# Study finds pigs susceptible to virulent ebolavirus can transmit the virus to other animals

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Canadian investigators have shown that a species of ebolavirus from Zaire that is highly virulent in humans can replicate in pigs, cause disease, and be transmitted to animals previously unexposed to the virus. The findings are published in The *Journal of Infectious Diseases* and are now available online.

In order to prevent human outbreaks of Ebola hemorrhagic fever, it is important to identify animal species that replicate and transmit the virus to other animals and, potentially, people. Zaire ebolavirus, one of several species of the virus, has a fatality rate as high as 90 percent in humans. Antibodies to another species not associated with human disease, known as Reston ebolavirus, have been found in pig farmers in the Philippines, suggesting pigs may be able to transmit virulent ebolavirus to humans as well.

This study, led by Gary P. Kobinger, PhD, of the Special Pathogens Program, National Microbiology Laboratory, Public Health Agency of Canada, and Hana Weingartl, PhD, of the National Centre for Foreign Animal Disease at the Canadian Food Inspection Agency, investigated whether Zaire ebolavirus, like Reston ebolavirus, could replicate and cause disease in pigs and be transmitted to other animals. Using domesticated pigs, the researchers first evaluated virus replication, pathogenicity, and shedding.

Following mucosal exposure to Zaire ebolavirus, the pigs replicated the virus in high amounts, mainly in the respiratory tract. Shedding of the virus from nasal mucosa was detected for up to 14 days post-infection, and severe lung disease was observed. The study also showed that the virus was transmitted to all previously unexposed pigs co-habiting with the infected animals.

The study authors suggest that domesticated pigs are susceptible to Zaire ebolavirus through mucosal infection and that the pigs' accompanying severe respiratory disease is associated with shedding of high viral loads into the environment, exposing uninfected pigs to the infection. In contrast to the systemic syndrome affecting multiple organs that often leads to shock and death in primates, they noted, the respiratory syndrome that develops in pigs could be mistaken for other porcine respiratory diseases.

In an accompanying editorial, Daniel G. Bausch, MD, MPH & TM, of the Tulane School of Public Health and Tropical Medicine in New Orleans, noted that the study's findings raise important questions for additional research on ebolavirus. The results described in the study are "cause for consideration, for further scientific study" but are not cause for panic, Dr. Bausch wrote.

**More information:** "Replication, Pathogenicity, Shedding, and Transmission of Zaire ebolavirus in Pigs"
www.oxfordjournals.org/our_journals/jid/jir077.pdf

Editorial commentary
www.oxfordjournals.org/our_journals/jid/jir201.pdf

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