

Experts report one of two remaining types of polio virus may be eliminated in Pakistan

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Polio cases worldwide reached historic lows in 2012, and for the first time there were no new outbreaks beyond countries already harboring the disease, leaving researchers confident that a massive and re-energized international campaign to eradicate polio is on a path to success, according to presentations today at the annual meeting of the American Society of Tropical Medicine and Hygiene (ASTMH).

Globally there were 177 [polio](#) cases through October 2012, a drop from 502 during the same period last year.

Despite the dramatic drop, polio experts noted challenges in Pakistan posed by parents who refuse to vaccinate their children and in Nigeria where polio cases more than doubled in 2012 and threatened to re-infect currently polio-free countries. Pakistan, Nigeria and Afghanistan are the only countries where polio remains endemic and are the battle grounds of efforts to make polio only the second human disease, after [smallpox](#), to be completely eliminated.

Steven Wassilak, MD, a medical epidemiologist and polio expert at the US Centers for Disease Control and Prevention (CDC), said new data from Pakistan show that of the two types of wild [polio virus](#) (WPV1 and WPV3) circulating in the country, the one known as WPV3 - or Type 3 - is close to being eliminated.

"There have not been any Type 3 cases reported for six months, which is the longest gap in incidence there to date," he said. "CDC works with

Pakistan officials to monitor different chains of transmission over time and Type 3 is now down to only one chain, which is an indication that we are close to breaking the last link of Type 3."

CDC, which has led the effort to establish a global network of laboratories to track and sequence the genome of the wild polio virus, is one of four partners spearheading the Global Polio Eradication Initiative along with Rotary International, UNICEF and the [World Health Organization](#) (WHO), with great support from the [Bill and Melinda Gates Foundation](#). In September, the partners along with leaders from Pakistan, Nigeria, and Afghanistan met at United Nations Headquarters in New York to reaffirm the Emergency Action Plan against polio, launched in May. The initiative includes a "surge of human resources" involving 4,000 people who have been deployed to complete the eradication effort.

New Study Finds Vaccine Refusals Remain Barrier to Elimination

At the ASTMH conference, Anita Zaidi, MD, a pediatrician at Aga Khan University in Karachi who serves on Pakistan's National Immunization Technical Advisory Group, is presenting new data showing that while Pakistan has made major progress against polio by expanding immunization campaigns, the remaining challenge is not one easily solved by additional resources.

"We found that in Karachi, a key reason children fail to get immunizations is not due to lack of access, but because their parents refuse to participate," Zaidi said. "That is a big challenge and not something that can be overcome only by expanding immunization campaigns."

In a study published in the Bulletin of the World Health Organization (WHO), Zaidi and her colleagues found that in Karachi, "parent refusal was the most common reason given for the failure of children to participate in two recent polio supplementary immunization activities," accounting for 74 percent of missed immunizations.

While opposition to polio vaccinations has been widely reported in the remote, restive tribal territories in the north, less examined, Zaidi said, has been the situation in the urban environs of Karachi, which her study describes as "the only megacity in the world that has not succeeded in interrupting polio transmission." Nationwide, Pakistani health officials believe vaccine refusals, driven by false rumors that immunizations cause sterility and are contaminated with HIV, actually are declining. But Zaidi said that recent events in Karachi suggest the intensity of those who remain opposed appears to be rising.

She pointed out that in just the last few months, a health worker in Karachi involved in the polio campaign was killed and the child of another was kidnapped (though later returned unharmed). Zaidi said that she recently participated in a polio seminar in Karachi where concerns about violence prompted the organizers to avoid any publicity. Given the current volatile environment and continued evidence of widespread viral transmission in sewage sampling, Zaidi said that while Pakistan is making considerable progress in reducing polio cases, eradication by 2013 appears unrealistic.

"Efforts should focus on building trust through grassroots efforts using community elders in populations with high vaccine refusal rates," she said. By providing vaccination at mass transit sites such as bus routes used to travel up-country throughout the year, we can at least isolate the viral reservoirs and make sure we avoid what happened last year, which was exporting the virus to China."

In Nigeria, Working With Traditional Leaders, Nomadic Groups

Meanwhile, opposition to immunizations is also a major challenge in Nigeria, where the number of polio cases has risen for the second straight year, said Adamu Nuhu, MD, with Nigeria's National Primary Healthcare Development Agency. He said cases are at least confined to the northern part of the country where opposition to immunizations is rooted in religious or political differences and, as in Pakistan, has been stirred by rumors of vaccine-induced sterilization and HIV infection.

"We are working now with traditional leaders in the north who are respected by local people to change the perceptions of polio immunization and encourage more participation in immunization efforts," Nuhu said. "There is evidence that overall, immunization rates among children at risk are rising to 80 percent."

He described a campaign that is now literally going house-to-house to identify family decision makers and talk with them about the importance of polio immunization. Also, health officials—who are working closely with international partners including the WHO, UNICEF and the CDC—are pursuing new strategies to improve immunization coverage in nomadic groups.

"Even though they are often moving, they have a leadership structure and we can work through these leaders to provide polio immunizations," Nuhu said. "But we understand that you will not be able to immunize any children unless you can reach them on their pastoral routes and camps."

The persistence of polio in Nigeria—in 2012 the country has documented 99 cases—is especially worrisome because cases in Nigeria have spread in the past to Sudan, Chad, and 23 other countries. All these

countries are now once again polio-free except for Chad. The CDC reported in October that Chad could interrupt wild polio transmission by the end of this year, but that failure to stop transmission in Nigeria could prompt new outbreaks.

Vaccine Refusal: Lessons from India?

The CDC's Wassilak said the refusal by parents in Pakistan and Nigeria to vaccinate their children presents a challenge to eradication. "Karachi is a densely populated area where you need a high degree of immunity to interrupt polio transmission, so every child counts," he said.

But Wassilak said vaccine refusal is not an insurmountable barrier to global eradication.

"We saw similar problems in India, and while they were not resolved overnight, eventually we saw immunization coverage increase and polio cases halted," he said. "It requires working more closely with community leaders and greater political commitment at all levels, which is what we are seeing in both Pakistan and Nigeria."

India has not reported a polio infection since January 2011 and the entire Southeast Asia Region of WHO could be certified polio-free in 2014 if no new cases arise. Wassilak said advisors from India are now working in Nigeria to share their lessons learned. Meanwhile, the CDC is providing technical support to the global eradication effort, tracking the different types of polio that are circulating in the affected countries and training volunteers to assist in polio vaccination campaigns.

"This urgent international push for polio eradication means that soon no child will be hurt by this disease. The relentless drive to alleviate pain and suffering is the spirit of this Society and permeates every session and every hallway conversation at this meeting," said ASTMH President

James W. Kazura, MD, FASTMH. "We will get this done."

Provided by Burness Communications

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