

Slate

EXPLAINER

Outbreaks vs. Epidemics

Whether it's time to freak about the flu.

By Brendan I. Koerner

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The [Centers for Disease Control and Prevention](#) has been careful to characterize the sharp uptick in flu cases as an outbreak, rather than an epidemic. What's the difference between an outbreak and an epidemic, and where do pandemics fit into the nomenclature of disease?

In terms of the flu, the difference between an outbreak and an epidemic is the percentage of overall deaths caused by the disease. Every week, the CDC gathers morbidity data from hospitals in 122 cities nationwide and figures out what percentage of the decedents died of pneumonia, cancer, and other prolific killers. If the number of flu-caused deaths exceeds 7.7 percent of the total, then the United States officially has an epidemic on its hands. According to the latest survey, only 7.2 percent of last week's deaths were due to influenza, so there's no epidemic yet.

The 7.7 percent figure isn't static from year to year, however. The CDC's official definition of an epidemic is: "The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time." Since some diseases become more prevalent or lethal over time, while others become less severe, the CDC must adjust its statistical models to alter the definition of what's truly more than expected. During the flu epidemic of 1990, for example, the CDC's threshold was 6.7 percent of total deaths. Today's threshold figure is likely due in part to the emergence of new, less treatable flu strains, as well as the decline in morbidity associated with other diseases.

For diseases that cause a statistically insignificant number of deaths each week, the CDC often uses incidence data in lieu of fatality percentages. The rule of thumb for meningococcal disease, for example, is that an attack rate in excess of 15 cases per 100,000 people for two consecutive weeks constitutes a sizeable epidemic. In countries with more centralized health-care systems, such as the United Kingdom, the measurement is usually done by surveying the number of complaints made to general practitioners. In the United Kingdom, if 1,000 out of every 100,000 GP consultations are flu-related, then it's an epidemic.

The CDC doesn't have epidemic thresholds for every disease and actually tends to frown on some of the media hair-splitting over the outbreak-epidemic line. The center's online glossary states that "outbreak" can actually be used interchangeably with "epidemic" and that the former is often preferable merely because it's a less frightening term.

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Few epidemiological words stir up more panic than "pandemic," and for good reason. A pandemic is an epidemic that occurs across several countries and affects a sizable portion of the population in each, although there's no formal definition of what constitutes "sizable." According to the CDC, the last influenza pandemic took place in 1968-69, when the Hong Kong flu killed 33,800 Americans between September and March.

Next question?

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Cold & Flu Health Center

What Are Epidemics, Pandemics, and Outbreaks?

Epidemics, Pandemics, and Outbreaks

When is a disease outbreak a concern? And what is the difference between an epidemic and a pandemic? Learn the basics about the spread of serious diseases and what you can do to protect yourself, your family, and your community.

What is a disease outbreak?

A disease outbreak happens when a disease occurs in greater numbers than expected in a community or region, or during a season. An outbreak may occur in one community or even extend to several countries. It can last from days to years.

Sometimes a single case of a contagious disease is considered an outbreak. This may be true if it is an unknown disease, is new to a community, or has been absent from a population for a long time.

If you observe what you think might be a disease outbreak, report it right away to your health care provider or public health department.

What is an epidemic?

An epidemic occurs when an infectious disease spreads rapidly to many people. In 2003, the severe acute respiratory syndrome (SARS) epidemic took the lives of nearly 800 people worldwide.

What is a pandemic?

A pandemic is a global disease outbreak. HIV/AIDS is an example of one of the most destructive global pandemics in history.

Influenza pandemics have occurred more than once.

Spanish influenza killed 40-50 million people in 1918.

Asian influenza killed 2 million people in 1957.

Hong Kong influenza killed 1 million people in 1968.

An influenza pandemic occurs when:

A new subtype of virus arises. This means humans have little or no immunity to it. Everyone is at risk.

The virus spreads easily from person to person, such as through sneezing or coughing.

The virus begins to cause serious illness worldwide. With past flu pandemics, the virus reached all parts of the globe within six to nine months. With the speed of air travel today, public health experts believe an influenza pandemic could spread much more quickly. A pandemic can occur in waves. And all parts of the world may not be affected at the same time.

The World Health Organization (WHO) provides an influenza pandemic alert system, with a scale ranging from Phase 1 (a low risk of a flu pandemic) to Phase 6 (a full-blown pandemic):

Phase 1: A virus in animals has caused no known infections in humans.

Phase 2: An animal flu virus has caused infection in humans.

Phase 3: Sporadic cases or small clusters of disease occur in humans. Human-to-human transmission, if any, is insufficient to cause community-level outbreaks.

Phase 4: The risk for a pandemic is greatly increased but not certain.

Phase 5: Spread of disease between humans is occurring in more than one country of one WHO region.

Phase 6: Community-level outbreaks are in at least one additional country in a different WHO region from phase 5. A global pandemic is under way.

How many people die from a pandemic depends upon:

The number of people who become infected

The severity of disease caused by the virus (its virulence)

The vulnerability of affected populations

The effectiveness of preventive steps

Prevention: Slowing the Spread of Pandemic Disease

There is no foolproof method for preventing the spread of disease during an influenza outbreak, epidemic, or pandemic. Although a vaccine is not likely to be available at first, today it is easier to produce specific vaccines more quickly than in the past. Once a vaccine becomes available, certain individuals and groups will be vaccinated first. If mass vaccination clinics become available in your community, be prepared to provide medical information about your family.

In addition to vaccinations, you can take other prevention steps like these.

Wash your hands often with soap and water. If these are not available, use an alcohol-based hand cleaner or gel sanitizer. If using a gel, rub your hands until they become dry.

Avoid touching your mouth, nose, or eyes with your hands unless you've just washed your hands.

When you cough or sneeze, cover your mouth and nose with a tissue. Then throw the tissue in the trash. Wash your hands afterward.

Avoid crowded places as much as you can and stay home if you show signs of illness.

Depending on the severity of the pandemic, consider wearing a face mask if you must go into a crowded area or be within 6 feet of others.

Consider wearing a face mask if you must come into close contact with an infected person.

If human infection of swine flu is confirmed in a community and you develop flu symptoms:

Stay home and away from other people while you are contagious. This may be seven days after the onset of illness or at least 24 hours after symptoms are gone, whichever is longer. If you seek care, contact your health care provider by phone or report illness before going to a clinic or the hospital. If you have severe symptoms like difficulty in breathing, then you should seek immediate attention.

Wear a face mask if you must go into a crowded place. If you do not have a face mask, cover your mouth and nose with a handkerchief or tissue when coughing or sneezing.

If possible, have just one person care for you to minimize contact with others.

Seek emergency care right away if you have:

- Trouble breathing or shortness of breath
- Pain or pressure in your abdomen or chest
- Sudden dizziness
- Confusion
- Severe vomiting

Pandemic Severity Index

The CDC has developed a Pandemic Severity Index, with categories of increasing severity (Category 1 to Category 5). It uses a ratio to estimate the number of expected deaths. Similar to preparing for a hurricane, this index helps communities with pandemic preparedness and planning.

Antiviral Medications for Treatment and Prevention

If available, prescription antiviral drugs may help with both treatment and prevention of influenza. These may come in a pill, liquid, or inhaled form. Four influenza antiviral drugs are approved in the United States, although some viruses are resistant to one or more of these:

- Tamiflu (oseltamivir)
- Relenza (zanamivir)
- Symadine, Symmetrel (amantadine)
- Flumadine (rimantadine)

If you are already sick and it has been less than 48 hours since the onset of symptoms, an antiviral drug may help by:

- Making you feel better faster
- Keeping you from getting seriously ill
- Preventing serious complications

If you have been exposed to influenza, an antiviral drug may be about 70%-90% effective in preventing illness.

Pandemic Preparation

A pandemic causes economic and social disruption due to high rates of illness and worker absenteeism. This is especially true if absenteeism affects key services such as transportation, communication, or power.

Here are a few things you can do:

- Plan ahead, in case services are disrupted. This is especially important if someone in your family has special needs. For example, make sure to have a way to fill needed prescriptions.
- See if you can work from home in the event of a pandemic.
- Plan home learning activities if school is closed.
- Store extra water, food, and supplies.
- Stay as healthy as you can by getting adequate rest, managing stress, eating right, and continuing to exercise.
- Assist seniors in your community.

For more information on influenza pandemic preparedness, go to www.pandemicflu.gov. You can also call the CDC Hotline at 800-CDC-INFO (800-232-4636) or email questions to cdcinfo@cdc.gov.

WebMD Medical Reference

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