



Ask Well NYT NOW

Ask Well: How Does Ebola Spread? How Long Can the Virus Survive?

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Q. Can I get Ebola from public transportation? As in, if a passenger coughed into their hand and then held onto the pole, and then another passenger held onto that pole and inadvertently wiped their eye?

A. Updated on Oct. 23. | My original answer was simply no. A more nuanced answer is that it is extremely unlikely to spread through public transit.

Many readers have argued that the original answer was inconsistent with some statements by the Centers for Disease Control and Prevention or the World Health Organization. In fact, some C.D.C. and W.H.O. statements are inconsistent with each other and shifting as more questions are raised. The W.H.O. on Monday issued a new Ebola situation assessment entitled “What We Know About Transmission of the Ebola Virus Among Humans.”

Starting off my answer with a blanket “No” was wrong. But I would consider it irresponsible to have responded “Yes.” Implying that Ebola is caught as easily as flu or colds would be untrue and inflammatory.

It is extremely unlikely for the Ebola virus to spread through public transit for several reasons.

Not all viruses build up to infectious doses in all bodily fluids. Usually, Ebola does not at first make victims cough or sneeze, although someone who also had the flu could, in theory, spray vomitus or blood. Once Ebola invades the lungs, the body will cough to clear them. But passengers that deathly ill are not likely to be on public transit.

According to the recent W.H.O. statement, high levels of Ebola virus in saliva are rare except in the sickest victims, and whole virus has never been found in sweat. The fluids known to build up high viral loads are blood, feces and vomit.

How much virus is needed to cause illness is not exactly known. Viruses differ that way. In any group that shares needles, hepatitis C will spread more readily than H.I.V. because smaller doses infect.

No one has tested Ebola transmission on subways. But no case of transmission to a human from a dry surface has ever been confirmed. The C.D.C. has said there is “no epidemiological evidence” for transmission from hospital surfaces, including bed rails and door knobs — which are as close as a hospital room gets to having a subway pole and a bus handle. A 2007 study cited by C.D.C. experts shows that swabs of 31 surfaces — including bed frames, a spit bowl and a used stethoscope — in a very dangerous environment, an active Ebola ward in Uganda — did not have virus in a single sample.

So how might Ebola be passed on a subway? If someone ejected bloody mucus or vomitus onto a subway pole, and the next passenger were to touch it while it was still wet and then, for some unimaginable reason, were to put those wet fingers into an eye or mouth instead of wiping them in disgust — then yes, it could happen. Similarly, if an extremely ill passenger with high viral saliva loads were to sneeze large, wet droplets directly into the mouth or eyes of another passenger, the infection might be passed. But the influenza route — sneeze to hand to pole to hand to eye — has never been known to happen and is considered extremely unlikely.

Africa is full of overcrowded public transport — buses, minivans and some trains. There are no known instances of transmission in those environments. On July 20, a dying Liberian-American flew to Nigeria and was vomiting on the plane. All 200 people aboard were monitored; none fell ill.

Dr. Craig Spencer, the patient with Ebola currently in isolation in Bellevue Hospital, did ride the subways since arriving in New York on Oct. 14. He rode the A, L and No. 1 trains, according to Dr. Mary Bassett, the New York City health commissioner. Dr. Bassett said Dr. Spencer had been taking his temperature twice a day since he left Guinea. Until Thursday morning, his

temperature was normal and he was not experiencing any of the early symptoms of Ebola disease, such as nausea or diarrhea. Ebola experts say the disease cannot be transmitted before the appearance of symptoms.

Q. How long does the Ebola virus live on contaminated surfaces, such as bed sheets, door knobs, etc.?

A. It's different in every set of circumstances. The Ebola virus eventually dries out in the air and dies. It's not like anthrax, which forms a hard capsule around itself and can survive for months or a year. Ebola is a virus that is meant to live inside blood or fluid in your cells. It's not meant to live in the open air, so it dies. A sheet that has wet blood in it is more dangerous than one with dried blood, because by then it would have dried out. There's not one answer, but it is considered to be fairly safe after about 24 hours, certainly in environments that are cleaned regularly like hospitals.

Q. Can a blood test show if a person has the Ebola virus before they are symptomatic?

A. With blood tests that we have now, no. In fact, in order to be fairly certain, you have to have the first symptom, which is a fever, for about three days before there's enough virus coursing around in your blood for the blood test to be accurate.

Q. Many viruses (such as herpes) can be transmitted before a person shows symptoms. Why is that not the case for Ebola?

A. The basic answer is that all viruses are different. In the case of Ebola, you have to get a basic all-over body infection with infected blood and vomit coming out of you before you can pass the disease on to anybody else.

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