

O12 Ecology of Flying foxes and the risk of Nipah virus emergence in Cambodia

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Pteropid bats (*Pteropus* spp) are considered to be the main reservoir of Nipah virus (NiV) that was first identified in Malaysia in 1998 after it emerged in pigs and in humans causing 265 cases with 105 deaths. The virus has been re-emerging on a seasonal pattern in Bangladesh where over 200 sporadic human cases have been identified since 2001 caused by food-borne and some person-to-person transmission, with an overall case fatality exceeding 70%. In Cambodia, NiV circulation in Flying Foxes population was documented in 2000 but little is known about the epidemiology of the virus.

Seasonality in infectious disease circulation can be induced by multiple climatic, environmental or host-related factors. In particular, juveniles - susceptible individuals in the absence of maternal antibodies – may amplify pathogens circulation when massively entering in contact with the general population. Therefore, a synchronized reproduction of Pteropid bats in South East Asia may trigger a peak circulation of NiV due to a pulse of juvenile after the breeding season.

We monitored the reproduction phenology of a population of Lyle's flying foxes (*Pteropus Lylei*) using two different census methods to target the surveillance of NiV. Based on these censuses, we tested urine samples collected when a pulse of juveniles was recorded. Interviews of the local population around the roosts were also conducted to assess the potential route of transmission of the virus from the bats to humans and domestic animals. Our results showed a synchronized reproduction of the flying foxes population at our study site with a pulse of juveniles in April-May. A first batch of 129 samples collected in these months was tested for NiV and two samples were positive. We thus detected NiV in Pteropid bats with a limited number of samples tested, showing that ecologically-targeted surveillance may help optimize the detection of emerging pathogens in wildlife.

Our study suggests a peak of NiV circulation in Flying Foxes between April and June. We discuss the risk of emergence of Nipah in humans and domestic animals during that period of increased risk of transmission in relation with the potential route of transmission identified such as hunting, fruit contamination, market contamination or palm sap drinking.