

GLOBAL POLIO ERADICATION INITIATIVE (GPEI) STATUS REPORT

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World Health Organization

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Evanston, Illinois USA

Centers for Disease Control and Prevention

Atlanta, Georgia USA

UNICEF

New York, New York USA



EXECUTIVE SUMMARY

This second joint report of the Global Polio Eradication Initiative (GPEI) is being released at a time of record low numbers of wild poliovirus (WPV) cases worldwide—only 49 in the past 6 months. Although the program has made substantial progress, it faces serious threats, particularly increased insecurity.

Afghanistan: Access to children in the endemic South Region has improved. WPV cases decreased from 80 in 2011 to 37 in 2012. No “endemic” WPV case has been detected since November 2012, suggesting that interruption of endemic transmission is within reach. Gaps continue in surveillance and in supplementary immunization activity (SIA) implementation. Cases linked to WPV imported from Pakistan continue in 2013.

Pakistan: WPV cases declined by two-thirds in 2012 due to systematic improvements in ownership and operations. The program appeared to be progressing toward interruption of WPV transmission but progress is now threatened by targeted violence against polio workers. The program has adapted and is continuing to vaccinate to sustain the gains made in the last two years. However, in a critical region around Peshawar where WPV continues to circulate, insecurity is seriously impairing the program’s ability to reach all children.

Nigeria: Nigeria implemented major changes in its program in 2012, which led to steady improvement in lot quality assurance sampling (LQAS) results; nonetheless cases doubled from 2011 to 2012. As of early 2013, the Northwest and North Central sanctuaries have gone months without a case. However, there has been a recent resurgence of WPV in the Northeast and around the Federal Capital Territory. In addition, SIA performance in several northern local government areas (LGAs) remains poor. Vaccine refusals remain a problem, accounting for 33% of polio cases in 2012. Insecurity is a chronic problem, particularly in the Northeast, and is particularly affecting SIA quality in selected LGAs in Borno, Yobe, and Bauchi States.

WPV3: WPV3 has not been detected in Asia (Pakistan) since 18 April 2012, and may have been eliminated from the continent. WPV3 incidence was substantially reduced in Africa (Nigeria) in 2012, where the virus has not been detected since November 2012.

Vulnerable Countries: Angola and the Democratic Republic of Congo have gone >1 year with no WPV cases. Chad’s last case was >10 months ago. The only “outbreak” in 2012 was a single case in Niger in November. Egypt’s environmental surveillance in Cairo detected a WPV1 virus of Pakistani origin in December that appeared to clear before a vaccination campaign was implemented.

cVDPV: In 2012, there were outbreaks of circulating type 2 vaccine-derived poliovirus (cVDPV2) cases in Afghanistan and Pakistan, including cross-border transmission. These outbreaks represent both continued transmission of cVDPV2 in Afghanistan since 2009 and new emergences in both countries. cVDPV2s continue to circulate in northern Nigeria, though at lower rates than in 2011. cVDPV2s emerged in 2012 in Chad, with cases detected as recently as February 2013. cVDPV2s have circulated uninterrupted in Somalia since 2009.

Insecurity: In Pakistan, targeted killings of polio workers and officers protecting them have led to major changes in the program. Although Pakistan does not appear to be losing ground, insecurity is one of the main obstacles to further improvements needed to interrupt of WPV transmission. In Nigeria the recent targeted killings of health workers have added to the program’s challenges. Chronic insecurity, particularly in the Northeast, has become an even larger impediment to program progress.

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ACRONYMS AND ABBREVIATIONS

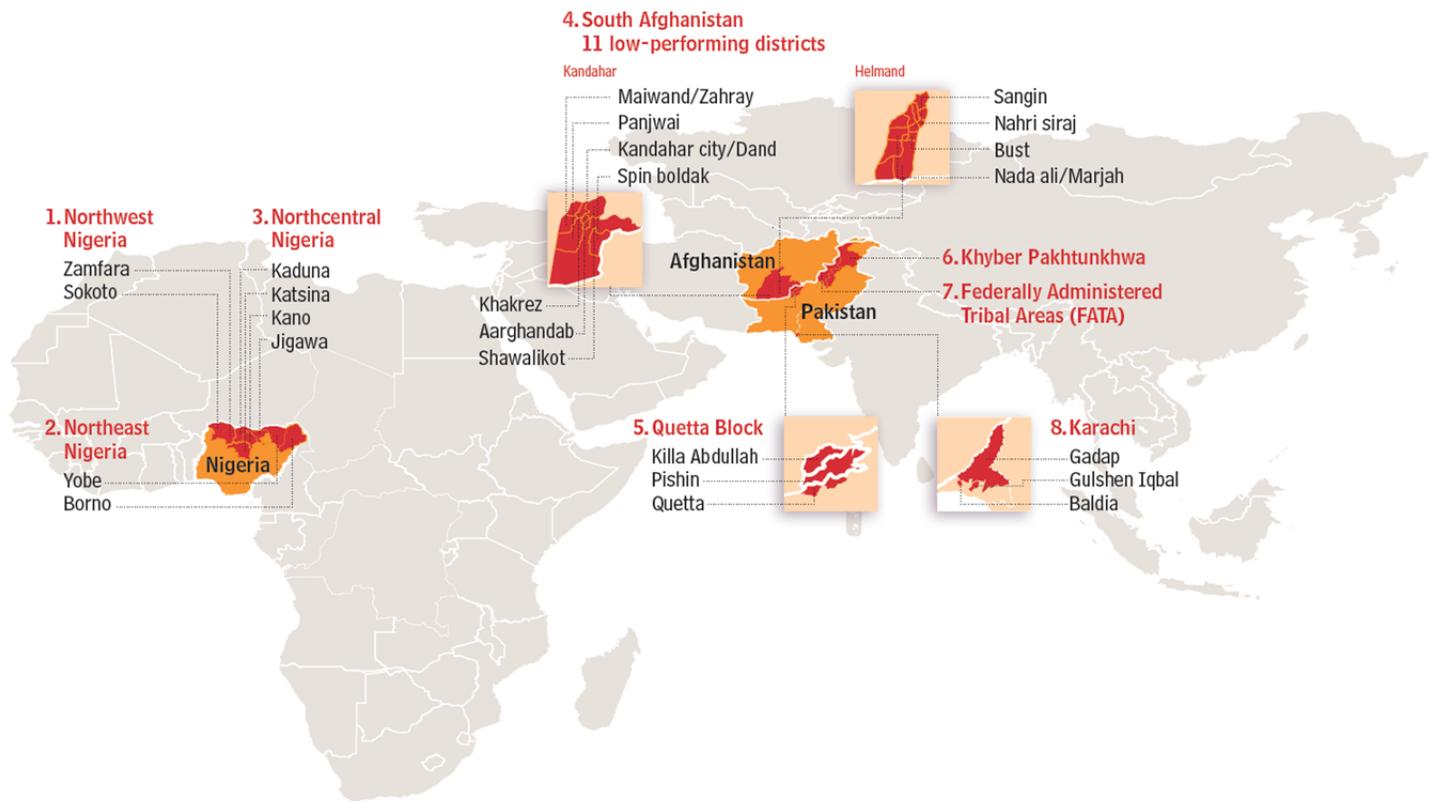
AFP	acute flaccid paralysis
aVDPV	ambiguous vaccine-derived poliovirus
bOPV	bivalent (types 1 and 3) oral poliovirus vaccine
CAR	Central African Republic
CDC	U.S. Centers for Disease Control and Prevention
cVDPV	circulating vaccine-derived poliovirus
DRC	Democratic Republic of the Congo
FATA	Federally Administered Tribal Areas (Pakistan)
FCT	Federal Capital Territory (Nigeria)
GPEI	Global Polio Eradication Initiative
IM	independent monitoring
KAP	knowledge, attitudes and practices
KPK	Khyber Pakhtunkhwa (Pakistan)
LGA	local government area (Nigeria)
LPD	low performing districts
LQAS	lot quality assurance sampling
MPI	major process indicator
MS	market survey (independent monitoring)
NPAFP	non-polio acute flaccid paralysis
OPV	oral poliovirus vaccine
SIA	supplementary immunization activity
tOPV	trivalent oral poliovirus vaccine
UNICEF	United Nations Children's Fund
UC	union council (Pakistan)
VDPV	vaccine-derived poliovirus
WHO	World Health Organization
WPV	wild poliovirus

GPEI Partner Status Report: April 2013

INTRODUCTION

This second Global Polio Eradication Initiative Partner Report on the progress towards polio eradication brings together input, analysis, and interpretation from the World Health Organization (WHO), Rotary International, the U.S. Centers for Disease Control and Prevention (CDC), and the United Nations Children’s Fund (UNICEF). This report focuses on data from poliovirus sanctuaries in the three remaining polio-endemic countries (Nigeria, Pakistan, and Afghanistan), the critical threats to and opportunities within these countries, and progress toward 2012–2013 GPEI Emergency Action Plan goals. It also addresses two previously polio-free countries with recent wild poliovirus (WPV) transmission, Chad and Niger, and countries with circulating vaccine-derived polioviruses (cVDPVs). As the first GPEI Partner Status Report (October 2012) presented outcomes of indicators in the 2010–2012 GPEI Strategic Plan, this report will present the final outcomes for 2012 (see report annex). The WPV and cVDPV data presented here represent cases confirmed as of 22 April 2013. Data from acute flaccid paralysis (AFP) surveillance include cases with onsets from 1 April 2012 through 31 March 2013.

Poliovirus sanctuaries and polio-endemic countries



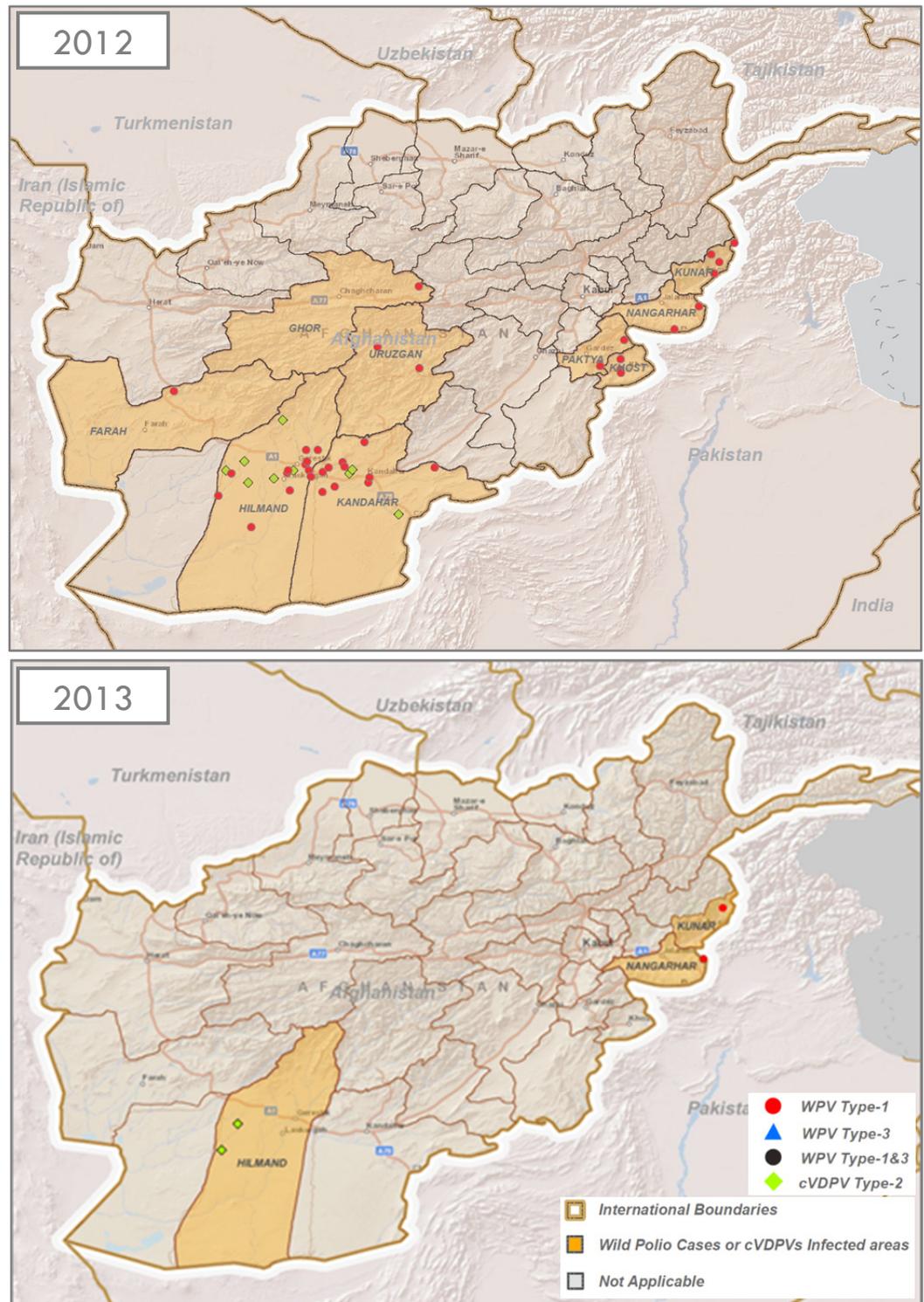
ENDEMIC COUNTRIES

AFGHANISTAN

NATIONAL POLIO OVERVIEW

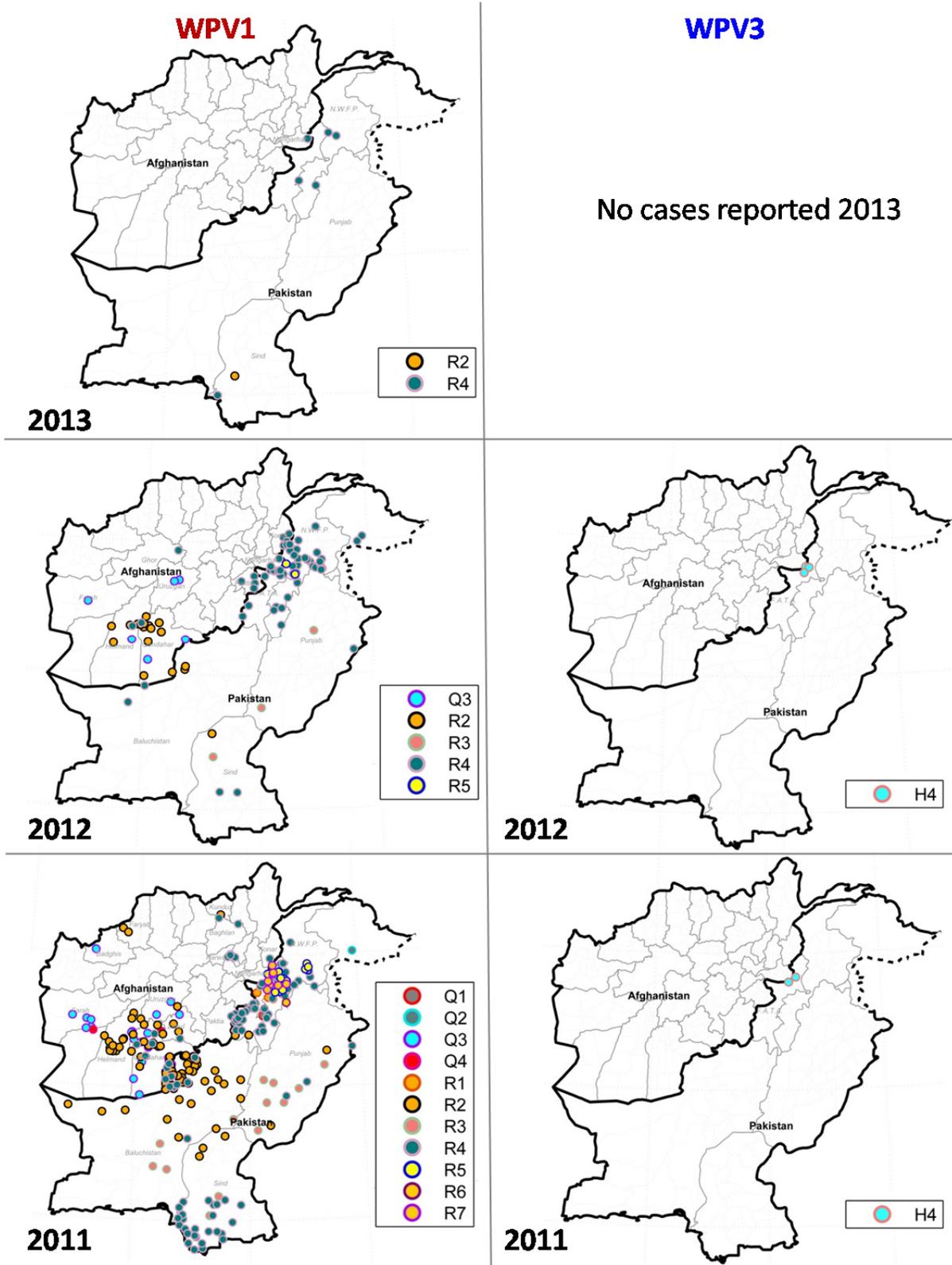
The number of WPV type 1 (WPV1) cases in Afghanistan decreased from 80 in 2011 to 37 in 2012. As of April 22, there have been only 2 WPV1 cases in 2013, both in provinces bordering Pakistan. The most recent confirmed case in the sanctuary area in the South Region occurred in November 2012. SIAs have primarily used bivalent (types 1 and 3) oral poliovirus vaccine (bOPV) during the reporting period; short-interval additional dose SIAs (an additional round one week later) have been conducted in the low performing districts (LPDs) of

the South Region in 2013. Cases of cVDPV2 have been detected since October 2012, representing both new emergences in 2012 and circulation of lineages previously present in Afghanistan which had subsequently gone undetected. In addition, there has been cross-border transmission from the cVDPV2 outbreak in bordering Quetta block, Balochistan, Pakistan. These findings indicate both weaknesses in routine immunization coverage and gaps in AFP surveillance in the recent past.



VIROLOGY

Wild poliovirus type 1 (WPV1) and type 3 (WPV3) by genetic cluster, Afghanistan & Pakistan, 2011–2013 to date*



* Data as of 25-Apr-13. See report annex for comments about phylogenetic clusters.

WPV1 viruses from three genetic clusters were isolated during 2012. Two clusters in southern Afghanistan (R2 and R4) represent local transmission as well as cross-border transmission from sanctuaries in Pakistan. Viruses were transmitted from the Quetta sanctuary in Pakistan (R4), to Kandahar City and Maywand District. Viruses (R2) detected through AFP environmental surveillance in the Karachi sanctuary in late 2011 were subsequently found in Helmand Province. In 2012, a third cluster (Q3) represents indigenous transmission in Kandahar, Helmand, Uruzgan and Farah Provinces. Q3 virus was last detected on 19 November 2012 in Helmand. There was also evidence of cross-border transmission from Khyber Pakhtunkhwa (KPK), Pakistan, including the most recently confirmed cases (R4, another lineage) in the East Region. Four (11%) of 38 WPV and cVDPV isolates in Afghanistan in 2012 had less than expected genetic linkage to other viruses from Afghanistan, indicating that there may be surveillance gaps at the sub-national level.

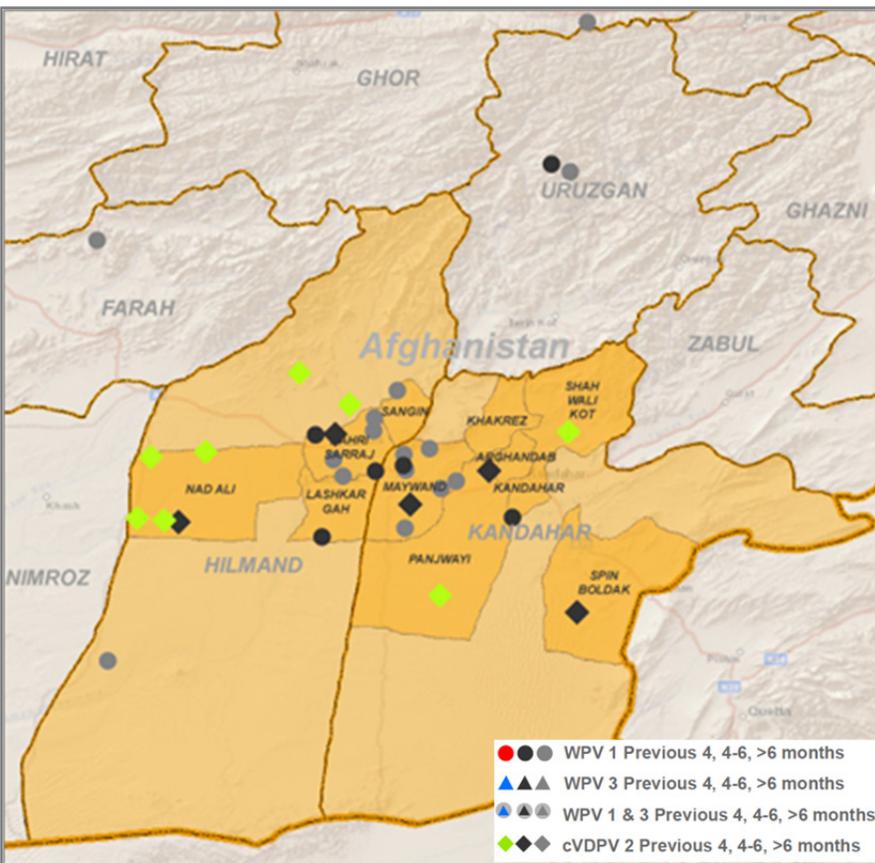
No WPV3 has been detected in Afghanistan since 11 April 2010.

1. Transmission across the border to Afghanistan occurs from three Pakistan sanctuaries; the majority of virus transmission in the country during 2012 was local virus circulation in southern Afghanistan.
2. All WPV cases since November 2012 are related to WPV importation from KPK, Pakistan.
3. No WPV3 detected in Afghanistan since 11 Apr 2010.

POLIOVIRUS SANCTUARIES

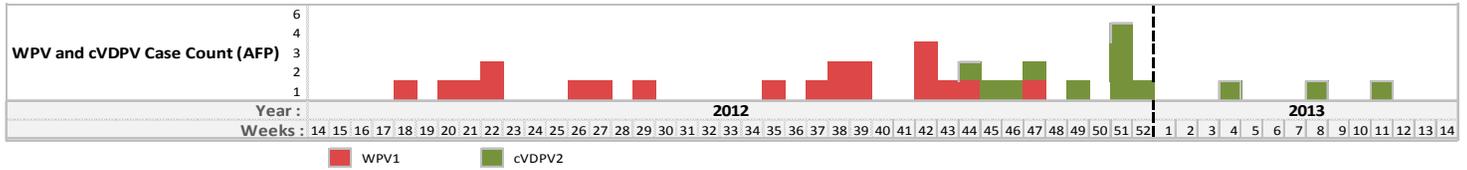
SOUTHERN SANCTUARY

WPV and cVDPV cases April 2012 to March 2013



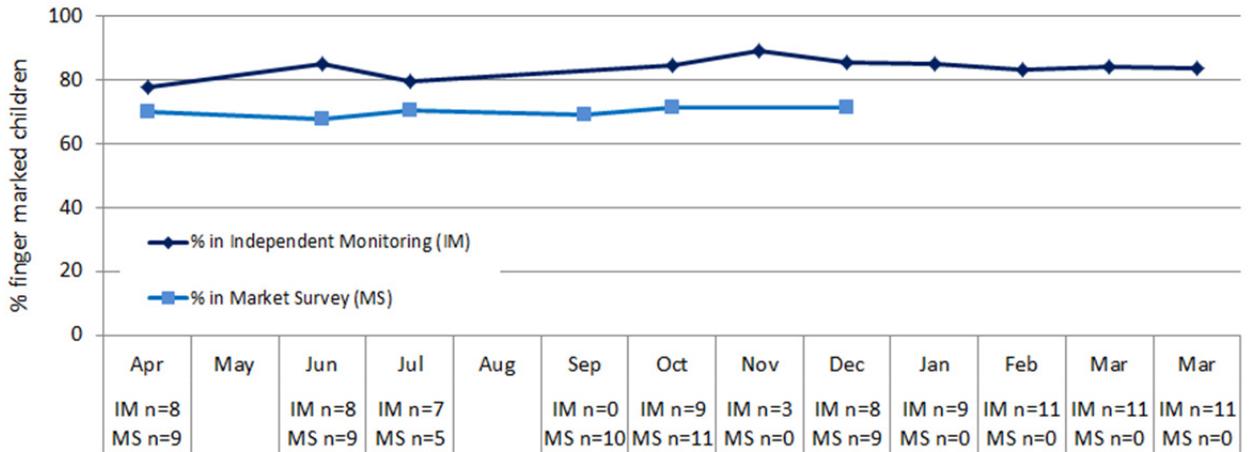
Afghanistan has one virus sanctuary. At the time of this report this sanctuary is defined as 11 LPDs in the South Region. Previously the sanctuary referred to 13 high risk districts; five of these were removed and two new districts were added to the sanctuary. These districts were designated as low performing because of inaccessibility, confirmation of endemic circulation in the last two years, weak or declining SIA quality in 2011 and 2012, low level of awareness of SIAs, and a disproportionately high percentage of young children with non-polio AFP who have never received OPV.

WPV and cVDPV cases by week of onset, South Region and Farah Province, Afghanistan*



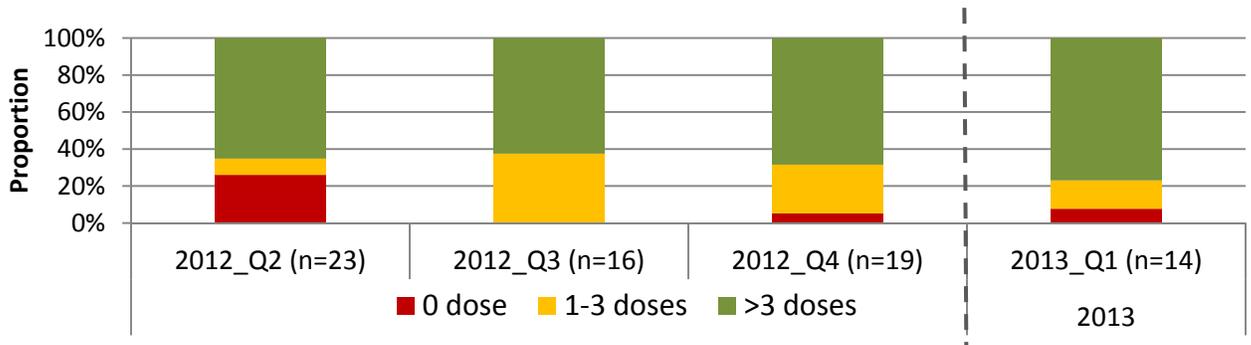
* South region of Afghanistan includes Helmand, Kandahar, Uruzgan, Zabul and Nimroz provinces

SIA independent monitoring (IM) and Market Survey (MS) results, 11 low performing districts

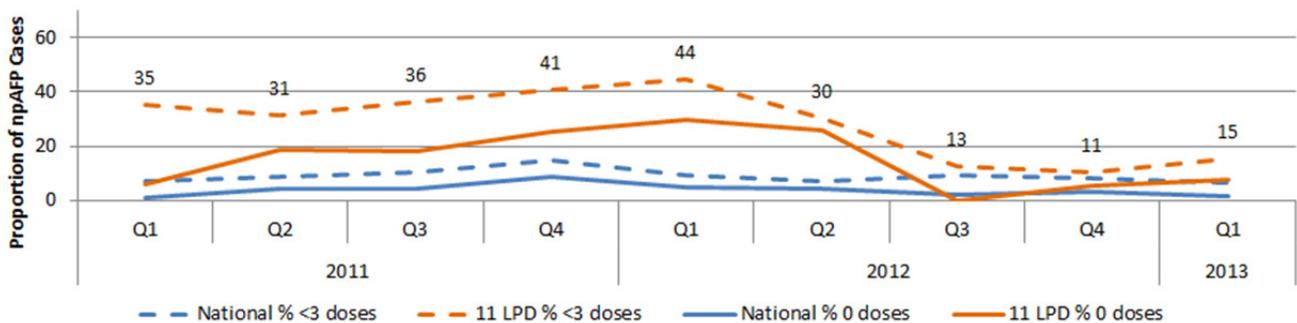


The "n=" numbers shown below each month represent the number of districts for which data are available

Proportion of NPAFP cases 6-35 months, by OPV status, 11 low performing districts



Proportion of NPAFP cases 6-35 months under vaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

PROGRAM INFORMATION

OWNERSHIP

National	Q4 '12	Q1 '13
National EPI Committee Weekly Meetings held with minutes available	Yes	Yes
Polio Policy Dialogue Group Quarterly Meetings held with minutes available	Yes	Yes
President's Quarterly Meeting with Governors held	No	No
Inter-Ministerial Task Force Quarterly Meetings held	Yes	No
Regional	Q4 '12	Q1 '13
Regional/Provincial EPI Management Teams Monthly Meetings held	Yes	Yes

Percent of low performing districts meeting preparedness indicators

Indicator: District Coordination Committee Meetings Held (yes / no)						
Low Performing Districts	Oct '12	Dec '12	Jan '13	Feb '13	Mar '13	Mar '13
Districts participating	8	8	7	7	8	8
Preparedness indicator met	75	88	86	100	38	88
Shahwalikot	Yes	No	No		No	No
Maiwand	No	Yes	Yes	Yes	Yes	Yes
Panjwai	Yes	Yes	Yes	Yes	Yes	Yes
Boldak	Yes	Yes	Yes	Yes	Yes	Yes
Bust (Lashkar Gah)	Yes	Yes	Yes	Yes	No	Yes
Nahesaraj	Yes	Yes	Yes	Yes	No	Yes
Nadali	No	Yes	Yes	Yes	No	Yes
Sangin	Yes	Yes		Yes	No	Yes

Abbreviations: EPI=Expanded Program on Immunization

Source: Afghanistan Campaign Dashboard, WHO-Afghanistan

No campaign No data

Results for 8 or the 11 Low Performing Districts were available at the time of this report

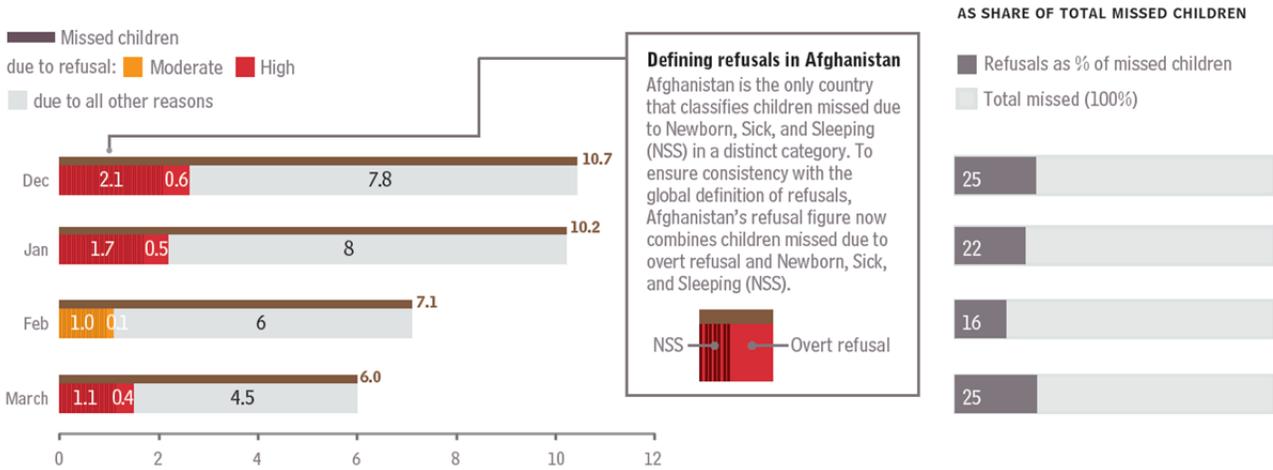
HUMAN RESOURCES

Location (sanctuary)	Number of vaccination teams	Percent of vaccination teams with a female member	Percent of vaccination teams with a local member	Salary per vaccinator / day	Number of current GPEI staff*				Number of additional GPEI staff needed (if surge is planned)
					PEI Coordinator	Provincial Polio Officer	District Polio Officer	Total	
11 Low Performing Districts	1705	6%	100%	\$4.00	2	9	13	23	15

* This does not include the UNICEF supported communication staff which are 15 District Communication Officers and two Provincial Polio Communication Officers in these LPDs while 12 are planned to be hired.

COMMUNITY DEMAND

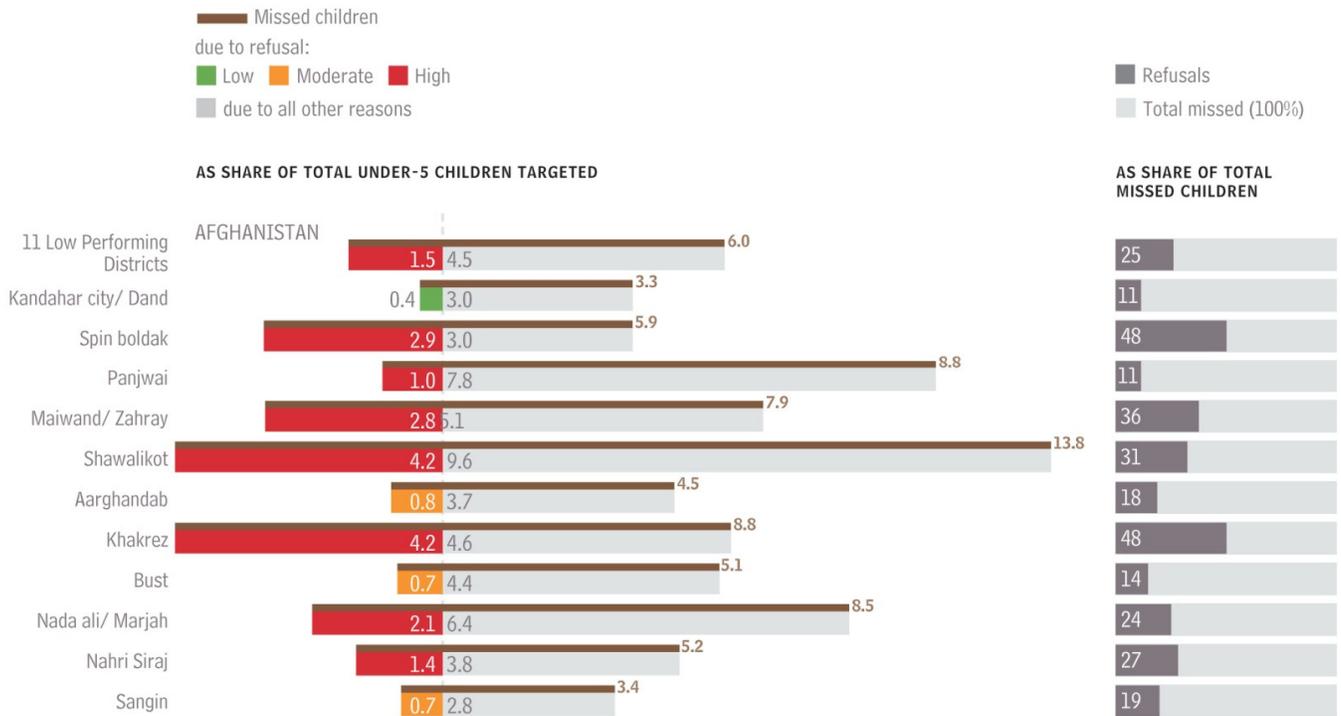
Trends in missed children due to refusal in low performing districts of Afghanistan (%); Dec 12 - Mar 13



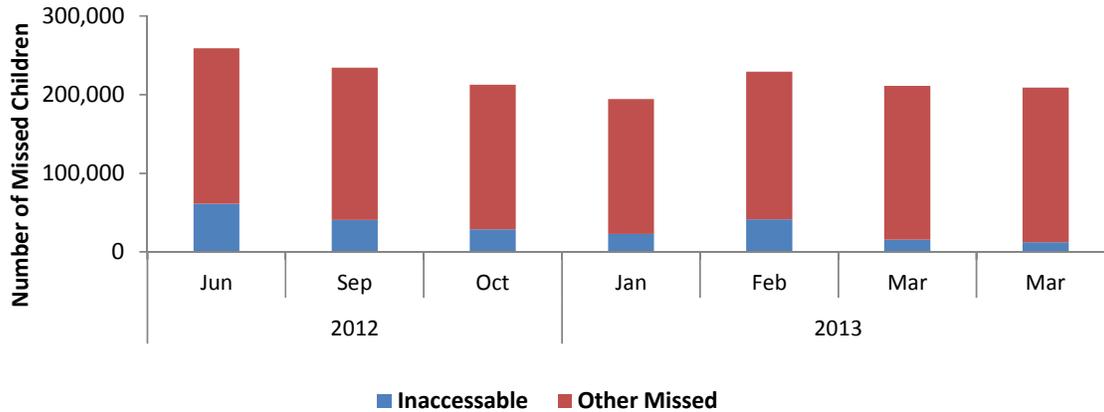
Note: All refusal figures reflect a combination of children missed due to child being sick, newborn, sleeping and overt caregiver refusal. All data reflects accessible areas only. December data reflects accessible areas of the 13 High Risk Districts

In the 11 LPDs, the proportion of children in accessible areas missed due to overt vaccine refusal or caregivers not allowing vaccination of sick, sleeping, or newborn children, has declined as a proportion of targeted children from 2.7% in December 2012 to 1.5% in March 2013. Five districts had proportions above this average in March.

Proportion (%) of children missed due to refusal as measured by independent monitoring, March 2013

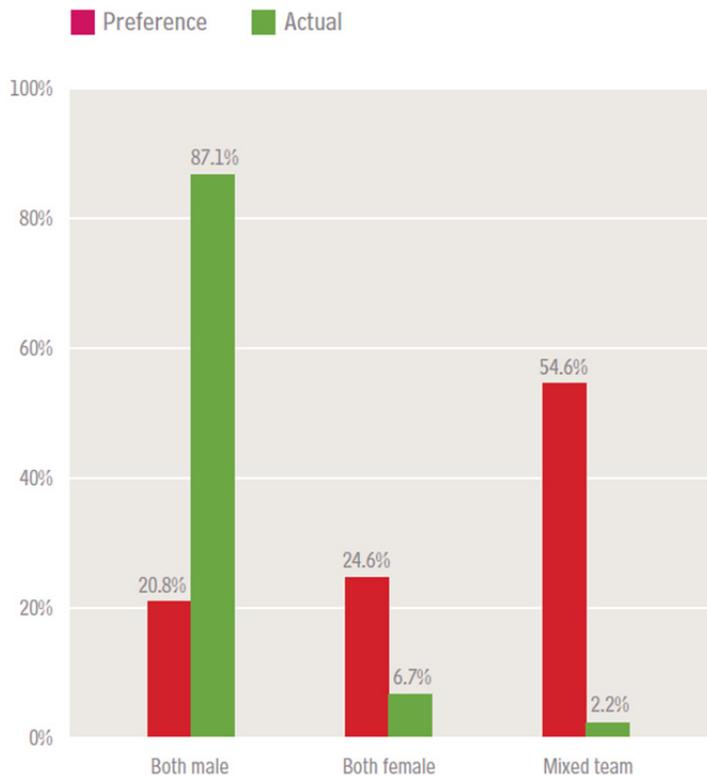


Estimated numbers of children missed due to inaccessibility vs. other causes—11 LPD, Afghanistan, Jun'12–Mar '13



Access to children has improved from June 2012 through March 2013, but the overall number of children missed for programmatic reasons remains high. As a percent of targeted children, inaccessibility has decreased from 9% to 2%.

Caregivers' preference about vaccination team composition in 13 high risk districts as determined by knowledge, attitudes and practices (KAP) survey, Afghanistan, December 2012*

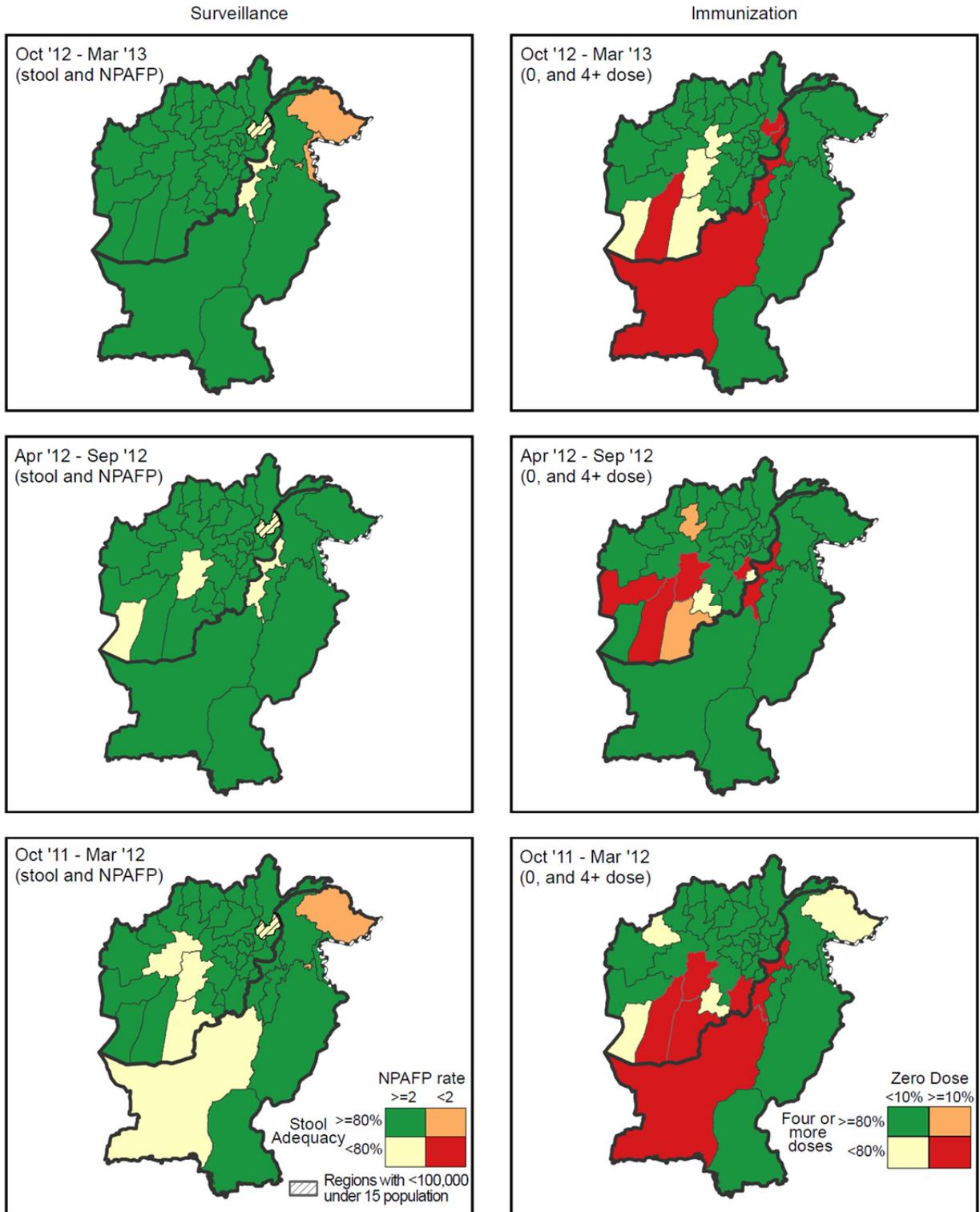


*KAP survey conducted before designation of 11 LPDs

Analysis from Afghanistan's December 2012 KAP study shows that most caregivers surveyed would prefer more women to deliver vaccination services (mostly in mixed gender teams) whereas nearly 90% of the workers currently visiting the households are men, who may not enter households in most areas of the deeply conservative South Region.

PERFORMANCE INDICATORS

Six month annualized standard surveillance and immunization indicators by province among children aged 6-35 months with NPAFP, Afghanistan and Pakistan, October 2011 to March 2013



GPEI GLOBAL EMERGENCY ACTION PLAN 2012-2013 INDICATORS

AREA	ACHIEVEMENT / TARGET	DATE (2012)	RESULTS	STATUS
SIAs, Surveillance, Communication & Social Mobilization	Coverage of >90% in high risk districts in at least 4 of the 8 planned SIAs (national and sub-national).	Not stated	Indicator not met for any of the eight campaigns in 2012. Campaign quality assessments based on market surveys ranged from 77-89%, and based on inside the house monitoring data from 61-69%.	Not met
	Less than 5% of children are inaccessible in each high risk district.	Not stated	The estimated proportion of targeted children who were inaccessible in SIAs has varied. For the 11 low performing districts, there has been a decrease from 9.2% in June 2012 to 1.9% in March 2013, having been <5% overall since October 2012.	Met end-2012
	Polio awareness to increase local engagement, address community concerns and create demand increased to 90% (baseline 50%).	End of 2012	Current status: Campaign awareness increased from 48% to 83% in the HRDs/LPDs in the last year, approaching the target.	Not met
	Zero dose AFP cases reduced by 50%.	Not stated	Among all districts nationally, the proportion of 0-dose NPAFP cases (aged 6-23 months) in 2012 was 4.1% compared to 5.4% in 2011 (base for comparison). For the South Region, these proportions were 19.3% and 14.1%, respectively. It should be noted that in the 11 LPDs, 0-dose cases in NPAFP (aged 6-35 months) decreased from 25% in Q2 of 2012 to <10% in the subsequent quarters.	Not met
	Among all unvaccinated children <10% missed due to "no team visit, sleeping or sick."	Not stated	In the 11 low performing districts, "no team visit" as a % of all unvaccinated children for 2013: January – 23.2%; February – 31%; March – 17%. As a % of all targeted children <5y for 2013: January – 2.3%; February – 2.2%; March – 1.0%. In 2012-2013, the average proportion of missed children due to "newborn, sick or sleeping" is approximately 20% in the 13 high risk districts and 11 low performing districts.	Not met

ANALYSIS

The government of Afghanistan is continuing to implement its national emergency action plan, officially launched in September 2012. In LPDs in the South Region, the program continues to develop and expand the use of "permanent polio teams" and "district emergency management teams." During 2012, there was an overall decrease in unvaccinated children among those with NPAFP within LPDs. Despite these developments, 12 of Afghanistan's 34 provinces failed to achieve rates of >90% of children with >3 doses of OPV among NPAFP cases.

Several indicators suggest steady improvements in social mobilization. In the South Region, the proportion of caregivers aware of polio campaigns increased from 66.9% in July 2012 to 77.6% in March 2013. From December 2012 to March 2013, the proportions of children missed as measured by independent monitoring decreased from 10.7% to 6.0%. The degree to which refusal contributes to non-vaccination in Afghanistan is unclear; among the 11 cases with complete case investigation forms, two occurred in children of refusal families. Collecting this information systematically would aid in analysis.

Ownership indicators have been variable. At the national level, there has been a strong sense of ownership at the Ministry of Public Health, but the Inter-Ministerial Task Force has met only once, and the President has not yet met with governors of priority provinces. Indicators suggest strong ownership at the provincial level, but preparedness indicators suggest variable levels of ownership at the district level. Unfortunately, one reflection of limited accountability is that an increasing proportion of children targeted are missed not because they cannot be accessed but because of managerial and operational problems to implement SIAs with sufficient quality.

Afghanistan is believed to have a single endemic zone, centered in Kandahar and Helmand in the South Region of the country. During the high transmission season (the second half of the calendar year), there are typically WPV importations from neighboring Pakistan, mostly into provinces near the border. However, these importations have not established new zones of long-term endemicity, suggesting that for the time being, immunity levels outside of the endemic South Region are sufficient to interrupt transmission.

In the South Region, the most recent WPV occurred on 19 November 2012, raising the prospect that interruption of endemic WPV transmission in Afghanistan may be approaching. However, substantial gaps in routine and supplementary immunization, as well as in surveillance, remain.

Afghanistan will continue to receive importations of WPV as long as WPV transmission continues in Pakistan. The five WPV cases that have occurred in Afghanistan since 19 November 2012 have all been reported in provinces bordering the KPK and FATA sanctuaries in Pakistan.

cVDPV2s have continued to emerge in the South Region of Afghanistan, with virologic evidence of cross-border transmission with the Quetta Block of Pakistan, totaling 13 reported cases since October 2012. These cases highlight low routine vaccination coverage in both of these sanctuaries. There is evidence of long-standing undetected cVDPV2 transmission during 2011-2012 in the WPV sanctuary area.

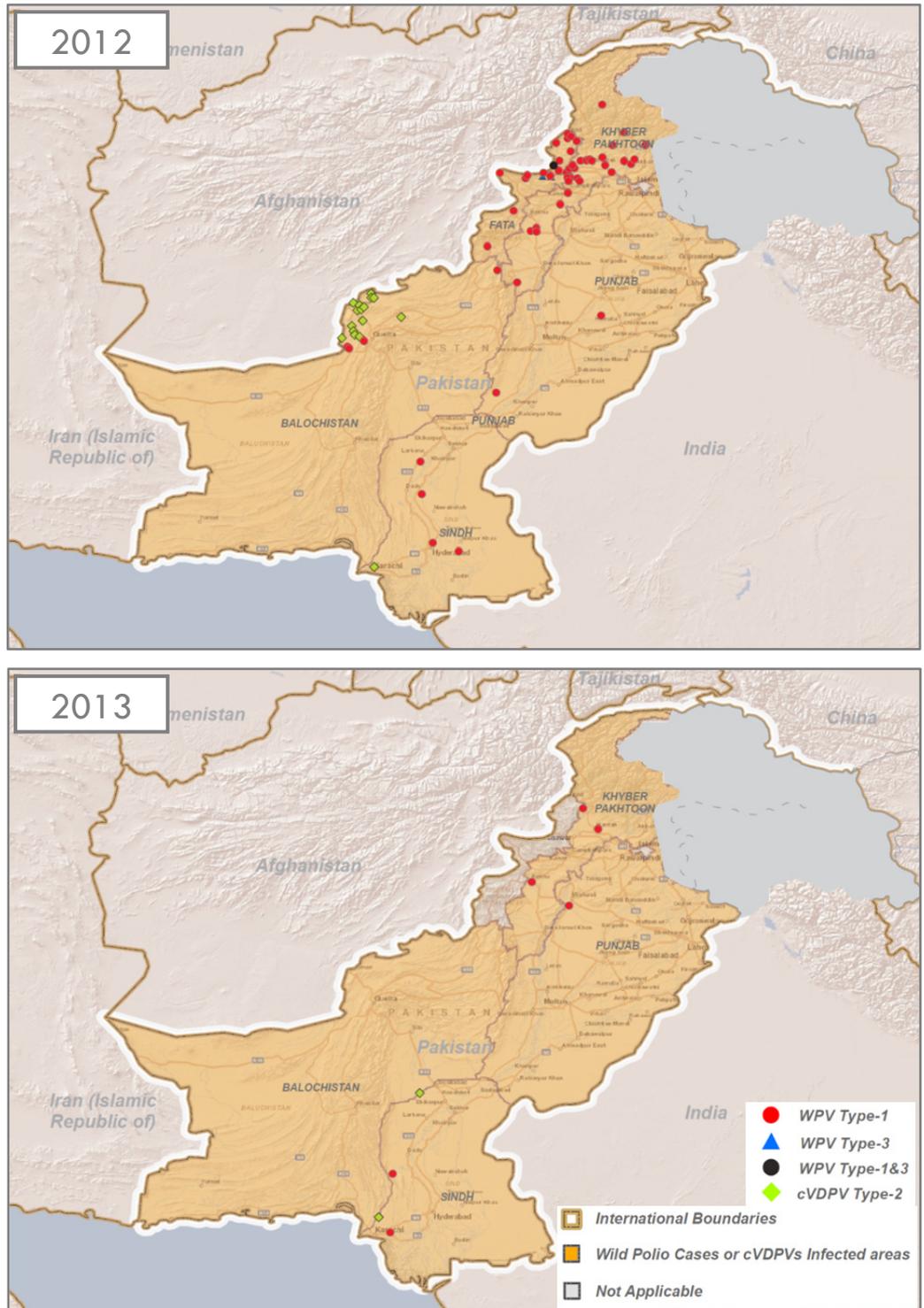
CONCLUSIONS

- **Epidemiology:** Case counts were decreased 54% in 2012 compared with 2011, and so far in 2013, case counts have decreased even further. The last reported case of WPV in the endemic zone occurred on 19 November 2012. WPV3 has not been detected in more than 3 years. cVDPV2s have emerged as a problem in Kandahar and Helmand.
- **Immunization:** Non-polio AFP data from the endemic South Region suggest improvements in vaccination coverage during 2012. However, the emergences of cVDPV2 highlight continued weaknesses in the routine immunization system in this region.
- **Surveillance:** AFP performance indicators and virologic data suggest surveillance gaps.
- **Ownership:** At the national level, indicators suggest strong ownership within the Ministry of Public Health but weaker ownership elsewhere. Ownership is strong at the provincial level but variable at the district level.
- **Community demand:** Vaccine refusal is substantial according to independent monitoring, accounting for 25% of missed children in March among all 11 LPDs, and representing >2% targeted children in five districts.

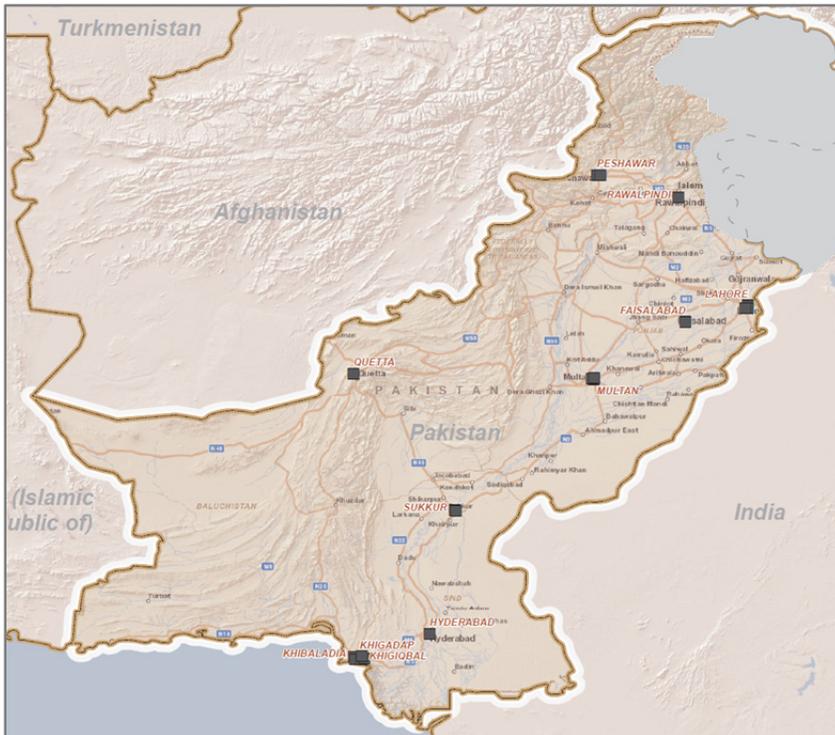
PAKISTAN

NATIONAL POLIO OVERVIEW

The number of WPV cases in Pakistan decreased from 198 in 2011 to 58 in 2012. During 2013 to date, there have been 6 cases compared with 15 for the same time period in 2012, with most cases occurring in Khyber Pakhtunkhwa (KPK). Although environmental surveillance in Pakistan also indicated a decrease in overall intensity of circulation by the end of 2012, there was evidence of continued transmission in the sanctuaries of FATA/KPK, Quetta and southern Sindh and some cities of Punjab. SIAs primarily have been utilizing bOPV during the reporting period; short-interval additional dose SIAs (an additional round 10 days later) have been conducted in the highest-risk areas since 2011. SIAs were temporarily suspended in some areas of Pakistan after targeted attacks occurred against health workers in December 2012; law enforcement has supported the security of vaccination teams in those areas since then. The quality of SIA implementation, as determined by LQAS, showed progressive improvement during 2012 but some quality deterioration in 2013, particularly in Quetta. Since August 2012, cases of cVDPV2 have been detected in Balochistan and Sindh that represent new emergence and transmission in 2011, with substantial delays in detection, indicating both weak routine immunization coverage and gaps in AFP surveillance in the recent past.



2012 - 2013 environmental surveillance sampling sites



As of April 2013, environmental surveillance is being conducted in 23 sites throughout the country, including in 3 of the 4 poliovirus sanctuaries (all but FATA). In 2011, 136 of 204 (67%) samples were positive. In 2012, this had decreased to 87 of 239 (36%). So far in 2013, 10 of 53 (19%) have been positive, compared with 21 of 39 (54%) during the same time period in 2012.

VIROLOGY

(See map on Page 3)

Four genetic clusters of WPV1 were represented in specimens from polio cases and environmental specimens in 2012 (R2, R3, R4, R5). More than half of the viruses from polio cases were from a single cluster with multiple chains of transmission, scattered throughout the country (R4). In all instances where WPV1 was detected, there was evidence of local transmission. In the Quetta sanctuary in

Baluchistan and the FATA and KPK sanctuaries, cross-border transmission into Afghanistan also occurred. Viral genetic diversity and levels of virus circulation were highest in KPK. WPV1 had been isolated from Quetta environmental sites during most months in 2011 and through February 2012. For 41 weeks in 2012, environmental specimens from Quetta tested negative for WPV. WPV1 was isolated from Quetta environmental specimens in weeks 48 and 52 of 2012 that were of the same lineage as earlier isolates from these sites, and closely related to virus from a June 2012 polio case in Quetta, indicating that this lineage was circulating undetected in the vicinity. Of note, virus from the most recent Balochistan case (October 2012) was most closely related to these Quetta viruses, although the genetic linkage was less than what would have been expected with effective surveillance. The frequency of detection of WPV from some environmental sites in Quetta and Karachi (Karachi-Baldia and Karachi-Gulshan-e-Iqbal) declined in late 2012 and early 2013, compared with the previous twelve months. No WPV has been detected in three environmental sites in Multan, one site in Faisalabad, and one site in Lahore in Punjab, nor in two sites in Sukkur in northern Sindh since September 2012. Samples from sites in Rawalpindi, Punjab and southern Sindh remained persistently positive after September, particularly Hyderabad in Sindh. Peshawar environmental surveillance indicates persistent transmission through 2013. Although no WPV1 from polio cases was detected in the high-risk towns of Karachi (Gadap, Baldia, and Gulshan-e-Iqbal) in 2012, WPV1 was isolated from environmental samples from Karachi sites during much of 2012 and a related polio case occurred elsewhere in southern Sindh in September.

No WPV3 viruses have been detected in environmental specimens since October 2010. WPV3 was detected in three polio cases in early 2012 in a small area in FATA, where the cluster was endemic in 2010–2012. These three viruses represent two chains of transmission of a single cluster.

The potential for surveillance gaps exists at the sub-national level, as evidenced by a few chains of transmission that were detected only from environmental surveillance (particularly in Hyderabad, southern Sindh) and a significant

proportion of WPV3 isolates with much less genetic linkage than expected during 2012. However, the percentage of WPV1 isolates with much less genetic linkage than expected has declined from 21% in 2009 to 5% in 2012.

1. WPV1 circulation decreased in 2012 compared with 2011, especially in the Quetta and Karachi sanctuaries.
2. Viral genetic diversity and levels of virus circulation were highest in KPK in 2012.
3. No WPV3 viruses have been detected in environmental specimens since October 2010.

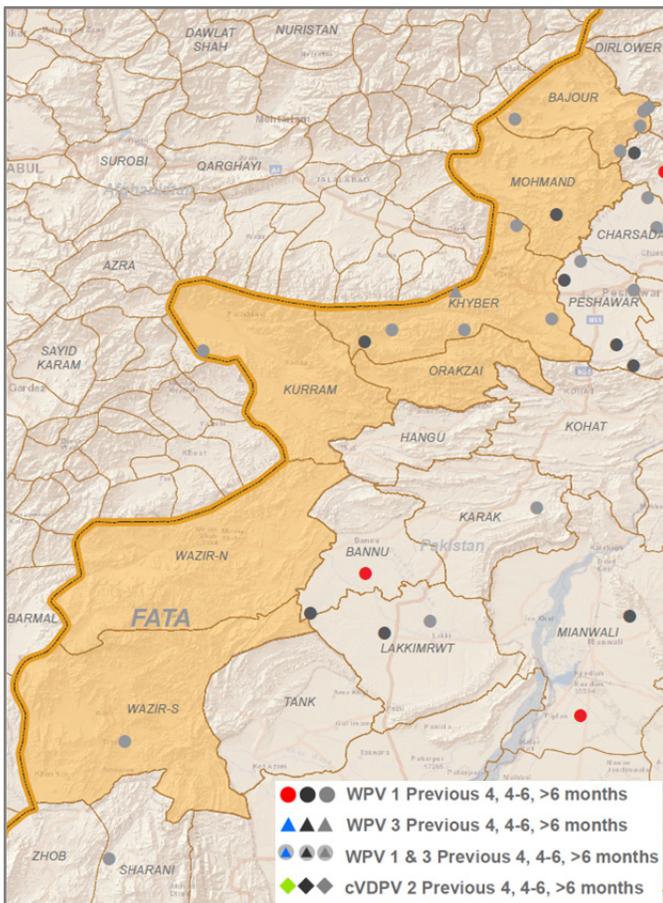
POLIOVIRUS SANCTUARIES

At the time of this report, Pakistan has four virus sanctuaries:

1. Federally Administered Tribal Areas (FATA)
2. Khyber Pakhtunkhwa province (KPK)¹
3. Karachi area, the three high-risk towns of Baldia, Gadap, and Gulshen-e-Iqbal
4. Quetta area, the three high-risk districts of Quetta, Killa Abdullah, and Pishin

FATA POLIOVIRUS SANCTUARY

WPV cases April 2012 to March 2013



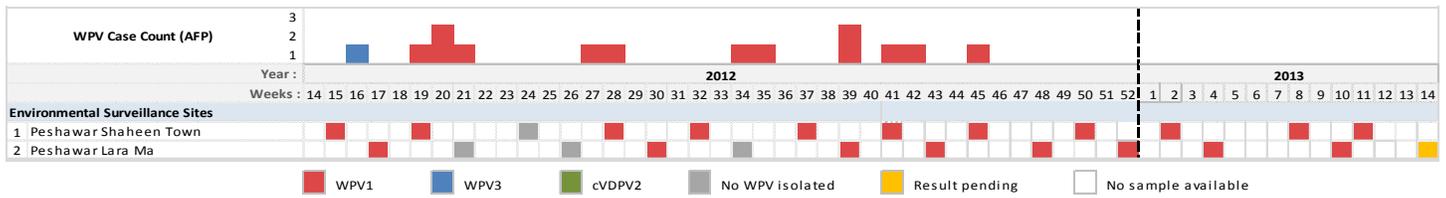
Lot quality assurance sampling (LQAS) surveys provide an assessment of SIA quality through a limited sample obtained from random cluster sampling. The original criteria applied in LQAS surveys (prior to 2012) in Nigeria and Pakistan overstated SIA quality. Guidelines developed by WHO with other GPEI partners in 2012 provide updated decision rules (“new”) that allow for a more accurate assessment of SIA quality. Although the 2012 criteria have been applied in Nigeria and elsewhere in the African Region, Pakistan continued to apply the original (“old”) criteria. LQAS results for Pakistan using the new and old criteria are shown here. Security concerns have limited LQAS sampling in some key high-risk areas in December 2012 to present.

Notes regarding LQAS

- Pakistan has used decision rules of 5, 7 and 16 for samples of five clusters of 10 children (50) and six clusters of 10 (60) for testing at thresholds of 95%, 90% and 80%. These rules result in very large type I (alpha) errors under the assumption of moderate variability in cluster-level results, leading to a high likelihood of overstating SIA quality.
- Decision rules of 0, 2, and 6 for sample sizes of 50; 0, 3, and 8 for sample sizes of 60 provide a more reasonable quality assessment at 95% (**High Pass**), 90% (**Pass**) and 80% (**Low**) thresholds (or **Fail** if below) for programmatic purposes under the same assumption of variability.

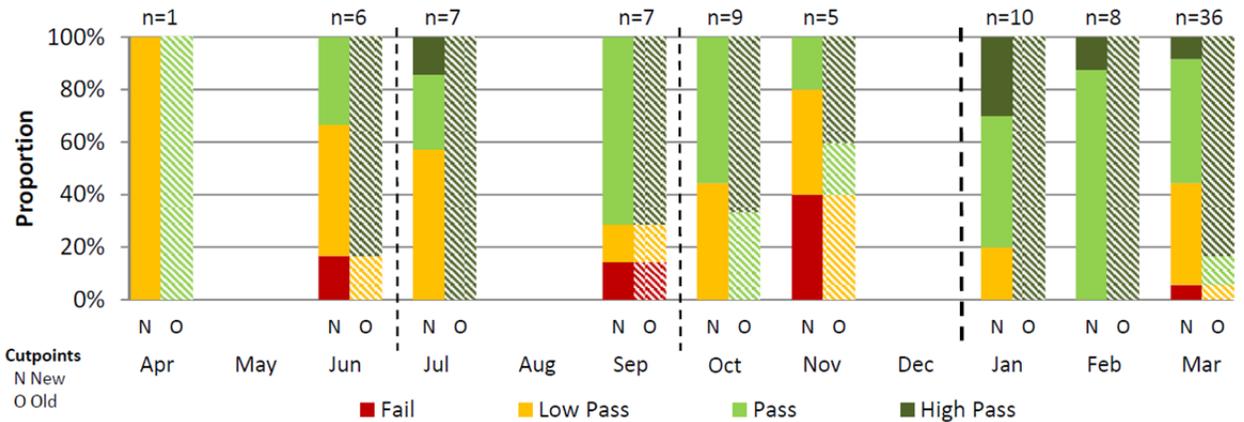
¹ The core sanctuary within KPK consists of 4 districts: Peshawar, Nowshera, Mardan and Charsadda. Most of the data reported below (except where indicated) are from the entire KPK rather than these four districts specifically.

WPV cases by week of onset and environmental surveillance results, FATA sanctuary



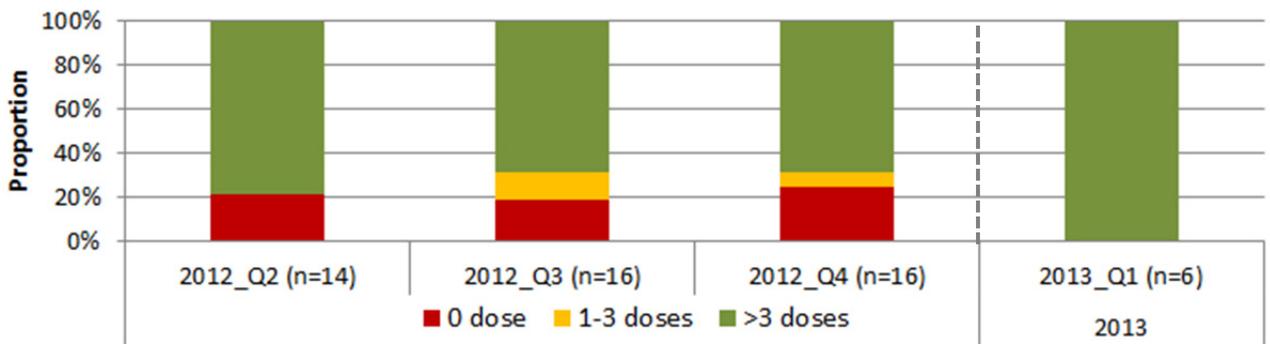
Note: both sites are located in neighboring Peshawar

Proportion of Union Councils with LQAS survey results by SIA, FATA sanctuary

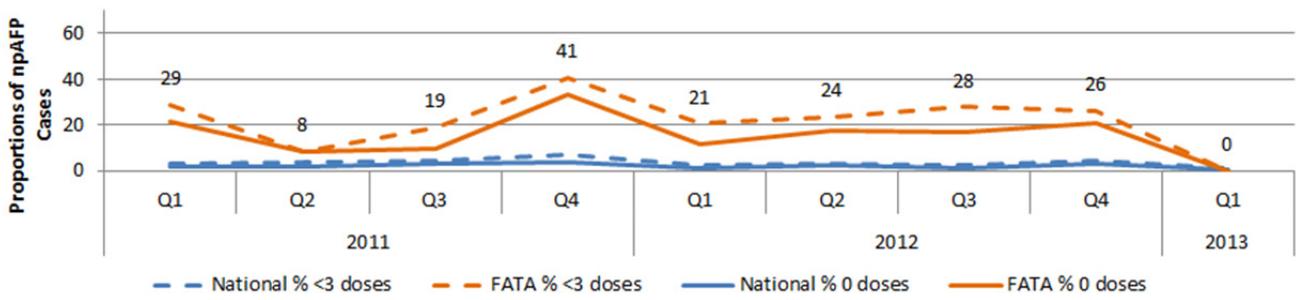


* Old cutpoint criteria overestimated SIA quality (see report annex for additional analyses)

Proportion of NPAFP cases 6 to 35 months, by OPV status, FATA sanctuary



Proportion of non-polio AFP cases 6-35 months under vaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

OWNERSHIP

Percent of Union Councils with indicators met for each campaign

FATA Sanctuary	Jun '12	Jul '12	Sep '12	Oct '12	Dec '12	Jan '13 R1	Jan '13 R2	Feb '13	Mar '13	Apr '13
UPEC meeting held	71	82	98	81	79					
UPEC chaired by UCMO	68	82	97	81	79					
Microplan Validated	84	91	99	100	100	99		99	100	100

Percent of Teams with indicators met for each campaign										
≥1 Government member	74	85	88	96	93	94		93	95	94
≥1 Local member	85	95	100	100	99	99		99	100	100
≥ 1Female member	16	23	14	25	23	13		13	13	16

Abbreviations: UPEC=Union Council Polio Eradication Committee

UCMO=Union Council Medical Officer

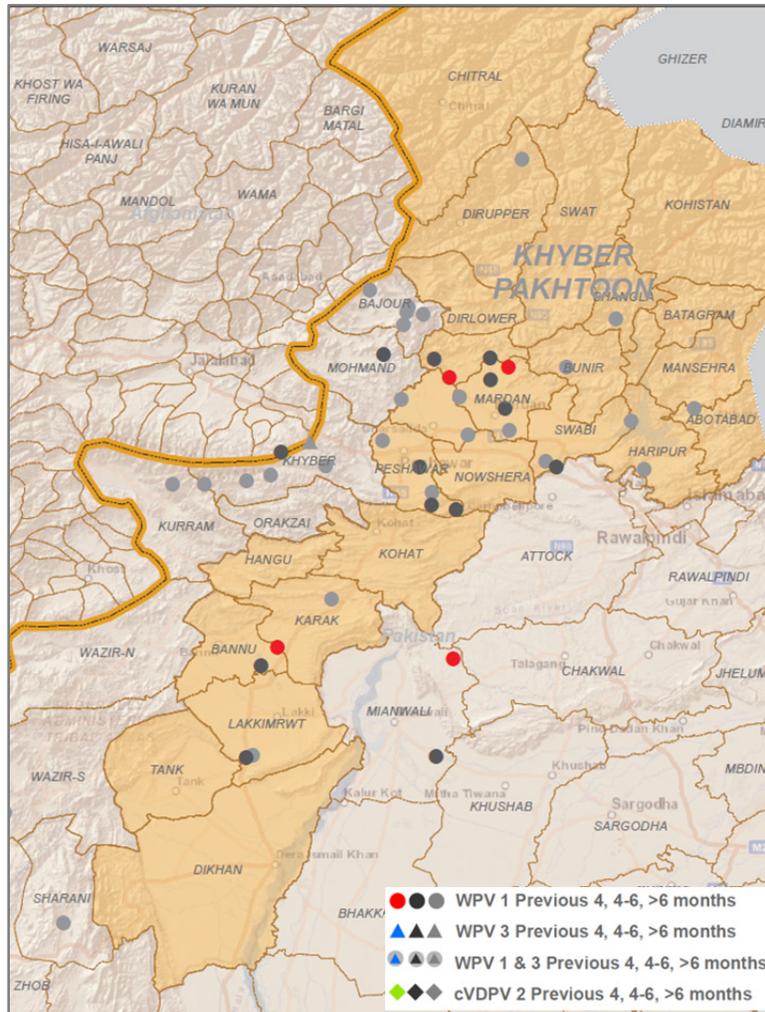
Source: Pakistan National Emergency Action Plan Indicators, WHO-Pakistan

No campaign

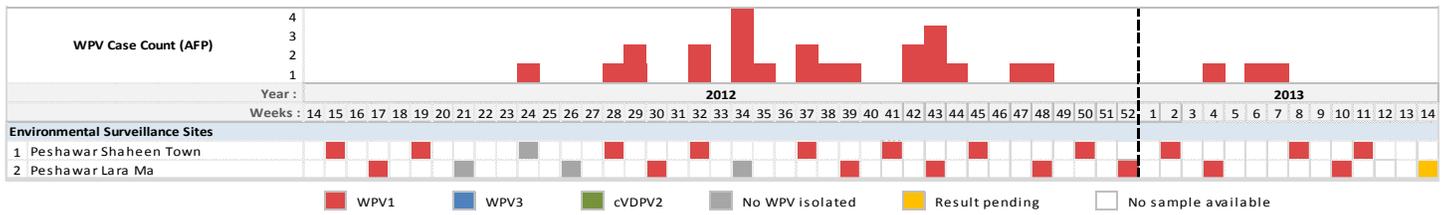
No data

KHYBER-PAKHTUNKHWA SANCTUARY

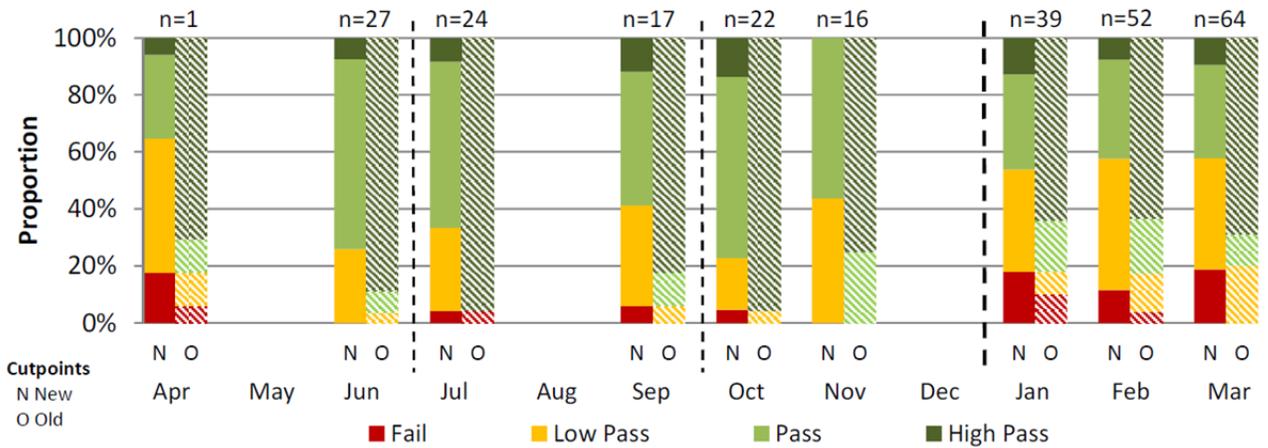
WPV cases April 2012 to March 2013



WPV cases by week of onset and environmental surveillance results, KPK sanctuary

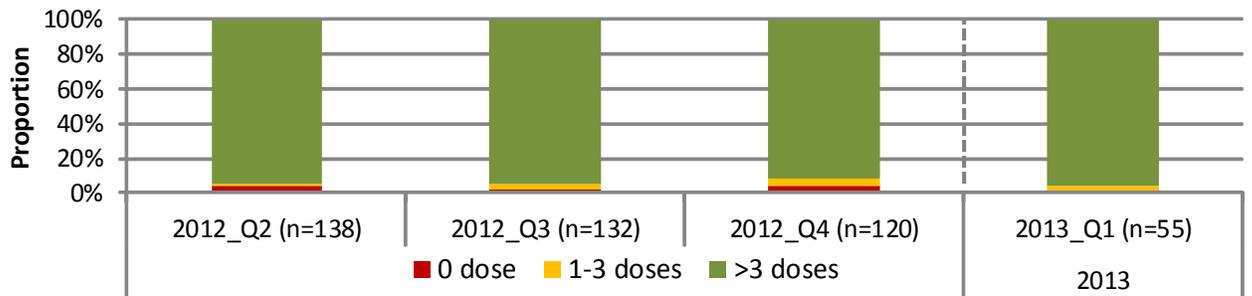


Proportion of Union Councils with LQAS survey results* by SIA, KPK sanctuary

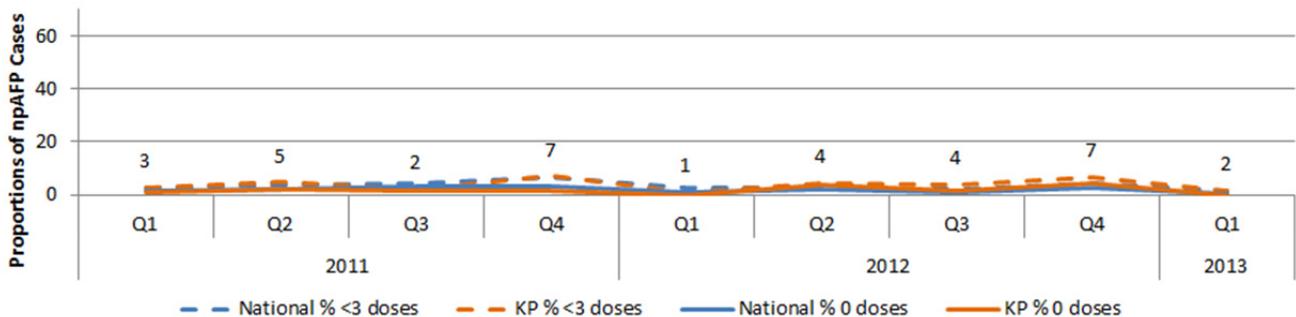


* Old cutpoint criteria overestimated SIA quality (see report annex for additional analyses)

Proportion of NPAFP cases 6 to 35 months, by OPV status, KPK sanctuary



Proportion of non-polio AFP cases 6-35 months under vaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

OWNERSHIP

Percent of Union Councils with indicators met for each campaign

KP Sanctuary	Jun '12	Jul '12	Sep '12	Oct '12	Dec '12	Jan '13 R1	Jan '13 R2	Feb '13	Mar '13	Apr '13
UPEC meeting held	70	76	67	74	64	99	74	53	56	77
UPEC chaired by UCMO	69	76	67	74	64	99	74	68	83	77
Microplan Validated	50	53	58	64	56	98	68	72	90	75

Percent of Teams with indicators met for each campaign										
Government	61	62	68	68	55	92	60	65	88	74
Local	63	62	68	69	56	97	64	67	90	75
Female	51	44	51	60	44	61	51	50	68	49

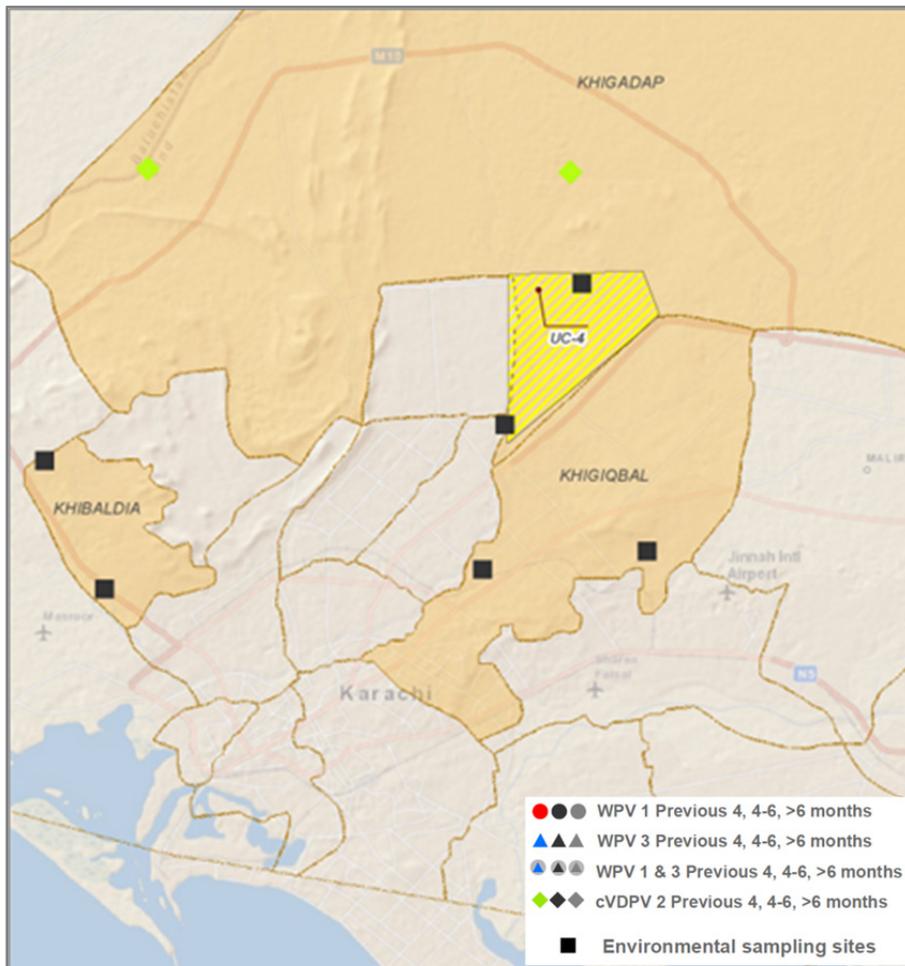
Abbreviations: UPEC=Union Council Polio Eradication Committee
 UCMO=Union Council Medical Officer

No campaign
No data

Source: Pakistan National Emergency Action Plan Indicators, WHO-Pakistan

KARACHI POLIOVIRUS SANCTUARY

WPV cases and environmental surveillance results April 2012 to March 2013



OWNERSHIP

Percent of Union Councils with indicators met for each campaign

Sindh	Jun '12	Jul '12	Sep '12	Oct '12	Dec '12	Jan '13 R1	Jan '13 R2	Feb '13	Mar '13	Apr '13
UPEC meeting held	87	100	99	100	96		96	100	88	95
UPEC chaired by UCMO	88	99	99	100	96		97	100	88	100
Microplan Validated	100	98	98	100	100		96	100	96	100

Percent of Teams with indicators met for each campaign										
≥ 1 Government member	96	98	97	98	98		95	99	95	98
≥ 1 Local member	98	99	98	99	99		96	100	95	99
≥ 1 Female member	92	94	95	95	95		91	96	94	94

Abbreviations: UPEC=Union Council Polio Eradication Committee

UCMO=Union Council Medical Officer

Source: Pakistan National Emergency Action Plan Indicators, WHO-Pakistan

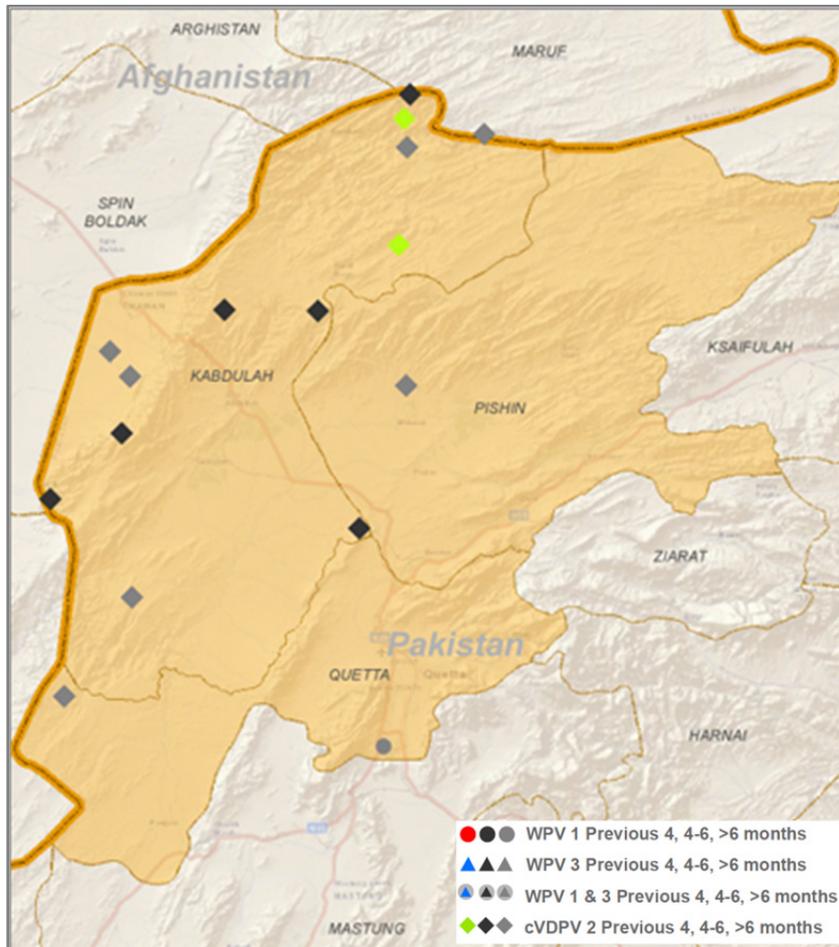
No campaign

No data

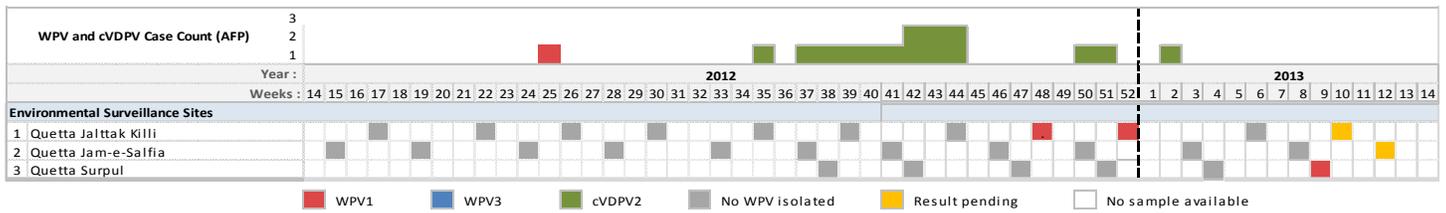
Data shown above are for all of the Sindh Province

QUETTA POLIOVIRUS SANCTUARY

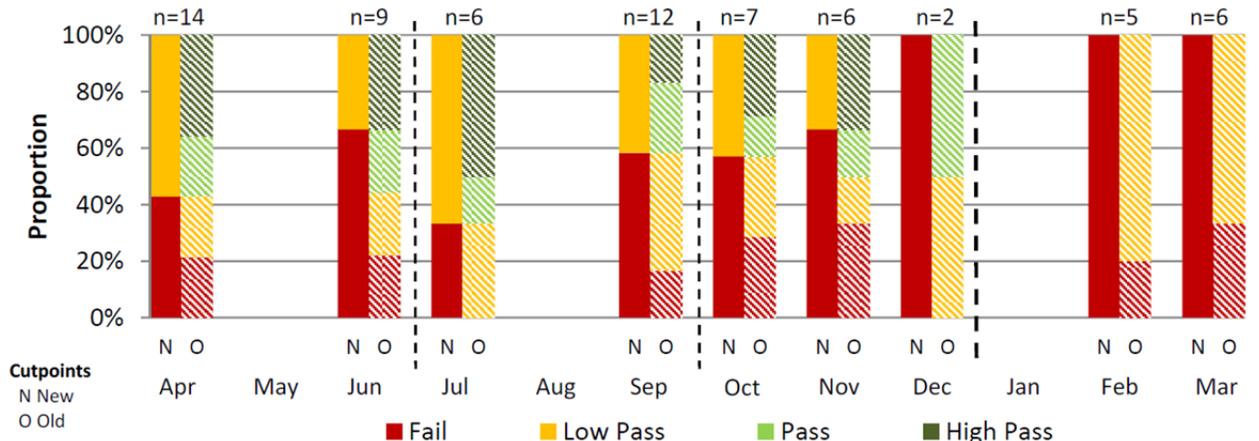
WPV and cVDPV2 cases April 2012 to March 2013



WPV cases by week of onset and environmental surveillance results, Quetta sanctuary

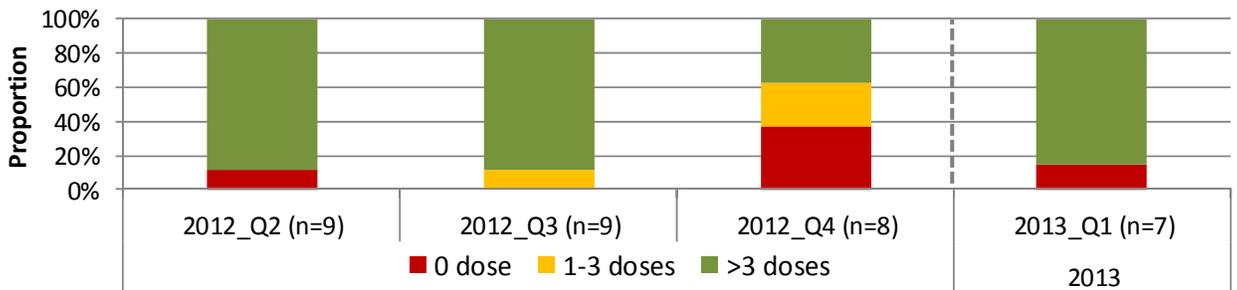


Proportion of Union Councils with LQAS survey results* by SIA, Quetta sanctuary

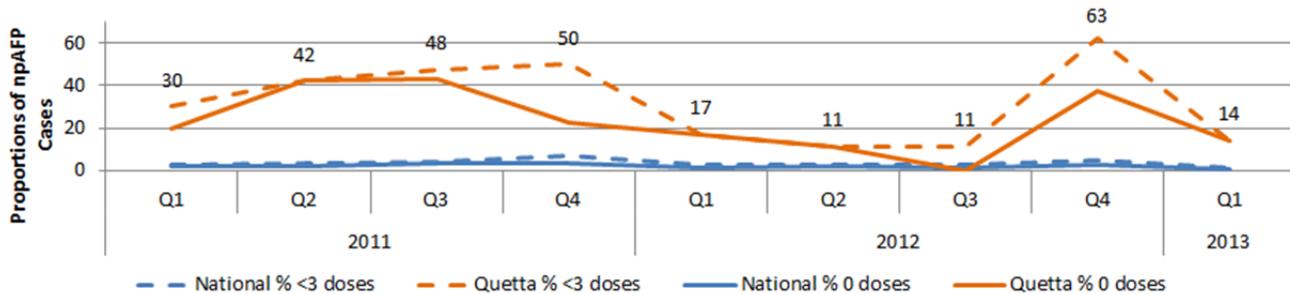


* Old cutpoint criteria overestimated SIA quality (see report annex for additional analyses)

Proportion of NPAFP cases 6 to 35 months, by OPV status, Quetta sanctuary



Proportion of non-polio AFP cases 6-35 months under vaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

OWNERSHIP

Percent of Union Councils with indicators met for each campaign

Balochistan	Jun '12	Jul '12	Sep '12	Oct '12	Dec '12	Jan '13 R1	Jan '13 R2	Feb '13	Mar '13	Apr '13
UPEC meeting held	71	86	99	92	94	89		99	96	85
UPEC chaired by UCMO	82	75	97	85	96	91		99	96	81
Microplan Validated	41	44	68	58	83	79	100	99	97	82
Percent of Teams with indicators met for each campaign										
≥ 1 Government member	64	67	69	52	53	56	13	63	62	62
≥ 1 Local member	89	88	99	72	61	67	26	93	90	81
≥ 1 Female member	96	56	61	30	37	46	28	63	60	42

Abbreviations: UPEC=Union Council Polio Eradication Committee

UCMO=Union Council Medical Officer

No campaign

No data

Source: Pakistan National Emergency Action Plan Indicators, WHO-Pakistan

Data shown above are for all of the Balochistan Province

PROGRAM INFORMATION

HUMAN RESOURCES

Location (sanctuary)	Total number of house to house vaccination teams	Percent of house to house vaccination teams with at least one female member	Percent of house to house vaccination teams with a local member	Salary per vaccinator / day *
FATA**	2,179	14%	99%	\$2.50
KP (province)	13,022	75%	97%	\$2.50
KP (High risk districts: Peshawar, Charsadda, Mardan, Nowshera, Lakki Marwat)	4,242	91%	100%	
Karachi (High risk towns: Baldia, Gadap, and Gulshen-e-Iqbal)	1,380	96%	99%	
Quetta (Districts: Quetta, Killa Abdullah, and Pishin)	1,534	57%	90%	

* Base salary was increased by 100 PKR (approximately \$ 1.00) in 2012. Depending upon the region the vaccinators may receive additional funds as a security incentive or provincial pledge supplement.

** Accessible areas only

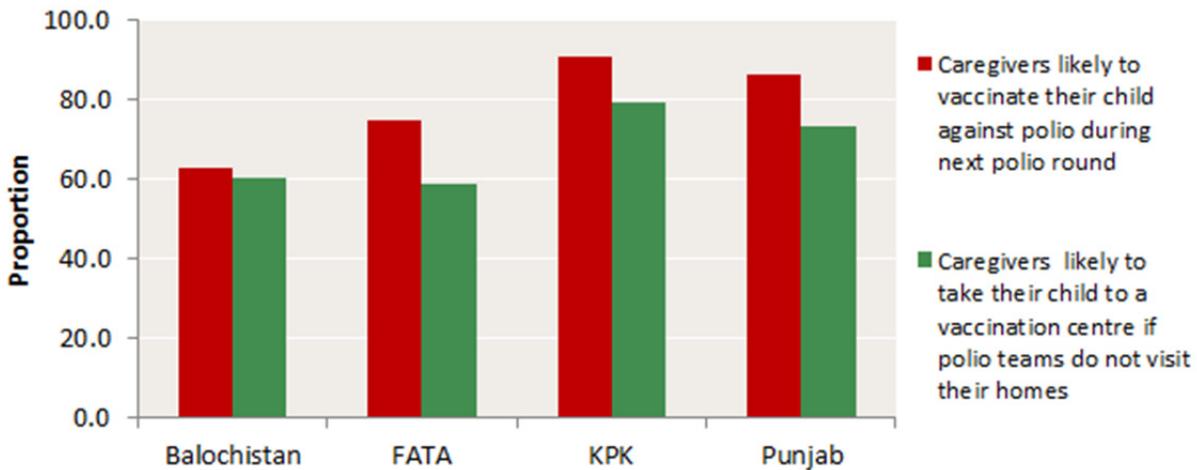
COMMUNITY DEMAND

Missed children due to refusal as a proportion of targeted and total missed children (%), March 2013



Refusal, a rare reason for missed children in Pakistan, is highest in Karachi (1.5% of targeted children in March). In administrative data from the four districts surrounding Peshawar, there have been rising numbers of refusals since October 2012. The proportion of refusals cited as due to religious reasons is increasing.

Community demand for OPV in high risk areas of Pakistan (%), August 2012



Source: UNICEF supported KAP study

UNICEF funded KAP data from 2012 shows that caregivers' intent to vaccinate was high in August 2012.

PERFORMANCE INDICATORS

GPEI GLOBAL EMERGENCY ACTION PLAN 2012-2013 INDICATORS

AREA	ACHIEVEMENT / TARGET	DATE (2012)	RESULTS	STATUS
SIAs, Surveillance, Communication & Social Mobilization	Data on preparation and implementation indicators for SIAs available at district, province and national level.	End January		Met
	Enhanced partnership implementation of SIAs introduced in persistently under-performing areas.	End January		Met
	Launch of media campaign to mobilize wide-spread national and localized support for the eradication effort.	End January	Media campaign was launched in March 2012, reaching over 100 million people with messages each month.	Met (in March)
	Minimum 90% of all LQAS lots in key under-performing districts (Quetta, Killa Abdullah, Pishin in Baluchistan; Gulshan Iqbal, Gadap, and Baldia in Karachi; Thatta in Sindh) will be accepted at greater than 90% coverage.	End March	LQAS assesses SIA quality and is not a direct measure of coverage. Using 2012 criteria, 11% of assessed lots from these districts were accepted at the 90% threshold in March 2013, compared to 0% in March 2012. (Country analyses use pre-2012 criteria, which over-estimate SIA quality. Using these insensitive pre-2012 criteria, in Mar 2012, 48% of lots from these districts were accepted at the "90% threshold".)	Not met
	Poliovirus transmission interrupted in Punjab and northern Sindh.	End March	As late as September, WPV was repeatedly isolated in environmental surveillance samples from northern Sindh (Sukkur) with genetic linkages to WPV isolated in 2011, indicating ongoing transmission. Although virus detection frequency has decreased dramatically, WPV1 detection indicating local transmission continued at least to mid-2012 in Punjab (Lahore and Rawalpindi).	Not met
	Minimum 80% of all LQAS lots assessed nationally in every SIA accepted at greater than 95% coverage.	End March	Using 2012 criteria, 6.1% of all assessed lots were accepted at the 95% threshold using 2012 criteria in March 2013 compared to 3.8% in March 2012. (Country analyses use pre-2012 criteria, which over-estimate SIA quality. Using these insensitive pre-2012 criteria, in March 2012, 24% of lots from these districts were accepted at the "95% threshold".)	Not met

GPEI GLOBAL EMERGENCY ACTION PLAN 2012-2013 INDICATORS (PAKISTAN CONTINUED)

AREA	ACHIEVEMENT / TARGET	DATE (2012)	RESULTS	STATUS
SIAs, Surveillance, Communication & Social Mobilization	Poliovirus transmission interrupted in KP, all accessible areas in FATA, and southern Sindh (except Karachi).	End July	Transmission continues in all accessible areas as evidenced by environmental sampling.	Not met
	WPV3 transmission interrupted nationally.	End July	Most recent case had onset 18 Apr 2012; an additional period of one month is necessary to test all specimens in process. However, the orphan frequency for PAK WPV3 2012 was 67% (two out of three viruses), which means that known surveillance gaps for FATA may persist or be worsening.	Possibly Met
	Refusals in Khyber Pakhtunkhwa (KP), FATA and southern Sindh are <5% of missed children.	End July	Percent missed due to refusals in those areas equals 3.7%. <i>Refusals in FATA and Sindh are <5% of missed children as of March 2013. In KP, refusals are 7%.</i>	Met (Jul round)
	At least 85% of caregivers in key under-performing districts of Balochistan and Sindh believe that OPV is safe.	End July	Indicator met in Balochistan (January round – 93.7%) and in Sindh (January round – 90.7%). <i>However, overall, 85% of caregivers in highest risk districts believe OPV is safe. In Balochistan it is 74% of caregivers, in Sindh it is 93%, and in FATA it is 70%.</i>	Met (Jan 2012)
	Poliovirus transmission interrupted in Karachi and in Quetta block.	End October	AFP and environmental surveillance continue to detect ongoing WPV transmission in both areas through January (Quetta) or February (Karachi) 2013.	Not met
	Mechanisms in place to access > 90% of children in SIAs in FATA.	End October	<i>Do not have the data.</i>	
	Environmental and AFP surveillance demonstrate both genetic and geographical restriction of WPV1 in the high transmission season.	End October	Environmental and AFP surveillance indicates that, although the intensity of transmission may be decreased, all involved provinces continue to have evidence of continued WPV transmission. It is too early to assess if genetic diversity remained restricted.	Not met
	Refusals in Quetta Block and Karachi are <5% of missed children.	End October	The proportion of refusals in Karachi is 17% as of March 2013. Quetta Block data are not available due to lack of reliable IM, which has been affected by insecurity.	Not met
	Cessation of all WPV transmission in Pakistan.	End 2013		Not yet met

ANALYSIS

Pakistan made impressive gains in SIA performance during 2011 and into 2012, and appeared to have an opportunity to interrupt WPV1 transmission in 2013. However, a series of targeted attacks against polio workers beginning at multiple sites in December 2012 (earlier in Karachi) has placed that opportunity in serious jeopardy. As of late April 2013, the program appears to have maintained gains overall, with case counts even lower than in 2012, but with cases early in the season in KPK.

In total, assailants have killed 14 polio workers and three law enforcement officers assigned to protect them, most recently on April 10th. The perpetrators and their motives are unclear. In response to this violence, the program has made many operational changes, including greatly enhancing security and conducting less visible, less synchronized and more focused SIAs. Although the program has gone to impressive lengths to adapt to this threat, the effectiveness of security measures will always be limited in such an environment and SIA quality has deteriorated in key locations.

The program has reported a decrease in AFP reporting since last year, from approximately 400 cases per month to about 300 per month currently. The reasons for this decrease are not clear.

The KPK sanctuary presents the greatest challenge to the program, and both AFP and environmental surveillance show ongoing transmission, particularly in four districts near the city of Peshawar (Peshawar District, Charsadda, Mardan, and Nowshera). Environmental surveillance has been almost continuously positive for WPV1. Vaccination teams face greater security threats in KPK than in any other part of Pakistan. These threats are present over a large geographic area, limiting what can be done to mitigate them. LQAS surveys were stopped in Karachi after the December killings, further limiting the ability of the program to monitor campaign quality. At this point in time, AFP surveillance shows no discernible trend in vaccination status among NPAPF cases, but three of four sanctuaries report low number of cases each quarter. Vaccine refusal, particularly for religious reasons, has been rising since October in the four districts around Peshawar.

In FATA, North and South Waziristan remain inaccessible to the program. While FATA saw an impressive decline in polio incidence last year, a growing cohort of unvaccinated children in inaccessible areas of FATA is cause for concern.

Similarly, while Balochistan continues to have a number of very concerning indicators suggesting poor vaccination performance, transmission appeared to be markedly suppressed during most of 2012 in its core transmission zone, the Quetta Block. AFP and environmental surveillance continue to be encouraging in this regard. Of note, Balochistan has made extensive use of short-interval additional doses (SIADs) between December 2011 and the end of 2012.

Lastly, Karachi and southern Sindh remain concerning. In Karachi, vaccine refusals have increased to 1.5%. However, the small number of cases in Karachi in the past year and the improving environmental surveillance results are encouraging. Although security threats are substantial in Karachi, they are most intense in union council four (UC4) of Gadap. The limited geographic area of this union council has permitted the program to implement elaborate security measures to assure the safety of workers there in a way that may not be feasible in KPK.

Vaccine refusal continues to be a relatively small problem in Pakistan overall, but remains a concern in concentrated pockets of KPK and Karachi. The proportion of WPV cases that occurred in refusal families decreased from 26% in 2011 to 12% in 2012 (7 of 58 cases). So far in 2013, 2 of 6 (33%) cases occurred in refusal families.

WPV3 was last detected in Pakistan (in FATA) on April 18 2012 and has not been detected in environmental samples since October 2010.

cVDPVs have emerged as a problem in the Quetta Block and across the border in southern Afghanistan, highlighting poor routine immunization coverage in both areas.

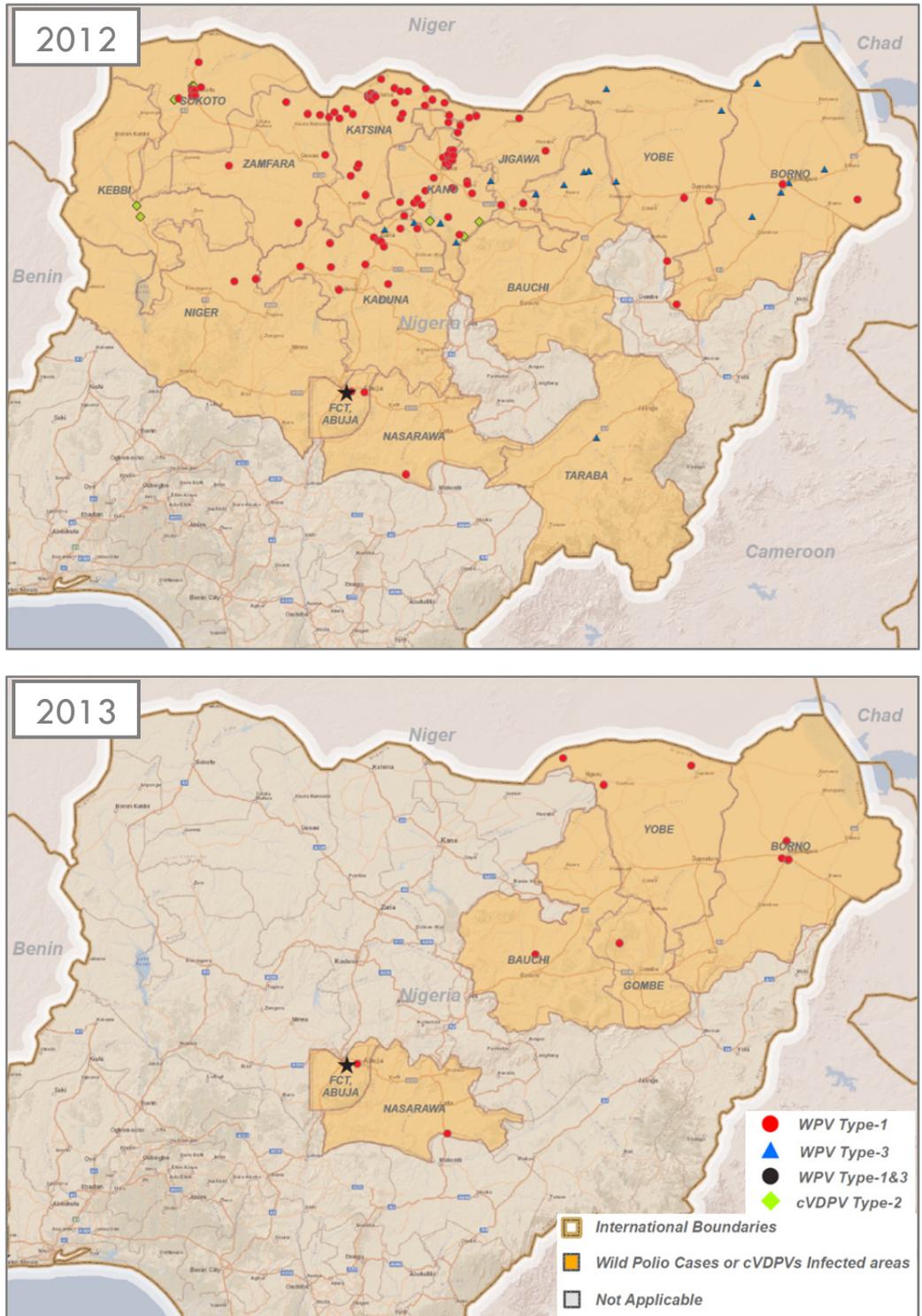
CONCLUSIONS

- **Epidemiology:** KPK is now the most active zone of WPV1 transmission. Environmental surveillance continues to be intermittently positive in many parts of the country. Despite the challenges posed by serious security threats, there have been few WPV1 cases outside of KPK in the last 6 months. WPV3 has not been detected in more than a year and may have been eliminated from Asia.
- **Immunization:** Although the program has indisputably made large progress in the past two years, immunization indicators remain suboptimal in some key high-risk areas.
- **Surveillance:** Environmental surveillance continues to detect chains of transmission not found in AFP surveillance, suggesting gaps in surveillance. However, rates of detection of distantly related “orphan” viruses are substantially decreased from what they were 3 years ago.
- **Ownership:** Indicators of ownership are generally positive but lag in both Balochistan and KPK compared with other provinces.
- **Community Demand:** While refusals remain low on the whole, there are signs that refusals are increasing in Peshawar and surrounding cities, as well as Karachi. Caregivers’ intent to vaccinate if vaccinators come to their door is high; and remains high even if they must go to a health center to receive OPV.

NIGERIA

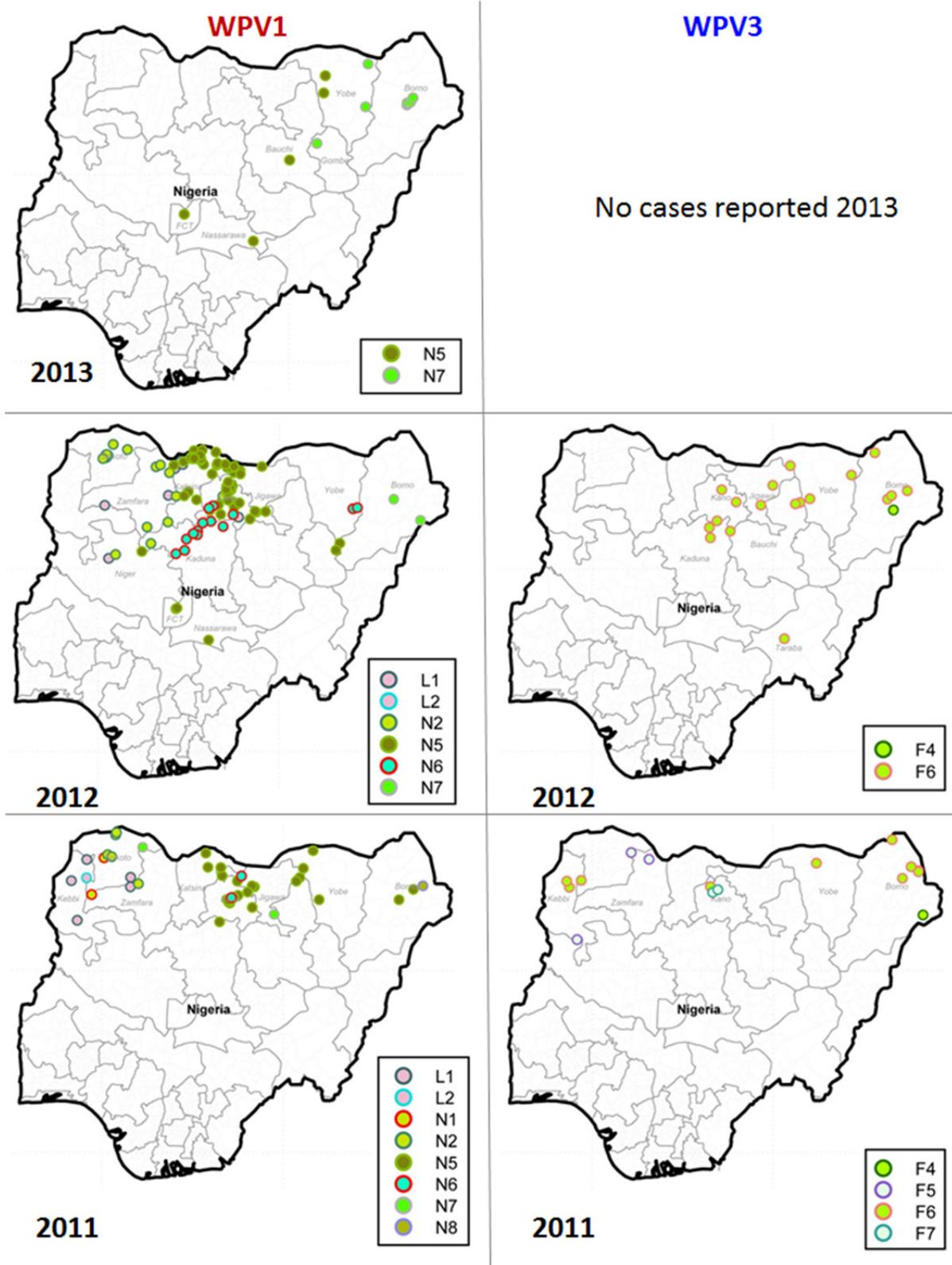
NATIONAL POLIO OVERVIEW

The number of WPV cases in Nigeria increased from 60 in 2011 to 122 in 2012. During 2013, there have been 14 WPV1 cases confirmed so far, compared with 24 WPV cases (17 type 1 and 7 type 3) during the same time period in 2012. Since December, the focus of transmission has shifted from the North Central zone to the Northeast zone. SIAs have primarily used bOPV during the reporting period. SIAs were temporarily suspended in some areas after targeted attacks against health workers in early February 2013. Although vaccination has continued under increased security, some LGAs in the Northeast sanctuary have yet to conduct further SIAs. The quality of SIA implementation, as determined by LQAS surveys, showed progressive improvement during 2012 but no further improvement since end-2012. A prolonged cVDPV2 outbreak has been ongoing since 2006; cases continued to be detected through November 2012, and there has been continued isolation of cVDPV2 in the environmental samples collected in Sokoto in 2013. There is substantial virologic evidence of gaps in AFP surveillance.



VIROLOGY

Wild poliovirus type 1 (WPV1) and type 3 (WPV3) by genetic cluster, Nigeria, 2011–2013 to date*



* Data as of 19-Apr-13. See report annex for comments about interpretation of phylogenetic clusters.

The WPV1 in Nigeria in 2013 and 2012 represents continued transmission from the very large outbreak in 2008. After a substantial decline in the genetic diversity of WPV1 strains from 21 clusters in 2009 to four clusters in 2010, the number of clusters increased to eight in 2011 with enough diversity to designate a new genotype (WEAFB2). The genetic diversity of the WPV1 virus chains of transmission has changed little from 2011 to 2012 (cluster designation for 2012 has not yet occurred).

Each of the three sanctuaries (Northwest, North Central, and Northeast) harbors viruses from specific clusters and lineages, although there is transmission between adjacent sanctuaries. No WEAFFB2 virus (clusters L1, L2) has been detected since September 2012. All viruses detected since then have been WEAFFB1. In 2013, viruses from two clusters have been detected to date. One cluster (N5) was found in areas inside and outside the North Central sanctuary and another cluster (N7) was found only in the Northeast sanctuary. The latter cluster has expanded dramatically in diversity in the past 4 months. No WPV cases have been detected in the Northwest sanctuary in 2013. However, WPV1 most closely related to strains from the North Central and Northeast sanctuaries has recently been isolated from an environmental sample taken from Sokoto. In 2012, WPV1 viruses from 3 clusters were detected in the Northwest sanctuary, viruses from 4 clusters were detected in the North Central sanctuary, and 3 clusters were represented in the Northeast sanctuary. Viruses from the Federal Capital Territory (FCT) in 2013 were from two different lineages of the N5 cluster, suggesting two separate introductions into the region, one from Katsina and a second from Yobe.

Genomic sequence analysis indicates surveillance gaps, including some chains of WPV transmission during 2012 and 2013 not detected for more than a year. Four viruses from AFP cases from four different states (Borno, Gombe, Bauchi and FCT) in 2013 had less genetic linkage than expected with sensitive AFP surveillance. The Northeast sanctuary had the lowest number of confirmed WPV cases but had a higher proportion of viruses with much less genetic linkage than expected with sensitive AFP surveillance than the other sanctuaries. The percentage of WPV1 isolates nationally with much less genetic linkage than expected declined substantially from 88% in 2010 to 13% in 2012. In the first quarter of 2013, however, the percentage has increased to 33% (4 of 12).

The WPV3 in Nigeria during 2012 represent continuation of a large, widespread outbreak in 2009. The genetic diversity of the WPV3 chains of transmission in 2011 was reduced somewhat along with the number of cases; four genetic clusters in 2011 were detected compared with six in 2010. Although the genetic diversity did not change substantially in 2012, WPV3 lineages circulating in Northwest sanctuary / Kebbi in 2011 (F5, F7) were not detected in 2012. All 2012 viruses except for one were from a single cluster (F6); the single virus in the other cluster was from an AFP case from January 2012 in Borno (F4). In 2012, the North Central sanctuary (Kano and Kaduna) harbored two lineages from one cluster (F6), whereas the Northeast sanctuary (Borno and Yobe) had a separate lineage from the same cluster, with spread to Taraba. WPV3 was isolated from only one specimen collected in Kano environmental sites and one each in two Lagos sites in 2012. The significant proportion (4 of 19, 21%) of WPV3 isolates with much less genetic linkage than expected during 2012 indicates surveillance gaps at the sub-national level.

1. All three poliovirus serotypes circulated in Nigeria in 2012.
2. After a substantial decline in the genetic diversity of WPV1 strains from 2009 to 2010, genetic diversity increased during 2011-2012.
3. Virologic data indicate remaining gaps in AFP surveillance.

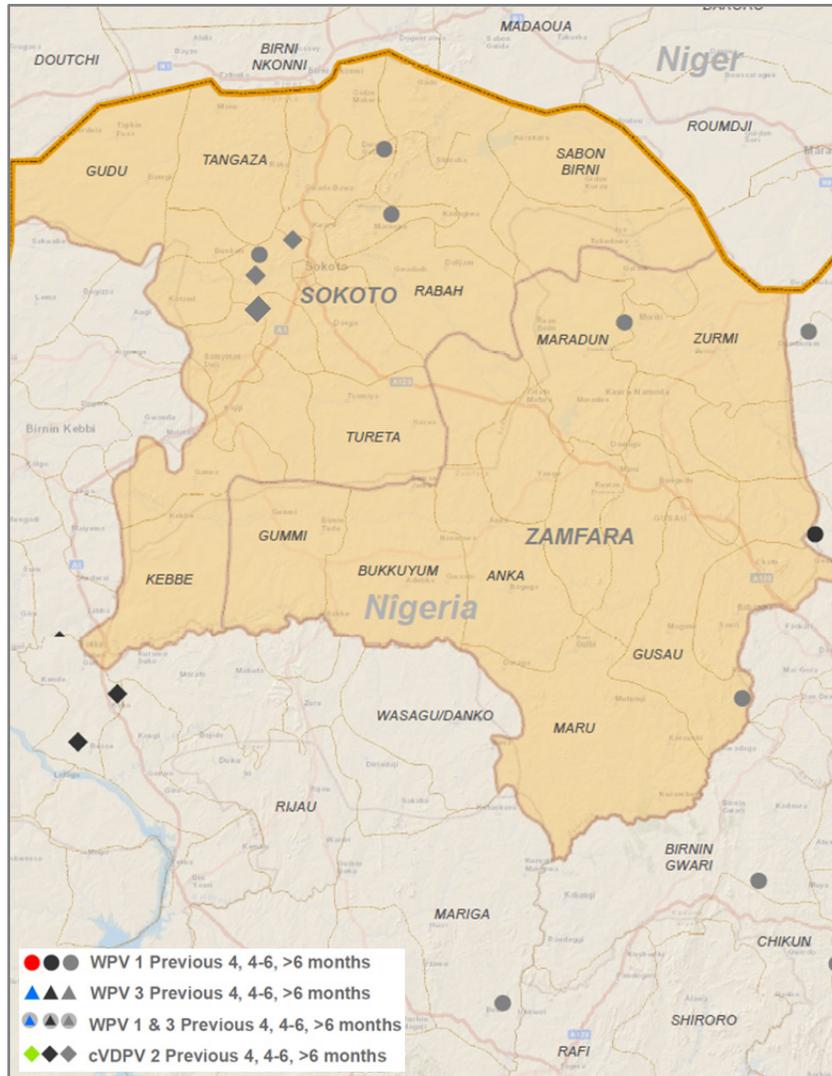
POLIOVIRUS SANCTUARIES

Nigeria has three virus sanctuaries, at the time of this report they are defined as:

1. Northwest (Sokoto and Zamfara)
2. North Central (Kano, Katsina, Jigawa, and Kaduna)
3. Northeast (Borno and Yobe)

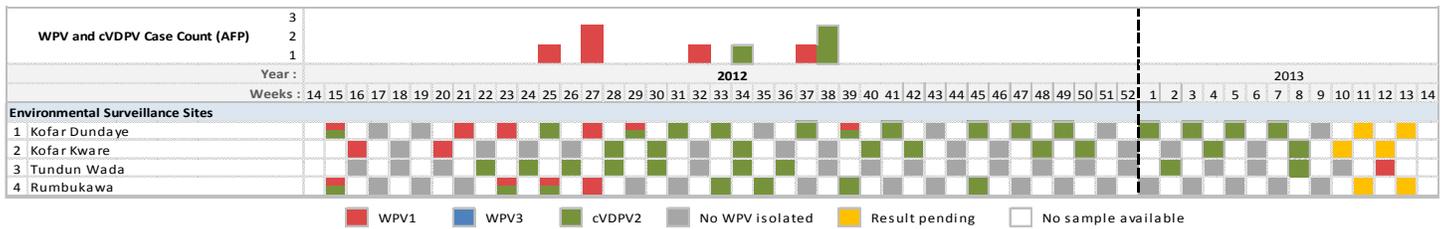
NORTHWEST SANCTUARY

WPV and cVDPV2 cases April 2012 to March 2013

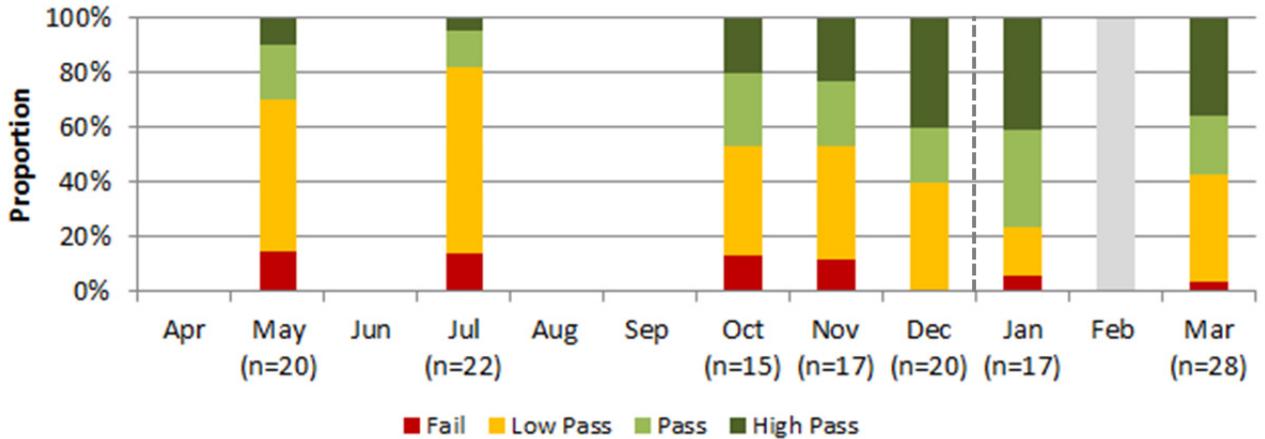


Notes regarding Nigeria's LQAS survey results (see next page). Decision rules of 3, 8, and 19 for sample sizes of 60 in Nigeria provide a reasonable assessment of SIA quality at 90% (**High Pass**), 80% (**Pass**) and 60% (**Low**) thresholds (or **Fail** if below) for programmatic purposes under the assumption of moderate variability in cluster-level results. These surveys do not allow accurate statements about vaccination coverage.

WPV cases by week of onset and environmental surveillance results, Northwest sanctuary

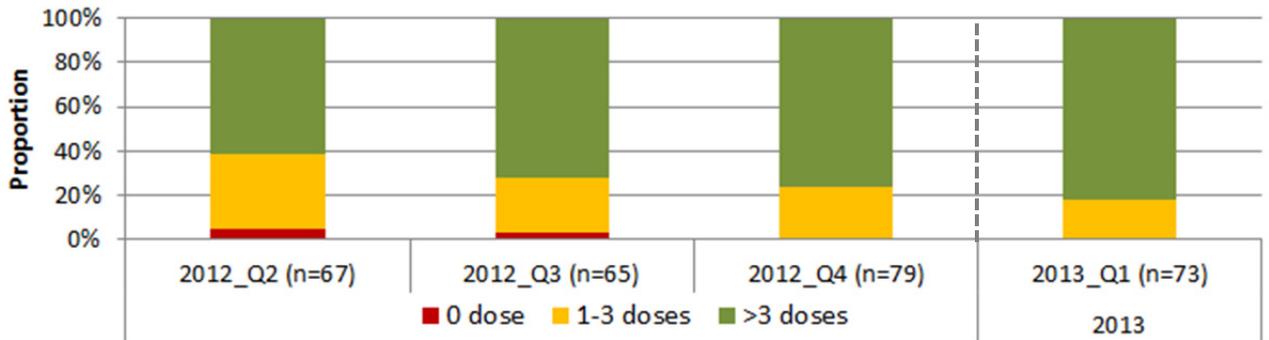


Proportion of LGAs with LQAS survey results by SIA, Northwest sanctuary

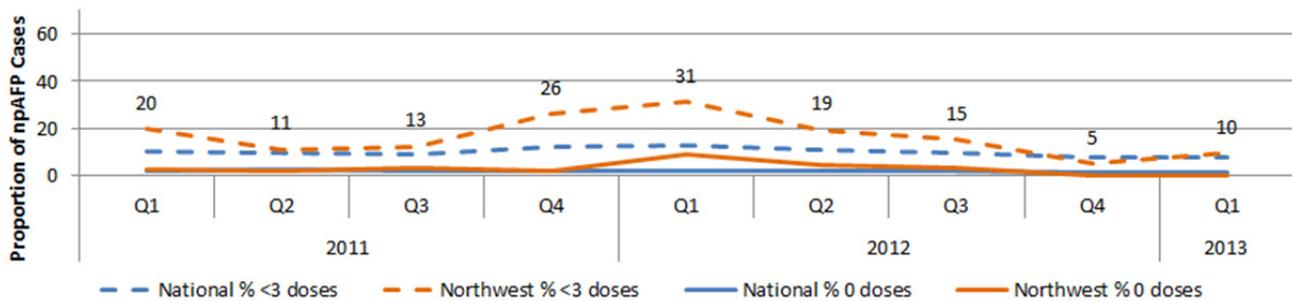


Note: The Jan. 2013 SIA was targeted at a limited number of LGAs and LQAS was conducted over a small area than after other SIAs. The LQAS survey after the Feb. 2013 round was stopped pre-maturely and is incomplete.

Proportion of NPAFP cases 6 to 35 months, by OPV status, Northwest sanctuary



Proportion of non-polio AFP cases 6-35 months under vaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

OWNERSHIP

Northwest Sanctuary	Percent of LGAs meeting indicators 1 week pre-campaign				Percent of LGAs meeting indicators 3 days pre-campaign			
	Dec '12	Feb '13	Mar '13	Apr '13	Dec '12	Feb '13	Mar '13	Apr '13
LGA's participating	24	37	37	37	24	37	37	37
LGA task force met	46	62	84	51	92	100	97	100
LGA counterpart funding released	3	0	0	0	13	100	62	24

Sokoto								
State task force met	No	Yes	Yes	No	No	Yes	Yes	No
State counterpart funding released	No	Yes	No	No	Yes	Yes	No	No

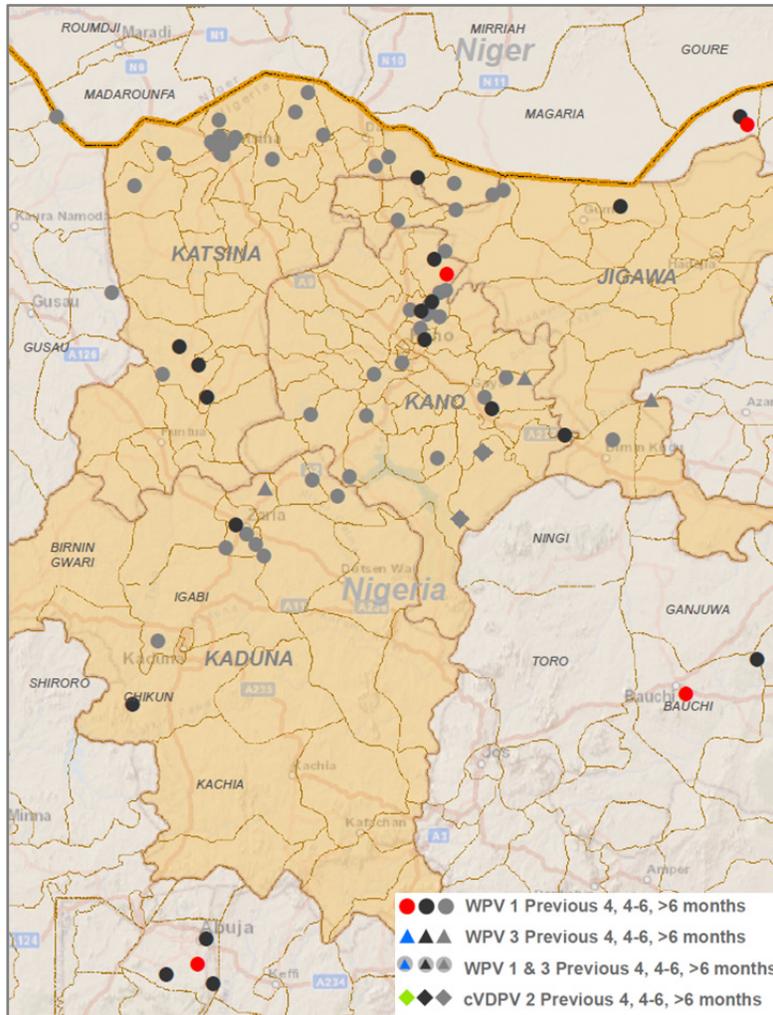
Zamfara								
State task force met	No	No	Yes	Yes	Yes	Yes	Yes	Yes
State counterpart funding released	No	No	No	No	No	Yes		No

Abbreviations: LGA=Local Government Area
Source: Nigeria Polio Campaign Dashboard, WHO-Nigeria

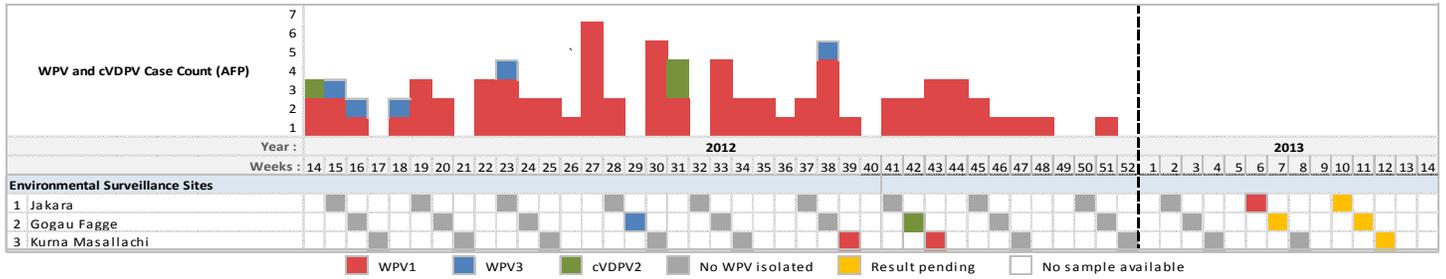
No campaign
No data

NORTH CENTRAL SANCTUARY

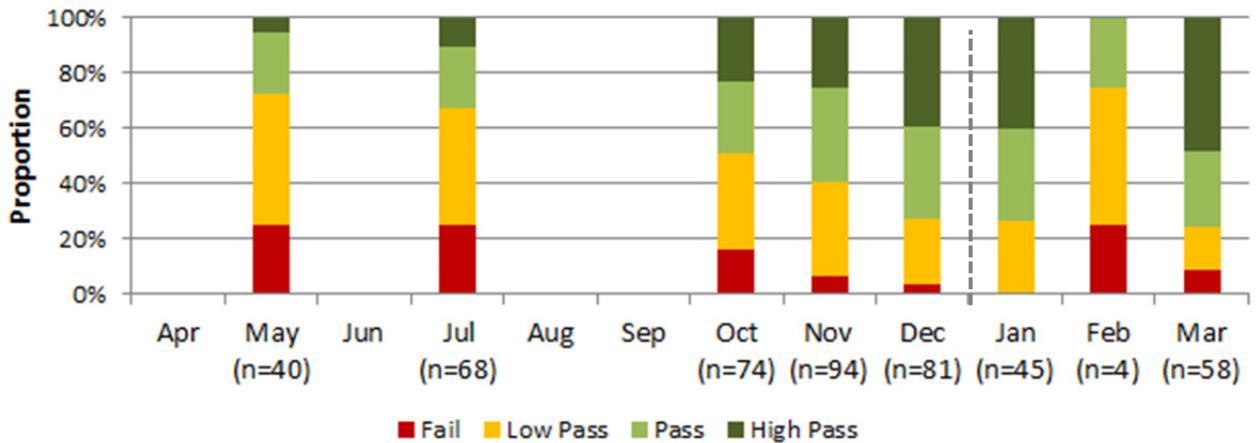
WPV and cVDPV2 cases April 2012 to March 2013



WPV cases by week of onset and environmental surveillance results, North Central sanctuary

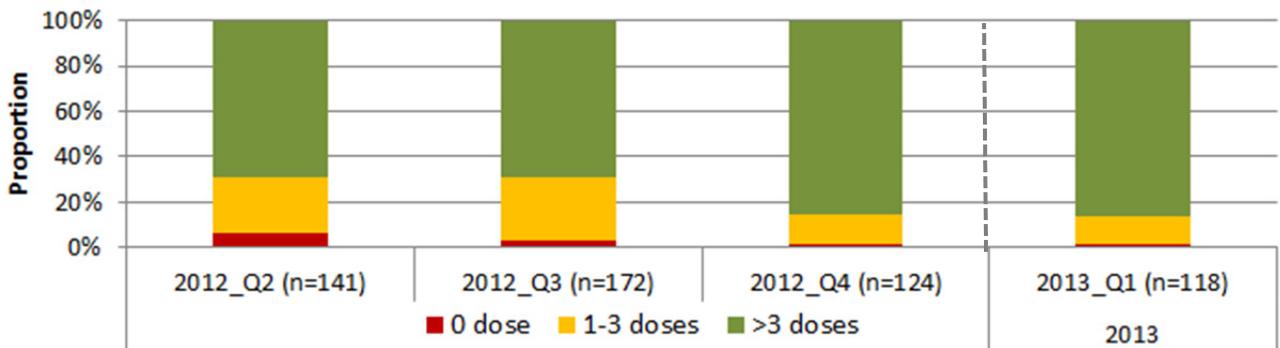


Proportion of LGAs with LQAS survey results by SIA, North Central sanctuary

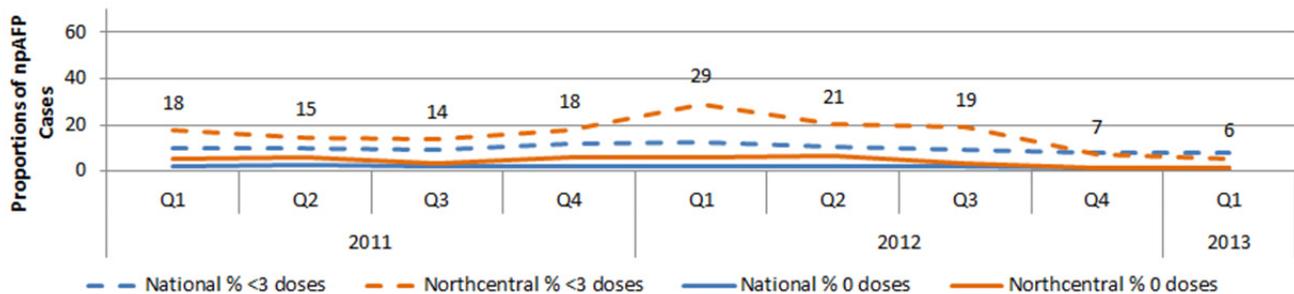


Note: The Jan. 2013 SIA was targeted at a limited number of LGAs and LQAS was conducted over a small area than after other SIAs. The LQAS survey after the Feb. 2013 round was stopped pre-maturely and is incomplete.

Proportion of NPAFP cases 6 to 35 months, by OPV status, North Central sanctuary



Proportion of non-polio AFP cases 6-35 months undervaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

OWNERSHIP

North Central Sanctuary	Percent of LGAs meeting indicators 1 week pre-campaign				Percent of LGAs meeting indicators 3 days pre-campaign			
	Dec '12	Feb '13	Mar '13	Apr '13	Dec '12	Feb '13	Mar '13	Apr '13
LGAs participating	128	128	84	128	128	128	84	128
LGA task force met	59	68	60	78	74	96	100	99
LGA counterpart funding released	30	34	5	33	46	57	73	52

Jigawa

State task force met	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
State counterpart funding released	No	No	No	Yes	Yes	Yes	Yes	Yes

Kano

State task force met	No	Yes		No	No	Yes		Yes
State counterpart funding released	No	No		Yes	Yes	No		Yes

Kaduna

State task force met	Yes	No	Yes	No	Yes	No	Yes	Yes
State counterpart funding released	Yes	No	No	No	Yes	No	No	No

Katsina

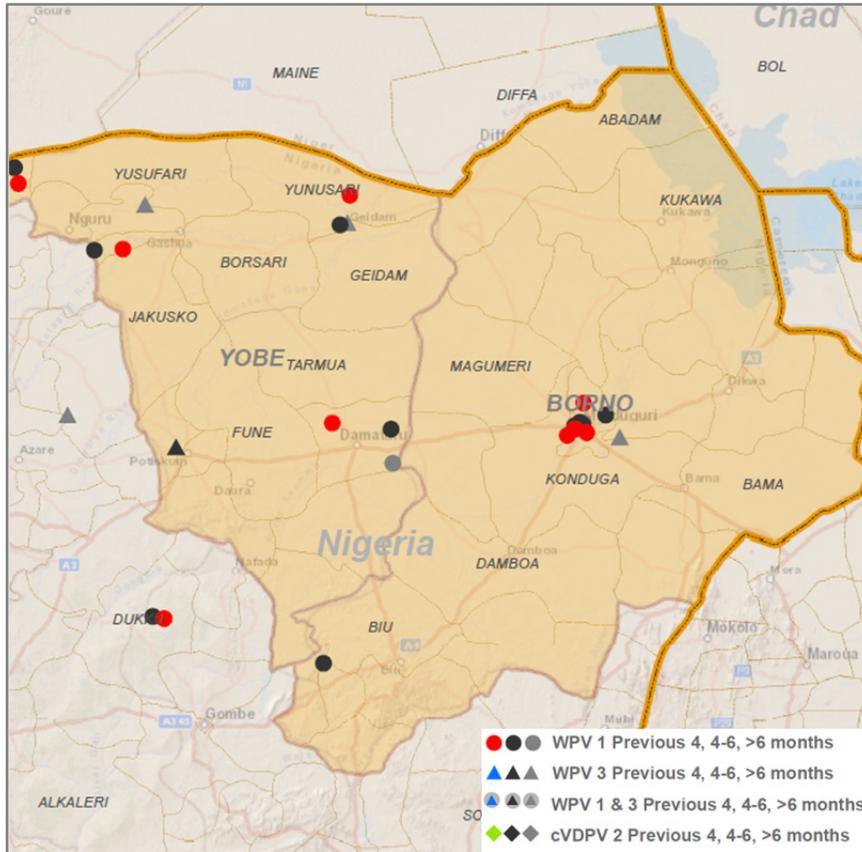
State task force met	No	Yes						
State counterpart funding released	Yes	No	Yes	No	Yes	Yes	Yes	

Abbreviations: LGA=Local Government Area
Source: Nigeria Polio Campaign Dashboard, WHO-Nigeria

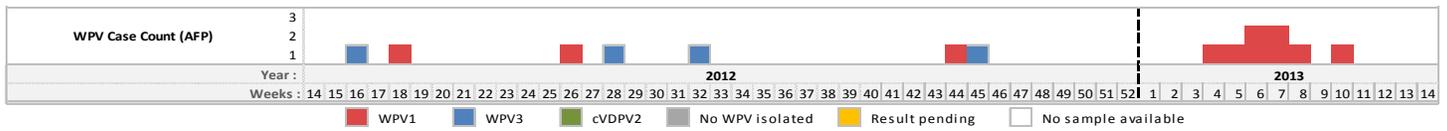
No campaign
No data

NORTHEAST SANCTUARY

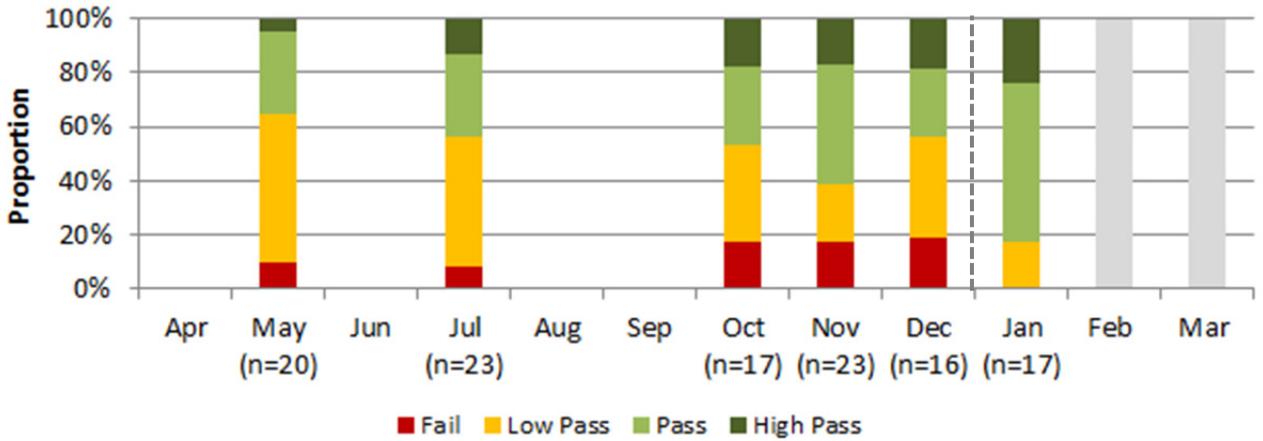
WPV and cVDPV2 cases April 2012 to March 2013



WPV cases by week of onset, Northeast sanctuary

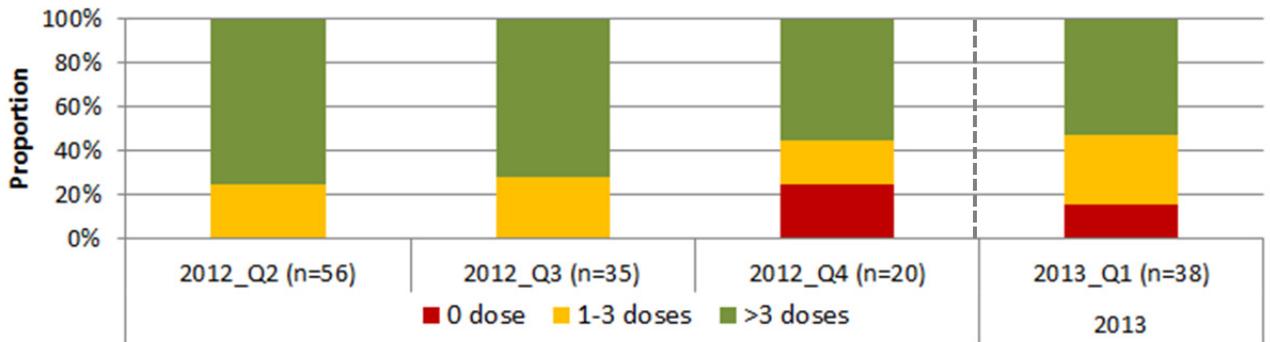


Proportion of LGAs with LQAS survey results by SIA, Northeast sanctuary

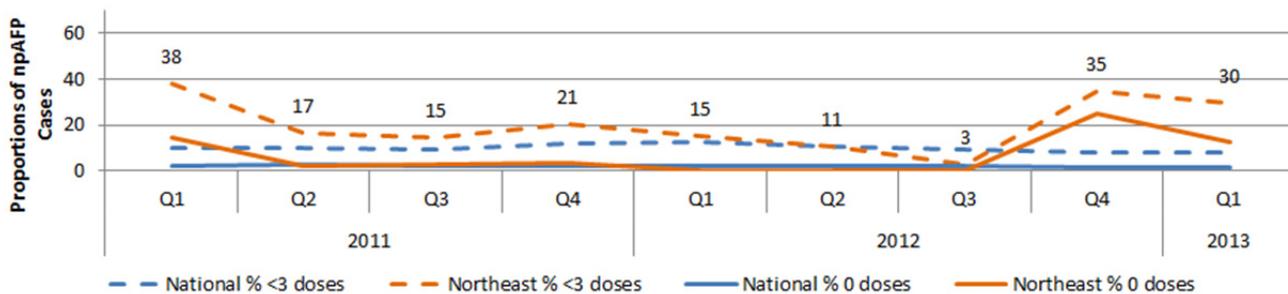


Note: The Jan. 2013 SIA was targeted at a limited number of LGAs and LQAS was conducted over a small area than after other SIAs. The LQAS survey after the Feb. 2013 round was stopped pre-maturely and is incomplete.

Proportion of NPAFP cases 6 to 35 months, by OPV status, Northeast sanctuary



Proportion of non-polio AFP cases 6-35 months under vaccinated by quarter year, 2011 to present



Sanctuary < 3 dose proportion (includes 0-dose) is labeled

OWNERSHIP

Northeast Sanctuary	Percent of LGAs meeting indicators 1 week pre-campaign				Percent of LGAs meeting indicators 3 days pre-campaign			
	Dec '12	Feb '13	Mar '13	Apr '13	Dec '12	Feb '13	Mar '13	Apr '13
LGAs participating	26	44	17	44	26	44	17	44
LGA task force met	35	32	0	64	19	84	100	55
LGA counterpart funding released	18	0	0	0	89	57	0	34
Borno								
State task force met	No	Yes		Yes		Yes		Yes
State counterpart funding released	No	No				Yes		
Yobe								
State task force met		No	No	Yes		No	No	Yes
State counterpart funding released		No	No	No		No	No	No

Abbreviations: LGA=Local Government Area
Source: Nigeria Polio Campaign Dashboard, WHO-Nigeria

No campaign
No data

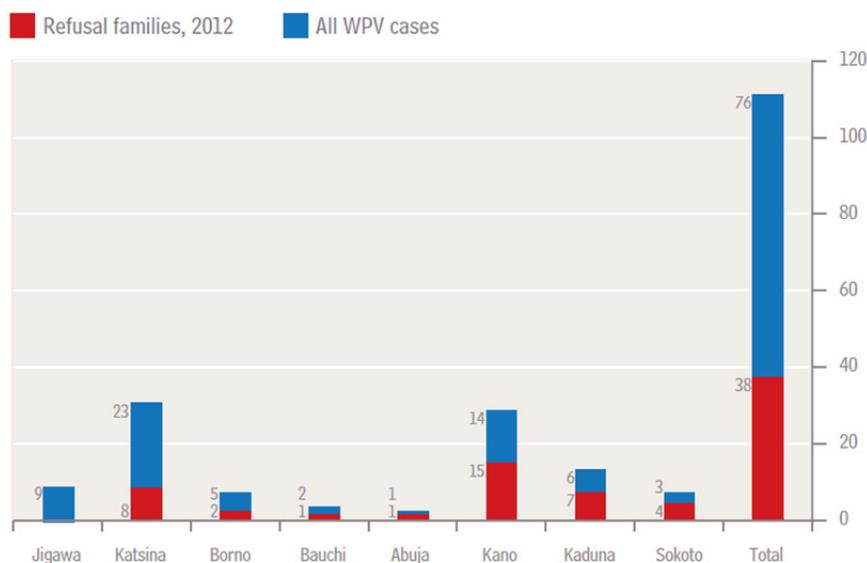
PROGRAM INFORMATION

HUMAN RESOURCES

Location (sanctuary)	Number of vaccination teams	Percent of vaccination teams with a female member	Percent of vaccination teams with a local member	Salary per vaccinator / day	Number of current GPEI staff	Number of additional GPEI staff needed
Northwest (Sokoto and Zamfara)	3,952	100%	100%	\$4.50	794	24
North central (Kano, Katsina, Jigawa, and Kaduna)	16,896	100%	100%	\$4.50	2,559	185
Northeast (Borno and Yobe)	3,554	96%	100%	\$4.50	821	13

COMMUNITY DEMAND

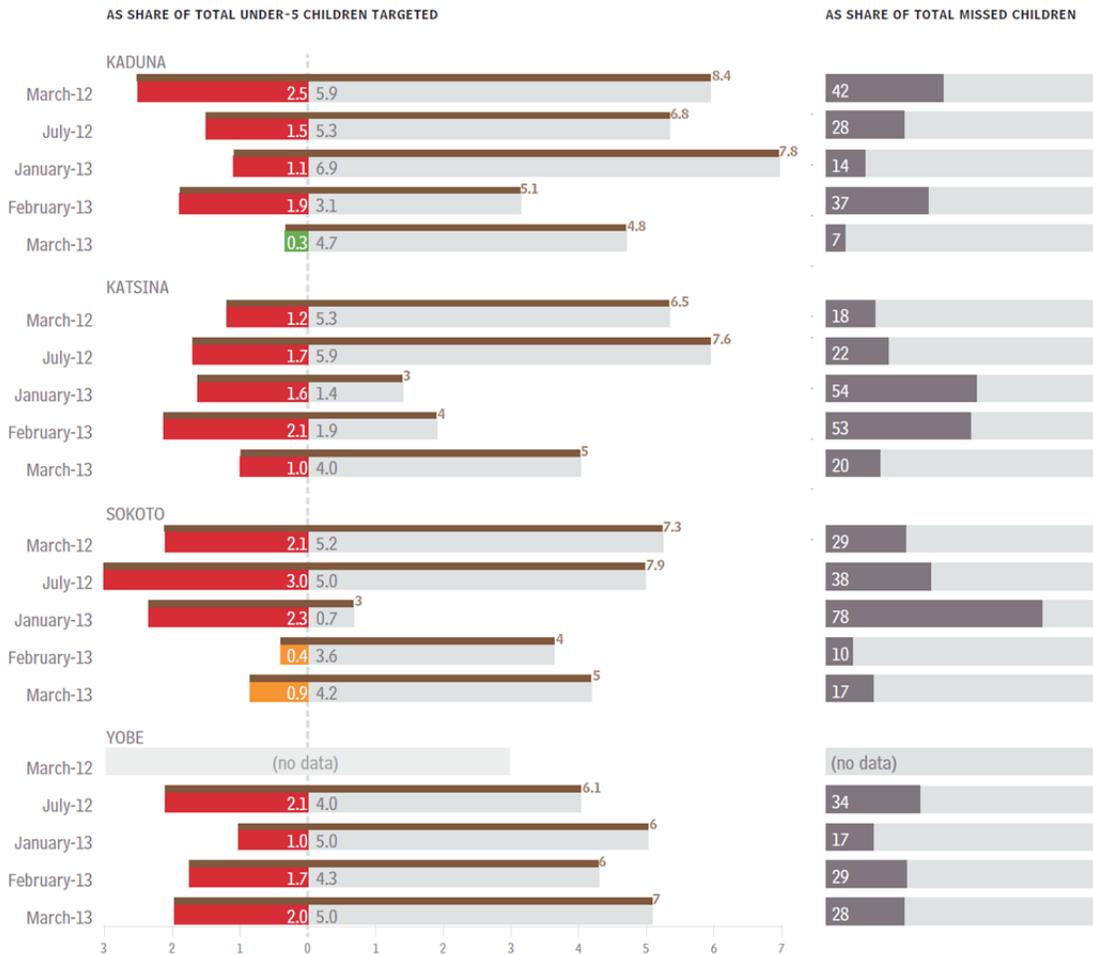
Proportion of wild poliovirus cases in children of refusal families in Nigeria in 2012



In 2012, one-third of all WPV cases were in children from families who refused them OPV. The proportions were highest among cases in Kano, Kaduna and Sokoto—although there were relatively few cases in Sokoto.

Note: Data represents analysis of 114 cases in Nigeria as of 04 March 2013

Trends in missed children (%) due to refusal in selected states—Nigeria, March '12 - March '13.



Missed children due to refusal as a proportion (%) of targeted and total missed children, March 2013.

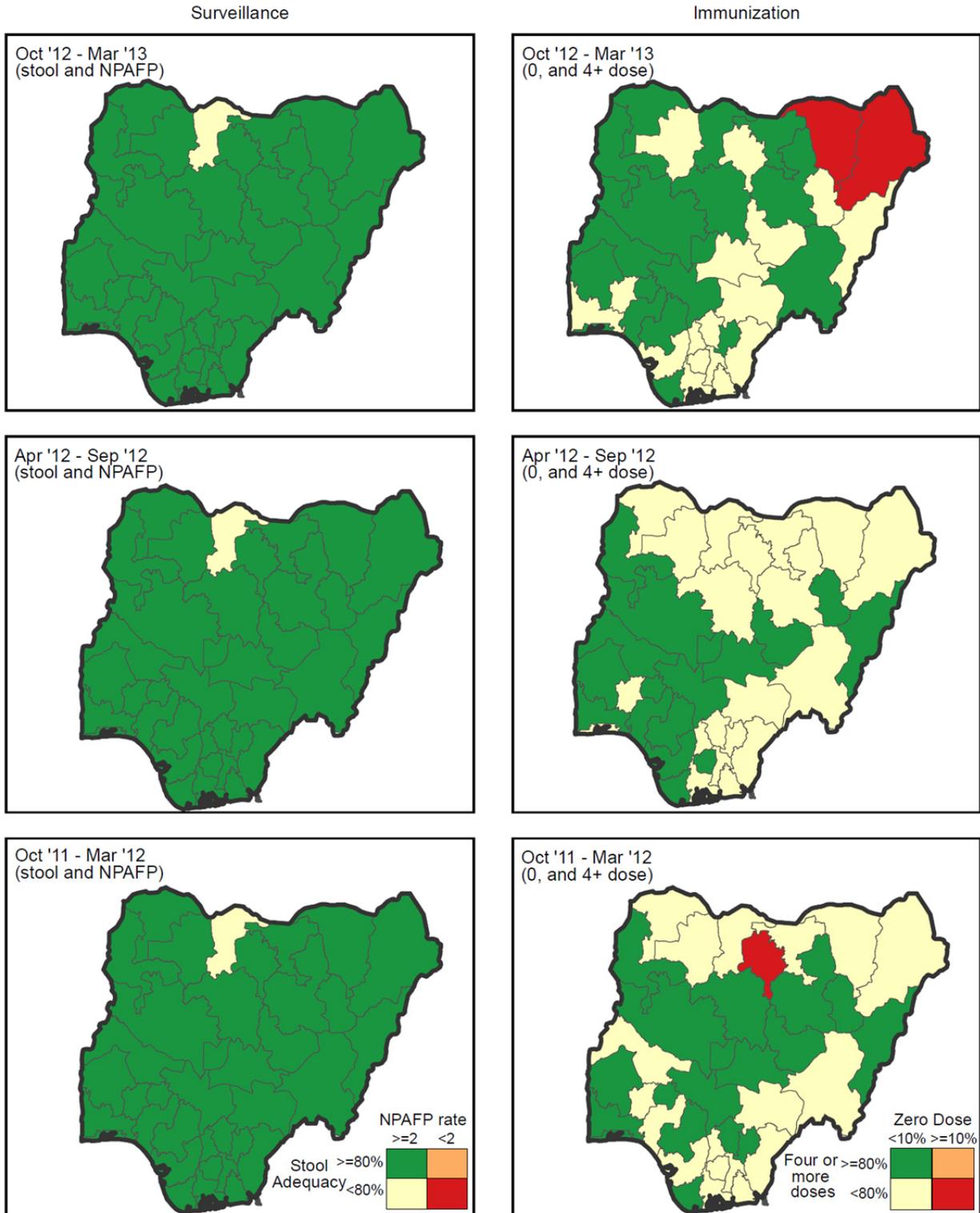


Independent monitoring data in Nigeria correlate poorly with LQAS results and overestimate SIA quality, so IM survey results on reasons for missed children provide unique information but may not be entirely representative.

Data from IM surveys have indicated a high rate of non-compliance. Since October 2012, there appears to have been substantial progress made in reducing refusals, particularly in Kaduna and Sokoto. In March (above), on average, 1% of all targeted children in Nigeria's sanctuaries were not vaccinated due to caregiver refusal, with much higher proportions in Borno and Yobe.

PERFORMANCE INDICATORS

Six month annualized standard surveillance and immunization indicators by province among children aged 6-35 months with NPAFP, Nigeria, October 2011 to March 2013



GPEI GLOBAL EMERGENCY ACTION PLAN 2012-2013 INDICATORS

AREA	ACHIEVEMENT / TARGET	DATE (2012)	RESULTS	STATUS
SIA Coverage	> 80% LGAs in high-risk states (HRS) achieve 90% coverage in at least 1 IPD (Immunization Plus Day) round.	End June	LQAS assesses SIA quality and is not a direct measure of coverage. In 2012, only 1 state (Bauchi in October) had >80% of its LGAs achieving the 90% threshold.	Not met
	> 90% LGAs in the HRS achieve 90% coverage in 2 IPDs.	End September	No high risk state had >90% of the LGAs achieving the 90% threshold. The average percent of assessed LGAs attaining the 90% threshold during a round ranged from 15.3% to 42.6%.	Not met
	> 90% LGAs in the HRS achieve 90% coverage in at least 4 IPDs.	End December	As above. Note: At the December 2012 SIA LQAS, 66.7% of assessed LGAs in sanctuary states met the 80% threshold overall.	Not met
Surveillance	90% of LGAs meet the 2 main surveillance indicators.	End December	Current status: the proportion of LGAs nationwide that met both indicators during 2012 was 89.8%; the proportion in the 8 sanctuary states plus 3 other high-risk northern states by national plan (Kebbi, Niger and Bauchi) was 79.6%.	Met (nationally); Not met (high-risk states)
	Zero orphan virus detection.	End December	21 of 130 (16%) viruses across all serotypes have been classified as orphan.	Not met
Routine Immunization	Achievement of at least 50% OPV3 coverage in all high-risk LGAs.	End December	Current status: of the 107 very high-risk LGAs, 58.9% achieved at least 50% OPV3 coverage in 2012.	Not met
Communication & social mobilization	Ensure 80% of high-risk States and LGAs achieve quarterly Abuja Commitments.	End December	In Q4 2012, 100% of State Governors participated in public events in support of polio and 100% conducted state task force meetings. Personal involvement of LGA chairmen in the 11 HR states increased to 97% in Q4 2012 from 71% in Q1 2012. The proportion of functional LGA Task Force quarterly meetings increased to 97% in 11 HR states in Q4 2012 from 72% in Q1 2012.	Met
	80% of LGAs implement 80% of social mobilization activities in national EAP.	End December	As at Q1 2013, 2200 Voluntary Community Mobilizers (VCM) are deployed in high-risk settlements of eight high-risk northern states. In Q1 2013 IPDs, more than 80% of 10 high-risk states implemented ≥80% of its planned communication activities (Bauchi-91%, Borno-85%, Jigawa-98%, Kaduna-94%, Kano-86%, Katsina-79%, Kebbi-95%, Sokoto-82%, Yobe-89%, Zamfara-77%). However, 72.6% of LGAs in those states implemented >80% of planned communication activities.	Not met

ANALYSIS

Throughout 2012, Nigeria implemented substantial changes to its polio program, including: deployment of technical support to each LGA in high-risk states; house-based microplanning to improve performance in the field; a program indicators “dashboard” to enhance accountability and preparedness for polio vaccination campaigns; identification of previously unmapped settlements, including of nomadic populations and incorporation of these into microplans; increasing use of satellite mapping and geographic positioning system tracking of vaccinators; and establishment of a network of volunteer community mobilizers to improve outreach. Evidence of the impact of these improvements is seen in the LQAS results from the northern sanctuaries throughout 2012 and in the improving vaccination status of children with non-polio AFP. The program continued to receive the highest level of political support through the Presidential Task Force and the personal support of President Jonathan and Executive Governors. Additionally, the program improved its management capacity through the establishment of an Emergency Operations Center in Abuja and several states.

However, improvements in these indicators have stagnated in early 2013 as the program faces two additional challenges. The first of these is chronic underperformance in certain, predominantly urban LGAs (e.g., Zaria, Katsina, Bauchi, Sabon Gari, Sokoto North, and Sokoto South). Vaccine refusals continue to be an issue, possibly as a consequence of reinvigorated efforts by a small fringe of anti-vaccine activists.

The second challenge is insecurity. Although this is not a new problem for the program, the killing of health workers in Kano and Borno in early February has greatly escalated this issue. Since these events, two SIAs have been completed in most of the North without further violence. This success is undoubtedly at least in part due to continued, intense outreach to traditional and religious leaders by the Nigerian government (National Primary Health Care Development Agency and the Federal Ministry of Health) following the February attacks and the involvement of State Security and police support in the planning and implementation of IPDs, and the engagement with anti-OPV critics who have argued that the vaccine is not safe.

Although these data provide some reassurance, the motivations for the February attacks are unknown as are the identities of the perpetrators. The health sector is also not alone in dealing with such attacks. Education programs, as well as food feeding services, have been attacked, leading to fear and intimidation in many social sector program. As such, the polio and immunization programs has had to move forward assuming that there remains a possible threat of further such attacks. Insecurity continues to complicate eradication efforts, particularly in the Northeast. Insecurity in this sanctuary has prevented SIAs in some LGAs in Borno for several months and has limited the ability of the program to provide on-site supervision, hampering efforts to improve performance.

Despite improvements in program indicators, WPV case counts in 2012 exceeded those in 2011. Since December 2012, WPV case counts have declined. However, limitations in surveillance, as evidenced by genomic sequencing analysis and by AFP surveillance indicators by LGA, remain. The proportion of LGAs that met both AFP surveillance indicators during 2012 in 11 high-risk northern states was 79.6%.

In the Northwest, no WPV was detected in AFP cases or environmental surveillance between September 2012 and March 2013. The WPV1 virus detected in environmental surveillance in March in Sokoto was most closely related to recent viruses in the North Central and Northeast sanctuaries. This analysis indicates an importation of WPV1 into the sanctuary rather than undetected, ongoing transmission.

The North Central sanctuary had the most cases throughout 2012, particularly in certain LGAs of Kano, Katsina, and northern Kaduna. Virologic evidence suggests this sanctuary was the source of the outbreak virus in Niger in November 2012 and one of two sources of viruses in the FCT/Nasarawa resurgence. Starting in December, the

number of cases in this zone abruptly dropped, with the last known case occurring on December 22 in Kano State. Since then, the only poliovirus detected in this sanctuary was a WPV1 in a single Kano environmental sample in February (subsequent testing pending).

Both LQAS and NPAFP surveillance dose history data suggest steady overall improvements in performance throughout 2012, although several LGAs continue to experience chronic under-performance. There has been a leveling of overall SIA quality since December.

The Northeast had few cases throughout much of 2012, raising the question of whether this reflected the true epidemiology or poor surveillance. The apparent resurgence of polio in this sanctuary in 2013 with three WPV with much less than expected genetic linkage to previously identified viruses shows that gaps in surveillance are at least part of the answer. Improvements in the program in this sanctuary, as measured by LQAS and dose history among children with non-polio AFP, have lagged behind those in other sanctuaries, likely due to insecurity and the challenges of implementing change and supervising staff under such conditions.

Of concern since late 2012 is the recurrence of polio in FCT and Nasarawa. These cases have highlighted weak program performance in both areas. Ongoing cases in this area demonstrate a low effectiveness of outbreak responses.

WPV3 has not been detected in Nigeria, or anywhere else in the world, since November 10, 2012. However, this observation should not be over interpreted: WPV3 has a low case-to-infection ratio, Nigeria has had prolonged periods without WPV3 detection in the past, and the WPV3 case in Taraba state in July 2012 as well as detection of WPV3 in environmental surveillance in Lagos in August and November 2012 all suggest that WPV3 transmission has been more widespread than indicated by AFP surveillance in the sanctuaries.

There has been a relatively low incidence of polio cases due to cVDPV in 2012 after SIAs using trivalent oral poliovirus vaccine (tOPV). However, two cases occurred in Kebbi in November and there has been continued isolation of cVDPV in environmental surveillance samples in Sokoto, including in 2013.

Ownership indicators showed some improvement over the last 6 months, particularly regarding state and LGA level task-force meetings. Lack of release of “counterpart funding” remains a common problem at both the state and LGA level.

CONCLUSIONS

- **Epidemiology:** Since the beginning of 2013, WPV incidence has returned to 2011 levels, with cases almost exclusively in the Northeast. Since late 2012, transmission continued in FCT and Nasarawa. cVDPVs continue to circulate, though at much lower rates than in 2011.
- **Immunization:** Data show steady improvements throughout 2012, except possibly in the Northeast. These same indicators have remained stable since December 2012. Immunization indicators in FCT and Nasarawa have shown poor performance.
- **Surveillance:** Sub-optimal AFP surveillance indicators aggregated at the LGA level and the continued detection of WPVs and cVDPVs with less genetic linkage than expected indicate surveillance gaps.
- **Ownership:** There is evidence of strong ownership at the national level, but the sense of ownership appears to be lower at the state level and variable at the LGA level.
- **Community Demand:** Vaccine refusal in specific communities remains a concern in Nigeria. There are some signs that the program is having success in this area despite emerging challenges.

INSECURITY

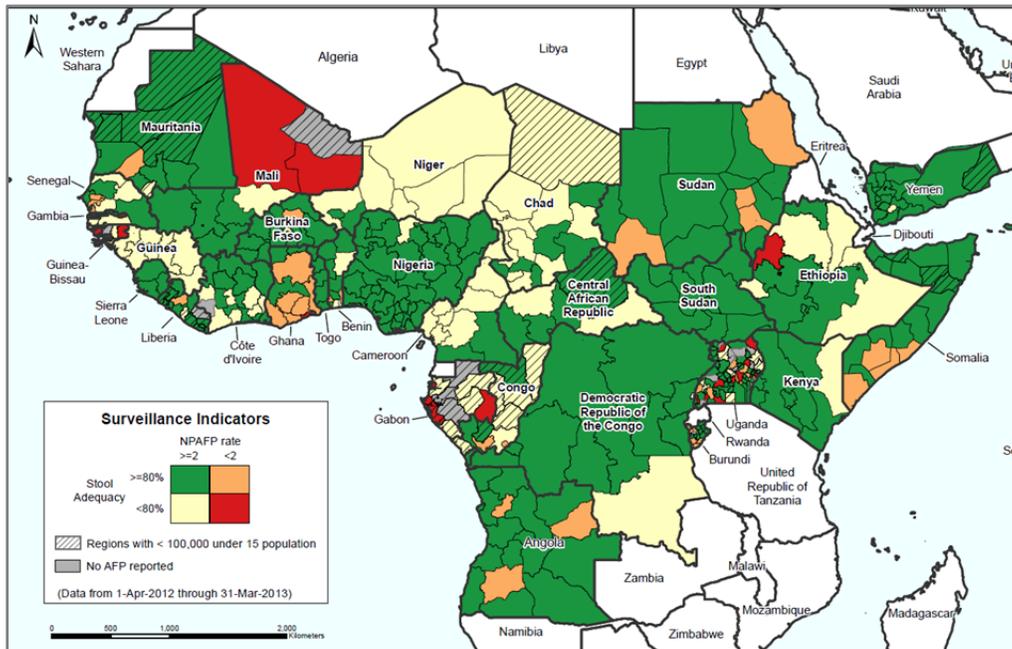
Insecurity in several different forms has been an impediment to global polio eradication for many years. Since late 2012, however, the program has faced a new, particularly vicious threat: attacks targeted specifically against its workers. Since the first of these in July in Karachi, 14 polio workers have been killed in such attacks in Pakistan as have 3 police officers assigned to protect polio staff. No group has claimed responsibility for these attacks and the motivations behind the attacks is unclear. What is clear is that the attacks are continuing.

Nigeria experienced similar violence during one week in early February, in which an attack in Borno killed three health workers and two attacks in Kano killed nine workers and one clinic patient. As in Pakistan, the motives and perpetrators are unknown.

In both countries, the governments and communities have united in their revulsion over the attacks. In both cases, the programs have adapted to the new, more insecure status quo, making changes in the program to improve security. In Pakistan, the violence has continued. In Nigeria, although there has been no further targeted violence, the threat of further attacks remains. In both countries, insecurity has resulted in decreased access to key populations (KPK in Pakistan; Borno in Nigeria) and has impaired the ability of the program to provide on-site supervision and to make changes needed for program improvement.

NON-ENDEMIC, VULNERABLE COUNTRIES

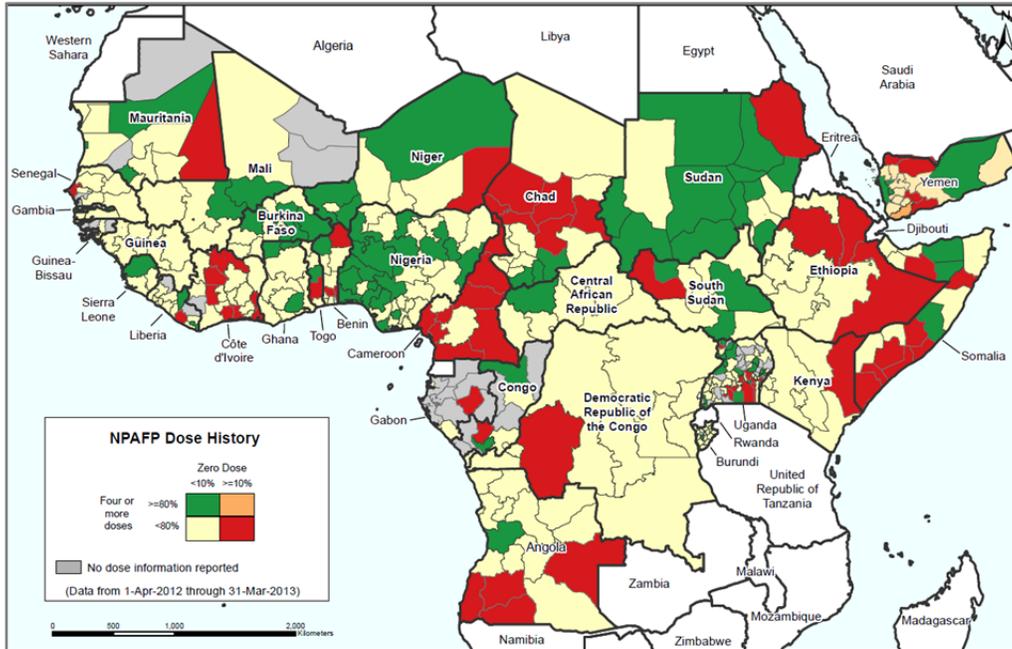
SURVEILLANCE PERFORMANCE



This map presents surveillance indicators at a subnational level (state/province) for countries reporting poliovirus (WPV and/or cVDPV) transmission during 2011–2012, as well as neighboring countries in the “importation belt.” All 19 countries reporting poliovirus transmission during 2011–2012 met the national target of an annual rate of ≥ 2 NPAFP cases per 100,000 population aged < 15 years for both years; the national target of $\geq 80\%$ of AFP cases with adequate specimens was met by 12 (63%) countries in 2011 and 13

(68%) countries in 2012. The geographic distribution of subnational AFP surveillance quality indicators varied among countries presented here, with note of failure to meet one or both indicators in major areas of several countries in close proximity to Nigeria: Cameroon, Chad, Ghana, Mali, Niger, and Republic of the Congo, as well as some countries more distant. Overall improvements from 2011 to 2012 in subnational indicators were seen in Angola, Central African Republic (CAR), and DRC.

IMMUNIZATION STATUS



This map represents immunization status indicators at a subnational level (state/province) for countries reporting poliovirus (WPV and/or cVDPV) transmission during 2011–2012, as well as neighboring countries in the “importation belt.” The immunization status of children was assessed using dose recall history for children 6–35 months of age with NPAFP over the previous 12 months and looks at the proportion of such children with no history of OPV doses (0-dose) and the proportion with ≥ 4 OPV doses.

Despite SIAs in most of these countries, a high number of countries have numerous subnational areas in which $< 80\%$ of children have ≥ 4 OPV doses, and many of those areas have $\geq 10\%$ of children with 0-dose history. Particular concern needs to be raised about Chad and Niger (below) but also about Cameroon, given its border with Nigeria, as well as Angola, CAR, DRC, and most areas of west Africa.

AFFECTED COUNTRIES DURING APRIL 2012-MARCH 2013

CHAD

In Chad, reestablished WPV1 transmission has occurred since introduction from Nigeria in 2010. Five WPV1 cases were reported in 2012 compared with 129 WPV1 (plus three WPV3) cases reported in 2011; the most recent case occurred in June. Three different cVDPV2 emergences in Chad during this period have resulted in 13 cVDPV2 cases, most recently in February 2013. When examined subnationally, most areas of Chad have $< 80\%$ of children with a history of ≥ 4 doses of OPV, and many of these also have $> 10\%$ 0-dose children, indicating a highly susceptible population remaining, even after improvements in SIA implementation. AFP surveillance indicators also indicate severe limitations in adequate specimen collection in most areas of the country in the previous 12 months, indicating gaps in surveillance.

NIGER

In Niger, one WPV1 case was reported in November 2012 compared with four WPV1 (plus one WPV3) cases reported during 2011. All of the virus isolates from WPV1 cases in Niger during 2011–2012 were genetically related to WPV1 circulating in Nigeria. The immunization status of children was assessed using dose recall history for children 6–35 months of age with NPAFP over the previous 12 months. When examined subnationally, these data indicate that most departments, including the department in which the 2012 WPV case was detected (Tahoua), there was $< 80\%$ of children with a history of ≥ 4 doses of OPV. AFP surveillance showed inadequate specimen collection in 2012 throughout most of the country, indicating gaps in surveillance.

STAFFING AND CAMPAIGNS IN 2012

Region	Country	Country Staffing for Polio ¹								2012 Polio Campaigns ²				Polio Program Costs ³ (USD, millions)	
		CDC		Rotary ⁵	WHO		UNICEF		STOP ⁷	Total No.	NIDs		SNIDs		
		CDC Staff & NSTOP	Supporting partners ⁴		Core ⁶	Surge	Core	Surge & Soc Mob			No.	Target (thousand)	No.		Target (thousand)
Endemic	Afghanistan	1 ⁸			144	55	16	2,056	4						
	Pakistan	32	1		734	680	55	1,056	15						
	Nigeria	61 ⁹	1		102	2,207	25	2,100	27						
AFR	Algeria									2			2	3,847	Unk
	Angola		2		29		4		9	4	3	6,068	1	3,693	\$26.67
	Benin				2				3	3	3	3,129			\$5.24
	Burkina Faso		1		2				2	5	4	5,967	1	2,864	\$12.95
	Cameroon				4				2	4			4	1,743	\$4.17
	Cape Verde									1	1	70			\$0.21
	CAR				4					7	5	805	2	220	\$4.49
	Chad ¹⁰	3	2		11		14		14	15	4	2,630	11	229 - 1,987	\$25.39
	Congo				1				2	0					\$0.67
	Côte d'Ivoire				5				3	4	4	6,872			\$11.52
	DRC ¹⁰		2		42		22	18,688	19	16	3	14,994	13	311 - 5,357	\$48.61
	Eritrea														\$0.31
	Ethiopia				36				2	2			2	2,574	\$9.60
	Equatorial Guinea				1										Unk
	Gabon				1										Unk
	Gambia				1					1	1	417			\$0.50
	Ghana				1				1	1	1	5,028			\$4.36
	Guinea				2				1	5	4	2,926	1	1,332	\$6.09
	Guinea-Bissau				1					1	1	283			\$0.73
	Kenya ¹⁰				6					8			8	269 - 2,264	\$5.21
	Liberia				3				5	4	4	898			\$3.43
	Madagascar								2	2			2	668 - 700	\$0.58
	Malawi				1										Unk
	Mali				2				1	5	1	6,383	4	5,750 - 5,791	\$14.00
	Mauritania				1				1	3	3	632			\$2.31
	Mozambique				3				2						Unk
	Namibia				2					1	1	323			Unk
	Niger ¹⁰				6				5	9	4	4,980	5	875 - 4,880	\$16.66
	Rwanda				2					2	1	1,766	1	190	Unk
	Senegal				1				2	1	1	2,519			\$4.33
	Sierra Leone				5				4	3	2	1,260	1	870	\$3.59
	South Africa				1										Unk
Swaziland				1										Unk	
Tanzania				3				2						Unk	
Togo				2					1	1	1,780			\$1.66	
Uganda				3				3	2	1	8,421	1	2,570	\$5.97	
Zambia				5					1			1	1,287	Unk	
Zimbabwe				1					1	1	1,802			Unk	

Region	Country	Country Staffing for Polio ¹							2012 Polio Campaigns ²				Polio Program Costs ³ (USD, millions)		
		CDC		Rotary ⁵	WHO		UNICEF		STOP ⁷	Total No.	NIDs			SNIDs	
		CDC Staff & NSTOP	Supporting partners ⁴		Core ⁶	Surge	Core	Surge & Soc Mob			No.	Target (thousand)		No.	Target (thousand)
AMR	Haiti							4						Unk	
EMR	Djibouti							1	1	1	234			\$0.06	
	Egypt			4										Unk	
	Somalia ¹⁰		1	180				5	20			20	96 - 412	\$6.37	
	South Sudan			65				15	5	4	3,206	1	39	\$16.80	
	Sudan ¹⁰			45		11		1	6	4	6,688	2	1,572 - 1,772	\$16.94	
	Syrian Arab Republic								1	1	2,802			Unk	
	Yemen			9				3	4	3	4,977	1	886	\$5.49	
EUR	Georgia													\$0.04	
	Kyrgyzstan													\$0.01	
	Russian Federation								2			2	219	Unk	
	Tajikistan													\$0.12	
	Uzbekistan								2			2	1,943 - 1,963	\$0.04	
SEAR	Bangladesh			46					2	2	24,735			\$12.34	
	India		1	459			9,125							Unk	
	Indonesia			46										Unk	
	Myanmar			17					1			1	235	Unk	
	Nepal			19					4	1	4,670	3	794 - 2,567	\$3.67	
WPR	Cambodia							1						Unk	
	China ¹⁰		1						4			4	3,288 - 8,600	Unk	
	Phillipines							3						Unk	
	Viet Nam								1			1	18	Unk	

1. Does not include staff at other levels

2. Includes National Immunization Days (NIDs), Subnational Immunization Days (SNIDs), Mop ups, and Child Health Days (CHDs)

3. Includes AFP surveillance, Social Mobilization, Technical Assistance, OPV, and Operational Costs. Costs for CHDs and CDC programs not included

4. CDC secondees to WHO country offices and contractors are which are also counted as WHO core staff

5. Comparable data not available for Rotary; information on Rotary's in-country support is detailed in the paragraph below

6. Includes international and national technical staff

7. Stop Transmission of Polio (STOP) round 41, deployed February-June 2013

8. CDC will have one staffer posted in Afghanistan starting May 2013

9. Includes 59 National STOP (NSTOP) staff (38 at LGA levels)

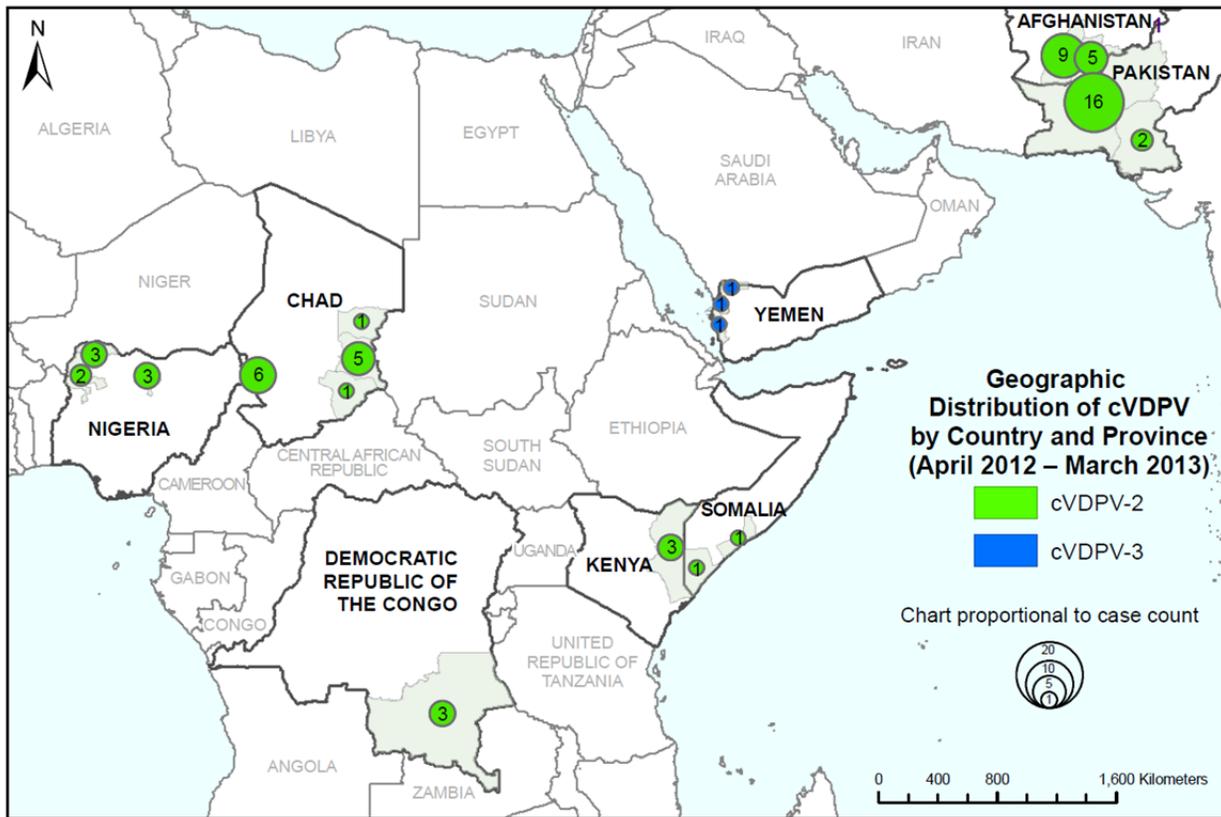
10. Concurrent SNIDs in different geographical areas were counted separately

ROTARY SUPPORT

Rotarians in Nigeria held a meeting on 22-23 June in Abuja under the leadership of the Past Rotary International President from Nigeria to discuss plans for enhanced Rotarian engagement. It was agreed that Past District Governors would lead Rotary teams for the remaining 4 rounds of Subnational Immunization Plus Days in high risks states. Also, the National PolioPlus Committee Chair is targeting Rotary ambassadors for each of the worst performing LGAs. In Pakistan, the National PolioPlus Committee Chair has an office manager and a newly hired project manager who will help coordinate Rotary efforts in the worst performing districts. Plans are underway to further expand Rotary infrastructure in Pakistan, Nigeria, Chad and DRC with professional staff to support Rotarian activities.

CIRCULATING VDPV

April 2012 – March 2013 Geographic Distribution of cVDPV by country and province



County	Serotype	April 2012 - March 2013 Quarterly cVDPV case counts ¹				12 month total	Onset of most recent case ²
		Apr-Jun '12	Jul-Sep '12	Oct-Dec '12	Jan-Mar '13		
Afghanistan	2	0	0	11	2	13	13-Mar-13
Chad	2	0	9	3	1	13	04-Feb-13
Democratic Republic of the Congo	2	3	0	0	0	3	04-Apr-12
Kenya	2	1	2	0	0	3	02-Sep-12
Nigeria	2	1	4	3	0	8	24-Nov-12
Pakistan	2	0	4	12	2	18	21-Feb-13
Somalia	2	0	1	0	1	2	17-Jan-13
Yemen	3	1	1	1	0	3	27-Nov-12

¹ Counts do not include environmental specimens, but do include case contacts when the index case is negative

² Specimen date used for case contacts

AFFECTED COUNTRIES DURING APRIL 2012-MARCH 2013

AFGHANISTAN

There have been 13 cVDPV2 cases in Afghanistan during April 2012 – March 2013 following internal emergence and transmission as well as cross-border transmission from Pakistan. Eight cases in Helmand, Farah and Kandahar are associated with a lineage that was circulating in 2009-2010 and subsequently undetected until cases were confirmed in November 2012. There has been a new emergence in 2012 as well, with one associated cVDPV case with two

positive non-household contacts. Lastly, there have been four cases in Helmand and Kandahar following cross-border spread of the cVDPV2 outbreak in Quetta block, the most recent with onset in March.

CHAD

Three different VDPV emergences in Chad during April 2012 – March 2013 have resulted in 13 cVDPV2 cases, one AFP in Ndjamena associated with a related type 2 “preVDPV” (five nucleotide changes) and an ambiguous vaccine-derived poliovirus (aVDPV) case. Eleven genetically linked cVDPV2s were isolated from AFP cases during August 2012 through February 2013; six are from Ndjamena, four are from Abeche in the east and the most recent (onset in February) was from Salamat in the southeast, most closely related to virus circulating in Abeche. Another emergence was associated with two cVDPV2 cases in Abeche, the latest with onset in October. An aVDPV2 case associated with the third emergence was detected in February in Mayo Kebbi Province, south of Ndjamena.

DEMOCRATIC REPUBLIC OF THE CONGO

There were 17 reported cVDPV2 cases in the Democratic Republic of the Congo in 2012 from four independent emergence events. The most recently of these was in Katanga province in April 2012.

NIGERIA

The number of cVDPV2 cases has declined substantially from 22 in 2011 to eight in 2012, all during April 2012 – March 2013; the most recent had onset in November 2012 in Kebbi state, preceded by cases in Kano and Sokoto. Environmental sampling in Kano and Sokoto states has resulted in detection of 54 distinct VDPV2s for the reporting period (two in Kano and the remainder in Sokoto); 51 of the 54 environmental sequences are cVDPVs; three are aVDPVs. Sampling has been positive for cVDPVs from samples taken in Sokoto most recently in February 2013 and in Kano most recently in October 2012. An aVDPV case was detected in Kebbi with onset in February 2013.

PAKISTAN

VDPV emergence has resulted in 18 cVDPV2 cases in Killa Abdullah and Pishin districts of the Quetta block, Balochistan during August 2012 to February 2013. The viral sequences indicate almost 2 years of circulation before detection following emergence. Two related cases were detected in Karachi.

SOMALIA AND KENYA

The 2012-2013 Kenya and Somalia VDPV2s are derived from a lineage of virus that emerged in Somalia in 2009 and has circulated continuously since then, with three lineages now identified among recent isolates. Among the cVDPV2 isolates detected in Kenya (two cases, one additional isolate from a contact of a case) and Somalia (two cases), three have much less genetic linkage that expected indicating ~2 years of undetected circulation. Overall, the viral sequencing results provide evidence for significant surveillance gaps in Somalia during the past two years and possibly in Kenya in 2012. All cVDPV2 cases in Somalia have been reported in the South Central zone, a major portion which has not been covered by SIAs in more than 3 years. As small areas have become accessible more children are progressively being reached by SIAs.

YEMEN

Three genetically linked cVDPV3s, from Hajjah, Alhudaidah and Sa'dah were isolated from AFP cases during April-November 2012. The viral sequences indicate more than 2 years of circulation. These geographic regions are areas where cVDPV2 circulated in 2011.