BVDV Testing and Control Practices for Alpaca Herds

Goals:

1. To identify exposed herds.
2. To identify and eliminate any persistently infected animals from the herd.
3. To identify non-PI animals and certify them as safe for travel to breeding farms, shows, and sale.
4. To minimize introduction and spread of BVDV in a herd.

Screening For Exposed Herds

- Identify Seropositive Animals
    - Select animals with a greater likelihood of exposure to BVDV
        - Females that have gone to another farm for breeding
        - Animals that attend shows
        - Animals exposed to visiting animals (i.e. exposed to breeding animals and their crias from other farms)
        - Recommend screening at least 10% of your animals or a minimum of 15 animals.
    - Collect Blood Samples (serum, red top tubes)
    - Submit for BVDV Serum Neutralization Test
        - Detects antibodies to BVDV
        - Any positive tests indicate exposure to BVDV
        - Test costs about $5.00 per sample
        - Currently, testing for BVDV Type 1 is sufficient

- If you have any animals with a measurable BVDV titer (i.e. any titer ≥8) then you have evidence of BVDV exposure in your herd.
    - This indicates that you **MAY** have a **PERSISTENTLY INFECTED** (PI) animal in your herd.
    - Alternatively, the positive animals may have been exposed at another herd or a show.
    - If any of these positive animals are pregnant, they may now be carrying crias that will be born persistently infected.

Identifying PI Animals

- **Available Tests:**

Test	Advantages	Disadvantages
Whole Blood PCR ($30, 1-2 weeks)	High Sensitiviy, No maternal antibody interference	May pick up acutely infected animals. Cost
Whole Blood Virus Isolation ($25, 3 weeks)	Sensitive, No maternal antibody interference	May pick up acutely infected animals. Cost. Time
Skin Immunohistochemistry (IHC, $2-20 per sample, 1 week, Kansas State or Nebraska)	Sensitive, simple to collect sample, inexpensive for multiple numbers, rarely detects acute infections	Leaves a skin defect (ear notch, axila), samples stored and sent in formalin, send within 1 week of collection

Antigen Capture ELISA–Skin ($5-10, 1 week)	Simple to collect sample, inexpensive, rarely detects acute infections.	Lower sensitivity, some false negatives. Leaves a skin defect (ear notch)
Antigen Capture ELISA–Serum ($5-10)	Inexpensive, rarely detects acute infections.	Lower sensitivity, some false negatives, not suitable for crias <6 months due to maternal antibody interference

- Recommend Whole Blood (EDTA) PCR Test
  - High Sensitivity, very few false negatives
  - No interference in crias from maternal antibody
  - Immediately send sample refrigerated on ice
  - Positive Test Result Interpretation
    - Persistently Infected or Acutely Infected
    - Retest after 3 weeks, acutely infected animals should be PCR negative at that time and persistently infected animals will continue to be positive.

- Testing Strategy
  - PI Test all animals under 12 months of age independent of individual animal serology
  - In herds with known exposure (i.e. at least 1 seropositive animal), test any adult animals with unknown titers or BVDV titers <32.
    - Currently the oldest known PI alpaca is 30 months. You may consider restricting PI testing to animals born **AFTER JANUARY 1, 2003**. Animals born before this date are perhaps less likely to be PI.
  - Continue testing ALL crias at birth by PCR
    - Isolate crias and dams from other pregnant animals until test results are know.
    - A negative cria means the cria, her dam, and all previous maternal ancestors are non-PI.
    - A positive cria is likely a PI
      - The cria should either be euthanized (to prevent transmission to other animals) or isolated and retested in >3 weeks as indicated above.
      - The dam may be a PI and should also be tested by PCR if BVDV titer is unknown or <32.

Testing Stillborn or Aborted Fetuses

- Stillborn or aborted fetuses can be tested by several methods. Two recommended methods are:
  - **Skin Immunohistochemistry** – Obtain a skin sample (about 1x1cm, ear notch or axila) and place in 10% buffered formalin. Submit within 7 days to a diagnostic lab that will perform BVDV IHC (Nebraska or Kansas State Diagnostic Labs)
  - **Skin PCR** – Obtain a skin sample (about 1x1 cm) and place in a clean container (i.e. red top blood tube). Ship immediately on ice to a lab that will perform BVDV PCR.

- After collecting the skin sample, the fetus can be frozen and used for neonatal classes if desired.

Biosecurity and Biocontainment

- Do not allow animals into your herd without confirmation of non-PI status.
- Isolate new animals from remaining herd for at least 3 weeks.
    - Isolation area should be at least 10 meters from any pregnant females.
- Utilize breeding farms with an active BVDV control program that only accept confirmed non-PI dams and crias from herds with an active BVDV control program.
- Utilize shippers that are willing to ship only animals with confirmed non-PI BVDV status.
- Restrict as best as possible contact with other animals of undetermined BVDV status at shows and other events.
    - Direct contact is the primary means of transmission.
    - BVDV can spread by aerosol at distances of at least 10 feet.
    - BVDV can be spread by items in contact with infected animals such as feeders, waterers, equipment, clothing, shoes, etc.
    - BVDV is susceptible to many disinfectants including regular detergents (soap and water), bleach, povidone iodine, chlorhexidine, etc.

ADDRESSES:

Colorado Veterinary Diagnostic Laboratory
300 West Drake
Fort Collins, CO 80523
Phone: (970) 297-1281
Fax: (970) 297-0320
www.dlab.colostate.edu/ for forms

For Skin Immunihistochemistry (IHC) Tests

Kansas State Veterinary Diagnostic Laboratory
1800 Denison
Kansas State University
Manhattan, KS 66506
Phone: (785)532-5650
FAX: (785)532-4481
http://www.vet.k-state.edu/depts/dmp/service/index.htm

Veterinary Diagnostic Center
University of Nebraska
Fair St. and East Campus Loop
P.O. Box 82646
Lincoln, NE 68583-2646
Phone: 402 472-1434
Fax: 402 472-3094
E mail: vdc2@unl.edu
http://vbms.unl.edu/nvdlssbvd.shtml