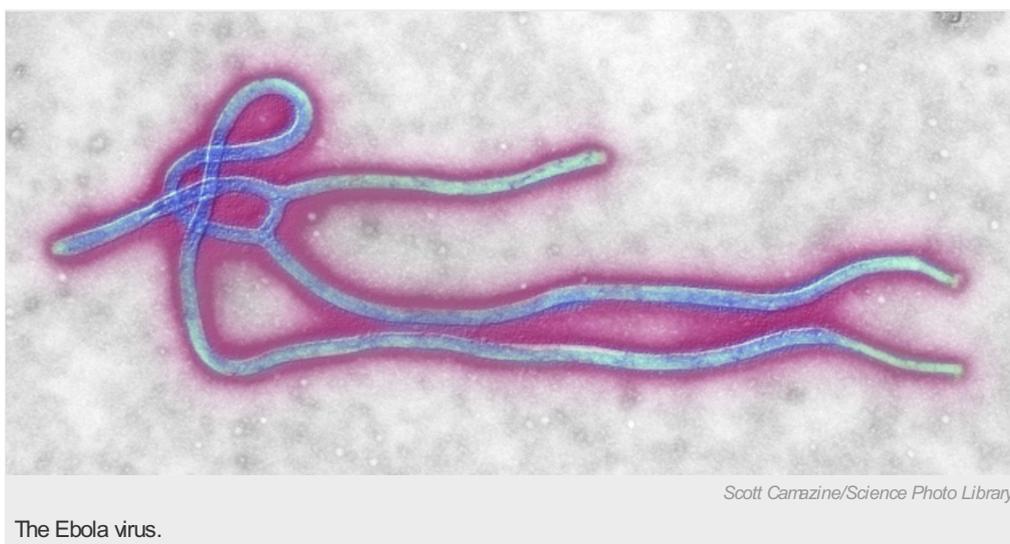


What first case of sexually transmitted Ebola means for public health

The risk of transmission is low, but could become a focus once West Africa is declared Ebola-free.

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16 October 2015



It has long been known that the Ebola virus can remain in semen for months after patients have recovered from the disease. But two studies published on 14 October in the *New England Journal of Medicine*^{1,2} have raised concerns that sexual transmission of the virus might cause flare-ups of Ebola in West Africa after the region has been declared Ebola-free. *Nature* explains the implications of the findings.

What did the studies show?

One study¹ recruited 93 men who had survived Ebola in Sierra Leone; they were examined between two and nine months after they first showed symptoms of the disease. Half had Ebola viral RNA in their semen. That was not a complete surprise because traces of the virus are known to linger in semen for many months. Those who first showed symptoms two months ago were most likely to test positive for the RNA. But even in the 43 people who first showed symptoms 7–9 months ago, around one-quarter still had Ebola RNA present in their semen.

The other study² confirms the first known case of sexual transmission of Ebola, to a woman in Liberia. (A [preliminary report on the same incident](#) had been published in May).

Were the survivors still contagious?

Not necessarily. The researchers in the Sierra Leone study (with the Sierra Leone government, the World Health Organization (WHO) and the US Centers for Disease Control and Prevention) did not test for live virus. Rather, they searched for Ebola-specific genetic sequences in the men's semen — so might have identified only fragments of dead virus. "The test is only detecting a small portion of the viral genome,

and not all viral RNA detected is necessarily live infectious virus," says Michael Wiley, a researcher at the Center for the US Army Medical Research Institute of Infectious Diseases in Fort Detrick, Maryland, and an author of the sexual transmission study.



Devastating impact of Ebola on maternal health

The researchers are working to see if they can isolate live virus from the semen samples. The Ebola RNA findings are only preliminary results from a longer-term study, says Margaret Harris, a WHO spokeswoman. Follow-up studies will retest the men at intervals to better understand how long the virus persists in semen and whether it is associated with any health problems.

What is the risk of sexual transmission of Ebola?

Very low, evidence from the field suggests. Until now, there have been no documented cases of Ebola being transmitted this way. And there is only one other suspected related instance: a case of sexually transmitted Marburg virus, which is in the same family as Ebola, was reported [back in 1968](#).

How was the new case identified?

In May, an international team of researchers reported that a male survivor might have infected a Liberian woman with Ebola. The woman had Ebola even though she had apparently not been exposed to anyone showing symptoms of the disease, but she had recently had unprotected vaginal intercourse with the male survivor; and although he had been discharged from an Ebola treatment centre 5 months earlier, his semen tested positive for the virus.

In the update this week, the same researchers — working in collaboration with the government of Liberia — generated an almost complete sequence of the Ebola virus genome from his semen and showed that it differed by just one mutation from the sequence of the virus in the woman. And three mutations shared by the woman and the survivor had not been seen in the 796 other sequences of Ebola in West Africa. "I think that we can move the 'probable' to 'confirmed', based on all available evidence," says Gustavo Palacios, one of the authors of the study and a researcher at the Center for Genome Sciences.

Ebola survivors fight prejudice

Can Ebola persist elsewhere in the body?

Yes. Ebola can also persist for some time in tissues such as in the eye, the central nervous system, the prostate gland, the placenta. The risk of transmission from these sites is even lower than for semen. But the persistence of Ebola virus, or fragments of it, is coming under renewed scrutiny for its possible role in '[post-Ebola syndrome](#)', a poorly understood range of symptoms including visual problems, joint and muscle pain, headaches and extreme fatigue that is experienced by thousands of survivors.

In one high-profile case, a Scottish nurse who had recovered from Ebola in January is now critically ill with Ebola-related complications.

The semen research is one part of a larger project being planned in Sierra Leone that will study the persistence of Ebola in a range of tissues, and explore their health effects.



Ebola teaches tough lessons about rapid research

What are the immediate public-health implications?

The WHO already revised its guidelines in May in response to the finding that an Ebola survivor seemed likely to have sexually transmitted Ebola 5 months after his recovery. Previously, it recommended that male survivors should either abstain from sex, or use condoms, for at least 3 months after recovery. But in the light of the findings, the agency recommended that the semen of male survivors be tested for Ebola 3 months after they have fallen ill, and that those that test positive be retested every month until they twice test negative (and continue to take sexual precautions). Survivors whose semen is not tested should practise safe sex for at least 6 months, it added.

Are there likely to be any more cases of sexual transmission in this epidemic?

West Africa seems close to being Ebola-free. Once this occurs, the possibility of sexual transmission, although unlikely, will become more of a focus. Given the large number of male survivors, the studies suggest that counselling to emphasize the need for testing and safe sex, as the WHO recommends, is imperative for the health of men and their partners to prevent any further transmission.

Sexual transmission might mean that people could become ill with Ebola well after the WHO declares an outbreak to be over, notes Armand Sprecher, a public health specialist with Médecins sans Frontières (Doctors without Borders) in Brussels. "The challenge with sexual transmission is not that it would be a source of many new Ebola virus disease cases, but that it may be a source of late cases," he wrote in an [editorial](#) accompanying the *New England Journal of Medicine* report.



And although sexual transmission is rare, adds Wiley, it is worth bearing in mind that it took a single infection to trigger the epidemic in West Africa.

How to beat the next
Ebola

Nature | doi:10.1038/nature.2015.18584

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Nature ISSN 0028-0836 EISSN 1476-4687

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