

West Nile virus reemerged and spread to new areas in Greece in 2017, researchers show

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Madrid, Spain: West Nile virus (WNV), which is transmitted via mosquito bites, reemerged and spread to new territories of Greece in 2017 following a two-year hiatus in reported human cases, according to findings presented at the 28th European Congress of Clinical Microbiology and Infectious Diseases (ECCMID).

During this reemergence, in the summer and early autumn of 2017, researchers diagnosed 45 cases from blood samples and cerebral spinal fluid from 180 patients who had symptoms and signs that probably indicated WNV. Prof. Athanassios Tsakris, who is head of the Microbiology Department at the University of Athens Medical School, and his team of researchers analysed the reemergence and presented the findings.

The researchers diagnosed 26 patients, or 57.8% of the new cases, with WNV neuroinvasive disease. They characterized the remaining 19 patients, or 42.2%, with WNV fever. The age of patients diagnosed with the neuroinvasive disease ranged from 15 to 91, with a median age of 63. Elderly patients with underlying diseases were particularly affected. Of the five patients who died (19.2% of those with neuroinvasive disease), all were older than 70.

All new cases emerged from southern Greece and most were reported in regions that had not been affected before. Of the 45 confirmed cases, 40 were in new territories: 37 in Argos and three in Corinthia prefecture. One case was reported in Crete and the remaining four were reported

from previously affected prefectures of northwestern Peloponnese. Researchers analysed geographical data of the areas affected by the virus and concluded that Greece's landscape, such as natural and constructed wetlands, seem to influence the transmission and rate of new cases.

Prof. Tsakris says: "The reemergence of WNV after a two-year hiatus of reported human cases and its subsequent geographic expansion in newly affected areas demonstrates that Greece provides the appropriate ecological and climatic conditions for WNV circulation. The virus has been established in Greece and disease transmission may continue in the future."

"Epidemiological surveillance, intensive mosquito management programmes and public education about personal protective measures are crucial to prevent WNV transmission, especially among susceptible population groups," Tsakris said.

"The risk of WNV transmission is complex and multifactorial; it concerns the virus, the vectors, the animal reservoirs, the environmental conditions and human behaviour. Preventing or reducing of WNV transmission depends on successful controlling vector's abundance or interruption of human-vector contact. Also, targeted WNV surveillance within mosquito populations may contribute to the well-timed detection of the virus prior to its emergence in equine species or human populations", Prof. Tsakris emphasizes.

WNV is transmitted to humans via infected [mosquito bites](#). The transmission period is typically between mid-summer and early autumn when mosquitos are most active. Most people infected with WNV have no symptoms, but 20% develop West Nile fever, a flu-like illness that causes fever and body aches. Less than 1% of infections progress to diseases with sever neurological manifestations, such as aseptic meningitis, encephalitis and acute flaccid paralysis.

Prof. Tsakris explains that the dramatic decline in cases in the previous two years may be result of the mosquito management strategy, i.e. the timely and proper use of effective larvicides, which has shrunk the populations of adult [mosquitoes](#), and the preventive measures taken by the community to limit their exposure to WNV. Still, WNV continued to circulate in Greek territories as it was demonstrated by serological testing of birds in 2015, he adds.

"Additionally, the development of immune response against WNV may have reduced human cases by depleting the susceptible human population. It is also possible that WNV caused infections that were asymptomatic, as occurs in approx. 80% of cases, or that remained undetected including neuro-invasive cases", Tsakris says. "Of course, climatic conditions cannot be excluded since virus replication rate within mosquitoes, as well as vector competence and population dynamic, are mainly weather dependent."

The first outbreak of WNV in Greece was recorded in 2010 and was considered to be the largest epidemic in Europe since the 1996 outbreak in Romania. Most outbreaks in western Europe have been caused by WNV Lineage 1. In eastern Europe, however, Lineage 2, which emerged in Hungary in 2004, has been responsible for human and bird mortality, particularly in Greece.

More information: Paper poster no: P0550, Reemergence of West Nile Virus infections in humans in Southern Greece, July to September 2017; session Dengue, Chik and other reemerging and emerging viruses, 15:30 - 16:30, Saturday, 21 April 2018, Paper Poster Area

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