

**HUMANITARIAN &
DEVELOPMENT
PROGRAMME**

GUNS, GERMS AND MANKIND

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« GLOBAL HEALTH » THINK TANK



From March 25th to the 28th, the Global Polio Eradication Initiative (GPEI) launched the 'From one side to another' operation in efforts to immunise 116 million children against polio throughout 13 countries in Africa - involving a record of 192,800 voluntary health workers to end polio on the continent.

In 1979, after 12 years of struggle, smallpox became the first disease - or almost first¹ - to be eradicated off the face of the planet. In a surge of optimism, the World Health Organization (WHO) then launched its second battle, this time targeting poliovirus. Poliovirus is a good candidate. The virus has been identified; the disease is a true global public health problem; there is no cure; and there is a vaccine providing a lifetime of protection². The 44th World Health Assembly approved a resolution in May 1988, which aimed to eradicate poliovirus by the year 2000. 29 years later, the virus is still raging on. What are the obstacles that prevent this truly good idea from being a reality?

In 1988, there were 350,000 cases, compared with 75 in 2015. The GPEI has now reached over 99% for the global eradication of polio. However, there are still many obstacles getting in the way of success: inaccessible populations, a virus derived from the vaccine strain, conflict, false beliefs, population shifts...

Polio eradication is currently considered an emergency programme for global public health. The WHO has also allocated \$700 million USD (17% of its 'programme' budget) for the following plan: impeding the transmission of wild poliovirus, strengthening the vaccination strategy, completing the containment and the global certification of eradication.

Poliovirus is transmitted by two classes of virus: the wild poliovirus strain (WPV) and the circulating vaccine-derived poliovirus (cVDPV). The latter are viral strains that have mutated from strains existing in the oral poliovirus vaccine (OPV). Each category has 3 types of viruses: PVS 1, 2, and 3 and the derivatives cVDPV 1, 2, and 3. In 1999, PVS2 was eradicated. In order to permanently eliminate poliovirus, it is important to eliminate PVS, as well as the viruses derived from the vaccine strains. Thus, it is necessary to stop using OPV against PVS2, in order to limit the risk of outbreaks of poliovirus via VDPV2. In April 2016, a joint action in 155 countries and coordinated over 15 days enabled the transition from trivalent to bivalent OPV (oral poliovirus vaccine). Beyond this logistical and organizational feat, one wonders why we needed to wait 17 years for this initiative, especially after knowing that 90% of the declared polioviruses of type cVDPV were of type 2 until 2016.

¹ Polio is a highly contagious disease that invades the nervous system which can lead to total paralysis in a few hours and is irreversible in 0.5% and lethal in 10% of cases. In the 1980s, there were 350,000 cases worldwide that spared no country.

² Two high-security laboratories still reserve the right to handle the virus in the US and Russia. You never know, a 'biological deterrent weapon', can always be employed. No worries though! The US and Russia are now reasonable countries...

Having presence in 125 countries in 1988, and endemic on 5 continents, polio was established in only two countries: Afghanistan and Pakistan. Whilst Nigeria (and the entire African continent along with it) was waiting for July 2017 to be certified 'polio free', three new cases occurred in the state of Borno in August 2016. The genetic sequence of the viruses found in 2016 was linked with a viral strain present in the same region in 2011, indicating that the virus circulated for 5 years under the radar of the health system. Is there a monitoring system or just a health system in the state of Borno right now?!

THE ERADICATION OF POLIO: A PROGRAMME OF GLOBAL SCOPE, WHICH MAY HAVE DELAYED RECOGNISING SPECIFICITIES AND THE NEEDS OF A 'TAILOR-MADE' MODEL

The state of Borno, the north-eastern region of Nigeria where polio remains endemic, is the cradle of the terrorist group 'Boko Haram'. In 2003, the religious authorities of the area banned the vaccination campaign, claiming that the vaccine contained sterilising agents, an argument later reiterated by terrorist groups. In 2012, a reversal of the situation was seen when the deputy governor of the state of Kano declared that he wanted to prosecute families who tried to stop their children from being vaccinated. Nigerian northerners faced a failing health system, and they considered that the 297,720 children who had died and die each year of malaria and pneumonia are a much bigger problem than failures in a global vaccination campaign. The population has found strange that a disease affecting only a few tens of children per year is at the centre of attention, thus propagating the spread of false beliefs or other conspiracy theories. The terrorist attacks in February 2013, where thirteen health workers were specifically targeted and killed, have also not helped to improve immunisation coverage in the region.

In these endemic polio strongholds, there remains a significant proportion of people who refuse to vaccinate their children. In some districts of Afghanistan, over 4% of children are not immunised due to parents refusing. In order to fill this gap, the current priority is direct communication and community mobilisation activities in accordance with the specific social, cultural, and political context. This requires creating an original campaign rather than relying on the global standard; in other words, it means combining the macro of vaccination campaigns with the micro of the population's expectations and beliefs. In these mountainous border regions, coordination has made it possible to set up vaccination points at the border posts, without needing access to inaccessible zones declared 'extreme risks' by the UN. Taliban reside in those zones and many health personnel have been abducted, tortured and/or killed there.

In Pakistan, of the 170 cases reported since January 2012, more than 90 cases have occurred in the federally administered tribal areas (FATA) affected by unrest, and also in the Khyber Pakhtunkhwa province where security is also an issue. As a result of the numerous targeted terrorist attacks against vaccinators and the ban on vaccination imposed by local authorities, more than 350,000 children in these districts have not been vaccinated. Opposition is in part due to the public release of the CIA's operation, under the code name 'Peter', which used a vaccination campaign as a Trojan horse to get rid of Osama bin Laden in 2011. Since then, more than 50 health-workers, including a dozen women, have been killed by the Taliban whilst vaccinating children. In an attempt to appease the situation, on May 16th 2014, the White House announced the decision by CIA director John Brennan not to use vaccination campaigns for informative purposes. However, it seems that this has not been enough to restore the trust in vaccination campaigns; and there are still messages in the field and on social networks that encourage children not to have their child vaccinated against polio, as they may become infertile and unwell for the year. Rumours stress the infertility being tackled in two ways: exposing the genocide orchestrated by the West, Zionism or Bill Gates (of the choices), as well as the demise of the Muslims of Pakistan.

On the other hand, year after year polio cases have decreased and the virus finds itself on its last legs. In 1994, the Americas were declared polio-free, as was India, which now celebrates its sixth year without a reported case, whilst in 2009 it still accounted for half of the world's cases. India has succeeded in translating a Western policy into a tailor-made plan; some haute couture for the billion people scattered over a territory of 3,287,590 km², almost five times the size of France. Taking into account the structure and peculiarity of its society, its culture of movement, and its stratification, India was able to find its solution and thus reach its 'forgotten children'. Living in remote valleys, these children are a challenging carrier of the return of the disease.

The vaccination teams looked for them wherever they were: stationed at railway stations, along roads, bus stops, and even in trains. 8,000,000 children were vaccinated, including 100,000 in the Indian Railways 'sleeper class', with the backing of the legendary Bollywood star Amitabh Bachchan³. To eradicate the last pocket of the virus in the region of the Kosi River (regularly flooded) and to make polio a distant memory, it was necessary to boost ideas and technologies. It must be recalled that it is not only rich in its population, but also the sixth space power, thus India is innovative and draws upon its satellite arsenal. The government maps the area, identifies each village, each household and determines where the challenge lies.

³ Star of the film 'Slumdog millionaire', a true national treasure in India.

Just like its neighbour did six years ago, Pakistan is now multiplying its vaccination teams in transit zones to access its children. Whilst 65% of children at the national level are vaccinated, only 38% are in FATA. This results in an increase in the transmission of wild poliovirus, but also a rapid spread of cVDPV⁴. The outbreak of polio in June 2012 in Pakistan, and in 2014 in Nigeria, threatens the achievements of each of these countries and of the rest of the world in the fight against the virus.

With these problems arising on the dawn of the year 2000, circulating polioviruses derived from vaccine strains are likely to cause outbreaks of paralytic poliovirus. In 2012, and for the first time, there were more countries affected by an outbreak due to a vaccine strain than those affected by a wild poliovirus outbreak. Polio cases are now reappearing in countries that have already been free from the virus for a few years: Cameroon, Kenya, Somalia, Ethiopia, Iraq and Syria. The wild virus travels too: throughout the global polio eradication efforts, viruses from endemic areas have regularly re-infected polio-free areas, leading to new outbreaks due to insufficient herd immunity⁵ and thus creating a persistent transmission. The failure of eradication in the last leg of the disease could, through these transmission mechanisms, lead to an increase in the number of new cases up to 200,000 per year.

It is hard not to make the link between this and the current outbreak of measles that crosses Europe. With more than 500 cases reported since January 2017, it is likely to trigger a real epidemic where immunisation coverage does not reach the 95% threshold necessary to guarantee herd immunity. With regards to the level of vaccine coverage, the question is: can a virus make the difference between a “I don’t vaccinate my child because it will make it sterile” and a “I do not vaccinate my child because I am afraid of aluminium, and anyway, if its to make pharmaceutical industry richer, no thank you”. It is likely not⁶.

It is true that the IMEP campaign against poliovirus is extremely expensive and long... But more than 10 million people can walk when they could have been paralysed; 1.5 million child deaths avoided; and up to \$50 billion USD have been saved over the next 20 years for public health in developing countries.

Today, the link between conflict-ridden regions and the final regions of resistance (Afghanistan/Pakistan border, Nigeria) is a clear sign of conflict, persuasion, false beliefs and displacement of a globalised campaign. Through these problems, it is the implementation of a global policy that must be called into question, as much at the level of the eradication of the polio as in terms of public health in the broadest sense. From

⁴ Poliovirus derived from a vaccine strain.

⁵ India (before 2009) and Nigeria in particular

⁶ Let us note in passing that the Americas eradicated measles in September 2016, when did the outbreak end in Europe?

Geneva, the WHO has looked for a model that would suit everyone. And the best idea was to narrow down to a generalised framework, and to work with each government so that it could find its unique and personalised solution. It is simply a pity that it took a quarter of a century to get here.

And as for the rollout of the African vaccination programme ‘From one side to the other’ that took place at the end of March, which we are sold on: “...volunteers will bring the polio vaccine to every home in every city, big or small, and every village in the 13 countries. To succeed, all these volunteers and health workers will work up to 12 hours a day, walking or cycling, often in suffocating humidity and temperatures above 40°C. Each team will transport the vaccine in special bags filled for cold storage to ensure that it remains below the required 8°C.”⁷ I must admit that I have some doubts... as much about the ability of Boko Haram to welcome these heroes by bike in the state of Borno, as of the achievement of the objectives. This is because in Mali, more than 2 million children have just missed the vaccination campaign following a general strike by the health unions, which are demanding the government an increase in their premium to a total of 100,000 CFA (€150)⁸.

Let us hope that malaria, the next candidate for eradication, will benefit from these hard-learned lessons from the past three decades. A public health objective, yes, but with sociological, psychological, political, religious, logistical and financial determinants. One must start from these foundations, to then reach the change of behaviour necessary to achieve any public health objective. You must educate before you want to vaccinate. Under this condition, perhaps we will stop seeing mosquito nets being used as fishing nets rather than protecting sleeping children in malaria-endemic areas. And who knows, we might see malaria/polio/measles eradicated within the next 30 years. ■

⁷ <http://www.who.int/mediacentre/news/releases/2017/africa-tackles-polio/fr/>

⁸ It would probably be a good idea to avoid this ‘brain drain’ to more and more countries that creates ‘medical deserts’ at the local level, amongst other things.

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