

Health in the News

Influenza: A Short History of the Disease

Historical Overview:

Historically, influenza has followed unpredictable patterns, occurring at irregular intervals and varying in intensity.

In the past, pandemics (global epidemics) have had intervals as varied as from ten to forty-nine years. The eighteenth century witnessed roughly eight flu pandemics; the nineteenth century witnessed five pandemics and the twentieth century witnessed three significant pandemics.

Generally, influenza has been a disease of the colder months but there have been some exceptions to this. The most notable of these occurred in 1918-1919; that year, the first wave of the epidemic occurred in the spring with the second and lethal wave erupting in the fall. The second exception was the 1781-1782 pandemic, when the peak of the epidemic occurred in mid-summer. Both the 1918-1919 pandemic and its predecessor in 1781-1782 were especially virulent pandemics.

Understanding of Flu Pandemics:

The influenza virus was first identified in 1933 by Wilson Smith, Christopher Andrewes and Patrick Laidlaw.

During the 1960s and early 1970s, epidemiologists believed pandemics occurred within an eleven-year cycle. The cycle supposedly began in 1946-1947, continued into 1957-1958 and then continued predictably into 1968-1969. The idea of an eleven-year cycle fell apart when no pandemic appeared in 1979.

Twentieth-Century Flu Pandemics:

The three most significant flu pandemics of the twentieth century occurred in 1918-1919, 1957-1958, and 1968-1969.

1918-1919: During the so-called Spanish Influenza pandemic of 1918-1919, influenza struck between twenty to forty per cent of the world's population, killing over 21 million people. This pandemic was atypical in having especially high mortality rates among young adults.

The first wave emerged in the United States in the spring of 1918 but contemporaries saw the epidemic emerging almost simultaneously in Sierra Leone, France and the United States during the early fall of 1918.

The spread of the virus was accelerated by troop movements during World War I. Within six months of the first outbreak, even the most remote regions of the world, where influenza had never been a regular

threat, had come under attack from the disease.

Attempts were made to prevent the spread of the disease but these efforts, which included encouraging people to avoid large gatherings, had no real impact in the United States. In fact, patriotic fervor for war often led to large rallies which only served to spread the disease.

Estimates of the death toll were first made during the 1920s when historians and demographers sifted through data relating to the pandemic. In the United States, the death toll has been calculated at 500,000 excess deaths.

1957-1958: The 1957-1958 flu epidemic originated in February, 1957, in Kweichow province of China. The new strain, H2N2, spread from China into the rest of Asia, the Middle East and Europe, reaching the Americas in June.

Advances in scientific technology meant that the virus was quickly identified and a vaccine was available by August of 1957. Although the disease hit young people and children especially hard, the elderly suffered the highest death rates from the disease. Influenza peaked in the United States between September and December, with a second wave emerging in January and February.

The excess death figure for the United States was approximately 70,000.

1968-1969: In 1968, a new flu strain, H3N2, originated in Guangdong Province in Southern China. The first indication of the problem came when a rise in respiratory illness was noted in Hong Kong and reported in the press in mid-July. The outbreak had a significant impact on Hong Kong, infecting fifty percent of the city.

Despite the city's smaller size and more limited contact with outside regions, the disease quickly spread around the world. Overall, the spread followed a similar pattern to that of the 1957-1958 flu pandemic. Beyond Asia, the epidemics were more circumscribed as worldwide dissemination of the virus occurred over the year. High excess mortality was really observed only in the US.

The excess death figure for the US was about 28,000 which put it lower than the flu toll in 1957-1958. This lower death rate probably occurred because the Hong Kong strain had only a surface antigen in common with pre-existing A-strains. As a result, the epidemic may have been somewhat blunted by partial existing immunity.

Influenza Vaccine:

Influenza vaccine was first introduced as a licensed product in the United States in 1944. Because of the rapid mutation of the virus, the effectiveness of a given vaccine lasts only a year or two. Each year researchers must investigate and, to some degree, anticipate changes in the virus in order to produce a vaccine that will be effective against a given strain. In most years, the mutation which occurs does not produce a strain which is drastically different from the strains in previous years. Occasionally, however, major changes occur in the configuration of the virus, requiring significant modifications in the vaccine. Significant changes occurred, for example, in the 1957 Asian Flu and the 1968 Hong Kong Flu.

In the late spring of 1957, investigators at the Walter Reed Army Institute of Research determined the virus was Type A but antigenically different from any of the previously known Type A strains. This meant that the existing vaccine would not be effective against this new strain. In late May, prototype strains were sent to licensed influenza vaccine manufacturers so that they could produce a new vaccine and the experimental vaccine was submitted to the PHS's Division of Biologic Standards for testing on June 10. A crash program of production led to the first lots of vaccine becoming available in August. But the epidemic's arrival in the U.S. in June meant that only limited supplies of the vaccine were available when it would have been most useful.

The PHS did take several other steps to deal with the vaccine. Among these was the creation of a voluntary allocation system to ensure that each state received an equitable share of the vaccine. Priority in vaccination was to be given to those who were considered medical risks (the aged and the debilitated) as well as to persons whose services were considered vital to the nation. PHS Surgeon General Leroy Burney complained, however, that except for manufacturers distributing vaccines to the military on the basis of population, these guidelines were not followed in many instances.

In the early summer of 1968, scientists isolated a strain of Type A2 virus that differed markedly in character from the A2 strains which had been prevalent in recent years. Recognizing that the current vaccine would produce no more than limited protection against this new strain, PHS Surgeon General William Stewart outlined a five-point plan of attack against the emerging epidemic. This involved research, epidemic intelligence, health education, medical care and prevention through vaccination. Efforts to develop a new vaccine were quickly initiated but supplies of this would be limited when the epidemic hit the US. Stewart, like his predecessor, called for those at risk to be given priority in receiving vaccinations. But many of those deemed to be most at risk did not take advantage of the vaccine.

In February, 1976, an outbreak of influenza at Fort Dix sparked concerns that a new and highly lethal strain of the influenza virus (similar to that of 1918-1919) had emerged. Responding to these concerns, President Ford announced The National Influenza Immunization Program on March 24, 1976. This program aimed at inoculating all Americans before December, 1976 (inoculations began in October, 1976). Less than two months later, on December 16th, the program was suspended because of evidence that people given the swine flu vaccine had an increased risk of developing Guillain-Barre syndrome, a rare, usually reversible but occasionally fatal form of paralysis. The anticipated pandemic never occurred.

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