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Top Doctors: Ebola May Become Airborne … And May Already Be Transmissible Via Aerosols

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We Can't Stop the Ebola Epidemic Unless We Understand How It's Spread

Michael T. Osterholm – director of the Center for Infectious Disease Research and Policy at the University of Minnesota – wrote in the New York Times last month:

> Viruses like Ebola are notoriously sloppy in replicating, meaning the virus entering one person may be genetically different from the virus entering the next. The current Ebola virus's hyper-evolution is unprecedented; there has been more human-to-human transmission in the past four months than most likely occurred in the last 500 to 1,000 years. Each new infection represents trillions of throws of the genetic dice.
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> If certain mutations occurred, it would mean that just breathing would put one at risk of contracting Ebola. Infections could spread quickly to every part of the globe, as the H1N1 influenza virus did in 2009, after its birth in Mexico.
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> Why are public officials afraid to discuss this? They don't want to be accused of screaming "Fire!" in a crowded theater — as I'm sure some will accuse me of doing. But the risk is real, and until we consider it, the world will not be prepared to do what is necessary to end the epidemic.
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> In 2012, a team of Canadian researchers proved that Ebola Zaire, the same virus that is causing the West Africa outbreak, could be transmitted by the respiratory route from pigs to monkeys, both of whose lungs are very similar to those of humans. Richard Preston's 1994 best seller "The Hot Zone" chronicled a 1989 outbreak of a different strain, Ebola Reston virus, among monkeys at a quarantine station near Washington. The virus was transmitted through breathing, and the outbreak ended only when all the monkeys were euthanized. We must consider that such transmissions could happen between humans, if the virus mutates.

The Guardian reports today:

> There is a 'nightmare' chance that the Ebola virus could become airborne if the epidemic is not brought under control fast enough, the chief of the UN's Ebola mission has warned.
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> Anthony Banbury, the Secretary General's Special Representative, said that aid workers are racing against time to bring the epidemic under control, in case the Ebola virus mutates and becomes even harder to deal with.

But perhaps most challenging to the mainstream assumption that Ebola can only be spread through *physical* contact with a person who is showing symptoms of infection is the following explanation by two national experts on infectious disease transmission, both professors in the School of Public Health, Division of Environmental and Occupational Health Sciences, at the University of Illinois at Chicago (footnotes omitted):

> We believe there is scientific and epidemiologic evidence that Ebola virus has the potential to be transmitted via infectious aerosol particles both near and at a distance from infected patients, which means that healthcare workers should be wearing respirators, not facemasks. [Aerosols are liquids or small particles suspended in air. An example is sea spray: seawater suspended in air bubbles, created by the force of the surf mixing water with air.]
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> The important points are that virus-laden bodily fluids may be aerosolized and inhaled while a person is in proximity to an infectious person and that a wide range of particle sizes can be inhaled and deposited throughout the respiratory tract.
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> Being at first skeptical that Ebola virus could be an aerosol-transmissible disease, we are now persuaded by a review of experimental and epidemiologic data that this might be an important feature of disease transmission, particularly in healthcare settings.
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> Many body fluids, such as vomit, diarrhea, blood, and saliva, are capable of creating inhalable aerosol particles in the immediate vicinity of an infected person. Cough was identified among some cases in a 1995 outbreak in Kikwit, Democratic Republic of the Congo, and coughs are known to emit viruses in respirable particles. The act of vomiting produces an aerosol and has been implicated in airborne transmission of gastrointestinal viruses. Regarding diarrhea, even when contained by toilets, toilet flushing emits a pathogen-laden aerosol that disperses in the air.
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> There is also some experimental evidence that Ebola and other filoviruses can be transmitted by the aerosol route. Jaax et alreported the unexpected death of two rhesus monkeys housed approximately 3 meters from monkeys infected with Ebola virus, concluding that respiratory or eye exposure to aerosols was the only possible explanation.
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> Zaire Ebola viruses have also been transmitted in the absence of direct contact among pigsand from pigs to non-human primates, which experienced lung involvement in infection. Persons with no known direct contact with Ebola virus disease patients or their bodily fluids have become infected.
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> Experimental studies have demonstrated that it is possible to infect non-human primates and other mammals with filovirus aerosols. [Ebola is a type of filovirus]
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> Altogether, these epidemiologic and experimental data offer enough evidence to suggest that Ebola and other filoviruses may be opportunistic with respect to aerosol transmission. That is, other routes of entry may be more important

> and probable, but, given the right conditions, it is possible that transmission could also occur via aerosols.

In other words, these two infectious disease experts believe that Ebola is *already* – in its *current* form – transmissible via aerosols. They therefore urge all doctors and nurses working with Ebola patients to wear respirators.

If they're right, the government's current approach towards Ebola is all wrong.
