Infectious Diseases Labs

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Wednesday 27th Aug 2025
12:30 PM to 1:30 PM (SGT)

Venue: Codon A & B, Matrix Level 5

Support of sentinel syndromic surveillance in improving arbovirus detection in Senegal

The African continent faces regular epidemics due to emerging pathogens, including arboviruses such as Dengue (DENV), Chikungunya (CHIKV), Rift Valley fever virus (RVFV) and Crimean Congo hemorrhagic fever virus (CCHFV), that are challenging for our vulnerable health systems. This is mainly due to the overlap in Africa between low preparedness and high risk of disease emergence. It is therefore important to strengthen surveillance in endemic areas for early detection of pathogens and implementation of efficient control measures.

We used sentinel syndromic surveillance in 8 regions with different ecological patterns in Senegal. Patients were enrolled between April, 2021 and April, 2024 and collected biological specimens were analyzed with molecular and serological tests for different arboviruses (yellow fever, DENV, CHIKV, West Nile, Zika, RVFV and CCHFV). Next Generation Sequencing was also performed for genetic characterization of the viruses.

About 1200 patients aged between 22 months to 70 years were sampled. The analyses showed the detection in Senegal of all tested arboviruses, mainly during the rainy season. Indeed, we detected 3 Dengue outbreaks, 1 Chikungunya outbreak and sporadic cases of the other tested viruses including West Nile, Zika, CCHFV and RVFV. Genetic characterization showed the circulation of 3 Dengue serotypes (1, 2 and 3), the Chikungunya West-African genotype, a new RVFV lineage and multiple CCHF genotypes (I, II, and II) with reassortment events. Our results also highlighted virus introduction to Senegal from different countries.

These results showed the importance of sentinel syndromic surveillance approach with the detection of multiple arboviruses with medical and veterinary interest in Senegal. This calls for enhancement of sentinel surveillance in humans as well as its implementation in animals and arthropods for timely detection of pathogens. Our results also called for a pan-African arbovirus surveillance for better disease surveillance and control.

Dr Gamou Fall is a virologist at the Institut Pasteur de Dakar. She received her PhD training at Montpellier 2 University in France on Biology-Health and also graduated on Fundamental Virology at the Pasteur Institute in Paris. She is currently a mid-career investigator working at the Virology department (Institut Pasteur de Dakar), which hosts the WHO collaborating center for arbovirus and hemorrhagic fever viruses as well as the WHO yellow fever regional reference laboratory where she performed research, public health and training activities.

Her research activities are mainly focused on virus-vector and virus-host interactions, especially on arbovirus transmission by mosquito vectors and pathogenesis in vertebrate hosts using mouse models. Regarding public health, she is coordinating the routine diagnostic of arboviruses and viral hemorrhagic fevers through different surveillance programs and has experience on field deployment for public health purposes such as outbreak investigations and control at the national and international levels. Finally, regarding training, she demonstrated leadership skills through workshop participation/organization and supervision of Master and PhD students in the laboratory. She has more than 80 scientific publications in international peer-reviewed journals.

Hosted by: Prof Marco Vignuzzi

Seminar is open to all. No registration required.

Questions? Contact us at **seminars@idlabs.a-star.edu.sg**

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