Starting a new era: the development of a network of expertise for the surveillance of vector-borne diseases in the Mediterranean area

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Introduction

A project for the implementation of a regional surveillance network for vector-borne diseases of veterinary (bluetongue) and public health concern (West Nile disease - WND, Crimean-Congo Hemorrhagic fever - CCHF) in the Balkan Region was started in April 2007. The project, promoted by the Italian Abruzzo Region and funded by the Italian Ministry of Foreign Affairs, was coordinated by the Instituto Zooprofilattico Sperimentale dell’Abruzzo e del Molise ‘G. Caporale’. The beneficiaries of the project were the Central Veterinary Services and National Veterinary Laboratories of Albania, Croatia, Bulgaria and Romania.

Main objectives

1. Strengthening the regional BT surveillance network
2. Establishment of a regional WND and CCHF surveillance network.

Results

All countries replied to the BT questionnaire, three to the WND questionnaire and two to the one on CCHF. Tables 1-3 present the results of the analysis of the questionnaires.

A web-GIS application to map the spatial distribution of WND and CCHF in Europe and in the Mediterranean Basin has been developed. The one for BT already operating was improved to strengthen the regional surveillance network. The alphanumeric database contains epidemiological data (i.e. outbreak, serology/virology/entomology) retrieved and recorded from official (i.e. OIE) and non-official reporting system (i.e. ProMed, published articles).

User may filter data according to multiple criteria (time period, species involved, strains), and he may access to the database directly through the maps. Geographical tools (zoom in, zoom out, pan, object selection, distance calculation, buffer creation) allow the user to customise data analysis and maps.

Discussion and Conclusion

The analysis of the questionnaires provided useful information for planning further activities towards the collection of standardized epidemiological data on CCHF and WND.

Results showed that despite the presence of WND in the Balkan area, the main source of information is given by a passive surveillance system. Moreover, no country put in place an active surveillance system, even where confirmed human cases were reported. A passive surveillance in animals, although not a very sensitive method, is useful to detect WN virus circulation, whereas for CCHF, this type of surveillance is not helpful as the disease is completely asymptomatic in animals and the presence of the virus in the environment is detected by the sporadic occurrence in humans. As far as BT is concerned, since the disease is present in Europe and in the Balkan Region, the main source of information (recorded in a dynamic reporting system) is given by an active entomological and serological surveillance system. The system is based on random surveys, on sentinel animals and on clinical visits in case of suspicion of viral circulation.

Furthermore, skills, diagnostic expertise capabilities and information are not harmonised among countries for WND, CCHF and BT. Despite of the risk of occurrence in the Balkan and Mediterranean areas, considering that the vectors are present in these zones and the diseases are sporadically reported or suspected to be present, a clear picture of the geographical distribution (prevalence/belance) of the infections is still not fully available. Therefore, the main objectives for the present and the future should be:

1. to develop and to enhance a harmonized surveillance system for vector borne diseases
2. to define standardized common procedures and data exchange protocols
3. to improve the diagnostic capabilities among countries
4. to stress human case reporting systems.

Being vector-borne diseases, it is of paramount importance to strengthen the relationship among the different scientific figures (veterinarians, physicians, entomologists, zoologists, statisticians, etc.) involved in the management of the diseases, especially when the aim is to build a sound network of expertise.

Materials and Methods

• Submission of a questionnaire on BT, WND and CCHF for the assessment of the existing surveillance systems in the countries and evaluation of training and diagnostic needs
• Definition of a minimum set of standardised data to collect and to record
• Preparation of a prototype of a web based Geographic Information System (GIS) for WND and CCHF and improvement of the existing one for BT.

References


Images and Figures:

- Figure 1: Epidemiological information recorded into the database
- Figure 2: Surfaces and diagnostic capabilities for Crimean-Congo Hemorrhagic Fever
- Table 1: Surveillance and diagnostic capabilities for BT
- Table 2: Surveillance and diagnostic capabilities for West Nile Fever
- Table 3: Diagnostic capabilities for serology in animals
- Table 4: Diagnostic capabilities for virus detection in animals

Access to data records through maps

Geographic Information System (GIS) for data to collect and to record evaluation of training and diagnostic needs