Imported Chikungunya Virus Infection

To the Editor: Chikungunya is a disease caused by an arboviral alphavirus transmitted to humans by *Aedes* mosquitoes (*Aedes aegypti*, *Ae. albopictus*). Symptoms include fever, myalgia, rash, and joint pain (which can last for several months) (1). During the 2005–2006 epidemics on Reunion Island, clinical manifestations such as severe hepatitis, severe maternal and fetal disease, and meningoencephalitis not described previously were observed (2). Occurring in an immunologically uninfected population, this outbreak spread quickly, infecting approximately one third of the population (266,000 of 775,000 inhabitants) (2). The case-fatality rate on Reunion Island was estimated to be 1/1,000 cases, with excess deaths observed mainly among persons ≥75 years of age (3).

Chikungunya disease is endemic to western, central, eastern, and southern Africa; on Indian Ocean and west Pacific Ocean islands; and in Southeast Asia (1). Before 2005–2006, no outbreak of this disease had been described on islands in the Indian Ocean (Comoros, Mayotte, Madagascar, Reunion Island, Mauritius, and Seychelles). Since the epidemic on Reunion Island, many imported cases caused by this arbovirus have been reported elsewhere in areas where the disease is not endemic, particularly in Europe and the United States.

The main competent vector of chikungunya virus, a mosquito, *Ae. albopictus*, is indigenous to Southeast Asia and some islands of the western Pacific and Indian Ocean. The mosquito spread to the eastern Pacific, the Americas, Central Africa (Nigeria, Cameroon, Equatorial Guinea and Gabon), Europe, and the Middle East (4,5). Entomologic studies have shown that *Ae. albopictus* mosquitoes can now be found in the southeastern part of the United States, Mexico, Central and South America, the Caribbean, the Middle East, Japan, and southern Europe (Spain, Italy, Bosnia-Herzegovina, Croatia, France, Greece, the Netherlands, Serbia and Montenegro, Slovenia, Switzerland, and Albania) (4,6). This mosquito has also been intercepted in Australia’s seaports and is now established in northern Queensland (7).

* Ae. *aegypti* mosquitoes are indigenous to Africa and disseminated around the tropical and subtropical regions. The southeastern United States, the Middle East, Southeast Asia, Pacific and Indian islands, and northern Australia are also infested by this mosquito. In continental Europe, it

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### Table. Age groups, median ages, and case-fatality ratios for influenza A (H5N1) case-patients, by influenza season, Egypt

<table>
<thead>
<tr>
<th>Influenza season</th>
<th>No. case-patients by age group, y</th>
<th>Total no. case-patients</th>
<th>Median age, y</th>
<th>Case-fatality ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>August–July</td>
<td>1–8</td>
<td>4</td>
<td>14</td>
<td>18.0</td>
</tr>
<tr>
<td>2005–06</td>
<td>9–20</td>
<td>3</td>
<td>24</td>
<td>6.5</td>
</tr>
<tr>
<td>2006–07</td>
<td>21–30</td>
<td>4</td>
<td>12</td>
<td>23.5</td>
</tr>
<tr>
<td>2007–08</td>
<td>31–40</td>
<td>3</td>
<td>33</td>
<td>3.0</td>
</tr>
<tr>
<td>2008–09</td>
<td>41–74</td>
<td>1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>12</td>
<td>83</td>
<td>—</td>
</tr>
</tbody>
</table>

*Age at date of clinical sign onset; data from the World Health Organization (2).*
has been documented in southern regions but today seems to no longer to be present there (8).

Climate change, increasing globalization, and ease of travel could favor the continuing spread of mosquito vectors to nonindigenous habitats, expanding the number of regions in the world where local transmission of vector-borne disease could occur. In these countries where competent vectors are present, patients coming from disease-endemic areas at an early stage of infection may import the virus and be responsible for locally acquired mosquito-transmitted cases of chikungunya. The risk for local transmission of suitable control measures that can interrupt the transmission chain.

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**References**


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