

A Historical Exploration of Pandemics of Some Selected Diseases in the World

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ABSTRACT

A pandemic is an epidemic occurring on a scale which crosses international boundaries, usually affecting a large number of people. In a simple way a pandemic is an epidemic with higher magnitude in terms of geographical area, number of cases and days of suffering resulting in disabilities or deaths. Human population have suffered from many pandemics throughout history be it the earlier form of smallpox or tuberculosis or the recent incidence of HIV/AIDS or H1N1. It has created catastrophic damage in many different forms. Public health around the globe is improving by leaps and bound but the occurrence of a pandemic is not always unexpected. The epidemiological transition in different form may be one of the important factors for such incidents in and around the globe. In this paper an attempt has been made to explore historically some calendar of events of some selected pandemics around the globe.

Key Words: Pandemic, Selected Disease, World

INTRODUCTION

Pandemic is the form of epidemic that spreads through human population affecting large number of people, major part of a nation, entire nation, a continent or a part of the entire world.⁽¹⁾ A disease or condition is not a pandemic merely because it is widespread or kills many people; it must also be infectious. For instance, cancer is responsible for many deaths but is not considered a pandemic because the disease is not infectious or contagious. Human population have suffered from many pandemics throughout history be it the earlier form of smallpox or tuberculosis or the recent incidence of HIV/AIDS or H1N1. It has created catastrophic damage in many

different forms. While planning for a possible influenza pandemic, the WHO published a document on pandemic preparedness guidance in 1999, revised in 2005 and in February 2009, defining phases and appropriate actions for each phase. The 2009 revision, including definitions of a pandemic and the phases leading to its declaration, were finalized in February 2009. The pandemic H1N1 2009 virus was neither on the horizon at that time nor mentioned in the document.⁽²⁾ All versions of this document refer to influenza. The phases are defined by the spread of the disease; virulence and mortality are not mentioned in the current WHO definition, although these factors have previously been

included.⁽³⁾ The changing patterns of infectious disease such as: (1)Antibiotic resistance (2) Emerging and reemerging infectious disease (3)Change of niche such as from animal to human (4) Non infectious diseases are getting discovered with an infectious origin and the epidemiological transitions contribute a lot to several forms of epidemics.

HIV/AIDS: AIDS is the end result that occurs after several years of infection with HIV. The disease was first detected in 1981 and the name AIDS was coined in the next year. New HIV infections have been reduced by 17% over the past eight years. Since 2001, when the United Nations Declaration of Commitment on HIV/AIDS was signed, the number of new infections in sub-Saharan Africa is approximately 15% lower, which are about 400 000 fewer infections in 2008. In East Asia HIV incidence has declined by nearly 25% and in South and South East Asia by 10% in the same time period. In Eastern Europe, after a dramatic increase in new infections among injecting drug users, the epidemic has leveled off considerably. However, in some

countries there are signs that HIV incidence is rising again.⁽⁴⁾

Plague: Plague is a zoonotic infection primarily affecting the rodents caused by a gram negative rod like cocco-bacillus called *Yersinia pestis*. It is transmitted to house rats from wild rodents such as marmots in Mongolia and Siberia, ground squirrels in California and field rodents such as Bandicoot, gunomyskok, *Tatera indica* and *Rattus norvegicus* in India. The common vectors responsible for the spread of the disease include *Xenopsylla cheopis*, *X. astia*, *X. braziliensis* and *Nasopsylla fasciatus*. The control of Plague involves Notification, Isolation, Quarantine, Diagnosis, Treatment, Disinfection, Immunization, Health Education and International measures. Epidemics or pandemics of plague could be disastrous as had happened in India in 1994 which was not an incidence by chance rather favored by all epidemiological features such as reservoir in the form of wild rats, vector in the form of fleas, nonimmune population etc.⁽⁵⁾ The following table shows a list of pandemic events occurred worldwide:

Table No1, Calendar of Plague and disease Pandemic Events Occurred Worldwide.

Sl No.	Name of the Pandemic event	Year of the Event	Place of the Event	Catastrophe
PLAGUE AND OTHER DISEASES				
1 ⁽⁶⁾	Plague of Athens(Typhoid Fever)	430 BC	Athens	A quarter of the Athenian troops and a quarter of the population over four years.
2 ⁽⁷⁾	Antonine Plague (Small pox)	165-180	Italian peninsula	Killed a quarter of those infected, and up to five million in all.
3 ⁽⁸⁾	Plague of Cyprian	252-256	Rome	5,000 people a day were said to be dying
4 ⁽⁸⁾	Plague of Justinian (Bubonic Plague)	541-750	Egypt and Constantinople	10,000 a day at its height, and perhaps 40% of the city's inhabitants
5 ⁽⁹⁾	Black Death	14 th Century	Worldwide	75 million people died
6 ⁽¹⁰⁾	Third Pandemic (Plague)	19 th Century	Started in China and grabbed many continent	10 Million People died in India only.

Smallpox: Smallpox was one of the major killers of mankind and was responsible for the death of one out of every five children below five years of age till the vaccine could be discovered. This disease is no more a public health problem and has been eradicated from the world by October 1979 as declared by WHO. The epidemiological basis of smallpox eradication is as follows:

- Absence of an animal reservoir.
- Absence of human carrier stage.
- Absence of subclinical cases.
- Rarity of second attack.
- Easy clinical identification.
- Slow transmission which helps in containment.

- Availability of a potent, safe and effective vaccine.
- International cooperation.⁽⁵⁾

The following table shows a list of pandemics events of Smallpox occurred worldwide:

Table No.2, Calendar of Smallpox Pandemic Events Occurred Worldwide.

Sl No.	Name of the Pandemic event	Year of the Event	Place of the Event	Catastrophe
SMALLPOX				
1 ⁽¹¹⁾	Smallpox	1518	Hispaniola (Dominican Republic and Haiti)	Half of native population if Hispaniola
2 ⁽¹¹⁾	Smallpox	1520	Mexico	Killed 150,000 in Tenochtitlan alone including the Emperor
3 ⁽¹¹⁾	Smallpox	1618-1619	Massachusetts Bay	90% Native Americans
4 ⁽¹¹⁾	Smallpox	1770	Pacific Northwest	30% of Native Americans
5 ⁽¹¹⁾	Smallpox	1780-1782 & 1837-1838	Indians	Drastic Depopulation

Cholera: Cholera is water borne disease caused by *Vibrio cholera* characterized by three classical clinical stages, such as stage of profuse watery evacuations, stage of collapse, stage of recovery or death. The prevention and control measures include Verification, Notification, Isolation, Diagnosis, Treatment, Disinfection, Antifly measures, Immunization, Health education, personal protection and Surveillance. The incidence of cholera around the world has been divided in to three phases and the first phase (pre-1817) was limited to India especially to Bengal. The second phase (1817-1823), known as pandemic phase, witnessed six pandemics, all of which started in India and disseminated to several continents including South East Asia, China,

Middle East, USSR, Europe and Africa. The third phase which started in 1923 was again confined to India and East. The fourth phase of cholera pandemic started in 1961 and continued with the seventh phase of pandemic. The seventh phase of the pandemic was started in 1961 from an endemic focus on an island in Indonesia. The worst part of this pandemic was that it affected some portions of all the continents except America in 1970. From 1948 onwards 98% of all cases of cholera were occurred in Indian subcontinent such as India, Pakistan and Bangladesh. The classical more sever forms of cholera are now uncommon and are usually present with diarrhea as a presenting feature.^(5,12)

Table No.3, Calendar of Cholera Pandemic Events Occurred Worldwide.

Sl No.	Name of the Pandemic event	Year of the Event	Place of the Event	Catastrophe
CHOLERA				
1 ⁽¹²⁾	1 st Cholera Pandemic	1816–1826	Started in Indian Subcontinent, later spread to China, Indonesia and Caspian Sea	10,000 British troops and countless Indians died
2 ⁽¹²⁾	2 nd Cholera Pandemic	1829–1851	Russia, Hungary, Germany, London, France, Canada, US, Pacific coast of North America	Hungary (about 100,000 deaths), more than 55,000 persons died in the UK and many more in different parts of the globe.
3 ⁽¹²⁾	3 rd Cholera Pandemic	1852–1860	Mainly Russia	over a million deaths
4 ⁽¹²⁾	4 th Cholera Pandemic	1863–1875	Mostly in Europe and Africa	At least 30,000 of the 90,000 Mecca pilgrims fell victim to the disease
5 ⁽¹²⁾	An Outbreak of Cholera	1866	North America	50,000 Americans were died
6 ⁽¹²⁾	5 th Cholera Pandemic	1881–1896	Europe, America, Russia, Spain, Japan, Persia	250,000 lives in Europe, at least 50,000 in Americas, 267,890 lives in Russia, 120,000 in Spain, 90,000 in Japan, 60,000 in Persia were lost
7 ⁽¹²⁾	6 th Cholera Pandemic	1899–1923	Russia	more than 500,000 people died of cholera during the first quarter of the 20th century
8 ⁽¹²⁾	7 th Cholera Pandemic	1962–66	Indonesia, Bangladesh, India, USSR	-----

Influenza: Influenza is an infectious disease of birds and mammals caused by RNA viruses of the family Orthomyxoviridae. The most common symptoms are chills, fever, runny nose, sore throat, muscle pains, headache (often severe), and coughing, weakness/fatigue and general discomfort. The 2009 pandemic of H1N1 is a real scourge. The recent estimate of global mortality published in Lancet shows a death of 151,700 to 575,400 people in the world. This study estimated that 80% of 2009 H1N1 deaths were in people younger than 65 years of age which differs from typical seasonal influenza epidemics during which 80-90% of deaths are estimated to occur in people 65 years of age and older. To illustrate the impact of the shift in the age

distribution of influenza deaths to younger age groups during the pandemic, researchers calculated the number of years of life lost due to 2009 H1N1-associated deaths. They estimated that 3 times as many years of life were lost during the first year of 2009 H1N1 virus circulation than would have occurred for the same number of deaths during a typical influenza season.⁽¹³⁾ Development strategies for mitigating new influenza pandemic is a top global public health priority.⁽¹⁴⁾ Influenza prevention and containment strategies can be considered under the broad categories of antiviral, vaccine and nonpharmaceutical (case isolation, household quarantine, school or workplace closure, restrictions on travel) measures.⁽¹⁵⁾

Table No.4, Calendar of Influenza Pandemic Events Occurred Worldwide.

Sl No.	Name of the Pandemic event	Year of the Event	Place of the Event	Catastrophe
INFLUENZA				
1 ⁽¹⁷⁾	Russian Flu	1889-1890	Uzbekistan and other parts of North America	About 1 million people died in this pandemic
2 ⁽¹⁸⁾	Spanish Flue	1918-1919	Worldwide pandemic of all continents	500 million people were affected
3 ⁽¹⁹⁾	Asian Flue	1957-1958	Started in China and then other parts of the globe including US	2 million deaths globally
4 ⁽²⁰⁾	Hong Kong Flue	1968-1969	First detected in Hong Kong and then disseminated to other parts of the globe	Killed one million people worldwide
5 ⁽¹³⁾	H1N1	2009	Many parts of the globe	151,700 to 575,400 people perished from world and a disproportionate number of deaths occurred in Southeast Asia and Africa

CONCLUSION

Exploring history of pandemic is a hard-hitting job as the same cannot be easily reproduced in a short article. Many researchers believe that the 1918 influenza pandemic is the mother of all pandemics. Though the world has progressed substantially in mitigating many epidemics from time to time owing to the improved public health measures but the occurrence of an epidemic in a large scale cannot be denied fully. This is because of the changing pattern of infectious diseases and the epidemiological transition. Many controlled diseases are getting reemerged and new emerging infectious diseases are evolving creating challenge among the global public health intelligencia. The recent pandemic of

influenza is a wake up slap to the public health realm and development of strategies for mitigating new influenza pandemic is a top global public health priority. Proper surveillance is one of the key factors behind mitigating some of the important scourges besides the disease specific strategies.

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