Can The Zombie Apocalypse Happen in the Arctic?

Tales of Arctic Infectious Diseases with the Center for Disease Control's Dr. Michael Bruce

Friday, April 13, 2018
11:45 am - 1:00 pm
Bear Tooth Theatre
Doors open at 11:00

Tickets: Online & At the Door
Members: $10, General Public: $15
Students and Military: Free
Ticket price is for lecture only.
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Michael Bruce is a public health physician and medical epidemiologist trained in Internal and Preventive Medicine. He is the Epidemiology Team Leader at the Center for Disease Control and Prevention's Arctic Investigations Program in Anchorage, Alaska, USA.

For the past 15 years, his work has focused on improving the health of Alaskans and peoples of the Arctic. He has worked to create, manage and analyze data from the International Circumpolar Surveillance (ICS) system for invasive bacterial diseases that includes Alaska, Northern Canada, Greenland, Iceland, the Faroe Islands, Norway, Sweden and Finland. He has received numerous awards and has published over 100 scientific articles and book chapters.

More info about this program is at AlaskaWorldAffairs.org
When the zombie apocalypse hits, pray you're in Alaska

Real estate site Estately has compiled data on which states stand the best chance of surviving the brain eaters. Live in Alaska and you should be OK. In Jersey, you better have a good plan B.

Zombies. If you can't beat 'em, move to a state that can!

If you live in New Jersey, you're going to want to stock up on several cases of zombie-repelling cologne.

That's because, according to a new ranking by real estate site Estately, Jersey is the least likely state in America to survive an zombie apocalypse, followed by Mississippi and Washington, D.C. The safest places to be when the zombies arrive? Alaska, followed by Wyoming and Colorado.
Alaska has what it takes to survive zombie attack

ANCHORAGE (KTUU) Turns out living in Alaska has its benefits. We have beautiful national parks and uniquely Alaskan food and entertainment. Now you can add zombie survival skills to that list.

“Estatey Real Estate Search” ranked which states are the safest and least safe to live in if zombies rise up and take over the world, and Alaska comes in at number one.

The Estatey Blog is a resource designed to help you decide which city or state to call home. For the zombie study, Estately used five criteria, and then averaged the results to create the rankings. The criteria are: fewest people per square mile, gun owners per capita, percentage of people who are cremated instead of buried, percentage of population that is physically active, and interest in the zombie genre.

Here’s how Alaska ranks in those five categories:
1. Fewest people per square mile: Alaska is 1st (source: 2014 U.S. Census)
2. Gun owners per capita: Alaska is 2nd (source: DemographicaData.org)
3. Percentage of people who are cremated instead of buried: Alaska is 13th (source: National Funeral Directors Association)
4. Percentage of population that is physically active: Alaska is 7th (source: The State of Obesity)
5. Interest in the zombie genre: Alaska is 7th (source: Google Trends)
The Influenza virus
What is Influenza?

• A single stranded RNA virus
  • Spikes (surface proteins) protruding from surface
    • Hemaglutinin
    • Neuraminidase
  • Flu viruses are named by their
    Surface proteins hemagglutinin and neuraminidase
Annual Flu

• Two flu seasons a year
  • Northern Hemisphere
  • Southern Hemisphere

• Worldwide: ~5 million flu cases/year
  ~500,000 deaths/year

GET VACCINATED!
Pandemic Flu

• ~3 times per century
• Antigenic shift
• Population naive (unexposed)

• The Spanish Flu of 1918
History—Pandemic Flu

- 1918: worldwide influenza A pandemic
  - Spanish Flu (H1N1)
  - 675,000 U.S. deaths
  - 50 million deaths worldwide
  - Original source of the virus: waterfowl or pigs
Questions

- Are Alaskans being exposed to H5N1?
  - Have rural subsistence hunters been exposed to this deadly virus?
- Is exposure common or uncommon?
- Are people who are handling wild birds taking precautions when having contact with wild birds?
What did we learn about exposures?

• Lots of exposure to birds potentially infected with H5N1
  • All 3 groups: >10 years of cumulative exposure to wild birds

What did we learn about risk factors?

• > 50% of hunters didn’t wash their hands during or after hunting

Were any of the groups exposed to H5N1?

• No
  • Despite high levels of exposure, and lack of hand washing, none of the study participants had antibody to H5N1
Main Messages from the H5N1 Study

• There were no exposures to H5N1 virus

• Persons need to wash their hands, during, and after hunting and after cleaning wild birds

• Wild birds should be cooked thoroughly before consuming
Haemophilus influenzae A (Hia)

- Gram-negative bacteria
- Can live in your throat
- Can cause severe clinical illness
  - Meningitis, epiglottitis, pneumonia, cellulitis, bacteremia, septic arthritis
- Spread by coughing, sneezing, touching contaminated surfaces
Haemophilus influenzae A (Hia)

- Devastating illness in young children
  - Most are <2 years of age
- 25% of cases died or suffered very serious long-term damage (hearing loss, loss of extremities etc.)
- 1 in 10 cases died
- Alaska and Northern Canada have the highest rates of invasive Hia in the world
H. pylori
The Zombie Diseases of Climate Change

What lurks in the Arctic’s thawing permafrost?
Russia is fighting a mysterious anthrax outbreak in a remote corner of Siberia. Dozens of people have been hospitalized; one child has died. The government airlifted some families out because more than 2,000 reindeer have been infected.

Officials don’t know exactly how the outbreak started, but the current hypothesis is almost unbelievable: A heat wave has thowed the frozen soil there and with it, a reindeer carcass infected with anthrax decades ago.

Some scientists think this incident could be an example of what climate change may increasingly surface in the tundra.
Arctic Zombie Summary

• Zombie-like organisms from the past can get us by melting out of the permafrost – Anthrax
• Zombie-like organisms can get us from the air (coughed or sneezed) – Influenza, Hia
• Zombie-like organisms can be spread from person to person and survive the acid of the stomach to live comfortably within us for the rest of our lives– Helicobacter pylori
• Zombie-like organisms can be spread to us from contact with animals (birds) – H5N1 and many other organisms
“It is the microbes that will have the last word.”

Louis Pasteur
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