How Contagious is Ebola?

Required Annotations		Student-Created Annotations		Summary / Questions / Reflection	

Comprehension	**log = word/study of; dict = speak; epi = upon; on top of**	Comments

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First your fever spikes, your joints hurt, and your head aches. It feels like the worst flu you've ever had. And then it gets worse: You double over with stomach pains, vomiting, and diarrhea. For about 60 percent of victims, these symptoms lead to multiple organ failure and ultimately, death.

The virus is called Ebola, and it's been making headlines around the world. The current outbreak started in December 2013 in the West African nation of Guinea and then spread to neighboring Liberia and Sierra Leone. By early December 2014, more than 17,000 cases of Ebola and 6,000 related deaths had been reported in the region.

Six Ebola cases (including two deaths) had been confirmed in the U.S. by early December; at least 20 more people have been treated for Ebola in countries outside West Africa, including Germany, Spain, and the United Kingdom. The disease's spread has created fear of a global **epidemic**. Bur disease experts known as epidemiologists say that's very unlikely.

Epidemiologists study the spread of infectious diseases. To determine how contagious a disease is, they use a measurement called the basic reproduction number, or R_0 (pronounced “R nought”).

“R_0 tells us how many people are likely to get a disease from someone who's already sick,” says Dr. Abdulrahman El-Sayed, an epidemiology professor at Columbia University in New York City. “The bigger the R_0, the more likely the disease will infect a lot of people.” A person with an illness with an R_0 of 4, for example, will infect four people if no **preventative** measures are taken.

Ebola has a relatively small R_0 of 2. This doesn’t mean it's not a serious illness. But it suggests that Ebola won't spread as fast as an infection with a high of R_0, like chicken pox (which has an R_0 of 8).

While R_0 is a helpful tool, it's not an exact measurement. “In reality, there are many situations that can affect the spread of an illness,” says El-Sayed. For example, vaccination programs in the U. S. have greatly reduced cases of measles and mumps, despite high R_0 values. Limiting patients' direct contact with people can also curb a contagion. This approach is helping restrict Ebola's spread in the U. S., where medical workers wear protective suits.

“We've seen pictures of doctors in their' spacesuits,'” says El-Sayed. “It's one more effort to decrease the transmission and—more importantly—help save the patient's life.”

Questions

1. Would the disease that leads to a zombie apocalypse have a high R_0 or a low R_0? Why?
2. If “dict” means to speak, what word using that stem describes what the R_0 value helps epidemiologists do?
3. The article explains that “vaccination programs in the U. S. have greatly reduced cases of measles and mumps, despite high R_0 values.” Put this into your own words.
4. What are some preventative measures mentioned in the article?