Global Polio Eradication Initiative (GPEI) Status Report

2 May 2017

Surveillance data as of 27 April 2017

World Health Organization

Geneva, Switzerland

Rotary International

Evanston, Illinois USA

Bill and Melinda Gates Foundation

Seattle, Washington USA

Centers for Disease Control and Prevention

Atlanta, Georgia USA

UNICEF

New York, New York USA

Outline

- Topline Messages (slides 4-5)
- Endemic countries
  - Pakistan (slides 7-26)
    - Cases and environmental surveillance
    - Corridors of transmission for Pakistan and Afghanistan
    - Program quality (coverage estimates and missed children)
    - Surveillance quality
  - Afghanistan (slides 27-41)
    - Cases and environmental surveillance
    - Program quality (coverage estimates and missed children)
    - Surveillance quality
  - Nigeria (slides 42-55)
    - Cases and environmental surveillance
    - Program quality (coverage estimates and missed children)
    - Surveillance quality
- Detect, respond and prevent: keeping the rest of the world polio-free (slides 56-67)
  - VDPV events
  - PV2 isolations post-switch
  - Surveillance in Africa
  - Lake Chad response
  - Eastern Mediterranean Region risk analysis summary
  - IPV supply
  - Transition planning
- Financial outlook (slides 68-69)

The boundaries and names shown and the designations used on these maps do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Topline Messages - 1

- **Pakistan and Afghanistan** made significant progress towards stopping poliovirus transmission—the lowest number of WPV cases ever was reported in 2016 from Pakistan (20 cases) and in the last 10 years from Afghanistan (13 cases). Also genetic diversity of polioviruses detected in the two countries decreased throughout the 2015-2016 low season and reached an all-time low.
- However, persistent and recurrent WPV1 positive environmental isolates in Quetta, Peshawar and risk of re-establishment in Karachi are major concerns. Recent WPV isolates from Afghanistan represent continued cross border transmission in two common corridors (Quetta-Kandahar and Peshawar-Nangarhar blocks).
- High government commitment sustained at every level in both countries to focus on meeting the targets set in the NEAPs particularly maintaining the program rigor in core reservoirs, enhanced quality in underperforming non reservoir areas of Pakistan; maintain recently gained access in North-East (Kunduz) and improving quality of SIAs in Southern region of Afghanistan.
- The proportion of missed children has been reduced in high-risk areas of Pakistan and Afghanistan due to robust follow-up activities of community level frontline workers, who consistently track, refer to health facilities, and vaccinate up to 80-90% of children that were missed during polio campaigns.
- WPV1 and cVDPV2 isolates from Borno State, **Nigeria** represented prolonged undetected endemic circulation. Inaccessibility and systematic errors in surveillance masked ongoing transmission for a period of over 2 years. A massive vaccine response with bOPV, mOPV2 and IPV was implemented in Nigeria and bordering areas of Lake Chad Basin. No WPVs reported since August 2016, but VDPV2 circulation persists in Sokoto, indicating pockets of low population immunity. Inaccessibility in Borno compounded with decline in political commitment are major concerns. Approximately 40% of Borno settlements remain inaccessible, and potentially 300,000+ children are still unimmunized. Improved access in Borno and improved quality in Sokoto are urgent priorities to reduce a major threat to GPEI success in 2017.
- GPEI believes that the current situation in endemic countries offers the best window of opportunity than ever before to stop transmission in 2017.

Topline Messages - 2

- Outbreaks of circulating VDPV2 and emergences of new VDPV2 pose major risks as poliovirus type 2 immunity declines following the global withdrawal of type 2 OPV. GPEI responded to cVDPV2 outbreaks in Borno, Sokoto and Quetta and to a VDPV2 event in Mozambique using monovalent type2 OPV (mOPV2). **In Afghanistan mOPV2 SIA was recommended by GPEI in response to the ongoing Quetta outbreak, but has not been implemented.**
- Overall, surveillance performance indicators are being met at national levels, however, many subnational geographies do not meet the targets. GPEI has formed a Surveillance Task Team in EOMG to prioritize countries for surveillance strengthening activities.
- The switch from tOPV to bOPV was largely successful, however in response to detection of Sabin 2 poliovirus GPEI has reported use of tOPV in parts of several countries (Afghanistan, Cameroon, India, Nigeria, Pakistan), which was immediately followed by investigations and corrective actions.
- GPEI prioritized accountability which led to a leaner 2017 budget as well as stronger planning and oversight of expenditures at the country, regional and global levels. It also is exploring options to optimize planning and costing of the polio eradication activities with the aim to achieve savings to extend the program into 2020 without exceeding the 7B USD budget ceiling. GPEI continues to be funded largely by earmarked/specified funding that presents increasing risks as it does not provide the program the flexibility necessary to respond quickly to changing polio epidemiology and program needs.
- IPV supplies are insufficient to meet demand through 2017 and into 2018; use of fractional-dose IPV vaccination strategies have been recommended and are being used or considered in a few areas (India, Bangladesh, Sri Lanka) as a mitigating strategy.

ENDEMIC COUNTRIES

Pakistan
Afghanistan
Nigeria

Pakistan Summary

High government commitment and oversight, present at every level

- Robust engagement of Prime Minister Focus Group & Provincial Task Forces
- Rollout of effective Divisional level oversight has had major impact
- Intensive focus on Tier 1 and 2, but increasing focus on Tier 3 and 4
- Implementation of performance management and accountability framework on-track

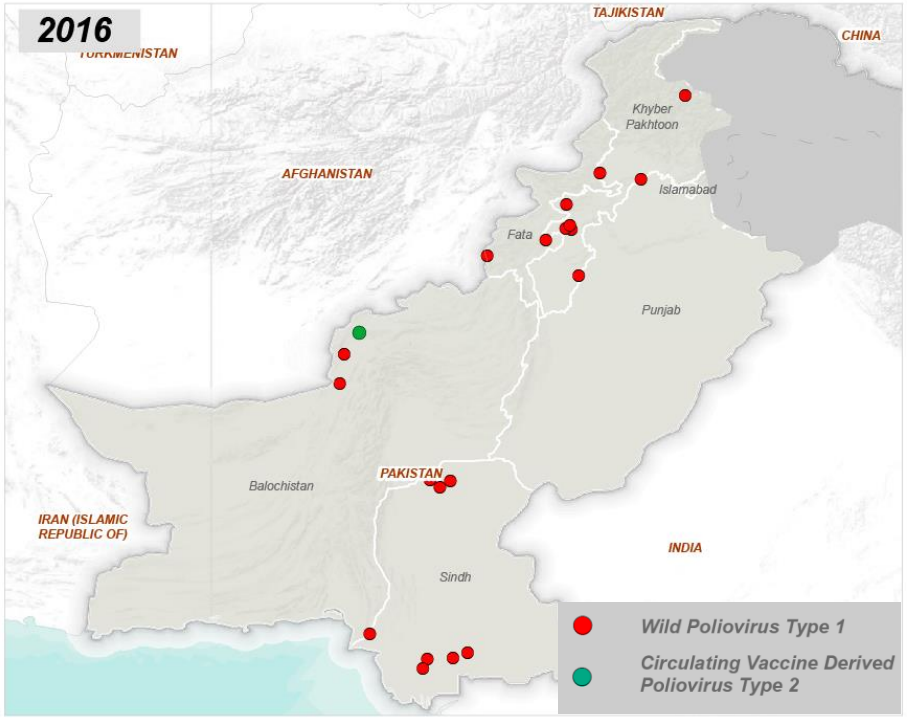
NEAP (National Emergency Action Plan) objectives since June 2016:

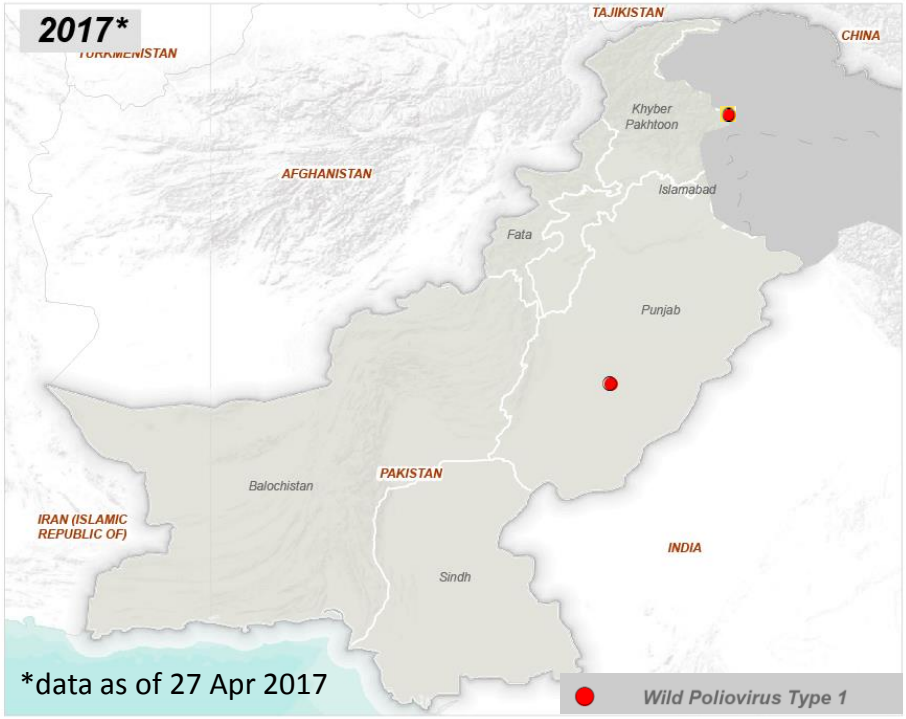
- Stop poliovirus transmission in all reservoirs
- Detect, contain, and eliminate poliovirus from newly infected areas
- Maintain and increase population immunity against polio throughout Pakistan
- Sustain recent improvements in program performance in Quetta

Key priorities moving forward:

- Core reservoir areas remain the greatest risk to polio eradication in Pakistan
- Common reservoirs with Afghanistan
- Persistently missed children and high risk mobile populations (HRMP)
- Rapid and robust response to any polio event
- Improving quality in lowest performing UCs in Tier 3 & 4 areas

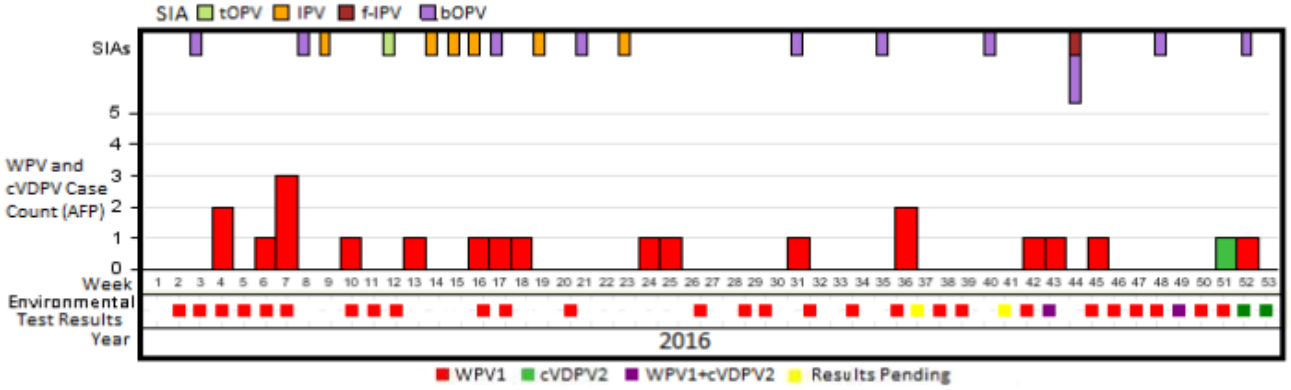
Pakistan: WPV1 and cVDPV2 cases, 2016 and Jan 2017 – Mar 2017

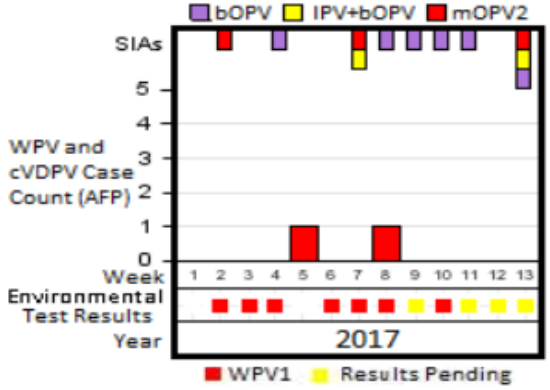




Source: WHO

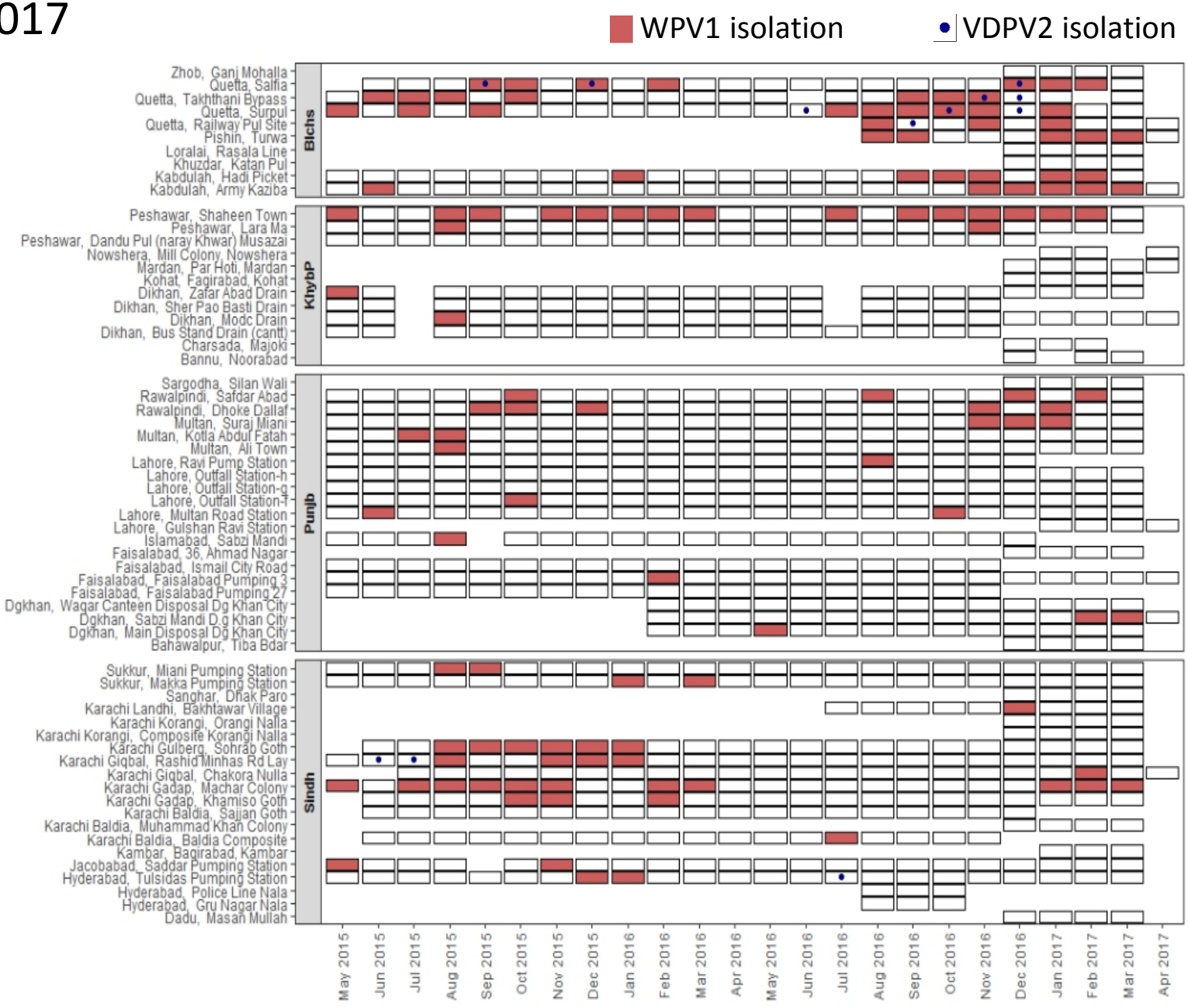
WPV1 and cVDPV2 cases, environmental results by onset wk, and SIAs, 2016 & Jan to Mar 2017





In 2016, Pakistan had 20 WPV1 cases; YTD in 2017 there are 2 cases, compared to 8 cases in the same period in 2016. Three mOPV2 campaigns were conducted in 3 districts near Quetta in 2017.

Pakistan: Environmental Sampling – WPV1 and VDPV2 isolation, May 2015 – Apr 2017



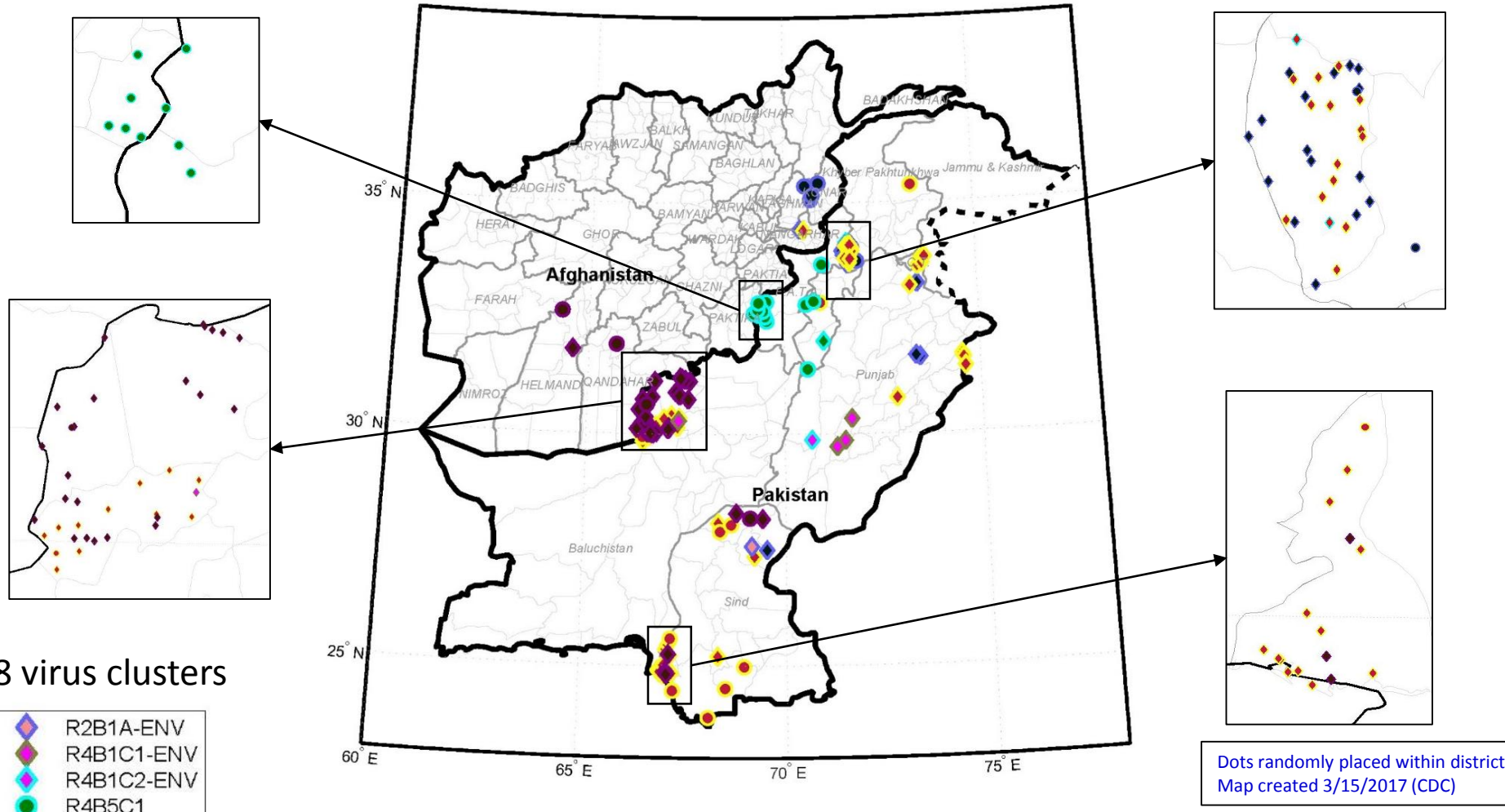
Monthly collection seen across almost all sites.

Both WPV1 and VDPV2 isolated from multiple sites.

VDPV2 last detected in Dec 2016 in Quetta (response with mOPV2 campaigns in Jan-Mar, 2017).

POLIS Data as of 11 Apr 2017 (Note: POLIS data is missing BMFS results and may not be as up-to-date for ES as country data)

Pakistan & Afghanistan: Genomic classification of WPV1 from AFP cases and environmental surveillance, Jan 2016 – Dec 2016



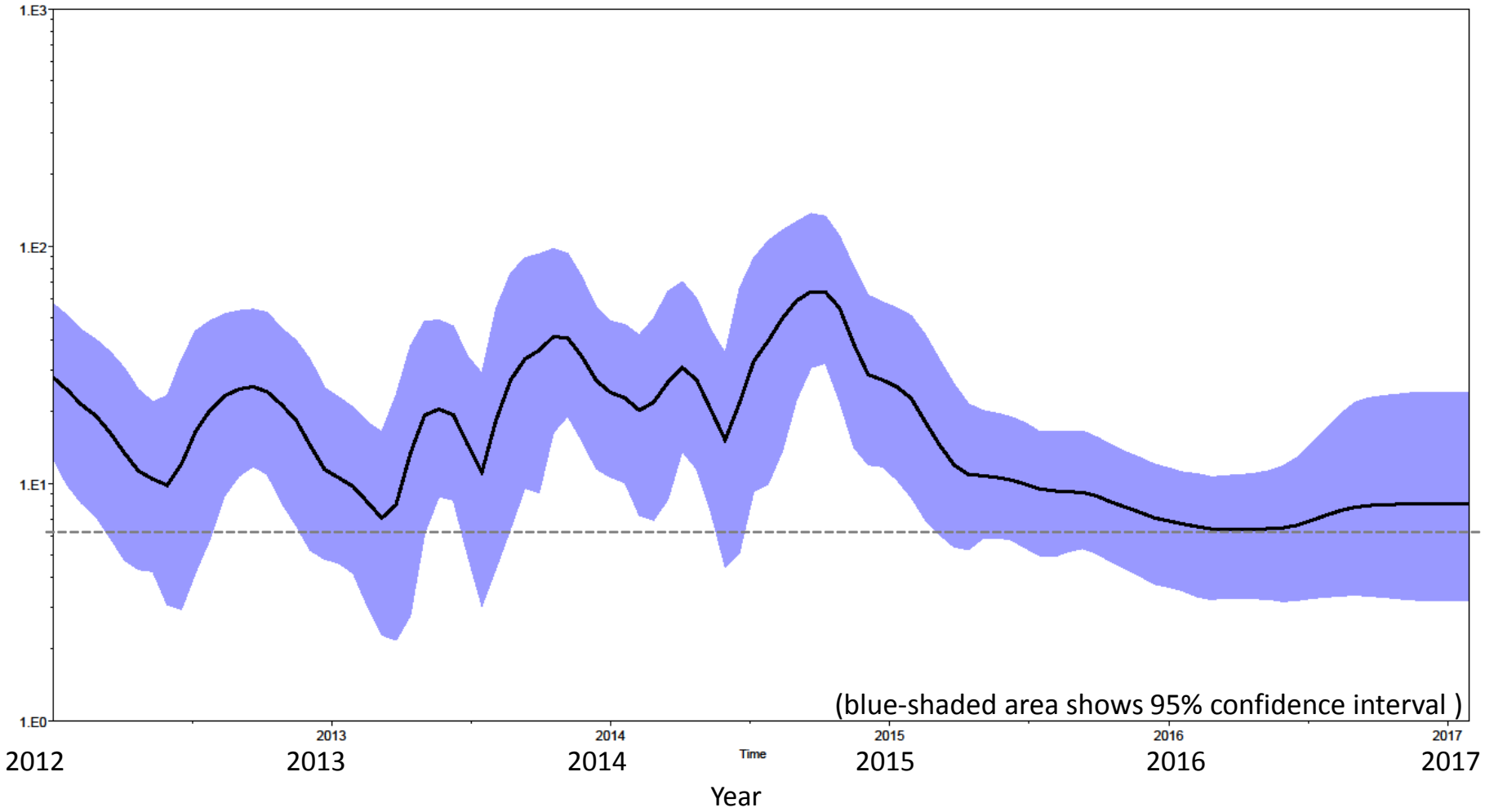
8 virus clusters

- R2B1A-ENV
- R4B1C1-ENV
- R4B1C2-ENV
- R4B5C1
- R4B5C1-ENV
- R4B5C3
- R4B5C3-ENV
- R4B5C4
- R4B5C4-ENV
- R4B5C5
- R4B5C5-ENV
- R4B5D-ENV

Dots randomly placed within district.
Map created 3/15/2017 (CDC)

Expansion of ENV sites and increased sampling frequency has enhanced the overall sensitivity whereby ENV surveillance detected 8 genetic clusters compared to 4 detected from AFP cases. Circulation of subcluster C3 has continued through 2016 into Q1 2017 in Quetta block; different chains of transmission of subcluster C4 persisted in Quetta, and Karachi/Sindh. This indicates that population immunity achieved in 2016 was not adequate enough to stop these chains of transmission.

Pakistan & Afghanistan: Genetic diversity of WPV1, 2012 – Feb, 2017



Genetic diversity decreased across the 2015-2016 low season and reached an all-time low.

During the peak high-season and into the 2016-2017 low season, the average genetic diversity may have slightly increased.

Source: CDC

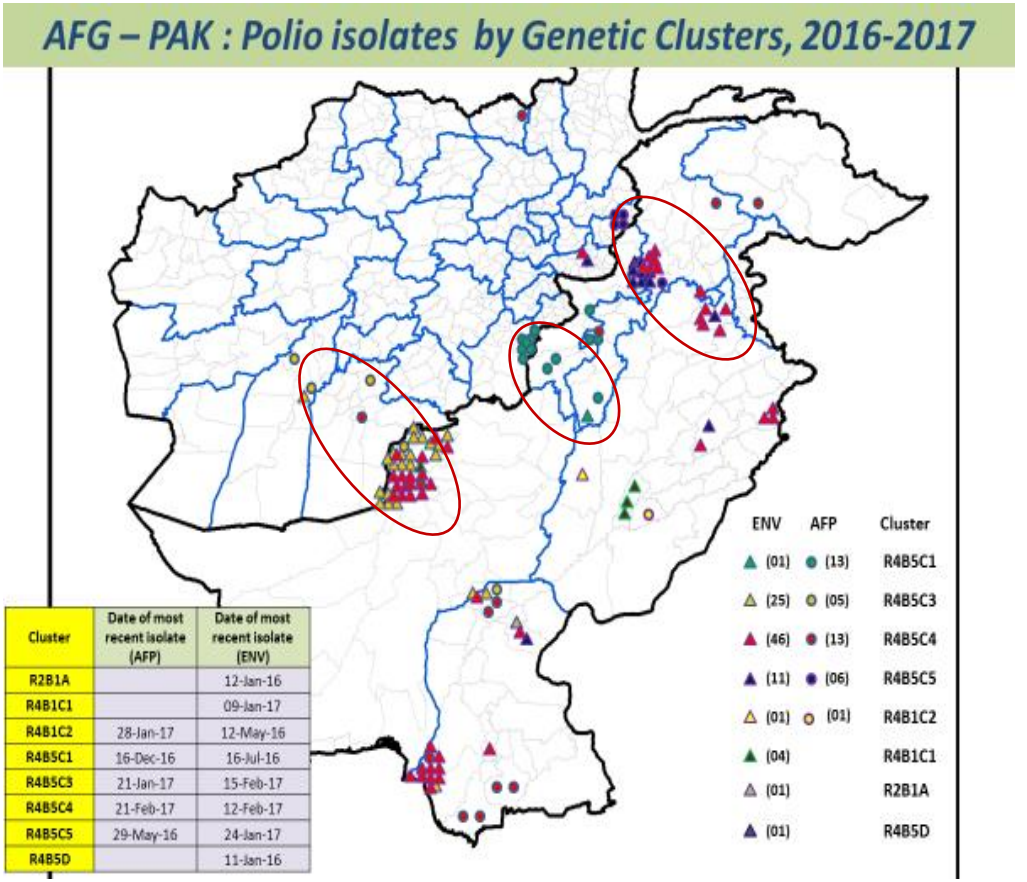
Pakistan and Afghanistan: Corridors of transmission—common reservoirs spanning borders between Afghanistan and Pakistan involving: 1) selected geographic areas, and 2) demographic groups

Three main shared transmission corridors/endemic zones:

a) Southern/Western (Kandahar & Helmand—Quetta)
b) Southeast Afghanistan/South KP (Paktika—South Waziristan)
c) Eastern/Northern (Nangahar & Jalalabad—Peshawar Valley)

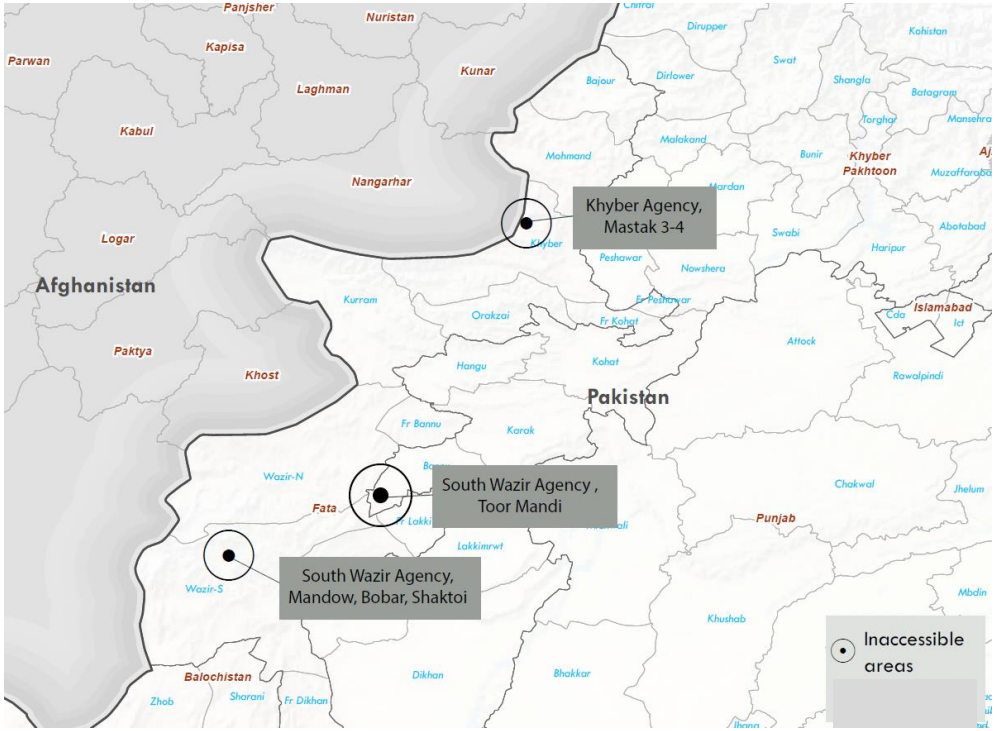
4 risk scenarios for future WPV transmission due to movement of people, and GPEI action:

- Movement within reservoir areas
  - Areas with high population movement identified and focused
  - Emphasis on guest children (vaccinators, SMs, Supervisors and monitors)
- Straddling populations at border areas
  - Mapping of areas and relations on other side of border
  - Inclusion in high risk area for increased focus
- Nomads
  - Routes, seasonality identified
  - Nomad specific campaigns, Nomad specific PTTs, Inclusion in SNID/NID
- Returnees
  - Vaccination at border, UNHCR/IOM centers
  - IPV (under 5) and OPV (under 10)
  - Identification of settlement and inclusion in microplan



Cluster	Date of most recent isolate (AFP)	Date of most recent isolate (ENV)
R2B1A		12-Jan-16
R4B1C1		09-Jan-17
R4B1C2	28-Jan-17	12-May-16
R4B5C1	16-Dec-16	16-Jul-16
R4B5C3	21-Jan-17	15-Feb-17
R4B5C4	21-Feb-17	12-Feb-17
R4B5C5	29-May-16	24-Jan-17
R4B5D		11-Jan-16

Pakistan: Program accessibility: FATA and KP, 2017

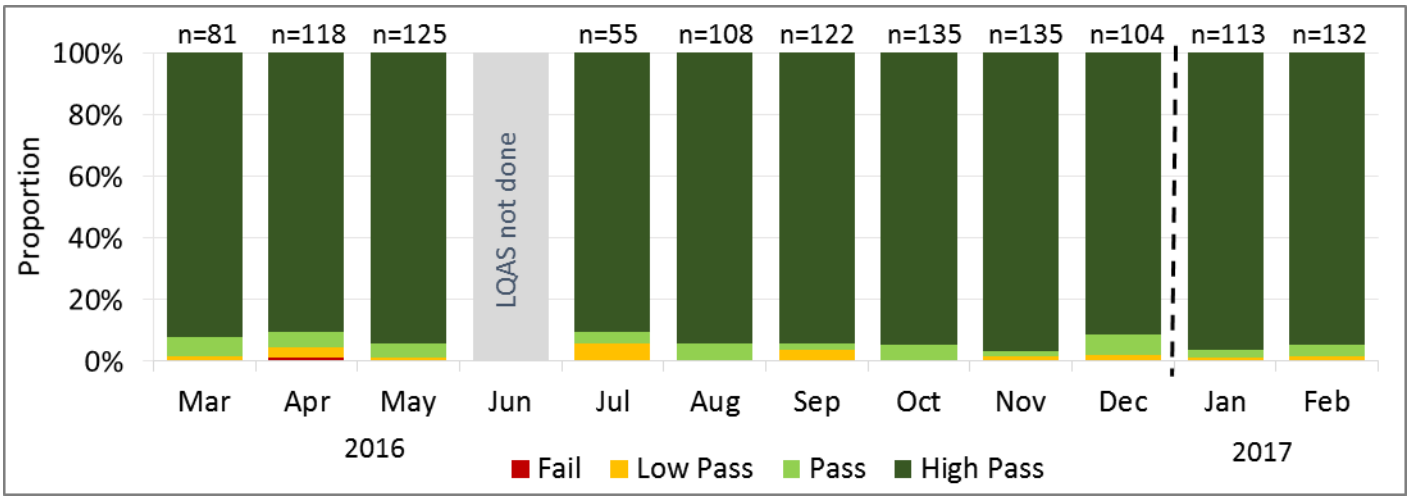


- Inaccessibility has been limited to three small pockets with an <5 yr population of 5,500 within Khyber and South Waziristan Agencies.
- Part of South Wazir Agency (Shaktoi) has been accessed intermittently (through health camps in 2016 and again in April, 2017 when 2240 children were vaccinated)

Source: WHO, data as of 28 Mar 2017, inaccessibility reduced in Apr 2017

Pakistan: FATA Immunization coverage levels appears to be sustained at high levels

LQAS Survey Results by SIA, Mar 2016 –Feb 2017



LQAS categories for unvaccinated children based on samples of 60 children:

0-3 = High Pass (90%+)
4-8 = Pass (80%-89%)
9-19 = Low Pass (60%-79%)
≥ 20 = Fail (< 60%)

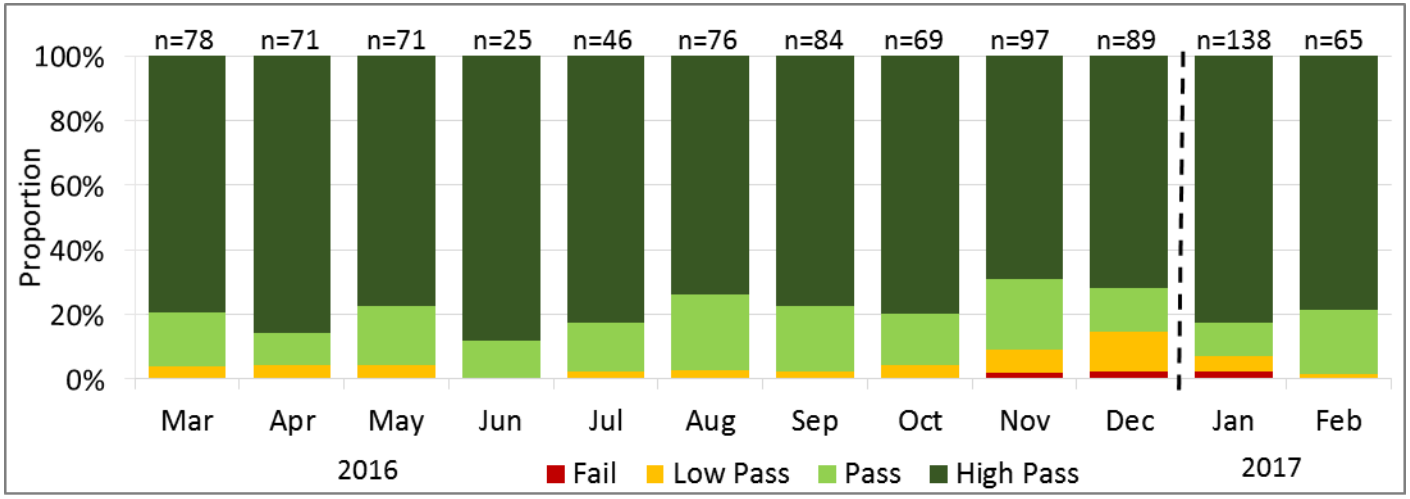
NPAFP cases polio dose history at 6-35 months of age, by quarter, Apr 2016 to Mar 2017

Source: CDC

Data as of April 4, 2017

Pakistan: KP Post-campaign coverage estimates are variable

LQAS Survey Results by SIA, Mar 2016 –Feb 2017



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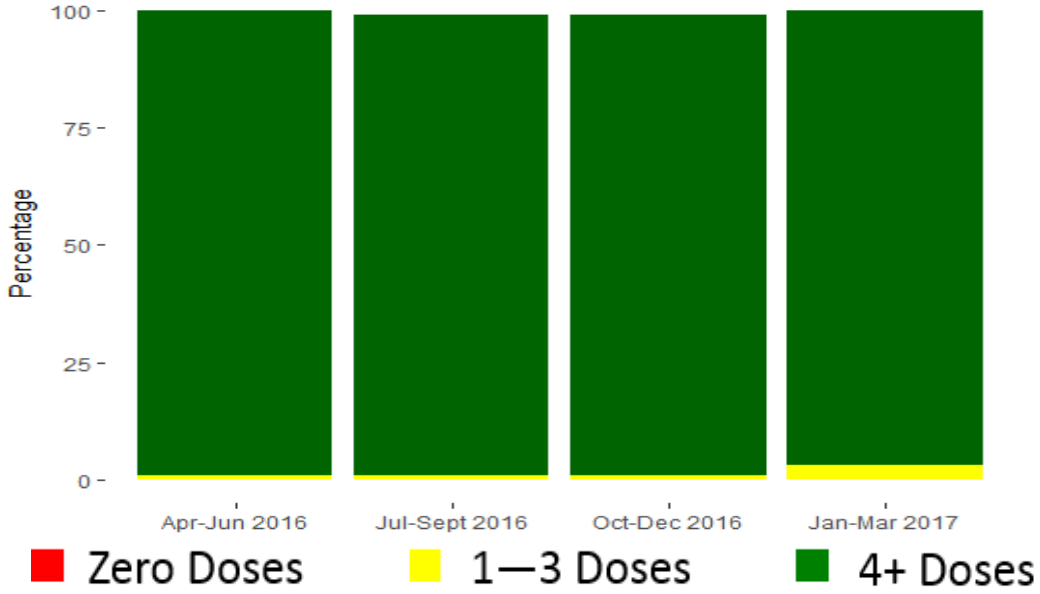
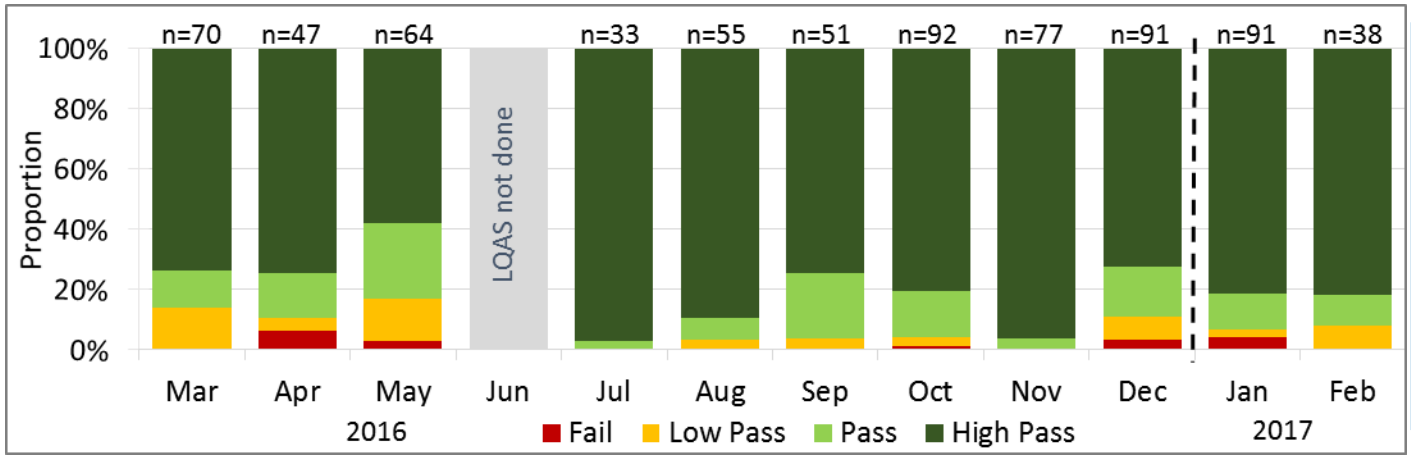


Source: CDC

Data as of April 4, 2017

Pakistan: **Karachi** SIA quality appears to be improving

LQAS Survey Results by SIA, Mar 2016 –Feb 2017



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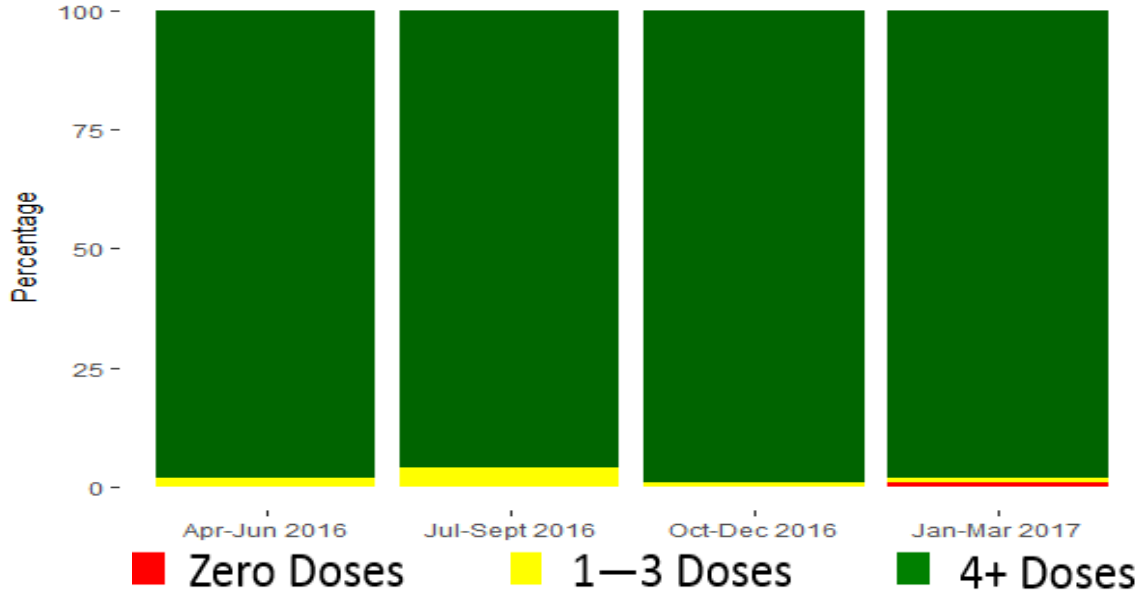
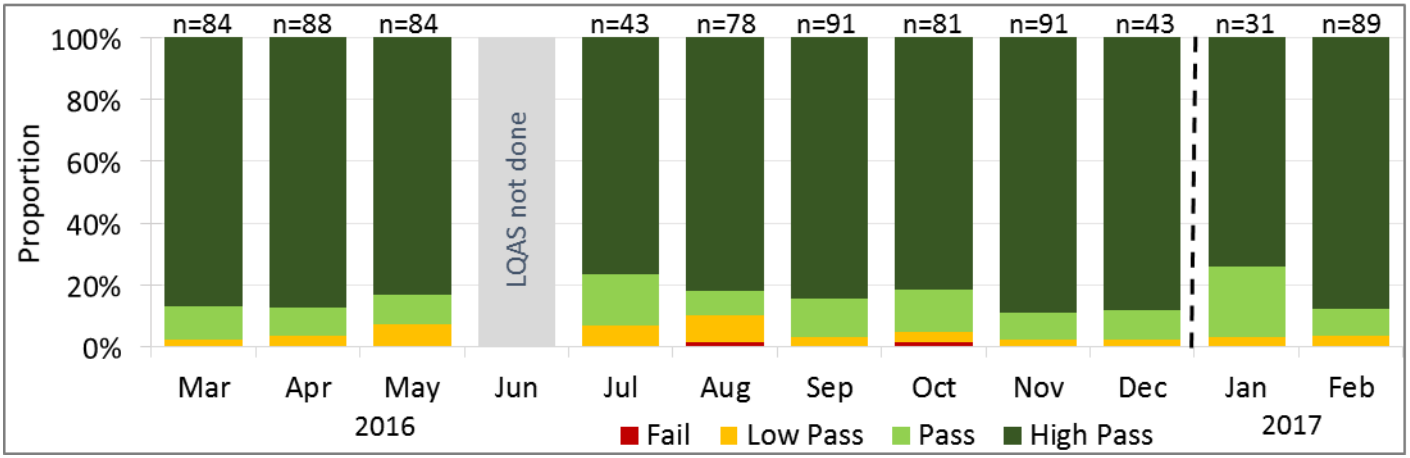


Source: CDC

Data as of April 4, 2017

Pakistan: Quetta SIA quality indicators relatively unchanged since 2016

LQAS Survey Results by SIA, Mar 2016 –Feb 2017



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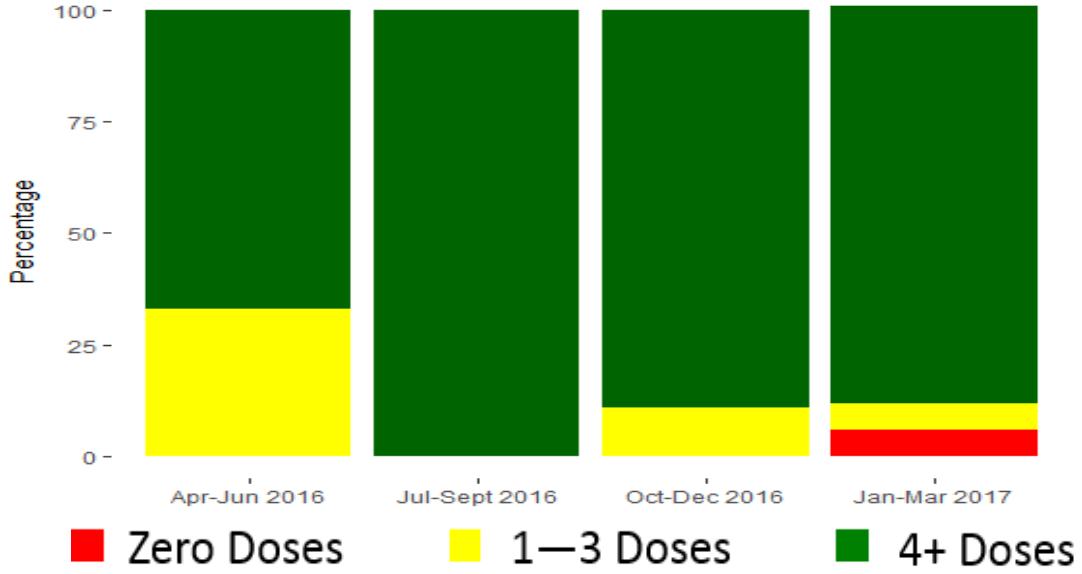


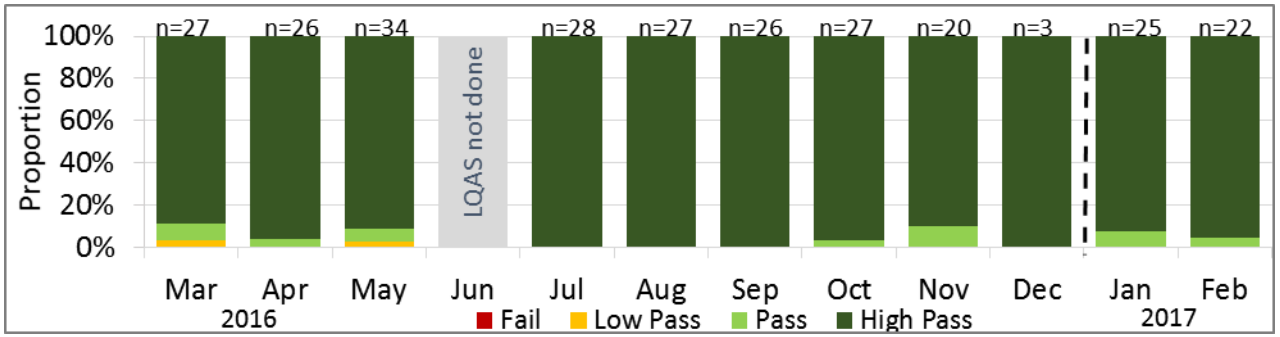
Source: CDC

Data as of April 4, 2017

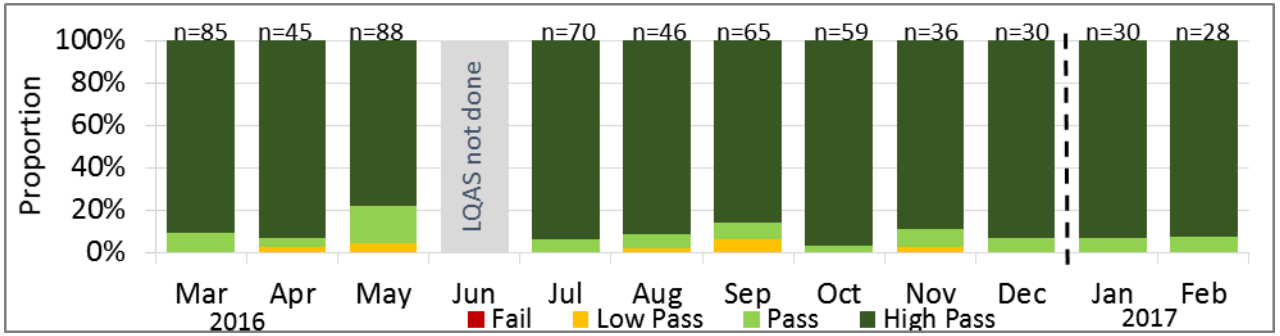
Pakistan: SIA quality varies among high risk transmission areas

Mar 2016 – Feb 2017

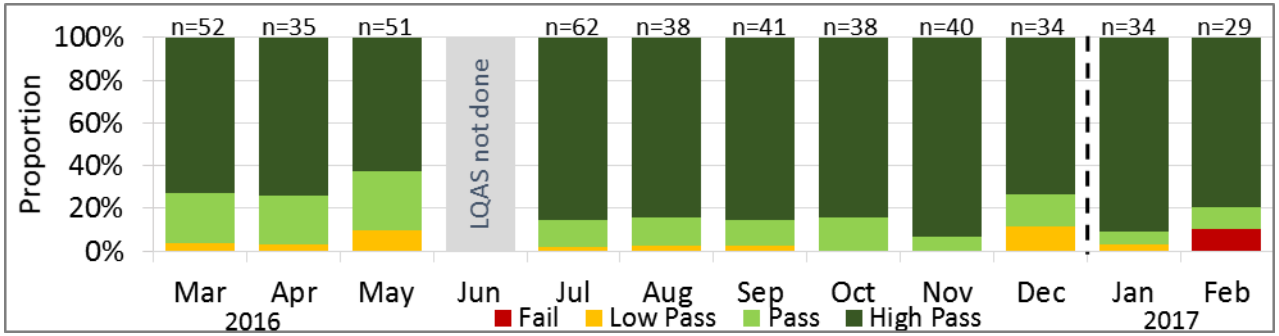
Khyber



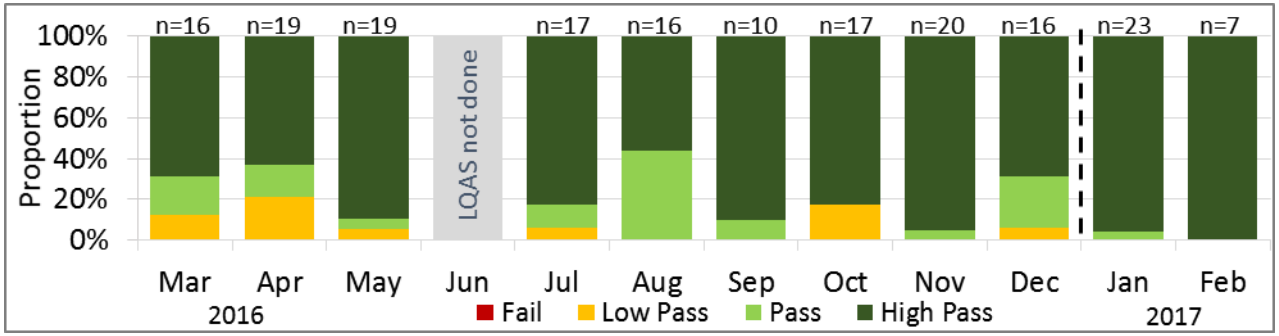
Peshawar



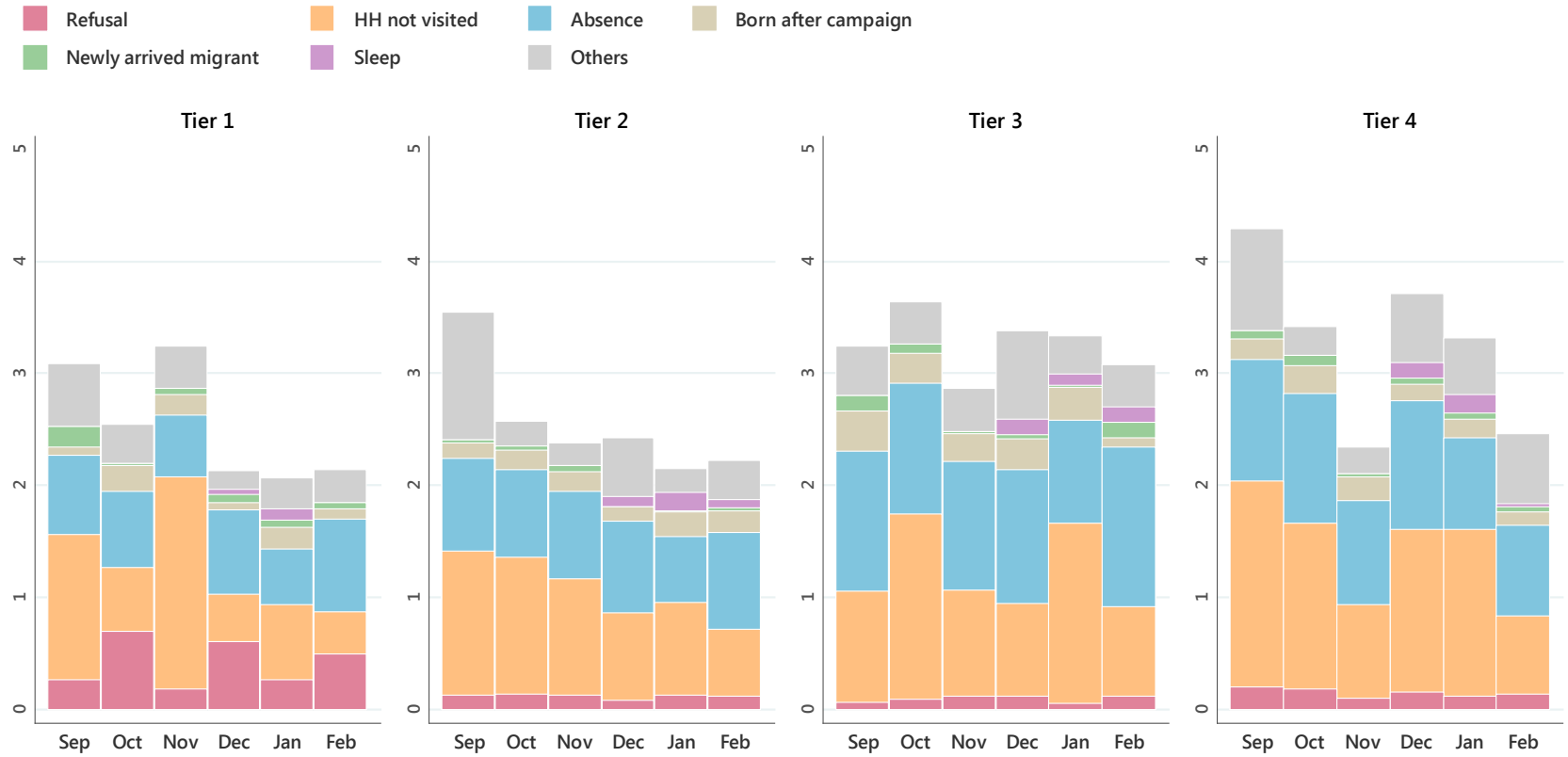
Northern Sindh
(Kambar, Larkana, Jacobabad, Shikarpur, Kashmore, Ghotki, Sukkur, Khairpur)



High Risk Karachi Towns
(Baldia, Gadap, Giqbal)



Trends in missed children, 2016 Sep - 2017 Feb



Source: Post Campaign Monitoring

Note: "Others" reason category included "*Team visited but missed the child*", "*Unknown*" and "*Others*".

- NIDs were conducted in Sep-2016, Dec-2016, and Jan-2017
- "Absence" and "HH not visited" are the primary reasons for missed children during campaign in all tiers
- While Tiers 1 and 2 have shown improvement, Tiers 3 and 4 have not.

Pakistan: Trend in children "still missed" after post-NID catch-up efforts, by Tier, Jan 2015 to Jan 2017

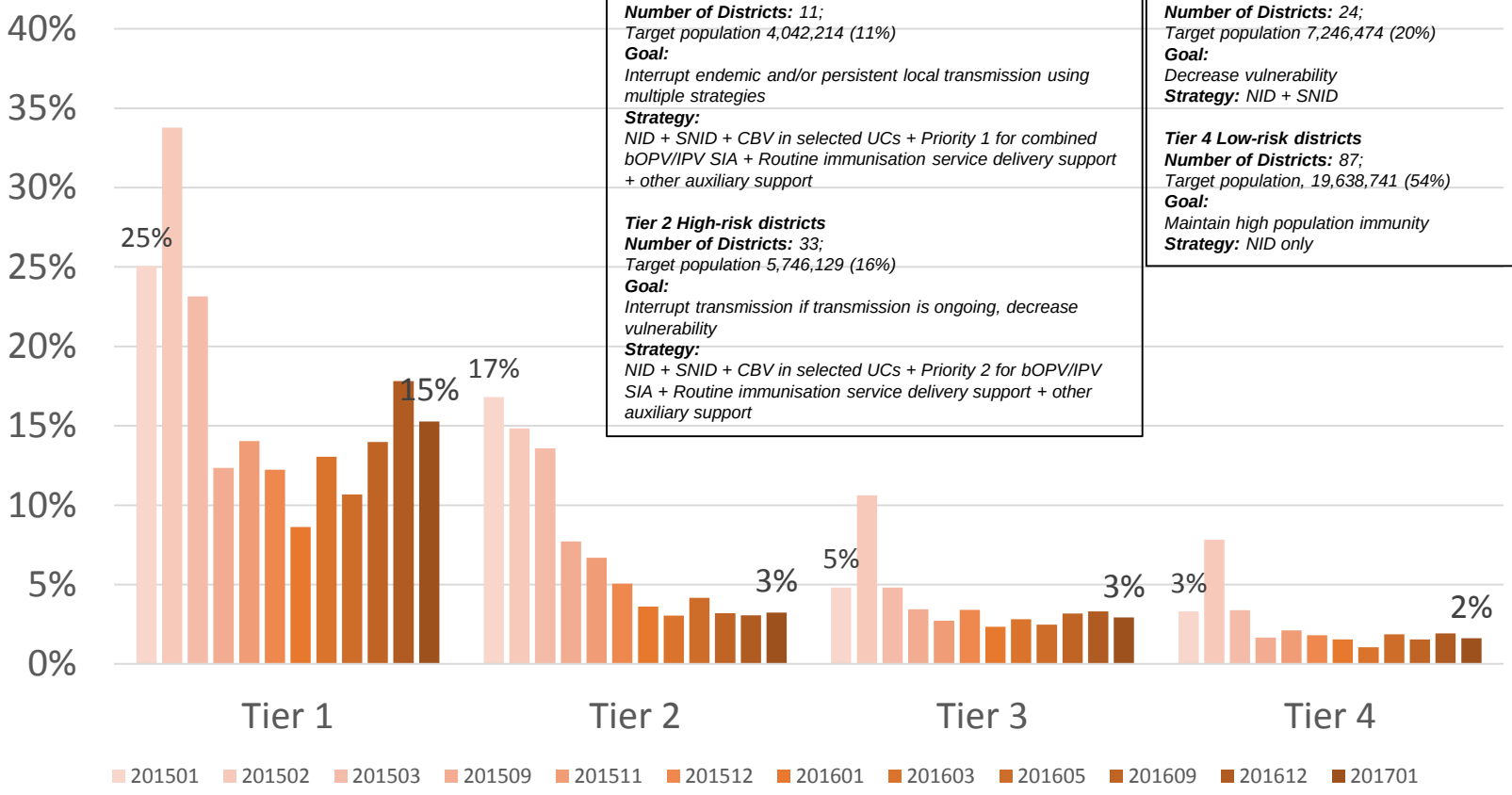
2016 - 2017 Tiers

Tier 1 Core reservoir districts
Number of Districts: *11;*
Target population 4,042,214 (11%)
Goal:
Interrupt endemic and/or persistent local transmission using multiple strategies
Strategy:
NID + SNID + CBV in selected UCs + Priority 1 for combined bOPV/IPV SIA + Routine immunisation service delivery support + other auxiliary support

Tier 2 High-risk districts
Number of Districts: *33;*
Target population 5,746,129 (16%)
Goal:
Interrupt transmission if transmission is ongoing, decrease vulnerability
Strategy:
NID + SNID + CBV in selected UCs + Priority 2 for bOPV/IPV SIA + Routine immunisation service delivery support + other auxiliary support

Tier 3 Vulnerable districts and low-risk districts reporting case(s) in 2016
Number of Districts: *24;*
Target population 7,246,474 (20%)
Goal:
Decrease vulnerability
Strategy: *NID + SNID*

Tier 4 Low-risk districts
Number of Districts: *87;*
Target population, 19,638,741 (54%)
Goal:
Maintain high population immunity
Strategy: *NID only*

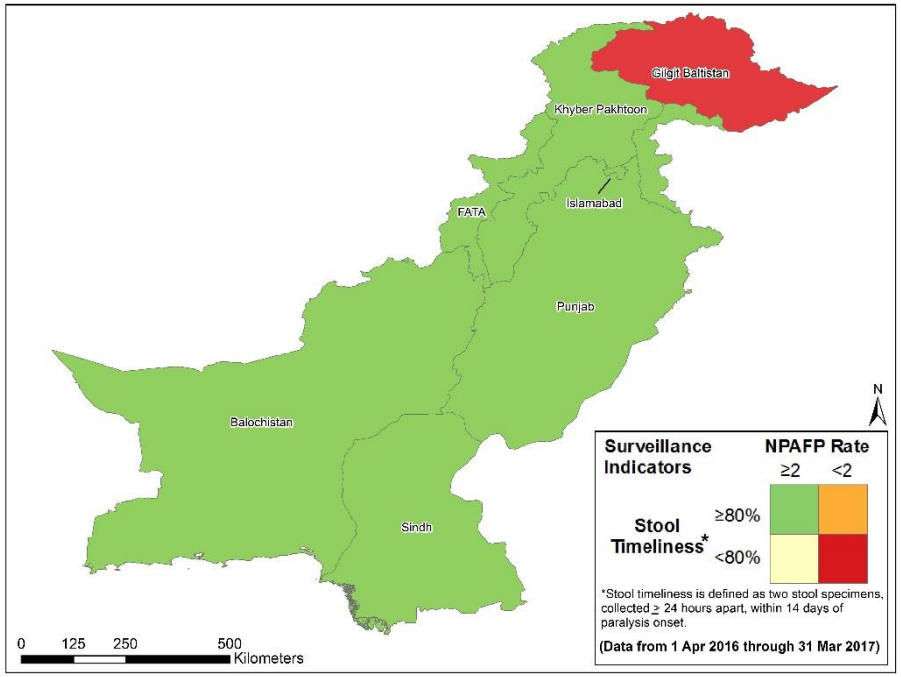


- Most reduction occurred in 2015.
- In Tiers 2, 3, and 4 about 3% of children were "still missed" following catch-up in 2016-2017.
- Tier 1 districts have more than 15% "still missed" children following catch-up efforts since 2015.
- Higher proportion of missed children in the core reservoirs may partially reflect more intensive follow-up by Community Based Volunteers and better recording at household level.

Source: Pakistan EOC, Integrated Disease Information Management System

Pakistan: Surveillance Apr 2016 - Mar 2017

Surveillance quality



Surveillance quality is variable within provinces

Stool timeliness: 2 stool specimens, collected ≥ 24 hours apart, among AFP cases < 15 yrs old w/in 14 days of paralysis onset

Source: CDC

Recommendation #3 of the 13th IMB Report

"CDC Atlanta should facilitate the Polio Programmes in Pakistan and Afghanistan in undertaking a full process mapping of Acute Flaccid Paralysis (AFP) reporting and assessment.

- This should involve evaluating the shortfalls in quality in each step of the process and identify measures to strengthen them.
- It should be well informed with detailed local knowledge of the current situation and sufficiently granular to take account of context-specific aspects of the process that will vary from place to place. "

As a result of this recommendation, CDC, BMGF and other GPEI partners reviewed surveillance data from Pakistan, Afghanistan, and Nigeria.

Pakistan: CDC/BMDF review of surveillance data for IMB 2016 recommendation #3 – selected results

- Surveillance continued to improve from 2013 to 2016
- Substantial variation in surveillance at the district level (e.g., Karachi, Peshawar)
- ES detected virus that was missed by AFP

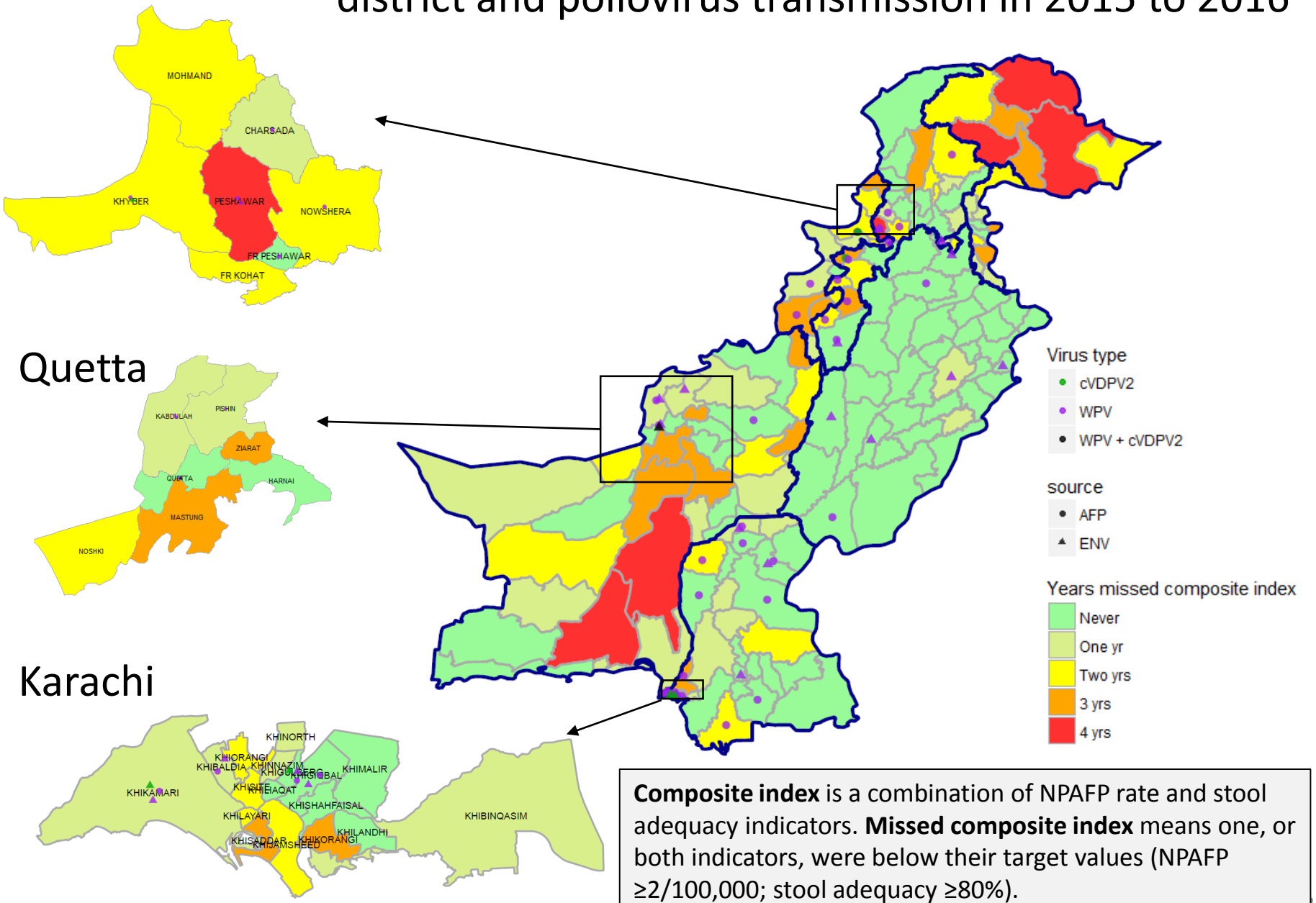
Pakistan

Years missed composite index (2013-2016) by district and poliovirus transmission in 2015 to 2016

Peshawar

Quetta

Karachi



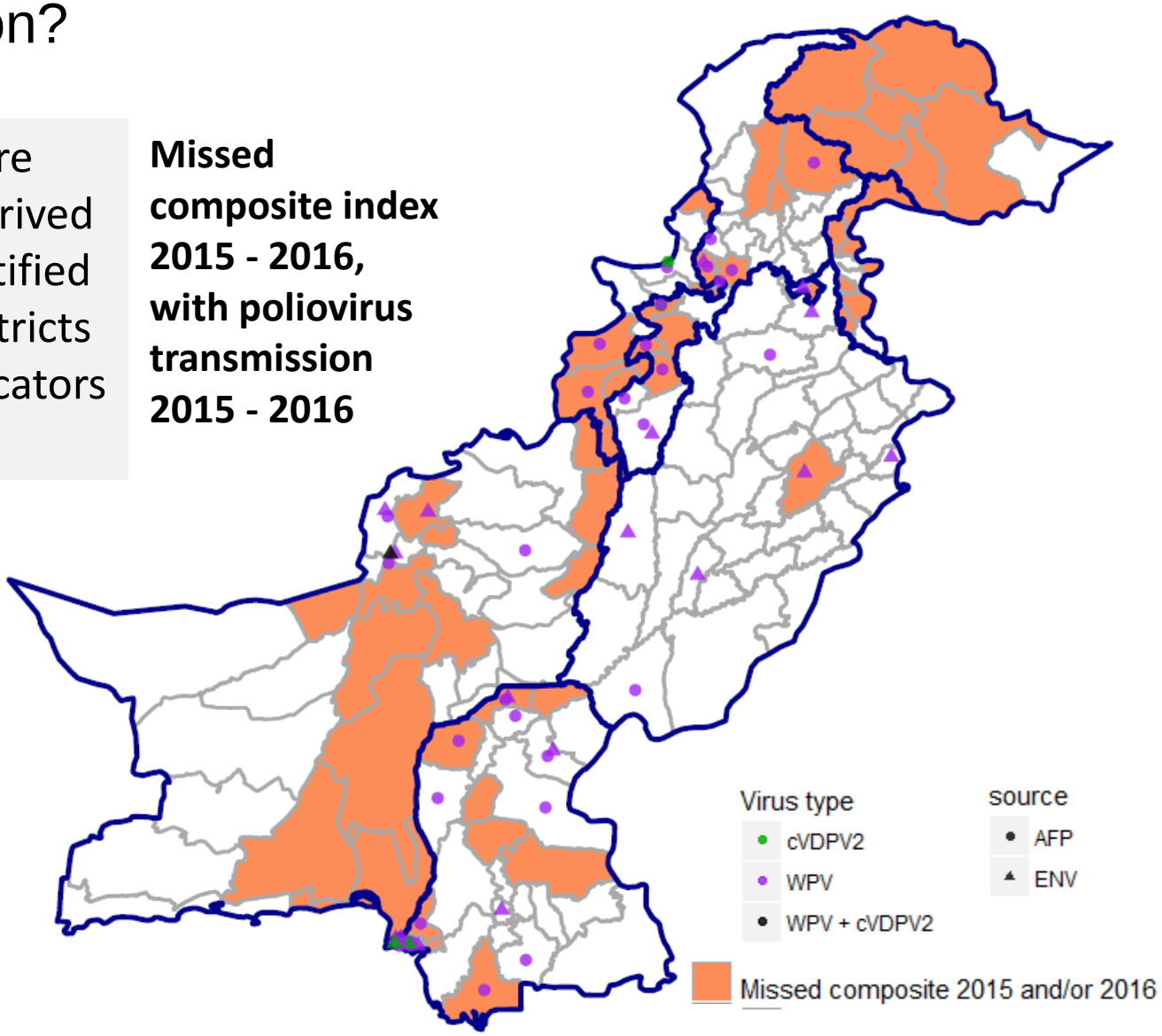
Composite index is a combination of NPAFP rate and stool adequacy indicators. **Missed composite index** means one, or both indicators, were below their target values (NPAFP ≥2/100,000; stool adequacy ≥80%).

Pakistan

How sensitive is AFP surveillance to detect poliovirus transmission?

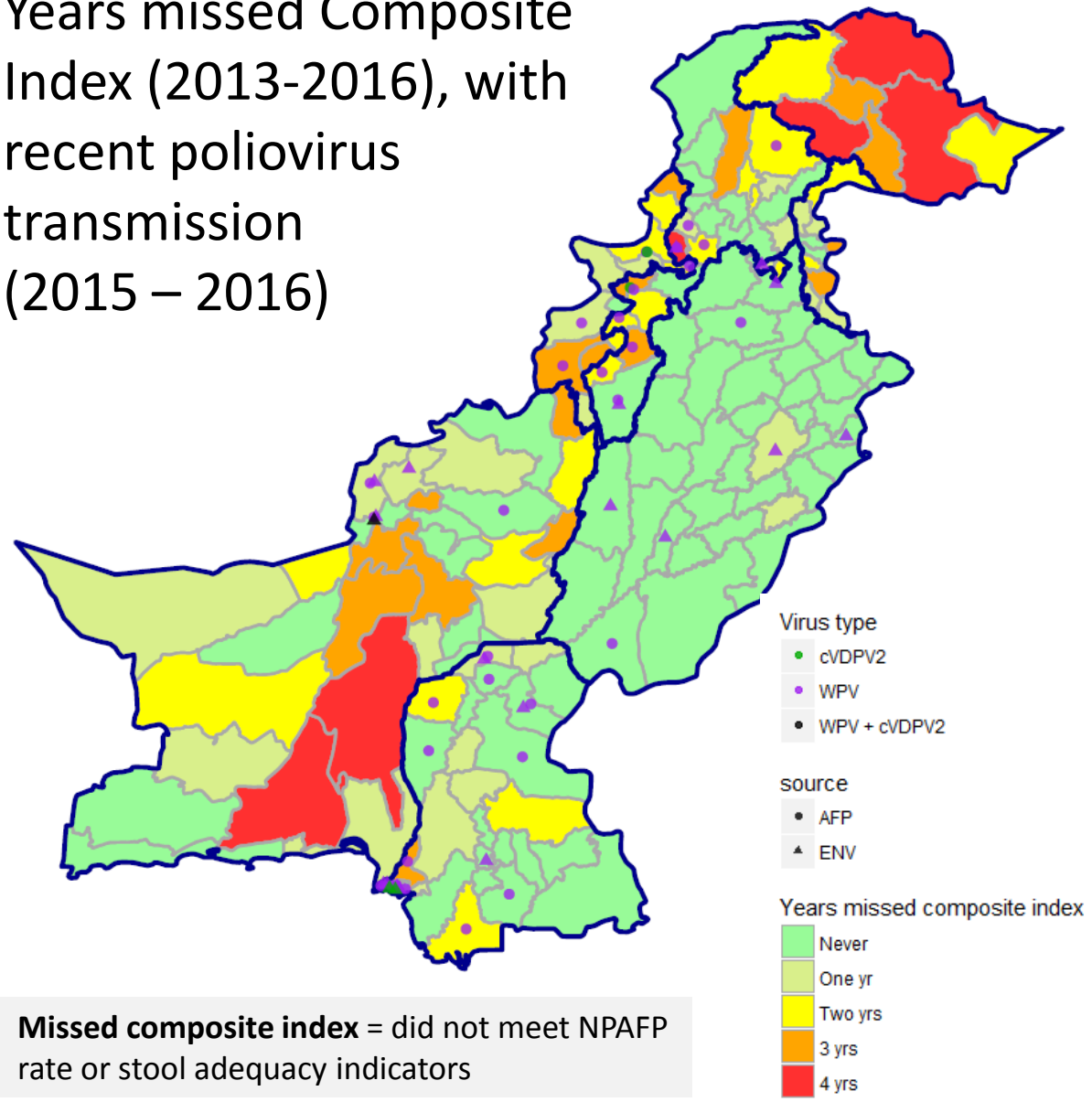
Of the **39** districts where wild and/or vaccine-derived polioviruses were identified in 2015 or 2016, **14** districts did not meet both indicators in 2015 or 2016.

Missed composite index 2015 - 2016, with poliovirus transmission 2015 - 2016



Pakistan External AFP Surveillance Analysis – Key findings

Years missed Composite Index (2013-2016), with recent poliovirus transmission (2015 – 2016)



Missed composite index = did not meet NPAFP rate or stool adequacy indicators

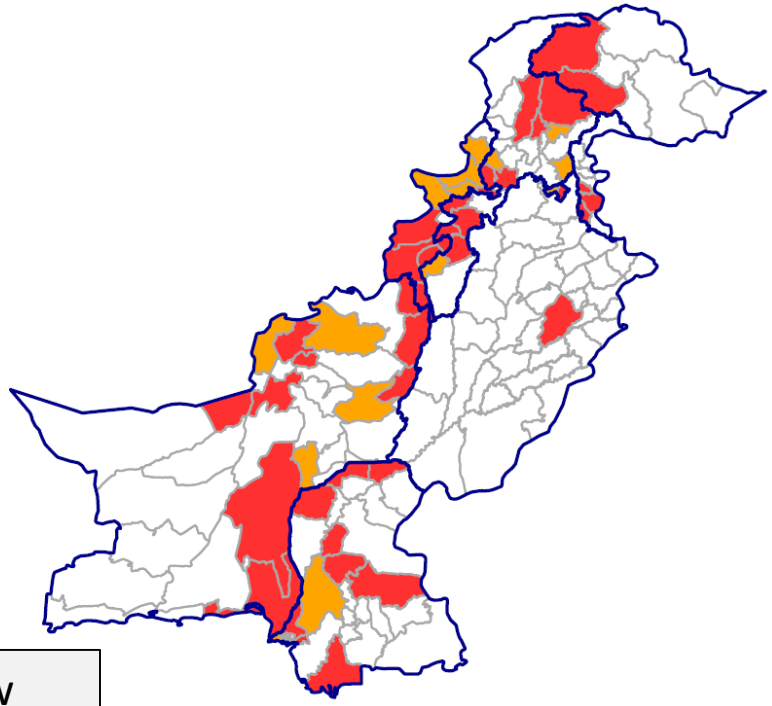
Pakistan surveillance should be able to detect polio outbreaks with several cases, although low-level transmission could be missed in specific pockets.

There still remain suspected weak spots of surveillance close to zones of transmission

Pakistan: Comparison of NEAP tiers with surveillance review findings identifies districts for further field investigation

Surveillance review priority* for further field Investigation of surveillance practices

	High	Med/High	Medium	Low
Tier 1	8	8	6	1
Tier 2	15	5	12	1
Tier 3	6	4	12	2
Tier 4	15	3	33	33
Total	44	20	63	37



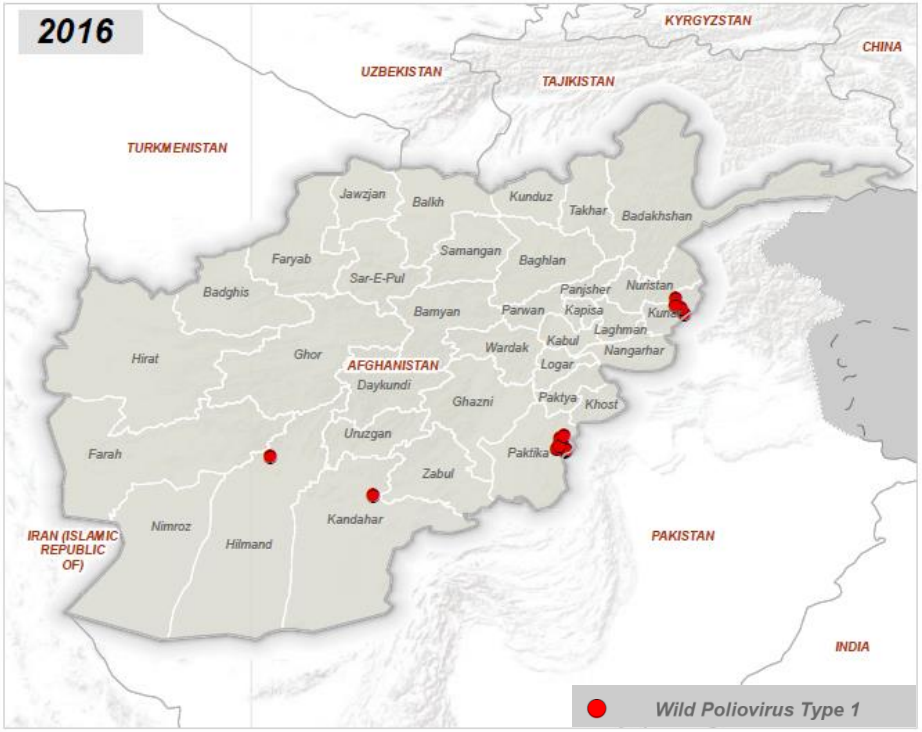
Districts judged as “High Priority” for surveillance review fall into all four NEAP tiers.

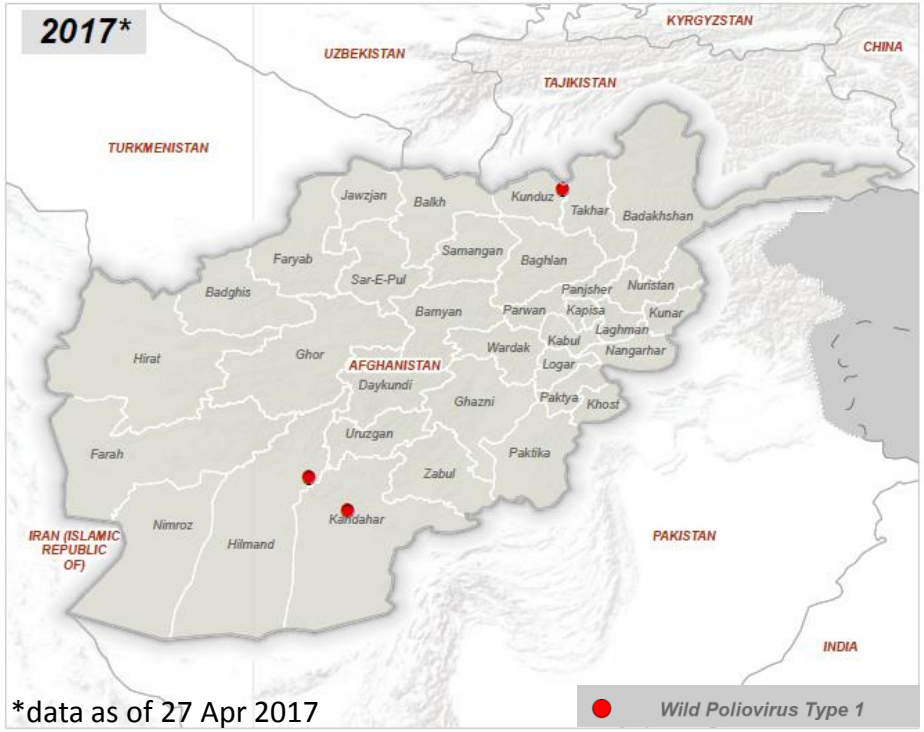
*Districts were flagged as “High” to “Low Priority” for field investigation based on surveillance quality review and virus transmission or proximity using 2015-2016 POLIS data.

Afghanistan Summary

- **Strong political commitment and continued strong partnership** between government, UNICEF and WHO at national and regional levels.
- Systematic **implementation of NEAP 2016-2017** is paying results. **Strategic approach:**
  - Maintain program neutrality and gain access to all children
  - Use alternate strategies in inaccessible areas
  - Focus on identified high risk areas
  - Ensure community and household engagement in all strategies
  - Ensure accountability at all levels
- The **recent transmission in Kunduz** has potential of spreading/establishing. The risk of continued transmission in Bermal, Helmand and Kandahar cannot be ruled out.
- Sheegal and Bermal demonstrates that **pockets of unreached children**, however small, remain at risk.
- The transmission detected in 2016/2017 illustrates the **importance of population movement** for poliovirus transmission in the common reservoir.
- **Improved quality of the campaigns** as evidenced by reduction of failed LQAS lots from 26% in February SNID 2016 to 7% in February SNID 2017.
- **Improved analysis and data triangulation (**e.g. microplan validation, remote and third party monitoring in security compromised areas, Post campaign monitoring (PCM)/LQAS validation)
- Expansion of **Immunization Communication Network** showing promising results in reducing missed children

Afghanistan: WPV1 cases, 2016 and Jan 2017 – Mar 2017

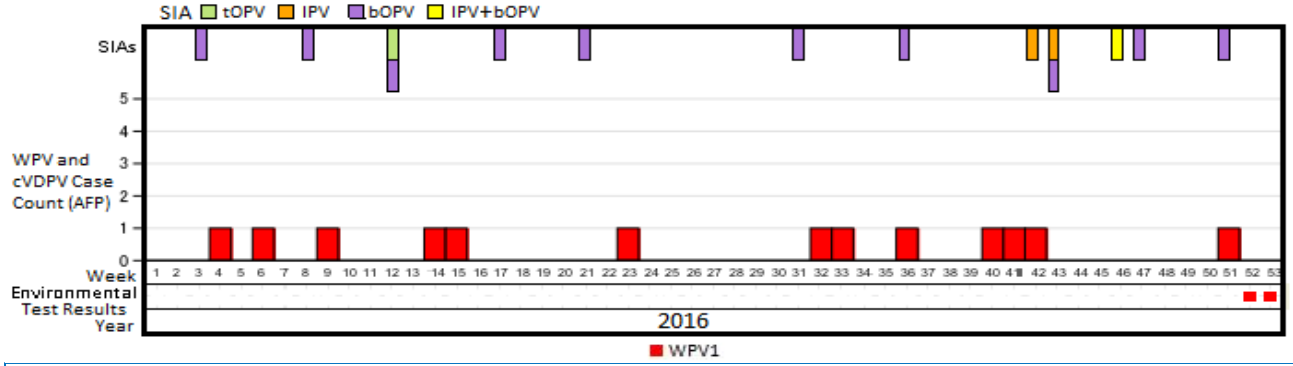


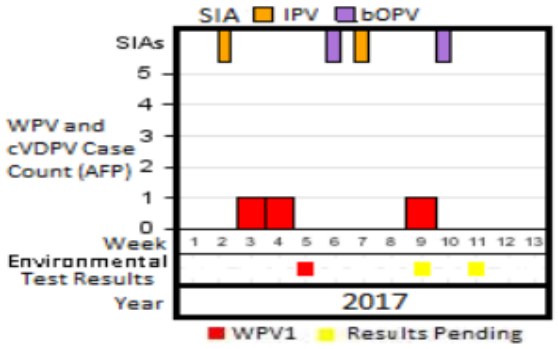


*data as of 27 Apr 2017

Source: WHO

WPV1 cases, environmental results by onset week, and SIAs, 2016 & Jan to Mar 2017





In 2016, Afghanistan had 13 WPV1 cases; YTD in 2017 there are 3 cases, compared to 4 cases for the same period in 2016.

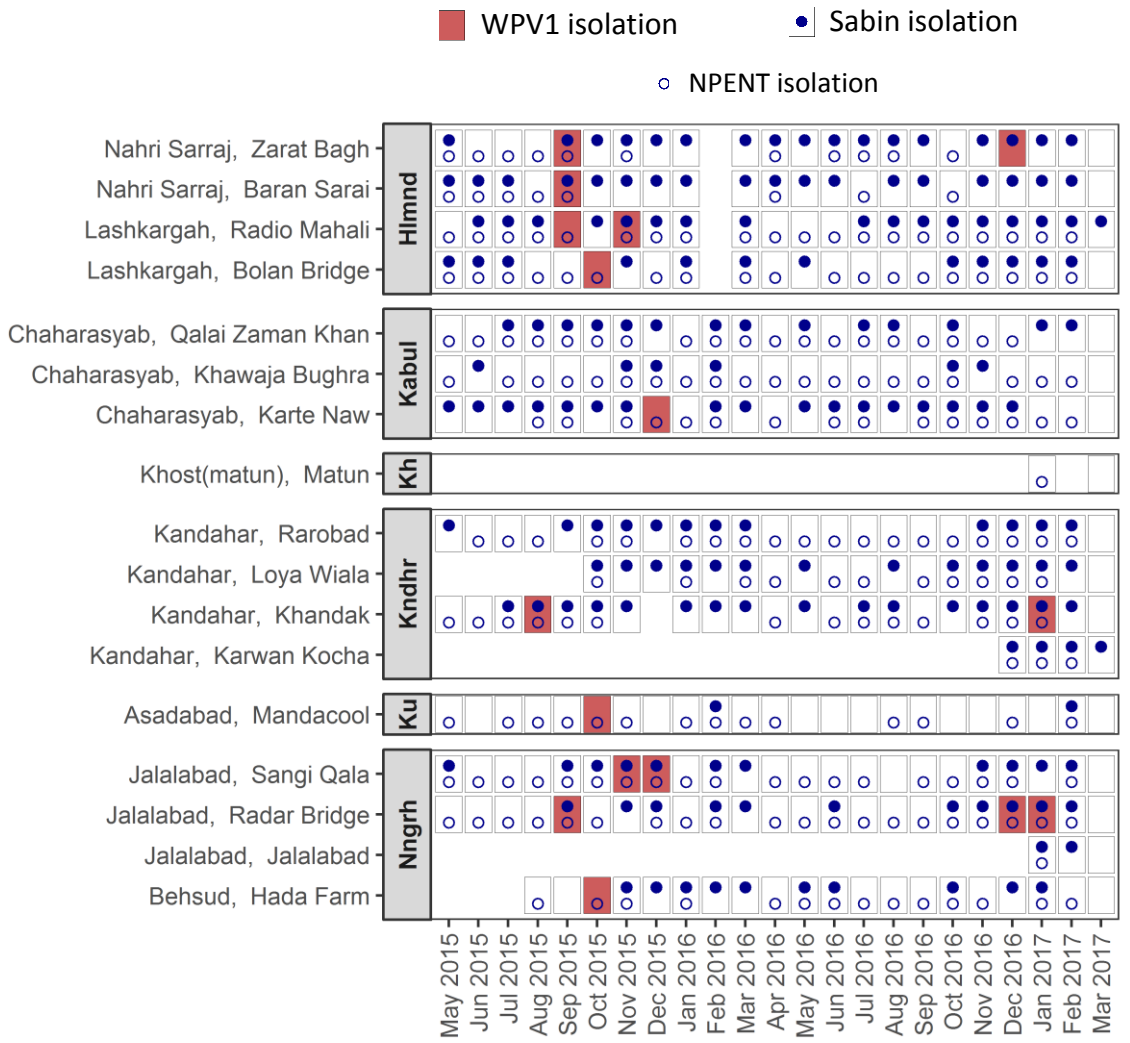
Afghanistan Environmental Surveillance , May 2015 – Mar 2017

No ES in Paktika or Shigal

Sabin isolation high, but variable

- Almost no Sabin or NPEV isolation in Kunar
- Khawaja Burghra site in Kabul rarely isolates Sabin, despite many SIAs

Good alignment between isolation of WPV in AFP cases and in sewage, where both exist

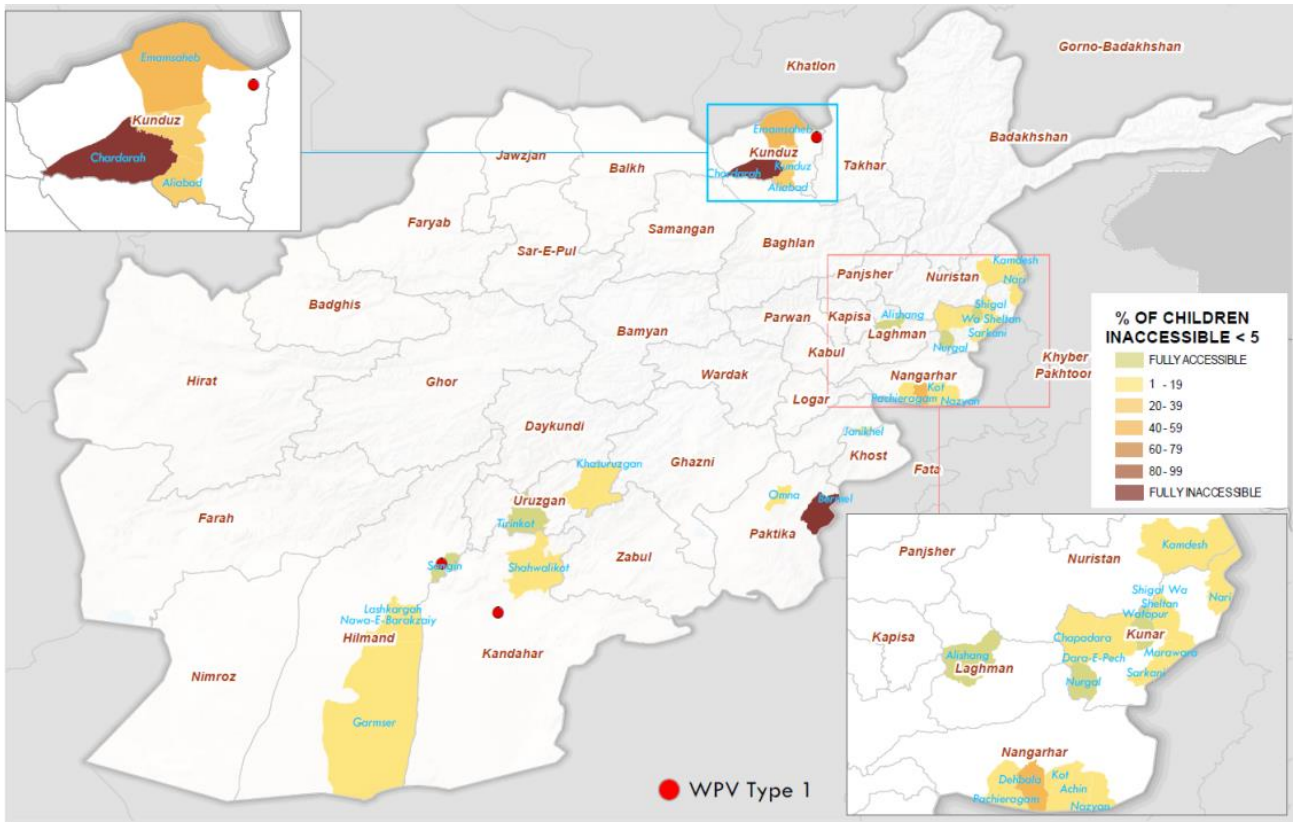


Afghanistan

Eastern and Southern Regions

Access problems are increasing in parts of east and south, and have been of concern in parts of north. Map shows Kunduz inaccessibility since late 2015, however, access has improved starting in March 2017)

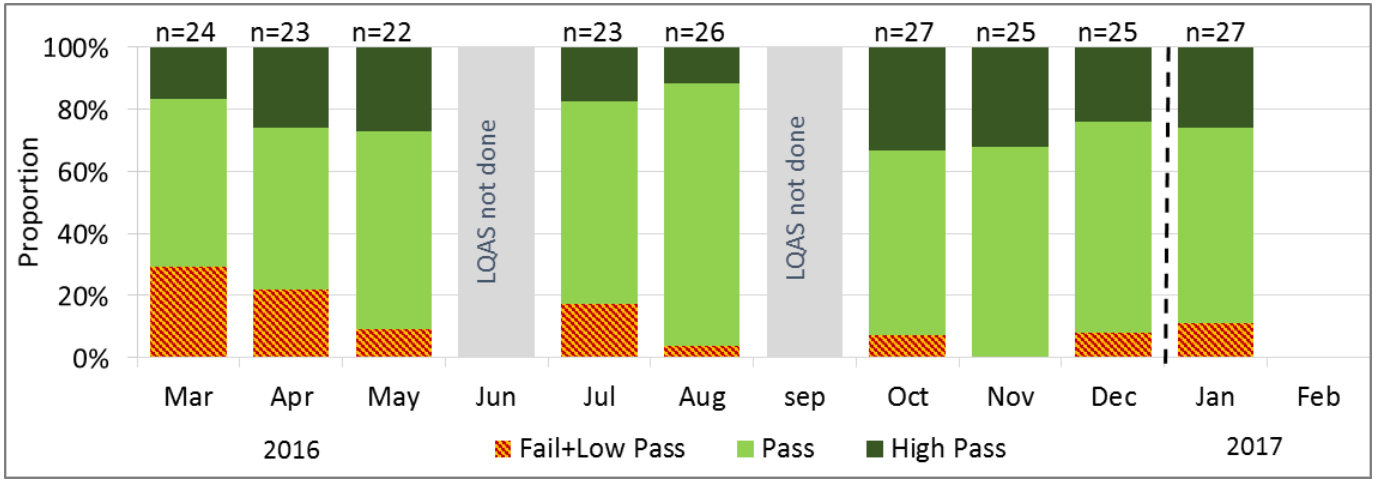
Accessibility - 2017



Source: WHO

Eastern Afghanistan: Improving SIA quality and immunity in accessible areas

LQAS Survey Results by SIA, Mar 2016 – Jan 2017

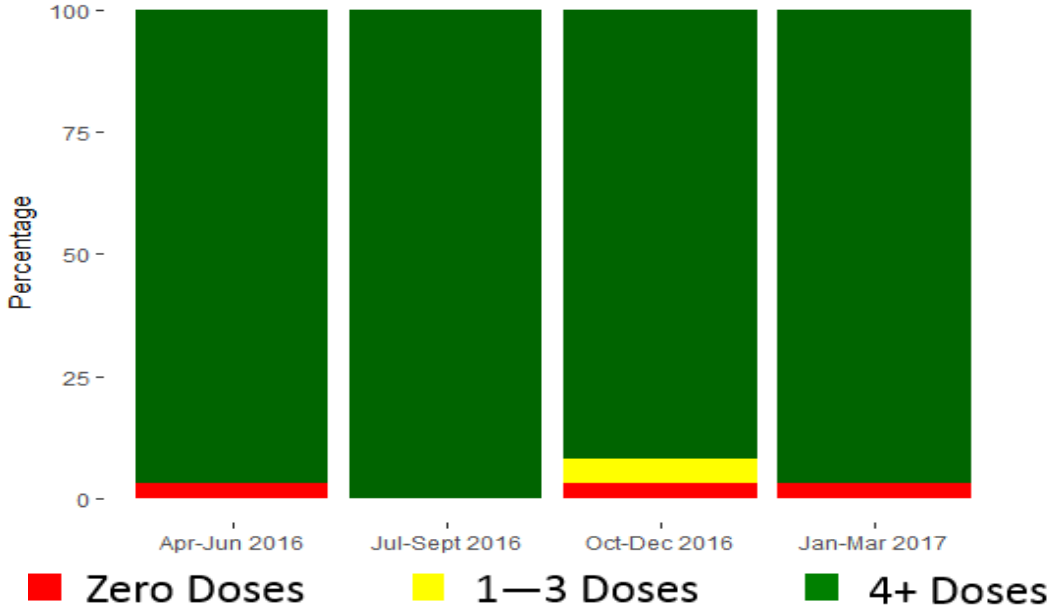


LQAS categories for unvaccinated children based on samples of 60 children:

0-3 = High Pass (90%+)
4-8 = Pass (80%-89%)
9-19 = Low Pass (60%-79%)
≥ 20 = Fail (< 60%)

LQAS low pass (60%-79%) and fail (<60%) categories are combined

NPAFP cases polio dose history at 6-35 months of age, by quarter, Apr 2016 to Mar 2017

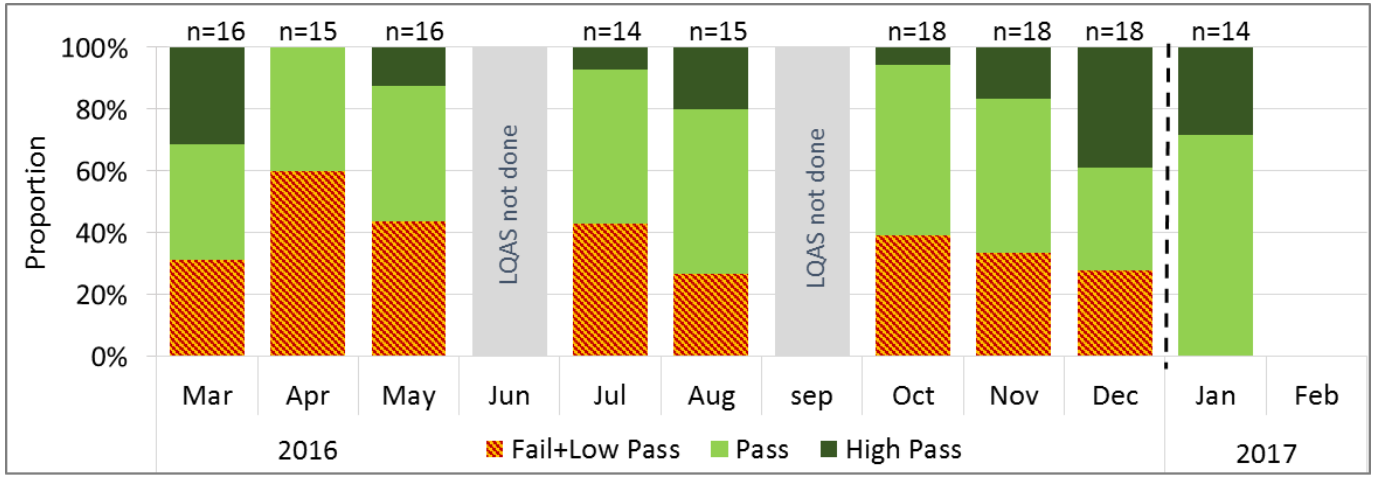


Source: CDC

Data as of April 4, 2017

Southern Afghanistan: SIA quality does not yet show improvement despite increased efforts during 2016, Mar 2016 – Mar 2017

LQAS Survey Results by SIA, Mar 2016 – Jan 2017



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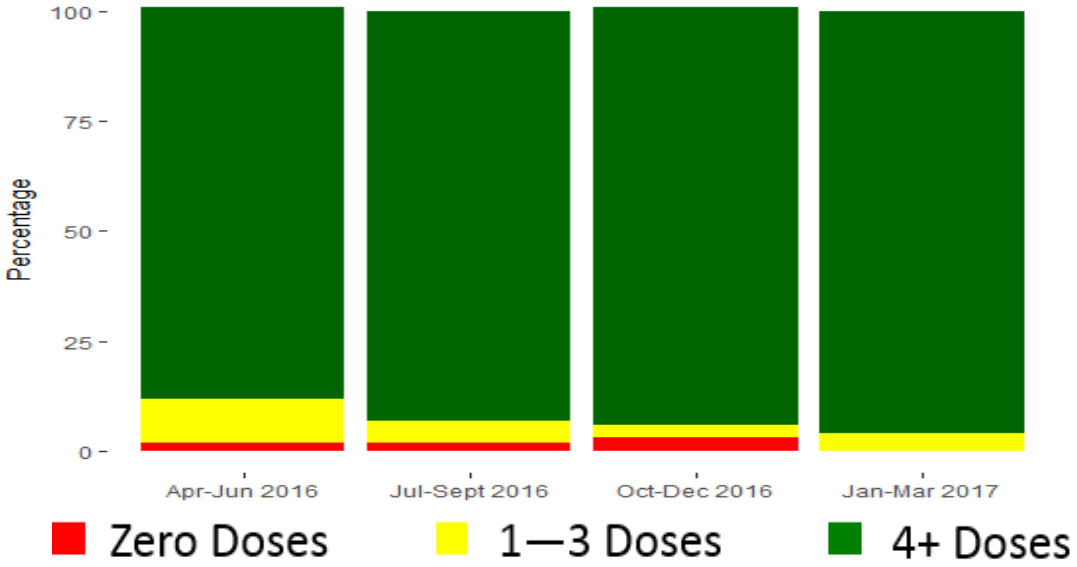
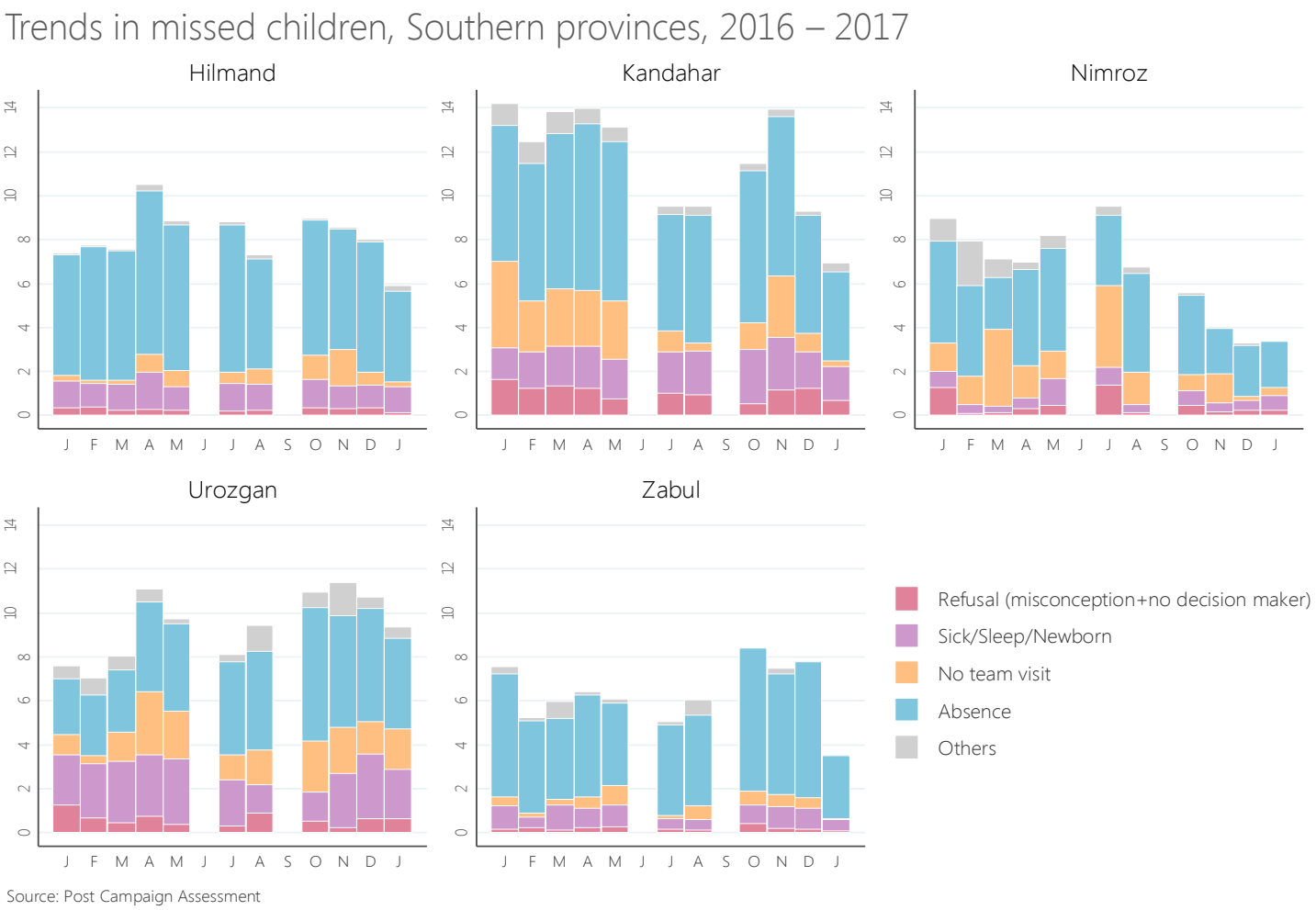


Source: CDC

Data as of April 4, 2017

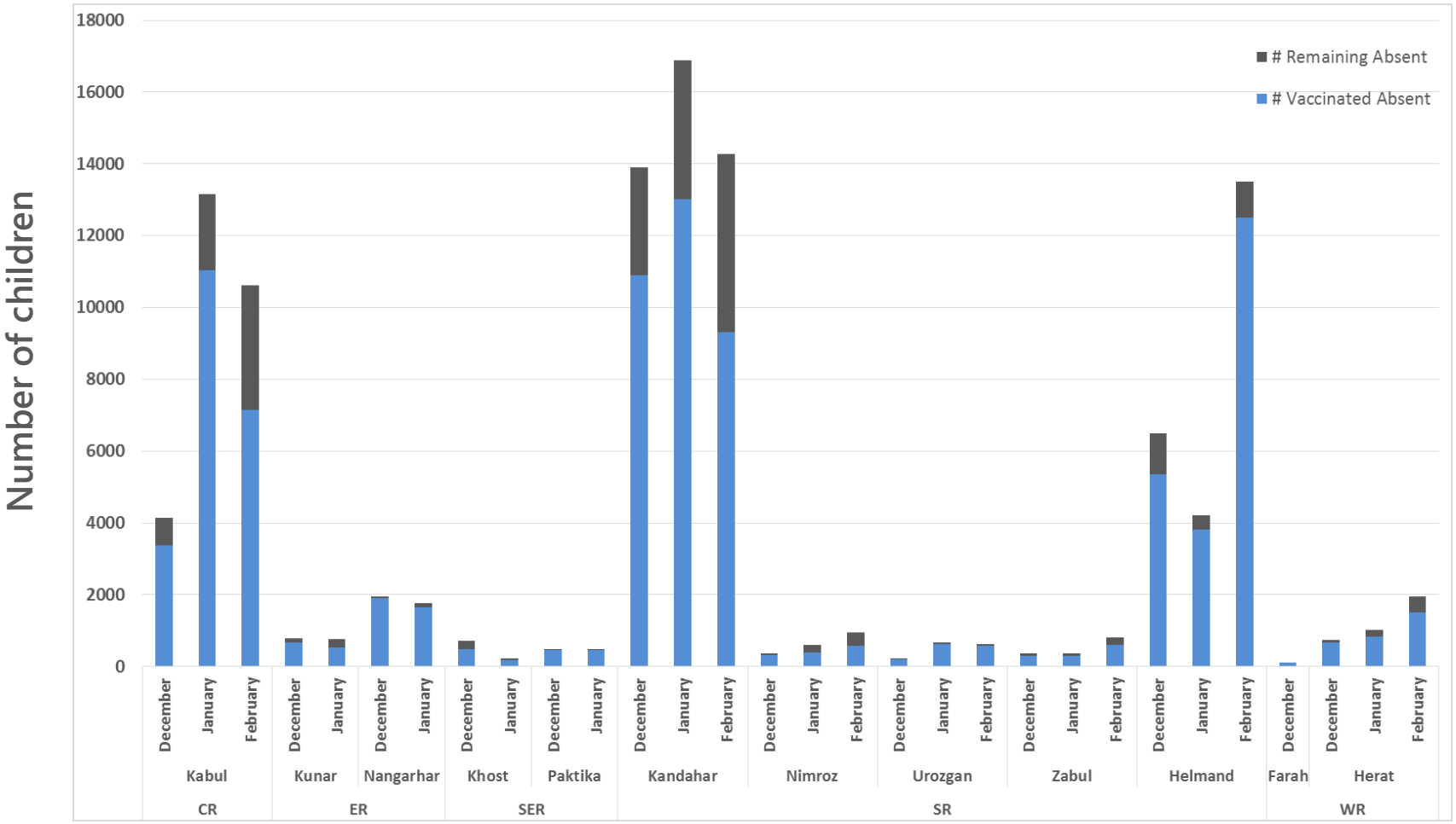
Afghanistan

% Missed Children



- Primary reason for missed children is “Absence”
- About 1% of missed children are reported as “Sick/Sleeping/Newborn”
- Refusal represents 1% - 2% of missed children in Kandahar province

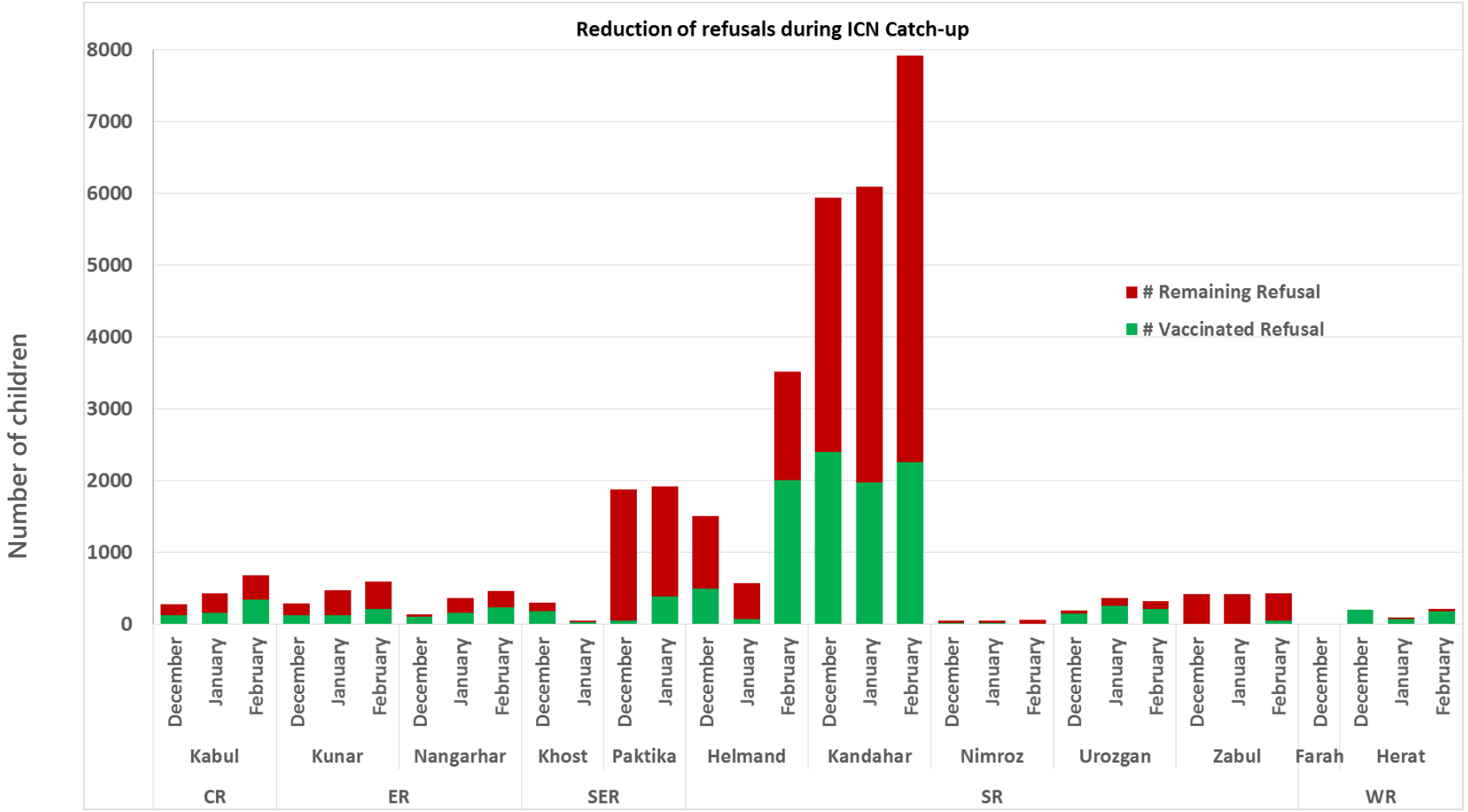
Afghanistan: Immunization Communication Network (ICN) social mobilizers are catching up children missed due to absence post-campaign, by area, Dec 2016 – Feb 2017



In Kabul, Kandahar and Helmand provinces, the majority of children absent during the campaign were immunized during catch-up period by ICN social mobilisers

Source: Social Mobiliser Records

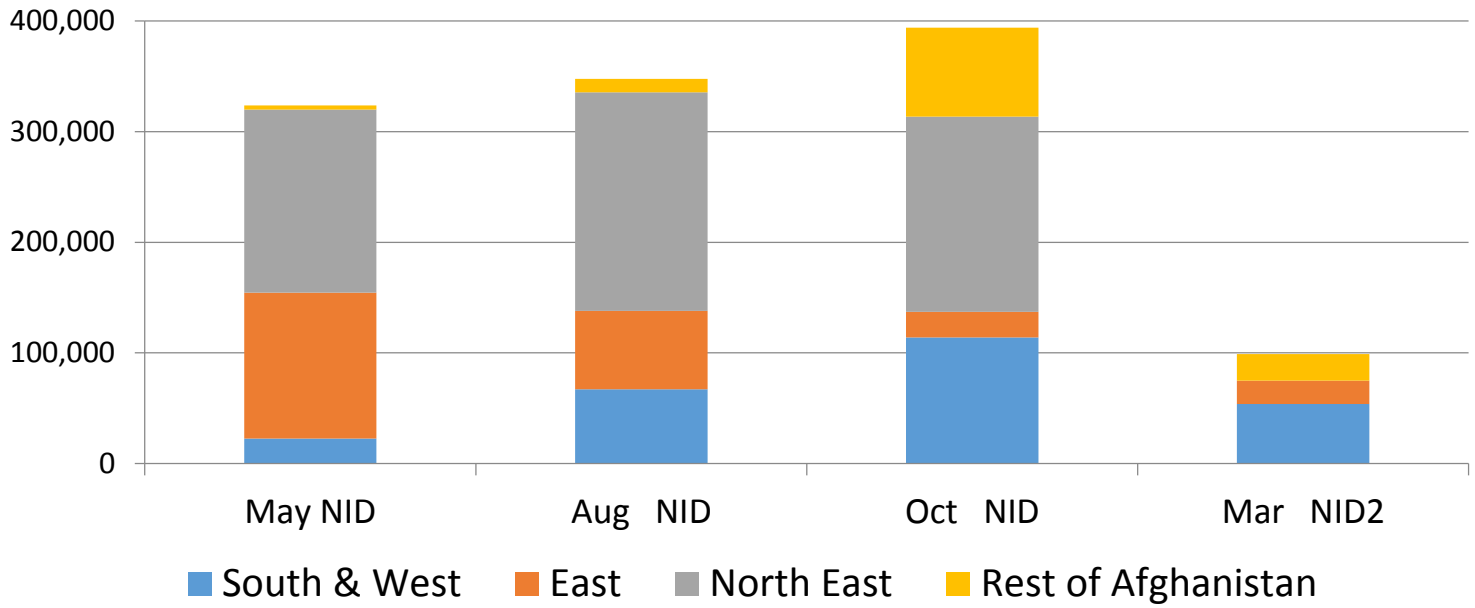
Afghanistan: Immunization Communication Network (ICN) social mobilizers are catching up children missed due to refusals, by area, Dec 2016 – Feb 2017



- In some southern and south east provinces, many children missed campaign due to *Refusal*
- Less than half of "refusal children" were later immunized during catch-up period by social mobilisers
- Aggregating "refusal children" in all areas with available data, about 30% were immunized during catch-up period in December and 40% in February.

Source: Social Mobiliser Records

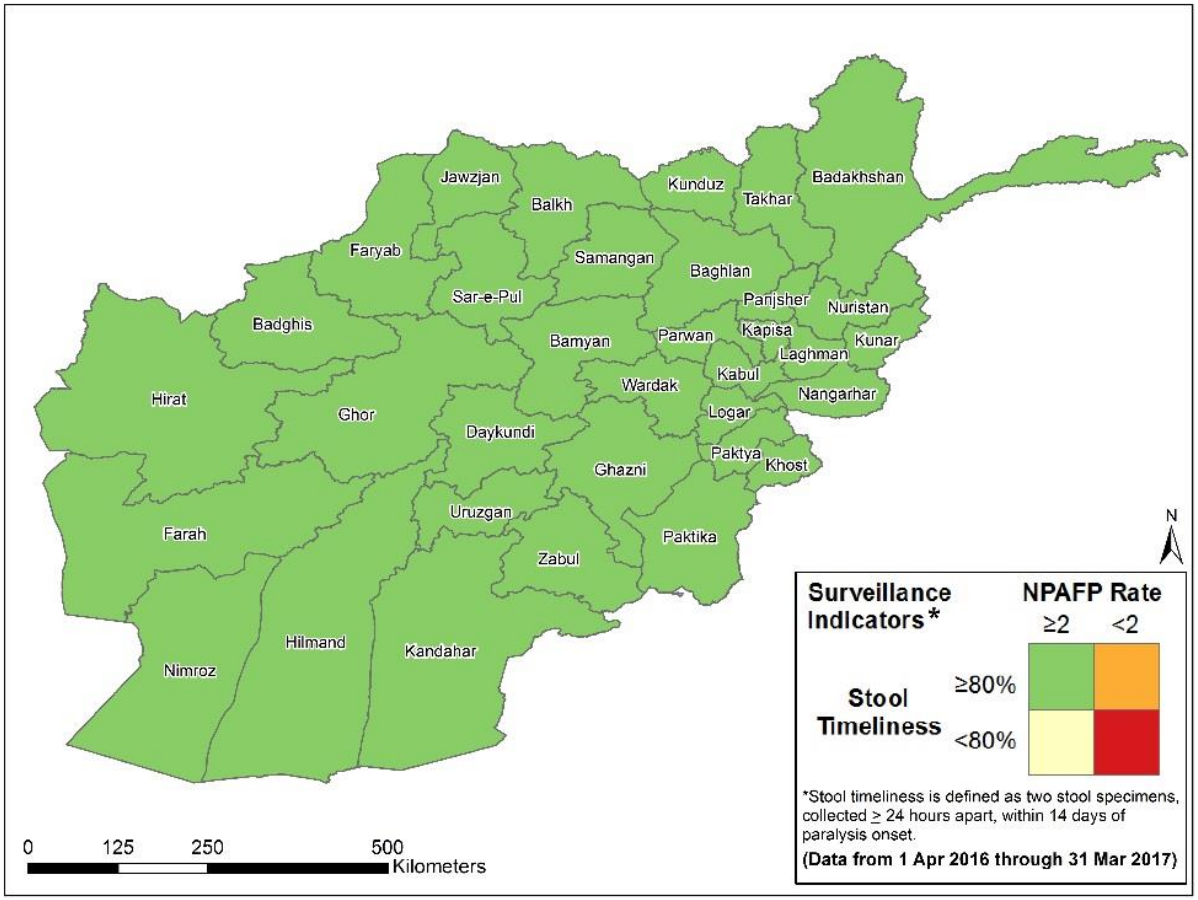
Afghanistan: Inaccessible children, May 2016- Mar 2017



- Decline in the number of inaccessible children in March is due to a major breakthrough in Kunduz, where the March campaign was implemented in all districts.
- Number of children who missed immunization during the campaign due to inaccessibility has decreased from 300,000+ to 100,000
- The reduction in number of inaccessibility was greatest in East and North East regions

Afghanistan

Surveillance, Apr 2016 – Mar 2017



Stool timeliness: 2 stool specimens, collected ≥ 24 hours apart, among AFP cases < 15 yrs old w/in 14 days of paralysis onset

Source: CDC

Afghanistan: Review of surveillance data for IMB 2016 recommendation #3

- Composite surveillance index has improved over 2013-2016
- Timeliness is overall satisfactory (87% cases typically notified within 1 week days of onset; stool typically collected within 1-2 days, 99% within 1 week)
- Very High Risk Districts (VHRD's) are based on disease risk, and also the focus of personnel and surveillance improvement
  - 29% of the population
  - 82% of WPV cases (2013-present)
- Good agreement between isolation of WPV in AFP cases and in sewage, where both exist

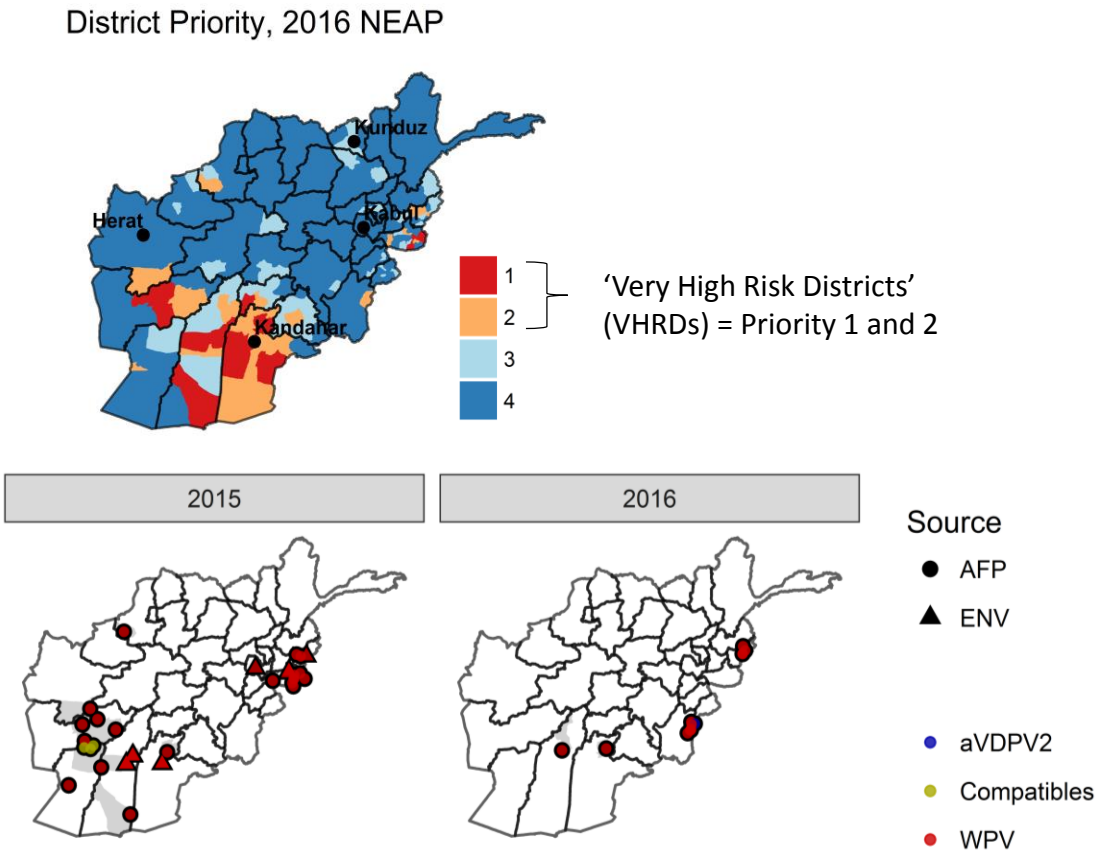
Afghanistan: Epidemiological and programmatic context

WPV1 in Afghanistan has been linked to cross-border transmission (“straddling populations”) within the common corridors of Quetta-Southern and Peshawar-Eastern Regions.

Genetic analysis, particularly orphan viruses in 2015 and 2014, suggest some persistent transmission, in addition to possible surveillance gaps

Very High Risk Districts (VHRD’s) are based on disease risk, and also the focus of personnel and surveillance improvement

- 29% of the population
- 82% of WPV cases (2013-present)

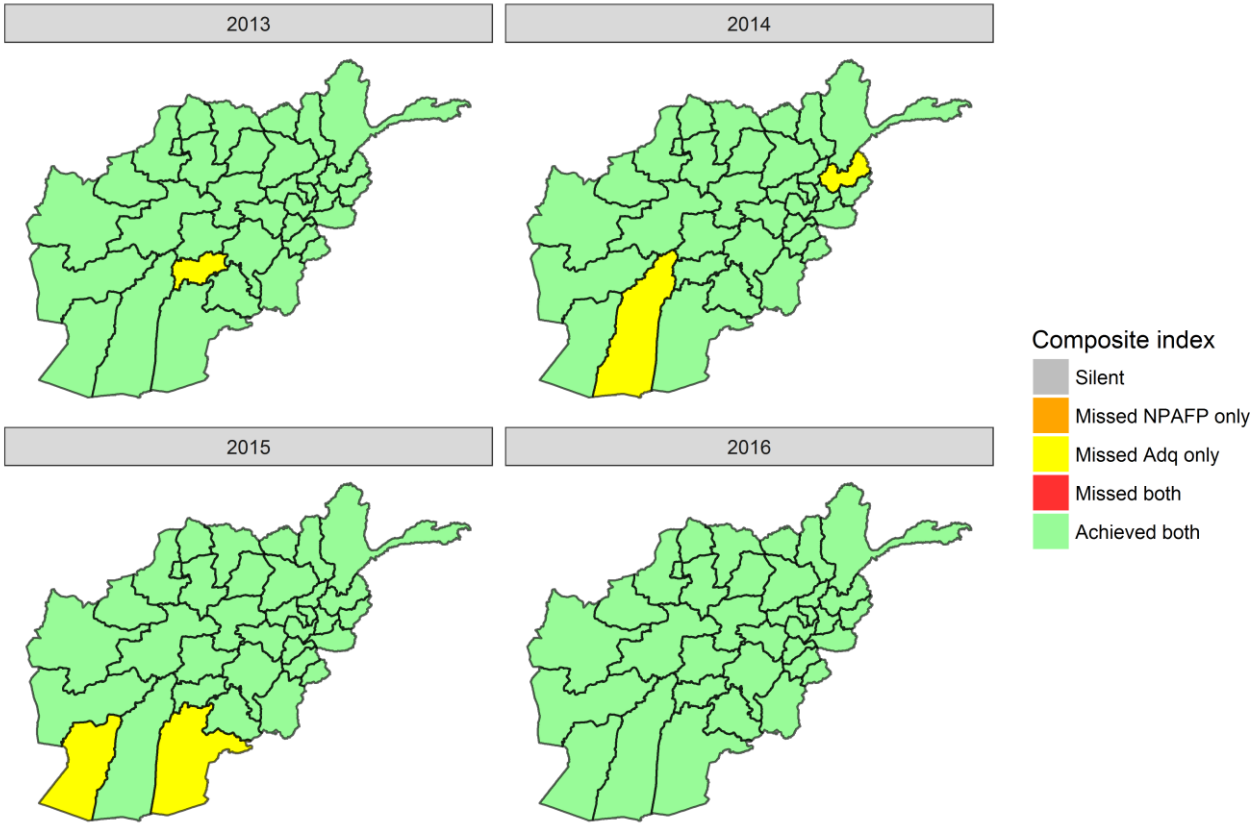


Afghanistan Composite Surveillance Index, by province, 2013 – 2016

Composite Index:
NP-AFP Rate > 2/100k *and* Stool adequacy > 80%

NP-AFP rates are universally high overall rate of 13.9 in 2016 (range 8 – 27)

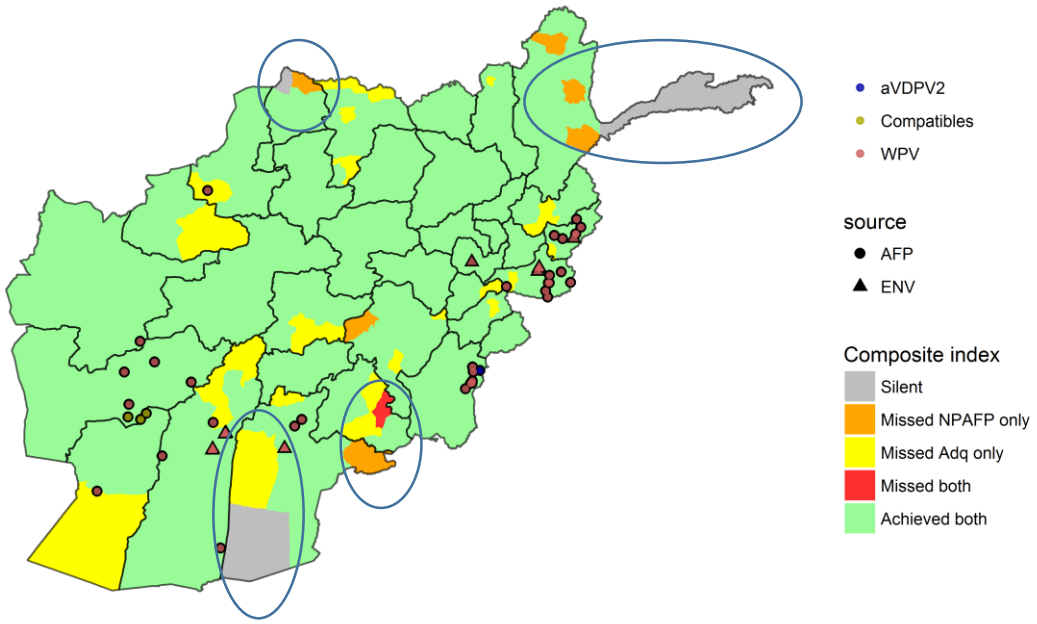
Stool Adequacy generally high, and improving in the south in recent years

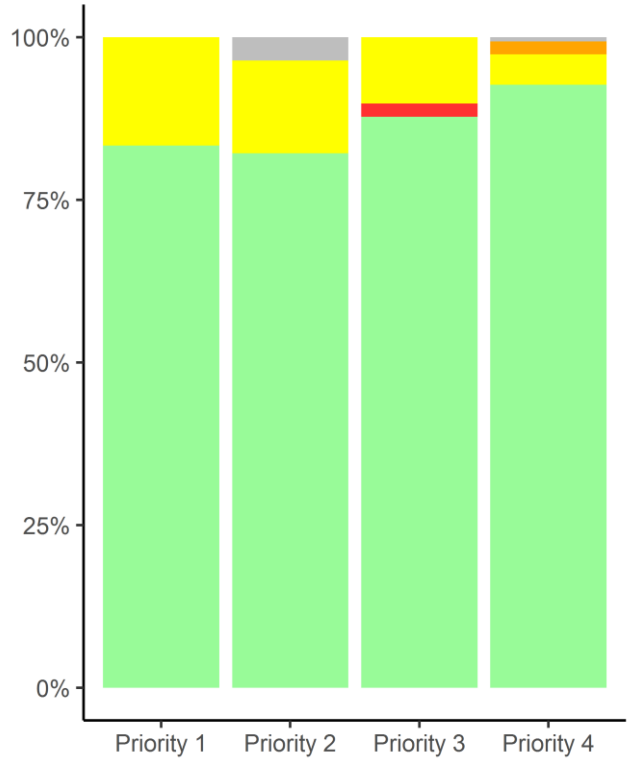


Afghanistan: Composite Index, by district, and evidence of recent poliovirus transmission, 2014-2016

Composite AFP indicator met in most districts
1 LPD (Rig, Kandahar, 10k under 15) was silent

Composite index, 2014-2016

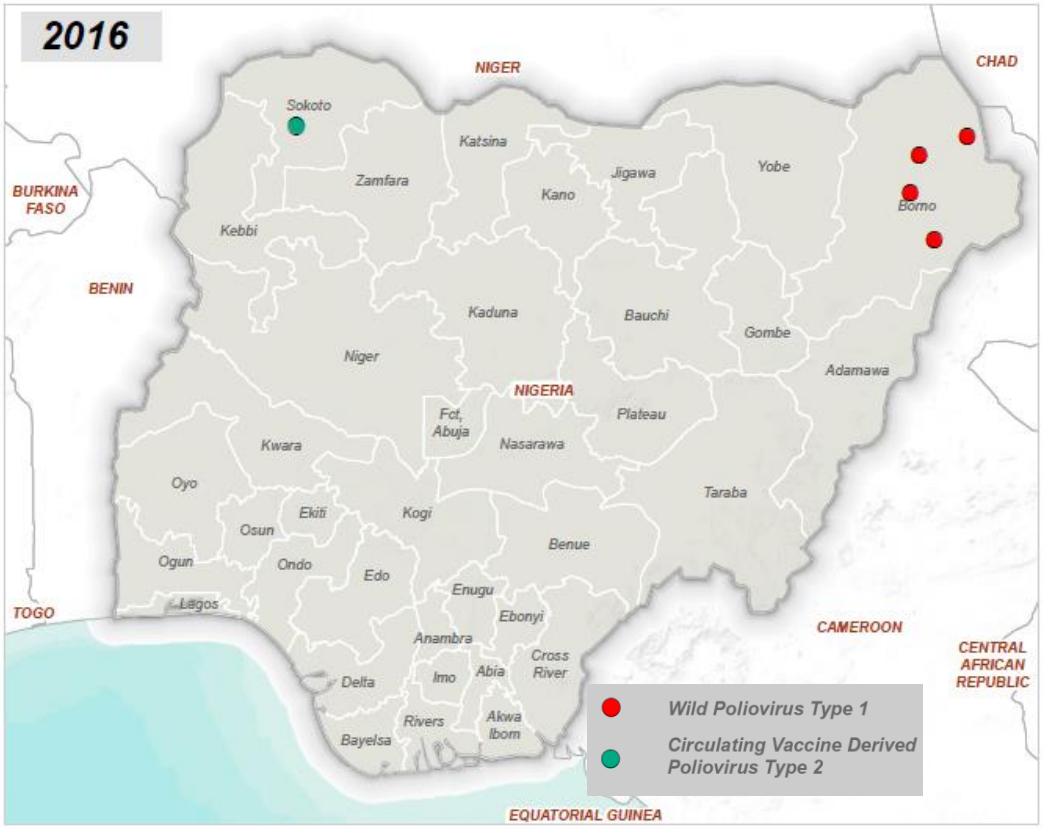




Nigeria – topline messages

- The epidemiological situation in Nigeria is complex, with a May 2016 cVDPV2 outbreak and July 2016 WPV1 outbreak in Borno State in the northeast, and an unrelated October 2016 cVDPV2 outbreak and subsequent VDPV2 events in Sokoto State in the northwest. This marked the first cases of wild poliovirus detected in the country in more than two years, leading to Nigeria being placed back on the list of endemic countries. WPV1 has not been detected outside of Borno; a credit to the vaccination efforts in the rest of the north.
- Nigeria mounted a massive vaccine response with bOPV, mOPV2 and IPV, even surpassing outbreak guidelines. However, VDPV2 has persisted in Sokoto, indicating that there are pockets of children that are unimmunized and threaten to sustain transmission. Improving the quality and oversight of the Sokoto program is an urgent priority to head off a resurgence of Type 2 disease nation-wide, particularly as immunity levels drop following the withdrawal of tOPV and continued weak routine immunization.
- Despite progress in reaching children in Borno, 40% of settlements remain unreached because of violence and fear caused by the insurgency. Population estimates suggest 250K-450K children <5 may be still living in these areas. The Borno program has undertaken critically important initiatives to reach these children with support from security forces; these efforts need to be sustained and intensified.
- Surveillance indicators were erroneously thought to be strong in Borno in 2015 and 2016 with non-polio AFP cases attributed to inaccessible areas. Systematic errors in data collection and assessment, coupled with failure of surveillance officers to operate in insecure areas, led to a complete lack of information from inaccessible districts, accounting for approximately half of Borno. The program has introduced some initiatives (data cleaning) and innovations (environmental sweeps) to address these problems. The program will need to rigorously implement the recommendations of recent surveillance reviews and analyses throughout the country to restore confidence in surveillance quality, data management and analysis. There has also been a sharp decline in AFP reporting in Borno in the first quarter of 2017, as well as several other States due to a variety of administrative, programmatic and security reasons. The program needs to assess if this is more accurate reporting or underreporting, and address the needs found.
- The same scrutiny to surveillance over the past three months needs to be applied to the quality of immunization activities, especially in the northwest and northeast. Despite uniformly high LQAs results, monitoring reports and vaccinator tracking by GPS indicate significant gaps following each campaign. The continued emergence of VDPVs in Sokoto points to sub-standard immunization activities, despite strong LQAs performance.
- Political leadership of the polio program, especially at the LGAs, is poor with few Chairmen active in the campaign. Most States are unable to release their 'counterpart' funds which pays for monitoring and supervision by the state, and special teams and incentives. Nationally, the Presidential Task Force on Polio Eradication has not met since January 2016. The funds committed for polio in the 2017 budget are half the government's 2016 contribution (the 2017 funds have not yet been released).

Nigeria: WPV1 and cVDPV cases, 2016



Source: WHO

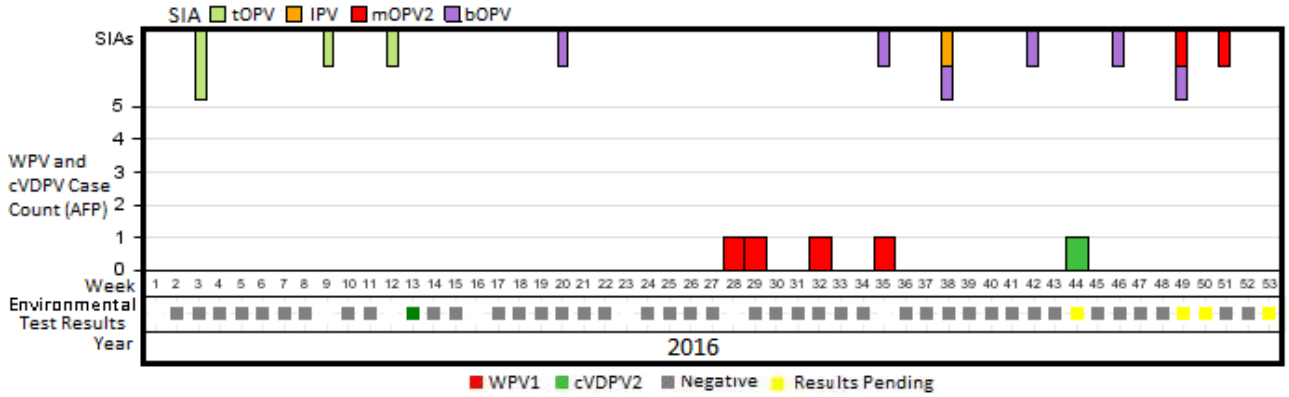
2016

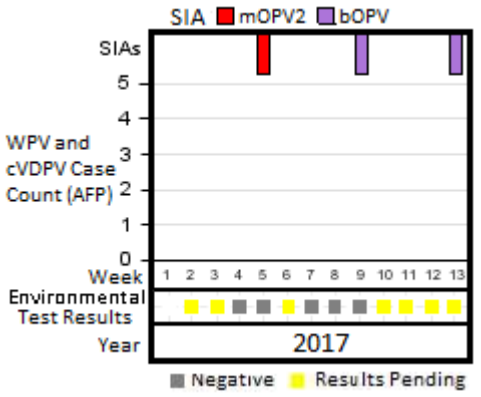
- 4 WPV1 were under-immunized children from conflict-affected areas; last WPV1 onset 21 Aug 2016.
- 1 cVDPV2 isolate from contact in Sokoto
- 2 persistent cVDPV2 isolates in Borno (healthy contact of WPV1 case and ES)

2017

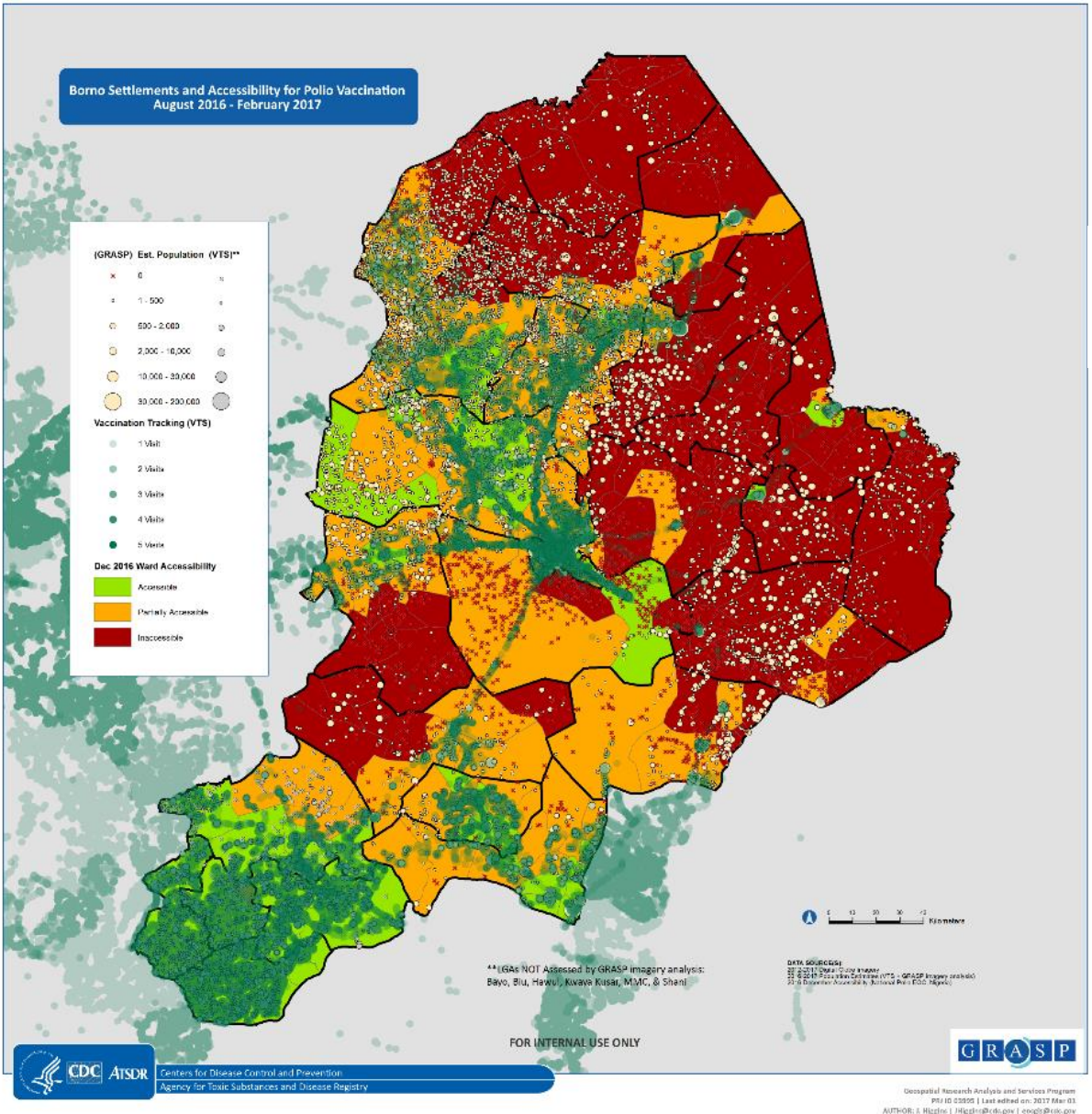
- No WPV1 or cVDPV2 cases
- 7 VDPV2 emergences detected by ES [Gombe (2), Bauchi (1), Sokoto (4)]

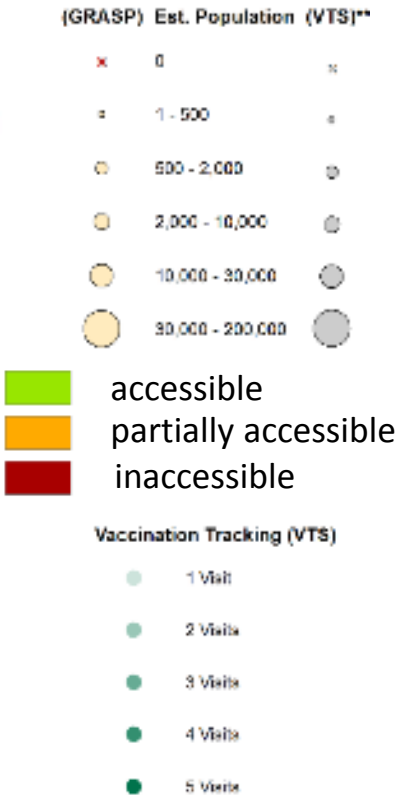
WPV1 and cVDPV cases, environmental results by onset wk, and SIAs, 2016 & Jan to Mar 2017





Nigeria: Accessibility – Borno State, Dec 2016



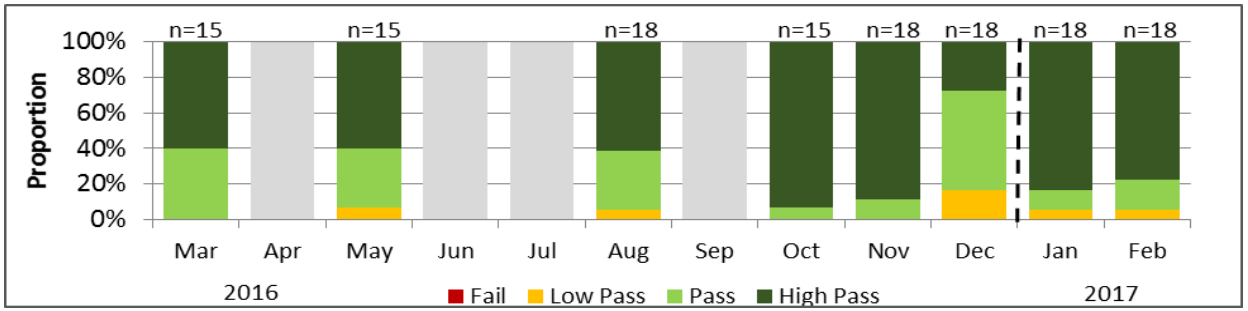


Analysis of satellite data identified thousands of destroyed or abandoned settlements.

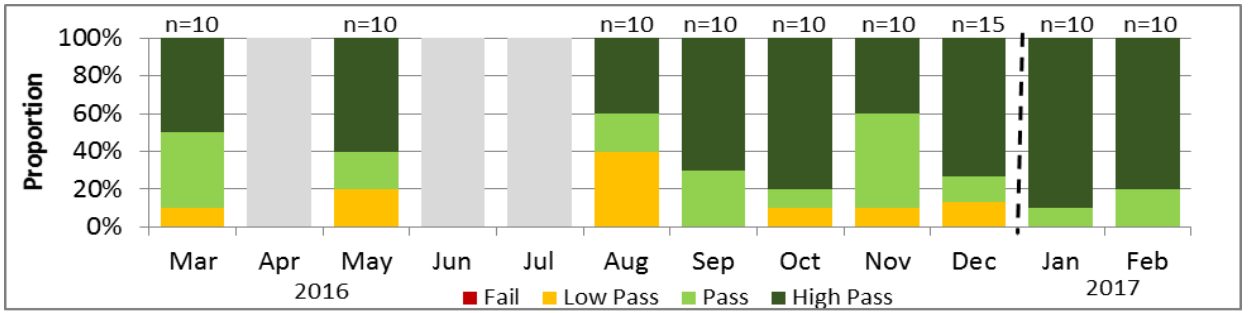
Although support from military and security forces has improved access, potentially 285,000-465,000 children <5 are still unreached.

Nigeria: Improving quality of immunization activities in 4 high risk states, Mar 2016 – Feb 2017

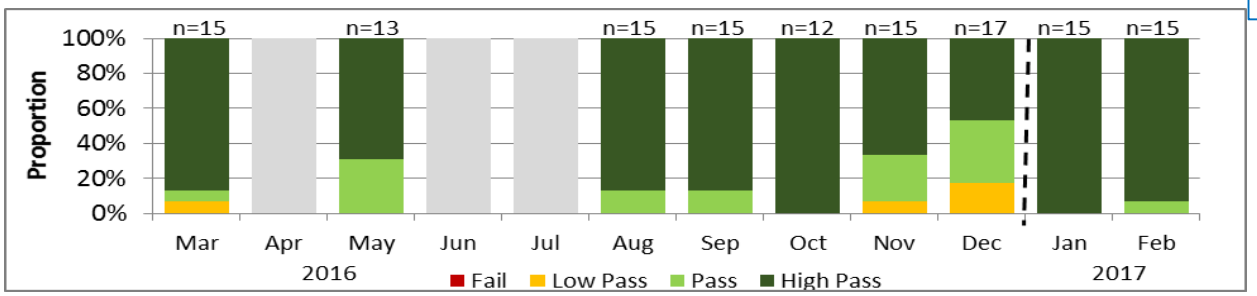
Borno



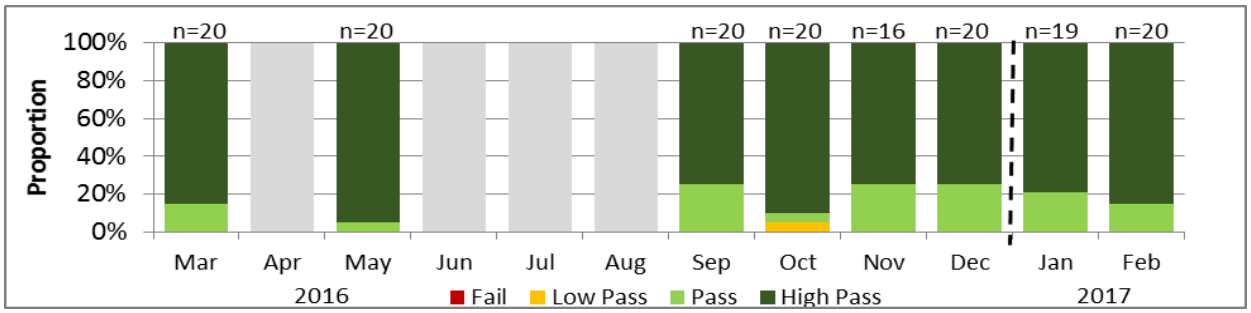
Adamawa



Yobe



Sokoto



LQAS categories for unvaccinated children based on samples of 60 children:

0-3 = High Pass (90%+)
4-8 = Pass (80%-89%)
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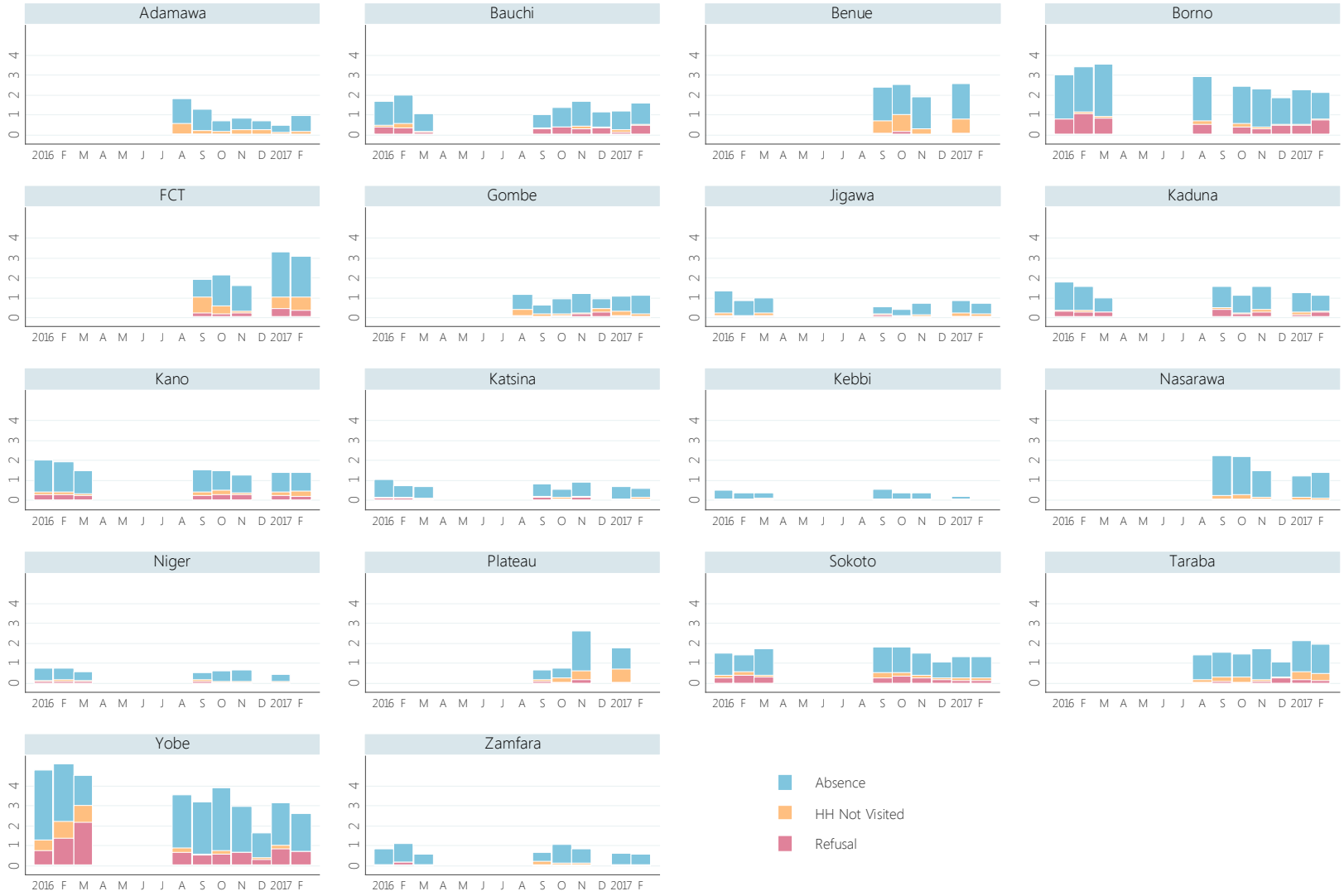
≥ 20 = Fail (< 60%)

Nigeria

Trends in missed children and awareness, Nigeria, 2016 January - 2017 February

% Missed Children

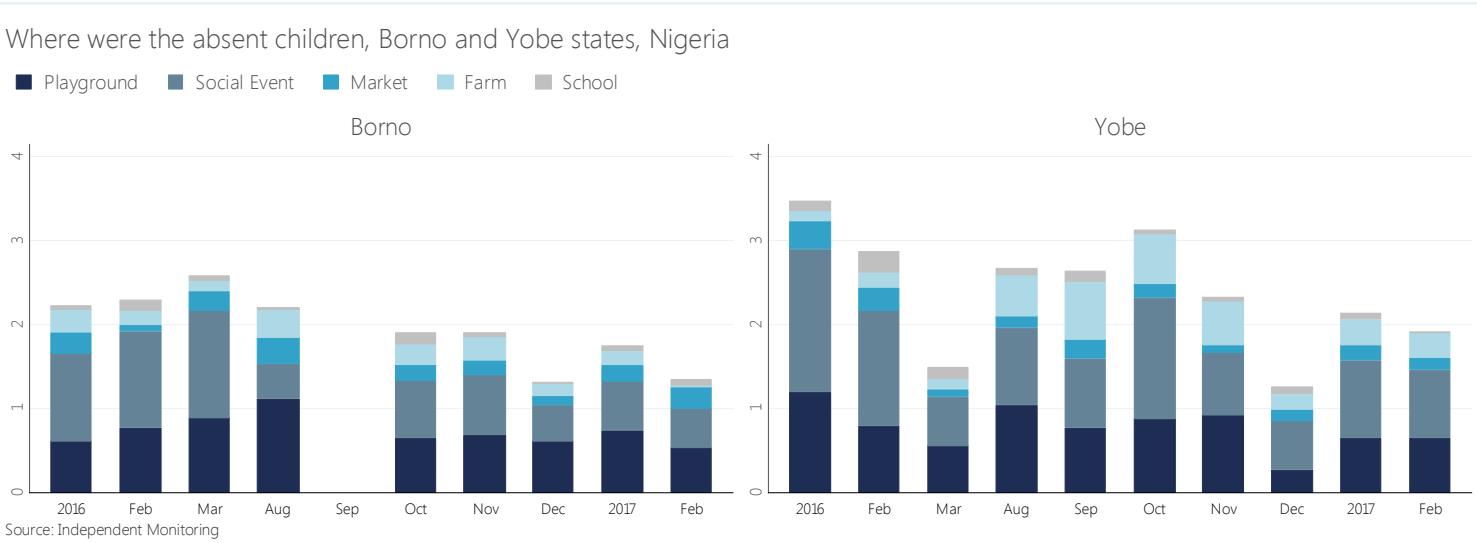


Source: Independent Monitoring

- Primary reason for missed children is “Absence”
- Refusal is a significant reason in Borno and Yobe

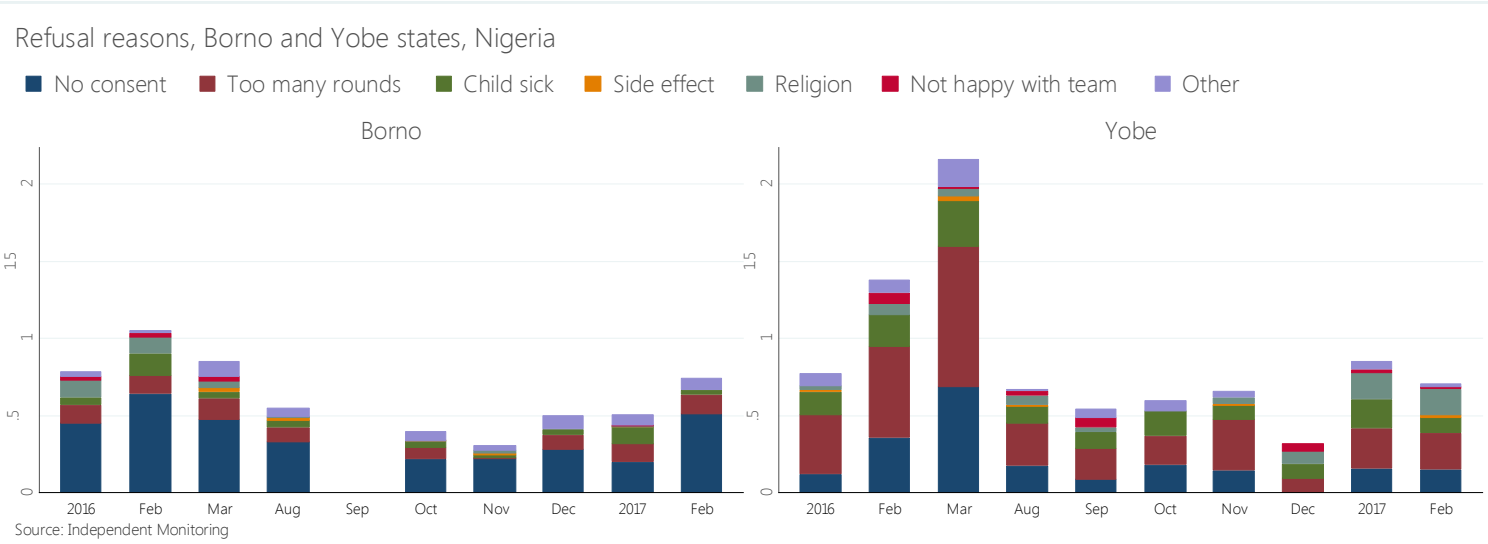
Nigeria

% Missed Children



"Social event" and "playground" are the primary locations for absent children during campaign

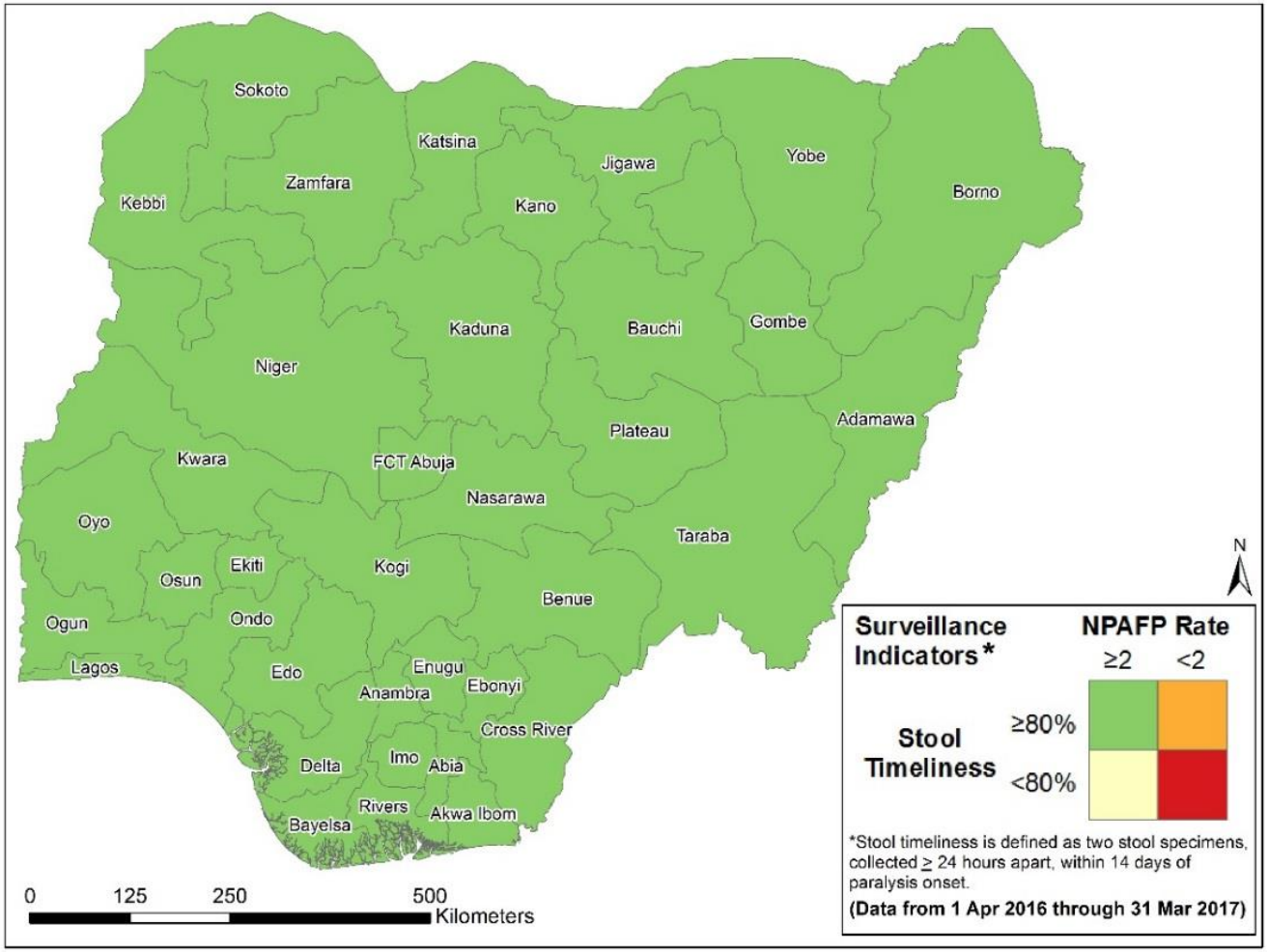
% Missed Children



"No consent" and "too many rounds" are the primary reasons for refusal during campaign

Nigeria: Apr 2016 – Mar 2017

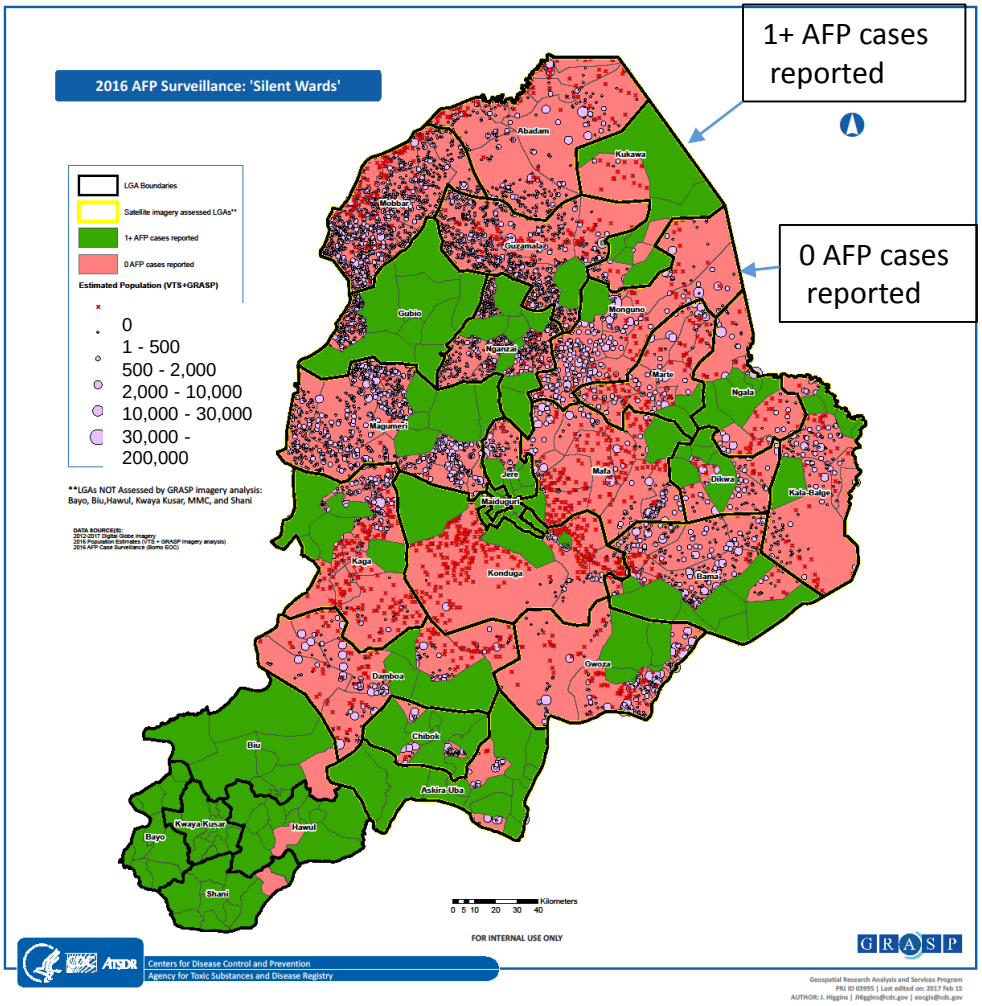
Surveillance



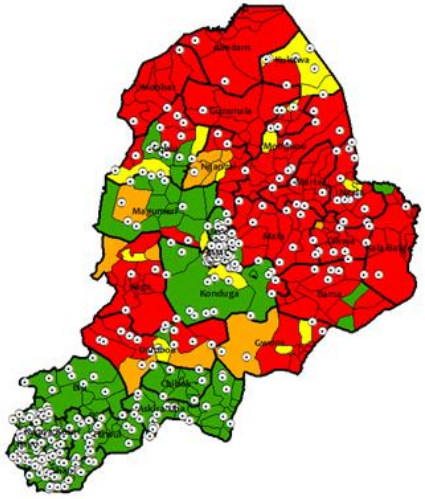
Stool timeliness: 2 stool specimens, collected ≥ 24 hours apart, among AFP cases < 15 yrs old w/in 14 days of paralysis onset

Nigeria: Borno State, 2016

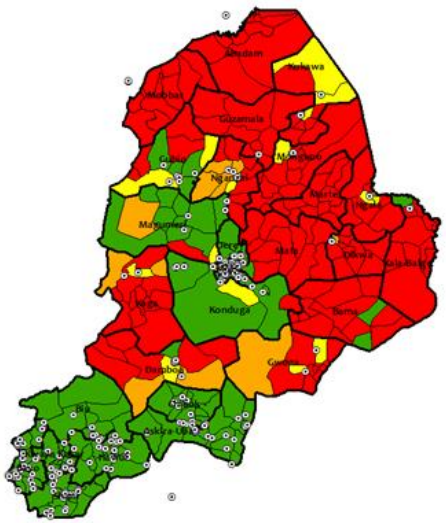
Wards (sub-districts) not reporting AFP in 2016



A



B



Surveillance indicators initially were thought to be strong in 2016, but many AFP cases among displaced populations were incorrectly attributed to inaccessible districts (Fig. A).

The actual location of AFP cases identified through November 2016 is shown in Fig. B.

This program was unable to assess presence or absence of poliovirus, until the recent opening up of key areas in most districts.

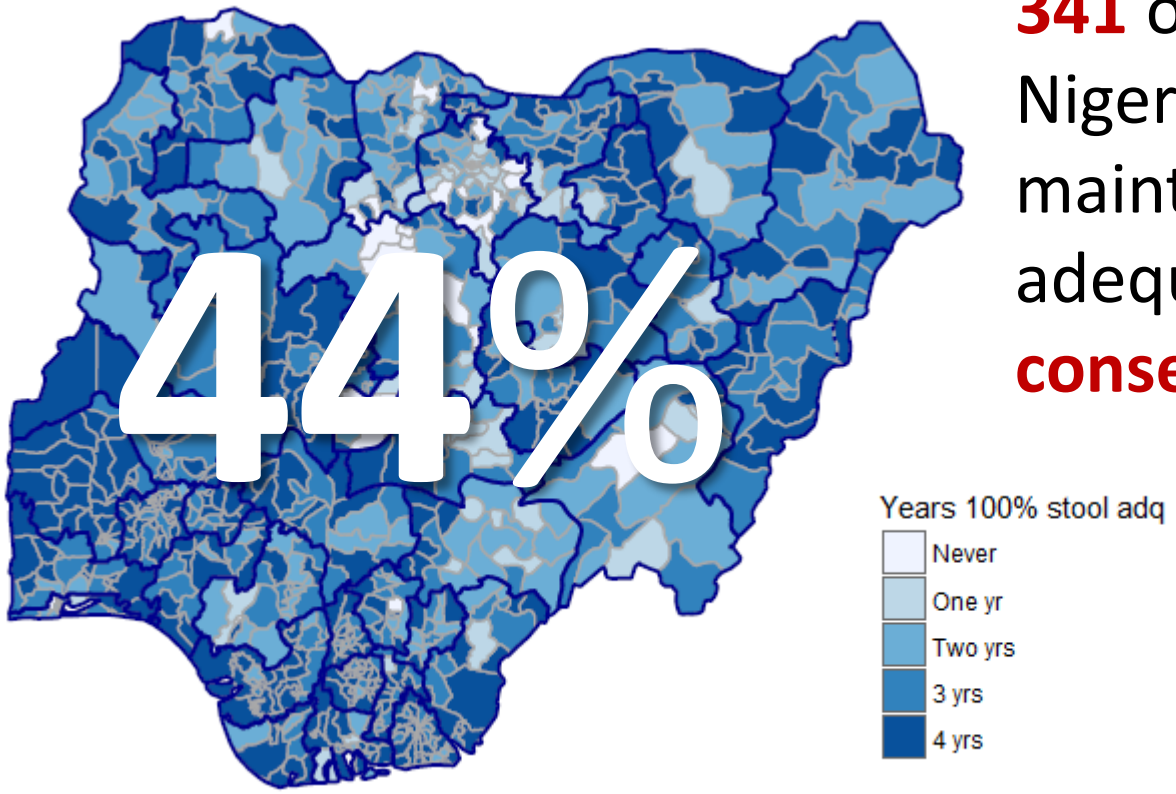
Despite meeting surveillance indicators at the state level, 40% of settlements in Borno were not accessible for surveillance in 2016.

Nigeria: CDC/BMDF review of surveillance data for IMB 2016 recommendation #3 – selected results

- AFP cases from Borno state were incorrectly attributed as cases detected within inaccessible districts.
- Stool adequacy rates reported at extremely high levels for many years.
- Stool timeliness measures showed almost no cases reported more than 14 days after onset.
- AFP case onsets clustered within 10 days prior to the onset of an SIA

Nigeria: Stool Adequacy

Years with **100%** stool adequacy
2013 - 2016



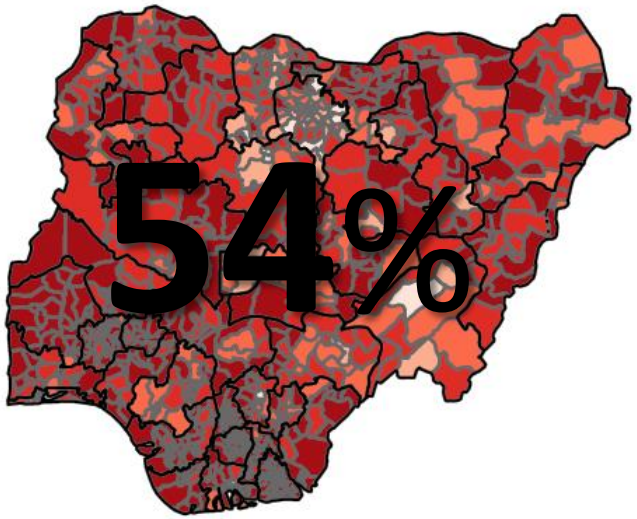
341 of **774** LGAs in Nigeria **(44%)** have maintained **100%** stool adequacy for **4 consecutive years**.

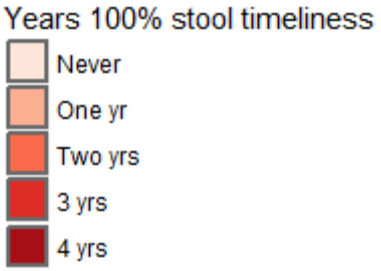
Note: Stool adequacy indicator combines timeliness of collection (2 stools collected within 14 days of onset of paralysis and ≥ 1 day apart) and stool condition on arrival at lab.

Nigeria: Stool Timeliness* – a global comparison

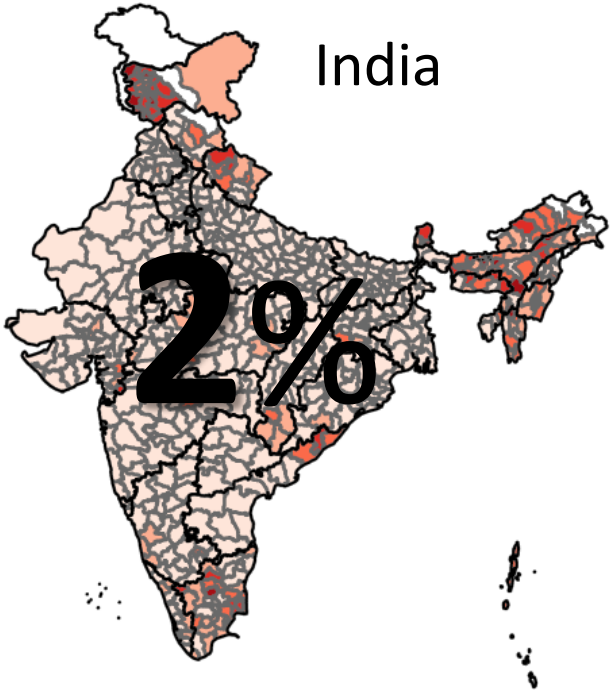
Districts/LGAs with **100%** stool timeliness **2013 - 2016**

Nigeria

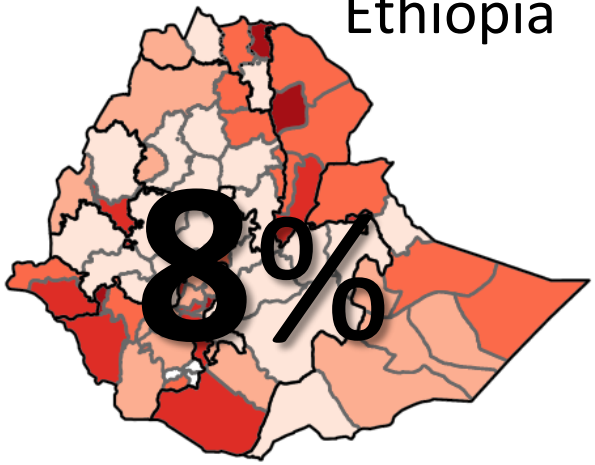




India



Ethiopia



*Stool timeliness defined as 2 stools collected within 14 days of onset of paralysis and ≥ 1 day apart

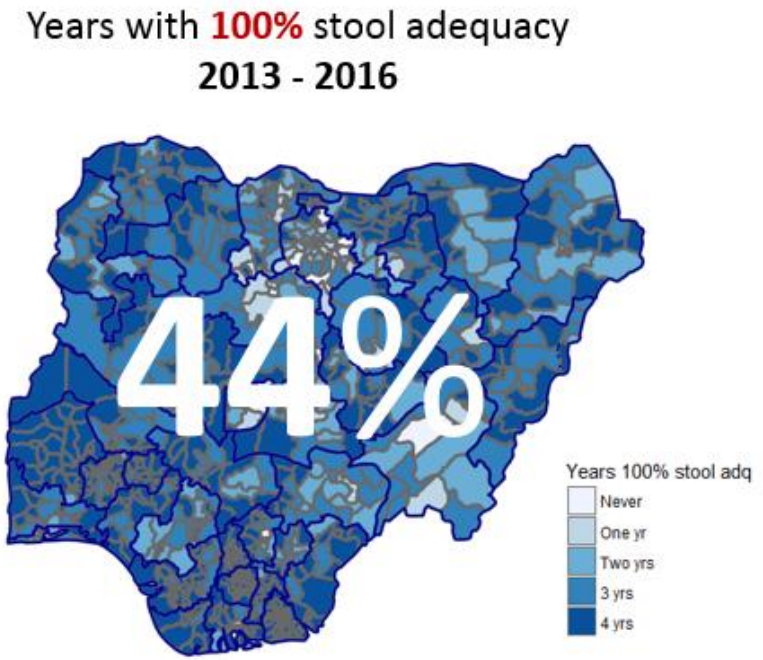
What is **different** in Nigeria?

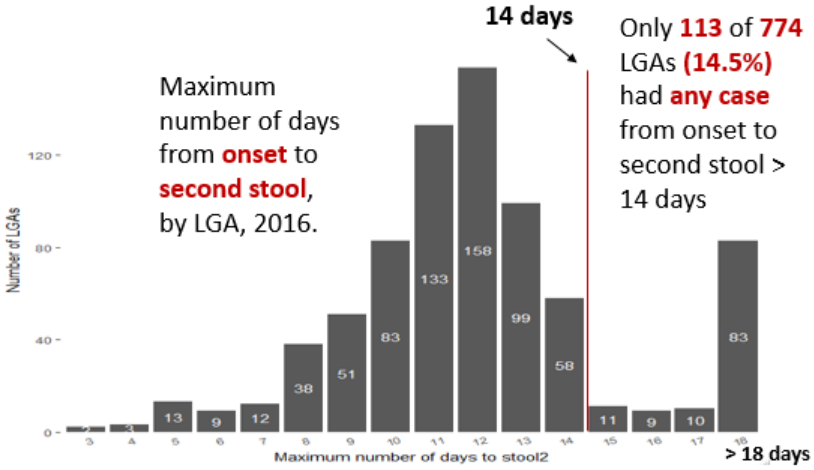
Data source: PolIS

Nigeria: Surveillance findings

Possible explanations

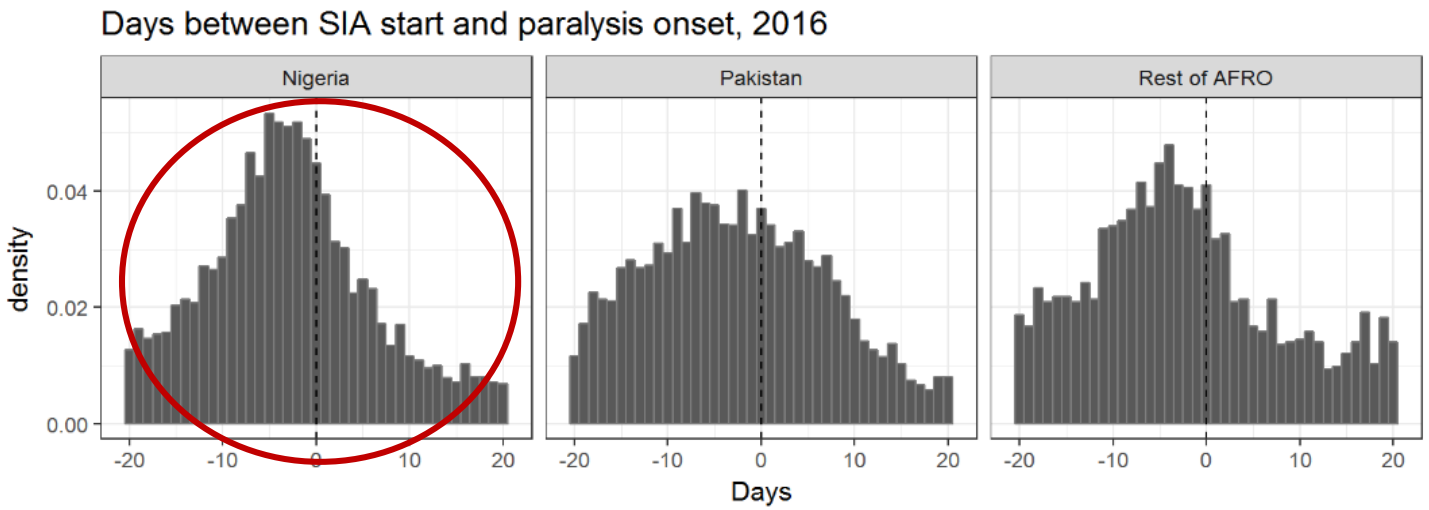
1. Nigeria's AFP surveillance system identifies and collects stools from nearly all cases ≤ 14 days from onset.
2. Cases are not reported if stool specimens are not collected due to any reason.
3. AFP cases presenting after 60 days of onset are not reported and not calculated for indicators.
4. Stools collected >14 days from onset are misclassified as ≤ 14 days.





Nigeria: Days between SIA start and onset of paralysis, 2016

Onset of paralysis of reported AFP cases in Nigeria clustered within 10 days before start of SIA.



This pattern suggests systematic error in recording.

Next steps for AFP surveillance data quality checks

- Based on findings from this review, CDC is developing methods for routine, rapid analysis of AFP data to look for unexpected patterns in surveillance indicators, for example:
  - Extreme values (e.g., no missing stools, very low number of AFP cases with late collection of stool).
  - Other unexpected frequencies of surveillance indicators or process measures (to be determined).
- These findings of these quality checks are intended to serve as one tool for prioritizing follow-up with country programs and possible field investigation of surveillance procedures to gain better insight and identify means for improving surveillance as appropriate.

Detect, Respond and Prevent:
keeping the rest of the world polio-free

Post switch VDPV2 events and cVDPV2 outbreaks, by date of onset or collection, May 2016 – 21 Mar 2017

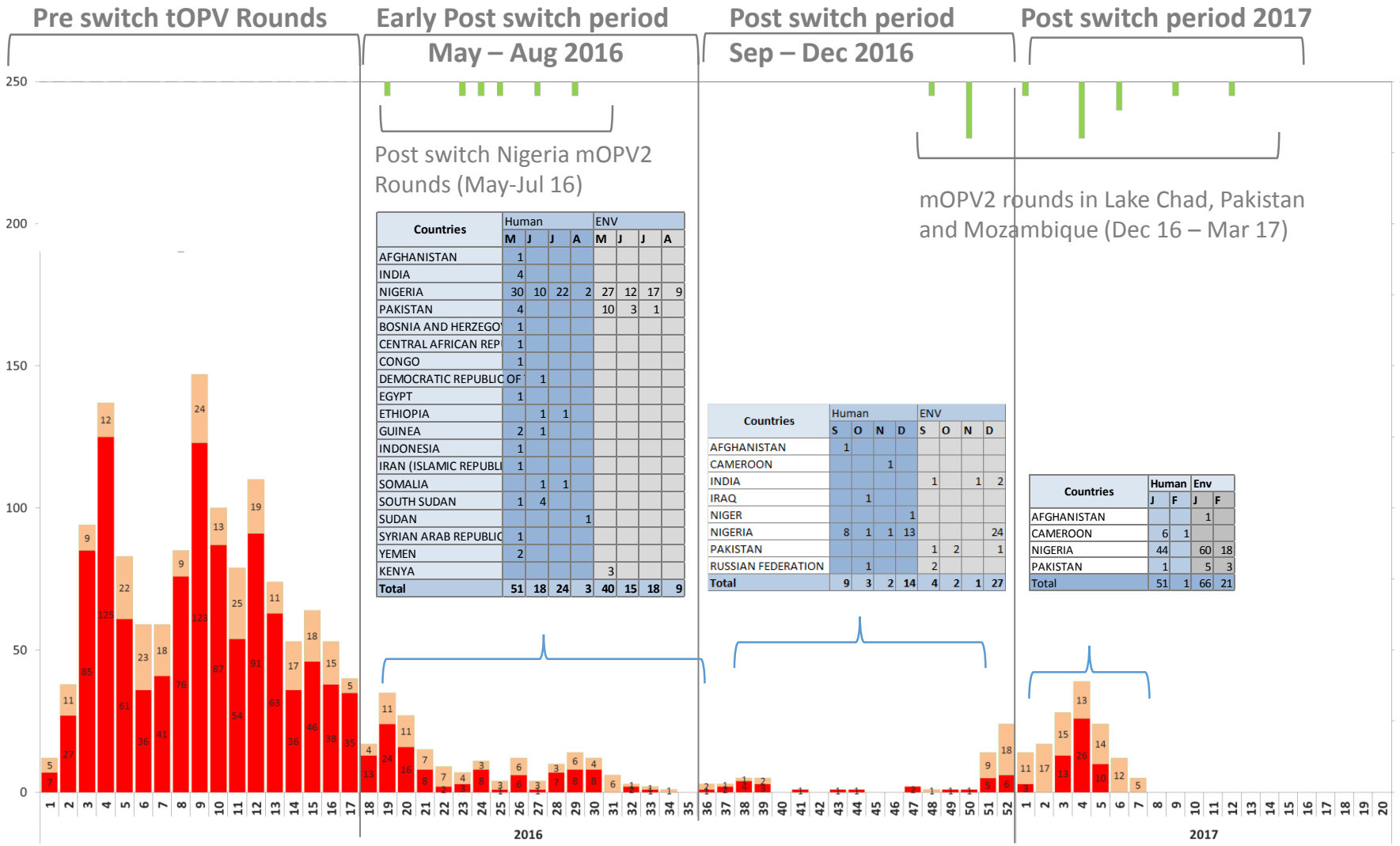
Country	Province	District	Surv. type	Date(collection /onset)	Classification	NT change
*Nigeria	JIGAWA	KAUGAMA	AFP	14-May-2016	Immune Def	8
India	ANDHRA PRADESH	HYDERABAD	ENV	16-May-16	Ambiguous	10
India	DELHI	SOUTH	ENV	6-Jun-16	Ambiguous	8
India	ANDHRA PRADESH	HYDERABAD	ENV	10-Jun-16	Ambiguous	14
YEMEN	ADEN	ALBREIGAH	AFP	11-Jun-16	Ambiguous	8
*Pakistan	BALOCHISTAN	QUETTA	ENV	20-Jun-2016	Ambiguous	8
YEMEN	ADEN	ALBREIGAH	Contact	20-Jun-16	Ambiguous	9
Pakistan	SINDH	HYDERABAD	ENV	11-Jul-16	Ambiguous	12
EGYPT	N. SINAI	ALHOSNA	Other	17-Jul-16	Immune Def	6
UKRAINE	ODESSA	ODES'KA	Healthy child	18-Jul-16	Ambiguous	8
*Nigeria	BORNO	MONGUNO	Contact	26-Aug-2016	Circulating	37
West Bank and Gaza	WEST BANK	Bethlehem	Other	28-Aug-16	Immune Def	7
PAKISTAN	PUNJAB	LAHORE	AFP	7-Sep-16	Immune Def	NA
AFGHANISTAN	PAKTIKA	BERMEL	AFP	10-Sep-16	Ambiguous	9
*Pakistan	BALOCHISTAN	QUETTA	ENV	16-Sep-2016	Ambiguous	6
Russian Federation	Central Fed District	MOSCOW - CITY	Healthy child	19-Sep-16	Ambiguous	10
*Pakistan	BALOCHISTAN	QUETTA	ENV	20-Oct-2016	Circulating	9
SOMALIA	TOGDHER	BUHODLE	AFP	24-Oct-16	Ambiguous	7
*Nigeria	SOKOTO	BODINGA	AFP	28-Oct-2016	Circulating	12
*Nigeria	SOKOTO	BODINGA	Contact	24-Nov-2016	Circulating	17
Iran (Islamic Rep of)	TEHRAN	West	AFP	26-Nov-16	Immune Def	6
*Pakistan	BALOCHISTAN	QUETTA	ENV	28-Nov-2016	Circulating	15
*MOZAMBIQUE	ZAMBEZIA	MOPEIA	AFP	30-Nov-2016	Pending	12
Russian Federation	N Caucasian Fed Dist	Chechen Rep	Contact	8-Dec-16	Pending	13
*Pakistan	BALOCHISTAN	QUETTA	ENV	12-Dec-2016	Ambiguous	10
*Pakistan	BALOCHISTAN	QUETTA	AFP	17-Dec-2016	Circulating	14
*Pakistan	BALOCHISTAN	QUETTA	ENV	20-Dec-2016	Circulating	18
*Pakistan	BALOCHISTAN	QUETTA	ENV	28-Dec-2016	Circulating	15
*Nigeria	BAUCHI	BAUCHI	ENV	15-Jan-2017	Pending	6
*Nigeria	GOMBE	GOMBE	ENV	30-Jan-2017	Pending	6
*Nigeria	SOKOTO	SOKOTO SOUTH	ENV	30-Jan-2017	Pending	6
*Nigeria	SOKOTO	SOKOTO North	ENV	06-Feb-2017	Pending	6
EGYPT	Ismailia	Faid	AFP	13-Feb-17	Immune Def	17

Most VDPV2 is linked to pre-switch OPV2-containing vaccine use.

Too early to see full impact of switch on VDPV2.

*Response containing mOPV2 vaccine conducted or planned.

Global evidence of Sabin-like2 from AFP and Environment surveillance, by wk, 2015-2017



Countries	Human				ENV			
	M	J	J	A	M	J	J	A
AFGHANISTAN	1							
INDIA	4							
NIGERIA	30	10	22	2	27	12	17	9
PAKISTAN	4				10	3	1	
BOSNIA AND HERZEGO	1							
CENTRAL AFRICAN REP	1							
CONGO	1							
DEMOCRATIC REPUBLIC OF		1						
EGYPT	1							
ETHIOPIA		1	1					
GUINEA	2	1						
INDONESIA	1							
IRAN (ISLAMIC REPUBLI	1							
SOMALIA		1	1					
SOUTH SUDAN	1	4						
SUDAN				1				
SYRIAN ARAB REPUBLIC	1							
YEMEN	2							
KENYA					3			
Total	**51**	**18**	**24**	**3**	**40**	**15**	**18**	**9**

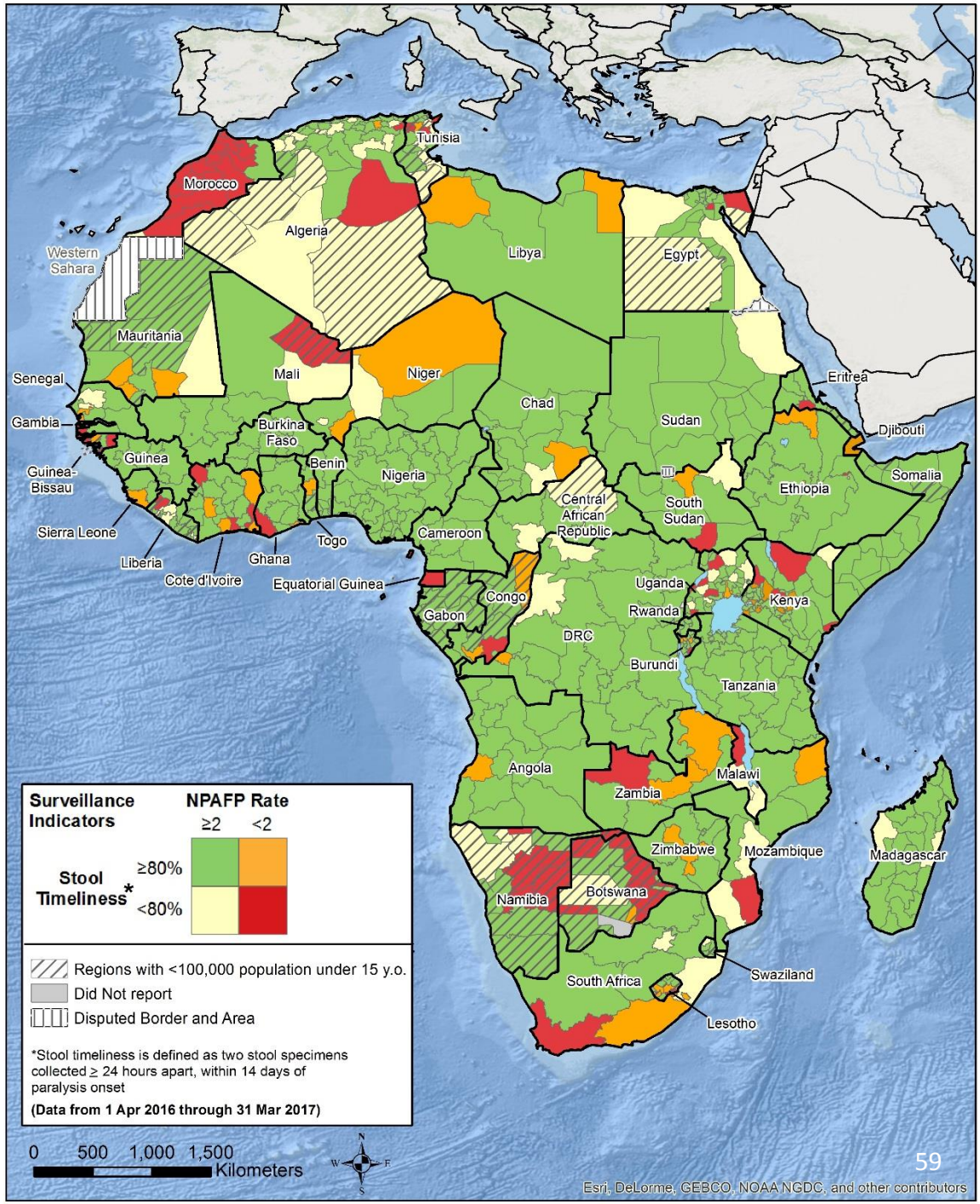
Countries	Human				ENV			
	S	O	N	D	S	O	N	D
AFGHANISTAN	1							
CAMEROON			1					
INDIA					1		1	2
IRAQ		1						
NIGER				1				
NIGERIA	8	1	1	13				24
PAKISTAN					1	2		1
RUSSIAN FEDERATION		1			2			
Total	**9**	**3**	**2**	**14**	**4**	**2**	**1**	**27**

Countries	Human		Env	
	J	F	J	F
AFGHANISTAN			1	
CAMEROON	6	1		
NIGERIA	44		60	18
PAKISTAN	1		5	3
Total	51	1	66	21

- Most of the SL2 in Q1 of 2017 can be attributed to mOPV2 use.
- However, field investigation during September – December 2016 give evidence of use of tOPV use in parts of multiple countries

Africa: Surveillance quality by country and province, state, or region, Apr 2016 – Mar 2017

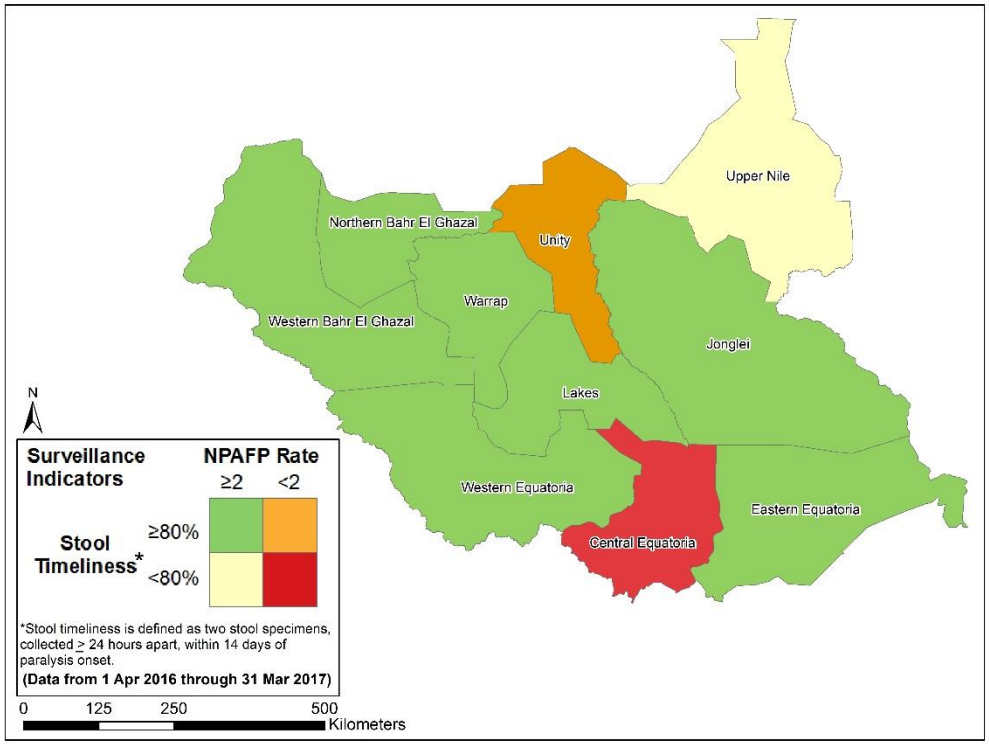
Most countries have achieved surveillance indicators at the national level, however, not all provinces met both indicators.



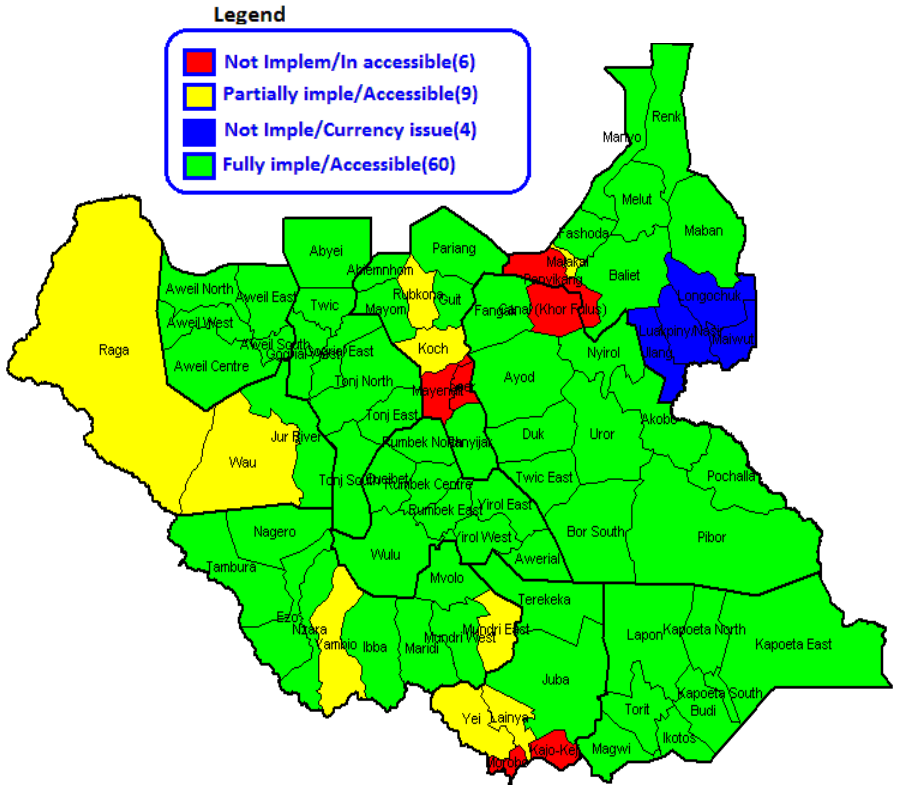
Source: CDC

South Sudan: Surveillance and Accessibility

Surveillance Apr 2016 – Mar 2017



Accessibility, Feb 2017



- 60 of 79 areas are fully accessible
- Areas in blue refuse to implement except when teams are paid in dollars

Stool timeliness: 2 stool specimens, collected ≥ 24 hours apart, among AFP cases < 15 yrs old w/in 14 days of paralysis onset

Source: CDC

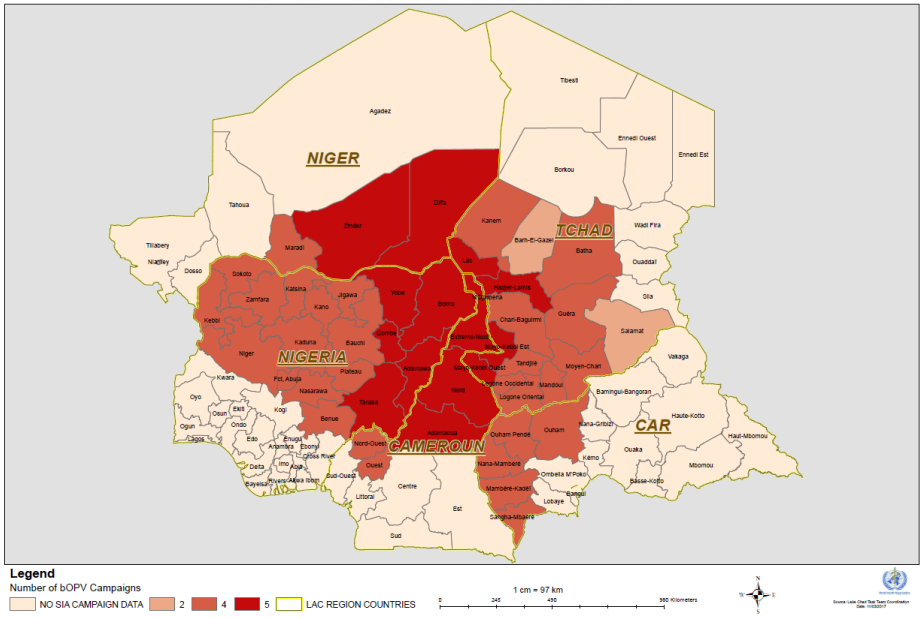
Source: WHO Country Office

Lake Chad Basin countries response:

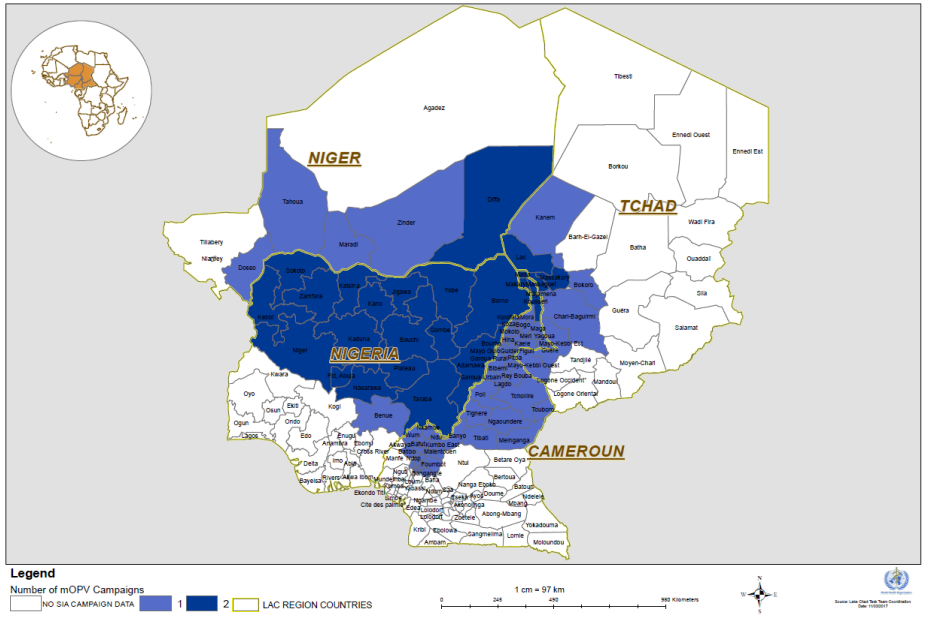
The Borno outbreak led to a massive regional response targeting 40+ million children with OPV multiple times

- Overall cost of the outbreak Aug-Dec: $140m

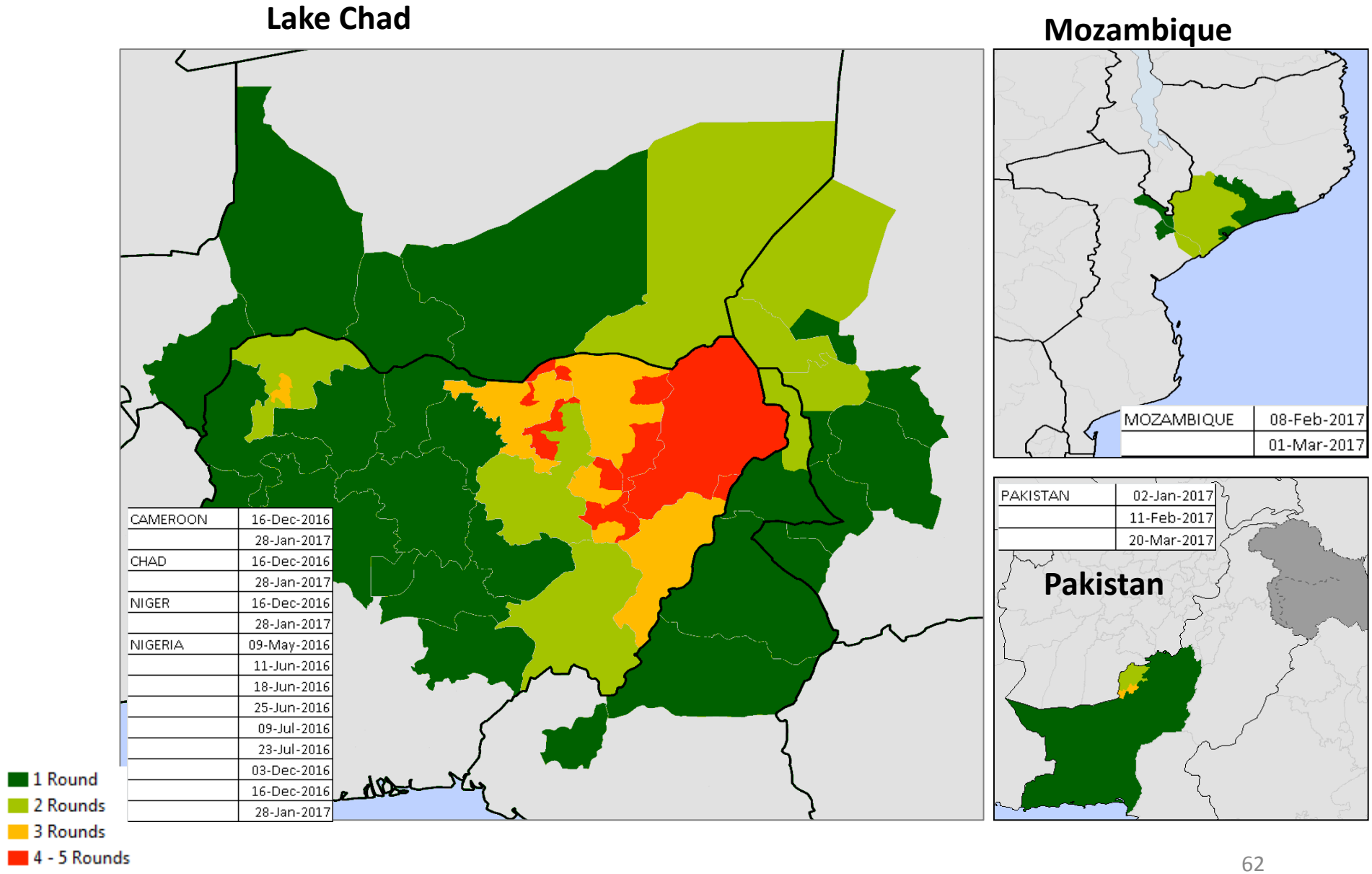
bOPV SIA CAMPAIGN ROUNDS WITHIN THE LAC COORDINATION REGION
BETWEEN AUGUST 2016 AND DECEMBER 2016



mOPV SIA CAMPAIGN ROUNDS WITHIN THE LAC COORDINATION REGION
BETWEEN DECEMBER 2016 AND FEBRUARY 2017



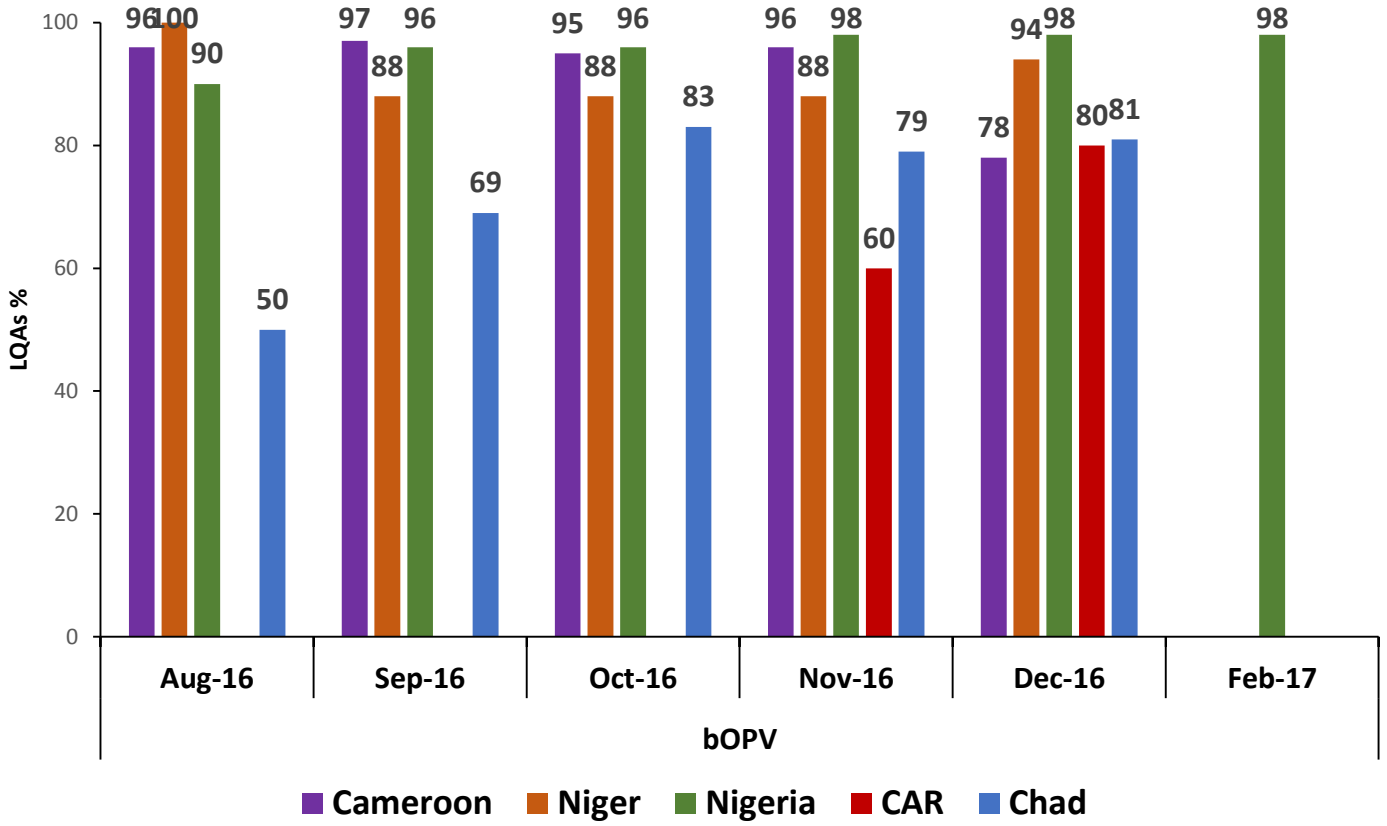
Lake Chad Basin, Mozambique, and Pakistan post-switch mOPV2 rounds conducted and planned between 01 May 2016- 31 Jul 2017



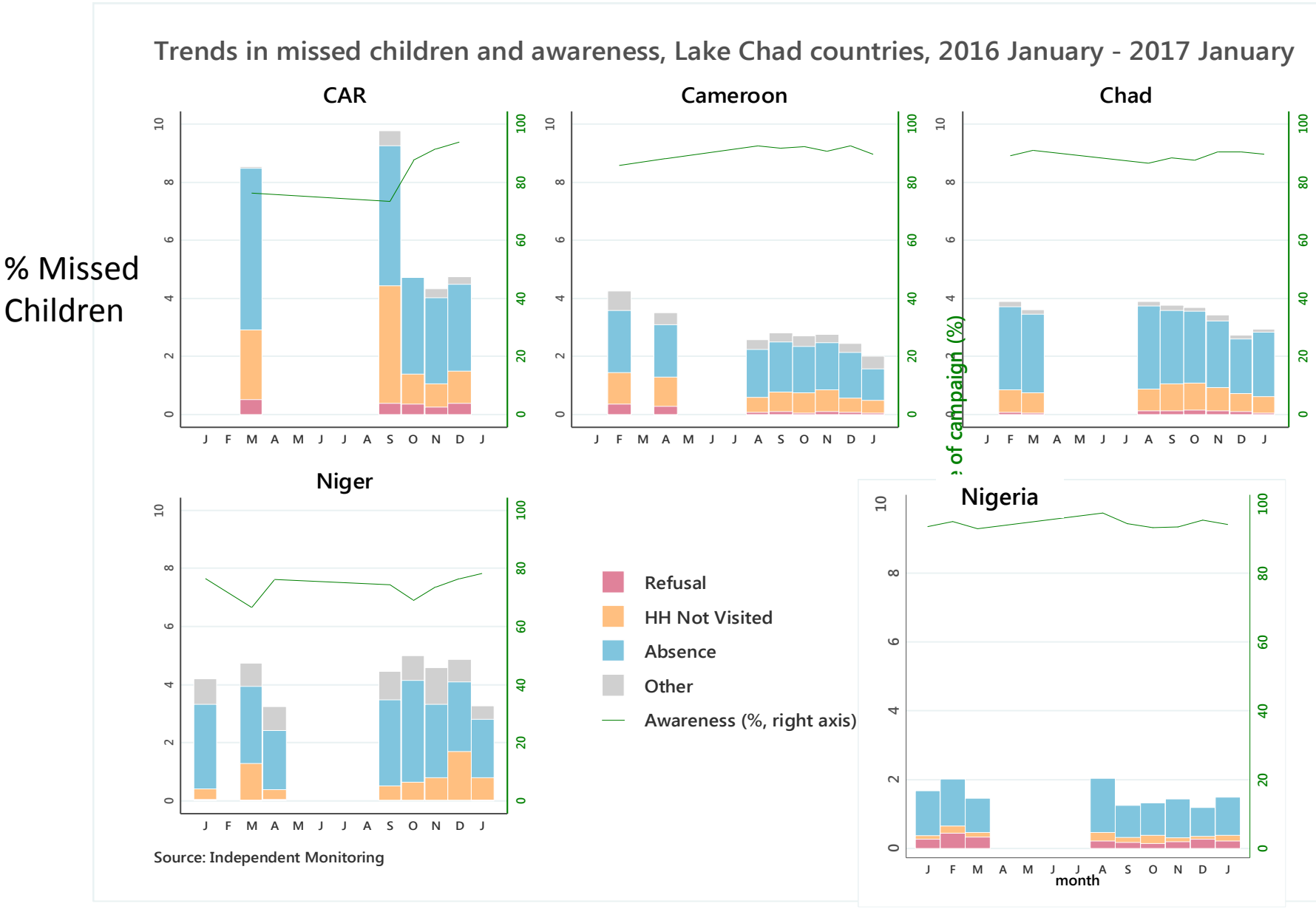
Data in WHO HQ as of 07 March 2017

Lake Chad Basin Countries: coverage estimates

LQAS for bOPV SIAs from Aug 2016 – Feb 2017



Lake Chad Basin Countries



- Primary reason for missed children is “Absence” (absent from home at time of SIA)
- “Household not visited” was also a common reason (except Nigeria)

Risk for Priority Polio-Free Eastern Mediterranean Region Countries Summary, December, 2016 (source EMRO)

Country	Risk of Undetected transmission	Risk of WPV importation / spread or emergence of cVDPVs	Capacity of the country/ program to rapid response
Somalia	Low	High	High
Yemen	Low - Medium	Medium – high	Medium - High
Libya	Low	Low - Medium	Medium
Syria	Low	Medium	Medium - High
Iraq	Medium	Medium	Medium - High
Sudan	Low - Medium	Medium – High	High

IPV supply in 2017

Tier 2 countries (15) are informed now that…:

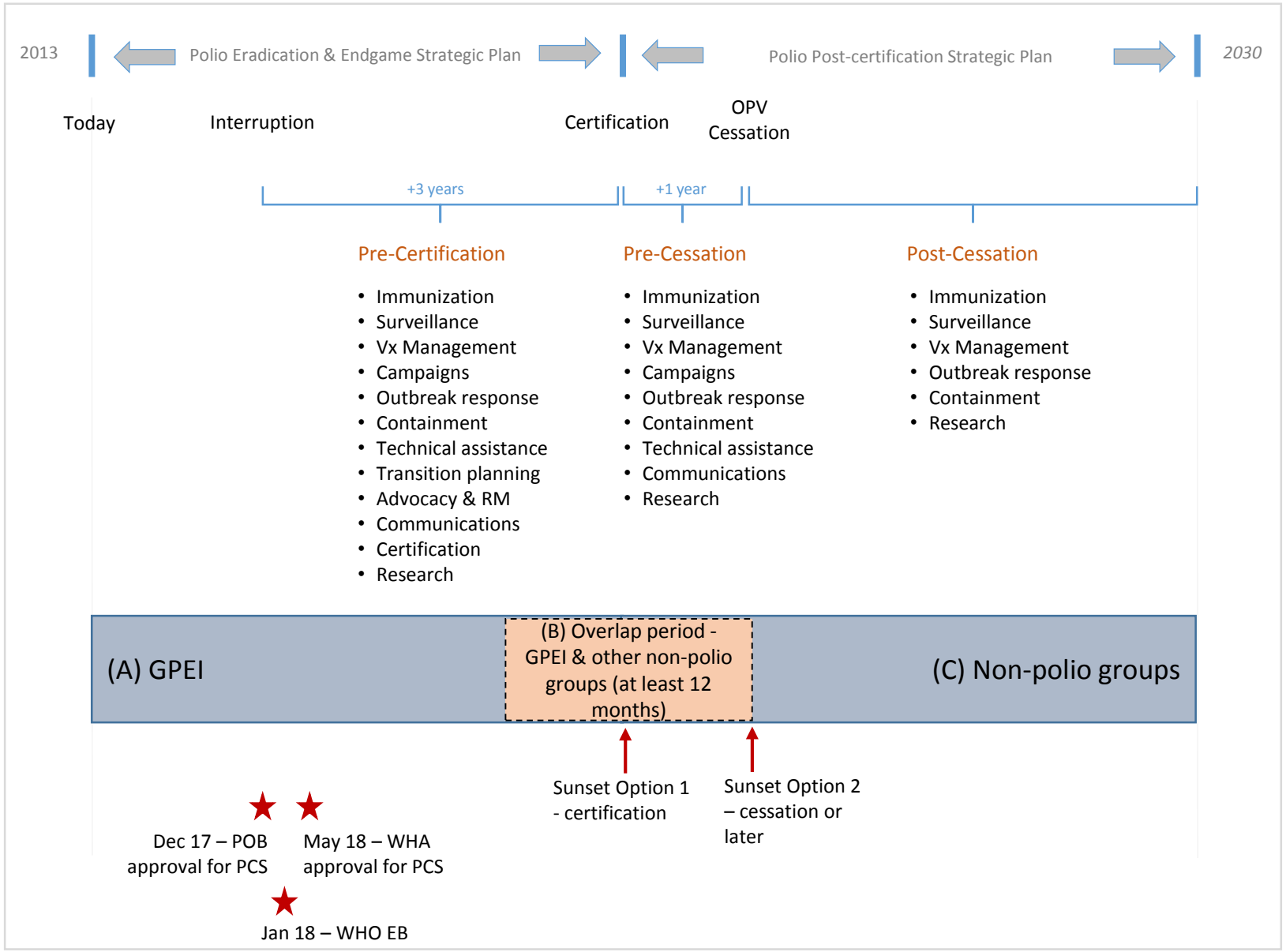
- they will receive supply in Q2 but due to the extremely tight supply situation, they are warned that there could be further interruptions throughout 2017;
- there are no guarantees for future deliveries and their shipment plans will be reviewed on a quarterly basis;
- they are strongly encouraged to consider moving to fIPV routine with partner support to stretch supplies

Tier 3 and Tier 4 countries (50) are informed now that…:

- due to the worsening supply situation it will not be possible to supply/resupply them in Q4 2017;
- they will be informed before June 2017 of when they can receive IPV in 2018 (need BBio and Sanofi schedule);
- any country moving to fIPV will be prioritised and would be supplied as soon as adequate IPV becomes available

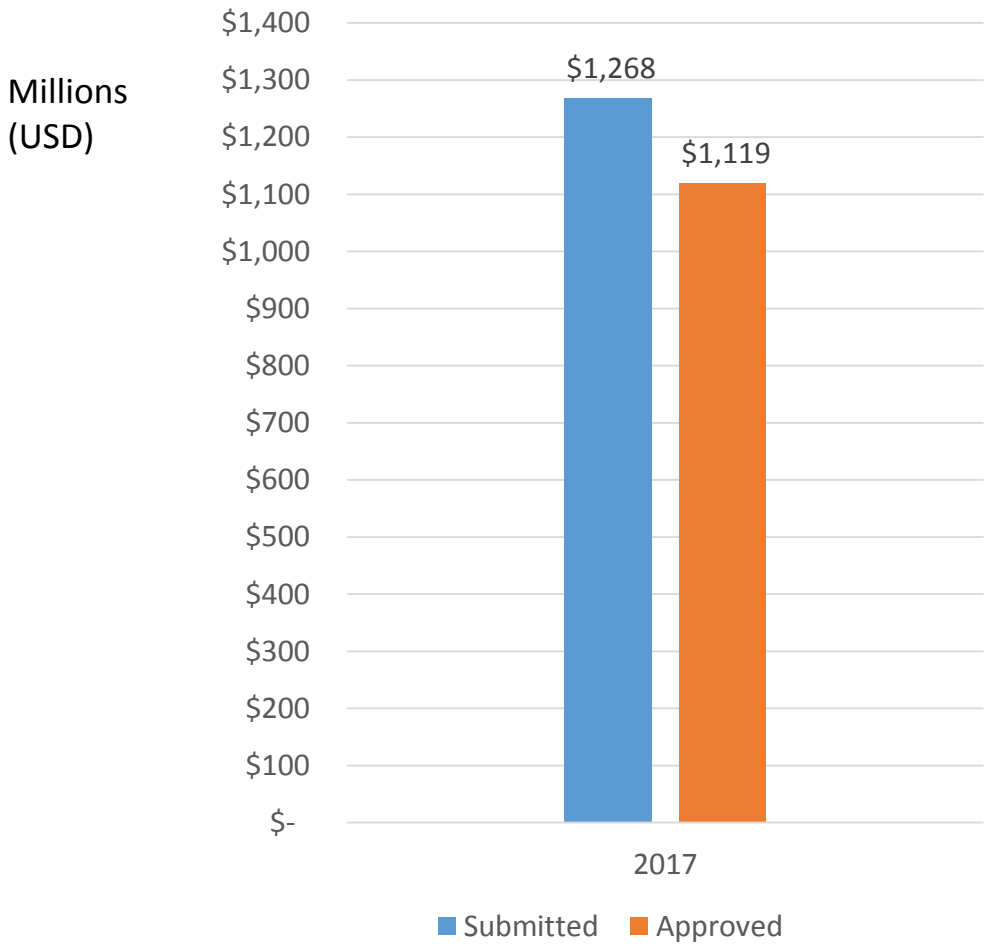
Tier 2: Benin, CAR, Cambodia, Congo, Equatorial Guinea, Gabon, Lao, Mali, Mauritania, Mozambique, Papua NG, Syria, Timor-Leste, Ukraine & Uganda. If the tier 2 countries are not resupplied in Q2 then most of these countries are likely to stock out in Q2 (duration of 4-6 months)

Transition of Essential Functions and Polio Eradication



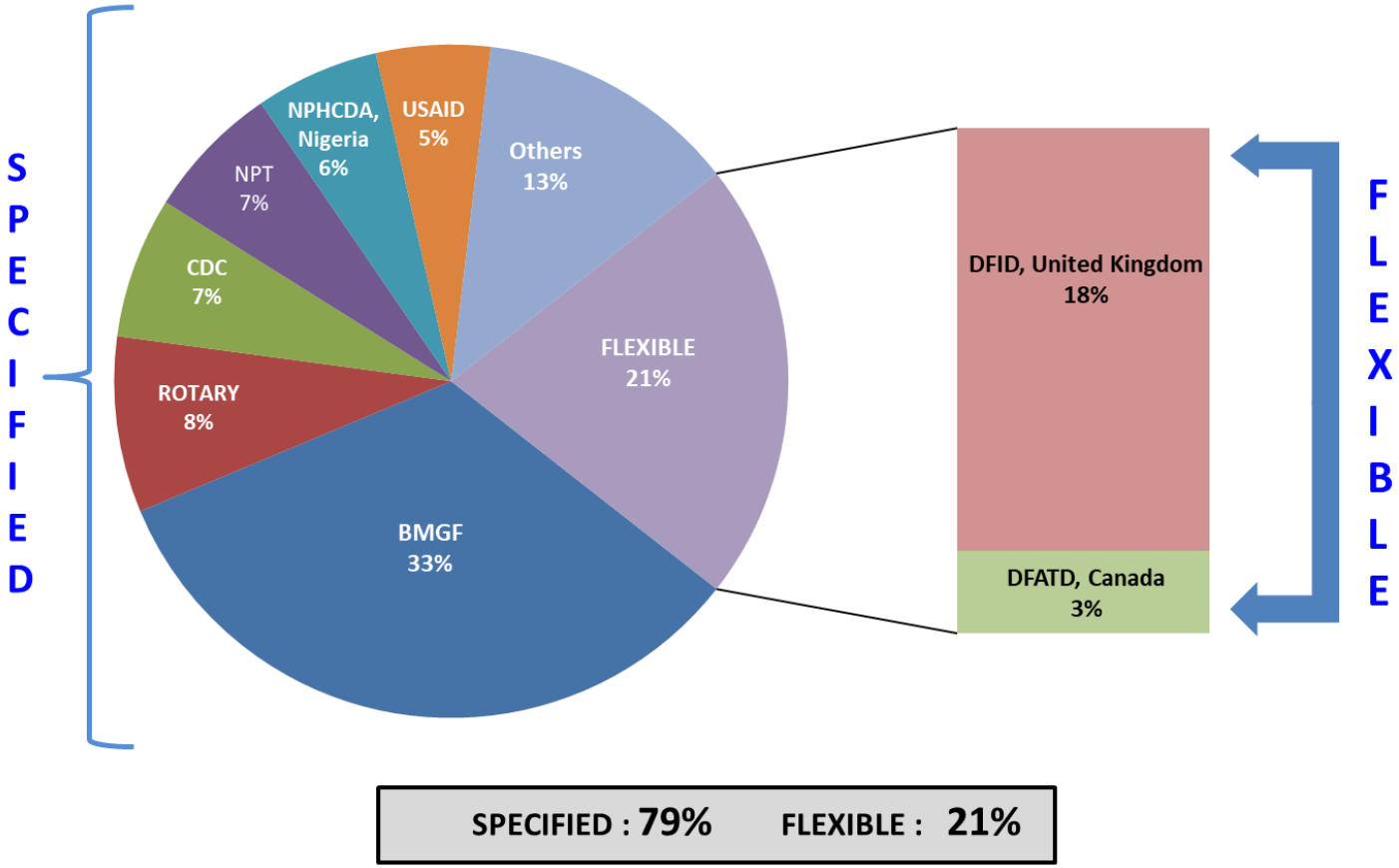
Financial outlook

Actions taken to enhance GPEI budget implementation and accountability



- 2017 GPEI budget capped at 1,119 M USD, which is 149 M USD lower than the budget requested by the country, RO and HQ teams, to align with historic implementation levels.
- Quarterly budget review/revision initiated to complement established quarterly expenditure reporting.
- Further analysis of major cost drivers carried out for more accurate planning, costing, allotting.
- Uniform financial planning and reporting in countries facilitated.
- “Contingency" or "provisional" elements are correctly reflected to avoid implementation distortions.
- Communication on GPEI program budgeting and funding is being enhanced.

GPEI financing structure



SPECIFIED : 79% **FLEXIBLE : 21%**

- Ability to quickly reallocate funding and other resources is critical for effective implementation of the GPEI strategy, especially in the context of the leaner budget and new accountability measures. However it continues to be funded largely by earmarked grants that limit this ability and thus present increasing risks.