



Vaccinators get temperature checks before getting to work in Karachi, Pakistan, on 20 July.

## Polio vaccination campaigns restart after modelers warn about risk of ‘explosive’ outbreaks

By [Leslie Roberts](#) Jul. 21, 2020 , 4:20 PM

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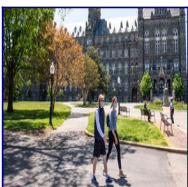
In a sad knock-on effect of the COVID-19 pandemic, the Global Polio Eradication Initiative (GPEI) abruptly **halted all mass vaccination campaigns in March**, worried they could inadvertently spread the novel coronavirus. The move further imperiled the troubled 3-decade drive to wipe out polio.

But now, armed with new data and perspective, GPEI and the countries it supports are resuming vaccination campaigns. Burkina Faso was first out of the gate in early July; **Pakistan followed yesterday**. Polio cases are surging in many countries, and models paint a “pretty bleak picture” if campaigns don’t restart soon, says Michel Zaffran, who heads the effort at the World Health Organization (WHO). For now, countries will only be responding to outbreaks; preventive campaigns remain on hold.



[‘We have no choice.’](#)

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Back in March, when COVID-19 began to spread around the world, no one knew whether door-to-door polio campaigns would make things worse, says Hil Lyons, a statistician at the Institute for Disease Modeling (IDM) in Bellevue, Washington. Without answers, “The default was to shut things down,” he says.

The cost was enormous. “There’s a growing sense that the collateral damage [of pausing campaigns] is really substantial,” says Nick Grassley of Imperial College London (ICL), who heads one of the groups modeling the impact of the pause and how best to respond. In “urgent” [recommendations in late May](#), GPEI said it expected circulation of polioviruses “to increase exponentially during the upcoming high season,” raising the possibility of “uncontrolled multi-country outbreaks.”

IDM models also suggest the effect of polio campaigns on the pandemic [is likely small in places where the virus is already raging](#). “The outbreak has its own momentum and acceleration,” Lyons explains. In areas where COVID-19 has yet to hit, however, the risks are substantial. To lower them, vaccinators will be screened for COVID-19, wear masks, use hand sanitizer, and practice physical distancing as much as possible. Most important, says Hamid Jafari, WHO’s head for polio eradication in Pakistan and Afghanistan, teams will work in their own communities. “We don’t want to bring workers from infected areas to uninfected areas,” he says.

The polio campaign [was in a rut even before COVID-19](#). In Pakistan and Afghanistan, the last bastions of the wild virus, cases of wild-type polio shot up last year to 176, from 33 in 2018, driven by rumors, vaccine refusal, and, in Afghanistan, the Taliban’s outright ban on vaccination. So far this year, the two countries have confirmed 87 wild polio cases, compared with 64 at this time last year. The real number is likely higher because the pandemic has hampered surveillance, Zaffran says.

More alarming still, Pakistan and Afghanistan are battling outbreaks of vaccine-derived polio virus as well—the only two countries facing that double challenge. Such outbreaks occur when the weakened virus used in the oral polio vaccine (OPV)—usually the type 2 component of the three polio virus serotypes—mutates and regains its ability to paralyze and spread. Type 2 vaccine-derived cases in Pakistan and Afghanistan soared from 16 at this time in 2019 to 79 so far. “The numbers look awful for eradication,” Jafari says.

Mathematical models from Grassley’s team suggest the two countries will see “truly explosive” outbreaks of the vaccine-derived virus, Jafari says, “going up to the thousands of cases, if we don’t intervene.” (Wild cases will rise as well, but into the hundreds, he says.) The reason is that most children under age 5 have little or no immunity to vaccine-derived virus type 2 because the world stopped using OPV2 in 2016—a first step toward pulling OPV from use altogether in hopes of preventing vaccine-derived outbreaks. That hasn’t worked, and now the number of vulnerable kids is growing every year.

To fight vaccine-derived outbreaks, GPEI relies on a version of the same vaccine that gave rise to them in the first place, known as monovalent OPV2 (mOPV2), which can create a never-ending cycle. A new vaccine, designed to have a much lower chance of reverting, could help turn the situation around, but the pandemic has delayed its rollout until September and at first, its use will be limited.

The revived Pakistan and Afghanistan programs will have to overcome the suspicions and refusals that derailed them last year. Addressing the many other health issues poor communities face—for example

by distributing soap and teaching people how to stem the spread of COVID-19—could help build trust, Jafari says. Pakistan will likely start with pilot projects in known pockets of vaccine resistance such as Karachi and Khyber Pakhtunkhwa.

Africa is free of the wild virus, but it too is mired in a battle against vaccine-derived virus, and there's a strong risk of "explosive growth" on the continent, says ICL's Isobel Blake. So far this year, Africa has reported 133 type 2 cases in 14 countries, up from 47 at this time last year. Chad alone recorded 23 cases in 1 week in June and now has 42 cases.

The highest risk areas are those that have recorded just a few cases of type 2 polio this year but were unable to respond because of the pause, modeling by Blake shows. Hot spots include the Ivory Coast and parts of Chad, Mali, Ghana, Togo, Burkina Faso, and Niger. Surprisingly, the places that had the worst vaccine-derived outbreaks in the past are at lower risk, Blake says. Nigeria, for example, conducted multiple rounds of vaccination with mOPV2 before the pandemic pause—the last case of type 2 virus occurred in January—and now has "quite good immunity in a sea of quite poor immunity," Grassley says. The country won't resume polio campaigns yet, says Fiona Braka, WHO's head of immunization in Nigeria.

Zaffran says there's no question that the pandemic has compounded the eradication effort's long-standing problems. Getting back on track "will take more time than it did in the past, and it will be more complicated."



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