**Outbreak Investigation**

An outbreak is considered to be present when there is a sudden rise in cases of occurrence of a given disease among a group of people at a particular place and time or even a larger geographical area that has severe effects on the victims including deaths. Some of the steps that should be taken by the researchers and medical experts in investigating an outbreak include the following (Pleydell, 2010):

1. Preparing to investigate. Involves identifying the investigation team and resources to be needed during the study.
2. Verifying the diagnosing and certainly confirming that the outbreak exists. Involves collecting specimens such as blood samples from the ill persons, performing virologic, parasitic and Bacteriology testing in laboratories.
3. Case definition. Includes setting standard criteria to help in making decisions regarding who are the victims of this outbreak.
4. Case finding. Comprises of conduction of a systematic search which fully has its basis on the case definition.
5. Perform a descriptive epidemiology. This step involves mapping the spread of the alleged outbreak through tabulation and orientation of data using information technology.
6. Generate a hypothesis. It helps to determine what may seem to be causing this epidemic.
7. Evaluate the hypothesis. May involve performing additional studies and comparing the risk factors present.
8. Conducting further environmental studies. Entails collection of environmental samples such as water and food and determining what happened to those samples.
9. Implement the control measures. It calls for the development of strategies that help prevent further spread through coordination with all stakeholders involved.
10. Communicating findings through the dissemination of the investigation report and educating people on how to take precautions.

**Smallpox from the European Settlers**

This epidemic took place around 1633 to 1634 in North America whereby the coming of the European settlers who were infected with this disease resulted in the spread of this outbreak like bushfire since the natives who were living in this area was not immune to it. Smallpox by being a contagious virus caused the death of over seventy percent of the residents in North America (Lyons, 2015). Medical experts immediately embarked on a long journey to find the cure for this plague. Through the help of the government, they acquired all the resources that they needed. They collected blood samples from the victims and analyzed them in the laboratories.

The case findings from the numerous researches that were conducted revealed that initial signs of this disease were first appearing after one being exposed to this epidemic for about twelve days whereby one started having flu-like symptoms. This virus was spreading through the natives coming into contact with the respiratory droplets or smallpox sores of the infected European settlers. It was also discovered that by day four after infection, skin rashes and painful lesions which were appearing in the nasal passages, mouth, and throat were evident among the ill persons (Parks, 2012). The descriptive epidemiology that was conducted showed that most of the Americans living in the northern part of the country were at a risk of becoming infected. The additional environmental studies performed by the medical experts showed that this virus was to some extent airborne as respiratory droplets facilitated the spread of this disease from the infected to the uninfected.

Studies to find the cure for this outbreak took quite a long time while in the meantime people especially the natives from the North America were contained to reduce the risk of this virus spreading to the other parts of the country. Fortunately, in 1796, physicians were able to make a smallpox vaccine that had an immunity level of about 3-5 years and it in deed worked in preventing and stopping further spread of this outbreak (Stanhope & Lancaster, 2014). This vaccine was made from a living pox-type related virus hence calling for the vaccination sites to be cared for to prevent the virus from further spreading.

**Conclusion**

According to the World Health Organization, this vaccine has made smallpox to be effectively eradicated worldwide. It also recommends that researchers and medical experts should always follow all the outbreaks investigation steps to come up with long-lasting solutions to such menaces successfully.

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