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VICE

Vector-borne Infections: risk based and Cost Effective surveillance systems

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The problem for veterinary services and farmers:

Recent outbreaks in Europe of vector-borne diseases (VBD) in production animals, wildlife and humans have created an urgent need for surveillance in order to rapidly detect and control the spread of these diseases and also to document freedom from these diseases. We want these surveillance systems to be sensitive and able to predict and map outbreaks at an early stage. At the same time we want to keep the costs for surveillance as low as possible.

VICE aims to develop a functional framework for dynamic risk-based surveillance for vector-borne diseases

Traditional random disease surveillance, i.e. searching for infected individuals/farms by collecting repeated random samples all over Europe is a costly solution. But fortunately vector borne diseases are not introduced to an area at random. The risk of introduction is determined by trade patterns, neighbouring areas and wind patterns. And also the ability of vector borne diseases to spread does not vary randomly. The risk of spread changes from month to month and between years and it varies greatly between geographical areas and even farms. This is because the spread of vector borne diseases is driven by vector abundance, host abundance, climate and environment, factors that varies greatly in time and space i Europe. The VICE project

suggests that it will be possible to predict geographical areas and identify time periods with an increased risk of introduction and/or increased risk of spread. We will therefore develop risk based approach for surveillance. By continuously quantifying these risks we can focus surveillance resources at high risk geographical sites and high risk time periods, and thus increase sensitivity, improve early detection while at the same time also greatly reduce the cost of surveillance.

Adding syndromic surveillance (morbidity and mortality, drug use, production yields) may further help detecting exactly where and when an outbreak may occur. The risk of outbreaks will continue to shift in time and space. Therefore risk based surveillance is a dynamic process.

VICE develops a cost efficient solution for risk based surveillance based on data from a multitude of existing and freely available environmental, climatic and veterinary data registers

