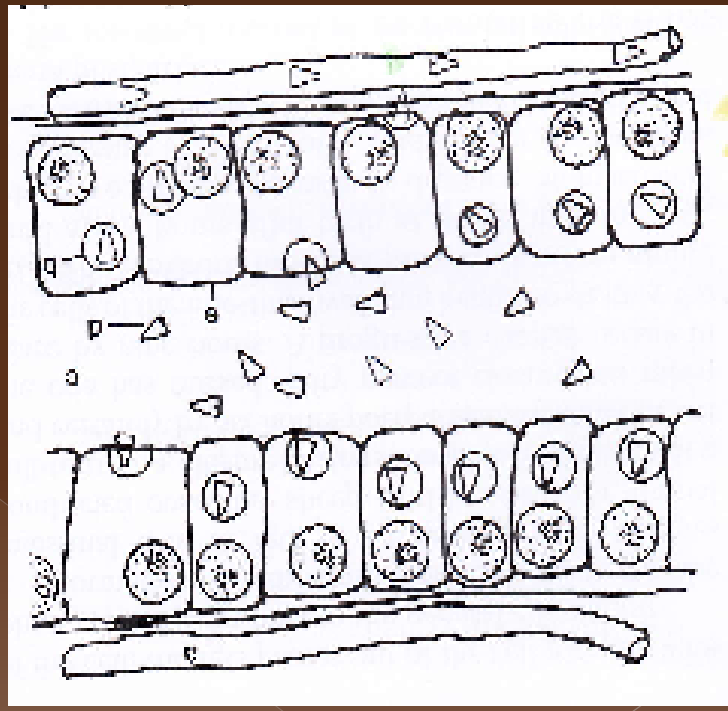


Prematurity-related Concerns

- Failure of passive transfer
  - Delayed or absent colostral intake
  - Decreased absorption of Ig
- Abnormal lung function
  - Low oxygen to tissues
- Low blood sugar
- Dehydration
- Poor thermoregulation

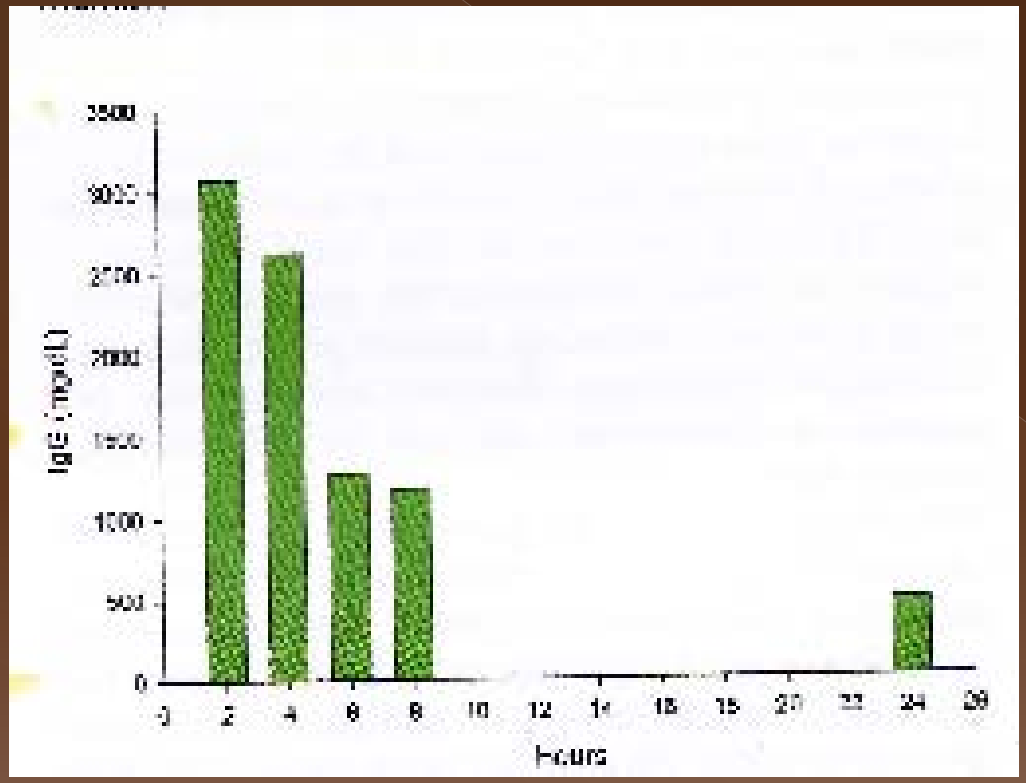
Colostral Antibodies

- Hypogammaglobulinemic
- Epitheliochorio placenta prevents Ig transfer to fetus → require colostral intake
- Starts to close after first feeding; complete by 24 hours
- Mechanism of transfer may be impaired in premature crias



Fowler, ME. Medicine and Surgery of Camelids. 201

IgG Concentration

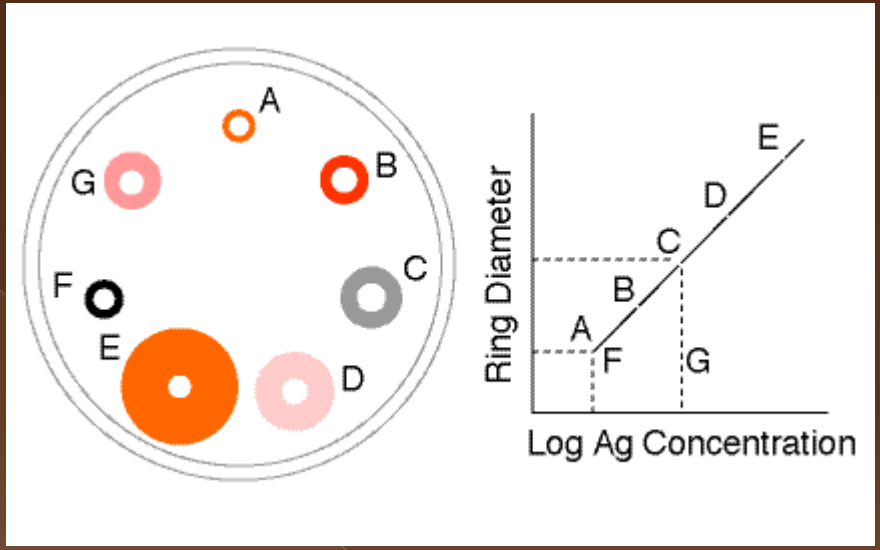


Fowler, ME. Medicine and Surgery of Camelids. 2010

- Healthy crias may be okay with low [IgG]
- Peak [IgG] between 1-2 days of age
- Studies in Peru
  - Lower [IgG] in crias that died
  - Highest [IgG] when first suckle 2-4 hours after birth
  - Marginal [IgG] when first suckle 6-8 hours after birth

Failure of Passive Transfer

- Gold standard = radial immunodiffusion test (RID)
  - Measures [IgG]
  - 36 hours post birth
  - 24 hours to get result
  - Ideal >1000 mg/dl



http://scienceray.com/biology/immunology-laboratory-procedures/

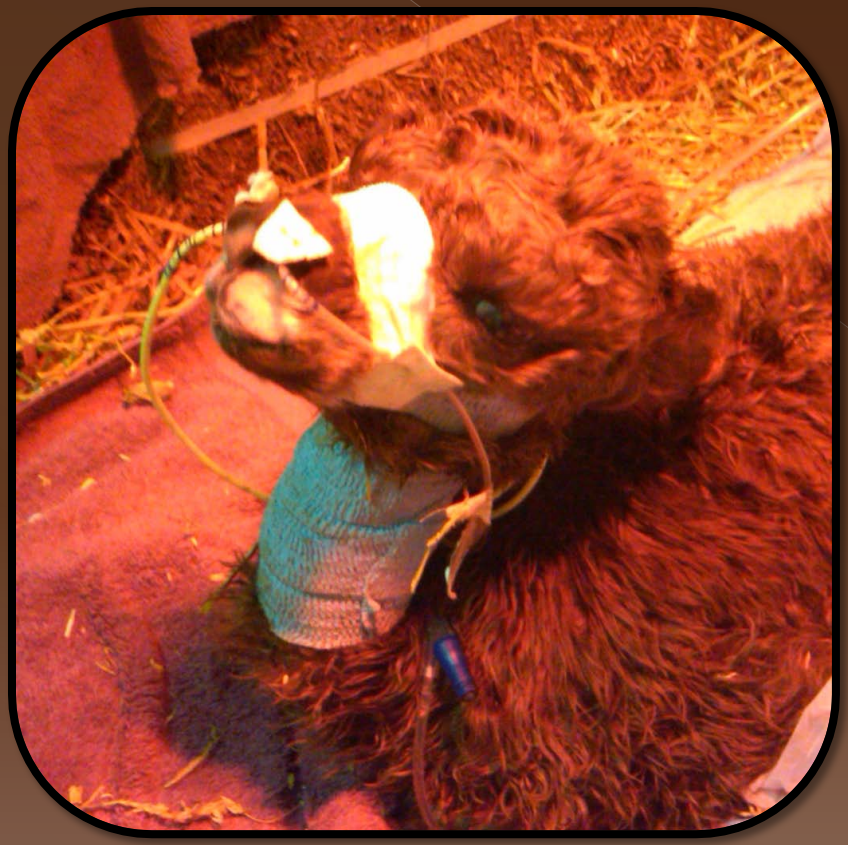
- TP<4.5 g/dl indicative
  >5.5 g/dl adequate
- Sodium sulfite precipitation test indicative
- Variable findings on other tests

Plasma Transfusion



- Oral – only effective soon after birth
  - Decreased efficacy in premies
- Intraperitoneal
  - Field veterinarians, breeders
  - Rapid infusion (5-10 min)
  - Risk of pain from distention, organ laceration, peritonitis
- Intravenous
  - 20-30 ml/kg over 1.5-3 hours
  - Variable increase in IgG levels
  - Recommend 2 units (approx 700 ml high concentration llama plasma) (unpublished, UT, 2009)

Supportive Care



- IV catheter
- Plasma!!!
- IV fluid support – add dextrose
- Antibiotics
- Heat lamp
- Intranasal oxygen
- Feeding tube

Flexural Deformities

- Premature or dysmature crias
- Laxity in tendons
- Fetlocks drop
  - Controlled exercise
- May splay
  - Use hobbles
- Good prognosis with time



Umbilicus

- 2-3 inches long is ideal
- Dip with dilute chlorhexidene or betadine solution every 12 hours until dried up
- Best to leave unclamped
  - If clamp, 10-15 minutes recommended
  - Increased risk of abscess with clamp
- Heat, pain, swelling, or discharge may indicate infection
- Route of infection to whole body!!!

Topics in the News

- Choanal Atresia
- Vitamin D toxicosis
- Sodium phosphate enemas
- Bovine viral diarrhea virus
- Coronavirus

Choanal Atresia

Choanal Atresia

- Congenital defect
- One or both sides
- Complete or partial



- Signs
  - Difficulty breathing
  - Weak
  - Aspiration possible
  - Other defects?

What can be done?

- Diagnosis
  - Contrast radiographs
  - Computed tomography
- Surgical repair under general anesthesia only option to correct
- Prognosis guarded to poor

Choanal Atresia Gene

- Genetic component suspected
- Similar to condition in humans (CHD7 gene)
- Researchers at University of Minnesota found gene CHD7 in affected alpaca cria
- Working on sequencing and then evaluating for mutations
- Eventually may have genetic test for breeding stock

Vitamin D Intoxication

Acute Renal Failure and Anuria Associated with Vitamin D Intoxication in Two Alpaca (*Vicugna pacos*) Cria

C. Gerspach et al. 2010

Journal of Veterinary Internal Medicine. 24(2), 443–449.

Vitamin D



- Converted in skin by UV radiation
- SA mountain habitat → high UV exposure
  - Reduced converting ability
- Less UV exposure in North America
  - Important to supplement
- Recommended
  - SAC: 30 IU/kg BW (Van Saun)
  - single dose 1000-2000 IU/kg
  - Other species: 6.6 IU/kg

Vitamin D Functions

- Calcium and phosphorus metabolism
  - Skeletal development
  - Bone mineralization
- Deficiency → rickets

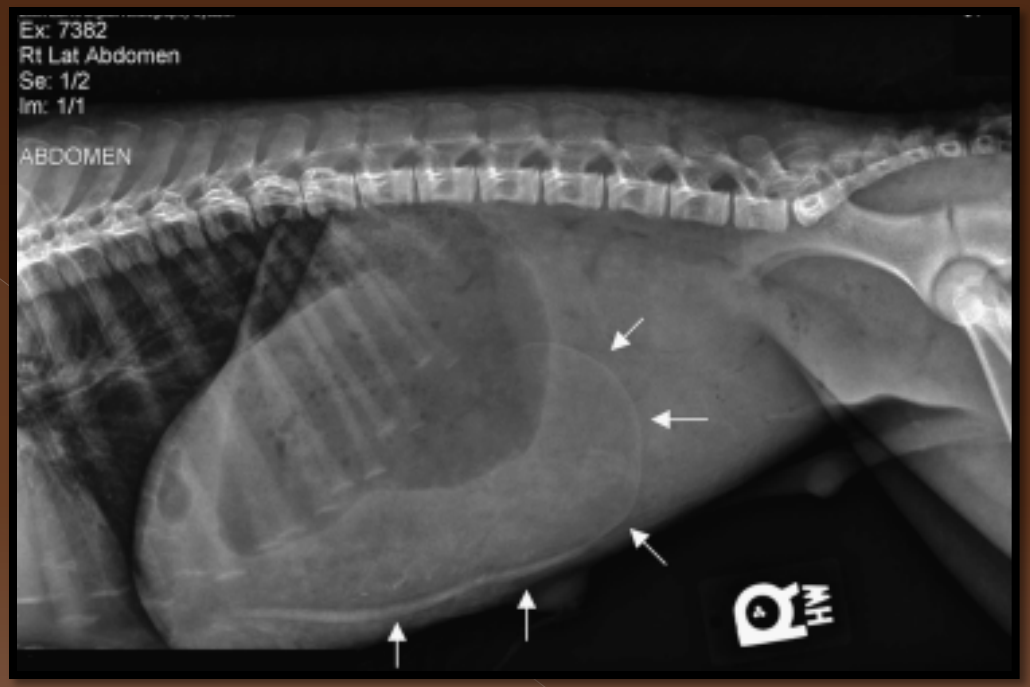


Too much of a good thing…

- Two alpaca crias
  - 18-day-old male: 3,750 IU/kg/d for 7 days
    - Powdered goat colostrum supplement
  - 8-day-old male: 12,987 IU/kg/d for 5 days
    - ADE paste → 100,000 IU vitamin D/day
- Signs
  - Anorexia
  - Weakness
  - Depression

Vitamin D Intoxication

- High calcium
- High phosphorus



- Kidney failure
- Mineralization of organs

Vitamin D in supplements

Supplement	Vitamin D
Manna Pro Colostrum Powder	5000 IU/lb
MannaPro Kid Colostrum	5000 IU/lb
Kaeco Colostrum Powder	2750 IU/tsp
LaBelle Alpaca/Llama Powder	3200 IU/lb
ADE paste	varies

Recommended amount of 30 IU/kg:

7 kg alpaca cria = 210 IU/day

9kg llama cria = 270 IU/day

Enemas

Inadvertent transvaginal administration of sodium phsophate enemas in 2 alpaca crias

Bragg et al. 2010.

JVECC 20(6), 623-627

Sodium Phosphate Enemas

- 2 female alpaca crias
- Given sodium phosphate enemas for suspected meconium impactions
- Inadvertently given in reproductive tract →vaginal tear →enema fluid in abdomen
- Electrolyte levels altered
- One euthanized, one recovered

Enemas

- Meconium should pass w/in 18-20 hours of birth
- Sodium phosphate
  - Dogs < 25 lbs 2 fluid ounces toxic
- Warm soapy water







- Use only if indicated
- Do not repeat
- Ensure proper restraint
- Gentle applicator and lubrication

Bovine Viral Diarrhea Virus

Disseminated Bovine viral diarrhea virus in a persistently infected alpaca cria

Byers et al. 2009

J Vet Diag Invest 21, 145-148.

Bovine Viral Diarrhea Virus

- Emerging disease in North American camelids?
- Study of 63 herds (voluntary)
  - 25% of herds had positive animals
  - 6% of herds had PI crias
- Cattle
  - Acute → fever, low WBC, anorexic
  - Persistent infection

BVDV-1b in Camelids

- **Natural transient infection**
  - Decreased feed intake, mild lethargy
  - >60 days
- **Acute BVD**
  - Mild fever, anorexia, lethargy
  - Intro of PI →9/52 sick
- **Embryonic loss**
  - Pregnancy loss
  - Abortion
  - Premature births
- **PI cria**
  - Acute
  - chronic

What is a PI cria?

- Persistantly Infected
- Dam infected during pregnancy
  - Virus crosses placenta
- Fetus infected **before** immune system develops
  - Probably first trimester (cattle<145 days)

    → Immune system accepts virus as “self”

    → Virus multiplies
- Often low birth weights, poor-doers, chronic respiratory and GI infections

Disseminated Bovine viral diarrhea virus in a persistently infected alpaca (Vicugna pacos) cria

- Case report from Washington State
- 4-month-old male alpaca cria
  - Negative antibody test
  - Positive PCR and virus isolation tests
- Decreased weight gain, poor-doer, anorexia
- BVDV-1b found in many tissues
  - Salivary glands →transmission through spit?
  - Testes, prostate → reproductive transfer?
  - Kidneys → urine?

Recommendations

- Avoid comingling especially pregnant females
  - Isolate new animals until tested
- Test all crias
  - PCR
- Ab test (ELISA)
  - Bovine colostrum may give false (+)
  - Vaccination
  - 0.9-25.4 % positive
- PCR screen
  - 10% of herd or 15 animals
  - Retest positive in 3-4 weeks (transient up to 60 d)
  - Pooled sample

Coronavirus

Identification of a novel coronavirus possibly associated with acute respiratory syndrome in alpacas in California

Crossley et al. 2010.
J Vet Diag Invest 22, 94-97.

Coronavirus

- First identified in NWC in 1998
  - Herd outbreaks
  - Severe diarrhea
- Diarrhea outbreaks – all ages
  - Diagnosis with electron microscopy of feces
- “Snots” – outbreaks in 2007



Acute Respiratory Syndrome

- California 2007
- Fever, Mild flu signs to fatalities
  - Severe fluid in lungs and chest cavity
  - Fibrin in alveoli
- Isolated coronavirus from 1 lung
  - Different than diarrheal virus
  - More work needed to identify in respiratory cases

Questions?



Sources

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