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What we know about transmission of the Ebola virus among humans

Ebola situation assessment - 6 October 2014

The Ebola virus is transmitted among humans through close and direct physical contact with infected bodily fluids, the most infectious being blood, faeces and vomit.

The Ebola virus has also been detected in breast milk, urine and semen. In a convalescent male, the virus can persist in semen for at least 70 days; one study suggests persistence for more than 90 days.

Saliva and tears may also carry some risk. However, the studies implicating these additional bodily fluids were extremely limited in sample size and the science is inconclusive. In studies of saliva, the virus was found most frequently in patients at a severe stage of illness. The whole live virus has never been isolated from sweat.

The Ebola virus can also be transmitted indirectly, by contact with previously contaminated surfaces and objects. The risk of transmission from these surfaces is low and can be reduced even further by appropriate cleaning and disinfection procedures.

Not an airborne virus

Ebola virus disease is not an airborne infection. Airborne spread among humans implies inhalation of an infectious dose of virus from a suspended cloud of small dried droplets.

This mode of transmission has not been observed during extensive studies of the Ebola virus over several decades.

Common sense and observation tell us that spread of the virus via coughing or sneezing is rare, if it happens at all. Epidemiological data emerging from the outbreak are not consistent with the pattern of spread seen with airborne viruses, like those that cause measles and chickenpox, or the airborne bacterium that causes tuberculosis.

Theoretically, wet and bigger droplets from a heavily infected individual, who has respiratory symptoms caused by other conditions or who vomits violently, could transmit the virus – over a short distance – to another nearby person.

This could happen when virus-laden heavy droplets are directly propelled, by coughing or sneezing (which does not mean airborne transmission) onto the mucus membranes or skin with cuts or abrasions of another person.

WHO is not aware of any studies that actually document this mode of

transmission. On the contrary, good quality studies from previous Ebola outbreaks show that all cases were infected by direct close contact with symptomatic patients.

No evidence that viral diseases change their mode of transmission

Moreover, scientists are unaware of any virus that has dramatically changed its mode of transmission. For example, the H5N1 avian influenza virus, which has caused sporadic human cases since 1997, is now endemic in chickens and ducks in large parts of Asia.

That virus has probably circulated through many billions of birds for at least two decades. Its mode of transmission remains basically unchanged.

Speculation that Ebola virus disease might mutate into a form that could easily spread among humans through the air is just that: speculation, unsubstantiated by any evidence.

This kind of speculation is unfounded but understandable as health officials race to catch up with this fast-moving and rapidly evolving outbreak.

To stop this outbreak, more needs to be done to implement – on a much larger scale – well-known protective and preventive measures. Abundant evidence has documented their effectiveness.

Related links

Ebola situation assessments

Frequently asked questions on Ebola virus disease

Fact sheet on Ebola

Ebola virus disease - web site