The precedents for disease eradication through international cooperation

Part two

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The work carried out on smallpox became the benchmark for future attempts to eradicate viral diseases that continued to devastate societies particularly in the former colonial countries in Africa, Asia and South America. Two viruses that were considered of critical importance in elimination programs were poliomyelitis (or polio) and measles.

The poliomyelitis virus has been known since ancient times, but it was in the 20th century that it caused widespread epidemics. Polio epidemics emerged in Europe and the US in the late 19th century until the middle of the 20th century. For instance, in the US there was an outbreak in 1916 that resulted in over 27,000 cases and more than 6,000 deaths. This outbreak led to polio becoming a global disease.

The virus spread through contact with fecal material in contaminated water or food and sometimes from the saliva of infected individuals.

The first known scientific work on polio was carried out in 1789 by an English pediatrician Michael Underwood, who published the first clear description of paralytic disease of infants in a medical textbook. He described polio as “a debility of the lower extremities.”

In 1909, Austrian physicians Karl Landsteiner and Erwin Popper identified the polio virus. The polio virus exists in three forms, Types 1, 2 and 3. Development of a vaccine would have to defend against all three variants.

Polio attacks the nervous system, with young people under the age of 5 most vulnerable. It initially causes flu-like symptoms and is known to cause permanent paralysis. The virus can affect the muscles that control breathing ultimately causing death due to asphyxiation. It is fatal for up to 10 percent of children.

Effective polio vaccines were eventually developed by the 1950s. In 1954, an American scientist named Albert Sabin developed a vaccine made from live mutated virus that was taken orally. In 1955, Jonas Salk in the US developed a polio vaccine that was administered via injection. Salk made the vaccine from inactivated polio virus.

In 1956, Soviet scientists Mikhail Chumakov and Anatoli Smorodintsev collaborated with Sabin to conduct large-scale testing of his polio vaccine. In 1959, Sabin’s vaccine was given to 10 million children and by the end of 1960, Soviet scientists had administered it to 77 million people under the age of twenty across the Soviet Union. This work definitively proved the safety and efficacy of Sabin’s vaccine. It was then was used to start the elimination of the disease leading to very rapid and effective results.

In 1960, Czechoslovakia became the first country to eradicate polio. During this period polio was largely wiped out in Europe and the US but remained a scourge in the former colonial countries in Africa, Asia, and Latin America. The WHO carried out “lameness surveys” during the 1970s to show the extent of polio cases in oppressed countries.

The Global Polio Elimination Initiative (GPEI) commenced in 1988 by the World Health Assembly with the aim of eliminating polio cases by 2000. However, instead of an international body used to prosecute this eradication campaign as with smallpox, it was largely funded by the Bill and Melinda Gates Foundation, while Rotary International supplied a workforce of volunteers and the Centers for Disease Control and Prevention (CDC) supplied scientific assistance. The involvement of the Gates Foundation and Rotary signified that governments internationally were abrogating their responsibilities in the arena of public health.

Though the WHO finally declared Nigeria polio-free last month, the virus still lurks in Pakistan and Afghanistan. The existence of a simply administered and cheap-to-produce vaccine has been a fact for decades, but lack of political initiative by rich nations has slowed efforts to eradicate the disease. This is an indictment of capitalism.

“To eradicate the disease, the two countries (Afghanistan and Pakistan) should focus on peace-building,” public health researcher at Aga Khan University Zulfiquar Bhutta told

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Nature. Such sentiments completely let US imperialism off the hook. The US invaded Afghanistan in 2001, devastating the country and destabilising its neighbour Pakistan. Nineteen years later the war continues as a seemingly permanent fact.

The other major disease earmarked for eradication—a perspective still unachieved—is measles.

The earliest known diagnosis of the virus was published in 910 by the Persian physician Rhazes, who distinguished measles from smallpox.

Measles is an extremely contagious airborne viral disease that spreads through coughs and sneezes from infected people. It is usually associated with a red rash that spreads across the whole body. It is a deadly killer, and before an effective vaccine was developed in 1964 major epidemics occurred every 2 to 3 years with an estimated toll of 2.6 million deaths each year.

Recent studies of the measles virus (Measles morbillivirus) RNA have estimated that the disease appeared four thousand years ago when it separated from a rinderpest virus that infects cattle. This is around the time when humans started living in cities with populations greater than 250,000.

Early explorers setting sail across uncharted oceans are known to have spread the disease around the world. When measles along with other diseases such as smallpox were introduced into the Americas, they nearly annihilated the native populations who lacked immunity to the viruses. Some estimates put the decline in population at 95 percent over barely a century and half.

As measles reached other isolated societies it caused a similar horrendous impact. For instance, when the HMS Dido reached the Fiji Islands in 1875, an estimated 20,000 islanders died as a consequence of contracting the virus.

In 1954, the American physician Thomas Peebles first isolated the measles virus, an essential first step towards the development of a vaccine. The microbiologist Maurice Hilleman developed the first effective vaccine in 1964.

The introduction of the vaccine represented a major step forward, preventing an estimated one million deaths per year. Yet, despite the existence of an effective treatment and the fact an elimination program is totally feasible, measles has not been eradicated 56 years later.

Even though programs were developed on a regional level leading to the elimination of measles in the Americas and other areas, no effective overall international program was implemented. This has left Africa and some Pacific Island states with continued cases.

According to Red Cross and United Nations Foundation officials Athalia S. Christie and Andrea Gray, writing in the *Journal of Infectious Diseases* (JID) in 2011, investment in global measles control had decreased by 55 percent since 2007. In 2010, the US cut US$10 million, leading to the elimination of several programs internationally.

The failure of the major powers to fund such health initiatives and the running down of the health systems in general has led to a resurgence of measles cases even in advanced countries. Countries that were once declared free of measles, such as Albania, Czech Republic, Greece, and Great Britain, have recently experienced a recurrence of the disease.

"[I]t has been suggested that the current measles situation amounts to an undeclared public health emergency of international concern," stated the director of health protection at the University of Newcastle, David N. Durrheim, in *T he Lancet* .

Although the eradication of smallpox has never been repeated with any other virus, the medical and scientific work carried out provided a pivotal example of how international scientific collaboration could obtain important results for the medical wellbeing of humanity.

Today with the raging coronavirus pandemic, the prospect of a vaccine has been held up as the only way to tackle the virus successfully. Despite the immense technological advances that have produced vaccine candidates in mere weeks, the scientific work to develop a vaccine has been completely perverted and is being used to leverage corporate profits and to manoeuvre for advantage for one or another country against its geopolitical rivals.

The private ownership of the means of production and the drive for profit, along with the division of the world into rival nation states, stands as an absolute barrier to the defence of basic rights, including the right to life. The struggle against the pandemic is inseparable from the struggle of the working class to overthrow capitalism and expropriate the wealth of the corporate oligarchy. In this regard, scientific achievements are the fruits of social labour and belong to all mankind.

Concluded

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