



NYS Cattle Health Assurance Program  
Bovine Leukosis Module  
**Testing for BLV infection**



### **Testing an individual animal**

There are very reliable tests available to determine which animals are infected. The ELISA test is reported to be 95% sensitive for animals infected 55 days. Any animal that develops antibodies is considered infected, because animals exposed to the virus and developing antibodies, but not remaining infected, have not been demonstrated. The animals for which serum antibody detection is unreliable are either calves that still have detectable levels of maternal antibodies, or newly infected animals, such as calves with *in utero* acquired infection that have not yet seroconverted. A newborn calf fed colostrum from a positive cow, whether it is the calf's dam or not, will have maternal antibodies and test positive until approximately six months of age. If testing is deemed necessary in young animals, calves that test positive should be retested after they reach 6 month of age to determine their actual status. False positives may occur theoretically even at 7 or 8 months. Calves tested at a very young age (days to weeks of age) and found to be negative, if born to a positive dam, might need to be retested to confirm their negative status. Therefore, for animals greater than 8 months old, the ELISA and AGID tests are very specific, approaching 100%.

The tests commonly performed are the serum ELISA and the serum AGID tests. The NYS Animal Health Diagnostic Laboratory (AHDL) at Cornell prefers to run the ELISA, and requests that the AGID only be used where required for export, as supplies to perform that test in large numbers are not readily available. The ELISA test is more able to detect a lower number of antibodies than the AGID test (greater analytical sensitivity).

In addition to testing for serum antibodies, it may be indicated to test infected cows for elevated lymphocyte counts, as it has been determined that positive cows which have persistent lymphocytosis (PL) are more likely to infect their in-utero calves, may suffer serious production declines, and may be more infectious to animals around them. Cows may be considered PL when their lymphocyte count is 3 or more standard deviations above the norm for a given breed or age group, on two occasions 3 months apart, so as not to include cows that may have a transient elevated lymphocyte count due to a current infection. In our lab at the AHDL, that value is represented by a lymphocyte count of 16,000; the suggested interval for retesting is 3 months.

With the exception of calves that still have detectable maternal antibodies, a positive animal should remain positive for life. There are reports of positive cows' antibody levels dropping to undetectable levels on the AGID test pre-parturition, during the period

of colostrum pooling. The ELISA test can detect antibodies at this time. Therefore, most testing strategies would not require retesting of mature or near-mature individuals that tested positive previously. While it may take up to 5 months for the ELISA test to detect antibodies in a newly infected animal, 95% of newly infected cattle can be detected with the ELISA test by 55 days post-infection, so new herd additions which test negative may need to be retested 60 to 150 days later, if their negative status is critical to the farm control strategy.

### **Herd testing strategies**

Testing strategies will vary depending on the farm's goals. If a farm has a low prevalence of BLV or is BLV free, positive new additions are undesirable, and positive animals in the existing herd may be culled based on test results. If no new positive animals are ever introduced from outside sources, the farm may need to verify their status, for example BLV free bull studs.

**A herd that is trying to reduce the overall prevalence of BLV** and prevent new infections will need to consider where the greatest risk for spread is on their farm, and gear their testing strategies toward that. For example, in some dairies, the risk of infecting a newborn calf is greatest in the calving pen, either from ingesting blood contaminated items in their environment, or possibly from the consumption of colostrum from an infected dam or colostrum donor. There is even the risk that a newborn calf might suckle milk from a positive cow that is sharing the pen. Therefore, knowing which cows are positive at the time of calving will assist in controlling management at this stage. It would be useful to test cows as they are dried off so that results are available at calving.

If a farm has the ability to segregate negative from positive animals, the negative group needs to be handled like a BLV free herd, with rigorous testing of additions to the negative group, and verification of negative status as deemed necessary by the owner/herdsman and veterinarian.

Determining which positive cows are PL may enable farms to cull the cows that would most likely give birth to an infected calf, and would be considered the greatest risk to other animals on the farm. These may also be the animals most likely to develop clinical lymphosarcoma within a short period of time, or be less productive than their average herd mates.

**The less management practices the farm is committed to in order to prevent transmission of the virus from infected to uninfected animals, the more stringent the testing and isolation of positive cows needs to be in order to reduce the prevalence of BLV in the herd.**

- 1. Low prevalence or free herds:** test everything greater than 6 months of age and cull or isolate positives. Retest based on risk assessment and desire to establish BLV-free status

2. **Moderate to high prevalence herds:** Targeted testing with management procedures in place to prevent new infections and begin to reduce BLV prevalence.
3. **No testing:** Stringent application of management procedures to minimize newly infected young stock and mature animals. Possible testing can always be introduced at a future time to assess progress, and could include a whole herd survey or selective testing of small groups to assess progress, such as groups of 2 year olds.