

## From eradication to the risk of reintroduction of poliomyelitis in Brazil

The vaccination strategy for children and young people has proven to be undoubtedly one of the most successful public health interventions. Vaccines have been responsible for substantial reductions in child mortality and are among the most cost-effective interventions in the health area. Vaccination of ten selected pathogens is estimated to have prevented approximately 37 million deaths (95%CI: 30-48) between 2000 and 2019<sup>1</sup>.

However, vaccine coverage has dropped alarmingly both worldwide and in Brazil, before and after the first two years of the COVID-19 pandemic. The world has witnessed the largest ongoing reduction in childhood immunizations in 30 years<sup>2</sup>. It is considered the largest continuous reduction in childhood immunizations in a generation.

The Brazilian National Immunization Program (PNI), created in 1975, is a world reference and a pioneer in the incorporation of vaccines in the Unified Health System (SUS). Brazil is one of the few countries that universally offers an extensive and comprehensive list of immunobiologicals.

Poliomyelitis – an immune preventable disease of great importance in public health – is prominent in the Brazilian and Global Expanded Program of Immunization (EPI) calendar due to its permanent sequelae and risk of death. It is caused by poliovirus 1, 2 and 3. Vaccine protection against poliomyelitis has been provided by two vaccines: the Salk vaccine, or injectable vaccine of the inactivated poliovirus (IPV); and the Sabin oral polio vaccine (OPV), produced with live attenuated virus (LAV).

Like most countries, Brazil chose the Sabin OPV to control poliomyelitis. The low cost, ease of administration and the fact that it produces excellent immunity in the intestine and spreads among unvaccinated people influenced the choice. However, albeit rarely, the attenuated virus can mutate and cause paralysis, especially when circulating in regions of low immunization coverage. For this reason, most countries switched from OPV to IPV, including Brazil, which made IPV available from 2012 onwards, applying it in the first year of life (2, 4 and 6 months), combining it with the oral vaccine in the second year of life (15 months and 4 years) and in annual campaigns.

The last confirmed case of poliomyelitis in Brazil was registered in 1989 and the disease was considered eradicated from the Americas in the 1990s. Between 2010 and 2015, the polio vaccine and almost all vaccines in Brazil reached universal coverage, close to 100%. But after 2015, there was a sharp drop in vaccine coverage in the country. A national mobilization effort was conducted at the time, increasing coverage slightly in 2018, to plummet far below protective levels in 2019, worsening with the COVID-19 pandemic from 2020 onwards. The observed decline was national, but not homogeneous, affecting the poorest regions of the country, North and Northeast, and juxtaposed municipalities that form pockets of poverty.

It is quite likely that these time periods, between 2015 and 2022, not by chance, coincide with governments that instituted neoliberal policies to control expenditures in the area of health and education, which withdrew resources from the SUS and, consequently, from the vaccination program. Due to political decisions, the PNI was left out of the equation for months, during the pandemic, when health ministers took over the Brazilian health system without even appreciating what the SUS represented, and the increase in poverty, which started even before the pandemic, put the country back on the map of countries suffering from hunger.

Today, there is an imminent risk of polio reemerging in Brazil if robust control measures are not taken to increase vaccination coverage. Researchers claim that to better assess the expected success of vaccination programs and campaigns, it is necessary to pay attention to the socio-political context<sup>3</sup>. And the success of an immunization program will be the result of political decisions made by leaders who consider the real health needs of their population.

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