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PREDICT

FILOVIRUS SURVEILLANCE IN UGANDA

WORKING IN BWINDI IMPENETRABLE FOREST REGION

The Bwindi Impenetrable forest region in Southwestern Uganda is a mammalian biodiversity hotspot in Africa where human livelihoods are intimately connected with wildlife. The UNESCO World Heritage Site forest is also surrounded by one of the densest human populations in Africa, making it a particularly important interface for understanding the transmission of ebolaviruses (the viruses causing Ebola Virus Disease (EVD)) between reservoir, secondary spillover hosts and humans.

Through a combination of acute febrile illness surveillance in medical facilities surrounding the Bwindi Impenetrable Forest and in-depth behavioral survey work, we were able to identify the first human exposures to ebolaviruses (Ebola virus, Sudan virus, and Bundibugyo virus) in the region, particularly those with a history of wildlife contact. Identification of antibodies to ebolaviruses in humans in Bwindi likely represent previous infection with known ebolaviruses or infection with serologically cross-reactive low or non-pathogenic undiscovered filoviruses that also share wildlife hosts.

People reporting a history of hunting primates were significantly more likely to have evidence for past exposure to Sudan virus.

Hunting primates has been previously linked to outbreaks of EVD, caused by Ebola virus, through contact with dead common chimpanzees and/or western lowland gorillas. Hunting of primates may be on the increase in the region because of population growth both within Uganda and through influx of refugees from the DRC, where primate bushmeat consumption is more common.

People with a history of touching duikers were also significantly more likely to be seropositive for Ebola virus. Duikers are frequently eaten by humans in many parts of equatorial Africa and have been previously implicated as incidental hosts for Ebola virus. Duikers are believed to become infected with Ebola virus through scavenging nonhuman primate carcasses, an activity that is plausible in Bwindi given the prevalence and diversity of nonhuman primate species. Duikers are the most common animal caught in snares in Bwindi Impenetrable National Park, and people directly contact this species through hunting, food preparation, and consumption.

Our findings indicate that spillover of ebolaviruses in humans, and circulation of ebolaviruses, could be more common than previously reported. The results of this study inform ongoing surveillance efforts needed to improve our understanding of the role of wildlife in spillover of ebolaviruses, not only adding to investigations of bats as likely reservoir hosts, but also indicating that secondary spillover host species such as primates and duikers remain important sources of human infection.

Learn more here: bit.ly/bwindi-filoviruses