



Leukosis Factsheet

Healthy Cows, Healthy Future



Testing for Leukosis Disease Using the DHI Milk ELISA Test

Leukosis is considered a production limiting disease of dairy cattle. A Canadian study determined that 40% of dairy herds and 11% of beef herds have cows that are infected with the Bovine Leukosis Virus (BLV). About 5% of the cows infected will become sick. Cows with the disease will develop tumours in the lymph nodes, uterus, abomasums, heart, spleen, kidneys and brain. The disease results in decreased production and potentially death. Infection without disease is not known to affect production or health.

What is Leukosis

Enzootic Bovine Leukosis Virus, sometimes referred to as EBL or BLV, is a virus that infects the white blood cells of the cows. The virus can cause tumours in the lymph nodes, uterus, heart, abomasums, spleen, kidneys and brain.

At the clinical stage, the tumours can become visible as lumps in the skin at the lymph nodes at the shoulder and above the udder. Internal tumours (of the uterus, heart etc) cannot be seen.

Once infected, the animal has BLV for the remainder of their life. There is no treatment for animals to remove infection with the virus or to stop clinical disease.

How does an Animal Become Infected

A very small amount of blood or colostrum, carrying infected white blood cells, can transfer the infection from one animal to another. Contaminated ear tagging equipment, dehorning, hoof trimming equipment, needles, etc can all potentially transfer the virus among animals. The virus can also be transmitted directly between animals through milk, nasal discharge and saliva. The virus can transfer from cow to calf, before the calf is born, in about 20% of pregnancies of infected cows.

There is no evidence that humans can become infected with the virus through blood or milk. Pasteurization effectively destroys the virus in milk.

Economic Impact

Depending on the location of the tumors that develop cows may have decreased milk production, weight loss and can possibly become "downer" cows. Frequently, cows with Leukosis are not detected until the time of slaughter. Up to 50% of condemned dairy cows are condemned due to the presence of tumors. Producers selling breeding stock and embryos will feel a larger financial impact due to lost marketing opportunities, since most international buyers require a Leukosis free status.

Control

There is no way to treat an animal infected with either the virus or affected with clinical disease. Infection is lifetime.

Due to the highly contagious nature of this virus, once an animal is identified as infected it is recommended that the producer work with their herd veterinarian to develop an action plan. Cows can be culled from the herd if eradication of the virus is the herd goal.

Producers should adopt management practices that reduce the potential for spreading the virus.

Suggested practices include:

- Colostrum from cows that test positive for Leukosis should not be fed to calves;
- Sterile needles should be used and discarded after each individual use
- Obstetric gloves should be changed between cows
- Instruments (e.g. ear tagging equipment) that have the potential to become contaminated with blood should be washed and disinfected between use on each animal
- Calves should be housed in individual pens and spaced well apart to prevent spread through saliva or nasal discharge
- Non-surgical dehorning procedures should be used. Avoid using gougers
- Place calving cows in individual pens. Disinfect and change bedding between calvings.

Testing for Leukosis

The Ontario Veterinary College and others around the world have evaluated the testing for BLV in milk samples with an Enzyme-Linked ImmunoSorbent Assay (ELISA) analysis. They have determined that the milk test is extremely accurate in detecting Leukosis positive cows. Milk testing, which has the same accuracy as traditional blood testing, is more convenient.

The ELISA test detects an antibody that is developed when a cow is infected with the Leukosis virus. The antibody will develop within three weeks of exposure to the virus.

Due to the high sensitivity of the test, cross contamination with milk from other animals during the sampling process might cause some animals to be identified as "Suspect". Cows that are identified as Suspect should be retested to confirm the diagnosis.

The producer should work closely with their veterinarian to determine management procedures and culling practices if a cow tests positively.



Selecting Animals to Test

Initially, the whole herd should be tested to determine if the virus is present and to estimate the extent of infection within the herd.

Newly purchased cows should always be tested to determine if Leukosis is potentially being introduced into the herd.

Testing Plan

In conjunction with their veterinarian, a producer should develop a testing plan based on whether the virus exists in the herd and cattle movement in and out of the herd. The herd veterinarian can help you to design an appropriate testing program.

Understanding your DHI Leukosis Reports

Herd owners and their veterinarian receive two reports each time animals from the herd are tested using DHI's milk ELISA test for Leukosis:

The **Herd Summary** provides a summary of the results of the tested samples. The **Cow Summary** provides detailed results for each cow tested. Each report will be sent to the herd owner and the herd veterinarian (the name and contact information for the herd veterinarian must be provided to DHI before testing is done) by fax, internet, or mail. Herd owners should discuss the results of the DHI Leukosis test with their veterinarian.

Further action could involve further testing using the DHI milk samples.

2. Results Interpretation

This chart provides information on how to read the individual results on the Cow Summary. Milk ELISA scores range from -0.10 to 3.00. Any cow scoring greater than 1.00 is indicated in the >1.00 area. A Leukosis positive result is interpreted as any sample with an ELISA score of more than 0.30.

3. Leukosis Test Results by Age

This graph provides a quick overview of the herd test results for Leukosis for individual cows, based on the age of the animals tested.

Cow Summary

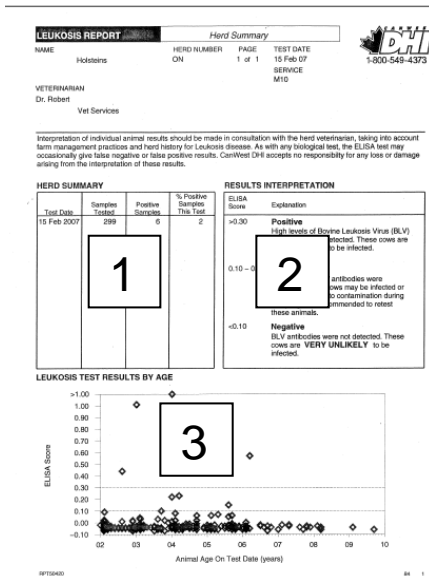
This report provides detailed information on the test results from each cow tested. The table has two sections:

- Animal identification (by chain, name, NLIID#)
- Information from the current test (birth date, age of cow, test results and interpretation)

Tested cows are ranked on the report by their ELISA score. Animals with the highest ELISA scores are listed at the top; animals with lower scores are listed at the bottom.

Headings identify which animals have scores that put them in the Positive, Suspect or Negative range based on their ELISA score and the Results Interpretation chart on the Herd Summary.

The management of cows that receive a Positive (greater than 0.30) score should be discussed with the herd veterinarian before any action is taken. The herd's history with the Leukosis Virus and whether she was born on the farm or purchased should all be considered.



LEUKOSIS REPORT		Cow Summary		15 Feb 07		
NAME	HERD NUMBER	PAGE	TEST DATE	1 of 8	15 Feb 07	
Hokstans	ON	1 of 8	SERVICE	MID		
Chain #	Cow Name	Registration	Birth Date	Age Y:Mo	ELISA Score	Interpretation
Positive						
0571	571	HO F	17 Jan 03	04-00	1.13	POS
0574	24	HOCANF7429	19 Feb 04	03-00	1.01	POS
0562	662	HO F	19 Nov 02	04-03	0.88	F
0567	567	HO F	25 Apr 03	03-09	0.87	POS
0763	753	HOCANF6000	27 Nov 00	05-02	0.57	POS
0085	65	HOCANF7429	17 Jul 04	02-06	0.44	POS
Suspect						
0512	512	HO F	09 Dec 02	04-02	0.23	SUSP
0567	567	HO F	18 Jan 03	04-00	0.22	SUSP
0526	526	HO F	22 Jan 03	04-00	0.22	SUSP
1367	1367	HO F	07 Aug 01	05-06	0.15	SUSP
0869	869	HO F	02 Jul 03	03-07	0.10	SUSP
Negative						
0026	26	HOCANF7429	26 Feb 04	02-11	0.09	NEG
0580	580	HO F	01 Jan 03	04-01	0.08	NEG
0129	129	HOCANF7429	19 Nov 01	05-09	0.07	NEG
1362	1362	HOCANF6214	15 Mar 01	05-11	0.06	NEG
0209	209	HO F	27 Jun 01	05-07	0.06	NEG
0514	514	HO F	07 Jul 02	04-07	0.06	NEG
1365	1365	HOCANF6214	15 Aug 01	05-06	0.05	NEG
0674	674	HO F	07 Apr 03	03-10	0.04	NEG
0036	36	HOCANF7429	15 Mar 03	03-11	0.03	NEG
0861	861	HO F	12 Aug 03	03-06	0.03	NEG
0000	D11	HO F	02 May 04	02-09	0.02	NEG
0865	865	HO F	03 Apr 04	02-10	0.02	NEG
0567	567	HO F	05 Jun 03	03-08	0.02	NEG
0059	59	HOCANF7429	04 Jul 02	04-07	0.02	NEG
0686	686	HO F	01 Jan 03	04-01	0.02	NEG
0668	668	HO F	27 Feb 04	02-11	0.02	NEG
0030	30	HOCANF7429	06 Mar 04	02-11	0.01	NEG
0082	82	HOCANF7429	03 Aug 04	02-08	0.01	NEG
0577	577	HO F	05 Feb 03	04-00	0.01	NEG
0660	660	HO F	22 Apr 04	02-09	0.01	NEG
0662	662	HO F	03 Jan 01	05-01	0.00	NEG
0234	234	HO F	01 May 03	03-09	0.00	NEG
0549	549	HO F	01 May 03	03-09	0.00	NEG
0195	195	HO F	28 Jan 01	05-07	-0.01	NEG
0515	515	HO F	05 Jul 02	04-07	-0.01	NEG

Herd Summary

This report has three areas of information:

1. Herd Summary:

This table provides a report of the overall results of the samples tested for this test, and previous tests, including:

- Number of samples tested for Leukosis
- Number of positive samples
- Percent of Leukosis positive samples

For more information on Leukosis Disease contact your Herd Veterinarian. For more information on the milk ELISA test contact your DHI field staff.