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

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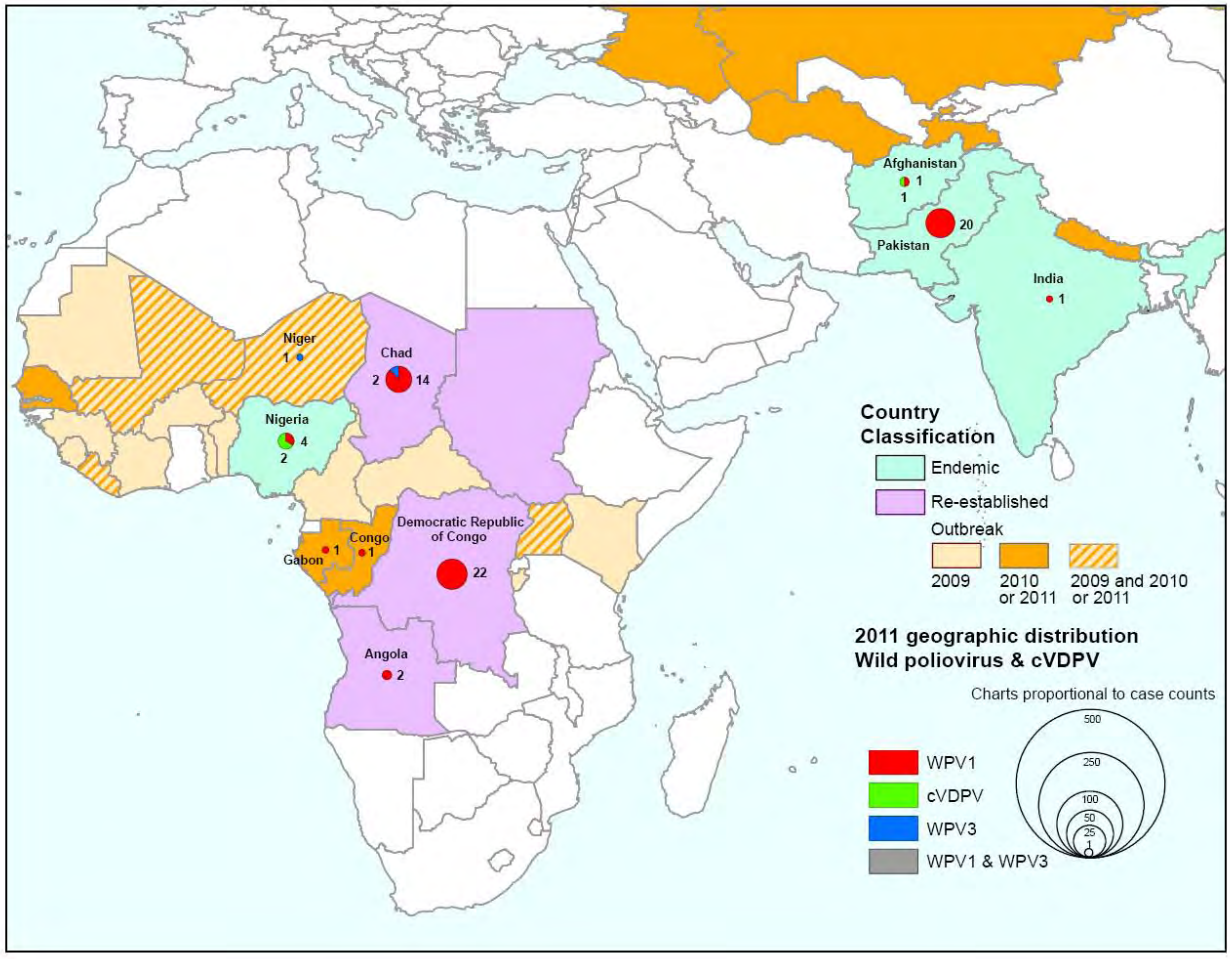
30 Mar 11 | 2011 First Quarter Report

Wild poliovirus (WPV) cases and circulating vaccine-derived polioviruses (cVDPV), onset during January–March 2011 (data as of 22 Mar. 2011)



CDC will report quarterly on the Strategic Plan Major Process Indicators (MPIs) of the Global Polio Eradication Initiative (GPEI) Strategic Plan for 2010–2012. The first report of 2011that gave the outcome of MPIs for 2010 and progress toward MPIs for 2011was issued on 25 March 2011 [*1st Quarter 2011, Progress Report of the GPEI Major Process Indicators for 2010 and 2011*, and is available at http://www.polioeradication.org/Dataandmonitoring/Polioeradicationtargets/Riskassessments.aspx

This 1st Quarter 2011 CDC assessment evaluates indicators based on the criteria in the 2011 MPIs applied over the previous 12 months. For each of the countries affected by polio, in addition to the assessment of risk of failure, this report will also briefly indicate the outcome of the 2010 MPIs and progress toward 2011 MPIs by the use of symbols.

The symbol key for each country's outcome for the 2010 MPI, or progress toward 2011 MPI is:

- Fully achieved, or achieved thus far in 2011
- Not achieved, or not yet achieved in 2011
- No data to assess

EXECUTIVE SUMMARY

Following the release of the GPEI Strategic Plan for 2010–2012, CDC was requested to regularly assess the risk of failure to detect and interrupt wild polio virus (WPV) transmission in affected countries. CDC will issue risk assessments to partners and to the Independent Monitoring Board (IMB) just prior to each quarterly meeting of the IMB; each report will represent a tentative cross-section of information for that quarter. The first quarter 2011 CDC risk assessment focuses on progress toward achieving 2011 Major Process Indicators (MPIs) as evidenced over the previous 12 months. Along with country-specific changes in MPIs for 2011, 2011 MPI surveillance criteria for all polio-affected countries became more stringent and this has altered the evaluation of surveillance performance in this report for some countries from prior CDC assessments.

	Endemic countries	Date of last WPV	Current Quarter Risk Assessment			Nov. 10 Report
			Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
1	Afghanistan	11-Jan-11	Weak	Intermediate	High	High
2	India	13-Jan-11	Strong	Intermediate	Moderate	Moderate
3	Nigeria	24-Feb-11	Intermediate	Intermediate	Moderate	High
4	Pakistan	06-Mar-11	Weak	Intermediate	High	High

Endemic countries: Both India and Nigeria continue to experience historic low numbers of WPV cases. The challenge remains of attempting to effectively reach clusters of un-immunized and under-immunized children in Nigeria, and migrant populations of relatively under-immunized children in India. With the 2011 introduction of a standard that all states have ≥80% of AFP cases having adequate specimens, India has intermediate surveillance performance overall, but with a very high rate of nonpolio acute flaccid paralysis (NPAFP); the indicators in Bihar and Uttar Pradesh are currently strong. Both India and Nigeria are assessed at moderate risk of failure to detect and interrupt WPV transmission by the end of 2011. The assessed risk of failure in Nigeria decreased from high in the prior assessment to moderate due to an altered immunization MPI for 2011, and introduction of intermediate achievement evaluations in CDC assessments of immunization and surveillance performance. Consideration is needed of altering the current MPI for Nigeria to be more sensitive. Progress has been limited in Afghanistan and remains elusive in Pakistan; both remain at high risk of failure to detect and interrupt WPV transmission by the end of 2011. Emergency response plans have been prepared to address the serious weaknesses in immunization and surveillance performance in Pakistan, but have yet to be fully implemented down to the Union Council level.

	Re-established countries	Date of last WPV	Current Quarter Risk Assessment			Nov. 10 Report
			Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
1	Angola	04-Feb-11	Weak	Intemediate	High	High
2	Chad	20-Feb-11	Weak	Weak	High	High
3	Democratic Republic of Congo	27-Feb-11	Weak	Weak	High	High
4	Sudan	27-Jun-09	Intermediate	Strong	Moderate	Moderate

Re-established transmission countries: Sudan has reported no WPV case since June 2009 and appears to have interrupted WPV transmission, given observations with more than 12 months of strong surveillance, meeting a 2010 milestone for countries with re-established transmission. In Angola, Chad and the Democratic Republic of the Congo (DRC), although there have been signs of progress in monitoring data for SIAs (supplementary immunization activities) and expanding the extent of SIAs implementation into more areas, persistent WPV transmission raises concerns about the pace of improvements. The risks of failing to detect and interrupt WPV transmission by the end of 2011 are high in Angola, Chad, and DRC. Consideration is needed of altering the MPIs for DRC to track progress in all areas of recent WPV transmission and not just those districts of provinces specified in the Strategic Plan.

Importation / importation-belt countries (with recent virus)			Date of last WPV	Current Quarter Risk Assessment			Nov. 10 Report
				Immunization performance (strong, intermediate, weak)	Surveillance performance (strong, intermediate, weak)	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Countries with virus last 12 months	1	Congo	22-Jan-11	Intermediate	Weak	High	
	2	Niger	19-Jan-11	Strong	Weak	Moderate	Low
	3	Gabon	15-Jan-11	Intermediate	Weak	High	
	4	Uganda	15-Nov-10	Strong	Weak	Moderate	High
	5	Russian Federation	25-Sep-10	Intermediate	Weak	High	High
	6	Mali	17-Sep-10	Strong	Weak	Moderate	Low
	7	Liberia	08-Sep-10	Strong	Intermediate	Low	Moderate
	8	Nepal	30-Aug-10	Strong	Strong	Low	Moderate
	9	Kazakhstan	12-Aug-10	Strong	Intermediate	Low	Low
	10	Tajikistan	04-Jul-10	Strong	Intermediate	Low	Low
	11	Turkmenistan	28-Jun-10	Strong	Strong	Low	Low
	12	Senegal	30-Apr-10	Intermediate	Weak	High	Moderate
	13	Mauritania	28-Apr-10	Intermediate	Strong	Moderate	Moderate

Importation countries: Most of the outbreaks starting in 2010 are no longer active. Surveillance performance limits interpretation of >6 months without confirmation of continued transmission for some countries. With some laboratory data pending, Mali has a moderate risk of failure to detect and interrupt WPV transmission within 6 months of confirmation because of weak surveillance performance. The Russian Federation is assessed as having a high risk of failure because of weak surveillance performance in the northern Caucasus territories. Uganda has a moderate risk of failure, with strong immunization performance. The Republic of the Congo appears to have controlled its large outbreak but pending SIA monitoring results is assessed at high risk of failure to detect and interrupt WPV transmission within 6 months of confirmation. Gabon experienced an outbreak in 2011, but because of the Congo outbreak, implemented SIAs even before WPV detection; based on assessed immunization and surveillance performance, Gabon has a high risk of failure to detect and interrupt WPV transmission within 6 months of confirmation. Pending sequencing, it appears another importation has occurred in Niger in 2011 but substantial transmission is not anticipated and its risk of failure is moderate. Outbreaks are generally on track to be controlled, but have required substantial resources.

Conclusions: The overall trends in improvement have been greatest in India by WPV epidemiology and in South Sudan by epidemiology and performance indicators. Progress in other areas has been incremental and needs acceleration to reduce the risks of failure to detect and interrupt WPV transmission. Angola continues to risk being a potential reservoir for additional outbreaks.

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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. 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 failure to detect and interrupt wild polio virus (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.

Prior CDC risk assessments were issued approximately 6 weeks after the end of a quarter to include essentially complete surveillance data for the quarter. The current and subsequent reports will be issued just prior to each quarterly meeting of the IMB to better inform member deliberations, so will represent a provisional cross-section of information for that quarter.[1] In addition, CDC has considered that for much information, an assessment is optimally based on data collected over an entire year. The current CDC risk assessment is based on available data from 9 March 2010 through 8 March 2011 and laboratory information as of 22 March 2011. The analysis is restricted to countries included in the GPEI Strategic Plan and countries with outbreaks in 2010 and later. A detailed presentation of information for each country is provided in a "country profiles" supplement.

In addition to conducting risk assessments, beginning in 2011, CDC will report quarterly on the Strategic Plan Major Process Indicators (MPIs). The first report of 2011that gave the outcome of MPIs for 2010 and progress toward MPIs for 2011was issued separately on 25 March 2011 [*1st Quarter 2011, Progress Report of the GPEI Major Process Indicators for 2010 and 2011*].

Methods

CDC's quarterly risk assessments use the country-specific 2011 MPIs as a basis to evaluate immunization and surveillance performance over the previous 12 months and provide the criteria for assessment of risk of failure to detect and interrupt WPV transmission. This assessment introduces intermediate achievement evaluations of immunization and surveillance performance. Of note, when applying a 2011 MPI for surveillance (an indicator of subnational adequate specimen collection, added for all polio-affected countries), the assessment of surveillance performance is altered for many countries from prior reports.

Data

The data used for the risk assessment presented in this report are from: i) independent monitoring (IM) of Supplementary Immunization Activities (SIAs) 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

[1] Although most laboratory results are available within days to 2 weeks, it may take approximately one month from the onset of a paralysis case to the final data for a substantial proportion of cases. Classification of AFP cases in which adequate specimens were not collected may take additional months before the AFP databases are finalized.

specimens are collected, and the number of oral polio vaccine (OPV) doses received by NPAFP case-patients. IM and AFP surveillance data were from the period 9 March 2010 – 8 March 2011. Data comparisons are made with World Health Organization (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

GPEI Strategic Plan 2011 MPIs and "supplemental indicators" analyzed using data from the period of 9 March 2010 – 8 March 2011 served as the basis for the risk assessment. For some countries, the 2011 MPIs for immunization as written in the Strategic Plan do not address current epidemiologically-relevant geographic areas. For the risk assessment of these countries, analyses of SIA performance in the additional relevant geographic areas were included. For all countries, the MPIs for immunization assessed over the stated 12-month period, including the analyses of SIAs in additional geographic areas, were referred to as the "12-month immunization indicator". The 12-month immunization indicator, the MPIs for surveillance, and the supplemental indicators were used to assess a country's risk of failing to detect and interrupt WPV transmission.

Supplemental indicators were used to assess the consistency and validity of the 12-month immunization indicator. In most cases, SIA independent monitoring (IM) data served as the primary indicator for immunization performance. Supplemental indicators for immunization performance were:

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

The two GPEI Strategic Plan 2011 MPIs related to surveillance are NPAFP rates of ≥2 per 100,000 children <15 years of age and ≥80% adequate specimens achieved at each sub-national level in all polio-affected countries.[3] The supplemental indicator used to assess surveillance performance was:

- WPV genomic sequence analysis[4].

[2] available at http://www.who.int/immunization_monitoring/routine/immunization_coverage/en/index4.html

[3] AFP surveillance quality is monitored by performance indicators that measure the sensitivity of detecting WPV transmission and the timeliness of investigation. Certification-standard targets are: 1) a national 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 at a WHO-accredited laboratory. Since 2005, the operational target for countries with polio has been NPAFP ≥2 cases per 100,000 children aged <15 years and since 2010, ≥2 at each state/province. Sub-national data are analyzed if the population <15 years of age is ≥100,000. In this report, when sub-national NPAFP rates were used, they were based on upper 90% confidence limits. A state/province's NPAFP rate was considered to be acceptable if the upper 90% confidence limit was ≥2. Also in this report, a state/province was considered to have achieved the target proportion of adequate specimens if the upper 90% confidence interval for its proportion contained 80%.

[4] 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.

Assessments of immunization and surveillance performance

Immunization performance was assessed as being STRONG, INTERMEDIATE, or WEAK using a stepwise process (described in the Methods Supplement, available upon request) that considered the 12-month immunization indicator and supplemental indicator data. Briefly,

1. Primary emphasis was placed on IM data from SIAs conducted during the period 9 March 2010 – 8 March 2011 to assess the 12-month immunization indicator. For most countries, district-level or province/state-level performance of each SIA was 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 12-month immunization indicator.

2. Secondarily, data on supplemental indicators were considered as follows:
   - 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).

The scores for Pol3 coverage and zero-dose OPV were combined with that for the 12-month immunization indicator for an overall immunization performance assessment of STRONG, INTERMEDIATE, or WEAK; details describing this process are in the Methods Supplement. When no SIA monitoring data were available, supplemental indicator data were used alone to assess immunization performance.

Surveillance performance was assessed as being STRONG, INTERMEDIATE, or WEAK using a stepwise process (details in Methods Supplement) that considered an analysis of MPIs and supplemental indicator data, all from the period of 9 March 2010 – 8 March 2011. Briefly,

1. Primary emphasis was placed on NPAFP rates of ≥2 in all sub-national areas. For each country, the proportion of sub-national areas with NPAFP rates ≥2 (based on the upper 90% confidence limit) was 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 was considered acceptable if the upper 90% confidence interval was ≥2.

2. Secondarily, the second MPI for surveillance (i.e., proportion of states/provinces with ≥80% adequate specimens) was considered as follow:
   - Percent of provinces/states with ≥80% adequate specimens (based upon 90% confidence limits): 100% (strong), 80-99% (intermediate), and <80% (weak).

3. Last, data on WPV genetic sequence analysis was considered as follows:
   - 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 sub-national proportion of adequate specimens and genetic sequence data were combined with the score for the sub-national NPAFP rate for an overall surveillance performance assessment of STRONG, INTERMEDIATE, or WEAK; details describing this process are in the Methods Supplement.

Overall risk assessment

The overall assessment of a country's risk of failure to detect and interrupt WPV transmission was based primarily upon the immunization performance assessment but also considered the surveillance performance assessment as illustrated in the table below. An overall risk of HIGH, MODERATE, or LOW was assigned to countries assessed in this report.

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

*If a country was initially assessed as having a HIGH risk of failure to detect and interrupt WPV transmission but its surveillance performance was assessed as STRONG or INTERMEDIATE and there was no evidence of WPV circulation in >12 months (>6 months if importation country/"importation belt"), overall risk was revised to MODERATE.
If an **endemic or re-established transmission country was initially assessed as having STRONG immunization performance and STRONG or INTERMEDIATE surveillance performance but there was evidence of WPV circulation within the last 6 months in ≥3 states/provinces, its overall risk was revised to MODERATE. If an **importation country** had STRONG immunization performance and STRONG or INTERMEDIATE surveillance performance but there was evidence of WPV circulation within the last 3 months and ≥3 months had elapsed from outbreak laboratory confirmation to the most recent case, its overall risk was revised to MODERATE.

Limitations

This report assesses the risk of failing to detect and interrupt WPV transmission in countries included in the GPEI Strategic Plan and countries with importation outbreaks since the Plan was issued. 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 proportions missing data on age or vaccine history are substantial. Even with complete data, estimates based on small populations lack precision. Data limitations and potential biases were taken into account to the extent possible in this assessment. The consistency of estimates based on different data sources provided one measure of data quality. For surveillance performance, WPV genomic sequence analysis provided objective information. Comparing the genetic relatedness of viruses taken from infected persons identified through AFP surveillance and from environmental sampling provided robust information on the quality of the surveillance system

RISK ASSESSMENT

Endemic Countries

AFGHANISTAN

Immunization				Surveillance			
12-month immunization indicator**	National		**Immunization Performance**	Percent of states / provinces with:		Virology	**Surveillance Performance**
% missed children in SIAs	POL3	0-dose		NPAFPR >= 2*	Adeq. Stools >= 80%*		
Weak	**83**	**1.2**	**Weak**	**100**	**100**	**Some**	**Intermediate**

* based on the upper 90% confidence limit

** 12-month immunization indicator: Based upon Afghanistan's 2011 MPI for immunization but using data from SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and the Methods Supplement.

Afghanistan has a high risk of failure to detect and interrupt WPV transmission by the end of 2011. A WPV3 case occurred within the last 12 months, and WPV1 and VDPV2 cases have continued into 2011. With continued impediments to access, immunization performance remains weak. Although surveillance indicators are meeting targets, performance is assessed to be intermediate because of some virologic evidence of missed chains of transmission. Despite evidence of frequent cross-border transmission with Pakistan, there also is genetic evidence of sustained independent transmission of lineages unique to Afghanistan. The risk of failure for each country is interrelated.

Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	<10% missed children during at least 4 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern region
	end-2011	<10% missed children during at least 6 SIAs in each of the 13 conflict-affected districts with persistent transmission in the Southern region

INDIA

Immunization						Surveillance			
12-month immunization indicator **			National		Immunization Performance	Percent of states / provinces		Virology	Surveillance Performance
% missed children in SIAs in Bihar/UP	% missed children in SIAs in West Bengal	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2*	Adeq. Stools >= 80%*		
Strong	**Strong**	**Strong**	**67**	**0.2**	**Strong**	**94.1**	**91.2**	**Little**	**Intermediate**

* based on the upper 90% confidence limit

** 12-month immunization indicator: Since data were not yet available to assess India's 2011 MPI for immunization, based upon the two most recent SIAs conducted (January/February 2011) in Bihar, Uttar Pradesh (UP), and West Bengal. Additional details in Methods Supplement.

India has a moderate risk of failure to detect and interrupt WPV transmission by the end of 2011. In 2010, PV1 seropositivity was high in the tested populations in western Uttar Pradesh and central Bihar. The further reduction in the number of WPV1 and WPV3 cases and affected districts in India from 2010 to date, including during the high transmission season, indicates continued significant progress towards interrupting WPV transmission in India.

Immunization performance remains strong. Data suggest continued high SIA coverage in the general targeted population in Uttar Pradesh (≤2% missed children), Bihar (≤2% missed children) and affected states (West Bengal, <6% missed children). Data also suggest ongoing improvements in reaching mobile and remote populations in SIAs (not presented). The January WPV1 case near Kolkata in West Bengal indicated a susceptible, undervaccinated subpopulation in a densely populated area; response SIAs had some limitations (district-level monitoring showed 6-12% missed children) partly because this case occurred in a community of vaccine rejecters. Progress is vulnerable and depends on simultaneously ensuring interruption of WPV transmission in West Bengal and Jharkhand, maintaining high population immunity in Bihar and Uttar Pradesh, and continuing to improve coverage in specific migrant subpopulations. Surveillance performance overall was assessed as intermediate; the newly added surveillance criterion for ≥80% adequate specimen collection in each state indicates some states below 80% (noting the very high NPAFP rates). However, indicators in Bihar, Uttar Pradesh, West Bengal and Jharkhand are currently strong. Environmental surveillance has been valuable in supplementing surveillance; in both Delhi and Mumbai, chains of transmission were detected in 2010 that were not detected by AFP surveillance in 2010. Confirmed WPV circulation in four states since September 2010 (laboratory data are not yet available for March 2011) is indicative of remaining pockets of population susceptibility. There remains an ongoing threat of persistent transmission in West Bengal and a possibility that transmission may be persisting in sub-population groups in Bihar.

Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Moderate	**Moderate**

GPEI MPI	end-2010	>95% population immunity to type 1 polio in the persistent transmission areas of western Uttar Pradesh and central Bihar
	end-2011	>95% population immunity to type 1 and type 3 polio in the persistent transmission areas of western Uttar Pradesh and central Bihar

NIGERIA

Immunization				Surveillance			
12-month immunization indicator **	National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
% children with ≥3 OPV doses	POL3	0-dose		NPAFPR >=2*	Adeq. Stools >=80%*		
Intermediate	**54**	**3**	**Intermediate**	**100**	**100**	**Some *****	**Intermediate**

* based on the upper 90% confidence limit

** 12-month immunization indicator: Based upon Nigeria's 2011 MPI for immunization but using OPV dose information within NPAFP surveillance data from the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

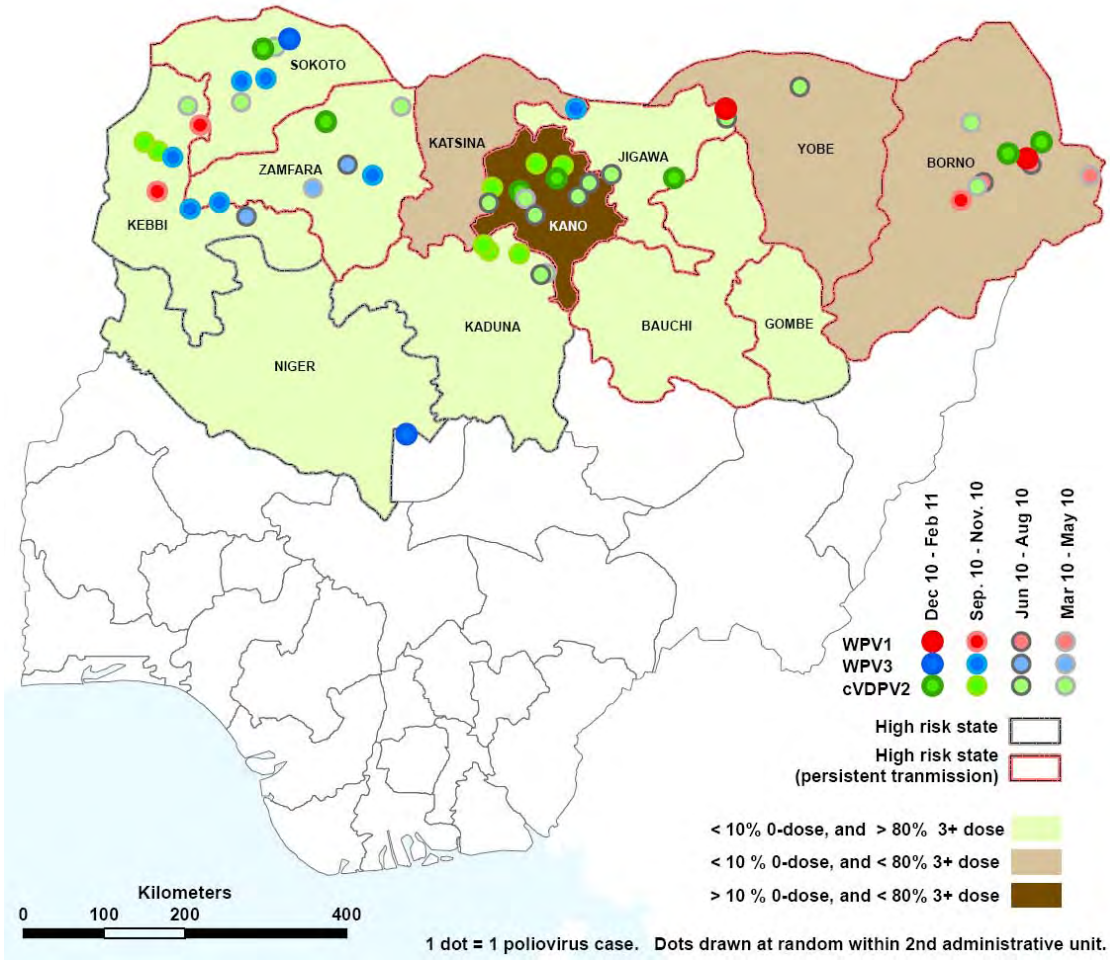
*** significantly higher proportion of viruses without close genetic linkage in 2010

Nigeria has a moderate risk of failure to detect and interrupt WPV transmission by the end of 2011. The assessed risk of failure in Nigeria decreased from high in the prior assessment report to moderated due to an altered immunization MPI for 2011, and introduction of intermediate achievement evaluations in CDC assessments. Although there were continued reductions in the number of identified WPV1 and WPV3 cases and affected districts during January–March 2011 compared with the same period in 2010, a high proportion of children remain at risk within the high-risk northern states as a result of focal areas with low routine immunization coverage, low SIA coverage and high birth rates. Immunization performance is intermediate over the previous 12 months. The high number of cVDPV2 cases despite trivalent OPV rounds indicates remaining challenges in reaching children. Although surveillance indicators are meeting targets, performance is intermediate with apparent gaps in AFP surveillance as indicated by the virologic evidence, with an even higher proportion of WPV and VDPV isolates not having close linkages within the last 6 months. Surveillance gaps discovered by virologic evidence of missed chains of transmission could be due to lapses in AFP detection in geographic areas (below the state level) or among population subgroups (e.g., migrants), in AFP case investigation, or in specimen collection and/or transport. The current programmatic support from all levels of government is vulnerable to change following upcoming state and federal elections.

Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Moderate	**High**

GPEI MPI	end-2010	<10% 0-dose children (per NPAFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)
	end-2011	>80% of children with ≥3 doses of OPV (per NPAFP data) in each of the 12 high-risk states (including the 8 persistent transmission states)

Nigeria: immunization indicators with wild poliovirus (WPV) cases and circulating vaccine-derived polioviruses (cVDPV), onset during March 2010 - February 2011.



The Strategic Plan Major Process Indicator for 2010 was based on <10% of children with NPAFP with 0-dose; the MPI for 2011 is based on>80% of children with NPAFP with ≥3-OPV doses, using parental recall histories, in the high risk states. Neither MPI at the state level has indicated underimmunization in Kebi, Sokoto and Zamfara, parts of which together have served as a major center of protracted WPV transmission by analysis of virologic genetic data. The 0-dose indicator was not sensitive to the protracted WPV transmission in Borno. Consideration should be given to analysis of independent monitoring data of SIAs as in other countries, and to adding MPI criteria based on monitoring data, to supplement the indicators based on recall history for NPAFP cases.

PAKISTAN

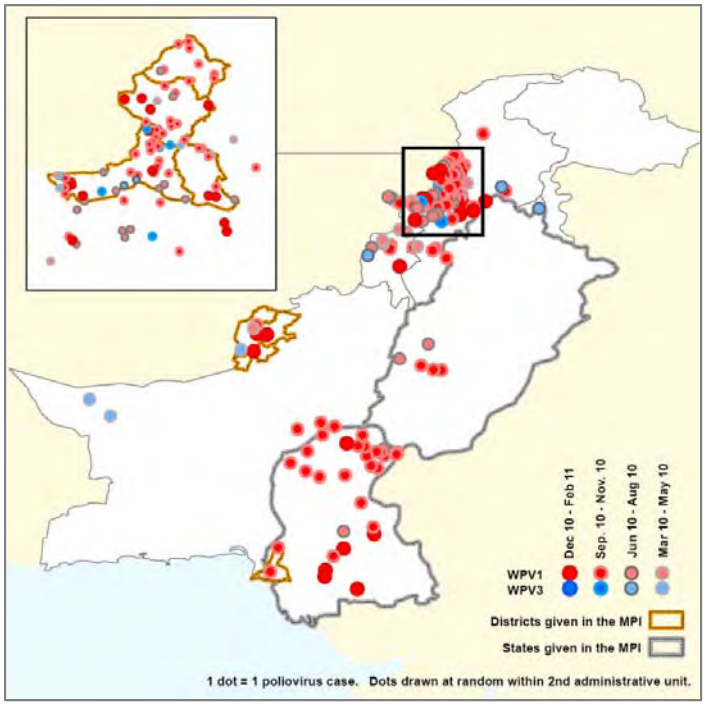
Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs**	% children with > 6 OPV doses***	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2*	Adeq. Stools >= 80%*		
Weak	Weak	Weak	85	1.8	Weak	100	100	Some	Intermediate

* based on the upper 90% confidence limit

** 12-month district immunization indicator: Based upon Pakistan's 2011 MPI for immunization but using SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

*** 12-month >6 dose immunization indicator: Based upon Pakistan's second 2011 MPI for immunization but using OPV dose information within NPAFP surveillance data from the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

Pakistan has a high risk of failure to detect and interrupt WPV transmission by the end f 2011. The number of WPV3 cases was relatively low in 2010. Circulation of WPV1 increased in 2010 an persists in high-risk districts targeted for action by the Strategic Plan and in other districts and provinces int 2011. In 2010, there were <10% of missed children in the towns of Karachi in at least four SIAs. However assessment of SIA monitoring during the last 12 months i Khyber Pakhtunkhwa and FATA did not meet criteria, nor did dose history in children with NPAFP in Sindh and Punjab; immunization performance is weak. Outside the house monitoring data have not b en reported for secure areas. Surveillance indicators meet criteria at national and state levels; however, performance is assessed to e intermediate because of virologic eviden e of missed chains of transmission, particularly among isolates from environmental surveillance. The risks of missing children in subpopulations d ring SIAs and through surveillance are high. Emergency response plans have been prepared to ad ress the serious weaknesses in immunization and surveillance performance in Pakistan, bu have yet to be fully implemented down to the U ion Council level.



Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	<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
	end-2010	<10% missed children during at least 4 SIAs in every town of Karachi
	end-2011	<10% missed children during at least 8 SIAs in the Quetta area and in the persistent transmission districts and agencies of NWFP and FATA
	end-2011	>90% of children with >6 doses of OPV in Sindh and Punjab

Re-Established Transmission Countries

ANGOLA

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs**	Province: % missed children in SIAs***	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2*	Adeq. Stools >= 80%*		
Weak	**Weak**	**Weak**	**73**	**11.2**	**Weak**	**100**	**100**	**Some**	**Intermediate**

* based on the upper 90% confidence limit

** 12-month district immunization indicator: Based upon Angola's 2011 MPI for immunization but using data from SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

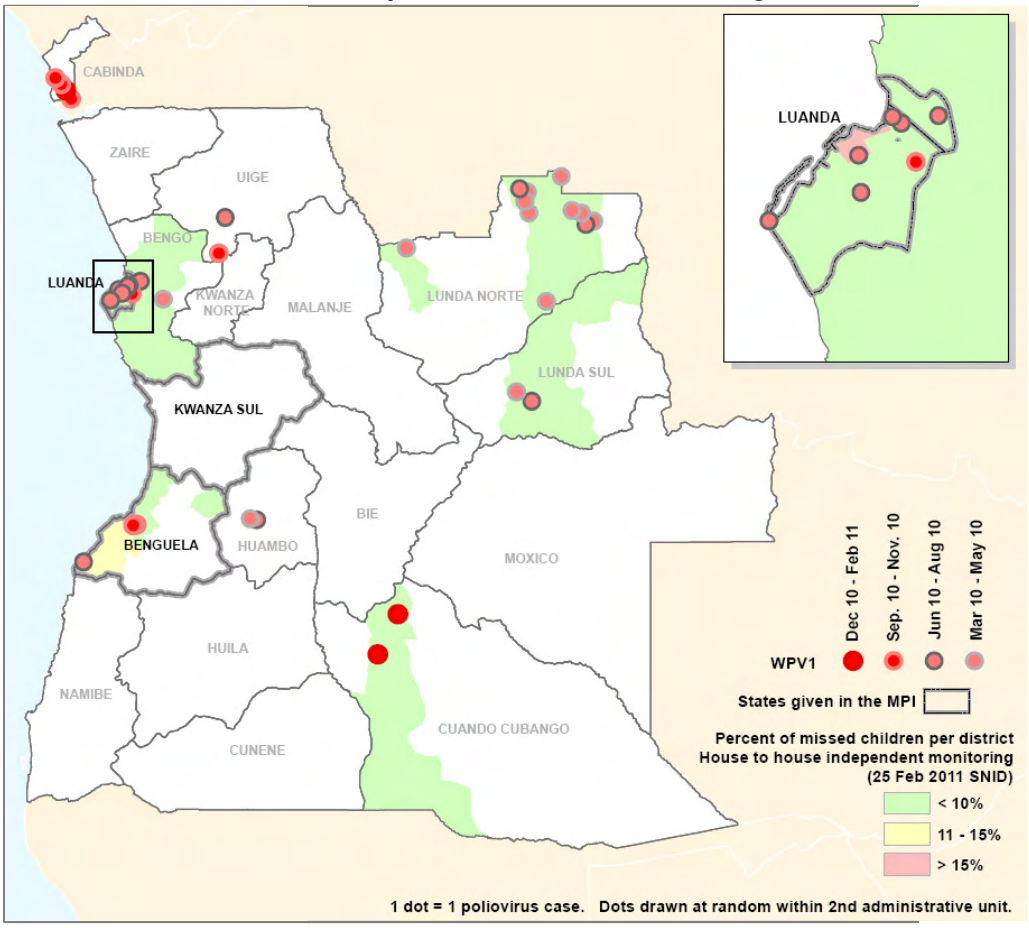
***12-month provincial immunization indicator: Based upon SIAs conducted in all provinces in Angola except the provinces of Luanda, Benguela, and Kwanza Sul (MPI provinces) during the previous 12 months (9 March 2010 – 8 March 2011). The provinces of Luanda, Benguela, and Kwanza Sul were omitted given their consideration in the 12-month district immunization indicator. Additional details in Methods Supplement.

Angola has a high risk of failure to detect and interrupt WPV transmission by the end of 2011. Confirmed WPV1 in 2011 indicates failure to meet the end-2010 milestone of stopping transmission in countries with re-established transmission. The Strategic Plan Major Process Indicator addresses the districts of Luanda, Benguela and Kwanza Sul, which have not been the only centers of transmission in 2010–2011. The risk assessment included SIA monitoring data from all other provinces as equivalent to these. Available immunization performance data indicate apparent recent improvement in SIA implementation which needs to be confirmed and consistently observed; overall immunization performance remains weak. Surveillance performance is intermediate; although indicators suggest strong surveillance; virologic data indicate that some surveillance gaps exist. Surveillance gaps discovered by virologic evidence of missed chains of transmission could be due to lapses in AFP detection in geographic areas (below the province level) or among population subgroups (e.g., migrants), in AFP case investigation, or in specimen collection and/or transport. Ongoing WPV1 transmission throughout the country indicates extensive susceptibility due to ongoing weaknesses in routine immunization and SIA coverage.

Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	<10% missed children in all districts of Luanda, Benguela, and Kwanza Sul during each SIA
	end-2011	<10% missed children in all districts of Luanda, Benguela, and Kwanza Sul during each SIA

Angola: immunization indicator with wild poliovirus cases, onset during March 201) - February 2011.



CHAD

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs**	Province: % missed children in SIAs***	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >= 2*	Adeq. Stools >= 80%*		
Weak	**Weak**	**Weak**	**36**	**7.6**	**Weak**	**100**	**77.8**	**Some**	**Weak**

* based on the upper 90% confidence limit

** 12-month district immunization indicator: Based upon Chad's 2011 MPI for immunization but using data from SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

***12-month provincial immunization indicator: Based upon SIAs conducted in all provinces in Chad except the provinces in N'Djamena and in the southern and eastern WPV transmission zones (MPI provinces) during the previous 12 months (9 March 2010 – 8 March 2011). The provinces in N'Djamena and in the southern and eastern WPV transmission zones were omitted given their consideration in the 12-month district immunization indicator. Additional details in Methods Supplement.

Chad has a high risk of failure to detect and interrupt WPV transmission by the end of 2011. Continued re-established transmission of WPV3 in eastern provinces into 2011 indicates failure to meet the end-2010 milestone of stopping transmission in countries with re-established transmission. That fact and continued WPV1 transmission after 2010 importation in provinces in the south and east and the occurrence of cVDPV2 indicate high susceptibility due to ongoing weaknesses in routine and SIA immunization coverage. The Strategic Plan Major Process Indicator addresses greater N'Djamena and the districts of the southern and eastern transmission zone, which have not been the only centers of transmission in 2010–2011. The risk assessment included SIA monitoring data from all other provinces as equivalent to these. Available immunization performance data indicate recent improvement in SIA implementation which needs to be confirmed and consistently observed, but overall immunization performance remains weak. Surveillance performance is weak, in large part because >20% of specimens do not arrive at the Cameroon laboratory in good condition.

Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	**High**

GPEI MPI	end-2010	<10% missed children in greater N'Djamena and in the sountern and eastern WPV transmission zones during each SIA in the second half of 2010
	end-2011	<10% missed children in greater N'Djamena and in the sountern and eastern WPV transmission zones during each SIA

DEMOCRATIC REPUBLIC OF THE CONGO

Immunization						Surveillance			
12-month immunization indicator			National		Immunization Performance	Percent of states / provinces with:		Virology	Surveillance Performance
District: % missed children in SIAs**	Province: % missed children in SIAs***	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR >=2*	Adeq. Stools >=80%*		
Intermediate	**Intermediate**	**Intermediate**	**74**	**11.4**	**Weak**	**100**	**45.4**	**some**	**Weak**

* based on the upper 90% confidence limit

** 12-month district immunization indicator: Based upon DRC's 2011 MPI for immunization but using data from SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011). Additional details in Methods Supplement.

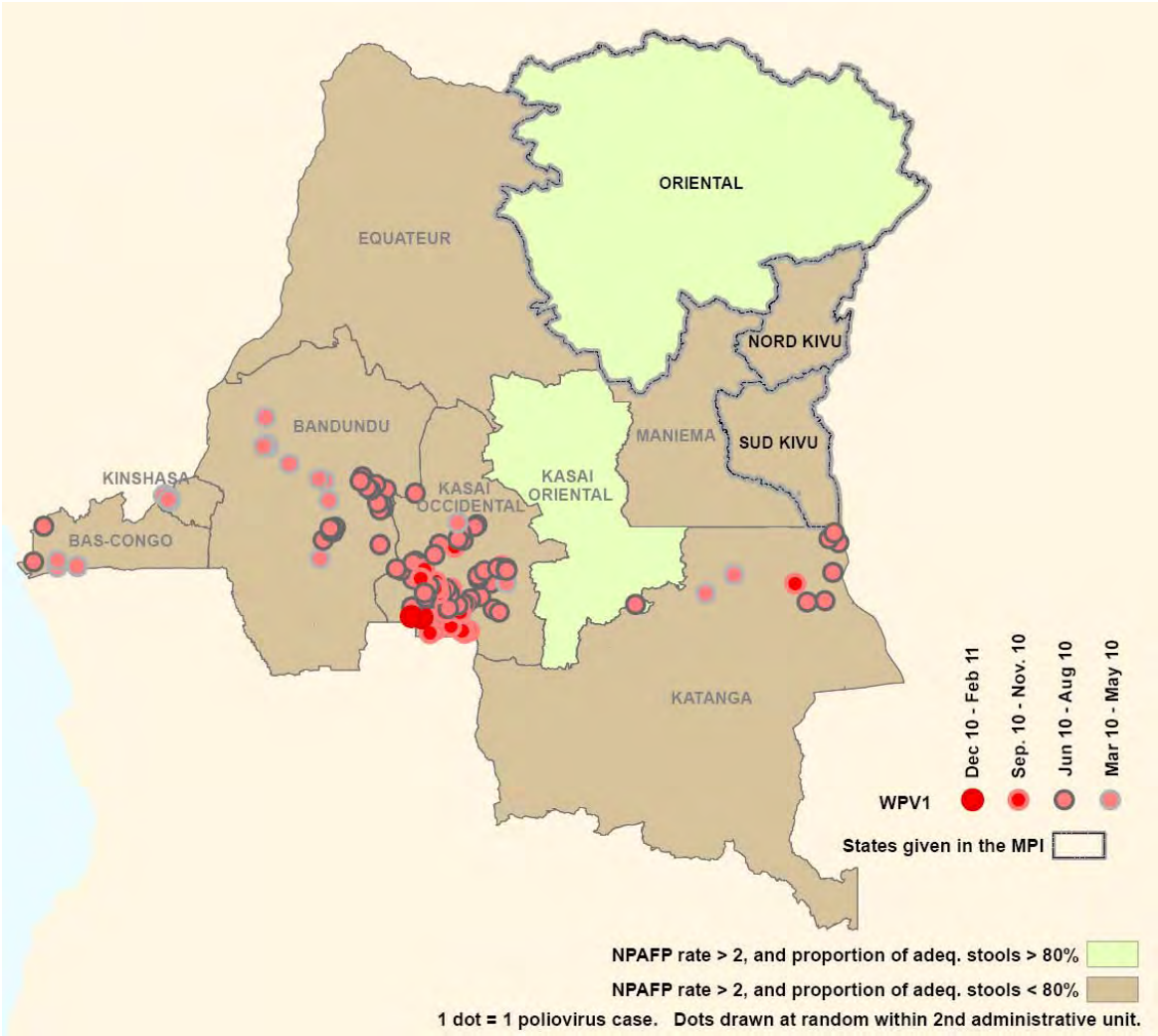
*** 12-month provincial immunization indicator: Based upon SIAs conducted in all provinces in DRC except the provinces of Orientale and North and South Kivu (MPI provinces) during the previous 12 months (9 March 2010 – 8 March 2011). The provinces of Orientale and North and South Kivu were omitted given their consideration in the 12-month district immunization indicator. Additional details in Methods Supplement.

DRC has a high risk of failure to detect and interrupt WPV transmission by the end of 2011. WPV1 cases at the southwest provinces of DRC represent spread after importations from Angola in 2010. Re-established transmission of WPV1 since introduction in 2006 persisted in the eastern provinces until at least December 2010. DRC is at high risk of failure to meet the end-2010 milestone of stopping transmission in countries with re-established transmission (i.e., if additional related cases are found). Provinces from which WPV cases were confirmed in 2010 and 2011 were Bandundu, Bas-Congo, Kasai-Occidental, Katanga, and Kinshasa. Provinces in 2010 with confirmed cases of cVDPV were Equateur, Kasai Occidental, and Maniema. Although SIA monitoring data suggest improvements, immunization performance remains weak. Surveillance performance is weak, with poor collection of adequate specimens and virologic data that support the epidemiologic data that substantial surveillance gaps exist in eastern provinces. Caution will be needed in interpreting the last date of WPV case onset as an indicator of the end of transmission in eastern provinces because of surveillance limitations.

Current Quarter	Nov.'10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
High	High

GPEI MPI	end-2010	>80% adequate specimens in all provinces
	end-2010	AFP rate >2 in all provinces
	end-2010	<10% missed children in each SIA in Orientale, North & South Kivu
	end-2011	>80% adequate specimens in all provinces
	end-2011	AFP rate >2 in all provinces
	end-2011	<10% missed children in each SIA in Orientale, North & South Kivu

Democratic Republic of Congo: surveillance indicator with wild poliovirus cases, onset during March 2010 - February 2011.



The Strategic Plan Major Process Indicator for immunization addresses the provinces of Orientale, North and South Kivu. No WPV or cVDPV cases were detected in these three provinces in 2010–2011. The current risk assessment included SIA monitoring data from all other provinces that conducted SIAs as equivalent to these. WPV cases were confirmed in 2010 and 2011 in Bandundu, Bas-Congo, Kasai-Occidental, Katanga, and Kinshasa. Cases of cVDPV were confirmed in Equateur, Kasai Occidental, and Maniema. Taken together, these provinces and the provinces in the MPI comprise the totality of the country. Consideration should be given to broadening the geographic scope of the MPI through 2012 or modifying for 2011 as long as WPV continues to circulate widely.

SUDAN

Immunization				Surveillance			
12-month immunization indicator **	National		**Immunization Performance**	Percent of states / provinces with:		Virology	**Surveillance Performance**
% missed children in SIAs	POL3	0-dose		NPAFPR >= 2*	Adeq. Stools >= 80%*		
Intermediate	**84**	**5.3**	**Intermediate**	**100**	**100**	**N/A**	**Strong**

* based on the upper 90% confidence limit

** 12-month immunization indicator: Based upon Sudan's 2011 MPI for immunization but using data from SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011). Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

By assessment criteria, South Sudan is assessed to have a moderate risk of failure based on available SIA monitoring data because of intermediate immunization performance, but appears to have interrupted re-established transmission. The last confirmed WPV case occurred in June 2009 and surveillance performance has been strong for >12 months following the last case through improvements in AFP surveillance components. A field assessment will be performed in April 2011 to verify the quality of surveillance. Assessment of SIA monitoring data in the previous 12 months indicates intermediate immunization performance, with improvement in the November SIA; data for the December SIA were not available.

Current Quarter	Nov. 10 Report
Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
Moderate	**Moderate**

GPE MPI	end-2010	>80% adequate specimen rates in all states
	end-2010	Non-polio AFP rate >2 in all states
	end-2010	<10% missed children in each state during each SIA
	end-2011	>80% adequate specimen rates in all states
	end-2011	AFP rate >2 in all states
	end-2011	<10% missed children in each state during each SIA

Because the last confirmed WPV case was in June 2009 and surveillance performance has been strong for >12 months, Sudan met the end-2010 milestone of stopping re-established transmission.

		Country (without virus >12 months)	Immunization						Surveillance				Current Quarter	Nov. 10 Report
			12-month immunization indicator†			National	National	Immunization Performance	Percent of states / provinces with:		Virology **	Surveillance Performance	Overall risk of failure to detect and interrupt WPV transmission	Overall risk of failure to detect and interrupt WPV transmission
			% missed children in most recent SIA	% missed children in 2nd most recent SIA	Overall 12-month immunization indicator	POL3	0-dose		NPAFPR > 2*	Adeq. Stools > 80%*				
Countries without virus last 12 months	1	Benin	32.9	2.9	Intermediate	83	9.5	Intermediate	83.3	91.7	N/A	Intermediate	Moderate	Low
	2	Burkina Faso	9.2	4.4	Strong	84	1.3	Strong	100	100	N/A	Strong	Low	Low
	3	Burundi				96	0	Strong	76.5	87.5	N/A	Weak	Moderate	Moderate
	4	Cameroon	7.1	6	Strong	79	8.5	Strong	60	90	N/A	Weak	Moderate	Low
	5	Central African Republic	15.9	10.2	Weak	47	3	Weak	100	100	N/A	Strong	High	Moderate
	6	Côte d'Ivoire	5.1	4.9	Strong	77	2.3	Strong	100	84.2	N/A	Intermediate	Low	Low
	7	Eritrea				99	0	Strong	100	100	N/A	Strong	Low	Low
	8	Ethiopia	21.3	10.8	Weak	76	7.5	Weak	90	81.8	N/A	Intermediate	High	Moderate
	9	Gambia	7.6	5.5	Strong	97	0	Strong	100	100	N/A	Strong	Low	Low
	10	Ghana	4.8		Strong	94	0	Strong	60	90	N/A	Weak	Moderate	Low
	11	Guinea	2.1	1.8	Strong	53	0	Strong	100	37.5	N/A	Weak	Moderate	Low
	12	Guinea-Bissau	1.9	5	Strong	72	0	Strong	50	75	N/A	Weak	Moderate	Low
	13	Kenya	14.2	19.4	Weak	71	5.2	Weak	87.5	100	Some***	Intermediate	High	Moderate
	14	Sierra Leone	11.6	11.2	Intermediate	74	1	Intermediate	100	100	Little	Strong	Moderate	Moderate
	15	Somalia				28	11.8	Weak	100	100	N/A	Strong	High	Moderate
	16	Togo	10.4	10.8	Intermediate	89	3.2	Intermediate	83.3	100	N/A	Intermediate	Moderate	Moderate

* based on the upper 90% confidence limit.

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

*** Virus from outbreak in Kenya in 2009 resulted in outbreak in Uganda in 2010 and was missed for a significant period in unknown part of cross-border area.

† 12-month immunization indicator: Based upon the 2011 MPI for immunization for the "WPV importation belt" but using the two most recent SIAs conducted during the previous 12 months (9 March 2010 – 8 March 2011) and included countries outside of the "WPV importation belt" that had outbreaks in 2009/2010/2011. Additional details in the 1st Quarter 2011 Progress Report of the GPEI Process Indicators for 2010 and 2011 and Methods Supplement.

Some WPV outbreak countries with cases occurring in the previous 12 months have substantial surveillance limitations, so caution is needed in interpretation of the significance of time since latest WPV case in those countries. All outbreaks in which the last confirmed case was before 25 August are no longer considered active (>6 months without cases with full laboratory data available). Laboratory data are pending for some cases with onset through 8 September, but are essentially complete and suggest that the outbreaks in Nepal and Liberia are no longer active.

Mali and the Russian Federation are nearing the date of >6 months without cases, pending the final laboratory data for nearly one month. Mali has a moderate risk of failure to detect and interrupt WPV transmission within 6 months of confirmation because of weak surveillance performance. The Russian Federation is assessed as having a high risk of failure to detect and interrupt WPV transmission within 6 months of confirmation. Although most importations had generally no or limited local transmission, local transmission occurred in the Caucasus republics from two importations. The Russia Federation has not reported independent monitoring data, but reports high coverage for SIAs in November/December. Additional SIAs are planned in April/May. By supplemental indicators, immunization performance is assessed as intermediate. Surveillance performance is assessed as weak because of subnational indicators are substandard for many territories including the northern Caucasus. Although there will soon be >6 months with complete laboratory data, the situation will warrant further observation given the indicators.

Uganda has a moderate risk of failure to detect and interrupt WPV transmission within 6 months of confirmation, with strong immunization performance. Although without WPV cases detected in 2010, Kenya 2009 transmission was the source of WPV in Uganda. Because Kenya has had week immunization performance and intermediate surveillance performance, this warrants further caution. The Republic of the Congo has not reported SIA monitoring data for multiple SIAs, and although the outbreak appears to be controlled, Congo currently has a high risk of failure to detect and interrupt WPV transmission within 6 months of confirmation based on assessed immunization and surveillance performance. Gabon implemented SIAs even before WPV detection; based on assessed immunization and surveillance performance, Gabon has a high risk of failure to detect and interrupt WPV transmission within 6 months of confirmation. Pending sequencing, it appears another importation has occurred in Niger in 2011 but substantial transmission is not anticipated and its risk of failure is moderate; importations in 2009 resulted in limited or no transmission. Overall control of outbreaks is on track but outbreak responses have posed a risk to GPEI by diverting substantial resources.

Active WPV outbreaks as of 22 March 2011 ordered by date of latest case from present.

Countries with importations since March 2010	Date of laboratory confirmation of outbreak	Date of onset of latest WPV related to 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
Congo	4-Nov-10	22-Jan-11	79	No	22-Jul-11
Niger	11-Mar-11	19-Jan-11	(before)	No	19-Jul-11
Gabon	14-Feb-11	15-Jan-11	(before)	No	15-Jul-11
Uganda	18-Oct-10	15-Nov-10	28	No	15-May-11
Russian Federation	31-May-10	25-Sep-10	117	No	25-Mar-11
Mali (WPV3)	15-Oct-10	17-Sep-10	(before)	No	17-Mar-11