

Polio eradication in the Commonwealth: windows of opportunity

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India has recently celebrated its first 12-month period without polio, a major milestone towards a world without polio. By all indicators, including the search for polio virus in sewage in major metropolitan areas, the states of Bihar and Uttar Pradesh – the only two Indian states that had never before stopped polio – have succeeded in vaccinating high enough numbers of children to end the circulation of the virus.

The recent report of the Independent Monitoring Board of the Global Polio Eradication Initiative, prepared by its chair Sir Liam Donaldson, has concluded that the success in India clearly demonstrates that ‘unswerving political commitment, outstanding public health leadership, clear lines of accountability, intolerance of weak performance and the systematic enforcement of best practice can stop polio’ (Donaldson et al., 2012).

Intensive efforts to eradicate polio from the world began in 1988 when the World Health Assembly passed a resolution to eradicate polio by the year 2000. Though a vaccine to prevent polio had been available since 1952, access to this was constrained in many developing countries. In 1988 – though polio had already disappeared from many industrialised countries through routine immunisation using the oral polio vaccine – there were still over 1,000 children being paralysed each day by polio virus, then present and circulating in 125 countries.

The Global Polio Eradication Initiative that began in 1988 – a partnership of Rotary International, The Centers for Disease Control and Prevention (USA), the United Nations Children’s Fund (UNICEF) and the World Health Organization (WHO) – changed all that by ensuring that enough vaccine was available to reach all the world’s children and that funds could be provided to countries in order to top up national resources and get the vaccine to children.

Countries of the Commonwealth have been major funders of polio eradication. Australia, Canada, New Zealand and the United Kingdom have contributed bilaterally to other Commonwealth and non-Commonwealth countries or multilaterally through WHO. And those Commonwealth countries that were still having polio epidemics in 1988 have provided vast amounts of national funding to either become polio-free or make progress towards this goal through routine vaccination activities and supplemental campaigns.

Though the target for eradication was missed in 2000, great progress has been made. Among countries of the Commonwealth, only four have reported polio during the past 12 months: Nigeria and Pakistan, where polio has not previously been stopped and the polio virus continues to circulate; and Cameroon and Kenya, countries that had previously succeeded in

becoming polio-free but were re-infected by polio virus that is thought to have originated in West Africa.

The importance of routine immunisation

Progress in polio eradication has been easier in countries or geographic areas where routine immunisation services are able to maintain high levels of polio immunity. Two or three mass vaccination campaigns each year in these countries or geographic areas were often enough to reach the level of protection in children that stopped polio.

The Indian states of Bihar and Uttar Pradesh struggled to stop polio because of their low levels of routine immunisation coupled with repeated exposure of unvaccinated children to the polio virus that is present because of sub-standard sanitation and impure water supplies. These two states have now become polio-free and are compensating for weak immunisation services by conducting frequent and costly mass vaccination campaigns. During these campaigns vaccinators pass from community to community, and household to household, delivering two drops of a newly

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formulated polio vaccine to each child under the age of 5 years. Vaccination campaigns must continue in order to keep immunity levels high enough to prevent circulation of polio virus should it be reintroduced to India from a country where polio is still occurring.

Parts of Nigeria and Pakistan are similar to Uttar Pradesh and Bihar – they have low levels of protection against polio because routine immunisations services have been unable to reach the level of protection necessary to stop polio. Since July of last year Cameroon and Kenya have also reported children paralysed by the polio virus, and ‘genetic fingerprint’ studies have clearly shown that it likely had its origin in northern Nigeria.

The evidence is convincing: if polio is occurring in any part of the world, other countries are at risk, especially those that have immunisation services that do not sustain high vaccination protection of children.

The polio viruses in Cameroon and Kenya that were found during this past year are the continuing consequences of an event that occurred in Northern Nigeria in 2003. At this time there was unfounded concern about the safety of polio vaccine, and routine vaccination and vaccination campaigns were stopped. The result was an immediate increase in polio and paralysed children in northern Nigeria and the spread of the virus to previously polio-free neighbouring countries and then along religious pilgrimage routes to Saudi Arabia, Yemen and Indonesia. Most of these countries have now been able to stop polio again. A few vaccination campaigns added to their routine vaccination services were effective, though costly. Others – like Cameroon and Kenya – have recently been re-infected.

Nigeria announced earlier this year that it will double national funding for its polio eradication efforts, from US\$17 million to US\$30 million, in a bid to stop polio in the eight infected states by 2015. In making the announcement, President Goodluck Jonathan expressed his concern that Nigeria was still a ‘sanctuary for polio’ and thus represented a threat to other countries. Commitment such as this, followed by well-supervised and effective vaccination, will help Nigeria finally become polio-free.

In Pakistan and neighbouring Afghanistan, people freely circulate across the common border. Borders are clearly not a barrier to the polio virus, or to any other infectious disease, and the virus continues to freely move from one side to the other in infected children and in other family members. Because most infections with polio virus do not cause paralysis, it is difficult to pinpoint who is carrying it. But the result is clear: Afghanistan and Pakistan continuously re-infect each other, adding to the challenge of protecting children from polio in areas where routine immunisation services are sub-standard.

Some US\$ 6 billion has been invested in polio eradication across the world, and recently the Bill & Melinda Gates Foundation has joined others in providing funding and technical support. This investment has served to strengthen cold-chain infrastructure to support transport of polio vaccine, develop public health laboratories for viral disease diagnosis, train national surveillance officers in basic epidemiology and recruit and train vaccinators, many of whom are community volunteers. In fact, the polio eradication investment has created a worldwide network of more than 20 million volunteers who have immunised well over 2 billion children against polio.

The window of opportunity to stop polio in all countries remains open because of partners such as the Bill & Melinda Gates Foundation, Rotary International and many of the wealthier Commonwealth countries. The challenge for the Commonwealth is to use this investment wisely to stop polio in Pakistan and Nigeria, to be sure that Cameroon and Kenya become polio-free once again and to continue to vaccinate against polio in all countries in order to protect against polio virus importation.

Polio eradication and other communicable and non-communicable diseases

The substantial infrastructure developed for polio eradication – cold-chain, public health laboratories and training in basic epidemiology and vaccination – has also been used by countries for



The head of Nigeria's Muslim community immunises a child against polio.

“The substantial infrastructure developed for polio eradication ... has also been used by countries for the detection of and response to many other communicable diseases. ... [This] infrastructure also offers another opportunity – it can be used for prevention and better control of non-communicable diseases

the detection of and response to many other communicable diseases (CDs). It has been used, for example, to support the international effort to control severe acute respiratory syndrome (SARS), to identify areas at risk of avian and pandemic influenza and to detect and respond to outbreaks of yellow fever, meningitis and haemorrhagic fevers caused by the Ebola and Marburg viruses.

The response to yellow fever and meningitis outbreaks includes vaccination campaigns for which polio eradication-strengthened country infrastructure is especially well suited. Vaccination campaigns are also required at the time new vaccines are introduced in routine immunisation activities in order to ‘catch up’, i.e., vaccinating those who have not had the opportunity to be vaccinated previously.

This broadening to other CD threats is in itself a substantial legacy of polio eradication. But the polio eradication infrastructure also offers another opportunity – it can be used for prevention and

better control of non-communicable diseases (NCDs). As was called to the attention of Commonwealth Health Ministers during their pre-World Health Assembly meeting in Geneva last May, and during the special session of the UN devoted to this issue last September, NCDs exact a high cost in terms of disability and lives lost.

Some NCDs – liver cirrhosis and cancers of the liver and cervix, for example – have their origin in infections that have occurred many years previously and have then become persistent. Vaccines exist to prevent these infections: hepatitis B vaccine that prevents hepatitis-related cirrhosis and liver cancer and human papilloma vaccine that prevents cervical cancer. Catch-up vaccination campaigns are required when these vaccines are introduced in routine vaccination programmes of populations at risk.

For other NCDs – such as lung disease, heart disease and type 2 diabetes – prevention is best accomplished by individual adoption of more healthy dietary practices, increasing exercise and not smoking. Social mobilisation is crucial in helping people understand these prevention measures – and the social mobilisation infrastructure of polio eradication that has helped mothers understand the need to protect their children by polio vaccination can be adapted and built on to meet this need.

Windows of opportunity

As Sir Liam Donaldson's report has indicated, the polio eradication programme has been good, and in these next 10 months every drop of polio vaccine is important, as is every vaccinator, team leader, laboratory specimen, piece of data, parent and child. If polio eradication efforts can make the shift from good to great by learning from the lessons in India's success, the window of

opportunity to eradicate will not be lost. Furthermore, the polio eradication efforts themselves offer another window of opportunity in terms of better prevention and control of other CDs and NCDs.

However, polio is not the only CD, nor are CDs the only health priority in the Commonwealth. The polio eradication infrastructure can however be a useful platform upon which to build the Commonwealth response, not only to other CDs, but also to NCDs which are a growing challenge to many Commonwealth member states.

Reference

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