

## MISSION REPORT

# ECDC mission related to West Nile virus infection in Greece, 2012

5 – 7 November 2012

## Introduction

The large outbreak of human West Nile virus infection in Greece in 2010 also marked the first outbreak of this mosquito-borne disease in this country. In 2011 and 2012, further cases were observed, both in previously affected and non-affected areas.

The persistence of the virus activity indicates that the ecological conditions are highly favourable for West Nile virus maintenance and amplification during the spring and summer months.

A surveillance and control programme was implemented by the Greek authorities in order to cope with these outbreaks. In addition, a national project entitled 'Integrated surveillance and control programme for West Nile virus and malaria in Greece' (MALWEST) now supports West-Nile-virus-related surveillance, data integration and analysis activities. This project is funded by the National Strategic Reference Framework 2007–2013 (through the Greek Ministry of Health) and coordinated by the Laboratory of Hygiene and Epidemiology at the University of Thessaly. It was launched in January 2012 and will run for a total of 24 months (until 31 December 2013).

Within the context of the West Nile virus outbreaks, an ECDC mission was conducted at the end of the transmission season to support the Greek authorities regarding further response and prevention activities on West Nile virus infections in the country\*.

## Findings

The West Nile virus infection epidemic, which started in Greece in 2010, is now in its third year. During the outbreaks in 2010, 2011 and 2012, the same virus was identified.

- The 2010 outbreak occurred from 6 July to 5 October, with the peak in mid-August. The episode involved 262 patients. Of these cases, 197 (75%) were classified as neuroinvasive disease and 65 (25%) were classified as non-neuroinvasive West Nile fever. Cases were primarily reported in northern and central Greece (including central Macedonia)
- The 2011 outbreak took place from 16 July to 18 October, peaking at the end of July. The episode involved 100 patients. Of these cases, 75 (75%) were classified as neuroinvasive disease and 25 (25%) were classified as non-neuroinvasive West Nile fever. Cases were reported in northern, central and southern Greece.

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ECDC would like to thank all Greek colleagues for facilitating this mission, the many fruitful discussions, for sharing their experiences, and for their kind hospitality.

- The 2012 outbreak (20 June to 7 October, peaking in the second week of August) involved 161 patients. Of these cases, 109 (68%) were classified as neuroinvasive disease and 52 (32.3%) were classified as non-neuroinvasive West Nile fever. Cases were mainly reported in Attiki, East and Central Macedonia, and Thrace (Xanthi, Kavala, Drama).

Based on the observed dynamic in the last three years, further human cases can be expected in the coming years, although a precise prediction about the epidemic dimension and the regions at risk is not possible.

The Ministry of Health is currently developing a National Action Plan for vector-borne diseases, including specific sections on malaria, West Nile virus and other vector-borne diseases. The objective is that this National Plan will be endorsed by all involved ministries and provide the necessary legal framework for assigning responsibilities to all stakeholders.

- The human surveillance of West Nile virus infections aims at the timely detection of cases in order to take control measures and to avoid further transmission. The 2008 EU case definition<sup>†</sup> of confirmed and probable cases is used for this purpose, albeit with slight modifications. The Department of Surveillance and Intervention at the Hellenic CDC ensures the daily communication and information exchange with the laboratories responsible for the testing of West Nile virus cases as well as the daily dissemination of information to stakeholders, i.e. the local/regional public health and vector control authorities.
- In 2012, the Animal Health Directorate of the Ministry of Rural Development and Food, in cooperation with local veterinary authorities at the regional subunit level, launched a monitoring and surveillance programme for West Nile virus infections in equidae. The main goal was to use the results of the veterinary surveillance programme for the early warning and monitoring of West Nile virus activity in order to protect public and animal health. The programme is based on both passive and active surveillance. Cases in horses in the 2012 transmission period were detected in six districts, namely Xanthi, Kavala, Evros, Preveza, Attiki and Kilkis. In two of these districts, Xanthi and Kavala, cases in equidae preceded or occurred simultaneously with human cases. In Evros and Preveza, cases in equidae were the only indicators of West Nile virus circulation. Equids (mainly horses) appear to be useful indicators for West Nile virus circulation as far as surveillance in animals is concerned. However, not all regions could be surveyed this way because equids are not present in all parts of the country.
- The aim of bird surveillance is to early detect West Nile virus circulation in a given area in order to initiate public health measures and thus decrease the risk of infection in humans. The bird surveillance programme is based on passive and active surveillance. During the first half of 2012, two seropositive birds were detected in a total of 59 analysed samples. During the second half of 2012, 10 West Nile virus-positive birds, primarily *Pica pica*, were detected in a total sample of 218 birds that comprised five species.
- A number of entomological surveillance activities were implemented in Greece, covering both West Nile virus and malaria vectors. Activities included:
  - studies of the mosquito fauna and the mapping and monitoring of mosquito populations, funded by the Hellenic CDC;
  - integrated surveillance and control programmes for West Nile virus and malaria, funded through the National Strategic Reference Framework (NSRF) 2007–13; and
  - regional mosquito control activities, funded by municipalities or regional units of Greek administrative divisions.

The regions and municipalities are responsible for the implementation and organisation of mosquito control activities. At the central level, no comprehensive overview of implemented control activities in the country is available and no independent quality control evaluation is in place to review and evaluate the implementation of the various control activities in each locality. Vector control measures are focused predominantly on wetland and flooded areas, mainly between June and August. Treatment of road drains is sometimes implemented in villages to reduce the *Culex pipiens* biting nuisance. Adult mosquito control has been implemented in some villages where neuroinvasive human cases have been detected.

The adopted blood safety measures for West Nile virus infection in Greece are sufficient and appropriate. There were only two cases of West Nile virus transmission (one of them symptomatic) through two blood components (plasma and platelets) from one infected donation. This blood donation was collected and used before the detection and reporting of the first human West Nile virus infection in Greece and before measures were implemented in 2012. Open issues which need further discussion and analysis – in close collaboration between Greek blood safety authorities, ECDC, and European blood safety groups – refer to:

- the definition of triggers for recall of implemented blood safety measures; and
- the spatial definition of areas of disease outbreak with local transmission in order to inform travellers from abroad.

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<sup>†</sup> Commission Decision of 28 April 2008 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council.

## Recommendations and future steps

- The complex epidemiology of West Nile virus infections requires that surveillance activities are well coordinated and progressively improved. In order to achieve this goal, an appropriate cost-benefit analysis needs to be carried out, taking into account field-based evidence focussed on four basic indicators: mosquitoes, birds, horses and humans. In this context, the creation and management of a centralised web platform – developed with the support of the MALWEST project – would be very helpful as it would promote the standardisation of data collection, facilitate timely data processing, and ensure the prompt availability of synthesised information to regional stakeholders.
- Collected data and evidence produced by the entomological, bird, equine and human surveillance systems during the 2011–12 season have to be thoroughly evaluated to improve the understanding of the strengths and weaknesses of the West Nile virus preparedness and response plan so changes can be made if necessary.
- The working group on vector-borne diseases (in collaboration with the Hellenic CDC staff) and the staff of the national MALWEST project should focus on the preparation of protocols that contain specifications regarding field and laboratory data collection, data storing, data transmission, data processing, and extraction of relevant information. These tasks should be regularly performed during the coming season. Also, different methods of delivering this information to stakeholders should be explored. The timing of the required activities should be discussed and defined, together with the responsible bodies, in order to guarantee highly efficient disease surveillance.
- Entomological surveillance data are useful indicators for the early detection of West Nile virus, its prevention and control, and the assessment of potential risks. The re-organisation of the mosquito trapping network on the basis of the 2012 experiences should be a priority; this cannot be done without taking into account the resources available for 2013.
- In absence of human cases, active bird and equine surveillance may produce data supporting the identification of areas with virus circulation. However, the usefulness of equine and bird surveillance in the context of the already widespread distribution of West Nile virus in Greece should be re-evaluated.
- During the winter months, an integrated vector control plan – including responsibilities and duties at the different national, regional, and municipal levels – should be prepared. The role of adult mosquito control in the integrated vector control plan must be carefully considered and should be supported by evidence-based experience.
- Active intersectoral collaboration between the different public and private stakeholders in West Nile virus control and prevention should be promoted further. Improved collaboration between the different sectors – health, agriculture, internal affairs and environment – at a higher political level is essential when prioritising the necessary actions needed to combat West Nile virus.

At the international level:

- ECDC can provide support in risk assessment, conduct data analyses, and facilitate the scientific discussion on blood safety issues.