

Type: Invited Presentation

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 Session: *Surveillance of Zoonotic Diseases*
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 Time: 15:45-17:45
 Room: Room 1.60

Update on viral hemorrhagic fevers

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Viral hemorrhagic fevers (VHF) are characterized by a propensity for human-to-human spread and high death rates; properties which render them liable to control by the state and necessitate the use of high security laboratories for handling the etiological agents. However, not all strains of the viruses concerned cause hemorrhagic signs or highly lethal disease, while a variety of other pathogens pose equally hazardous health problems. Hence, for regulatory purposes it has been found more logical to classify high consequence pathogens according to defined biorisk groups. Among the familiar VHFs of Africa, Marburg and Ebola filoviruses have been less active recently than 5-10 years ago, but there have been advances in understanding the ecology and pathogenesis of these viruses, and in developing candidate vaccines and therapeutics. Meantime, the emergence of new pathogens has continued apace, including a new arenavirus and a rhabdovirus causing hemorrhagic fever in Africa, and a phlebovirus in China.

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Etiology of dengue in Latin America

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Dengue is a mosquito-borne viral disease. It is estimated that 50-100 million people are infected and a half a million cases due to DHF/DSS and ≈25,000 deaths occur annually worldwide. The region of the Americas have experienced a dramatic increase in the number of reported cases over the last thirty years, evolving from a low to a high endemicity situation, with indigenous transmission in almost all countries. The 4 dengue serotypes are circulating in the region, sometimes with a hyperendemic pattern (co-circulation of 2 or more serotypes) in countries like Venezuela and Colombia. Epidemic patterns of 3-5 years have been observed, with an increasing number of reported cases in the last 5 years. Cases have been reported with a seasonality pattern related to rainy season in most of countries. There is a trend of severe cases in younger ages in the last 10 years in Latin America, compared to what had been observed previously. To 15 Nov 2013, record figures of more than 2 million of dengue cases had been reported to PAHO (Pan American Health Organization), 32,270 of them considered as severe, the incidence rate was of 404.35 per 100,000

population, 1,175 deaths and case fatality rate of 0.05 Some macro-determinant factors may contribute to the increasing dengue cases, like: Unprecedented population growth, unplanned and uncontrolled urbanization, increasing poverty, population movement (migration, tourism), climatic change. Countries continue with the efforts for the disease control through specific actions against Aedes mosquitoes and PAHO's Integrated Management Strategy for dengue prevention and control, however additional measures should be implemented like the development of effective dengue vaccines to reinforce the current strategies

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The spread of dengue into Africa

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Prevention of dengue vaccines in the pipeline

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Dengue burden is an important issue in Africa, Asia and the Americas, with nearly 2 billion people exposed. Vector control is so far the only measure available worldwide to stop the growing number of cases. But control measures are not effective, since trends of erratic urbanization and its consequences like water supply and storage, and waste disposal, largely favors the mosquito spreading. Vaccination is the most promising preventive intervention and deserves heavy efforts. Denguevirus is a member of *Flavivirus* Genus, and many of its components have been successfully targeted for vaccine development, such as West Nile fever (veterinary), Japanese encephalitis, tick-borne encephalitis and yellow fever, but none of these viruses has four serotypes as denguevirus. Single serotype (monovalent) dengue vaccines has been pursued since the 1950s in Asia, when viral attenuation was obtained in several mouse brain tissue passages, but a tetravalent vaccine was never come to trial. Latter in the 1980s, natural attenuation process in cell culture (PDK cells) gave rise to new live vaccines, through the cooperation of Mahidol University in Thailand and the Walter Reed Institute of USA. Monovalent PDK cell vaccines were immunogenic, but when all four serotypes were put together interference among serotypes appeared; two of these vaccines have been aban-