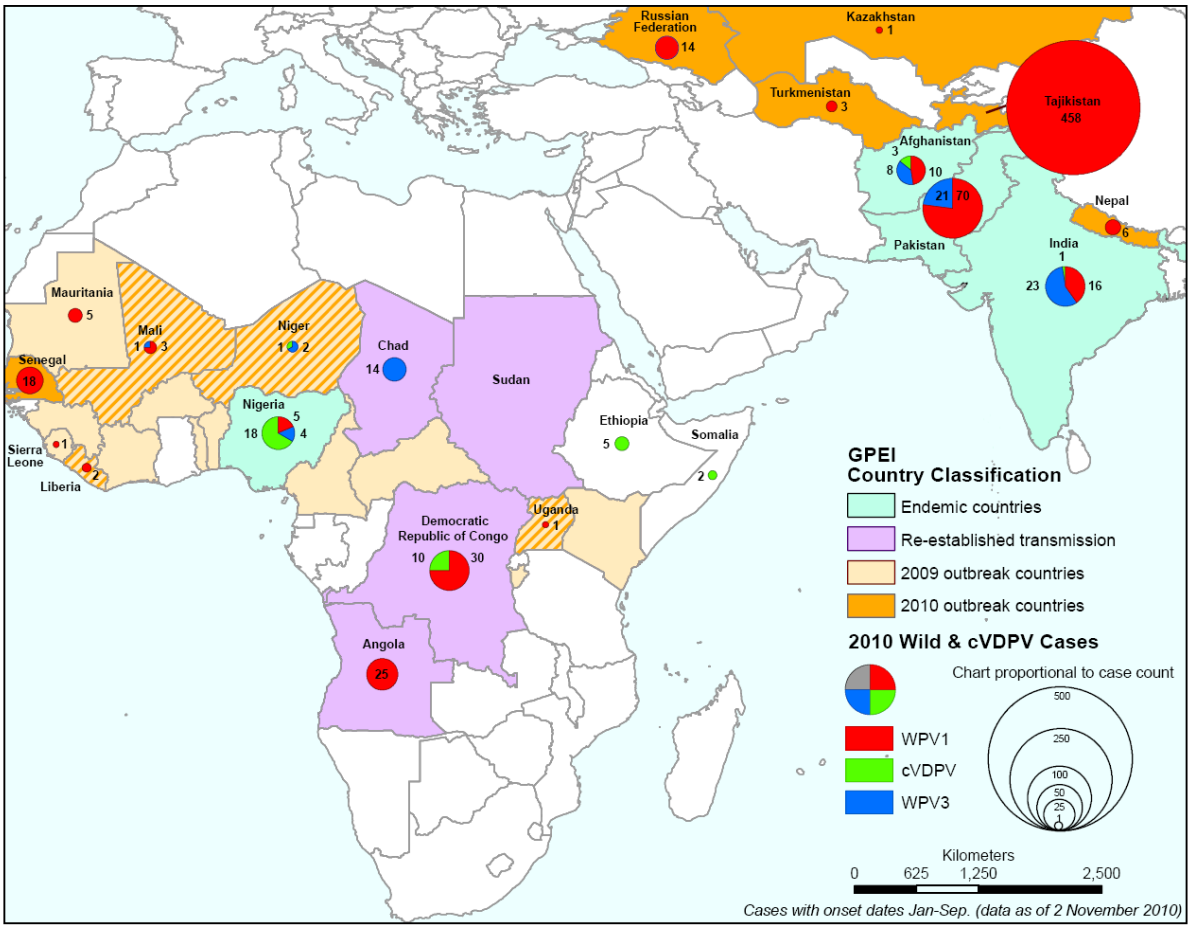
CDC ASSESSMENT OF RISKS TO THE GLOBAL POLIO ERADICATION INITIATIVE (GPEI) STRATEGIC PLAN 2010-2012

10-Nov

2010 Third Quarter Report (January-September)

Geographic distribution of wild poliovirus (WPV) cases by serotype and of circulating vaccine-derived polioviruses (VDPV), onset during January–September 2010
(data as of 2 Nov. 2010)



Global Immunization Division and Division of Viral Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention

Atlanta, Georgia USA

GLOBAL UPDATE

1 January-30–September 2010

Globally, 748 WPV cases were reported with onset during 1 January–30 September 2010 compared to 1271 cases for the same period in 2009 (a 41% reduction); 476 (64%) cases were associated with the Tajikistan outbreak (18 occurring outside of Tajikistan). In the endemic countries of Afghanistan, India, Nigeria, and Pakistan, 157 cases were reported in 2010 through 30 September, compared with 973 cases in the same time period in 2009 (an 84% reduction). A total of 69 cases were reported in Angola, Chad and the Democratic Republic of the Congo in 2010 through 30 September. As of 2 November, Sudan has not detected WPV in over 15 months.

Of concern are recent outbreaks in polio-free countries: 1 case in Uganda in late September suggesting undetected circulation there and/or in Kenya in 2010, and 213 suspected cases in Republic of the Congo as of 9 November. This latter outbreak is under investigation and not further discussed in this report.

ERRATUM

The following errors were inadvertently made in the first CDC assessment of risks to the Strategic Plan 2010–2012 (14 September 2010):

- 2010 WPV1 importations into Mali were not correctly distinguished from ongoing circulation of WPV1 imported in 2009. The latest case onset of the 2009 outbreak was not 1 May 2010, as indicated, but 30 March 2010. Two 2010 WPV1 importations accounted for individual cases with onset 6 March and 1 May 2010.
- Surveillance performance for Burkina Faso for July 2009–June 2010 was not intermediate, as indicated, but strong based on proportion of adequate specimens at 88%.
- Nepal was incorrectly assessed as high risk of failure to detect and interrupt WPV instead of moderate risk; Nepal's immunization performance should have been indicated as intermediate rather than weak based on performance criteria.
- SIA monitoring data for Pakistan were reported without adjusting for areas targeted but not accessed during SIA implementation because of security concerns. This adjustment of monitoring data is included in the current report, although again only house-to-house data are available for review.
- Map on page 52 of Annex 5 inadvertently showed DPT3 mapping instead of Pol3.

EXECUTIVE SUMMARY

Summary Overview

This is the second CDC assessment of risks to the GPEI Strategic Plan 2010–2012, covering program activities and wild poliovirus (WPV) cases with onset January–September 2010 in importation countries (Milestone 1), re-established transmission countries (Milestone 2), and endemic countries (Milestones 3 and 4).

Importation countries: Impressive progress has been made. In all 15 countries with 2009 importations, transmission associated with the importations appears to be interrupted, with the possible exception of Kenya. Most of the 10 countries with 2010 WPV importations are on track to interrupt transmission – 4 have not reported cases in over 3 months. Two recent outbreaks are of concern: a WPV1 case in Uganda that indicates undetected circulation in Kenya and/or Uganda since 2009, and a large WPV1 outbreak in the Republic of Congo (currently under investigation). Recently, a new WPV3 importation was identified in Mali, and persistent transmission of a 2010 WPV1 importation was identified in Liberia. Based on immunization and surveillance performance, the risks of failing to detect and interrupt WPV transmission within 6 months of outbreak confirmation are considered low in Benin, Burkina Faso, Burundi, Cameroon, Côte d'Ivoire, Eritrea, Gambia, Ghana, Guinea, Guinea-Bissau, Kazakhstan, Mali, Niger, Tajikistan, and Turkmenistan; moderate in Central African Republic, Ethiopia, Kenya, Liberia, Mauritania, Senegal, Sierra Leone, Somalia, Nepal and Togo; and high in the Russian Federation and Uganda.

Re-established transmission countries: Sudan appears to have interrupted WPV transmission for more than 12 months, and Chad reported no WPV cases in the high transmission season and recently strengthened immunization performance. Persistent WPV transmission in Angola and the Democratic Republic of the Congo (DRC) is of concern. **Priority must be given to consolidating the gains in Sudan and Chad, while addressing the serious immunization and surveillance weaknesses in Angola and DRC.** The risks of failing to detect and interrupt WPV transmission by the end of 2010 are considered moderate in Sudan and high in Angola, Chad, and DRC.

Endemic countries: Both India and Nigeria are experiencing historic low numbers of WPV cases, although clusters of un-immunized and under-immunized children remain in Nigeria, and migrant populations of relatively under-immunized children remain in India. Progress has been limited in Afghanistan and elusive in Pakistan, where the situation has deteriorated. **Priority must be given to consolidating gains in India and Nigeria by continuing to focus on sub-national areas and populations remaining at risk of sustaining WPV transmission. Immediate action must address the serious weaknesses in immunization and surveillance performance in Afghanistan and Pakistan.** The risks of failing to detect and interrupt WPV transmission by the end of 2011 are considered moderate in India and high in Afghanistan, Nigeria, and Pakistan.

Introduction

The GPEI Strategic Plan for 2010–2012 proposes aggressive, time-bound milestones and stringent process indicators that target both high immunization coverage and quality surveillance. Although many countries have previously eradicated polio without fulfilling all these strict targets, empiric evidence demonstrates that success in substantially reducing the susceptible population and detecting all WPV chains of transmission is essential to meeting the global goal. Based on the targets set by the Strategic Plan, this report considers failing to reach each process indicator as a serious risk to success. Mitigating factors (such as strong political support or evidence of capacity to respond to transmission) can enhance a country's achievement of the goal.

The Strategic Plan is intended to consolidate the progress made in 2009. In most large re-established transmission and endemic countries, transmission appears to be primarily related to limited geographic areas or to high-risk sub-populations such as migrants. The risk of transmission remains high in each country as long as there is evidence of systemic weaknesses in immunization and surveillance in key sub-national areas and vulnerable high-risk groups. Based on cases with onset January–September 2010, supplementary immunization activity monitoring in 2010, surveillance data the last 12 months reported as of 18 October 2010; and laboratory data for this reporting period as of 2 November, countries are assessed in this report on both the level and trend in their risk of failure to detect and interrupt WPV transmission.

Global Milestone 1 Status

Milestone 1: cessation of all polio outbreaks with onset in 2009, with a mid-2010 target.

Countries with 2009 importations	Date of latest WPV related to 2009 importation	Meets >6 months without cases validation criterion now
Benin	19 Apr 2009	Yes
Burkina Faso	25 Oct 2009	Yes
Cameroon	15 Oct 2009	Yes
Central African Republic	09 Aug 2009	Yes
Côte d'Ivoire	06 Aug 2009	Yes
Guinea	03 Nov 2009	Yes
Liberia	26 Oct 2009	Yes
Mali	06 Mar 2010	Yes
Mauritania	28 Apr 2010	Yes*
Niger	28 May 2009	Yes
Sierra Leone	28 Feb 2010	Yes
Togo	28 Mar 2009	Yes
Burundi	12 Sept 2009	Yes
Kenya	30 Jul 2009	Yes**
Uganda	10 May 2009	Yes

Note: Surveillance quality limits interpretation of period without cases for many countries
* pending final confirmation of surveillance data through 28 October 2010
** pending further observation/ investigation following detection of related WPV in Uganda in 2010

Global Milestone 1a Status

Milestone 1a: cessation of all polio outbreaks with onset in 2010 within 6 months of laboratory confirmation.

Countries with 2010 importations	Date of laboratory confirmation of outbreak	Date of onset of latest WPV related to 2010 importation	Days after confirmation of outbreak until latest case	Meets >6 months without cases validation criterion now	Earliest validation date for >6 months without cases
Kazakhstan	5 Oct 2010	12 Aug 2010	(before)	No	12 Feb 2011
Liberia	14 Apr 2010	8 Sep 2010	147	No	8 Mar 2011
Mali (WPV1)	8 Apr 2010	1 May 2010	23	Yes*	
Mali (WPV3)	15 Oct 2010	17 Sep 2010	(before)	No	17 Mar 2011
Nepal	19 Mar 2010	30 Aug 2010	164	No	1 Mar 2011
Niger	22 Apr 2010	1 Apr 2010	(before)	Yes**	
Russian Federation	31 May 2010	25 Sep 2010	117	No	25 Mar 2011
Senegal	18 Jan 2010	30 Apr 2010	102	Yes***	
Tajikistan	20 Apr 2010	4 Jul 2010	75	No	4 Jan 2011
Turkmenistan	27 Jun 2010	28 Jun 2010	1	No	27 Dec 2010
Uganda	18 Oct 2010	28 Sep 2010	(before)	No	28 Mar 2011

Note: Surveillance quality limits interpretation of period without cases for many countries
* pending final confirmation of surveillance data through 8 October 2010
** pending final confirmation of surveillance data through 1 October 2010
*** pending final confirmation of surveillance data through 30 October 2010

Status of Polio-Affected Countries

Note: 213 suspected polio cases, with laboratory confirmation of two WPV cases, have been identified in the Republic of the Congo as of 9 November, not included in this report. Republic of Congo was not identified in the Strategic Plan as an "importation belt" country.

Importation Countries and the Africa "Importation Belt"

West and Central Africa

There are 16 "importation belt" countries in west and central Africa with a historically high risk of WPV importations. Of the 12 countries in this belt with outbreaks in 2009 due to imported WPV:

- In Benin, Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Guinea, and Togo, no cases were reported in 2010.
- In Mali, Mauritania, and Sierra Leone, WPV type 1 (WPV1) cases continued to be detected in 2010. All countries currently appear to have interrupted transmission of WPV1, pending full 6 months of surveillance data for Mauritania (with surveillance limitations). Mali has also experienced a WPV type 3 (WPV3) importation in 2010, with case onset 17 September. Mali is assessed as having low, stable risk of failure to detect and interrupt WPV transmission within 6 months of outbreak confirmation (15 October).
- In Liberia and Niger, although no 2009-related WPV has been isolated in 2010, both reported new importation events in 2010. Niger has apparently interrupted the associated transmission, with some surveillance limitations. In Liberia, six months elapsed between onset of the first WPV case and the most recent case and five months elapsed after laboratory confirmation; Liberia has a moderate, stable risk of failure to interrupt transmission within six months of outbreak confirmation (14 April).

Of the four "importation belt" countries without an outbreak in 2009:

- In Senegal, the 2010 outbreak has apparently been interrupted, with some surveillance limitations.
- The Gambia, Ghana, Guinea-Bissau were unaffected during 2009–2010.

East Africa

Eritrea, Ethiopia, and Somalia did not report confirmed cases in 2009–2010. Burundi, Kenya, and Uganda had outbreaks in 2009 due to imported WPV). No confirmed cases have been reported in 2010 in Burundi, and transmission has been interrupted. There have been no confirmed cases reported in Kenya in 2010.

However, WPV1 related to WPV last isolated in Turkana, Kenya in 2009 (and not related to the WPV detected in Uganda in 2009) was isolated from a case-patient in Uganda with onset 28 September 2010. The previous CDC risk assessment categorized immunization performance as weak in Uganda and intermediate in Kenya; surveillance performance was assessed as intermediate in Uganda and strong in Kenya. Uganda is considered at high, stable risk of failure to detect and interrupt WPV transmission within 6 months of laboratory confirmation (18 October). Kenya is assessed at moderate, stable risk of failure to detect and interrupt transmission should WPV be in circulation.

Europe and Asia

In Nepal, six WPV1 cases following two separate importations were detected, with onset of the most recent case on 30 August. Nepal is considered at moderate, decreasing risk of failure to detect and interrupt WPV transmission within 6 months of laboratory confirmation (19 March).

In Tajikistan, 458 WPV1 cases have been confirmed with onset of the first case 1 February and of the most recent case on 4 July. Tajikistan is considered at low, stable risk of failure to detect and interrupt WPV transmission within 6 months of laboratory confirmation (20 April).

The Tajikistan outbreak was associated with cases also in Turkmenistan (three: onset 20–28 June), Kazakhstan (one: onset 12 August) and Russian Federation (14: onset 11 May–25 September). There were at least five separate importations into the Russian Federation with no or little local transmission. However, all the most recent cases (onset 21 August-25 September) have been in the Dagestan and Chechen republics in the northern Caucasus. Because of an assessed intermediate immunization performance and weak immunization performance, the Russian Federation is considered at high, stable risk of failure to detect and interrupt WPV transmission within 6 months of laboratory confirmation (31 May) and poses a risk of further spread to other countries in the Caucasus and elsewhere. Turkmenistan and Kazakhstan are at low risk of failure to detect and interrupt WPV transmission within 6 months of laboratory confirmation, which is decreasing in Turkmenistan (confirmed 27 June) after SIAs, and stable in Kazakhstan (confirmed 5 October) until further SIAs are conducted.

Re-Established Transmission Countries

In Angola, WPV1 of the same related lineage has been circulating since 2007 following importation from India; 25 WPV1 confirmed cases were reported with onset during January–September 2010, from throughout the country. With weak immunization performance and intermediate surveillance performance, Angola continues to have a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2010 and of exporting WPV into neighboring countries.

In Chad, WPV type 3 (WPV3) transmission has been ongoing since importation from Nigeria in 2007; 14 WPV3 cases were identified during January–September 2010; the most recent case had onset 10 May. Without recent SIAs and based on weak immunization performance to date, Chad has a high risk of failure to detect and interrupt WPV transmission by the end of 2010. However, the risk appears to be decreasing because monitoring data following SIAs in the first months of 2010 suggest some progress in implementation. Surveillance performance is weak, but the absence of confirmed cases in the high transmission season is reassuring.

In DRC, 30 WPV1 cases were identified during January–September 2010 primarily in provinces of the country adjacent to Angola, as a result of two separate importation events with WPV of Angolan origin. One of the cases was detected in an eastern province on the border with Tanzania/Lake Tanganyika. WPV isolated from this case-patient is most closely related to WPV isolated in DRC in 2007–2008 on virologic analysis; this undetected transmission demonstrates deficiencies in surveillance performance. DRC has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2010.

In Sudan, WPV1 of Nigerian origin was imported into the country via Chad in 2004 and resulted in 147 polio cases during 2004–2005 and undetected circulation until June 2008. A total of 71 cases occurred during 2008-2009; the most recent case had onset 27 June 2009. South Sudan has shown substantial progress but without recent SIAs, has weak immunization performance based on earlier SIAs. With strong surveillance performance in the last 12 months, south Sudan is at a moderate, decreasing risk of failure to detect and

interrupt WPV transmission by the end of 2010. Upcoming elections are a concern and contingency plans are needed to sustain program achievements.

Endemic countries

In Afghanistan, poliovirus transmission has remained largely unchanged from the same period in 2009 (25 WPV cases) to 2010 (18 WPV cases). SIA monitoring data available for the 13 high-risk districts identified in the Strategic Plan indicate that in all 13, the target of <10% missed children has consistently not been reached in 2010 SIAs. Afghanistan has a high, stable risk of failure to detect and interrupt WPV transmission by the end of 2011.

In India, 39 WPV cases (16 WPV1 and 23 WPV3) have been confirmed during January–September 2010, compared with 504 (64 WPV1, 439 WPV3, 1 mixed WPV1/WPV3) during January–September 2009. The latest identified WPV1 case in Uttar Pradesh had onset in November 2009. Prior to 7 August 2010, the latest confirmed WPV1 case-patient in Bihar had onset in October 2009; since 7 August, 3 cases have been confirmed in Bihar in one block of a district bordering Nepal where WPV1 circulation occurred in 2010. The latest confirmed WPV1 case in India was in Maharashtra with onset 16 September. The most recent WPV3 case was in Jharkhand with onset 31 August. The reduction in the number of WPV cases in India to a record low number following the high season indicates significant progress. Immunization performance and surveillance performance are strong. Nonetheless, India remains at moderate, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2011 because of the multiple foci of circulation of WPV in the previous 6 months.

In Nigeria, 9 WPV cases (5 WPV1 and 4 WPV3) were identified during January–September 2010, a decrease from 380 cases (74 WPV1 and 306 WPV3) during January– September 2009. As of 2 November, an additional case was reported with onset 5 October. The onset of the most recent WPV1 case was 27 September in Kano state and represented importation from Borno state. There have been 18 circulating vaccine-derived poliovirus type 2 cases during January–September 2010, decreased from 150 during the same period last year. The Strategic Plan 2010 target is <10% of children with non-polio AFP with a vaccine history of 0-dose in each of the 12 high-risk states, which has not been met for Kano (17% 0-dose) and Yobe (13% 0-dose) indicating continuing weak immunization performance in some localities. Virologic analysis suggests intermediate surveillance performance despite AFP surveillance performance indicators meeting targets. Although the current situation is markedly improved from past years, Nigeria has a high risk of failure to detect and interrupt WPV transmission by the end of 2011. The risk is decreasing because of continuing improvement in SIA implementation; however, there is the potential for disruptions in services during the state and federal elections planned for early 2011.

In Pakistan during January–September 2010, 91 (70 WPV1 and 21 WPV3) cases have been confirmed, compared with 66 (43 WPV1, 22 WPV3 and 1 WPV1/WPV3) during the same period in 2009. The target of <15% missed children has been reached in six of seven SIA rounds in the three monitored districts in Balochistan. In Peshawar district in Khyber Pakhtunkhwa and the monitored districts of FATA, however, this target has not been reached: up to 60% of children were missed when adjusting for limited access. Among the 18 monitored towns of Karachi, house-to-house SIA independent monitoring indicated <10% missed children in 17 towns in at least four SIA rounds to date. However, market/outside the house monitoring data are not available. Although there are signs of progress in some areas in 2010, Pakistan has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2011.

Table of Contents

ACRONYMS AND ABBREVIATIONS

AFP	acute flaccid paralysis
bOPV	bivalent (types 1 and 3) oral poliovirus vaccine
CDC	U.S. Centers for Disease Control and Prevention
cVDPV	circulating vaccine-derived poliovirus
GPEI	Global Polio Eradication Initiative
IM	independent monitoring
IMB	Independent Monitoring Board
mOPV	monovalent oral poliovirus vaccine, either type 1 (mOPV1) or type 3 (mOPV3)
MPI	major process indicator
NPAFP	non polio acute flaccid paralysis
OPV	oral poliovirus vaccine
Pol3	coverage with three doses of OPV
SIA	supplementary immunization activity
tOPV	trivalent oral poliovirus vaccine
UNICEF	United Nations Children's Fund
VDPV	vaccine-derived poliovirus
WHO	World Health Organization
WPV	wild poliovirus

CDC Assessment of Risks to GPEI

INTRODUCTION

The Global Polio Eradication Initiative (GPEI) Strategic Plan for 2010–2012 proposes aggressive, time-bound milestones and process indicators for high immunization coverage and quality surveillance. Although many countries have eliminated wild poliovirus (WPV) without fulfilling these requirements, experience demonstrates that reducing the susceptible population and detecting all chains of transmission is essential to eradication.

The Interagency Coordinating Group (ICG) of major polio eradication partners requested the U.S. Centers for Disease Control and Prevention (CDC) to assess the risk of failing to detect and interrupt WPV transmission in affected countries during 2010-2012. CDC will report quarterly risk assessments to the ICG and to the Independent Monitoring Board (IMB). The IMB will use this information to evaluate progress toward each GPEI Strategic Plan milestone and indicator, develop recommendations for mid-course corrections, and track implementation of their recommendations.

This second CDC risk assessment is based on data from 1 January through 30 September 2010 (updated for the 3-month period 1 July–30 September 2010) and in part on data from the one-year period 1 October 2009–30 September 2010. The primary analysis is restricted to countries included in the GPEI Strategic Plan; however, analyses of countries with WPV outbreaks in 2010 are included.

Methods

Data

National and sub-national data used for this report, as outlined in Annex 1[1], are from: i) independent monitoring of Supplementary Immunization Activities (SIAs) in selected geographic areas, and ii) Acute Flaccid Paralysis (AFP) surveillance, used to determine non-polio AFP (NPAFP) rates, the proportion of AFP case-patients from whom adequate stool specimens are collected, and the number of oral polio vaccine (OPV) doses received by each NPAFP case-patient. Data comparisons are made with WHO/United Nations Children's Fund (UNICEF) country immunization coverage estimates for the third routine OPV dose (Pol3) in 2009.[2] Genomic sequence analyses of poliovirus isolates are provided by the Global Poliovirus Laboratory Network.

Indicators

This report's risk assessments are from analyses of "Major Process Indicators" (MPI) and "supplemental indicators". MPIs are set forth in the GPEI Strategic Plan (Annex 2) and used to assess a country's risk of

[1] WPV and vaccine-derived poliovirus cases are reported with onset 1 January through 30 September 2010, using data as of 2 November 2010. Any cases with onset between 30 September 2010 and the report's release date are not included in the global overview or in detailed analyses, but are noted in country risk assessments. Independent monitoring data are from SIAs conducted between 1 January and 30 September 2010. For AFP surveillance, databases as of 18 October 2010 were used for onset of AFP between 1 October 2009 and 30 September 2010 and thus overlap with the AFP data used in the 14 September 2010 CDC report.

[2] Unchanged from the 14 September 2010 CDC report; available at http://www.who.int/immunization_monitoring/routine/immunization_coverage/en/index4.html

failing to detect and interrupt[3] WPV transmission. MPIs targeted for achievement by the end of 2010 are assessed in this report as achieved or not as of 30 September 2010; those MPIs that could not yet be assessed at the time of this report's release are noted.

Supplemental indicators are used to assess the consistency and validity of MPIs. SIA independent monitoring (IM) data serve as the primary indicator for immunization performance. Supplemental indicators for immunization performance are:

- Pol3 coverage estimates, and
- the proportion of NPAFP children 6-35 months of age with no OPV doses – referred to as "zero-dose" (0-dose) children.

The MPI target, related to surveillance, for all countries in the Strategic Plan is a NPAFP rate >2 per 100,000 children <15 years of age in all sub-national levels. Supplemental indicators used to assess surveillance performance[4] are:

- the national proportion of AFP cases with adequate stool specimens, and
- WPV genomic sequence analysis[5].

Assessments of immunization and surveillance performance

Immunization performance is assessed as being STRONG, INTERMEDIATE, or WEAK using a stepwise process (Methods document available upon request) that considers both MPI and supplemental indicator data. Briefly,

1. Primary emphasis is placed on IM data from SIAs conducted in 2010 to assess the MPI, particularly in the geographic areas specified for the MPI in the GPEI Strategic Plan (for most countries, <10% missed children in each of a specified number of SIAs, or otherwise in the two most recent SIAs). In most countries, the performance of each SIA is individually scored as strong (<10% missed children), intermediate (10-14% missed children), or weak (≥15% missed children); then SIA scores are considered together for assignment of an overall score of strong, intermediate, or weak for the MPI.

2. Secondarily, data on supplemental indicators are considered as follows:

[3] WHO considers an outbreak to be interrupted when six months have passed after the most recent case. Even with surveillance performance indicators that meet criteria standards, CDC considers an outbreak *apparently interrupted* when six months have passed with full laboratory data available indicating no detected cases, and *interrupted* when 12 months have passed with full laboratory data available after the latest case.

[4] AFP surveillance quality is monitored by performance indicators that measure the sensitivity of detecting WPV transmission. Certification-standard targets are: 1) a NPAFP detection rate of >1 case per 100,000 population aged <15 years, and 2) adequate stool specimen collection from >80% of AFP cases, where two specimens are collected ≥24 hours apart, both within 14 days of paralysis onset, shipped on ice or frozen ice packs, and arriving in good condition to a WHO-accredited laboratory (not evaluated here). Sub-national data are analyzed if the population is ≥100,000. Since 2005, an operational target has been to achieve a NPAFP rate of >2 cases per 100,000 children aged <15 years. In this report, when sub-national NPAFP rates are used, they are based on upper 90% confidence limits. A state/province's rate is considered to be acceptable if the upper 90% confidence limit is >2.

[5] The genetic relatedness of viruses taken from infected persons identified through AFP surveillance can provide information about the sensitivity of the surveillance system. Because poliovirus mutates at a constant rate, viruses from persons connected in place and time that were detected through a sensitive AFP surveillance system should show a high degree of relatedness. If a virus does not have a close relative, however, that indicates that the particular transmission chain or chains represented by the virus has gone undetected for some time. The lower the genetic identity of a virus is to its closest related virus, the longer the period of silent transmission. The more detected viruses that are not closely related to their nearest genetic neighbor, the stronger the indication that there are problems with the sensitivity of the AFP surveillance system.

- National 2009 Pol3 coverage estimates of ≥90% (strong), 75-89% (intermediate), and <75% (weak).
- National zero-dose OPV proportions of ≤5% (strong), 6-9% (intermediate), and ≥10% (weak).

When no SIA monitoring data are available, supplemental indicator data are used alone to assess immunization performance. The scores for Pol3 coverage and zero-dose OPV are combined with the score for the MPI for immunization for an overall immunization performance assessment of STRONG, INTERMEDIATE, or WEAK (Annex 3); details describing this process are available in the Methods document (available upon request).

Surveillance performance is assessed as being STRONG, INTERMEDIATE, or WEAK using a stepwise process (details provided in Methods document, available upon request) that considers both MPI and supplemental indicator data. Briefly,

1. Primary emphasis is placed on the MPI for surveillance in all countries (i.e., NPAFP rates of >2 within the last 12 months in all sub-national areas). For each country, the proportion of sub-national areas with NPAFP rates >2 (based on the upper 90% confidence limits) is scored as: strong (100% of sub-national areas with NPAFP rates >2), intermediate (80-99% of sub-national areas with NPAFP rates >2), or weak (<80% of sub-national areas with NPAFP rates >2). For this assessment, the NPAFP rate is considered acceptable if the upper 90% confidence interval is >2. For the Democratic Republic of the Congo (DRC) and south Sudan, specific MPIs call for NPAFP>2 in all sub-national areas; the assessment here is based on the reported values, not on upper 90% confidence limits.

2. Secondarily, data on supplemental indicators are considered as follow:
   - National proportion of adequate stool samples: >80% (strong), 65-80% (intermediate), and <65% (weak).[6]
   - Genetic sequence data of WPV isolates: little evidence of missed chains of WPV transmission (little), and some evidence of missed chains of WPV transmission (some).

The scores for the proportion of adequate stools and genetic sequence data are combined with the score for the surveillance MPI for an overall surveillance performance assessment of STRONG, INTERMEDIATE, or WEAK (Annex 3); details describing this process are available in the Methods document (available upon request).

Overall risk assessment

The overall assessment of a country's risk of failure to detect and interrupt WPV transmission is based primarily upon the immunization performance assessment but also considers the surveillance performance assessment as illustrated in the table below. An overall risk of HIGH, MODERATE, or LOW is assigned to countries assessed in this report. Trends in the assigned overall risk are judged by SIA monitoring data (or for those without recent SIAs, supplemental indicators) and recent events supporting a decreasing, stable, or increasing risk of failure to detect and interrupt WPV transmission.

[6] *The 14 September 2010 CDC risk assessment report did not take into account specimen condition in the proportion of adequate stool specimens; this report and subsequent reports will.*

	IMMUNIZATION PERFORMANCE		
SURVEILLANCE PERFORMANCE	**WEAK**	**INTERMEDIATE**	**STRONG**
WEAK	HIGH	HIGH	MODERATE
INTERMEDIATE	HIGH*	MODERATE	LOW**
STRONG	HIGH*	MODERATE	LOW**

*If a country is initially assessed as having a HIGH risk of failure to detect and interrupt WPV transmission but its surveillance performance is assessed as STRONG or INTERMEDIATE and there is no evidence of WPV circulation in >12 months (>6 months if importation country/"importation belt"), overall risk is revised to MODERATE.
**If a country is initially assessed as having STRONG immunization performance and STRONG or INTERMEDIATE surveillance performance but there is evidence of WPV circulation within the last 6 months in ≥3 states/provinces (*3 months for an importation country*), its overall risk is revised to MODERATE. *If an importation country has STRONG immunization performance and STRONG or INTERMEDIATE surveillance performance but there is evidence of WPV circulation within the last 3 months and ≥3 months have elapsed from outbreak laboratory confirmation to the most recent case, its overall risk is revised to MODERATE. [Italics indicates modification since the 14 September 2010 CDC report.]*

Limitations

This report assesses all endemic, re-established transmission, importation, and "importation belt" countries' risk of failing to detect and interrupt WPV transmission. The assessment is not meant to predict a country's risk for WPV introduction. Even so, the assessment is based on data of limited scope and unknown accuracy and does not account for mitigating factors such as strong political support or capacity to respond to transmission.

Because SIA monitoring has not been consistently implemented across countries, it is not possible to compare SIA quality between countries. When SIA implementation in a country remains consistent over time, temporal trends can provide valuable information on SIA quality improvement for that country. However the areas chosen and size of samples drawn for monitoring impacts the validity of estimates of the proportion of missed children, as does the independence and skill of SIA monitors. Similarly, surveillance data may not be geographically or demographically representative, and immunization histories based on children with NPAFP may be subject to bias. NPAFP dose histories can also be difficult to interpret when the proportion missing data on age or vaccine history is substantial. Even with complete data, estimates based on small populations lack precision.

Data limitations and potential biases are taken into account to the extent possible in this assessment. The consistency of estimates based on different data sources provides one measure of data quality. For surveillance performance, WPV genomic sequence analysis provides objective information. Comparing the genetic relatedness of viruses taken from infected persons identified through AFP surveillance and from environmental sampling provides robust information on the quality of the surveillance system.

RISK ASSESSMENT

Importation Countries

West and Central Africa "importation belt" countries

Importation belt countries (west and central Africa only)			WPV History		Current Quarter Risk Assessment			Prior Quarter
			Date of last WPV	Weeks since last WPV (as of 1Oct.)	Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)
west and central Africa	1	Benin	19-Apr-09	**76**	Strong	Intermediate	**Low: stable**	**Low: stable**
	2	Burkina Faso	25-Oct-09	**49**	Strong	Strong	**Low: stable**	**Moderate: stable**
	3	Cameroon	15-Oct-09	**50**	Strong	Intermediate	**Low: stable**	**Moderate: stable**
	4	Central African Republic	09-Aug-09	**60**	Intermediate	Strong	**Moderate: stable**	**Moderate: stable**
	5	Cote d 'Ivoire	06-Aug-09	**60**	Strong	Intermediate	**Low: stable**	**Low: stable**
	6	Gambia	last WPV in 2000		Strong	Strong	**Low: stable**	**Low: stable**
	7	Ghana	08-Nov-08	**99**	Strong	Intermediate	**Low: stable**	**Low: stable**
	8	Guinea	03-Nov-09	**47**	Strong	Intermediate	**Low: stable**	**Low: stable**
	9	Guinea-Bissau	last WPV in 1997		Strong	Intermediate	**Low: stable**	**Moderate: stable**
	10	Liberia *	08-Sep-10	**3**	Strong	Intermediate	**Moderate: stable ****	**Low: decreasing**
	11	Mali *	17-Sep-10	**2**	Strong	Strong	**Low: stable**	**Low: decreasing**
	12	Mauritania	28-Apr-10	**22**	Intermediate	Intermediate	**Moderate: stable**	**High: decreasing**
	13	Niger *	01-Apr-10	**26**	Strong	Intermediate	**Low: stable**	**Low: decreasing**
	14	Senegal *	30-Apr-10	**22**	Strong	Weak	**Moderate: stable**	**Low: decreasing**
	15	Sierra Leone	28-Feb-10	**31**	Intermediate	Strong	**Moderate: stable**	**Moderate: decreasing**
	16	Togo	28-Mar-09	**79**	Intermediate	Strong	**Moderate: stable**	**Moderate: stable**

* Countries with a 2010 importation event(s). Dates of virus confirmation related to the importation event:
Liberia 14-Apr-10 (WPV1), Mali 8-Apr-10 (WPV1) and 15-Oct-10 (WPV3), Niger 22-Apr-10 (WPV3), Senegal 18-Jan-10 (WPV1).

** Evidence of WPV circulation within the last 3 months and >=3 months have elapsed from the date of confirmation of the importation event to the most recent case associated with that importation (refer to methods section).

Epidemiologic Situation:

There are 16 "importation belt" countries in west and central Africa (above table). Of these, 12 had outbreaks in 2009 due to imported WPV:

- In seven (Benin, Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Guinea, and Togo), there were no confirmed cases in the first 9 months of 2010.
- In three (Mali, Mauritania, and Sierra Leone), cases from earlier importations were detected in 2010. In Mali, there were also three new importations in 2010; two with WPV1, related to WPV previously in Mauritania and Burkina Faso, and one WPV3.
- In two (Liberia and Niger), no 2009-related WPV was isolated in 2010 although both countries reported unrelated new WPV importations in 2010. There was a single case in Niger; in Liberia, the two related cases had onset on 3 March and 8 September.

Of the four "importation belt" countries in west and central Africa without an outbreak in 2009:

- In three (the Gambia, Ghana, and Guinea-Bissau), there were no reported cases during 2010.
- In one (Senegal), there was an outbreak of 18 WPV cases in 2010 associated with three separate importation events.

Immunization Performance:

The MPI target is <10% missed children in 2 SIAs (GPEI #1). NPAFP 0-dose and Pol3 data are examined to supplement SIA monitoring data.[7]

Among the 10 countries without evidence of transmission in 2010, only Burkina Faso, Cameroon and Guinea conducted SIAs with IM in the third quarter of 2010.

- In eight (Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Gambia, Ghana, Guinea, and Guinea-Bissau), <10% of target children were missed among the national average of monitored areas during the two most recent SIAs in 2010 (most conducted in the first half of 2010). The IM data from recent SIAs in Burkina Faso and Cameroon indicate improved SIA performance since the 14 September CDC assessment.
- In two (Central African Republic and Togo), ≥10% of target children were missed among the national average of monitored areas during the two most recent SIAs in 2010 (conducted during the first half of 2010). Immunization performance is intermediate in both countries because SIA monitoring results are intermediate and supplemental data support this assessment.[8]

Among the six countries with 2010 cases, none conducted SIAs with IM in the third quarter of 2010:

- In four (Liberia, Mali, Niger, and Senegal), <10% of target children were missed among the national average of monitored areas in the two most recent rounds in 2010 (conducted in the first half of 2010). Supplemental data support strong immunization performance in all four countries.
- In two (Mauritania and Sierra Leone), ≥10% but <15%, of target children were missed among the national average of monitored areas in the two most recent rounds in 2010 (conducted in the first half of 2010). In Mauritania, however, the decrease over time in the proportion of children missed in SIAs during February–May (from >30% to 13%) and results following the June SIA (<10% of target children were missed) indicate that implementation of SIAs improved. Supplemental data support intermediate immunization performance for both countries.

Surveillance Performance:

The MPI target is a NPAFP rate >2 in all sub-national levels (GPEI#2). The national proportion of adequate specimen collection and virologic sequencing data are examined to supplement NPAFP rate data.
Eleven of 16 countries achieved the NPAFP sub-national rate >2 target as reported over the previous 12 months. In sub-national areas with low population, the NPAFP rate is considered acceptable if the upper 90% confidence interval is >2; with this analysis, all countries but three (Benin, Ghana, and Mauritania with intermediate assessment for the MPI) have strong AFP detection. Overall, this 12-month period indicates more countries with acceptable sub-national NPAFP rates than during the period examined for the 14 September CDC report.

The national proportion of adequate specimens is weak in one country (Senegal at 64%, lowering its overall surveillance performance to weak), and intermediate in six countries (Cameroon, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, and Niger). Overall, both indicators demonstrate limitations in AFP surveillance performance in nine countries (Benin, Cameroon, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, Mauritania, Niger, and Senegal) and Liberia had virologic evidence of limitations. In the 14 September 2010 CDC report, Liberia had intermediate surveillance performance with suboptimal sub-national NPAFP rates. The recent

[7] Missing dose information for children 6–35 months of age with NPAFP from Benin (12% with missing data), Côte d'Ivoire (17% with missing data) and Guinea (23% with missing data) limit interpretation of these data.
[8] Missing dose information for children 6–35 months of age with NPAFP from Central African Republic (24% of children with missing data) and Togo (22% of children with missing data) limit interpretation of these data.

finding of WPV in Liberia with significantly less genetic linkage than expected supports the previous and present intermediate performance rating; in this report, the NPAFP sub-national rates are weak when not considering 90% confidence intervals (only 75% of states have reported NPAFP rates of >2).

Risk Assessment:

All 12 west and central African countries with 2009 outbreaks (Benin, Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Guinea, Liberia, Mali, Mauritania, Niger, Sierra Leone, and Togo) have apparently interrupted transmission of WPV associated with those outbreaks (pending complete laboratory investigation of all AFP cases with onset through 28 October 2010 in Mauritania). The outbreaks in 2010 in Niger and Senegal also appear to be interrupted (pending complete laboratory investigation of all AFP cases with onset through 30 October in Senegal). However, having six months of observation without a case as an indicator of WPV interruption needs to be interpreted with caution. In particular, surveillance performance is weak for Senegal and intermediate for Niger and Mauritania. Overall caution is warranted even though surveillance indicators for many countries improved in this observation period.

Suboptimal surveillance quality limits full interpretation.

All 12 west and central African countries with 2009 outbreaks have apparently interrupted transmission of WPV associated with those outbreaks prior to mid-2010.*

Of the 2010 outbreaks, those in Niger and Senegal appear to have been interrupted.**

Mali has experienced three importations to date in 2010 and has a low, stable risk of failure to interrupt WPV3 transmission within 6 months of outbreak confirmation. There is a moderate, stable risk of failure to detect and interrupt transmission in Liberia within 6 months of confirmation; if additional cases are detected, it will not meet this milestone.

*** pending complete laboratory data for cases through 28 October in Mauritania**
**** pending complete laboratory data for cases through 30 October in Senegal**

In Liberia and Mali, although 2009 importation outbreaks were interrupted, there were new importations in 2010. In Liberia, WPV transmission has continued with approximately six months between confirmed cases. Although Liberia has strong assessed immunization and intermediate assessed surveillance performance, because of the recent WPV case identification (and weak sub-national NPAFP rates as reported), it has moderate, stable risk of failure to detect and interrupt transmission within 6 months of outbreak confirmation (14 April).

The situation is more complicated in Mali. Although three importations occurred in 2010 (two of WPV1, one of WPV3), each has been associated with only one case to date. Mali may have already interrupted WPV1 transmission (pending complete laboratory data for cases through 1 November). Mali has a low, stable risk of failure to detect and interrupt WPV3 transmission within 6 months of outbreak confirmation, which should decrease with high quality SIAs using type 3-containing OPV.

Indicators of immunization and surveillance performance suggest a moderate risk of failing to detect and interrupt transmission following WPV importation in Central African Republic, Mauritania, Senegal, Sierra Leone, and Togo. The other countries of west and central Africa are at low risk.

East Africa importation countries

"Importation belt" and importation countries (east African only)			WPV History		Current Quarter Risk Assessment			Prior Quarter
			Date of last WPV	Weeks since last WPV (as of 1 Oct.)	Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)
east Africa	1	Burundi	12-Sep-09	**55**	Strong	Intermediate	**Low: stable**	**Moderate**
	2	Ethiopia*	cVDPV cases in 2010		Weak	Intermediate	**Moderate: stable**	**High**
	3	Eritrea*	last WPV in 2005		Strong	Strong	**Low: stable**	**Low**
	4	Kenya	30-Jul-09	**61**	Intermediate	Strong	**Moderate: stable**	**Moderate**
	5	Somalia*	cVDPV cases in 2010		Weak	Strong	**Moderate: stable**	**Moderate**
	6	Uganda **	28-Sep-10	**< 1**	Weak ***	Intermediate	**High: stable**	**High**

* Countries that are included in the "WPV importation belt" category.

** Countries with a 2010 importation event. Dates of virus confirmation related to the importation event: Uganda 18-Oct-10 (WPV1).

*** Current, incomplete data has immunization performance as intermediate. The second quarter immunization assessment (weak) will be considered valid pending availability of independent monitoring data.

Epidemiologic Situation:

Three east Africa countries (Burundi, Kenya, and Uganda) had WPV outbreaks in 2009. However, until September 2010, no WPV cases were detected in these countries for >12 months. In Uganda in September 2010, a WPV1 case (unrelated to WPV circulating in Uganda in 2009) was detected (considered a 2010 importation). Because its closest relative on genomic sequence analysis was isolated in Kenya in 2009, undetected circulation has occurred in Uganda and/or Kenya in 2010. If circulation occurred in Kenya into 2010 and subsequent cases are found there, its 2009 outbreak was not interrupted.

Circulating vaccine-derived poliovirus (cVDPV) outbreaks have been reported recently in Ethiopia (six cVDPV3 cases during 2009–2010) and Somalia (five cVDPV2 cases during 2008–2010).

Immunization Performance:

Immunization performance, in the absence of SIAs, is intermediate in Kenya (5% 0-dose and 71% Pol3) and tentatively assessed as intermediate in Uganda (9% 0-dose and 59% Pol3). Because of current WPV circulation in Uganda, the assessment in the previous quarter (weak) will be maintained pending SIA implementation and IM results. The limited NPAFP data available for Burundi (0% 0-dose) are consistent with the Pol3 estimate (96%), supporting strong immunization performance in that country.[9]

In Ethiopia, SIA monitoring data indicate weak immunization performance: 11% and 21% of children were missed in SIAs in August and September, respectively. Supplemental data support weak immunization performance (8% national 0-dose and 76% Pol3). Eritrea has strong immunization performance (0% 0-dose and 99% Pol3), and Somalia has weak immunization performance (11% 0-dose and 28% Pol3).[9]

[9] Missing dose information for children 6–35 months of age with NPAFP from Burundi (24%) and Kenya (16%) as well as Eritrea (14%) limit interpretation of these data. With 0-dose at the 5% borderline of strong for Kenya, the high proportion of missing dose information makes this assessment intermediate.

Surveillance Performance:
The MPI target for all endemic, re-established transmission, and "importation belt" countries is a NPAFP rate >2 in all sub-national levels (GPEI#2). Among the six countries in east Africa, the MPI target is only met in Eritrea. Kenya and Somalia have strong surveillance performance when considering confidence limits to account for areas with low population in addition to national-level stool adequacy. Burundi, Ethiopia, and Uganda have intermediate surveillance performance after using confidence limits to account for areas with low population and considering stool adequacy. Burundi has borderline suboptimal proportion of adequate specimens (78%), as does Ethiopia (79.7%). The recent finding of WPV in Uganda remotely related to WPV last detected in Kenya raises additional concerns about surveillance; in this assessment, the NPAFP sub-national rates are weak when not considering 90% confidence intervals (only 63% of states have reported NPAFP rates of >2).

Risk Assessment:

Because of the 2010 WPV1 importation in Uganda, it is uncertain whether WPV transmission was interrupted in all east African countries that had outbreaks in 2009; further investigation and observation time are necessary.

In east Africa, there are limitations in immunization and/or surveillance performance in most countries.

Recently, Uganda detected WPV1 genetically related to WPV last seen in Kenya in 2009. Uganda has high, stable risk of failure to detect and interrupt 2010 WPV transmission within six months of confirmation.

The 14 September CDC assessments of immunization and surveillance performance for Uganda were equivalent to high risk. Currently, Uganda has a tentatively assessed intermediate immunization performance because of 0-dose decreasing from 11% to 9%. Since immunization performance in countries with WPV transmission is primarily assessed by SIA IM data, with recent WPV detection, Uganda's previous immunization assessment of weak will remain, pending SIA implementation and IM data. With intermediate surveillance performance, Uganda has a high, stable risk of failure to detect and interrupt WPV transmission within 6 months of outbreak confirmation (18 October).

Immunization performance is weak in Somalia and Ethiopia, and intermediate in Kenya; surveillance performance is intermediate in Burundi and Ethiopia. This assessment indicates that there is moderate risk of failure to detect and interrupt transmission following WPV importation and a risk of further cVDPV outbreaks in Ethiopia, Kenya and Somalia.

Europe/Asia Importation Countries

Importation countries (Asia only)			WPV History		Current Quarter Risk Assessment			Prior Quarter
			Date of last WPV	Weeks since last WPV (as of 1 Oct.)	Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)
Asia	1	Kazakhstan *	12-Aug-10	**7**	Strong	Strong	**Low: stable**	
	2	Nepal *	30-Aug-10	**5**	Intermediate	Strong	**Moderate: decreasing**	**Moderate ****
	3	Russian Federation *	25-Sep-10	**1**	Intermediate	Weak	**High: stable**	
	4	Tajikistan *	04-Jul-10	**13**	Strong	Strong	**Low: stable**	**Moderate: stable*****
	5	Turkmenistan *	28-Jun-10	**14**	Strong	Strong	**Low: decreasing**	

* Countries with a 2010 importation event(s). Dates of virus confirmation related to the importation event(s): Kazakhstan 5-Oct-10, Nepal 19-Mar-10, Russian Federation 31-May-10, Tajikistan 20-Apr-10, Turkmenistan 20-Jun-10 (all were WPV1).

** The second quarter report incorrectly scored the overall risk as High - decreasing, the correct score should have been Moderate.

*** There was evidence of WPV circulation in three or more states within the last 3 months (refer to methods section).

NEPAL

Epidemiological Situation:

During January–June 2010, five WPV1 cases were detected from two districts bordering the Indian state of Bihar; in the third quarter there was one additional case. Virologic analysis indicated two separate importations most closely related to WPVs circulating in Bihar in late 2009.

Immunization Performance:

SIA monitoring data show 10% and <10% missed children in the two most recent SIAs in August and September 2010. Supplementary data (0% 0-dose and 82% Pol3) support intermediate immunization performance.

Surveillance Performance:

NPAFP rate targets are met nationally and sub-nationally; 100% of regions have NPAFP>2. National adequate specimen collection is 90%. Thus, surveillance performance is strong.

Risk Assessment:

Limited local transmission of WPV following importation is consistent with 0-dose and Pol3 supplemental indicators and improved SIA coverage compared with the 30% missed children in June SIAs reported in the 14 September 2010 CDC report. Nepal has a moderate, decreasing risk of failing to detect and interrupt transmission within 6 months of confirmation (19 March).

In Nepal, SIA performance is improving. There is a moderate, decreasing risk of failure to detect and interrupt WPV transmission within six months of confirmation.

WHO EUROPEAN REGION

TAJIKISTAN

Epidemiological Situation:

As of 2 November 2010, 458 laboratory-confirmed WPV1 cases were reported in Tajikistan, with onset of the first case on 1 February and onset of the most recent case on 4 July. Five of the six provinces were affected. The WPV isolated is genetically related to WPV isolated in 2009 in Uttar Pradesh, India.

Immunization Performance:

Of the four mOPV1 SIA rounds conducted two weeks apart in 2010, IM for rounds 2-4 indicate <5% missed children nationally and in all provinces. No data are available on 0-dose NPAFP children; the unknown dose proportion is >60%. The percent of NPAFP children with 4+ OPV doses (30%) is inconsistent with the Pol3 estimate (93%) and may reflect incomplete data collection or overestimated Pol3 coverage. Given that five of six provinces were involved in the large outbreak, it seems likely that Pol3 coverage is overestimated. However, by the assessment algorithm, based on SIA monitoring data, immunization performance after the outbreak is strong.

Surveillance Performance:

Surveillance performance is assessed as strong during the current reporting period because the NPAFP rates are within acceptable limits in all provinces and the national proportion of adequate specimen collection is 86%. However, of concern is a two week period during the outbreak when adequate specimens were collected from only 19 of 44 (43%) AFP cases.

Risk Assessment:

In Tajikistan there is a low, stable risk of failure to detect and interrupt WPV transmission within six months of confirmation.

A rapid outbreak response with high SIA coverage in four national mOPV1 rounds (administered within seven weeks) was implemented after laboratory confirmation of the outbreak and resulted in a marked decrease in confirmed and suspected cases. Since the latest case, a sub-national mOPV1 SIA and a national trivalent OPV (tOPV) SIA were conducted. Another tOPV national SIA is planned for November. Given the strong immunization and surveillance performance, the risk of failure to detect and interrupt WPV within six months of confirmation (20 April) is low and stable, supported by the absence of confirmed cases since 4 July.

RUSSIAN FEDERATION/KAZAKHSTAN/TURKMENISTAN

Epidemiological Situation:

In 2010, as of 2 November, 14 WPV1 cases virologically linked to the Tajikistan outbreak and related to at least 5 importations were reported in the Russian Federation with onset as early as 4 May. Although most cases were directly linked to travel or limited transmission in Tajik communities, there has been significant local transmission in two areas of concern: the Chechen Republic and Dagestan, where all the recent cases have been reported (15 July–25 September).

Turkmenistan reported a cluster of three cases from two importations in one province adjacent to Uzbekistan, and Kazakhstan reported a single case in a province north of the Uzbekistan border.

Immunization Performance:

Only catch-up immunization activities and limited mop-ups have been conducted in the Russian Federation to date, although sub-national SIAs are planned in the affected Caucasus republics in November and December. Supplemental data are inconsistent — 98% Pol3 coverage, but 7% 0-dose and only 53% 4+ coverage. Variation in immunization coverage is masked in the national supplemental data of this vast country. Based on the national 0-dose result, immunization performance is considered intermediate and delays in implementation of SIAs since identification of cases in the Caucasus republics are of concern. Routine immunization coverage has historically been suboptimal in this area.

Although SIAs were conducted in Turkmenistan (one using mOPV1 and two using tOPV) and Kazakhstan (one using tOPV), IM data were not available. Supplemental data in Turkmenistan indicate strong immunization performance (Pol3 of 97%, 4+ doses of 82%, and 0-dose of 0%). Kazakhstan similarly has strong immunization performance indicators, but not all are consistent (Pol3 of 99%, 4+ doses of 13%, and 0-dose of 0%).

Surveillance Performance:

As the NPAFP rate for the Russian Federation is >2/100,000 children <15 years of age nationally and >1 in all provinces over the last 12 months, the target for countries without recent WPV circulation is met. However, applying the target for countries with WPV circulation (i.e., all provinces having NPAFP>2), surveillance performance is weak: 44% of provinces have NPAFP>2. When applying the upper 90% confidence limit the percentage within the acceptable range increases to 75%; many of these areas with NPAFP upper limit <2 are in or near the Caucasus area. Adequate specimen collection is 95% nationally.

All provinces have NPAFP within acceptable limits in Turkmenistan and Kazakhstan, and adequate specimen collection is high, indicating strong surveillance performance in these two countries.

Risk Assessment:

Although the multiple importations into the Russian Federation had generally no or limited local transmission, those into the Caucasus republics are concerning. The Russian Federation has a high, stable risk of failure to detect and interrupt low-level WPV transmission within 6 months of outbreak confirmation (31 May) until SIAs are implemented. There is a low, decreasing risk of failure to detect and interrupt WPV transmission in Turkmenistan (confirmed 27 June), and a low, stable risk of failure in Kazakhstan (confirmed 5 October), pending implementation of additional SIAs.

In the Russian Federation, pending SIAs in the Caucasus, there is a high, stable risk of failure to detect and interrupt WPV transmission within six months of confirmation. The risk is low, decreasing in Turkmenistan and low, stable in Kazakhstan.

Re-Established Transmission Countries

Re-established countries		WPV History		Current Quarter Risk Assessment			Prior Quarter
		Date of last WPV	Weeks since last WPV (as of 1 Oct.)	Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)
1	Angola	20-Aug-10	**6**	Weak	Intermediate	**High: increasing**	**High: increasing**
2	Chad	10-May-10	**21**	Weak	Weak	**High: decreasing**	**High: decreasing**
3	Democratic Republic of Congo	13-Sep-10	**3**	Weak	Weak	**High: increasing**	**High: increasing**
4	Sudan	27-Jun-09	**66**	Weak	Strong	**Moderate: decreasing ***	**High: decreasing**

* No evidence of WPV circulation in >12 months with surveillance performance standards met (refer to methods section).

ANGOLA

Epidemiologic Situation:

WPV1 of the same related lineage has been circulating in Angola since 2007 following importation from India. Of the 25 WPV1 confirmed cases with onset during January–September 2010 (compared to 29 during January–September 2009), 6 cases have occurred in Luanda, 1 in Benguela province, and none in Kwanza province (all identified as high-risk in the 2010-2012 Strategic Plan). There have been 11 cases in Lunda Norte, 2 in Lunda Sul at the eastern border with DRC, and 5 in 4 geographically dispersed provinces that have not reported cases since 2005.

Immunization Performance:

The MPI target was <10% missed children in all districts of Luanda, Benguela, and Kuanza Sul during each SIA in 2010 (GPEI #3). Of the 21 districts with available data, only 5 met the target; none of the 9 districts in the most populous province of Luanda reached the target in all three rounds in 2010. In the August round, 6 of the 9 districts in Luanda had ≥ 30% missed children. In June and August, 75% of 20 districts with SIAs had ≥10% missed children. National immunization data for NPAFP children are consistent with SIA monitoring data and indicate weak routine immunization coverage. The 4+ OPV coverage (30%) and 0-dose estimates (9%) are inconsistent with the Pol3 estimate (73%). Immunization performance is very weak.

Surveillance Performance:

The MPI target for all endemic, re-established transmission and "importation belt" countries is a NPAFP rate >2 in all sub-national levels (GPEI#2). Angola's national 3.6/100,000 NPAFP rate and 89% adequate specimen collection meet targets. Sub-nationally, the NPAFP rate is >2 in 89% of the country; 100% of low population states/provinces are within acceptable limits. Despite these achievements, surveillance performance is intermediate because genomic analysis of WPV1 isolates since 2007 indicates missed chains of transmission. This signifies ongoing weaknesses in AFP detection, investigation, specimen collection and/or transport in major areas of the country that is not demonstrated by the performance indicators.

Risk Assessment:

Available immunization and surveillance performance data do not support any progress thus far in 2010. Ongoing WPV1 transmission throughout the country indicates extensive susceptibility due to weaknesses in routine and SIA immunization coverage. Without substantial changes in planning, staffing, training, implementation and supervision of SIAs, progress will remain elusive.

Angola has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2010 and of exporting WPV into neighboring countries

CHAD

Epidemiologic Situation:

WPV3 transmission in Chad has been ongoing since importation from Nigeria in 2007. Fourteen cases were identified during January–September 2010 (compared with 43 cases during the same in 2009), with the most recent case on 10 May 2010. No cases were detected in the third quarter of 2010, normally considered the high transmission season.

Immunization Performance:

The MPI target is <10% missed children in greater N'Djamena and in the southern and eastern WPV transmission zones during each SIA in the second half of 2010 (GPEI #4). Overall immunization performance is weak based on IM of SIAs from July–September 2010; few districts with SIAs in those areas have yet reached the target, with an average of 11% missed children (Annex 2). IM data from the most recent sub-national SIA in one province of greater N'Djamena indicate overall 11% missed children house-to-house; a very small sample outside the house in one district showed 27%. Despite data over the first 9 months of 2010 that suggest improving SIA coverage (from 26% outside the house method evaluation in national SIAs in February to 12% in June), the MPI is not met and therefore immunization performance is weak.

NPAFP immunization status data are consistent with SIA monitoring data. The reported immunization status of children with NPAFP 6–35 months of age indicates suboptimal coverage nationally (11.7% 0-dose children). The overall proportion of NPAFP children with 4+ doses of OPV (44%) is consistent with the Pol3 estimate (36%). However, 0-dose and 4+ dose estimates indicate some improvement from the second quarter assessment (14 September 2010 CDC report).

Surveillance Performance:

The MPI target for all endemic, re-established transmission, and "importation belt" countries is NPAFP rate >2 in all sub-national levels (GPEI#2). The proportion of states with NPAFP >2 is 100%. However, because a high proportion of specimens arrive at the laboratory in poor condition, the proportion of AFP with adequate specimens is 54% (the proportion of two specimens within 14 days of onset is 84%). There is some virologic evidence indicating ongoing missing chains of transmission signifying ongoing weakness in AFP detection, investigation, specimen collection and/or transport in major areas of the country. Surveillance performance is weak.

Risk Assessment:

Chad has a high, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2010 because of weak immunization and surveillance performance. Monitoring data following SIAs in the second and third quarters of 2010 suggest progress and decreasing risk, accompanying increased political support. The absence of detected WPV during the high transmission season is encouraging, but improvements in surveillance are needed.

Chad has a high, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2010. No WPV has been detected during the typical high season, but further improvements in surveillance are needed.

DEMOCRATIC REPUBLIC OF THE CONGO

Epidemiologic Situation:

Thirty WPV1 cases have been detected during January-September 2010 in DRC: 29 WPV1 cases were identified in provinces adjacent to Angola, as a result WPV importations of Angolan origin, and one WPV1 case was detected in the second quarter in Katanga province on the border with Tanzania/Lake Tanganyika.

Immunization Performance:

The MPI target is <10% missed children in each SIA in Orientale, North & South Kivu, and all provincial capitals (GPEI #7). SIAs were implemented in North & South Kivu in September and in five districts in five other provinces in August/September. Of the 11 evaluations (provinces and rounds) overall, six indicated ≥10% missed children, with 41% missed in North Kivu and 14% to 16% missed overall in each round. Consequently, immunization performance is weak.

NPAFP immunization data are consistent with the SIA monitoring data. The reported immunization status of NPAFP children indicates weak national coverage (11% 0-dose children).[10] The overall proportion of NPAFP children with 4+ doses of OPV (29%) is inconsistent with the Pol3 estimate (74%) and suggests Pol3 overestimation.

Surveillance Performance:

The MPI targets are >80% adequate specimens in all provinces (GPEI #5) and a NPAFP rate >2 in all provinces (GPEI#6). 100% of provinces meet NPAFP >2. Adequate specimen collection overall is borderline intermediate at 79% but six of 11 provinces failed to reach 80% adequate specimen collection. With the majority of provinces not meeting GPEI #5, surveillance performance is weak. Additionally, undetected transmission in Katanga by WPV isolated in DRC in 2007-2008 demonstrates suboptimal surveillance performance with deficiencies in AFP detection, investigation, specimen collection and/or transport in eastern areas of the country.

[10] Missing dose information for 10% of NPAFP children limit interpretation of these data

Risk Assessment:

All recent WPV cases at the southwest border of DRC are imported or closely related to WPV from Angola. There has not been sufficient time to determine if response efforts will interrupt transmission within six months of onset of confirmation of the first case.

Democratic Republic of the Congo has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2010; evident weaknesses in surveillance are of major concern.

Although SIA monitoring suggests improvements, weak immunization performance and surveillance performance indicate that DRC has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2010. Caution will be needed in interpreting the last date of WPV case onset as an indicator of the end of transmission because of surveillance limitations in eastern provinces.

SUDAN

Since the WPV transmission zone in 2008–2009 was south Sudan, this risk assessment is limited to that area.

Epidemiologic Situation:

WPV1 of Nigerian origin was imported into Sudan via Chad in 2004 and resulted in 147 cases during 2004–2005. Although undetected in the interim, genetically related WPV1 was again isolated in 2008, with 71 cases in south Sudan during 2008–2009. South Sudan was classified in 2009 by the Advisory Committee on Polio Eradication as having suspected re-established transmission. No further cases have been identified since the latest case with onset 27 June 2009.

Immunization Performance:

The MPI target is <10% of missed children in each state during each SIA (GPEI #10). A sub-national SIA was planned for June, but SIAs were not conducted and therefore subsequent IM data are not available for a reassessment of immunization performance since the 14 September CDC report. SIA monitoring data for the two rounds in February and March indicate suboptimal coverage (≥10% missed children) in 60% of the 10 provinces. Additionally, outside the house monitoring data were not available for analysis. 0-dose coverage in the 10 states was 7.2%. Immunization performance is weak.

Note: The national immunization status of NPAFP children masks the specific data for the states of south Sudan. Nationally, the proportion of NPAFP children with 4+ doses of OPV is high (80%) and comparable with national Pol3 (84%) and 0-dose (4%) estimates.

Surveillance Performance:

The MPI targets of >80% adequate specimens in all provinces in south Sudan (GPEI #8) and a NPAFP rate >2 in all provinces (GPEI#9) were met, indicating strong surveillance performance. This is a marked improvement since the 14 September CDC report and reflects the success of efforts to strengthen surveillance since October 2009.

Risk Assessment:

Although recent IM data were not available, past assessment indicated weak immunization performance; 0-dose NPAFP data are intermediate. Because no WPV has been isolated for more than 12 months and surveillance performance is strong, Sudan may have interrupted WPV transmission. A field surveillance assessment would verify the quality of surveillance. Nonetheless, with weak immunization performance, strong assessed surveillance performance, and >12 months without WPV cases, South Sudan is considered to have a moderate, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2010. Upcoming elections are a concern and contingency plans are needed to sustain program achievements.

South Sudan has shown substantial progress and currently has a moderate, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2010. No further detection of WPV since June 2009 with improved surveillance indicators is highly encouraging. Upcoming elections are a concern; contingency plans are needed to ensure continued progress.

Endemic Countries

Endemic countries		WPV History		Current Quarter Risk Assessment			Prior Quarter
		Date of last WPV	Weeks since last WPV (as of 1 Oct.)	Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)	Overall risk of failure to detect and interrupt WPV transmission (risk / trend)
1	Afghanistan *	4-Sep-10	4	Weak	Intermediate	High: stable	High: stable
2	India	16-Sep-10	2	Strong	Strong	Moderate: decreasing **	Moderate: decreasing **
3	Nigeria *	27-Sep-10	1	Weak	Intermediate	High: decreasing	High: decreasing
4	Pakistan*	29-Sep-10	< 1	Weak	Intermediate	High: increasing	High: increasing

* Country reported at least 1 case with an October onset as of 2 November 2010

** There is evidence of WPV circulation in three or more states within the last 6 months (refer to methods section).

AFGHANISTAN

Epidemiologic Situation:

Eighteen WPV cases (10 WPV1 and 8 WPV3) were confirmed through 30 September 2010, compared with 24 (15 WPV1 and 9 WPV3) during the same time period in 2009. The number of districts affected by WPV have remained largely unchanged in 2010 (13) compared with 2009 (12). Three cVDPV2 cases were identified in Afghanistan during 2009–2010.

Immunization Performance:

The MPI target is <10% missed children during at least 4 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern Region. Available IM data using the house-to-house method for 2010 SIAs in the 13 high-risk districts indicate that this target has rarely been met in 2010 SIAs. Outside the house monitoring in July available for three districts indicate much higher proportion missed children compared with the house-to-house monitoring. IM data are adjusted for areas targeted but not accessed during SIAs.

The reported immunization status of NPAFP children indicates high coverage nationally (1% 0-dose children) and sub-nationally (all provinces having <10% 0-dose children). The overall proportion of children 6–35 months of age with 4+ doses of OPV (94%) is consistent with the Pol3 estimate (83%). However, these data mask substantial differences in high-risk districts of the south region. Because of MPI SIA monitoring data, immunization performance is weak.

Surveillance Performance:

The MPI target for all endemic, re-established transmission, and "importation belt" countries is NPAFP rate >2 in all sub-national levels (GPEI#2). Overall AFP surveillance performance indicators generally meet targets nationally and sub-nationally, despite access problems in the conflict-affected districts. Adequate specimen collection from children with AFP is <80% in one province. Surveillance performance is strong by these indicators and generally supported by genomic sequence analysis. Recently, however, virologic analysis indicates a distant genetic linkage, indicating missed chains of transmission and intermediate surveillance performance in the Kandahar area.

Risk Assessment:

The number of WPV cases is essentially unchanged from the same time period in 2009. Afghanistan has a high, stable risk of failure to detect and interrupt WPV transmission by the end of 2011 because both WPV1 and WPV3 continue to circulate in insecure districts in the Southern Region. Additionally, three cVDPV2 cases have been identified during 2009–2010 suggesting poor routine immunization and a need to balance mOPV/bivalent OPV (bOPV) use in SIAs with at least two tOPV SIAs per year.

Afghanistan has a high, stable risk of failure to detect and interrupt WPV transmission by the end of 2011 because of ongoing problems in accessing children in insecure southern areas.

INDIA

Epidemiologic Situation:

During January–September 2010, 39 WPV cases (16 WPV1, 23 WPV3) were confirmed, compared with 504 (64 WPV1, 439 WPV3, 1 mixed WPV1/WPV3) during the same time period in 2009. The number of districts affected also decreased in 2010 compared with 2009: 7 vs. 28 districts for WPV1 (including one WPV1/WPV3), and 12 vs. 40 districts for WPV3.

The latest identified WPV1 in Uttar Pradesh was in November 2009. The WPV1 outbreak in Tajikistan (imported in late 2009 or early 2010) was related to WPV last isolated in 2009 in western Uttar Pradesh. Three WPV 1 cases were confirmed in Bihar in 2010, the latest with onset 1 September. All of these cases in Bihar were from one block of Champaran East district which borders Nepal's Rautahat district where WPV1 circulation was observed earlier in 2010. WPV1 virus related to Bihar 2009 strains were isolated from AFP

case patients with onset in 2010 in West Bengal, Jharkhand, Maharashtra, and Nepal; a Bihar strain imported into Punjab in 2009 was isolated in February 2010 from migrants in Jammu and Kashmir. Environmental samples taken within Delhi (started in May 2010) detected both WPV1 and WPV3 related to 2009 and 2010 Bihar WPV strains and recently isolated strains circulating in West Bengal/Jharkhand, with the most recent positive samples taken during the second week of August. There were no positive samples to date in 2010 from environmental sampling in Mumbai. The latest WPV1 case in 2010 in all of India was in Maharashtra, with onset 16 September.

The latest identified WPV3 case in Uttar Pradesh had onset 21 April; in Bihar, the latest case had onset 23 January. The most recent WPV3 case identified in India was in Jharkhand with onset 31 August.

A total of 16 cases of cVDPV2 were isolated during 2009–2010; onset of the most recent was 18 January 2010.

Immunization Performance:

The MPI target for end-2010 is >95% population immunity to type 1 polio sustained in the persistent transmission areas of western Uttar Pradesh and achieved in the persistent transmission areas of central Bihar. Preliminary results from serosurveys conducted in August 2010 in children 6–7 months of age living in high-risk areas of Western Uttar Pradesh and central Bihar demonstrate 98% seroprevalence to type 1 in both areas and 77% seroprevalence to type 3 (compared with 43-49% in 2008–9 Uttar Pradesh serosurveys). These results suggest a significant impact of bOPV in closing the immunity gap to type 3 while maintaining very high immunity to type 1. Seroprevalence to type 2 was 65%.

Although IM data were not systematically reviewed for the country as in other country assessments, summaries have been provided by the country WHO office. SIA monitoring data consistently show high coverage (>95%) in Uttar Pradesh and Bihar, including remote areas of central Bihar. SIA coverage estimates in migrant populations outside Uttar Pradesh and Bihar suggest <10% missed children in most places. SIA monitoring in high-risk migrant populations in Mumbai and Delhi has found >10% missed children occasionally. In the most recent SIAs, <8% of migrant children are missed. Based on seroprevalence and IM data, immunization performance is strong in Uttar Pradesh, Bihar and for the country program overall.

The reported immunization status of NPAFP children indicates 0.3% 0-dose and 95.9% 4+ dose children nationally, and 0.09% 0-dose and 98.4% 4+ dose children in the high-risk states of Uttar Pradesh and Bihar. However, these estimates include doses given in SIAs in which tOPV, mOPV1 or 3 and bOPV were used.

Surveillance Performance:

The MPI target for all endemic, re-established transmission, and "importation belt" countries is NPAFP rate >2 in all sub-national levels (GPEI#2). The national NPAFP rate in India is >10/100,000 nationwide (>30 in Bihar; >20 in Uttar Pradesh). Only one state with >100,000 population has not met the target NPAFP rate at the upper 90% confidence limit; this island state is outside the high-risk northern zone and not considered relevant for this assessment. Adequate specimen collection is 84% nationwide, ≥80% in 79% of states, and higher in Uttar Pradesh and Bihar. Surveillance performance is strong. There has been a cataloguing of sites where migratory populations temporarily reside in high concentrations, with a specific effort to monitor AFP surveillance indicators for those sites; results of these have not been evaluated for this assessment.

An AFP surveillance review conducted in West Bengal in October 2010 indicated that the core AFP surveillance system processes are broadly functioning; however, surveillance gaps were noted in some high-risk districts.

Note: Although there was a near absence of WPV1 cases detected in Bihar in 2010, WPV1 related to Bihar 2009 strains identified elsewhere in India and Nepal in 2010 suggests undetected circulation in 2010. Transient re-infections in older children and young adults may play a role in sustaining low level WPV transmission inside and/or outside of Bihar.

Risk Assessment:

Data suggest significant improvements in reaching mobile and remote populations in SIAs, and overall high seropositivity in the tested populations in western Uttar Pradesh and central Bihar. The reduction in the number of WPV1 and WPV3 cases and affected districts in India from 2009 indicates continued significant progress towards interrupting WPV transmission in India.

The historic low incidence of both WPV1 and WPV3 cases in India during the 2010 high season indicates continued significant progress towards polio eradication. India is at moderate, further decreasing risk of failure to detect and interrupt WPV transmission by the end of 2011.

India's achievements are among the most promising in 2010; data indicate substantial progress toward meeting milestone 3 by the end of 2011 or earlier if current success can be maintained into the low transmission season. However, progress is vulnerable and depends on rapidly interrupting WPV transmission in Bihar, West Bengal and Jharkhand, maintaining high population immunity in Bihar and Uttar Pradesh, and improving coverage in specific migrant subpopulations. Confirmed WPV circulation in five states in the last six months is indicative of remaining population susceptibility. The 14 September CDC report indicated moderate, decreasing risk. Although WPV incidence remains low, India remains at moderate, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2011.

There remains an ongoing threat of persistent transmission in Bihar, reseeding high-risk areas of western Uttar Pradesh, additional importation of WPV into other areas of India and its neighbors, and long-distance importation into other vulnerable areas. If direct evidence of persist transmission in Bihar surfaces, contingency measures to supplement current approaches may need to be considered.

NIGERIA

Epidemiologic Situation:

From January–September 2010, Nigeria identified 9 WPV (5 WPV1 and 4 WPV3) cases in 9 districts in 6 states. WPV1 cases declined from 74 during January–September 2009, and WPV3 cases declined from 306. The onset of the most recent WPV3 case was 5 August (Sokoto state) and of the most recent WPV1 case was 27 September (Kano state). An additional WPV3 in Sokoto has been identified with onset outside the reporting period (5 October). There have been 18 cVDPV2 cases during January–September 2010, decreased from 150 during January–September 2009, in 8 northern states. The most recent cVDPV2 was 10 September (Kano state).

Immunization Performance:

During January–September 2010, two national SIAs (one using bOPV and one using tOPV), five sub-national SIAs, and one "mop-up" round were conducted. Different OPV formulations were often used in combination in SIAs; overall, bOPV was used in five SIAs. According to monitoring data presented at the Expert Review Committee meeting in early October, the percentage of wards in 85 high risk LGAs with >10% missed children declined to 15% in September. Among high risk northern states, Kano continued to report 14% of wards with >10% missed children during the SIAs. Based on the MPI data, immunization performance is weak.

The MPI is <10% 0-dose NPAFP children in each of the 12 high-risk states. That goal has been met for ten (83%) states; the two that failed are Kano (16.7 % 0-dose and 35% 4+ doses) and Yobe (13.4% 0-dose and 41% 4+ doses). The proportion of missed children may be underestimated by this indicator. In the 12 high risk states, 58% of children have 4+ doses.

Nationally, there are 3.4% 0-dose and 65% 4+ dose NPAFP children; pooled national data mask the situation in high-risk areas.

Surveillance Performance:

The MPI target for all endemic, re-established transmission, and "importation belt" countries is NPAFP rate >2 in all sub-national levels (GPEI#2). AFP surveillance performance indicators appear to generally meet targets nationally and sub-nationally, with all states having NPAFP rates > 2 (national rate is 8.9) and >80% adequate specimen collection. The national proportion of adequate stools is 94%.

Despite strong performance indicators, there are virologic indications of surveillance limitations. Genomic sequence analysis indicates some missed chains of WPV transmission during 2009–2010 with many chains of transmission not detected for more than a year. This finding indicates intermediate surveillance performance despite AFP surveillance performance indicators meeting or exceeding targets at national and all state levels. Surveillance gaps might be occurring among specific subpopulations such as migrants in northern Nigeria who have limited access to immunization activities and health-care providers, as well as among specific districts with surveillance weaknesses in AFP detection, investigation, specimen collection and/or transport in some areas of the country.

Risk Assessment:

There are substantial reductions in the number of identified WPV1, WPV3, and cVDPV2 cases and affected districts during January–September 2010 compared with the same period in 2009, suggesting marked improvements in coverage during SIAs since early-2009.

If progress in Nigeria can be sustained, WPV transmission could be interrupted in the near future. However, with a high proportion of 0-dose children in high-risk areas, Nigeria has a high, decreasing risk of failure to detect and interrupt WPV transmission by the end of 2011.

Within the high-risk northern states, a high proportion of children remain at risk as a result of focal areas with low routine immunization and SIA coverage and high birth rates. Because of apparent gaps in AFP surveillance as indicated by the virologic evidence, and because there are still sizable subpopulations of missed children, Nigeria has a high, decreasing risk of failure to detect and interrupt WPV transmission by the

end of 2011. Furthermore, potential disruptions in services during the state and federal elections planned for early 2011 could limit program progress.

PAKISTAN

Epidemiologic Situation:

During 1 January–30 September 2010, 91 WPV cases (70 WPV1 and 21 WPV3) were confirmed, compared with 66 (43 WPV1, 22 WPV3, and 1 WPV1/WPV3) during the same time period in 2009. The number of districts affected by WPV have remained largely unchanged from 2009 (26) to 2010 (30) and are located primarily in the northern transmission zone (most of Khyber Pakhtunkhwa [formerly North West Frontier Province] and the federally administered tribal areas [FATA], bordering eastern Afghanistan), and the southern transmission zone (bordering south Afghanistan, extending into Pakistan through Balochistan, into Punjab and into the towns around Karachi, Sindh).

Immunization Performance:

The MPI targets are: 1) <15% missed children during at least 8 SIAs in every district of the Quetta area and the persistent transmission districts and agencies of Khyber Pakhtunkhwa and FATA, and 2) <10% missed children during at least 4 SIAs in every town of Karachi. SIA IM data from house-to- house surveys are informative but tend to underestimate the proportion of missed children compared to market/outside the house monitoring, for which results have not been reported. In each of the three districts of Quetta area, house-to-house SIA IM indicated <15% missed children only during the four March–September SIAs out of the seven SIA rounds conducted to date in 2010. Each district in the Quetta failed to reach the target in at least one SIA. In Peshawar district, Khyber Pakhtunkhwa, the target of <15% missed children was reportedly reached in all seven SIA rounds, but up to 60% of children were missed in the monitored districts of FATA and Khyber Pakhtunkhwa when adjusting for limited access. Among the 18 monitored towns of Karachi, house-to-house SIA IM indicated <10% missed children in 17 towns in July and 18 towns in September; 15 towns reported <10% missed children in at least 4 SIA rounds conducted to date in 2010.

The reported immunization status of NPAFP children suggests high coverage nationally (2% 0-dose children) and sub-nationally (all provinces having <10% 0-dose children). The overall proportion of NPAFP children with 4+ doses of OPV (94%) is consistent with the Pol3 estimate of 85%. However, these data mask substantial differences apparent in the high-risk districts in both transmission zones. Because of SIA monitoring data, immunization performance is weak.

Surveillance Performance:

The MPI target for all endemic, re-established transmission, and "importation belt" countries is NPAFP rate >2 in all sub-national levels (GPEI#2). Overall AFP surveillance performance indicators generally meet targets nationally and sub-nationally with 100% of provinces meeting NPAFP>2 and the proportion of adequate specimens being 90%, despite access problems in the conflict-affected Khyber Pakhtunkhwa and FATA. Genomic sequence analysis of WPV isolates from AFP cases and sewage samples (environmental surveillance), however, indicate serious weaknesses in AFP detection, investigation, specimen collection and/or transport in some areas of the country. Surveillance performance is intermediate.

Risk Assessment:

Circulation of both WPV serotypes persists in high-risk districts in both transmission zones. The number of WPV3 cases is similar in 2010 compared with the same time period in 2009; however, WPV1 cases have increased. Although Pakistan did not meet MPI targets for SIA IM in all locations, there were many areas where the targets were met; however, outside the house monitoring data have not been reported. Immunization and surveillance services were seriously disrupted with the recent massive flooding, particularly in areas where WPV was circulating. Pakistan has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2011

Because of continuing weakness in immunization performance and the additional uncertainty of the long-term impact of the flooding crisis, Pakistan has a high, increasing risk of failure to detect and interrupt WPV transmission by the end of 2011.

ANNEXES

Annex 1 – Data used for quarterly CDC assessments

Type of data	Description and source
Independent monitoring of polio SIAs	Independent monitoring data (e.g. the proportion of children monitored in a targeted area and age group that received an OPV dose during that SIA round) are collected at the district level both by surveying in households (house to house) and in public venues (outside the house) following each polio SIA. Implementation and data quality vary by country, and the geographic extent of monitoring varies by round. These data are collected by staff of national polio eradication programs or WHO country office staff and sent to WHO regional offices after each SIA; country independent monitoring datasets are then sent to WHO-HQ. Data used for this report are from SIAs conducted 1 January – 30 September 2010.
AFP surveillance	AFP surveillance data are collected by national polio eradication programs on an ongoing basis and sent weekly to WHO country and regional offices. Country AFP surveillance datasets are then sent to WHO HQ. These data include age, numbers of OPV doses received, adequacy of stool specimen collection, and geographic information on AFP case-patients. The data used for the assessment in this report are from the preceding one year period.
Immunization coverage estimates	WHO/UNICEF coverage estimates are calculated annually to determine the proportion of children vaccinated by ~12 months of age through routine immunization. These estimates are based on data reported to WHO and UNICEF from country immunization programs, from independent coverage surveys of children 12–23 months of age, and from other relevant data. Data used for this report are the WHO/UNICEF estimates for 2009. *
Virologic characterization of poliovirus isolates	Basic characterization of poliovirus isolates are carried out at national poliovirus testing laboratories. Genomic sequence analyses are conducted at global specialized laboratories. All data are coordinated and shared through the Global Polio Laboratory Network. WPV isolates from the period 1 January – 30 September 2010 were used in the analyses in this report and compared with isolates from earlier years.

* http://www.who.int/immunization_monitoring/routine/immunization_coverage/en/index4.html

Annex 2 – Major Process Indicators

Time Period		Region	GPEI Major Process Indicator	Achieved
1	mid-2010	WPV importation belt	<10% missed children in 2 SIAs in all 'WPV importation belt' countries	No
2	end-2010	All	Non-polio AFP rate >2 achieved at sub-national level in all endemic, re-established transmission and 'WPV importation belt' countries.	Not yet for 2010
3	end-2010	Angola	<10% missed children in all districts of Luanda, Benguela and Kwanza Sul during each SIA	No
4	end-2010	Chad	<10% missed children in greater N'Djamena and in the southern and eastern WPV transmission zones during each SIA in the second half of 2010	No
5	end-2010	Democratic Republic of Congo	>80% adequate specimens in all provinces	Not yet in 2010
6	end-2010	Democratic Republic of Congo	AFP rate >2 in all provinces	Yes, thus far in 2010
7	end-2010	Democratic Republic of Congo	<10% missed children in each SIA in Orientale, North & South Kivu (and all provincial capitals)	No
8	end-2010	Southern Sudan	>80% adequate specimens rates in all states	Yes, thus far in 2010
9	end-2010	Southern Sudan	AFP rate >2 in all states.	Yes, thus far in 2010
10	end-2010	Southern Sudan	<10% of missed children in each state during each SIA	No
11	end-2010	Afghanistan	<10% missed children during at least 4 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern Region	Not yet in 2010
12	end-2010	India	>95% population immunity to type 1 polio in the persistent transmission areas of western Uttar Pradesh and central Bihar.	Yes (preliminary data)
13	end-2010	Nigeria	<10% 0-dose children (per NP AFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)	Not yet in 2010
14	end-2010	Pakistan	<15% missed children during at least 8 SIAs in every district of the Quetta area and the persistent transmission districts and agencies of NWFP and FATA	No
15	end-2010	Pakistan	<10% missed children during at least 4 SIAs in every town of Karachi	Not yet in 2010

GPEI #1: <10% missed children in 2 SIAs in all 'WPV importation belt' countries. (Strictly applied criteria)

	Country	SIA start date (Q3 data - yellow highlight)	Percent missed children		Type of SIA	Percent of districts		Achieved 3rd Qrt. (last 2 SIAs)	Achieved prior Qrt. (last 2 SIAs)
			(house to house)	(out of house)		Targeted in SIA	Targeted districts monitored		
1	Benin	06-Mar-10	2.4		NID	70	100	Yes	Yes
		24-Apr-10	2.9	6.9	NID	100	95		
2	Burkina Faso	06-Mar-10	3.7		NID	100	100	Yes	No
		02-Apr-10	2.7		NID	100	100		
		07-May-10	2.8	15.5	NID	100	100		
		28-May-10	1.2	5.8	sNID	54	100		
		02-Jul-10	1.6	4.4	sNID	54	100		
3	Cameroon	05-Mar-10	8.8	16.4	sNID	36	45	Yes	No
		23-Apr-10	7.8	11.7	sNID	36	54		
		23-Jul-10	2.9	6	sNID	16	54		
		06-Aug-10	4.4	7.1	sNID	16	54		
4	Central African Republic	05-Mar-10	9.8	13.6	NID	100	67	No	No
		23-Apr-10	10.1	10.2	NID	100	67		
5	Cote d'Ivoire	26-Mar-10	2.4	7.8	NID	100	100	Yes	Yes
		23-Apr-10	2.4	4.9	NID	100	100		
6	Eritrea		No independent monitoring data						
7	Ethiopia	11-Jun-10	14.8	16.9	sNID	8	100	No	No
		05-Aug-10	8.4	10.8	sNID	8	88		
		17-Sep-10	10.2	21.3	sNID	9	44		
8	Gambia	06-Mar-10	4.6	35.1	NID	100	100	Yes	Yes
		24-Apr-10	1.9	5.5	NID	100	100		
		28-May-10	2.4	4.3	NID	100	100		
		25-Jun-10	2.7	5.5	NID	100	100		
9	Ghana	05-Mar-10	4.6	2.5	NID	100	51	Yes	Yes
		23-Apr-10	4.8	2.7	NID	100	50		
10	Guinea	06-Mar-10	7.3	10.2	NID	100	100	Yes	Yes
		27-Mar-10	0.2	1.9	NID	100	100		
		24-Apr-10	0.2	3.2	NID	100	100		
		28-May-10	0.1	1.5	NID	100	100		
		05-Jul-10	0.2	1.8	NID	100	100		
11	Guinea-Bissau	06-Mar-10	4.7	8.5	NID	100	64	Yes	Yes
		24-Apr-10	2.7	5	NID	100	64		
		28-May-10	1.9	0.8	NID	100	100		
12	Liberia	05-Mar-10	2	10.7	NID	100	100	Yes	Yes
		23-Apr-10	4.1	5.3	NID	100	100		
		28-May-10	3	3.6	NID	100	100		
		25-Jun-10	5	5.2	NID	100	100		
13	Mali	06-Mar-10	11.2		NID	100	95	Yes	Yes
		26-Mar-10	2.9	10.1	sNID	14	100		
		24-Apr-10	5.9	11	NID	100	97		
		28-May-10	5.7	7.5	NID	100	78		
		25-Jun-10	5.7	7.6	sNID	86	100		
14	Mauritania	16-Feb-10	34.6		NID	100	89	No	No
		06-Mar-10	26.8	38.3	NID	100	89		
		27-Mar-10	23.7	24.9	NID	100	89		
		24-Apr-10	13.4	13.8	NID	100	96		
		28-May-10	12.6	12.3	NID	100	96		
		25-Jun-10	5.2	5.7	NID	100	96		
15	Niger	26-Mar-10	4	7.7	NID	100	100	Yes	Yes
		24-Apr-10	3	5	NID	100	100		
		28-May-10	4	9.1	sNID	31	100		
16	Senegal	06-Feb-10	11.6	18.1	sNID	94	92	Yes	Yes
		27-Mar-10	6.7	8.6	NID	94	97		
		24-Apr-10	6	7.8	NID	94	98		
		29-May-10	5	8.3	NID	94	98		
		26-Jun-10	4.7	9.6	NID	94	98		
17	Sierra Leone	06-Mar-10	11.4	17.3	NID	100	100	No	No
		26-Mar-10	9.4	13.1	NID	100	100		
		07-May-10	10.5	14	NID	100	100		
		28-May-10	12	14.9	NID	100	100		
18	Somalia		No independent monitoring data						
19	Togo	01-Apr-10	4.4	10.8	NID	100	103	No	No
		14-May-10	4	10.4	NID	100	100		

GPEI #2: Non-polio AFP rate >2 achieved at sub-national level in all endemic, re-established transmission and 'WPV importation belt' countries. (Strictly applied criteria)

Note: List includes "importation countries"

	Country	Number of state\provinces with > 100,000 children under 15 y/o.			Achieved 3rd Qrt.	Achieved Prior Qrt.
		NPAFP rate				
		>= 2	< 2	silent		
1	Afghanistan	31	0	0	Yes	Yes
2	Angola	16	2	0	No	No
3	Benin	9	3	0	No	No
4	Burkina Faso	13	0	0	Yes	Yes
5	Burundi	13	4	0	No	No
6	Cameroon	8	2	0	No	No
7	Cape Verde	0	1	0	No	No
8	Central African Republic	6	0	0	Yes	Yes
9	Chad	17	0	0	Yes	Yes
10	Cote d'Ivoire	19	0	0	Yes	No
11	Democratic Republic of Congo	11	0	0	Yes	Yes
12	Djibouti	1	0	0	Yes	Yes
13	Eritrea	5	0	0	Yes	Yes
14	Ethiopia	8	2	0	No	No
15	Gambia	1	0	0	Yes	
16	Ghana	7	3	0	No	No
17	Guinea	8	0	0	Yes	No
18	Guinea-Bissau	2	0	1	No	No
19	India	31	3	0	No	No
20	Kazakhstan	15	0	0	Yes	
21	Kenya	7	1	0	No	No
22	Liberia	3	2	0	No	No
23	Mali	8	0	0	Yes	No
24	Mauritania	5	1	1	No	No
25	Nepal	5	0	0	Yes	Yes
26	Niger	8	0	0	Yes	Yes
27	Nigeria	37	0	0	Yes	Yes
28	Pakistan	7	0	0	Yes	No
29	Russian Federation	30	35	3	No	
30	Senegal	11	0	0	Yes	Yes
31	Sierra Leone	4	0	0	Yes	Yes
32	Somalia	14	2	0	No	No
33	Sudan	25	0	0	Yes	No
34	Tajikistan	4	1	0	No	No
35	Togo	5	1	0	No	No
36	Turkmenistan	5	1	0	No	
37	Uganda	41	23	1	No	No

GPEI #3 Angola: <10% missed children in all districts of Luanda, Benguela and Kwanza Sul during each SIA

Province	District	Percent of under 5 y/o population within province	Round 1 SIA start date: 07-May-10		Round 2 SIA start date: 11-Jun-10		Round 3 SIA start date: 13-Aug-10		Achieved 3rd Qrt.	Prior Qrt. Achieved
			Missed H2H	Missed OUT	Missed H2H	Missed OUT	Missed H2H	Missed OUT		
LUANDA under 5 pop: 1,526,254	Cacuaco	13.8	3.8	1.7	**23.5**	**33.1**	**17.2**	5.5	No	No
	Cazenga	22.3	**19.7**	**18.9**	**17.2**	**20.1**	**16.8**	**11.7**	No	No
	Ingombota	2.9	**13.4**	7.9	9	8	**28.1**	**38.7**	No	No
	Kilamba Kiaxi	13.8	**26.7**	**27.1**	**27.7**	**35.4**	**36.4**	**34.7**	No	No
	Maianga	10.3	**11.4**	**10.1**	**12.4**	**19.1**	**29.9**	**24.5**	No	No
	Rangel	2.8	8.2	3.7	4.5	**10.8**	8.5		No	No
	Samba	5.1	**11.7**	**12**	**43.7**	**49.5**	**27.9**	**32.9**	No	No
	Sambizanga	10.3	**12.2**	**15.7**	**19.1**	**17**	**34.6**	**45.6**	No	No
	Viana	18.7	9.9	**13.4**	8.3	**15.3**	**29.1**	**30.5**	No	No
BENGUELA under 5 pop: 733,878	Baia Farta	3.9	**23**	9.8	**12.9**	4.1			No	No
	Balombo	7.3							no data	
	Benguela	22.8	8.4	**16.9**	**13.7**	**17.9**			No	No
	Bocoio	4							no data	
	Caimbambo	4.2							no data	
	Chongoroi	4.4	**15.3**	**28.3**	4.9	4.8			No	No
	Cubal	8.7							no data	
	Ganda	12	6.5	7.4					Yes	Yes
	Lobito	32.8	1.4	3.7	**10.3**	8.7			No	No
KUANZA SUL under 5 pop: 344,599	Amboim	11.6	**13.4**	6.4	**22.1**	**34.1**	6	8.1	No	No
	Cassongue	9.8					5.5	4.7	Yes	
	Cela	11.2							no data	
	Conda	4.9							no data	
	Ebo	10.5							no data	
	Kibala	11.3	5	4.8	8.4	8.8	7.1	4.2	Yes	Yes
	Kilenda	5.7			3.3	7.8	5.1	6.6	Yes	Yes
	Libolo	4.7			4.4	7.1	4.4	7.2	Yes	Yes
	Mussende	5.2							no data	
	Porto Amboim	6.9	**19.5**	**16.4**	**19.9**	**30.9**	**13.4**	**14.4**	No	No
	Seles	8.5							no data	
	Sumbe	9.8	9.9	9.9	**17.3**	**17.2**	**14.4**	**22.1**	No	No

GPEI #4 Chad: <10% missed children in greater N'Djamena and in the southern and eastern WPV transmission zones during each SIA in the second half of 2010

Zones	Province	Districts	Population under 5	30-Aug-10				14-Sep-10				Achieved 3rd Qrt.	Achieved prior Qrt.
				House to house		Out of house		House to house		Out of house			
				Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed		
Eastern zone	Ouaddai	Abéché	84,728									no data	Not applicable
		Adré	53,231										
	Total		137,959										
Greater N'Djamena	Chari Baguirmi	Bousso	38,410									No	
		Dourbali	29,484					588	**20.1**	112	**45.5**		
		Mandelia	25,090					1638	**13.7**	269	6.3		
		Massenya	24,255										
	N'Djaména	N'Djaména Centre	54,191										
		N'Djaména Est	51,231										
		N'Djaména Nord	14,672										
		N'Djaména Sud	67,231										
	Total		304,564					2226	**15.3**	381	**17.8**		
Southern zone	Logone Occidental	Benoye	29,629									No	
		Laokassy	37,645										
		Moundou	61,562	1147	**24.8**	30	**26.7**						
	Logone Oriental	Bebedjia	26,281	1296	9.6								
		Beboto	28,454	1169	**11.7**								
		Bessao	42,548	1463	7.9								
		Doba	31,875	1839	10								
		Goré	21,016	1136	4.8								
	Mandoul	Bedjondo	28,052										
		Goundi	18,552										
		Koumra	30,940										
		Moissala	42,580										
	Moyen Chari	Danamadji	19,869										
		Kyabé	32,775										
		Sarh	60,164										
	Total		511,941	8050	**11.2**	30	**26.7**						

GPEI #5 Democratic Republic of the Congo: >80% adequate specimens in all provinces.

GPEI #6 Democratic Republic of the Congo: AFP rate >2 in all provinces (Strictly applied criteria)

GPEI Major Process Indicator:		#5			#6		
Province	Population	NPAFP rate		Achieved prior Qrt.	Adequate stool *		Achieved prior Qrt.
		Rate	Achieved		Percent	Achieved	
Bandundu	3,542,100	6	Yes	Yes	66.5	No	Yes
Bas-Congo	1,530,537	5.2	Yes	Yes	79.7	No	Yes
Equateur	3,961,445	4.3	Yes	Yes	79.4	No	Yes
Kasai Occidental	3,312,540	6.3	Yes	Yes	72.2	No	Yes
Kasai Oriental	4,194,165	6.2	Yes	Yes	82.9	Yes	Yes
Katanga	5,050,963	5.8	Yes	Yes	70.5	No	Yes
Kinshasa	3,255,850	4.6	Yes	Yes	80.9	Yes	Yes
Maniema	922,298	6	Yes	Yes	81	Yes	Yes
Nord Kivu	2,917,051	3.2	Yes	Yes	77.7	No	Yes
Oriental	4,354,977	7.3	Yes	Yes	91.3	Yes	Yes
Sud Kivu	2,243,127	7.4	Yes	Yes	86.1	Yes	Yes

* Adequate stool is calculated as 2 stools collected within 14 day and "good" condition as reported by the receiving laboratory. Prior quarter reported did not include the stool condition in the calculation.

GPEI #7 Democratic Republic of the Congo: <10% missed children in each SIA in Orientale, North & South Kivu (and all provincial capitals)

Province		Rounds with independent monitoring result within the given regions								Achieved 3rd Qrt.	Achieved prior Qrt.
		19-Aug-10				23-Sep-10					
		House to house		Out of house		House to house		Out of house			
		Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed		
Orientale											No data prior quarter
North Kivu						3878	9	2522	40.8	No	
South Kivu						11498	8.6	2188	9.1	Yes	
Provincial capitals											
Province	Districts	House to house		Out of house		House to house		Out of house			
		Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed		
Bas-congo	Matadi	419	1.4	52	3.8	294	16.7	150	12	No	
Equateur	Mbandaka					330	10.3	75	5.3	No	
Kasai-Occidental	Luebo	431	19	310	19	422	6.4			No	
Kinshasa	Kinshasa	342	1.2	97	0	420	4.3	174	9.8	Yes	
Maniema	Kindu	231	24.2	50	2	288	20.8	127	24.4	No	

GPEI #8 southern Sudan: >80% adequate specimens in all states. (Strictly applied criteria)

GPEI #9 southern Sudan: AFP rate >2 in all states. (Strictly applied criteria)

GPEI Major Process Indicator:		#8			#9		
Province	Population	NPAFP rate		Achieved prior Qrt.	Adequate stool		Achieved prior Qrt.
		Rate	Achieved		Percent	Achieved	
Central Equatoria (Bahr el Jebel)	596,987	4.5	Yes	Yes	92.9	Yes	Yes
Eastern Equatoria	545,852	5.3	Yes	Yes	82.8	Yes	No
Jonglei	795,844	4	Yes	Yes	100	Yes	Yes
Lakes	608,953	4.8	Yes	Yes	93.1	Yes	Yes
North Bahr el Ghazal	799,582	2.9	Yes	No	91.3	Yes	Yes
Unity	717,315	2.8	Yes	Yes	90.5	Yes	Yes
Upper Nile	680,394	4.7	Yes	Yes	90.6	Yes	Yes
Warab	1,203,508	3.1	Yes	Yes	83.8	Yes	No
West Bahr el Ghazal	256,216	8.2	Yes	Yes	90.5	Yes	No
Western Equatoria	414,535	11.1	Yes	Yes	95.7	Yes	Yes

* Adequate stool is calculated as 2 stools collected within 14 day and "good" condition as reported by the receiving laboratory. Prior quarter reported did not include the stool condition in the calculation.

GPEI #10 southern Sudan: <10% of missed children in each state during each SIA

State	Round 1: Feb. 2010				Round 2: Mar. 2010				Achieved 3rd Qrt.	Prior Qrt. Achieved
	House to house		Out of house		House to house		Out of house			
	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed		
Central Equatoria (Bahr el Jebel)	3240	1.4	no data		3054	4.8	no data		Yes	Yes
Eastern Equatoria	1978	19.2	no data		788	20.1	no data		No	No
Jonglei	3932	7.6	no data		7452	6.8	no data		Yes	Yes
Lakes	2489	20.9	no data		5642	16.1	no data		No	No
Northern Bahr El Ghaza	2266	13.2	no data		1906	16.1	no data		No	No
Unity	834	13.7	no data		1428	18.8	no data		No	No
Upper Nile	1707	12.4	no data		1702	6.2	no data		No	No
Warrap	1521	11.2	no data		3187	14.9	no data		No	No
Western Bahr El Ghaza	902	5.5	no data		2546	4.1	no data		Yes	Yes
Western Equatoria	4564	6.1	no data		4364	5.8	no data		Yes	Yes

GPEI #11 Afghanistan: <10% missed children during at least 4 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern Region

Province	District	Round 1: Feb. 2010				Round 2: Mar. 2010				Round 3: May 2010				Round 4: Jun. 2010				Round 5: Jul. 2010	Round 6: Sep. 2010	Achieved 3rd Qtr.	Prior Qtr. Achieved
		House to house		Out of house		House to house		Out of house		House to house		Out of house		House to house		Out of house					
		Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed	Total checked	Percent missed				
Helmand	Bust (LashKar	3249	29.9	513	32.6	2936	19.1	540	27.8	2382	23.4	628	19.4	2437	17.3	617	27.7	10.0	15.0	No	No
	Musa Qala	2607	18.5			3069	8.1			2909	12.9			3145	16.4			22.8		No	No
	Naw Zad					2065	91.8			1882	77.7			2360	84.5			78.2		No	No
	Nad-E Ali					1489	53.3			3052	54.8			2042	63.6			61.1	68.8	No	No
	Sarban Qala (Sangin)	1704	24.1			1844	15.2			1654	16.3			1800	14.6			19.0		No	No
Kandahar	Qandahara / Dand	5063	7.6	592	32.1	5453	9.0	653	34.8	5139	6.5	615	29.8	4380	11.0	890	22.9	7.0		No	No
	Shah Wali Kot	797	78.2			716	77.2			755	80.5			890	83.6			88.5		No	No
	Maiwand	2823	11.7			3223	13.3			3580	10.7			3435	12.7			27.2		No	No
	Panjwai	531	5.6			632	78.2			506	77.1			627	80.4			80.0		No	No
	Spin Boldak	1267	13.6			1152	8.2			1150	19.3			1176	19.0			14.0		No	No
Urozgan	Tirin Kot	2238	19.1	436	34.9	2108	19.8	464	23.3	1803	19.9	583	34.6	2065	22.6	554	19.3	32.8		No	No
	Shahid Hassas	725	8.8			777	13.5			759	17.3			725	13.8			19.0		No	No
	Deh Rawud	994	18.8			1326	13.2			1609	12.0			1573	8.9			12.0		No	No

GPEI #13 Nigeria: <10% 0-dose children (per NP AFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)

States	Population under 15 years of age	Number of 0-dose NPAFP cases	Total number of NPAFP cases	Percent 0-dose	Achieved 3rd Qrt.	Achieved prior Qrt.
Bauchi	2,310,917	0	83	0.0	Yes	Yes
Borno	2,100,779	7	82	8.5	Yes	Yes
Gombe	1,156,459	0	67	0.0	Yes	Yes
Jigawa	2,117,910	4	94	4.3	Yes	Yes
Kaduna	2,963,204	3	112	2.7	Yes	Yes
Kano	4,623,615	41	246	16.7	No	No
Katsina	2,829,377	9	143	6.3	Yes	Yes
Kebbi	1,586,515	0	119	0.0	Yes	Yes
Niger	1,952,066	0	128	0.0	Yes	Yes
Sokoto	1,805,795	0	92	0.0	Yes	Yes
Yobe	1,150,575	13	97	13.4	No	No
Zamfara	1,601,561	1	102	1.0	Yes	Yes

GPEI #14 Pakistan: <15% missed children during at least 8 SIAs in every district of the Quetta area and the persistent transmission districts and agencies of NWFP and FATA

Province	District / agency	Round 1: sNID Jan-10	Round 2: NID Feb-10	Round 3: sNID Mar-10	Round 4: NID Apr-10	Round 5: sNID May-10	Round 6: NID Jul-10	Round 7: NID Sep-10	Achieved 3rd Qrt.	Achieved prior Qrt.
FATA	Bajour	53.5	54.2	34.9	24.6	16.6	16.9	24.6	No	No
	Khyber	55.0	60.2	60.7	59.4	58.8	59.9	60.3	No	No
	Mohmand	25.1	25.9	21.6	20.9	21.6	20.2	25.0	No	No
Khyber-Pakhtunkhwa (NWFP)	Peshawar	8.0	6.8	12.1	4.8	4.7	3.5	3.7	Yes	Yes
Balochistan	Quetta	20.4	8.7	9.5	7.8	7.7	8.1	10.0	No	No
	Killa Abdullah	13.8	16.6	12.2	10.6	12.9	10.5	12.5	No	No
	Pishin	12.5	6.6	8.8	9.1	7.5	8.8	17.3	No	Yes

GPEI #15 Pakistan: <10% missed children during at least 4 SIAs in every town of Karachi

District	Town	Round 1: sNID Jan-10	Round 2: NID Feb-10	Round 3: sNID Mar-10	Round 4: NID Apr-10	Round 5: sNID May-10	Round 6: NID Jul-10	Round 7: NID Sep-10	Achieved 3rd Qrt.	Achieved prior Qrt.
Karachi	Kemari	10.9	32.9	18.3	3.9	8.3	7.7	8.8	Yes	No
	SITE	27.1	2.6	6.5	1.3	12.1	2.8	7.7	Yes	No
	Baldia	13.7	9.7	18.3	5.1	9.9	9.7	6.7	Yes	No
	Orangi	26.8	14.7	9.8	9.2	6.8	4.6	9.2	Yes	No
	Lyari	5.9	14.1	3.0	1.8	1.6	8.9	2.7	Yes	Yes
	Saddar	6.7	16.9	10.0	10.2	17.6	6.1	9.2	No	No
	Jamsheed	21.6	6.9	6.0	1.5	3.0	2.1	3.1	Yes	Yes
	Gulshan-e-Iqbal	8.8	7.1	4.4	4.0	4.9	3.4	4.0	Yes	Yes
	Shah Faisal	8.1	5.2	9.2	3.0	3.7	3.4	5.3	Yes	Yes
	Korangi	5.3	3.8	4.8	8.4	5.5	9.7	5.6	Yes	Yes
	Landhi	2.2	7.8	5.1	5.0	4.9	0.4	3.2	Yes	Yes
	North Nazimabad	21.0	27.0	7.3	9.0	8.0	0.8	9.0	Yes	No
	North Karachi	17.2	9.8	20.8	4.0	10.3	3.8	6.4	Yes	No
	Gulberg	13.9	11.0	33.3	10.0	19.8	8.2	6.8	No	No
	Liaquatabad	12.6	20.1	9.5	17.2	3.4	10.7	4.9	No	No
	Bin Qasim	1.5	8.8	20.1	7.4	3.3	10.0	8.9	Yes	Yes
	Gadap	27.8	8.9	8.8	10.1	9.3	3.2	7.6	Yes	No
	Malir	5.9	9.6	1.5	6.4	2.7	3.8	6.5	Yes	Yes

Annex 3 – Risk Assessment data tables

		Country	Immunization Performance				Surveillance Performance		
			% missed children (IM)		National	National	% states with	National	Virology
			Most recent SIA	2nd most recent	POL3	0-dose	NPAFPR >2*	Stool Adeq.	***
west and central Africa	1	Benin	6.9	2.4	83	4.3	91.7	90.8	Little
	2	Burkina Faso	4.4	5.8	84	1.7	100	88.7	Little
	3	Cameroon	7.1	6	79	4.5	100	78	Little
	4	Central African Republic	10.2	13.6	47	1.2	100	91.1	Little
	5	Côte d'Ivoire	4.9	7.8	77	3.9	100	77.1	Little
	6	Gambia	5.5	4.3	97	0	100	96.8	Little
	7	Ghana	4.8	4.6	94	0	90	78.1	Little
	8	Guinea	1.8	1.5	53	1.1	100	69.3	Little
	9	Guinea-Bissau	1.9	5	72	0	100	66.7	Little
	10	Liberia	5.2	3.6	74	4.3	100	96.4	Some
	11	Mali	7.6	7.5	74	1.4	100	92	Little
	12	Mauritania	5.7	12.6	63	8.3	85.7	94.7	Little
	13	Niger	9.1	5	71	1.9	100	73.2	Little
	14	Senegal	9.6	8.3	83	7.9	100	63.8	Little
	15	Sierra Leone	14.9	14	74	0.7	100	81.4	Little
	16	Togo	10.4	10.8	89	2.7	100	88.9	Little
east Africa	1	Burundi			96	0	94.1	78.3	Little
	2	Eritrea			99	0	100	98.9	Little
	3	Ethiopia	21.3	10.8	76	8	80	79.7	Little
	4	Kenya			71	5 **	100	86.9	Little
	5	Somalia			28	11.1	100	98.9	Little
	6	Uganda			59	8.9	84.6	88.1	Little
Asia	1	Kazakhstan			99	0	100	99.2	Little
	2	Nepal	7.8	10.4	82	0	100	89.8	Little
	3	Russian Federation			98	6.8	75	94.9	Little
	4	Tajikistan	3.6	2.5	93	n/a	100	86.4	Little
	5	Turkmenistan			97	0	100	98.2	Little

* based on the upper 90% confidence limit.

** Missing dose information for children 6–35 months of age with NPAFP from Kenya (16%) limits interpretation of these data. With 0-dose at the 5% borderline of strong, the high proportion of missing dose information makes this assessment intermediate.

*** Virologic evidence indicates "little" or "some" evidence of missed chains of transmission.

		Country	Immunization Performance					Surveillance Performance			
			MPI **	% missed children (IM)		National	National	MPI **	% states with NPAFPR >2*	National	Virology
				Most recent SIA	2nd most recent	POL3	0-dose			Stool Adeq.	
re-established	1	Angola	#3: No	17.4	13.9	73	9.4	n/a	100	89.4	Some
	2	Chad	#4: No	17.8	26.7	36	11.7	n/a	100	53.8	Some
	3	Democratic Republic of the Congo	#7: No	16.3	13.9	74	11.3	#5: Yes #6: No	100	78.9	Some
	4	Sudan	#10: No	refer to MPI #10		84	3.7	#8 & 9: Yes	100	95.1	Little

* based on the upper 90% confidence limit

** GPEI country specific Major Process Indicators:

#3	ANG: <10% missed children in all districts of Luanda, Benguela and Kwanza Sul during each SIA
#4	CHA: <10% missed children in greater N'Djamena and in the southern and eastern WPV transmission zones during each SIA in the 2nd half of 2010
#5	DRC: >80% adequate specimens in all provinces
#6	DRC: AFP rate >2 in all provinces
#7	DRC: <10% missed children in each SIA in Orientale, North & South Kivu (and all provincial capitals)
#8	southern SUD: >80% adequate specimens rates in all states
#9	southern SUD: AFP rate >2 in all states
#10	southern SUD: <10% of missed children in each state during each SIA

		Country	Immunization Performance					Surveillance Performance			
			MPI **	% missed children (IM)		National	National	MPI **	% states with NPAFPR >2*	National	Virology
				Most recent SIA	2nd most recent	POL3	0-dose			Stool Adeq.	
endemic	1	Afghanistan	#11: No	refer to MPI #11		83	0.9	n/a	100	93.1	Some
	2	India	#12: Yes ***			67	0.3	n/a	97.1	83.5	Little
	3	Nigeria	#13: No			54	3.4	n/a	100	93.6	Some
	4	Pakistan	#14 & 15: No	refer to MPI #14 & 15		85	2	n/a	100	90.1	Some

* based on the upper 90% confidence limit

** GPEI country specific Major Process Indicators:

#11	AFG: <10% missed children during at least 4 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern Region
#12	IND: >95% population immunity to type 1 polio sustained in the persistent transmission areas of western Uttar Pradesh, and achieved in the persistent transmission areas of central Bihar.
#13	Nigeria: <10% 0-dose children (per NP AFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)
#14	PAK: <15% missed children during at least 8 SIAs in every district of the Quetta area and the persistent transmission districts and agencies of NWFP & FATA
#15	PAK: <10% missed children during at least 4 SIAs in every town of Karachi

*** based on preliminary data

Annex 4 – Recent poliovirus epidemiology

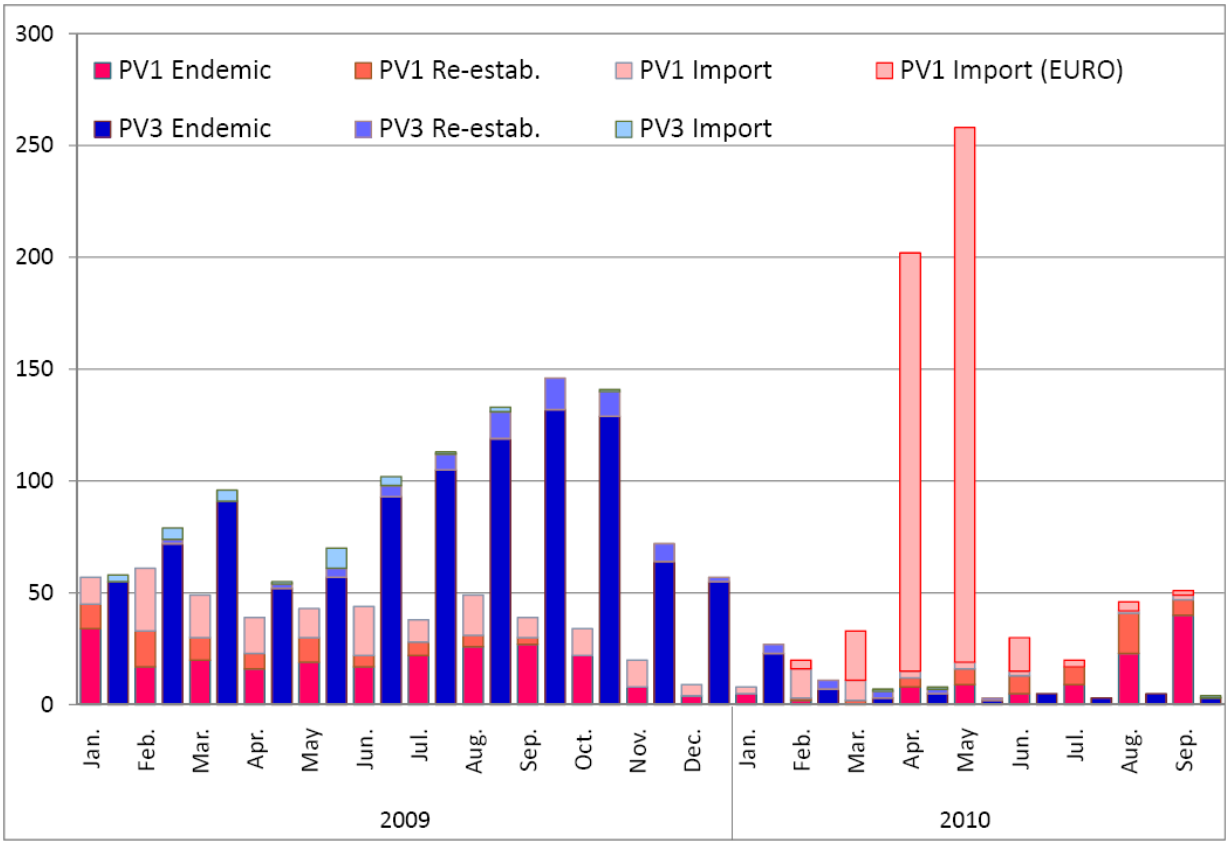
cVDPVs with dates of onset between 1-Jan-2009 and 30-Sep-2010

Country	Serotype	Jan - Dec 2009 case count	Jan - Sep 2010 case count	Last case onset date	*Notes*
Afghanistan	2	0	3	02-Jul-10	*2010 counts include a contact with no index case*
Democratic Republic of the Congo	2	5	10	06-Sep-10	
Ethiopia	2	1	0	16-Feb-09	
	3	1	5	17-May-10	
Guinea	2	1	0	06-May-09	
India	2	15	1	18-Jan-10	*Case counts reported by WHO-HQ*
Niger	2	1	1	01-Jun-10	
Nigeria *	2	155	18	10-Sep-10	*2009 counts include one mixture with PV1 Wild*
Somalia	2	6	2	24-Dec-09	*2009 counts include 2 contacts with no index cases, 2010 counts include 2 contacts with no index cases*

* Country reported at least one case with an October onset as of 2-Nov-10

A recommendation of the 16th Informal Consultation of the Global Polio Laboratory Network, 22-23 September 2010, was to change the reporting criteria for vaccine-related type 2 viruses which differ from Sabin 2 by 6 nt changes in VP1 capsid region to VDPV. This change in the criterion was applied to viruses detected since January 2010. No changes were made to the VDPV definitions for type 1 and type 3.

Monthly case count by virus serotype and country classification



Number of polio-affected districts in polio affected countries by country category of transmission, and by serotype, January–September 2009 and January–September 2010

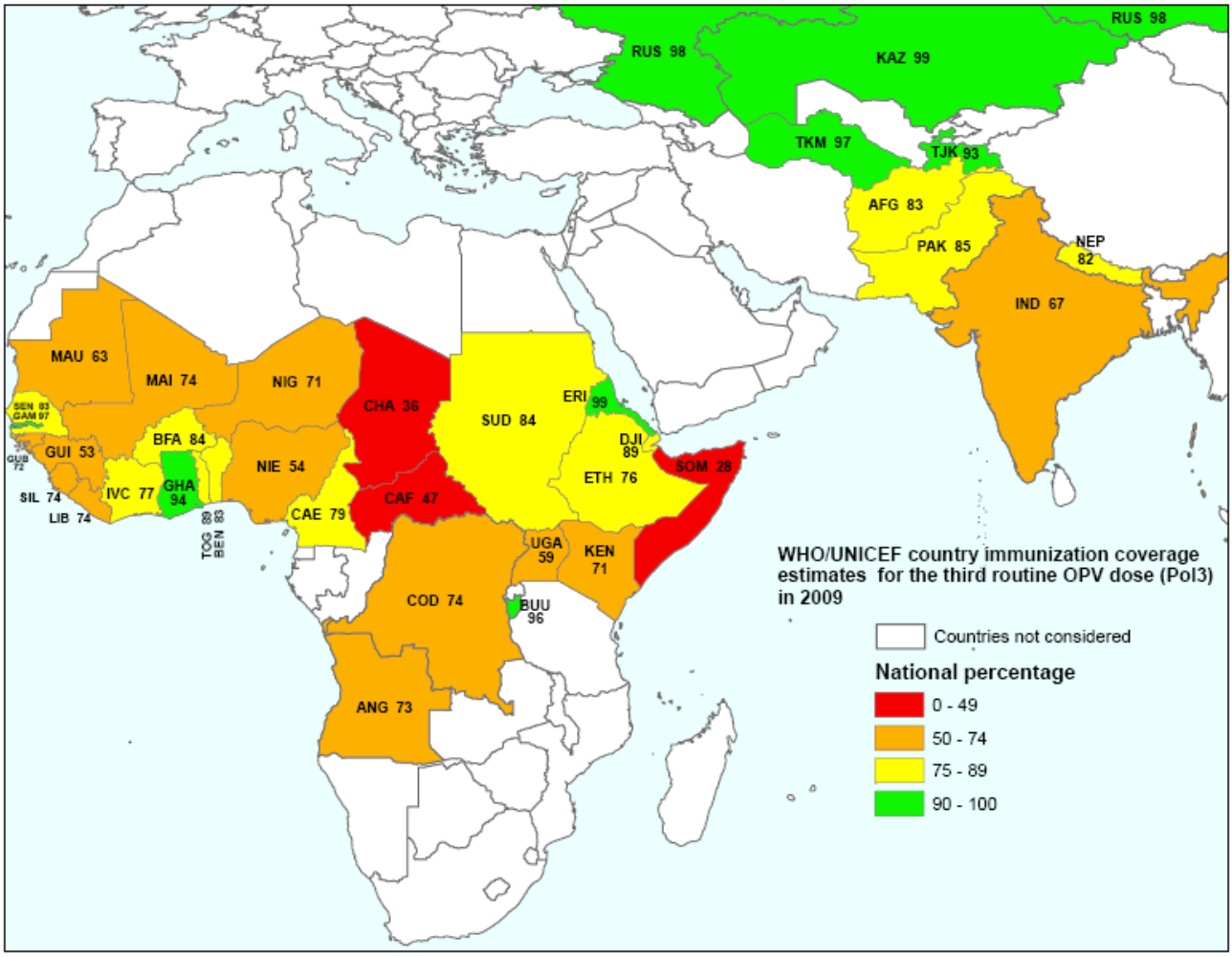
Importation Countries		Total districts in country	Serotype 1 Jan. - Sep. 2009	Serotype 1 Jan. - Sep. 2010	Serotype 3 Jan. - Sep. 2009	Serotype 3 Jan. - Sep. 2010	Serotype 1 or 3 Jan. - Sep. 2009	Serotype 1 or 3 Jan. - Sep. 2010	% decrease	Date of most recent case
west and central Africa	Benin	77	**14**	0	0	0	**14**	0	100%	19-Apr-09
	Burkina Faso	63	**9**	0	0	0	**9**	0	100%	25-Oct-09
	Cameroon	173	0	0	**2**	0	**2**	0	100%	15-Oct-09
	Central African Republic	24	0	0	**1**	0	**1**	0	100%	09-Aug-09
	Cote d'Ivoire	72	**19**	0	0	0	**19**	0	100%	06-Aug-09
	Guinea	38	**15**	0	0	0	**15**	0	100%	03-Nov-09
	Liberia	15	**6**	**2**	0	0	**6**	**2**	67%	08-Sep-10
	Mali	59	**1**	**3**	0	**1**	**1**	**4**	-300%	17-Sep-10
	Mauritania	53	0	**4**	0	0	0	**4**	n/a	28-Apr-10
	Niger	42	**1**	0	**9**	**1**	**10**	**1**	90%	01-Apr-10
	Senegal	65	0	**11**	0	0	0	**11**	n/a	30-Apr-10
	Sierra Leone	13	**2**	**1**	0	0	**2**	**1**	50%	28-Feb-10
	Togo	35	**5**	0	0	0	**5**	0	100%	28-Mar-09
east	Burundi	41	**1**	0	0	0	**1**	0	100%	12-Sep-09
	Kenya	78	**3**	0	0	0	**3**	0	100%	30-Jul-09
	Uganda	80	**2**	**1**	0	0	**2**	**1**	50%	28-Sep-10
Asia	Kazakhstan	201	0	**1**	0	0	0	**1**	n/a	12-Aug-10
	Nepal	75	0	**2**	0	0	0	**2**	n/a	30-Aug-10
	Russian Federation	83	0	**8**	0	0	0	**8**	n/a	25-Sep-10
	Tajikistan	66	0	**35**	0	0	0	**35**	n/a	04-Jul-10
	Turkmenistan	61	0	**2**	0	0	0	**2**	n/a	28-Jun-10

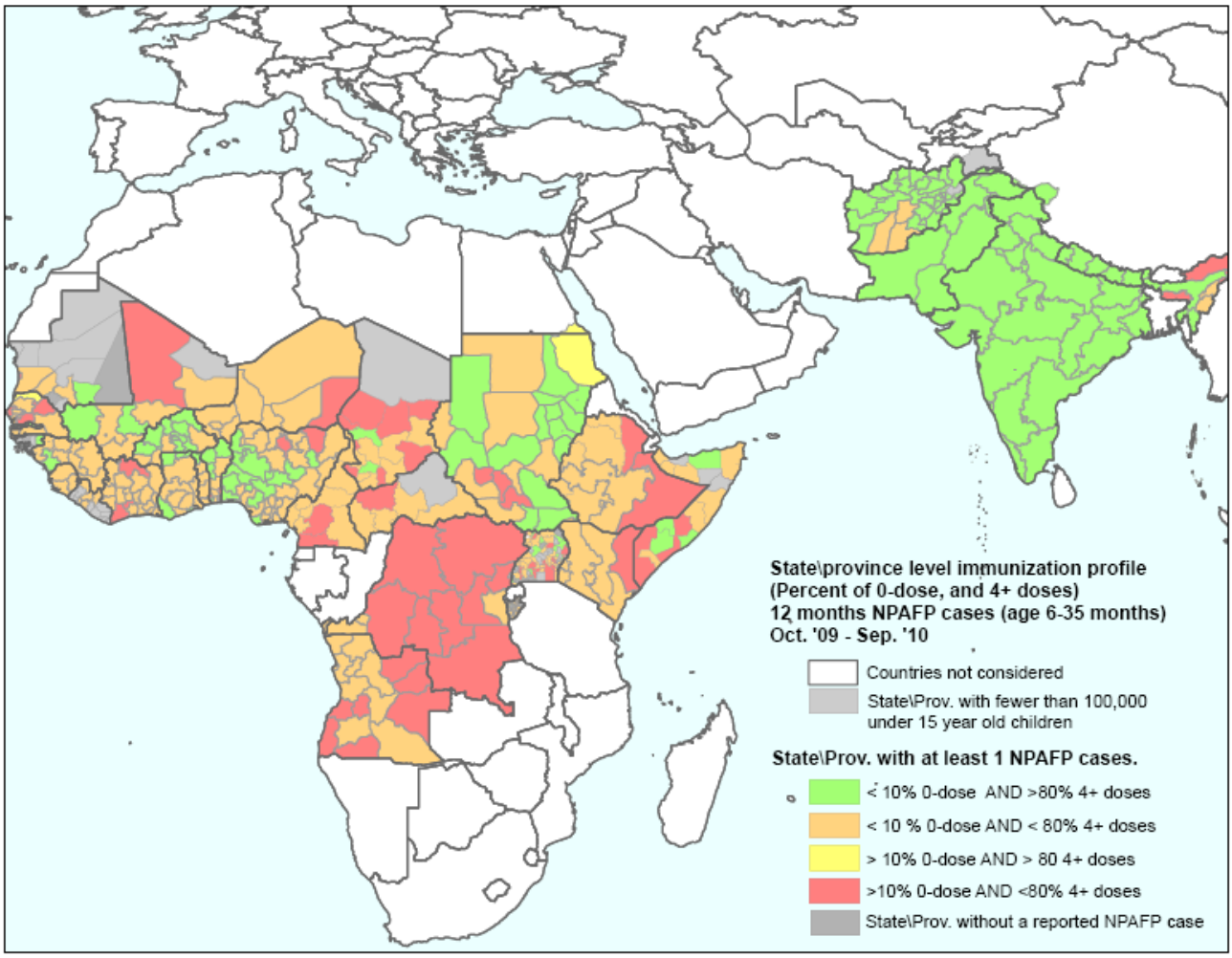
Re-established Countries	Total districts in country	Serotype 1 Jan. - Sep. 2009	Serotype 1 Jan. - Sep. 2010	Serotype 3 Jan. - Sep. 2009	Serotype 3 Jan. - Sep. 2010	Serotype 1 or 3 Jan. - Sep. 2009	Serotype 1 or 3 Jan. - Sep. 2010	% decrease	Date of most recent case
Angola	164	**10**	**14**	0	0	**10**	**14**	-40%	20-Aug-10
Chad	61	0	0	**19**	**9**	**19**	**9**	53%	10-May-10
Democratic Republic of Congo	515	0	**10**	**2**	0	**2**	**10**	-400%	13-Sep-10
Sudan	135	**24**	0	0	0	**24**	0	100%	27-Jun-09

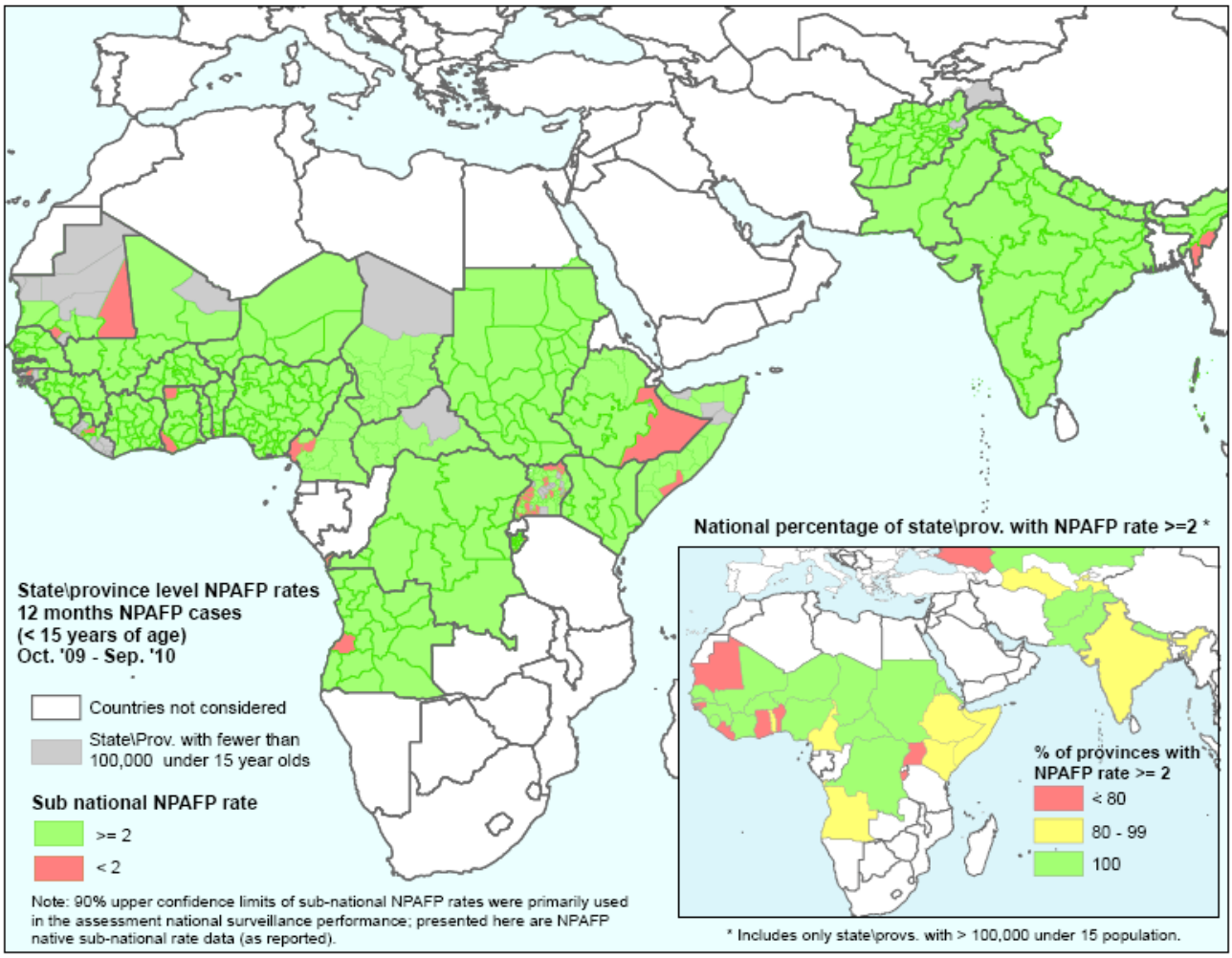
Endemic Countries	Total districts in country	Serotype 1 Jan. - Sep. 2009	Serotype 1 Jan. - Sep. 2010	Serotype 3 Jan. - Sep. 2009	Serotype 3 Jan. - Sep. 2010	Serotype 1 or 3 Jan. - Sep. 2009	Serotype 1 or 3 Jan. - Sep. 2010	% decrease	Date of most recent case
Afghanistan	329	**11**	**7**	**5**	**6**	**12**	**12**	0%	04-Sep-10
India	626	**28**	**7**	**40**	**12**	**47**	**17**	64%	16-Sep-10
Nigeria	774	**52**	**5**	**156**	**4**	**196**	**9**	95%	27-Sep-10
Pakistan	135	**20**	**24**	**10**	**11**	**26**	**30**	-15%	29-Sep-10

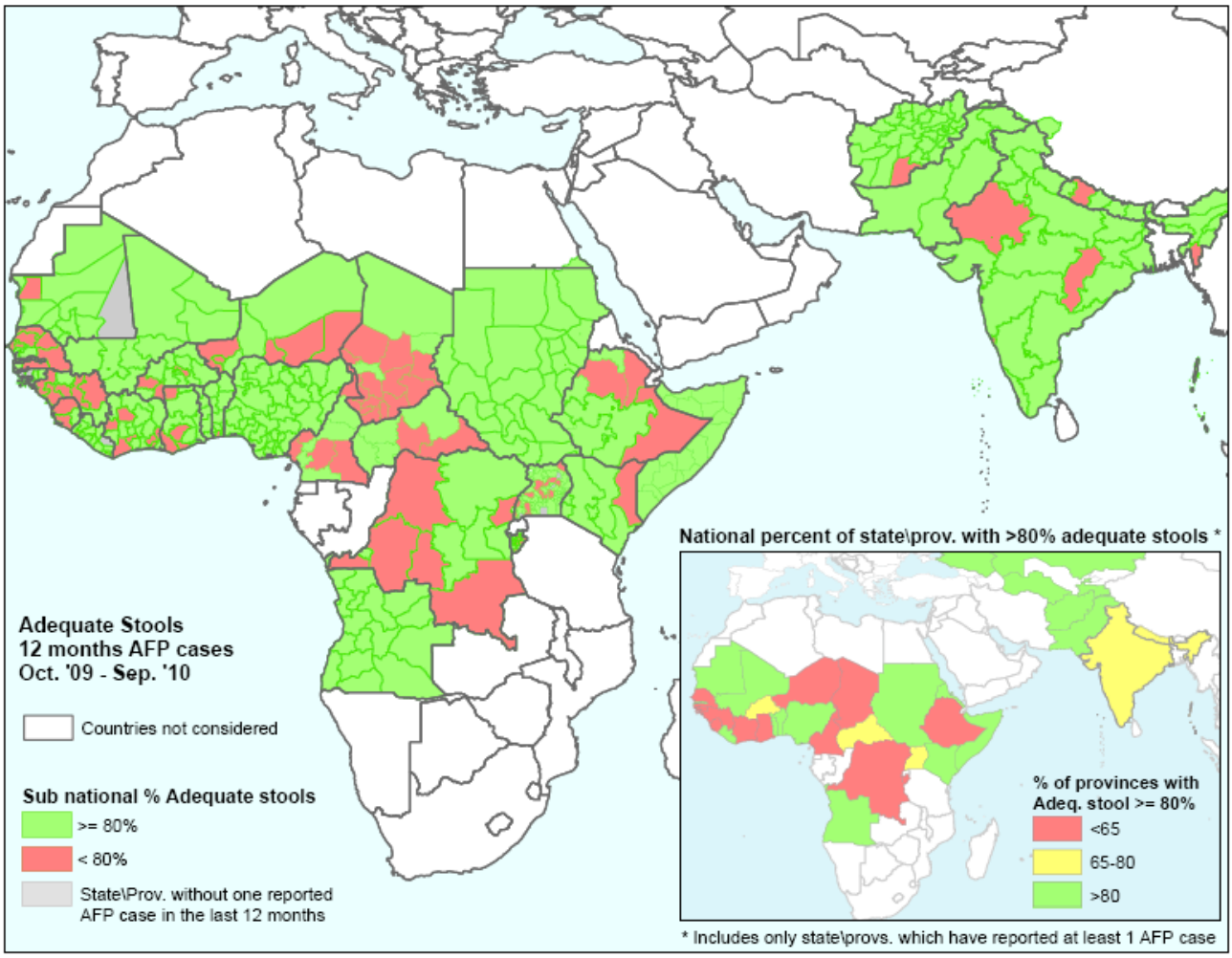
Year to date comparisons are based on cases with dates of onset between 1-Jan and 30-Sep.
WPV1 and WPV3 co-infections are counted as Serotype 1

Annex 5 – Maps of immunization and surveillance performance




State\province level immunization profile
(Percent of 0-dose, and 4+ doses)
12 months NPAFP cases (age 6-35 months)
Oct. '09 - Sep. '10
Countries not considered
State\Prov. with fewer than 100,000 under 15 year old children
State\Prov. with at least 1 NPAFP cases.
< 10% 0-dose AND >80% 4+ doses
< 10 % 0-dose AND < 80% 4+ doses
> 10% 0-dose AND > 80 4+ doses
>10% 0-dose AND <80% 4+ doses
State\Prov. without a reported NPAFP case


State\province level NPAFP rates
12 months NPAFP cases
(< 15 years of age)
Oct. '09 - Sep. '10
Countries not considered
State\Prov. with fewer than 100,000 under 15 year olds
Sub national NPAFP rate
>= 2
< 2
Note: 90% upper confidence limits of sub-national NPAFP rates were primarily used in the assessment national surveillance performance; presented here are NPAFP native sub-national rate data (as reported).
National percentage of state\prov. with NPAFP rate >=2 *
% of provinces with NPAFP rate >= 2
< 80
80 - 99
100
* Includes only state\provs. with > 100,000 under 15 population.


Adequate Stools
12 months AFP cases
Oct. '09 - Sep. '10
Countries not considered
Sub national % Adequate stools
>= 80%
< 80%
State\Prov. without one reported AFP case in the last 12 months
National percent of state\prov. with >80% adequate stools *
% of provinces with Adeq. stool >= 80%
<65
65-80
>80
* Includes only state\provs. which have reported at least 1 AFP case