Surveillance programmes for terrestrial and aquatic animals in Norway

Norwegian Veterinary Institute

Annual Report · 2015

The surveillance programme for *Brucella melitensis* in small ruminants in Norway 2015

Veterinærinstituttet

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The surveillance programme for *Brucella melitensis* in small ruminants in Norway 2015

Annette H. Kampen, Siv B. Harbo, Attila Tarpai, Siv Klevar

Brucella melitensis was not detected in any sheep flock or goat herd sampled in 2015.

Introduction

Brucellosis in sheep and goats is mainly caused by *Brucella melitensis*, although infection with *Brucella abortus* and *Brucella ovis* can also occur. The infection usually results in abortion in pregnant females and can cause orchitis and epididymitis in affected males (1, 2). *B. melitensis* infection is a zoonosis, and the bacterium causes a serious infection in humans known as Malta fever, characterised by undulant fever, chills, sweat and debilitation (2).

B. melitensis is prevalent in sheep and goats in several Mediterranean countries (1), but has never been diagnosed in animals in Norway or any of the other Nordic countries (3, 4). Brucellosis is classified as a list A disease in Norway and is notifiable to the Office International des Epizooties.

After the agreement on the European Economic Area in 1994, Norway achieved status as free from *B. melitensis* in small ruminants on a historical basis. However, documentation is required to maintain the status. Hence, a surveillance programme for *B. melitensis* in sheep was established in 2004, and goats were included in the programme from 2007.

The Norwegian Food Safety Authority is responsible for carrying out the programme. The samples are collected by inspectors from the Norwegian Food Safety Authority, while the National Veterinary Institute is in charge of planning the programme, performing the analyses and reporting the results.

Aims

The aims of the programme are to document freedom from *B. melitensis* in sheep and goats according to the demands in EU Directive 91/68/EEC with amendments and to contribute to the maintenance of this favourable situation.

Material and methods

In 2015, 115 goat herds were randomly selected for sampling. In addition, collection of 10 000 blood samples from sheep taken at slaughter was planned.

In sheep, the programme in 2015 was based on serological examination of blood samples collected at different abattoirs. In goat flocks of less than 30 animals, all animals were sampled. In flocks of 30 to 100, 100 to 200, and more than 200 animals, samples from 30, 35, and 40 animals were sampled, respectively. The number of flocks represented in the surveillance programme for *B. melitensis* in small ruminants in 2015 is given in Table 1.

Blood samples were examined for antibodies against *B. melitensis* using the rose bengal plate agglutination test (RBT) for the initial screening. A competitive ELISA (C-ELISA, Svanova Biotech AB, Uppsala, Sweden) would be used to follow up unclear or positive reactions due to cross reactions.

Results

A total of 9,467 samples from 3,364 sheep flocks and 3,048 samples from 97 goat herds were received in the programme in 2015. 49 sheep samples were rejected or not tested, leaving 9,418 samples from 3,353 sheep flocks for analysis. This is approximately 23% of the total Norwegian sheep flocks and 8% of Norwegian goat herds.

All samples tested for antibodies against *B. melitensis* in 2015 were negative. The results from the surveillance programme for *B. melitensis* in small ruminants from 2004 to 2015 are shown in Table 1.

Table 1. Results and total number of flocks within the frame of the Norwegian surveillance programme for *Brucella melitensis* in small ruminants from 2004 - 2015.

Year	Total number of									
	Flocks in Norway[1]		Animals in Norway		Flocks tested		Animals tested		Positive samples	
	Sheep	Goats	Sheep >1 year	Goats	Sheep	Goats	Sheep	Goats	Sheep	Goats
2004	17 439		918 500		1 655		50 501		0	
2005	16 500		927 400		935		28 406		1[2]	
2006	15 800		894 100		911		27 812		0	
2007	15 400	1 300	854 000	71 500	1 004	183	29 633	5 734	0	0
2008	15 059	1 308	891 427	69 637	783	80	23 235	2 399	0	0
2009	14 800	1 300	877 400	67 800	816	104	24 011[3]	3 124	0	0
2010	14 800	1 300	887 600	67 600	269	25	8 160	779	0	0
2011	14 500	1 300	882 000	66 900	467	93	13 629	2 698	0	0
2012	14 300	1 300	868 500	65 400	479	86	13 989	2 562	0	0
2013	14 242	1 276	871 976	64 112	468	95	13 550	2 827	0	0
2014	14 218	1 150	755 987	55 894	3 489	89	9 703	2 528	0	0
2015	14 425	1 177	784 558	58 048	3 353	97	9 418	3 048	0	0

[1] Based on data from the register of production subsidies as of July 31 the respective year. [2] Probably unspecific reaction. [3] Corrected from previous reports.

Discussion

During the years 2004-2008, ram circles and their member flocks registered by The Norwegian Sheep and Goat Breeders Association constituted the target population for the programme. Approximately 90 % of the Norwegian sheep flocks in ram circles were screened for antibodies against *B. melitensis* during 2004 and 2005. Most flocks participating in the ram circles were retested in the programme during 2006 to 2008, and breeding flocks of other sheep breeds than those regulated by The Norwegian Sheep and Goat Breeders Association were selected for sampling in 2009. In 2010-2013 a random selection of the Norwegian sheep and goat population was made.

In 2014, the programme started sampling of sheep at slaugtherhouses. This gives a better surveillance of the total population with less resources than on-farm sampling. However, the negative status for each investigated sheep flock is no longer documented on the same level as before (4). In goats the surveillance is still based on sampling of live animals in goat herds.

The surveillance programme for *B. melitensis* in sheep was evaluated in 2006. When taking into account results accumulated from 2004 to 2006, it was estimated that there is a 99 % probability that the prevalence of sheep flocks being positive for *B. melitensis* is lower than 0.2 % (5). The results of the programme until 2014 have confirmed this conclusion (6).

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The Norwegian Veterinary Institute (NVI) is a natiton-wide biomedical research institute and Norway's leading centre of expertise regarding biosafety in aquatic and terrestrial animals. The aim of the Institute is to become Norway's contingency centre of preparedness for One Health.

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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The Norwegian Food Safety Authority (NFSA) is a governmental body whose aim is to ensure through regulations and controls that food and drinking water are as safe and healthy as possible for consumers and to promote plant, fish and animal health and ethical farming of fish and animals.

We encourage environmentally friendly production and we also regulate and control cosmetics, veterinary medicines and animal health personnel. The NFSA drafts and provides information on legislation, performs risk-based inspections, monitors food safety, plant, fish and animal health, draws up contingency plans and provides updates on developments in our field of competence. The NFSA comprises two administrative levels, five regions in addition to the head office, and has some 1250 employees. The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Trade, Industry and Fisheries and the Ministry of Health and Care Services.

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