

# What is a Pandemic?

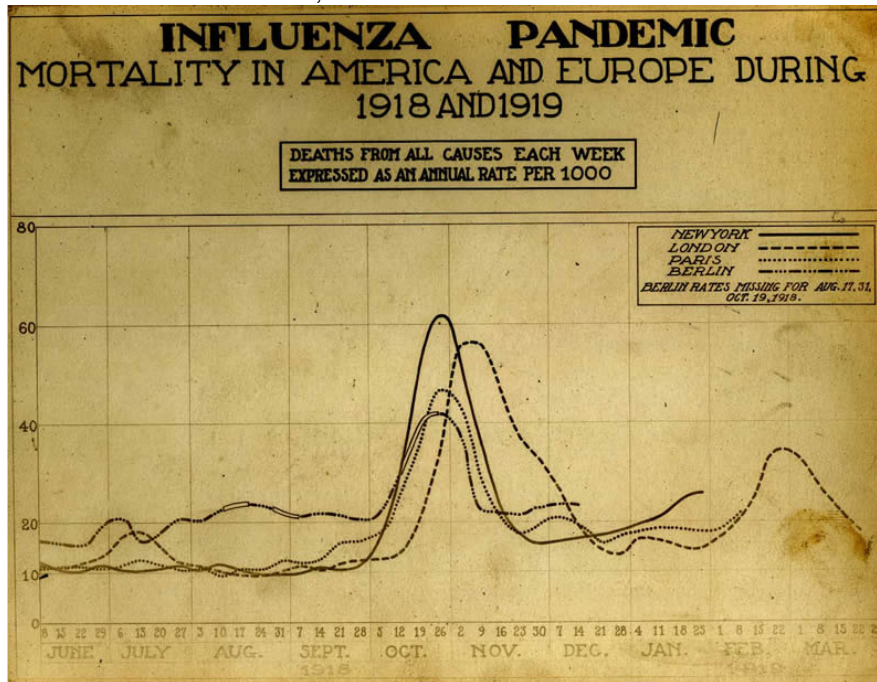
## What is a Pandemic?

A pandemic is a global disease outbreak. An influenza pandemic can start when three conditions have been met:

1. A new influenza A virus subtype emerges for which there is little or no immunity in the human population
2. It infects humans, causing serious illness
3. It spreads easily and sustainably among humans

Historically, the 20th century saw 3 pandemics of influenza:

- 1918 influenza pandemic caused up to 40 million deaths worldwide
- 1957 influenza pandemic caused 1-2 million deaths worldwide
- 1968 influenza pandemic caused about 700,000 deaths worldwide



## Why H5N1 is of concern

The H5N1 virus has already met the first two conditions:

1. It is a new virus for humans. H5N1 viruses have never circulated widely among people so no one will have immunity should an H5N1-like pandemic virus emerge.
2. It has infected more than 100 humans, killing over half of them.

If the H5N1 virus acquires the ability to spread easily and sustainably among humans, we will be faced with the start of a pandemic. The risk that the H5N1 virus will gain this ability will continue as long as opportunities for human infections occur. These opportunities, in turn, will persist as long as the virus continues to circulate in birds, and this situation could endure for some years to come.

There are several other reasons for concern regarding the potential for H5N1 to create a pandemic.

- Domestic ducks can now excrete large quantities of highly pathogenic virus without showing signs of illness, and are now acting as a “silent” reservoir of the virus, perpetuating transmission to other birds. This adds yet another layer of complexity to control efforts and removes the warning signal for humans to avoid risky behaviors.
- When compared with H5N1 viruses from 1997 and early 2004, H5N1 viruses now circulating are more lethal to experimentally infected mice and to ferrets (a mammalian model) and survive longer in the environment.
- H5N1 appears to have expanded its host range, infecting and killing mammalian species previously considered resistant to infection with avian influenza viruses.

## Characteristics and challenges of a pandemic

### 1. Rapid Worldwide Spread

- When a pandemic influenza virus emerges, its global spread is considered inevitable.
- Preparedness activities should assume that the entire world population would be susceptible.
- Countries might, through measures such as border closures and travel restrictions, delay arrival of the virus, but cannot stop it.
- Past pandemics have spread globally in two and sometimes three waves.

### 2. Health Care Systems Overloaded

- Most people have little or no immunity to a pandemic virus. Infection and illness rates soar. A substantial percentage of the world's population will require some form of medical care.
- Nations unlikely to have the staff, facilities, equipment and hospital beds needed to cope with large numbers of people who suddenly fall ill.
- Death rates are high, largely determined by four factors: the number of people who become infected, the virulence of the virus, the underlying characteristics and vulnerability of affected populations and the effectiveness of preventive measures.

### **3. Medical Supplies Inadequate**

- The need for vaccine is likely to outstrip supply.
- The need for antiviral drugs is also likely to be inadequate early in a pandemic.
- A pandemic can create a shortage of hospital beds, ventilators and other supplies. Surge capacity at non-traditional sites such as schools may be created to cope with demand
- Difficult decisions will need to be made regarding who gets antiviral drugs and vaccines.

### **4. Economic and Social Disruption**

- Travel bans, closings of schools and businesses and cancellations of events could have major impact on communities and citizens.
- Care for sick family members and fear of exposure can result in significant worker absenteeism.

### **Communications and Information are Critical Components of Pandemic Response**

Education and outreach are critical to preparing for a pandemic. Understanding what a pandemic is, what needs to be done at all levels to prepare for pandemic influenza, and what could happen during a pandemic helps us make informed decisions both as individuals and as a nation. Should a pandemic occur the public must be able to depend on its government to provide scientifically sound public health information quickly, openly and dependably.

*-Updated December 30, 2005*