

Experimental post-exposure antiviral treatment may protect humans from Ebola virus

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The Ebola virus, isolated in November 2014 from patient blood samples obtained in Mali. The virus was isolated on Vero cells in a BSL-4 suite at Rocky Mountain Laboratories. Credit: NIAID



For the first time, UK physicians have demonstrated that antiviral-based therapies have the potential to protect humans from the deadly Ebola virus. The report, published in *The Lancet Infectious Diseases* journal, describes a case-series of eight British health-care workers who were evacuated to the Royal Free Hospital in London, UK after possible accidental exposure to Ebola virus in Sierra Leone between January and March 2015.

Four of the health-care workers were considered to have been at significant risk of exposure to Ebola from needlestick injuries and were given post-exposure prophylaxis (PEP) with the antiviral drug favipiravir (Toyama Chemical Company), with or without monoclonal antibodies (similar to ZMapp). The other four workers had exposure that was not the result of a sharps injury, and were judged to be at lower risk. They were not given PEP, but were managed by watchful waiting.

None of the health-care workers went on to develop Ebola. All eight healthcare workers remained healthy throughout the 42 day follow-up, with no signs of disease or detectable levels of virus in their blood. The treatment regimen was well tolerated with no serious adverse events reported.

"It is possible that none of these health-care workers were infected with Ebola virus. Therefore, we cannot know for sure whether or not postexposure prophylaxis prevented the onset of Ebola-virus disease," says lead author Dr Michael Jacobs from the Royal Free NHS Foundation Trust, London, UK. "However, two of the workers had needlestick injuries contaminated with fresh blood from patients with Ebola virus disease putting them at very high risk of transmission."

The risk of Ebola infection for healthcare workers in west Africa is high. By 5 August, 2015, 880 out of 27862 cases of Ebola were reported in <u>healthcare workers</u>. Yet, for doctors and nurses caring for Ebola patients



there are no guidelines to quantify exposure risk, and until now, any evidence that PEP may be beneficial in humans.

According to Dr Jacobs, "We are excited to publish the first report of an antiviral-based postexposure treatment against Ebola-virus infection in humans. We believe this work justifies further study of this postexposure treatment to protect health-care workers accidentally exposed to Ebola virus in the field. What is more, a similar approach to treat household contacts of Ebola cases may work to prevent a major route of spread during an epidemic."

The authors conclude by calling for standardised guidelines about transmission risk and management after potential exposure to be urgently developed and adopted as they have been for many other infections such as HIV and hepatitis B <u>virus</u>.

Writing in a linked Comment, Professor Mark Mulligan and Dr Paul Siebert from Emory University in the USA said, "A needed next step is the development of a consensus risk determination algorithm devised by an expert panel, drawing upon all available evidence, endorsed by health organisations, and disseminated to the field. The algorithm could be accompanied by a chart abstraction and case report form to standardise and organise data gathering. These data for recognised exposures could be collated and analysed for an international registry."

More information: *The Lancet Infectious Diseases*, <u>www.thelancet.com/journals/lan ... (15)00228-5/abstract</u>

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