EVOLUTION OF THE ZIKA OUTBREAK

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Diseases transmitted by Aedes mosquitoes are expanding their geographic range and public health impact by exploiting the triad of the modern world: urbanization, globalization and international mobility. Zika virus joined the quartett of enzootic arboviruses (dengue, yellow fever, chikungunya) to enter urban human-mosquito-human transmission causing unprecedented epidemics. The first epidemiological alert was issued on 7 May 2015. On 1 February 2016, the unusual clusters of birth defects and Guillain Barre Syndrome were declared a public health emergency of international concern. Scientists are scrambling to explain the change from an endemic arbovirus causing sporadic mild illness across equatorial Africa and Asia to one that is now associated with severe complications and rapid geographic spread. A significant new finding is the ability of this arbovirus to also be transmitted sexually between humans and the persistence of viral RNA in semen for many months. The geographic distribution of Zika infections is likely to coincide with the global distribution of Aedes vectors, but due to globally dispersible person-to-person transmission (both vertically from mother to fetus, and horizontally through sexual transmission) infections will also occur in countries without Aedes mosquitoes. Questions that now need to be investigated are: What is the true attack rate of congenital Zika syndrome (CZS) by gestational week for asymptomatic and symptomatic ZIKV infections in pregnant women? What is the full clinical spectrum of CZS at birth and at five years of age? What long-term complications will appear in those with minimal CZS, or as a result of infections late in pregnancy?
By early 2017, the number of Zika infections had clearly declined in the Americas. In Yap Island and French Polynesia, both smaller island states, the epidemic came and went. The future evolution and indications for Zika vaccines will depend on many questions that have not yet been answered. Will population immunity in endemic countries (particularly Asia and Africa) confer protection against the epidemic strains of Zika currently circulating in Latin America and the Caribbean? What will be the impact through due to spill over from sylvatic cycles to human populations? What are potential post-invasion epidemic scenarios given that even low numbers of CZS are a tragedy? Fighting Zika calls for a complex epidemic response that requires strategies ranging from vector control, virology, reproductive health, birth defect surveillance, neurology, to communication science. The similarities with other arboviral epidemics underscore the need to reassess research priorities and public health interventions.