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Michigan State University Extension Service

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Questions and Answers for Farmers

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What is it?

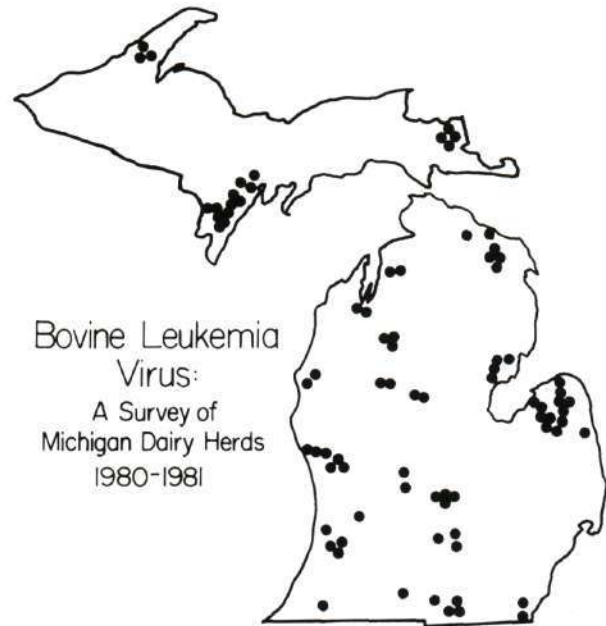
Bovine leukemia (also referred to as bovine leukosis, lymphosarcoma or malignant lymphoma) is a virus disease of cattle. All dairy and beef breeds are susceptible to this virus, but dairy breeds appear to have higher rates of infection. Of those animals infected, less than 10% actually develop tumors.

Clinical signs of illness produced by this disease depend on which parts of an animal are involved and how severely they are affected. Cows which have developed tumors may show decreased milk production, loss of weight, lymph node enlargement, cardiac, respiratory and digestive disturbances, repeat breeders, "downer cows" and others. Parts involved separately or in combination are the stomach, heart, uterus, and/or glands.

About 5% of the calves born to bovine leukemia virus (BLV)-infected dams are, while in utero, infected with BLV. Transmission of BLV to calves via colostrum or milk is infrequent. Transmission between animals may be primarily by way of contaminated needles, instruments and blood-sucking flies. The role of semen in transmission of the BLV via the artificial insemination and/or natural service remains to be clarified.

How is it detected?

The laboratory test approved by the USDA for detecting BLV-infected animals is the agar gel immunodiffusion test (AGID). Commonly, 5 to 10 ml of blood are drawn from the tail vein by a veterinarian and shipped to a laboratory approved for performing the blood test. The Clinical Microbiology Section of the Animal Health Diagnostic Laboratory at Michigan State University performs the test as does the Michigan Department of Agriculture State Laboratory in Lansing. For export to some countries, blood samples must be tested at the National Veterinary Service Laboratory in Ames, Iowa.



Location of 82 randomly surveyed dairy farms which were sampled for the presence of antibodies to the bovine leukemia virus.

Animals having a "positive" laboratory test are infected with the bovine leukemia virus and seem to remain infected for life. Results of this blood test will indicate whether or not the animal being tested has antibodies in its blood to the bovine leukemia virus. In order to produce antibodies in the blood, the animal must be infected by this virus. Moreover, they may act as a source of infection to "negative" animals and shed virus in the milk.

It is important to emphasize that NOT all infected animals have clinical signs of disease and less than 10% actually develop tumors. Identification of infected animals enables farmers to eliminate the carriers and substantially lessen the chance of any clinical disease associated with the virus in their herds.

How can you control this disease?

Avoid contact between bovine leukemia-infected and susceptible animals to stop the spread of the virus. Ideally, complete separation of the two groups is best so that there is limited or no common contact with instruments and/or blood-sucking insects which could further spread the virus to non-infected animals. Obviously, in most dairy herds this is impractical and hardly economical! So, eventual culling of bovine leukemia-positive animals is advised as well as husbandry practices which reduce the chance of spread such as:

- controlling blood-sucking insects
- avoid using blood-contaminated instruments (e.g. needles, dehorner) between animals
- feed calves colostrum and/or milk from bovine leukemia-negative cows
- raise calves and replacement heifers separately from bovine leukemia-positive cows
- test all new cattle above six months of age and add only negative animals.

Are humans susceptible to this virus?

At present there is not enough evidence to suggest that BLV presents a public health hazard for humans. This virus is easily destroyed by pasteurization and can only survive a few hours at room temperature outside of living cells. Studies of farm families who consume raw milk, thereby having a much higher degree of exposure to this virus, have shown **no evidence** of BLV infection. Also, the presence of antibodies to bovine leukemia have not been found in people potentially exposed daily to this virus in occupations such as researchers, veterinarians and meat inspectors.

What does it mean to you economically?

The primary effect of this disease is the potential loss of income from exporting U.S. breeding stock to European and South American countries. Many countries outside the U.S. prohibit importation of any "positive" testing dairy or beef animals, or any dairy or beef animals from a herd with known "positive" animals. Moreover, an increasing number of countries require certification of a negative status for BLV before shipment. Animals exported from the U.S. must test negative in two consecutive laboratory tests 60 days apart.

Also, Michigan dairy farmers may experience economic losses due to:

- condemnation of carcasses at slaughter
- breeding/health problems
- decreased milk production in cows with tumors.

What is the prevalence of this infection in the State of Michigan?

A random survey of Michigan dairy herds was conducted by researchers at Michigan State University's College of Veterinary Medicine from August 1980 to August 1981. In this study, 82 dairy farms were randomly sampled from throughout the state. A total of 3,132 dairy cows over 2 years of age from these farms were blood tested for BLV. Of these, 29.6% of the animals were "positive" for the presence of antibodies to the virus. (See figure for farms sampled.)

In contrast, a recent survey in Florida revealed a 47.8% (dairy) and 6.7% (beef) prevalence rate of BLV antibodies.



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