

# What zombies can teach us about infectious diseases

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If someone you know exhibits the following symptoms, you may want to steer clear of them at your next holiday gathering: shambling gait, moaning, loss of personality traits, rotting of the flesh.

These are not signs of a food coma; they're symptoms of zombiism - and a new report is sounding the alarm about a pending zombie apocalypse.

The report, which calls for more research and funding to prevent a metaphorical zombie apocalypse, appears in the BMJ's Christmas issue, which features papers that apply real scientific methods to humorous and lighthearted topics.

Zombies might take issue with being described in such terms. According to the BMJ paper, they are "reanimated human corpses" that are both "relentlessly aggressive" and capable of spreading infectious agents.

But are they real?

Of course not, said report author Tara C. Smith, an epidemiologist at Kent State University in Ohio. But they offer an inviting way for health experts to think about issues related to infectious diseases.

"There's a lot that can be applied to true epidemics like Ebola, epidemic influenza or SARS," Smith said. "Zombies are more fun to think about."

Smith has had a lifelong interest in the undead, amassing an "out of control" collection of zombie books and media. She serves on the advisory board of the Zombie Research Society alongside other scientists, authors and George Romero, known as the father of the modern zombie movie.

"I love 'The Walking Dead.' I watch that religiously with my family," Smith said. "I love '28 Days Later.' That's the one I find scariest."

As the Zombie Research Society's resident epidemiologist and microbiologist, she's the one who answers questions about how a zombie infection - be it a virus, bacterium, fungus, prion or some terrifying combination of agents - would spread.

"28 Days Later" was the first movie to popularize the infectious disease angle of zombie outbreaks, Smith said. In the 2002 film, the virus spreads across the United Kingdom after an animal-rights activist attempting to free a group of laboratory chimps is bitten by one of the animals.

In real life, Smith studies diseases that move between animals and people. She also researches the *Staphylococcus aureus* bacterium, which can cause life-threatening infections.

As it happens, this work is not such a far cry from tracking the undead.

For instance, Smith tracks people who are "colonized" with the Staph bacterium to see how it spreads. Then she can work out the best way to contain it.

The same goes for zombies, except it's probably easier to recognize the symptoms, Smith said.

Indeed, there's nothing in the real world that quite compares to the zombie bug, Smith said.

Rabies, the most frequently cited source of zombiism, causes aggression and can be spread by bites, Smith said, but there are no documented cases of human-to-human transmission.

Last year, the Ebola crisis drew comparisons to a zombie apocalypse. Even though prominent zombie "researchers" criticized the comparison, Smith suggested life mimics art.

During the Ebola outbreak, Smith said, it took a long time for the international community to develop a coordinated response. Even in the U.S., where there were very few cases, communication about the virus was poor, she said.

"We're still unprepared for a global event or even a national event," she said.

In the zombie literature, hypothetical outbreaks spread so quickly that the world is caught off guard. Zombie vaccine research is costly and difficult - most labs can't contain zombie pathogens or infected zombies. Once a vaccine becomes available, people are reluctant to get it. And quarantines can fail when infected people who don't show symptoms are grouped together with the healthy.

"Resources often become depleted, and zombies can overrun cities or entire countries in days to weeks," Smith writes. "Several models of zombie infections have shown that in the event of a large scale outbreak ... humans face extermination."

The Centers for Disease Control and Prevention has a Web page dedicated to zombie apocalypse preparedness. (It also comes in comic

book form.)

With the CDC weighing in and the surging popularity of zombie-themed entertainment, it can all start to feel too possible. Which brings us to this question: Should you be worried about a [zombie](#) outbreak?

"Realistically, I don't think there's much chance of this happening in real life," Smith said. "But I do have a plan just in case. Everyone should know where they should go."

Smith lives on six wooded acres on a reservoir. There's plenty of deer, possum, groundhogs and geese. Out in the country, she has little to worry about.

"I think I'm good," she said.

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