Surveillance programmes for terrestrial and aquatic animals in Norway
Norwegian Veterinary Institute

Annual Report · 2014

The surveillance programme for maedi in Norway 2014

Annette H. Kampen
Siv B. Harbo
Malin E. Jonsson
Siv Klevar

Veterinærinstituttet
Norwegian Veterinary Institute

Surveillance programmes for terrestrial and aquatic animals in Norway

Annual report 2014

Project managers at the Norwegian Veterinary Institute:
Ståle Sviland (Terrestrial animals)
Anne-Gerd Gjevre (Aquatic animals)
Mona Torp (Food safety)

Publisher
Norwegian Veterinary Institute
PO Box 750 Sentrum
N-0106 Oslo
Norway

Fax: + 47 23 21 60 95
Tel: + 47 23 21 60 00
E-mail: postmottak@vetinst.no
www.vetinst.no

ISSN 1894-5678

Title:
The surveillance programme for maedi in Norway 2014

Authors:
Annette H. Kampen, Siv B. Harbo, Malin E. Jonsson, Siv Klevar

Date: 2015-04-30

Front page photo: Anne-Mette Kirkemo

Example of citation:
Kampen AH, Harbo SB, Jonsson ME, Klevar S. The surveillance programme for maedi in Norway 2014. *Surveillance programmes for terrestrial and aquatic animals in Norway. Annual report 2014*. Oslo: Norwegian Veterinary Institute 2015.

The surveillance programme for maedi in Norway 2014

Annette H. Kampen, Siv B. Harbo Malin E. Jonsson, Siv Klevar

None of the investigated flocks were diagnosed with maedi in 2014.

Introduction

Maedi is a progressive viral pneumonia in sheep first described in Iceland in 1939 (1). The disease occurs in several European countries as well as in other continents. The disease visna is caused by the same virus as maedi, but is a neuropathogenic manifestation of the infection (1, 2). Maedi-visna is classified as a list B disease in Norway and is notifiable to the Office International des Epizooties. In Norway, maedi was officially reported for the first time in 1972 (3).

In November 2002 and January 2003, post-mortem examinations of lungs from two diseased sheep from two different farms in Nord-Trøndelag county showed histopathological changes consistent with maedi. During the following investigations more than 15,000 sheep in 300 flocks were serologically examined for maedi-visna infection, and 50 flocks were found to be seropositive (4, 5). The outbreak demonstrated the need for a new, nationwide surveillance programme, which was started in November 2003 (4, 6).

An overview of the number of new infected flocks registered each year up to 2014 is given in Figure 1.

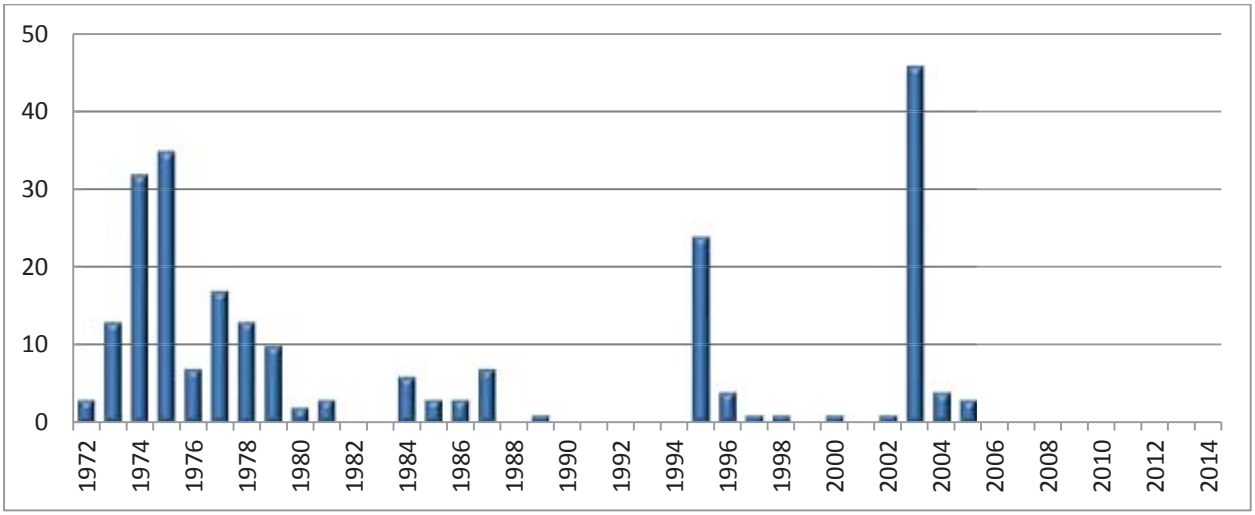

Figure 1. The number of new flocks infected with maedi during the period 1972 to 2014. The bars for 2003 – 2005 show both seropositive flocks detected through the investigations after the outbreak in Nord-Trøndelag county and seropositive flocks identified in the programme.

Aim

The aims of the surveillance programme for maedi are to document the status for maedi-visna virus infection in sheep in Norway, and to identify infected flocks for disease control.

Materials and methods

In 2014, collection of 10,000 blood samples from sheep taken at slaughter was planned.

The programme in 2014 was based on serological examination of blood samples from the selected sheep for antibodies against maedi-visna virus with the ELISA IDEXX MVV/CAEV p28 Ab verification kit, IDEXX, Montpellier SAS, France). Samples with inconclusive or seropositive ELISA results were retested in duplicate with the same ELISA and positive samples were verified by an agar gel immunodiffusion test (AGIDT, Maeditect, Veterinary Laboratories Agency, Weybridge, UK) (7). In case of inconclusive results on a sample taken from a sheep at slaughter, blood samples from a selection of animals in the

sheep's herd of origin would be taken one to two months after the first sampling. The meat inspectors at the abattoirs still play an important role in the programme by monitoring sheep and especially sheep lungs for detection of suspicious cases consistent with maedi-visna virus infection.

Results

A total of 10,044 samples from a total of 3,552 flocks were received in 2014. 273 samples were rejected, leaving 9,771 samples from 3,506 flocks for analysis (Table 1). This is approximately 25% of the total Norwegian sheep flocks.

In 2014, none of the investigated flocks were concluded as positive for maedi. One sample had positive serological results. The herd had a history of contact with goats positive for caprine arthritis encephalitis virus. Four samples from four different flocks had inconclusive serological results. Two of these had a history of contact with goats positive for caprine arthritis encephalitis virus, while in the two others, samples from a selection of animals in the herd were found to be serologically negative and no further investigations were made.

Table 1. The results and total number of sheep flocks within the frame of the Norwegian surveillance programme for maedi 2003-2014.

Year	Total no. of flocks*	No. of flocks sampled	No. of animals tested	No. of positive flocks
2003	18 400	456**	13 951	1
2004	17 439	1 230	36 911	1
2005	16 500	940	29 248	2
2006	15 800	911	27 846	0
2007	15 400	1 004	29 633	0
2008	15 059	783	23 235	0
2009	14 800	4|7	12 198	0
2010	14 800	188	5 697	0
2011	14 500	467	13 628	0
2012	14 300	479	14 043	0
2013	14 242	468	13 550	0
2014	14 218	3 552	9 771	0

* Based on data from the register of production subsidies as of 31 July the respective year.
** Sampling period: November 20 to December 31.

Discussion

During the years 2003-2008, 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 maedi during 2003 to 2005 and were retested in the programme during 2006 to 2008.

Breeding flocks of other sheep breeds than those regulated by The Norwegian Sheep and Goat Breeders Association were selected for sampling in 2009 with no positive findings. In 2010 - 2013 (8), flocks were randomly selected for sampling.

In 2014, 9 771 samples collected from slaughterhouses, from more than 3 500 different herds were analysed. This gives a better surveillance of the total population with less resources than on-farm sampling. However, the negative status for maedi for each investigated sheep flock is no longer documented on the same level as before.

Results from the surveillance and control programme for maedi, including data from November 2003 through 2006, showed a preliminary prevalence of less than 0.2 % positive flocks. Knowledge about the distribution of the disease so far indicates that it was regionally clustered, and that a more extensive spread of maedi-visna virus from the outbreak in 2003 has probably been prevented by the restrictions on transfer of sheep across county borders. The fact that maedi has not been detected in the surveillance programme since 2005 indicates that the prevalence of the infection in Norway is very low.

References

1. Pálsson PA. Maedi-visna. History and clinical description. In: Pétursson G, Hoff-Jørgensen R (editors). Maedi-visna and Related Diseases. Boston: Kluwer Academic Publishers; 1990. p. 3-17.

2. Martin WB, Aitken ID. Diseases of Sheep, 3rd edition. Oxford: Blackwell Scientific Publications; 2000.

3. Krogsrud J, Larsen HJS, Rimstad E. Mædi og lungeadenomatose [Maedi and lung adenomatosis, No]. Nor Vet Tidsskr. 1996; 108: 729-36.

4. Sviland S, Nyberg O, Tharaldsen J, Heier B T, Mork J. The surveillance and control programme for maedi in Norway. In: Mørk T, Hellberg H (editors). Surveillance and control programmes for terrestrial and aquatic animals in Norway. Annual report 2003. Oslo: National Veterinary Institute; 2004. p. 89-95.

5. Kampen AH, Tharaldsen J, Åkerstedt J, Norström M, Nestvold OK, Myhre JL, Nyberg O. Diagnosis and investigations of an outbreak of maedi in Norway 2002 – 2005. Proceedings of the 6th International Veterinary Vaccines and Diagnostics Conference; Jun 25 – 29. Oslo, Norway; 2006. p. 91-2.

6. Mork J, Jarp J. The surveillance and control programme for maedi in Norway. In: Fredriksen B, Mørk T (editors). Surveillance and control programmes for terrestrial and aquatic animals in Norway. Annual report 2001. Oslo: National Veterinary Institute; 2002. p. 109-15.

7. Toft N, Åkerstedt J, Tharaldsen J, Hopp P. Evaluation of three serological tests for diagnosis of Maedi-Visna virus infection using latent class analysis. Vet Microbiol. 2007; 120: 77-86.

8. Kampen AH, Bakken EH, Jore S, Klevar S. The surveillance programme for maedi in Norway 2013. Surveillance programmes for terrestrial and aquatic animals in Norway. Annual report 2013. Oslo: Norwegian Veterinary Institute; 2014.

The Norwegian Veterinary Institute (NVI) is a nationwide research institute in the fields of animal health, fish health, and food safety. 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 Norwegian Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

www.vetinst.no

Veterinærinstituttet
Norwegian Veterinary Institute

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 three administrative levels, and has some 1300 employees.

The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Fisheries and Coastal Affaires and the Ministry of Health and Care Services.

www.mattilsynet.no

Mattilsynet