



The Probability of Rabies Entry to Norway through Dogs, Cats and Wild Fauna

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Authors' contributions

This work was carried out in collaboration among all authors. The opinion has been assessed and approved by the Panel on Biological Hazards of VKM. All authors read and approved the final manuscript.

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Grey Literature

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ABSTRACT

The Norwegian Scientific Committee for Food Safety was asked by the Norwegian Food Safety Authority (Mattilsynet) to evaluate the probability of introduction of rabies to Norway through:

- 1) The importation of young dogs and cats under the present regulations;
- 2) The importation of young dogs and cats if the regulations are changed to allow importation of unvaccinated animals younger than three months from certain EEA countries;
- 3) The importation of dogs and cats from an EEA country when the animals are both identified, vaccinated and have valid serology tests;
- 4) The free passage of wild animals across the Norwegian border?

The first three questions were answered by a quantitative approach using a simulation model. The EEA countries were classified into 4 groups based on the estimated prevalence of rabies in dogs and cats, with the estimate increasing from Group 1 to Group 4. The estimates for the prevalence of rabies were based upon the number of reported cases of rabies in dogs and cats for the years 2003-2004 and corrected for possible underreporting.

Group 1 – No rabies cases reported during the last two years (except in bats), AND negligible probability of importation of rabies cases from close areas: Cyprus, Iceland, Ireland, UK, Sweden, Denmark, (Norway).

Group 2 – No rabies cases reported during the last two years (except in bats or in imported animals), but non-negligible probability of importation of from close areas: Italy, France, Spain, Greece, Portugal, Belgium, Liechtenstein, Luxembourg, Netherlands, Finland and Malta.

Group 3 – Low-prevalence endemic area, with few rabies cases reported: Germany, Austria, Slovenia, and Czech Republic.

Group 4 – Large number of rabies cases reported in domestic and wild animals: Slovak Republic, Poland, Lithuania, Latvia, Estonia, and Hungary.

Any significant change in the prevalence of rabies in exporting countries will cause a change in the probability of introduction of rabies to importing countries, Therefore, continuous surveillance of rabies is necessary and the probability of the introduction of rabies should be re-evaluated if significant changes in the prevalence of rabies occur in exporting countries.

The number of imported cats and dogs is important for assessing the probability of introducing rabies. In this report, three scenarios based upon three different numbers of imported cats and dogs from each of the different groups of countries have been considered (100, 1000 or 10 000).

Provided that the current rabies situation in the different group of countries remained constant, it was estimated that with an annual importation of 10 000 vaccinated and tested dogs and cats from countries in Group 3, this would, on average, cause the importation of one rabies infected animal approximately every 11 000 years. With similar importation scenarios from countries in Group 1 and 2, the number of years between every estimated imported case of rabies would be even higher. By annual importation of 10 000 vaccinated and tested dogs/cats from countries in Group 4, it was estimated that on average one rabies infected animal would be imported every 58 years with a 95% confidence interval of 16-194 years.

With an annual importation of 10 000 unvaccinated dogs and cats younger than three months from countries in Group 3, it was estimated that this would, on average, cause the importation of one rabies infected animal every 2 000 years. With similar importation scenarios from the countries in Groups 1 and 2, the number of years between every estimated rabies import would be even higher. With an annual importation of 10 000 unvaccinated dogs and cats younger than three months from countries in Group 4, it was estimated that, on average, one rabies infected animal would be imported every 21 years with a 95% confidence interval of 11-35 years.

By reducing the number imported in each category to 1000 or 100, the number of years would increase by a factor of 10 or 100, respectively, for each group.

The probability of introducing rabies to Norway via wild fauna is most likely low. There are two different ways that rabies could be introduced by wildlife; either by migrating carnivores or through bats. Migration of wild carnivores (in the context red fox, raccoon dog, wolf and Arctic fox) is buffered by the geographical separation of Norway from the epidemic areas. The probability of introduction of rabies to Norway through bats is unknown and could be higher than through wild carnivores.

Keywords: VKM; assessment; Norwegian Scientific Committee for Food Safety; rabies; cats; dogs

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NOTE:

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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