

## REGIONAL SURVEILLANCE OF VIRUS ACTIVITY AND VACCINATION

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One of the objectives of the Medreonet project was to reinforce and harmonize surveillance of bluetongue (BT), epizootic haemorrhagic disease (EHD), and African horse sickness (AHS) virus infections in Europe. Specifically, the project aimed at evaluating possible ways to harmonize surveillance protocols, tools for surveys and viral strain identification, and vaccination strategies.

A questionnaire was used to collect baseline data on the following: serological and virological tests used in the participating countries (validation data, sensitivity and specificity), the adopted surveillance protocols, and vaccination strategies (types of vaccines, target populations). Further detailed data on the activities performed for BT surveillance and their results have been collected from two study areas (Italy and Catalonia). These data concerned sentinel and other animals tested and test results, subdivided into herds. A hierarchical Bayesian analysis of detailed data from Italy and Catalonia will be carried out to determine posterior probability distributions of sensitivity and specificity of the screening tests used, probability of infection of each single sentinel herd tested, and within-herd (true) prevalence of infection in the infected sentinel herds. Data collected through the questionnaire will be used to estimate prior distributions of sensitivity and specificity of the screening tests to be used in the hierarchical Bayesian analysis. Results of the

Bayesian analysis will provide the parameters to evaluate the cost-effectiveness of surveillance strategies.

The following information was gathered: case definitions used in each country for each disease (BT, AHS, EHD), data on the serological tests used (producer, commercial name, data on diagnostic sensitivity and specificity when available, serotypes detected), data on the virological tests used (producer of the reagents, type of procedure, data on diagnostic sensitivity and specificity when available, serotypes detected), quality control of the diagnosis, and details of the surveillance system for each disease (random survey vs. sentinel network, sample size, geographical coverage, timing of testing). A software was generated, which uses the R programming language and is based on models developed by 'Adaptive metropolis rejection sampling'. Some possible improvements of the original Hanson et al. model are under study. The data collected and the software produced, once validated on the Italian and Spanish field data, should allow the participating countries to evaluate their surveillance systems and to improve surveillance activities by comparing the expected results with different surveillance scenarios.

**KEYWORDS:** BLUETONGUE – AFRICAN HORSE SICKNESS – EPIZOOTIC HAEMORRHAGIC DISEASE – SURVEILLANCE.

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