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Global polio eradication efforts in 2010 were rewarded with four substantive results: a 95% reduction in the number of children paralysed by polio in Nigeria, a 94% reduction in polio-paralysed children in India, a 92% decline in polio cases due to type 3 wild polio-virus (WPV3) globally, and the interruption of imported wild polioviruses in all countries re-infected in 2009. Taken together, these results suggest that full application of the tools and tactics in the Global Polio Eradication Initiative (GPEI) *Strategic Plan 2010-2012* can lead to a world where 'every last child' is protected from polio.

This report summarizes polio eradication activities in 2010, the first year of implementation of the *Strategic Plan 2010-2012*, and measures progress against milestones established in that document. Mandated by the World Health Assembly (WHA), the GPEI developed the plan to stop polio in all of the areas where the virus still circulated by the end of 2012.

At the beginning of 2010, key parts of the four endemic countries were still detecting both of the surviving types of wild poliovirus, polioviruses were re-established in four previously polio-free countries in central and southern Africa, and outbreaks were stalking west Africa and the Horn of Africa.

In 2010, progress hinged on committed governments. India and Nigeria, for example, mobilized all levels of government and traditional and religious leaders to oversee and support eradication activities, while devoting significant domestic resources to the effort. The very low levels of poliovirus transmission in these countries, and of WPV3 globally, was also a testament to the impact of the new bivalent oral polio vaccine (bOPV) and to new approaches in vaccine delivery. The steep decline in the number of WPV3 cases worldwide in 2010 was perhaps the most significant impact of bOPV. There were 87 polio cases due to type 3 virus in 2010, compared with 1122 cases in 2009 – the lowest recorded number of WPV3 cases in the history of the GPEI. Although bOPV was expected to reduce WPV3 cases while maintaining pressure on WPV1 transmission, its impact exceeded expectations. The introduction of bOPV and new delivery tactics played a leading role in halving the total number of districts infected with any wild poliovirus worldwide: from 481 districts in 2009, to 241 during the same period in 2010.

In the *Strategic Plan*, milestones were set out to measure progress against: 1) stopping outbreaks in newly-infected countries; 2) interrupting re-established poliovirus transmission; and, 3) reducing cases in endemic countries. To assess progress towards these milestones and guide corrective actions, the WHA mandated the establishment of an Independent Monitoring Board (IMB), which first met in December 2010.

Concrete progress towards two of three milestones

Important and concrete advances have been made towards the first and third milestones of the *Strategic Plan*.

To reach the first milestone, countries faced with importations drew on a combination of approaches: coordinated and large-scale polio vaccination campaigns, independent monitoring of campaign coverage, rigorous surveillance and political weight. Importations from 2009 were stopped in all 15 countries by mid-2010; in 2010, new importations with onset in 2010 were stopped within six months in 11 countries.

No account of 2010 is complete, however, without the sobering reminder of the devastation that polio can cause even in places where it has been long forgotten: hundreds of people were paralyzed after wild poliovirus was imported into Tajikistan in February 2010, and an importation into the Republic of the Congo in September turned even more deadly. The response to these outbreaks reaffirmed two key lessons for polio eradication: speed is of the essence and, when necessary, older children and adults must be vaccinated.



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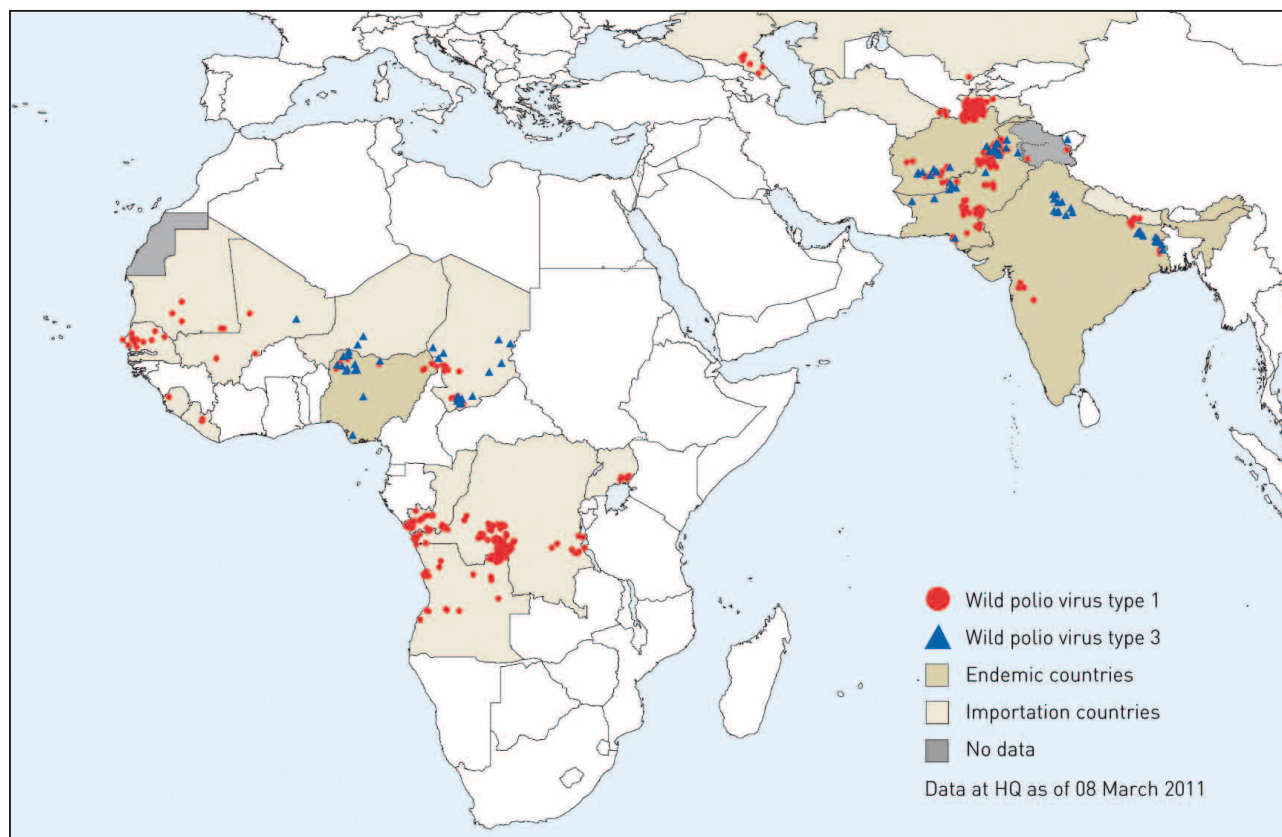
Jalalabad, Afghanistan, 2010: During a round of national immunization days, a girl waits with her mother and younger sister at a health centre until it is her turn to be immunized.

With respect to the third milestone, for endemic countries, the front-runners in 2010 were India and Nigeria with 94% and 95% reductions in cases respectively. These declines have particularly far-reaching implications for global efforts against polio, as all importations of wild poliovirus into polio-free areas in recent years have been related to viruses of Nigerian or Indian origin. On the fringes of this striking progress, risks still remain. In India, wild poliovirus was detected in early 2011 in West Bengal state, and the country remains in emergency mop-up mode. Polio also persists in the north-eastern and north-western corners of Nigeria, and there are warning signs that surveillance still suffers substantial gaps. The situation in Nigeria is further complicated by ongoing transmission of the vaccine-derived poliovirus that has lingered in the north of the country for over four years.

Despite the prevailing insecurity, Afghanistan also saw a 34% decrease in overall case numbers in 2010 compared to 2009, and as of April 2011 had detected no WPV3 for a full 12 months. As importantly, Afghanistan successfully prevented new outbreaks following importations from neighbouring Pakistan.

As polio eradication efforts gained ground in these three endemic countries, the virus tightened its grip over Pakistan. The rise of polio cases in Pakistan (of 62% over 2009) tempered the optimism elsewhere. In 2010, Pakistan had more cases of polio than the other three endemic countries combined. Arguably, it had far worse luck as well. Devastating floods washed through the country, damaging 600,000 homes, spoiling thousands of hectares of arable land and changing the lives of 18 million people. Hand-in-hand with this disaster, key polio-affected parts of Pakistan – notably the Federally Administered Tribal Agencies – continued to be plagued by conflict and insecurity, and as many as a quarter of a million children in those areas remained unvaccinated. Even in parts of Pakistan which were fully accessible, children continued to be missed during vaccination – and consequently paralysed by polio. Alarmed by the state of affairs, in October 2010 the President directed the rapid establishment of a National Emergency Action Plan to get polio eradication efforts back on track and launched it himself in January 2011.

Global WPV cases 2010



Second milestone goes off track

Under the second milestone, for re-established transmission countries, the situation is more alarming, with three of the four countries having missed this end-2010 milestone. Most signs pointed to the interruption of the re-established poliovirus in southern Sudan. In contrast, in Angola, Chad and the Democratic Republic of the Congo, re-established poliovirus transmission continued throughout 2010. The latter was plagued by new importations in its southern provinces and the capital city, while re-established poliovirus transmission continued in the east.

In the first half of 2010, substantial gaps in campaign quality in Angola allowed polio to spread both within the country and beyond, to the Democratic Republic of the Congo and the Republic of the Congo. In response, Angola launched a national Emergency Plan in June 2010, a key element of which was the full engagement of provincial Governors

and municipal administrators. As a result of increased international technical support, key areas of the country saw an improvement in surveillance. High level advocacy in early 2011 paved the way for the President to consider polio a national priority; a sign of this focus was the commitment of significant domestic funding for the operational costs of polio campaigns.

At the invitation of the governments of Angola and of the Democratic Republic of the Congo, the chief executives of the polio eradication partners travelled to those countries to discuss with the respective Heads of State support in implementing corrective action plans.

In March 2010, the president of Chad announced he was declaring “war on polio.” However, vaccination coverage of children improved only gradually, and transmission of the re-established WPV3 continued in the east of the country. New fronts opened up in this battle when WPV1 – imported from Nigeria in September – exploited the previous reliance on type 3 monovalent oral polio vaccine and rapidly sparked a new outbreak.

WPV cases 2009 vs 2010

Wild poliovirus type 1 cases*	WPV1-2009	WPV1-2010
Pakistan	61	120
Afghanistan	16	17
India	80	18
Nigeria	75	8
Re-established countries	74	144
Re-infected countries***	176	896

Wild poliovirus type 3 cases	WPV3-2009	WPV3-2010
Pakistan	28	24
Afghanistan	22	8
India	661	24
Nigeria	313	13
Re-established countries	67	15
Re-infected countries	31	3

Innovations

The significant advances against polio in 2010 in most endemic and outbreak-affected countries were facilitated by a series of innovations in programme planning and monitoring. District-specific planning made for better vaccination campaigns. Systematic tracking of the actions of sub-national leaders provided better accountability at the operational level. Other innovations applied more widely in 2010 were the Short-Interval Additional Dose (SIAD) strategy and targeted plans to reach mobile and transit populations. To provide a clearer picture of campaign quality, standard independent monitoring indicators were introduced in every country; where necessary, the picture was sharpened by the use of Lot Quality Assurance Sampling (LQAS) and serologic surveys. The sensitivity of disease surveillance was strengthened in 2010 by expanding environmental surveillance and introducing rapid field reviews.

Looking ahead

Meeting all of the *Strategic Plan* milestones will require the systematic and effective employment of these innovations in all infected districts and rapid adjustments in programme implementation when the IMB flags areas which have missed – or are at risk of missing – a milestone. In 2011, the priorities are threefold. In the countries that are on track to meet their milestones, the strategies must be sustained, to stop all transmission. Those countries which are at risk will aim to institutionalize best practices as they implement new emergency plans. Finally, continued innovation and research will guide next steps and prepare the ground for the post-eradication era.

COUNTRY CLASSIFICATION	WPV1		WPV3	
	2009*	2010	2009	2010
Endemic				
Afghanistan	16	17	22	8
India	80	18	661	24
Nigeria	75	8	313	13
Pakistan	61	120	28	24
Total	232	163	1,024	69
Re-established transmission				
Angola	29	33		
Chad		11	64	15
DRCongo		100	3	
Sudan	45			
Total	74	144	67	15
Outbreak				
Benin	20			
Burkina Faso	15			
Burundi	2			
Cameroon			3	
Congo**		382		
Côte d'Ivoire	26			
Guinea	42			
Kazakhstan		1		
Kenya	19			
Liberia	11	2		
Mali	2	3		1
Mauritania	13	5		
Nepal		6		
Niger	1		14	2
Russian Federation		14		
Senegal		18		
Sierra Leone	11	1		
Tajikistan		458		
Togo	6			
Turkmenistan		3		
Uganda	8	4		
Total	176	896	31	3
Global total	482	1,203	1,122	87

Data in WHO as of 11 May 2011.

* Includes one type1/type3 mixture each in Afghanistan, India and Pakistan.

**317 cases with inadequate specimens associated with the WPV1 outbreak have been exceptionally classified as confirmed polio based on their temporal and geographical association with virologically confirmed WPV1 cases and their classification by the National Polio Expert Committee as polio-compatible.

In 2010, the financial benefits of eradication were calculated to be at least US\$ 40-50 billion over the next 25 years, mostly in low-income countries; this figure does not include the considerable benefits that have already accrued in high-income countries, the additional benefits of having distributed Vitamin A and other interventions during polio campaigns and broader health system benefits of strengthened capacity.

The GPEI's estimated budget for 2011-2012 is US\$ 1.87 billion; at the end of March 2011, US\$ 665 million was still needed. The inspiring decline of polio in India and Nigeria catalysed emergency outreach by both Rotary International and the Bill & Melinda Gates Foundation to call on other donors and motivated the United Kingdom to double its funding to the GPEI for 2011-2012, contingent on other donors matching it five to one.

The lessons from Afghanistan, India, Nigeria and the countries which stopped new outbreaks in 2010 will be applied in 2011 to the remaining challenges in these areas as well as in Angola, Chad, the Democratic Republic of the Congo and Pakistan. At the end of the first year of implementation of the *Strategic Plan 2010-2012*, the world has in hand the tools and tactics needed to finish the job of polio eradication; it is now an issue of simply ensuring that these tools and tactics are systematically applied everywhere.