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Progress Toward Global Polio Eradication—Africa, 2011

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BY JANUARY 2012, 23 YEARS AFTER THE Global Polio Eradication Initiative (GPEI) was begun, indigenous wild poliovirus (WPV) transmission had been interrupted in all countries except Afghanistan, Pakistan, and Nigeria.[1,2] However, importation of WPV into 29 previously polio-free African countries during 2003-2011[3,4] led to reestablished WPV transmission (i.e., lasting >12 months) in Angola, Chad, Democratic Republic of the Congo (DRC), and Sudan (although the last confirmed case in Sudan occurred in 2009).[5] This report summarizes progress toward polio eradication in Africa. In 2011, 350 WPV cases were reported by 12 African countries, a 47% decrease from the 657 cases reported in 2010. From 2010 to 2011, the number of cases decreased in Angola (from 33 to five) and DRC (from 100 to 93) and increased in Nigeria (from 21 to 62) and Chad (from 26 to 132). New WPV outbreaks were reported in 2011 in eight African countries, and transmission subsequently was interrupted in six of those countries. Ongoing endemic transmission in Nigeria poses a major threat to the success of GPEI. Vigilant surveillance and high population immunity levels must be maintained in all African countries to prevent and limit new outbreaks.

Methods for Tracking Progress

WPV cases are identified through acute flaccid paralysis (AFP) surveillance and testing of stool specimens for polioviruses in World Health Organization—accredited laboratories. The Global Polio Laboratory Network provides comprehensive genomic sequencing of WPV isolates, which enables tracing of the probable origins of viruses imported into previously polio-free areas.[6]*

Polio-Endemic Country

Nigeria

In 2011, Nigeria reported 62 WPV cases (47 WPV type 1 [WPV1] and 15 WPV type 3 [WPV3]), compared with 21 WPV cases (eight WPV1, 13 WPV3) in 2010 (TABLE).† Three foci of WPV transmission were observed: northwestern states (Kebbi/Sokoto/Zamfara), north central states (Kano/Katsina/Jigawa), and northeastern states (Borno/Yobe). One WPV1 case in 2011 followed an importation from Chad.

Countries With Reestablished Transmission

Angola

During 2005-2007, three separate WPV importations into Angola were traced to WPV from India. WPV1 transmission was reestablished and has persisted since the latest importation in 2007.[5] In 2011, four WPV1 cases linked with reestablished transmission were reported in the southern province of Kuando-Kubango (onset of the most recent case was March 2011). A fifth WPV1 case with onset in July 2011 in the northern province of Uige resulted from a new importation from DRC (Table).

Chad

Reestablished transmission of WPV3, first imported from Nigeria in 2007[5] has continued in Chad. Subsequently, WPV1 transmission was reestablished following a 2010 importation from Nigeria. In 2010, 11 WPV1 cases were reported in four regions, and 15 WPV3 cases were reported in seven regions (Table).‡ In 2011, 129 WPV1 cases were reported in 15 regions (onset of the most recent case was in December 2011), and three WPV3 cases were reported in the eastern border region of Ouaddai (onset of the most recent case was March 2011).

DRC

In 2011, 93 WPV1 cases were reported in Kasai Occidental, Bandundu, Katanga, Bas-Congo, Kinshasa, and Maniema provinces, compared with 100 WPV1 cases in 2010 reported in

What is already known on this topic?

Indigenous wild poliovirus transmission has never been interrupted in Afghanistan, Nigeria, and Pakistan. During 2003-2011, outbreaks occurred following importation of the virus in 29 previously polio-free African countries. Before 2010, Nigeria was the source of most of the outbreaks in other African countries.

What is added by this report?

In 2011, the Global Polio Eradication Initiative experienced both successes and setbacks. The number of wild poliovirus cases in African countries decreased 47% from the number in 2010. However, transmission continued in Angola, Chad, Democratic Republic of the Congo, and Nigeria in 2011, and the number of cases increased in Chad and Nigeria.

What are the implications for public health practice?

Interrupting wild poliovirus transmission in Nigeria is key to the success of the global initiative, but the goal of global polio eradication by the end of 2012 is in serious jeopardy. CDC and polio eradication partners are assisting the remaining polio-affected countries in Africa by taking urgent steps to enhance the implementation of polio eradication activities, reach more children in mass campaigns, and interrupt transmission.

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TABLE. Reported wild poliovirus type 1 (WPV1) and type 3 (WPV3) cases, by category of polio-affected country — Africa, 2010–2011*

	2010			2011		
Category/Country	**WPV1**	**WPV3**	**Total**	**WPV1**	**WPV3**	**Total**
Polio-endemic country						
Nigeria	8	13	21	47	15	62
Countries with reestablished transmission						
Angola	33	—	33	5	—	5
Chad	11	15	26	129	3	132
Democratic Republic of Congo	100	—	100	93	—	93
Total	**144**	**15**	**159**	**227**	**3**	**230**
Countries affected by outbreaks						
West Africa						
Cote d'Ivoire	—	—	—	—	36	36
Guinea	—	—	—	—	3	3
Liberia	2	—	2	—	—	—
Mali	3	1	4	—	7	7
Mauritania	5	—	5	—	—	—
Niger	—	2	2	4	1	5
Senegal	18	—	18	—	—	—
Sierra Leone	1	—	1	—	—	—
Horn of Africa						
Kenya	—	—	—	1	—	1
Uganda	4	—	4	—	—	—
Central Africa						
Central African Republic	—	—	—	4	—	4
Republic of Congo†	441	—	441	1	—	1
Gabon	—	—	—	1	—	1
Total	**474**	**3**	**477**	**11**	**47**	**58**
Africa overall	**626**	**31**	**657**	**285**	**65**	**350**

* Data as of March 8, 2012.
† 2010 total includes cases with inadequate specimens that were classified as confirmed polio based on their association with the WPV1 outbreak.

the first five provinces (Table). Genetic sequencing has indicated five foci of transmission during 2010-2011. The late 2010–early 2011 Bandundu and Kasai Occidental outbreaks were related to WPV1 introduced from northern Angola in 2010. Cases in western Bas-Congo Province were related to WPV1 circulating in Angola and Republic of the Congo (ROC). WPV1 that caused the 2010-2011 Kinshasa Province outbreak were imported from ROC, Angola, and neighboring Bandundu Province, and the outbreak at the Bas-Congo/Bandundu provincial border (May—September 2011) was related to virus circulating in Kinshasa earlier in 2011. From October to December 2011, confirmed WPV circulation was restricted to Katanga and Maniema provinces, which had a combined total of 14 cases in 2011, all related to transmission reestablished in eastern DRC in 2008 or earlier, following importation from Angola.

Countries With WPV Outbreaks

West Africa

During 2010, transmission continued after 2009 WPV1 outbreaks in Mali, Mauritania, and Sierra Leone (Table). In 2010, new WPV1 outbreaks occurred in Liberia, Mali, and Senegal, and new WPV3 outbreaks occurred in Mali and Niger. The first case in the 2010 WPV3 outbreak in Mali was confirmed in October 2010; three cases occurred in 2011, the latest related case in June 2011. In 2011 there were four WPV1 importations into Niger (from Chad and Nigeria), and Nigeria (from Chad), resulting in a total of five cases. In 2011, seven WPV3 importations into Cote d'Ivoire (from Nigeria), Guinea (from Cote d'Ivoire), Mali (from Nigeria and Cote d'Ivoire), and Niger (from Nigeria) were reported, resulting in a total of 44 cases.

Horn of Africa

In 2011, one WPV1 case was detected in Nyanza Province in western Kenya; the isolate was most closely related to WPV1 circulating during 2010 in eastern Uganda and was distantly related to WPV1 circulating in northern Kenya during 2009 that was imported from Sudan (with origin in Nigeria). Genetic sequencing of WPV1 isolates indicated that undetected transmission occurred during two periods of at least 8 months each during 2009-2011 in the Kenya-Uganda border area.

Central Africa

In January 2011, the last WPV1 case was reported in ROC related to a 2010 outbreak, bringing the outbreak total to 442 cases. A single WPV1 case was reported in Gabon in 2011 that was related to the 2010 WPV1 outbreak in ROC.[4] In 2011, Central African Republic reported four WPV1 cases related to transmission in Chad.

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CDC Editorial Note: During 2011, the efforts to eradicate polio in Africa have had mixed results. Although outbreaks were interrupted within 6 months of confirmation in six of eight countries in 2011, WPV transmission persisted in Angola, Chad, DRC, and Nigeria, and the number of WPV cases increased in Chad and Nigeria. In 2011, after earlier outbreaks, ongoing WPV transmission was detected in Chad, DRC, Kenya, Mali, and ROC; as of March 8, 2012, WPV transmission had been interrupted (i.e., >6 months since the last case) in Kenya, Mali, and ROC.

Milestones established in the 2010-2012 GPEI Strategic Plan included stopping WPV transmission (1) following importation in countries with outbreaks in 2009 by mid-2010, (2) following importation in countries with outbreaks in subsequent years <6 months after confirmation of the outbreak, (3) in countries with reestablished transmission by the end of 2010, (4) in at least two of the four polio-endemic countries by the end of 2011, and (5) in all countries by the end of 2012.[7] Substantial obstacles have prevented achievement of these milestones in Africa.

The first milestone was met for 14 of the 15 countries with outbreaks occurring in 2009. However, transmission persisted during 2009-2011 in areas of Kenya and Uganda, indicating gaps in field surveillance quality and population immunity; these gaps currently are being addressed. Multiple countries in the Horn of Africa remain at risk for transmission. For example, civil conflict has prevented vaccination of children for the last 18 months in south-central Somalia, and displaced Somali refugees have contributed to additional resource needs throughout neighboring countries in the Horn of Africa. The second milestone was met, or is within reach, for all outbreaks reported during 2010-2011, except for one outbreak in Mali and two in DRC that persisted >6 months after confirmation. New outbreaks in 2011 generally were detected early and interrupted rapidly because of prompt, large-scale responses; in contrast, the large ROC outbreak in 2010 progressed because of delayed detection and response.[4] The four genetic lineages of WPV3 identified in the 2011 West Africa outbreaks all were related to WPV3 found earlier in northern Nigeria and were detected after prolonged circulation. AFP surveillance systems in many countries of western, central, and the Horn of Africa must be improved to meet certification standards[8] to reliably detect ongoing WPV transmission and to rapidly detect and respond to new outbreaks.

With reestablished transmission continuing into 2011 in Angola, Chad, and DRC, GPEI failed to meet the third milestone. Persistent WPV circulation in Angola caused outbreaks in western DRC during 2010-2011 (returning to northeastern Angola in 2011). Angola now appears to be on track to interrupt transmission, 7 years after the first WPV importation from India in 2005.[5] In Chad, importations from Nigeria resulted in reestablished WPV3 transmission from November 2007 to March 2011 and reestablished WPV1 transmission since September 2010. All countries with reestablished transmission substantially increased the number of national and international staff members working on polio eradication in 2011 to address chronic gaps in surveillance and low population immunity. Although the refusal of religious communities to vaccinate children in northern Katanga was brought to international attention in 2011 and has contributed to the percentage of children missed during polio supplementary immunization activities (SIAs), overall SIA quality in this province has been noted as poor.

Regarding the fourth and fifth milestones, India has not detected a WPV case since January 2011 and is no longer considered a polio-endemic country.[2] However, setbacks occurred in 2011 in the three countries where polio remains endemic (Afghanistan, Pakistan, and Nigeria). Nigeria remains the only country in Africa that has never interrupted transmission. CDC and GPEI's Independent Monitoring Board[9,10] have indicated that Nigeria and Pakistan pose the greatest risk to the success of global polio eradication and that the 2012 goal of interruption of WPV transmission everywhere is clearly in jeopardy.

Multiple polio outbreaks in Africa since 2003 have been traced to importations from Nigeria.[3,4] Interruption of endemic WPV transmission in Nigeria is critical to successfully eradicating polio in Africa. Operational and managerial challenges to implementing routine immunization services and high-quality SIAs are the main reasons children remain unvaccinated and undervaccinated in northern Nigeria, and these were complicated in 2011 by serious new security challenges. In a concerted effort with GPEI partners, the Nigerian government has developed an emergency plan§ aimed at restoring the programmatic momentum evident during 2009-2010. Many innovative approaches to improve microplanning and implementation are being instituted, as well as those addressing migrant communities at high risk.

In December 2011, the CDC Emergency Operations Center was activated to consolidate and reinforce CDC's polio eradication activities; other GPEI partners have taken similar steps to accelerate polio eradication efforts. Together, partners have taken steps to enhance coordination of their activities, and have jointly increased technical assistance, accountability, and performance. In May 2012, the World Health Assembly will consider a resolution declaring polio eradication an emergency for global public health. Urgent action is needed to strengthen SIA implementation and surveillance in the polio-affected countries of Nigeria, Chad, and DRC. All other countries in Africa need to urgently strengthen surveillance systems and attain high levels of population immunity to reliably detect WPV and prevent or limit the impact of new outbreaks.

REFERENCES

10 Available.

*Countries with no evidence of indigenous WPV transmission for >12 months and subsequent cases determined to be importations by genomic sequencing.
†In 2012, five WPV1 and one WPV3 cases had been reported as of March 8, compared with one WPV1 case during January 1–March 8, 2011.
‡In 2012, one WPV1 case had been reported as of March 8, compared with 12 WPV1 cases during January 1–March 8, 2011.
§National Primary Healthcare Development Agency. Nigeria eradication emergency plan—draft; 2012.

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