BRITISH COLUMBIA | Ministry of Agriculture and Food

Bovine Leukosis

Alternate Names: BLV, Bovine Lymphosarcoma, Leukemia, Malignant Lymphoma.

Species Affected: Bovids (cattle).

What causes bovine leukosis? Bovine Leukemia Virus (BLV). This virus infects white blood cells. Once infected, cattle will carry the BLV for life.

How is BLV transmitted? cattle get infected with BLV through contact with blood from infected cattle.

- Any activity that transfers infected blood between cattle can transmit BLV. For example: reusing blood contaminated tools during dehorning and tattooing, reusing needles, rectal palpation sleeves, and gloves.
- BLV may also be transmitted by large biting flies.
- Infected cows can transmit BLV to their calf via colostrum.

What are the clinical signs of BLV? Most cattle infected with BLV show no signs of disease, but they can still be a source of infection. A small proportion of animals (<5%) develop lymphosarcoma, a cancer of the lymphoid system. This cancer is most common in 4–8-year-old cattle and the clinical signs depend on the affected organs:

- **Juvenile lymphosarcoma** may affect multiple organs and it presents with sudden weight loss, fever, bloat, rapid heart rate, difficulty breathing and hind end weakness.
- **Thymic lymphosarcoma** is a cancer of the thymus, a gland from the immune system located in the neck and upper chest. Clinical signs include fever, bloat, rapid heart rate, difficulty breathing and swelling of the brisket region.
- **Cutaneous lymphosarcoma** is a cancer of the skin that presents as skin plaques 1 to 5cm in diameter on the face, neck, back, thighs and rump.

What are the consequences of BLV infection? Cattle infected with BLV have reduced immune function and are at higher risk of other diseases. Infected cows birth fewer calves and have lower milk production than healthy cows. Although mortality due to BLV is low, animals that develop lymphosarcoma (cancer) will die of the disease. BLV affected cattle sent to slaughter have higher rates of carcass condemnation.

How is BLV detected? Blood testing using serology (a test to detect antibodies) or PCR (Polymerase Chain Reaction, a molecular test) can detect BLV infection. Lymphosarcoma can be diagnosed by examination of tumor biopsies or tumor cells under a microscope but not by blood testing.

How can BLV be prevented? The main way BLV is introduced into a herd is via infected cattle. Good management practices including maintaining a closed herd, or if needed, purchasing from low-risk herds and blood testing all animals before bringing them to the farm are highly recommended. Additional biosecurity practices include fly control, cleaning and disinfection of tools and equipment between animals, single use needles and palpation sleeves, and use of pasteurized colostrum or colostrum replacer.

BLV eradication programs have been successful in many European countries. The economic cost and feasibility of eliminating BLV from the herd determine whether to use a test and cull or a test and segregate program. A BLV eradication program consists of 1) Blood testing the herd 2) culling/segregating all infected animals 3) retesting the herd in 30-60 days and culling/segregating again if needed 4) PCR testing all calves 5) continuing testing and culling/segregating until the entire herd tests negative. Strict separation and biosecurity are necessary between BLV negative and positive animals.
Once negative, the herd should be blood tested every 6 months.

How can BLV be treated? There is no treatment or vaccine for BLV

Is BLV zoonotic (transmitted from animals to humans)? No

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