FONDAZIONE BRUNO KESSLER
MAGAZINE

Dengue: In Italian outbreaks, short-range transmission predominates, almost always within 400 meters

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A new study coordinated by the ISS and Fondazione Bruno Kessler, with contributions from the regions involved, has just been published by Eurosurveillance

Dengue outbreaks that occur when a case is imported develop almost entirely within a short distance of the primary source of infection, with transmission events occurring at a maximum distance of 400 meters. These are the findings of a study coordinated **by the ISS** and **Fondazione Bruno Kessler** with the contribution of the Regions affected by outbreaks of dengue serotype 2 in 2024, just published by Eurosurveillance. The study has just been published in Eurosurveillance.
The findings confirm that early case detection and rapid mosquito vector control measures are critical for containing outbreaks.

Locally **acquired dengue infections** are increasing across Europe, particularly in France, Italy, and Spain, due to the presence of Aedes albopictus (the **Asian tiger mosquito**), which can transmit the virus following the introduction of an imported case.

The study analyzed outbreaks that occurred in Italy in 2024, resulting in a total of 296 cases—the highest number ever recorded in continental Europe. By examining the spatial and temporal patterns of infection and applying mathematical models, the researchers **reconstructed transmission chains** and characterized the outbreaks. They quantified the proportion of transmission events occurring at different distances and estimated the influence of several factors, including temperature and vector control measures, on secondary transmission.The analysis showed that the average **interval between a primary and a secondary case was 18 days, while transmission** occurred within the household in 15.4% of cases. Among the cases for which transmission chains could be reconstructed, fewer than 1% occurred more than 400 meters from the primary source of infection.Once an outbreak was detected, transmissibility declined sharply, with the average number of secondary cases generated by each infection falling from 1.4 to 0.4.

Vector control measures reduced transmission by 41.3%, whereas transmission increased by 19.8% for every 1 C rise in temperature. *“The autochthonous dengue outbreaks in Italy in 2024 were driven primarily by short-range transmission*,” the authors conclude. *“Our results confirm that early case detection and rapid vector control are essential to reducing transmission.”*

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