

Contagion: Real Life Connections

The fictional MEV-1 virus created for the movie is actually based on a combination of H1N1, SARS, and a virus called Nipah. H1N1 is basically influenza, or the flu. In June 2009, the World Health Organization declared the new strain of swine-origin H1N1 as a pandemic. This strain is often called swine (pig) flu by the media and the virus spread worldwide and had caused about 17,000 deaths by the start of 2010. SARS is the acronym for severe acute respiratory syndrome. In 2002-2003, an outbreak of SARS in southern China resulted in over 8,000 cases, and caused 774 deaths reported in 37 countries. SARS was eventually traced back to cave-dwelling bats. Nipah is another disease that traces its roots to South Asia and can cause respiratory complications and deadly brain inflammation in humans. Nipah killed 105 patients in an outbreak in Malaysia in 1999, and caused 49 deaths in India during an outbreak in 2001. The movie was released in 2011, but now the MEV-1 could also be representative of the Ebola virus. The first Ebola outbreak occurred in 1976, but in the years 2013-2015, the Ebola epidemic of western Africa resulted in more than 28,000 cases and more than 11,000 confirmed deaths.

The functional difference between the terms epidemic and pandemic is as follows:

epidemic - An epidemic is an outbreak of disease that attacks many people at about the same time and may spread through one or several communities. An epidemic occurs when there is an increase in the number of cases of a disease above what is normally expected in that population in that area.

pandemic - When a disease becomes pandemic, it means that an epidemic has spread over several countries or continents; a global disease outbreak (HIV/AIDS is probably the best example)

The movie doesn't reference this term, but **endemic** means that a disease that exists permanently in a particular region or population. For example, malaria is a constant worry in parts of Africa.

Beth Emhoff is the apparent "patient zero" or index patient - the first person thought to have contracted the disease and then subsequently passed it on to others. The job of epidemiologists is to investigate and attempt to trace the disease through paths of social networks and interactions. This process is known as contact tracing or source tracking. Dr. Cheever, Dr. Mears, and Dr. Orantes are representative of the many epidemiologists that spend a great deal of time and effort interviewing patients or family members, tracking down patient's contacts, retracing steps, and screening people along the way in their attempts to identify the source.

Simultaneously, as epidemiologists are compiling patient histories, researchers and laboratory scientists like Dr. Sussman and Dr. Hextall are hard at work trying to understand the cause of the outbreak and then hopefully formulate a vaccine. The movie represents this long, painstaking process in an overly simplistic manner and in an unrealistic time frame. However, as the movie depicted, scientist do need to isolate the pathogen to study and understand it. Then a vaccine needs to be developed to be tested extensively on laboratory animals. If success is achieved in the laboratory, the vaccine is then ready for clinical development (human trials). Clinical development is a three-phase process. During Phase I, small groups of people receive the trial vaccine. In Phase II, the clinical study is expanded and vaccine is given to people who have characteristics (such as age and physical health) similar to those for whom the new vaccine is intended. In Phase III, the vaccine is given to thousands of people and tested for efficacy and safety. If all proceeds successfully, manufacturing and widespread distribution then ensues. Normally, it can take 10 years to develop a vaccine for use by the masses, but in emergency situations that time frame can be realistically reduced to 3 years.

Alan Krumwiede is the conspiracy theorist blogger that has his own agenda driven by greed. He believes that the CDC and the WHO are working with the pharmaceutical companies, and because of this relationship, he feels that there is a history of financial benefit. Throughout the movie, Alan makes references to the extensive list of side-effects of medicines, vaccines, as well as the controversy of animal-testing. He even makes mention of autism being linked to vaccinations. This is a reference to a study that led to a fierce debate in 1998 when British researchers published a paper stating that the measles-mumps-rubella (MMR) vaccine caused autism. The study received a lot of publicity and ultimately led to a great many people not vaccinating their children. The study was discredited for numerous reasons, including procedural flaws and even possible researcher fraud, but the fear of the vaccine-autism connection still prevails in some parts of society. Alan conjures up his own alternative "cure" that he calls Forsythia. Forsythia is a non-prescription, herbal remedy that he said the government was concealing from the public that he then peddles to the millions of people who visit his website. Dr. Cheever sums it up perfectly by saying that Alan is like a second virus - an amoral source of panic and suspicion, rumor and lies that is even worse than the virus itself.

References:

<https://www.cdc.gov/>

<http://www.who.int/ith/diseases/>

<https://www.pbs.org/newshour/health/cdc-experts-examine-the-science-of-hollywoods-contagion>