

Vaccines and Public Health

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Vaccines are considered one of the greatest global health achievements, and it is estimated that they save an estimated 2 to 3 million lives each year. Since Edward Jenner's breakthrough with cowpox in 1796, the use of vaccines have eradicated wild-type polio from the world, prevented countless birth defects and lifelong disabilities from diseases like polio, and reduced childhood mortality rates in every country.¹

Vaccines created against measles, diphtheria, tetanus, and many more have led to the near or total elimination of these diseases from the United States, and the Centers for Disease Control and Prevention (CDC) have listed vaccines as one of their Top 10 Public Health Achievements.²

A Global Issue

International travel is an experience many people enjoy, and humans are now travelling in numbers and at speeds heretofore unprecedented in history. Travelers are visiting remote villages and major urban cities. People are being displaced due to social, economic, and political upheavals. Natural disasters are forcing people from their homes. Long-distance air transportation lets anyone reach almost any part of the globe within days.

Travel and globalized trade is a significant risk factor for infectious disease emergence. While International Health Regulations (IHR) provide some safeguards to limit the spread of disease, travelers are only one piece of the puzzle: trade, animal migration, water and air currents all have their part to play.³ Additionally, contact between animals, humans, and microbes may result in zoonoses (animal viruses "jumping" to humans), and creating new diseases for which there is no current cure.

Pandemics

In April 2009, H1N1 (swine flu) viruses were first detected in the United States, and the resulting spread led the US Government to declare a nation-wide public health emergency. By the end of April, the WHO had raised the influenza pandemic alert from phase 4 to 5, signaling a pandemic (the spread of a disease world-wide) was imminent. The pandemic was formally declared on June 11, 2009.⁴

Some disease outbreaks, like those seen with the Ebola virus, can cause countries to close their borders to those fleeing the disease. In 2014, an Ebola outbreak in Guinea, Liberia, Nigeria, and Sierra Leone took the lives of hundreds of healthcare workers, inspiring an onslaught of foreign doctors and medical aid workers to offer their assistance.

Constant Vigilance

Vaccines are not now, nor have they ever been, a "one and done" phenomenon. Herd immunity – vaccinating the majority of a population to keep those that cannot be immunized safe – stops the spread of contagious diseases in a community. The CDC and the WHO work closely with a

variety of international and domestic partners to protect people all over the globe from contagious and life-threatening vaccine-preventable diseases. Vaccination research and development have led to new and promising Ebola, Zika, and other much-needed vaccines. Countries must now have in place procedures to test and monitor health workers returning from countries seeing outbreaks to keep the outbreak contained to one or a few countries.

Moving Forward

Global health is a moving target: new diseases will inevitably arise, old diseases will mutate and change, and research will further scientific knowledge about the basis of infectious disease. Vaccines – new and old – will remain as one of the best methods of infectious disease prevention around the world, and allow the global community to move, interact, and thrive.

References

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