

5th International Berlin Bat Meeting: Are bats special?

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An integrated study of Nipah virus eco-epidemiology at the flying-fox/human interface in Cambodia

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Nipah virus (NiV) was first reported in Malaysia in 1998 after the virus emerged in pigs, causing 265 human, with 105 deaths. Flying foxes are considered to be the main reservoir of the virus which re-emerged in Bangladesh and India where over 200 human cases have been identified since 2001. Evidence of NiV circulation in flying fox populations has been reported in Thailand and Cambodia but little is known in South East Asia about the risk of transmission of NiV to domestic animals and Humans.

In order to better assess the risk of emergence of Nipah virus in Cambodia, we implemented a multidisciplinary study involving researchers (in ecology, epidemiology, virology, genetics, anthropology and modelling), conservationists and local and national authorities. We monitored the population dynamics and the diet of a colony of Lyle's flying fox (*Pteropus lylei*) as well as the circulation of Nipah virus in the urine of these bats. We investigated the perception of the bats by local communities and their practices relating them to the bats (such as hunting, collecting guano, harvesting fruits, harvesting and drinking palm juice). We studied the bat / human interface by deploying GPS collars on 14 bats.

Our results show seasonal patterns in both population dynamics and virus circulation, allowing us to identify a period when local communities' practices may put them at a higher risk of contamination. The GPS locations of the bats during this period reveal potential routes of transmission of the virus from the bats to the humans and areas with increased potential contacts. A serological survey of people living in these areas was subsequently implemented.

The development of an integrative model and participatory approaches are being used to help transfer this knowledge and to advocate the use of prevention measures, despite the absence of a perceived risk by local communities.