among confirmed infected persons. From 2006 through 2008, the annual CFR for influenza A (H5N1) in Egypt ranged from 36% to 55% (3). Since January 1, 2009, the CFR in Egypt has been 11%. The recent increases in infections among children coupled with a decrease in the CFR in the most recent 12-month period suggests that the strain of influenza A virus (H5N1) now circulating in Egypt may be becoming less virulent as it continues to spread among young children, a segment of the population that is highly vulnerable to influenza infections (4,5).

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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 (4). 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
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 mosquitoes 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 in these countries is not simply theoretical, as shown by the epidemic of chikungunya in Italy, in which 205 cases were identified between July 4 and September 27, 2007 (9). In the United States, such secondary transmission of vector-borne disease has also been observed with malaria (10).

To determine regions of the world at risk for an epidemic of chikungunya virus, we first listed the imported chikungunya cases (i.e., cases diagnosed in nonendemic areas) reported around the world. A literature review was undertaken on Medline by Pubmed and websites provided by the World Health Organization, Eurosurveillance, European Center for Disease Prevention and Control, Health Protection Agency (United Kingdom), Institut de Veille Sanitaire (France), and the Centers for Disease Control and Prevention (United States) were searched for information on imported chikungunya cases. Data were then mapped and compared with the known and theoretical geographic distributions of Ae. albopictus and Ae. aegypti mosquitoes around the world (online Appendix Figure, available from www.cdc.gov/EID/content/16/1/162-appF.htm) (4–8). This figure shows that imported cases were reported in many countries where mosquito vectors for chikungunya virus are well established.

These facts underscore the need for clinicians to consider the possibility of chikungunya disease in patients who experience acute unexplained fever with joint pain and live in regions where mosquito vectors are established. The presence of imported cases and well-established vectors also confirms the need for an active surveillance system; early detection of unexpected new diseases by physicians will enable the timely implementation of suitable control measures that can interrupt the transmission chain.

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