ECDC Threat Assessment

Update on the West Nile virus situation in Europe, 2009

30 September 2009

SOURCE AND DATE OF REQUEST

ECDC internal decision following the EWRS messages posted by Hungary on 24 September, France on 28 September 2009 and Italy on 29 September 2009

PUBLIC HEALTH ISSUE

Laboratory confirmed human case of West Nile infection in Hungary, France and Italy

CONSULTED EXPERTS

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DISEASE BACKGROUND INFORMATION

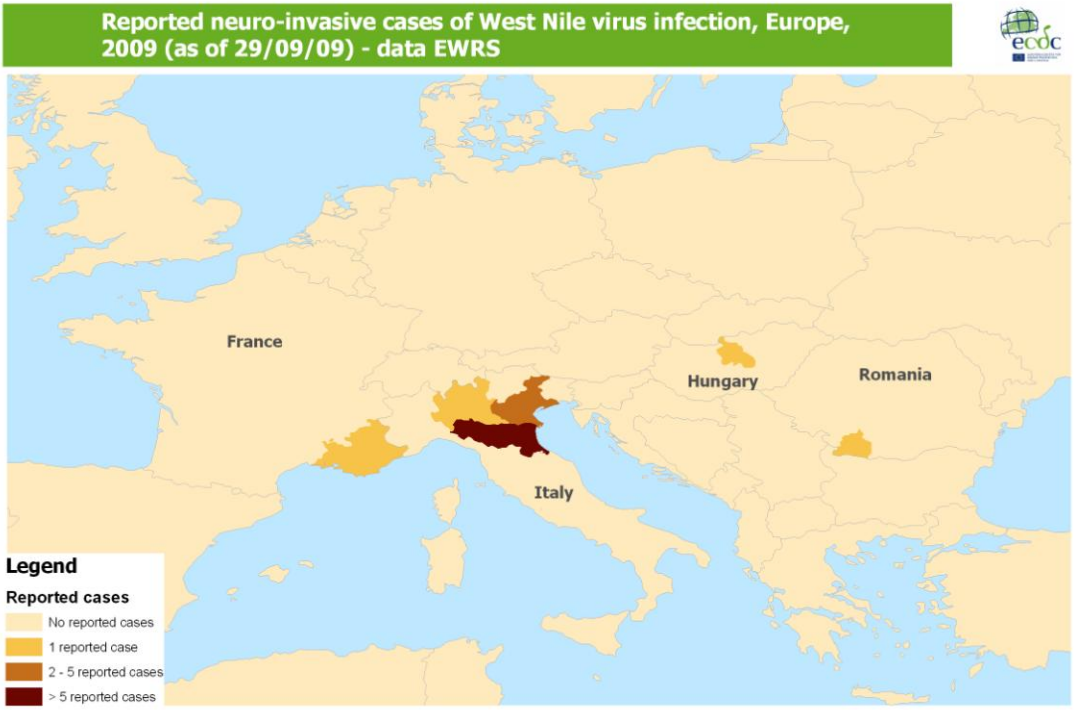
West Nile (WN) virus is transmitted in natural cycles between birds and mosquitoes, particularly *Culex spp*. mosquitoes. Human and horses are susceptible hosts. While humans are mainly infected through mosquito bites, few infections through organ transplantation and blood transfusion have been documented. After the infectious bite, an incubation period of 2–14 days precedes symptoms which tend to vary with the patient's age: from mild fever and malaise in children, a moderately severe disease in the young (high fever, red eyes, headache and muscle ache) to meningitis/brain infection in the elderly and the debilitated. Neither specific therapy nor vaccine is currently available. The main preventive measures are aimed at informing the at-risk human population, and reducing exposure to mosquito bites. Due to the absence of clinical symptoms in more than 70% of the WN infection in humans, transmission via blood donations or organ transplants have occurred.

In Europe, the first large outbreak in humans happened in Romania in 1996, when 393 cases were reported from July to October, including 17 deaths, although there is evidence of prior WN transmission in the 1960-1970's in Southern and Central Europe. Since 1997, several outbreaks in horses have been reported in Italy (Tuscany) and France, as well as sporadic cases in humans in Romania, France, Portugal, Spain and Hungary. Other large epidemics have been reported in Volgograd (Russia) in 1999, in Israel in 2000 and in Tunisia in 1997 and 2003.

In Hungary, WN has been reported in the past, with isolation from rodents and detection of antibodies in humans in the 1970's. Until 2003, WN virus infections in Hungary were not associated with clinical symptoms, whereas between 2003 and 2007, yearly averages of six cases of WN virus neuro-invasive infection were diagnosed. In 2008, 14 cases were confirmed by the end of October, in 9 different counties.

In France, outbreaks of WNV affecting humans and horses occurred on the Mediterranean coast in the delta of the river Rhône (Camargue) already in 1962-1963. Since then epizootics occurred irregularly but recurrently (e.g. in horses in 2000 and 2004). The latest autochthonous human cases of WN virus infection in France date back to 2003, when a total of 7 cases were confirmed, in addition to 4 equine cases, all in the Var district.

In Italy, the first cases of equine WNV infection were detected in the region of Tuscany in 1998. No human cases were recorded in that year. The first human cases of neuro-invasive WNV infection in Italy were detected in 2008. In the region of Veneto, six clinical patients were recorded (four of these retrospectively) with onset of disease between August and September and all in the province of Rovigo. An additional five asymptomatic WNV infections were identified in Veneto through a seroprevalence study in farm workers. Four of these were also resident in Rovigo. In addition, in Emilia Romagna, equine cases of WNV infection were confirmed, as well as three confirmed human cases between September and October in 2008.



EVENT BACKGROUND INFORMATION

Hungary

On 24 September 2009, Hungarian Health Authorities reported the laboratory confirmation of two neuro-invasive WN virus infections that occurred end of July and in August 2009 from the Közep-Magyarorzag region in central Hungary. In the affected areas, investigations are ongoing on potential animal reservoirs.

The national blood service agency and national animal authorities have been informed immediately. Further information on response measures is pending.

France

On 28 September 2009, the French Health Authorities reported the first autochthonous case of WN neuro-invasive illness since 2003 in a 41 year-old male resident of the Var district, southern

France. The diagnosis was confirmed on 25 September 2009 by polymerase chain reaction on both serum and cerebrospinal fluid by the National Reference Laboratory for Arboviruses.

Since this year's seasonal activation of WN surveillance, out of the 67 suspect cases investigated in the Var district, the current case is the first testing positive for WN virus. No horses with encephalitis have so far been reported in this area. No increase in avian mortality has been observed.

According to the French preparedness plan for WN (which is activated each year in the period between 1 June and October 31) the detection of an autochthonous human case of WNV infection triggers alert level 3, leading to enhanced surveillance, public education campaigns, entomological surveys and risk assessments, serological surveys among humans and horses, implementing vector control measures and securing blood and organ supplies.

Consequently, blood donations collected since early September from the population of the area have been put in quarantine. Nucleic acid detection screening will be carried out on future donations in the area.

Italy

Since the EWRS message of 10 September 2009, an additional 5 cases of WN infection are reported by Italy: four from the region of Veneto (3 confirmed, 1 probable) and 1 confirmed case from Emilia-Romagna. Therefore, as of 29 September, a total of 12 confirmed and 1 probable neuro-invasive WN infections are reported in Italy. (Table 1)

Table 1: Confirmed WNV infection in humans in Italy up to September 29, 2009

Region	***Province***	***Number of cases***
	Ferrara	5
Emilia Romagna	Modena	1
	Bologna	1
Lombardia	Mantova	1
Veneto	Rovigo	3
	Venezia	1
Total		**12**

In Italy, epidemiological surveillance of cases in human and animals (horses, sentinel birds) is ongoing, according to Regional and National guidelines and laws, reflecting the inter-sectoral co-operation among human public health services and veterinarian public health ones. According to these guidelines and laws, laboratory samples are sent to either regional or national reference laboratories for confirmation.

ECDC THREAT ASSESSMENT FOR THE EU

Together with Romania, which reported one case end of August 2009, confirmed WN infections are currently reported from four different EU countries. The presence of WN virus is well documented in all of them. Climatic conditions, temperature and humidity favour the presence and the multiplication of *Culex spp*. from May to October in the affected zones.

Sporadic cases and/or localized outbreaks of WN fever are not unusual in these areas. Enhanced surveillance at a regional level has strengthened the ability to rapidly detect cases, allowing a

timely public health response. More cases can be expected until mosquito activity decreases, as illustrated by the latest epidemiological situation update through EWRS from Italy.

In areas of Europe where WN virus transmission has been documented and the risk for further transmission of the virus exists, continued close monitoring of the situation (in terms of human, veterinary and entomological surveillance) is warranted. Furthermore increasing the awareness among clinicians to rapidly identify new human cases of WN would ensure an appropriate public health response. This applies to all EU countries with identified risk for WN virus transmission.

CONCLUSIONS

WN infections in humans have been reported from four EU countries this year. As discussed in previous ECDC threat assessments, these infections confirm the ongoing and expected virus activity in Europe at this time of the year. At the same time, there has been an increase in the number of cases that have been reported in the EU. It is uncertain whether the increase in numbers of reported cases in the EU in the past decade is due to increased surveillance or reflects a changing epidemiology. This, and other parameters of transmission, such as persistence of WN virus in nature, are a field of active research funded by the EU.

Continued close monitoring of the situation in the European area is needed, including increased awareness among clinicians and veterinarians, to rapidly identify and report suspected WN cases to the respective authorities, and ensure an appropriate public health response.

Restrictive measures regarding blood donations have been implemented in France and Italy in the affected areas. The impact of blood donation restrictions on the supply of blood products would need to be monitored.

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