Polio eradication is in sight

Harry Hull

A cooperative, global effort is needed to go those last steps that are always the hardest part of the journey. How can we afford to stop when we have come so far?

Poliomyelitis was a very real part of my childhood in the suburbs of Chicago, USA. I remember, as a three-year-old, watching my mother being carried on a stretcher down the stairs of our home to a waiting ambulance when she contracted polio in 1952. Though her paralysis was mild, with virtually complete recovery, many others were not so fortunate. One of my neighbours struggled on to the school bus every morning, to sit in the front seat—her withered legs in calipers, her crutches leaning against the window. Many more were confined to iron lungs, their breathing sustained by a pulsating, electrically-generated vacuum. Virtually every summer there was a polio panic—swimming pools and theatres closed, public events cancelled—as parents lived in terror that their child might be the next victim.

All that ended in 1955 with Dr Jonas Salk’s dramatic discovery of the first poliovirus vaccine. My brothers and sister and I, along with millions of other children, were rushed to family doctors to receive injections of the killed poliovaccine. The disease virtually disappeared from the USA, Canada, Europe and the industrialized countries of the Pacific following the introduction of the Sabin live, oral poliovaccine (OPV) in the 1960s.

Today, I am one member of a team working within WHO’s Expanded Programme on Immunization (EPI) to eradicate poliomyelitis from the world. Dr Nicholas Ward, who heads the eradication team at WHO headquarters, says that one major obstacle facing the team is that polio is perceived as a problem that has been solved. “It was only in the 1970s that lameness surveys in Africa proved that paralytic polio occurred in the developing world at rates equal to, or higher than, those in the industrialized world prior to the advent of vaccination.” Before then, it had been accepted that the infection in developing countries was associated with lower rates of paralysis. “Even today,” he says, “many of our acquaintances believe that polio has vanished.” WHO estimated that, as recently as 1980, more than 400,000 children were paralysed each year. Outbreaks in 1991 and 1992 in Bulgaria, Jordan and the Netherlands—all of which had been free from the disease for years—emphasize the

More than 100,000 children are still left paralysed every year by poliomyelitis.
continuing risk of polio for all countries of the world.

WHO’s Expanded Programme on Immunization was created in 1974 as the successor to WHO’s Smallpox Eradication Programme. EPI’s goal was to provide a basic course of immunizations, including three doses of OPV, to all children. Its success has now set the stage for the global eradication of poliomyelitis. As a result of the universal childhood immunization initiative, 84% of infants born in 1990 were immunized against poliomyelitis. WHO estimates that, as a result, only 127,000 cases of paralytic poliomyelitis occurred worldwide in 1991. (In fact, only 14,128 cases were reported to WHO).

Dr Robert Kim-Farley, Director of EPI, cautions against complacency. “Eradication of polio means that we seek to totally destroy the virus that causes polio. With that goal in mind, the occurrence of even a single case of poliomyelitis is unacceptable.”

Before the first poliovirus vaccine in 1955, children affected by polio depended on an iron lung for their survival.

A young Greek child receives the oral poliovirus vaccine.

A disease passes into history

Five years have now passed since the World Health Assembly first proposed an initiative to eradicate poliomyelitis from the face of the earth by the year 2000. In those five years, the numbers of reported cases of acute polio have fallen from over 32,000 in 1988 to 14,128 in 1991 and to an estimated 12,000 in 1992. This 62% reduction in cases since 1988 has occurred in spite of improved case detection, although satisfaction at this downward trend must still be tempered by estimates that only 10% of actual cases are being reported.

The most striking success has been in the Western Hemisphere (covering North, Central and South America and the Caribbean) where, in spite of intensive searching, no polio case caused by wild poliovirus has been detected since September 1991.

Worldwide, WHO staff, with their colleagues from UNICEF and Rotary International, are helping countries to forecast their vaccine needs, further exploring the possibilities of local production or bottling from bulk imports. WHO places high priority on strengthening surveillance, not only for polio but also for other communicable diseases, and workshops have been conducted for staff from over 70 countries. WHO is also helping to develop a laboratory network that will support the diagnosis of suspected cases. Within each WHO Region, a number of national laboratories are attempting to isolate polioviruses from suspect cases.

Apart from the human and economic benefits of eradicating poliomyelitis, immunization with poliovaccines has a high cost-benefit. One study showed that, by 1998, the benefit of not having to treat the polio disabled will start to outweigh the costs of the vaccine and its administration. When, eventually, immunization can be stopped everywhere, the savings will be enormous, the USA alone no longer having to spend over US$ 110 million on poliomyelitis vaccine each year.

Before poliovaccines were developed, half a million children suffered from the disease each year. When the last virus is eradicated, that half million will be reduced to zero. As has occurred with smallpox, now eradicated for over 15 years, future generations will only know the disease from history.
Even the most remote areas, as shown here in Mexico, can be reached by vaccine supplies.

Smallpox showed the way

The philosophy of polio eradication is grounded in smallpox eradication, since many of the leaders of the initiative were involved in that programme. Eradication initiatives seek to improve disease surveillance so that every case of the disease is rapidly detected. Immunization is then targeted to the highest risk areas to interrupt transmission of the virus. Once global eradication has been achieved, immunization against polio will no longer be needed. Eradication is the most cost-effective and sustainable approach to disease control, according to Dr Kim-Farley. "Once polio eradication has been achieved, more than US$ 100 million will be saved each year in the USA alone for vaccine that does not have to be purchased and medical care that does not have to be provided. The increased human potential for children who are not crippled is impossible to measure."

The actual strategies used in the eradication initiative were defined in the WHO Region of the Americas under the leadership of Dr Ciro de Quadros. Beginning in 1985, he assembled a coalition of international donors to provide coordinated support to the initiative: UNICEF, USAID and Rotary International were among the leaders. National vaccination days and campaigns administering OPV to all children under five years of age served both to suppress circulation of wild polioviruses and to increase each child’s individual immunity. The last case of poliomyelitis caused by a wild poliovirus in the Western Hemisphere occurred in August 1991.

These strategies are now being adopted and adapted for use elsewhere in the world. Significant progress is being made, for example, in China, where reported cases have decreased by 58% between 1989 and 1991. Potentially polio-free zones are emerging in North Africa, southern and eastern Africa, the Middle East, Europe, and the Pacific rim. Once established, these zones will be expanded to include neighbouring, polio-endemic countries.

The Indian subcontinent, where India, Pakistan and Bangladesh account for two-thirds of the reported polio cases in the world, is an important global polio reservoir, where additional progress is needed soon to reduce the risk of the disease being exported to polio-free areas. War and political instability in Europe, Asia and Africa remain significant obstacles to the global initiative.

Political will

Despite strong support from external donors, funding for much of the logistical support involved must come from in-country resources. In the programme in the Americas, the $112 million provided by external donors covered only 21% of the total cost.

But the greatest obstacle facing WHO’s polio eradication initiative is one of political will. In 1988, the World Health Assembly called for the global eradication of poliomyelitis by the year 2000. More than one-third of the allotted time has passed. Although cases have decreased as a result of improved immunization coverage, the number of countries conducting specific polio eradication activities is limited. Laboratories need to be equipped and staff trained, and an estimated additional $300 million worth of OPV will be needed. Polio-endemic countries must commit themselves to allocating sufficient human and financial resources, and donor agencies and governments of industrialized countries must also commit themselves to supporting these countries.

WHO, its Member States and their financial supporters will need to focus attention on the benefits that will accrue from polio eradication – improved disease surveillance, better laboratories, cost savings to immunization programmes in every country – rather than on the difficulty and cost. A cooperative, global effort is needed to go those last steps that are always the hardest part of the journey. How can we afford to stop when we have come so far? ■

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