

The surveillance programme for enzootic bovine leukosis (EBL) in Norway 2015



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The surveillance programme for enzootic bovine leukosis (EBL) in Norway 2015

Johan Åkerstedt, Malin Jonsson, Tormod Mørk

All milk and blood samples tested in 2015 were negative for antibodies against bovine leukaemia virus (BLV).

Introduction

Enzootic bovine leukosis (EBL) is caused by bovine leukaemia virus (BLV), in the genus retrovirus. Most infections are subclinical, but approximately one third of infected cattle older than three years of age develop persistent lymphocytosis, and a smaller proportion develop lymphosarcomas in various internal organs. EBL is classified as a list B disease in Norway and is notifiable to the Office International des Epizooties.

The disease had never been reported in Norway until antibodies against BLV were detected in eight dairy herds in samples collected through the surveillance programme in 1995 (1). No new herds have tested positive since 1997 (2), except a single positive bulk milk sample in one herd in 2002, and one blood sample from one of the cows in that herd. After extensive follow up, it was concluded that the positive antibody results were due to false positive reactions (3).

Free status from EBL was granted to Norway by the EFTA Surveillance Authority in 2007.

The Norwegian Food Safety Authority is responsible for carrying out the surveillance programme for EBL. The Norwegian Veterinary Institute is in charge of planning the programme, collecting the bulk milk samples from the dairies, and performing the tests. Official inspectors from the Norwegian Food Safety Authority collected the blood samples from beef cattle at slaughterhouses.

Aim

The aim of the surveillance programme for EBL in 2015 was to document freedom from the infection in Norway according to Council Directive 64/432/EEC as amended and to contribute to the maintenance of this favourable situation.

Materials and methods

The surveillance programme included both dairy and beef herds. Bulk milk samples from the dairy herds were provided by the dairies. From the beef herds, individual blood samples from animals older than 24 months were collected at 17 slaughterhouses, with a maximum of five animals per herd and day of sampling.

The target population of dairy herds consisted of all cattle herds delivering milk to dairies during the sampling period. In 2015, bulk milk samples from 1,176 randomly sampled dairy herds were tested. The target population of beef herds was all herds delivering cattle to slaughter in 2015. A total of 3,704 individual blood samples from 1,206 beef herds were analysed in pools. The sampled herds represented approximately 18% of the Norwegian cattle herds (Table 1).

Bulk milk samples and blood samples were examined by an indirect enzyme-linked immunosorbent assay (ELISA; Boehringer Ingelheim Svanova, Uppsala, Sweden) at the Norwegian Veterinary Institute in Sandnes (4).

Table 1. Numbers of dairy herds and beef herds within the frame of the Norwegian surveillance programme for EBL in 2015.

Herd category	Total no. of cattle herds*	No. of herds tested	Per cent of herds tested of the total no. of herds
Dairy herds**	8 771	1 176	13
*Beef herds***	4 131	1 206	29
Total	12 902	2 367	18

*Based on data from the Register of production subsidies as of 31 July 2015.

**Dairy herds including combined dairy and beef herds.

***Sampling performed at slaughterhouses. A small number of samples collected at slaughterhouses could originate from dairy herds.

Results

All bulk milk samples and blood samples tested in 2015 were negative for antibodies against BLV. Table 2 shows the results of the testing during the period from 1995 to 2015.

Table 2. Numbers of samples and positive results of antibody testing in the surveillance programme for EBL in the Norwegian cattle population during the period 1995-2015.

Year	Dairy herds	Beef herds		No. of positive samples
	No. of bulk milk samples tested	No. of herds sampled ¹	No. of individuals tested ²	
1995	25 131	1 532	9 354	8 (bulk milk)
1996	2 278	303	1 523	1 (bulk milk)
1997	26 903	2 214	16 741	0
1998	23 581	2 191	17 095	0
1999	19 933	2 382	18 274	0
2000	1 590	340	2 892	0
2001	2 564	434	3 453	0
2002	2 308	462	3 693	1 (bulk milk)
2003	1 845	449	3 901	0
2004	1 573	402	3 364	0
2005	1 919	484	4 766	0
2006	1 673	479	4 624	0
2007	1 575	412	4 241	0
2008	1 422	444	4 616	0
2009	1 315	435	5 038	0
2010	1 265	507	4 020	0
2011	1 226	1 278	4 758	0
2012	1 189	1 178	4 306	0
2013	1 042	1 167	4 079	0
2014	1 489	935	4 132	0
2015	1 176	1 206	3 704	0

¹Sampling performed at slaughterhouses from 2011 to 2015.

²A small number of blood samples collected at slaughterhouses could originate from dairy herds.

Discussion

The requirement from the EU for granting an EBL-free status is that the herd prevalence must be lower than 0.2%, which represents 26 herds out of the total number of 12,902 herds.

No new cases have been reported after 1997, and the continuous surveillance since 1995 shows that the Norwegian cattle population is free from EBL according to the requirements (2, 3). Initially, all cattle herds were tested annually. Since 2000, a minimum of 10% of dairy and beef cattle herds have been tested each year. Using scenario tree modelling, the probability of freedom from BVDV in Norway at the end of 2014 was calculated to 99.0% (5). The results of the surveillance programme from 2015 support that the Norwegian cattle population is free of EBL.

Together with the possible isolation period of six months and the testing protocol for imported animals, the surveillance programme for EBL should be an effective means to detect introduction of new infection.

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The primary mission of the NVI is to give research-based independent advisory support to ministries and governing authorities. Preparedness, diagnostics, surveillance, reference functions, risk assessments, and advisory and educational functions are the most important areas of operation. The Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad and Tromsø, with about 330 employees in total.

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