

through the bordering state of Pernambuco (4,5,9). Cases were concentrated in Fortaleza and the northwest region of the state. Patient age distribution was significantly different between the capital, where the infection most affected children <12 months of age, and the inner cities, where it most affected persons 15–29 years of age. Current heterogeneous measles vaccine coverage (4,5); a delayed response and insufficient vaccination coverage in the past, particularly in socially disadvantaged populations from the inner cities; and difficulties in the prompt recognition and surveillance of suspected cases may explain why this outbreak occurred in a population with a vaccine coverage historically >95%. In addition, vaccination campaigns directed at children <5 years of age may not have been sufficient to interrupt the outbreak because a substantial number of older persons were susceptible. Most notably, because it has lasted >12 months, Ceará's current outbreak may represent the reestablishment of endemic transmission of measles in the Americas.

Dr. Leite is a pediatric infectious diseases expert and adjunct professor at the Universidade Federal do Ceará. His primary research interests are the epidemiology of children's infectious diseases in the tropics and vaccines.

References

1. Risi JB Jr. Control of measles in Brasil. *Rev Infect Dis.* 1983;5:583–7. <http://dx.doi.org/10.1093/clinids/5.3.583>
2. Prevots DR, Parise MS, Segatto TCV, Siqueira MM, Santos ED, Ganter B, et al. *J Infect Dis.* 2003;187(Suppl 1):S111–20. <http://dx.doi.org/10.1086/368030>
3. Ministry of Health, Brazil. Confirmed cases of measles. Brazil, major regions and federal units, 1990 to 2014 [in Portuguese]. 2014 May 11 [cited 2014 Nov 8]. <http://portalsaude.saude.gov.br/images/pdf/2014/junho/05/Casos-confirmados-de-Sarampo-2014.pdf>
4. Health Department of the State of Ceará. Measles epidemic update 10/31/14 [in Portuguese].
5. Health Department of the State of Ceará. Measles epidemic update 01/23/15 [in Portuguese].
6. Castillo-Solórzano C, Reef SE, Morice A, Andrus JK, Matus CR, Tambini G, et al. Guidelines for the documentation and verification of measles, rubella, and congenital rubella syndrome elimination in the region of the Americas. *J Infect Dis.* 2011;204:S683–9. <http://dx.doi.org/10.1093/infdis/jir471>
7. Ministry of Health, Brazil. Measles epidemiologic status/data, 2014 May 11 [in Portuguese] [cited 2014 Nov 8]. <http://portalsaude.saude.gov.br/index.php/situacao-epidemiologica-dados-sarampo>
8. Health Department of the State of Ceará. Measles epidemic update 08/08/14 [in Portuguese].
9. Oliveira MI, Afonso AMS, Adelaide CF, Lemos XRMR, Almeida J, Frugis Yu AL, et al. Genetic diversity of measles virus. Resurgence of new genotype D8 in São Paulo, Brazil. *Rev Inst Med Trop Sao Paulo.* 2014;56:366. <http://dx.doi.org/10.1590/S0036-46652014000400018>

Address for correspondence: Robério Dias Leite, Rua Prof. Costa Mendes, 160 – 2º andar. Fortaleza-CE, CEP 60.416-200, Brazil; email: roberiodias.leite@gmail.com

Chikungunya Virus in Macaques, Malaysia

I-Ching Sam, Chong Long Chua, Jeffrine J. Rovie-Ryan, Jolene Y.L. Fu, Charmaine Tong, Frankie Thomas Sitam, Yoke Fun Chan

Author affiliations: University Malaya, Kuala Lumpur, Malaysia (I-C. Sam, C.L. Chua, J.Y.L. Fu, C. Tong, Y.F. Chan); Department of Wildlife and National Parks Peninsular Malaysia, Kuala Lumpur (J.J. Rovie-Ryan, T. Sitam)

DOI: <http://dx.doi.org/10.3201/eid2109.150439>

To the Editor: In the past 10 years, chikungunya virus (CHIKV) has caused global epidemics of fever, rash, and arthralgia affecting millions of humans, most recently in the Americas (1). CHIKV is an alphavirus transmitted by *Aedes* spp. mosquitoes. This virus has been isolated from wild vertebrates, particularly nonhuman primates (NHPs), in Africa (2). This sylvatic cycle might maintain the virus during interepidemic periods. The role of sylvatic cycles in Asia is less clear.

Encroachment of human settlements into forests has caused increased conflict between humans and macaques for space and resources in urban and rural areas. This interface exposes humans to zoonotic pathogens found in monkeys, such as CHIKV, dengue virus, and *Plasmodium knowlesi*. The most common macaque species in Peninsular Malaysia is the long-tailed macaque (*Macaca fascicularis*); an estimated population of >130,000 monkeys live in human-populated areas (3). We determined the potential role of long-tailed macaques in conflict with humans as a reservoir of CHIKV in Malaysia.

In response to reports of long-tailed macaques in human-populated areas, the Malaysian Department of Wildlife and National Parks traps monkeys in these areas and relocates them to forest areas. As part of the Wildlife Disease Surveillance Program conducted by Outbreak Response Team of this department, with assistance from the Eco-Health Alliance, serum samples were collected from 147 long-tailed macaques at >20 sites in the states of Selangor (88 monkeys), Negeri Sembilan (21), Perak (18), Pahang (17), and Penang (3) (Figure). Samples were collected in October–November 2009 and October 2010, just after a nationwide outbreak of CHIKV that affected >13,000 persons in 2008–2009 (4). These samples represent 0.05%–0.29% of estimated populations of long-tailed macaques in human-populated areas in these 5 states (3).

A seroneutralization assay was performed by using baby hamster kidney cells to screen for neutralizing antibodies against CHIKV in heat-inactivated monkey serum