Working Together to Protect All with Vaccines

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In the United States, global immunization programs have enjoyed consistent bipartisan support over the past two decades. The U.S. Agency for International Development (USAID) and the U.S. Centers for Disease Control and Prevention (CDC) provide financial and technical support for bilateral programs to strengthen countries’ immunization campaigns, including supply chain management and data analysis. The USAID Maternal and Child Health account also supports Gavi, the Vaccine Alliance, a public-private partnership financing vaccine programs in eligible lower and lower-middle income countries. The United States was one of the original six donors to Gavi and has consistently supported the alliance, which reports that it has immunized 640 million children and saved 9 million lives since its founding in 2000.\(^1\) Indeed, the 2018 omnibus budget passed by Congress in March provides $290 million for the vaccine partnership. That amount is $15 million above the FY2017 enacted level, a clear testament to political support for global immunization programs in a budget cycle when almost all other global health programs held steady at FY2017 levels in the face of an administration request 34 percent below the previous year.\(^2\)

Recent research suggests that in addition to preventing disease and protecting health, immunizations also contribute to poverty alleviation, supporting broader global economic development goals. In February, Health Affairs published a study arguing that, between 2016 and 2030, vaccines administered through public programs will prevent 36 million deaths and prevent 24 million people worldwide from becoming impoverished as a result of dealing with the catastrophic health costs

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associated with illness and death. This research builds on earlier data from 2016 showing that every $1 invested in vaccines saves $16 in health care costs associated with illness.

World Immunization Week, which in 2018 runs from April 24 to 30 and highlights the theme, “Protected Together, #VaccinesWork,” offers a moment to reflect on the positive support global immunization programs enjoy within an otherwise fractious political environment and the global successes to which U.S.-supported programs have contributed.

Yet while there is a great deal to celebrate during World Immunization Week, several emerging challenges must be acknowledged:

- After decades of steadily declining measles cases, the virus has made a comeback in Europe, thanks to a combination of vaccine hesitancy, poorly performing health systems, and challenges reaching the most marginalized populations. In 2016, the European Union saw just 5,273 cases of measles, a record low; just one year later, however, 21,315 cases and 35 deaths linked to measles had been confirmed, a four-fold increase. Most cases have been among children and adults who had either never been vaccinated or who had not been fully vaccinated with the two doses required to interrupt transmission of the virus within populations. The majority of cases have been in Romania and Ukraine, as well as Italy, where recent years have seen “declines in overall routine immunization coverage, consistently low coverage among some marginalized groups, interruptions in vaccine supply or underperforming disease surveillance systems.” Germany, France, and Italy have instituted more stringent requirements that children be immunized, with Germany and Italy imposing steep fines on parents who decline to do so.

- The ongoing outbreak of yellow fever in Brazil threatens to spill over into urban populations and threaten regional health security. The virus has been endemic in Brazil since the colonial period, when slaves infected with yellow fever brought it with them from Africa. Transmitted by mosquitoes, it typically circulates among nonhuman primates in forested regions, and seasonal outbreaks are common, but limited, with perhaps 10 or fewer confirmed cases per year in recent decades. However, officials noticed a significant uptick in the number of cases

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7 McNeil, “Measles Cases in Europe.”
in late 2016 and early 2017, and between July 2017 and April of this year, there have been 1,127 cases and 328 confirmed deaths. 9 Most victims have been Brazilian citizens, although a few cases have been confirmed among unvaccinated travelers to Brazil. All infections so far have been linked to forest-dwelling mosquito species, but because cases have been detected in the outskirts of such densely populated cities as São Paulo, home to an estimated 12 million people, and Rio de Janeiro, with more than 6 million inhabitants, there is concern the virus could begin to spread within urban settings.10 In January 2018, the government stepped up efforts to immunize citizens in the most vulnerable areas, but thus far officials estimate they have reached only half of the target population of 23 million people.11 Part of the challenge is that the global vaccine stockpile, managed by the World Health Organization (WHO), did not have sufficient vaccine on hand, so there have been delays as manufacturers, including Brazil’s own Bio-Manguinhos vaccine production unit, rush to produce additional doses.12

Finally, in Pakistan, an outbreak of extensively drug resistant typhoid has officials scrambling to vaccinate children with a new conjugate vaccine, Typbar-TCV, which was earlier this year pre-qualified by WHO and can be administered to children as young as six months old.13 The outbreak has been simmering since 2016, when health officials determined the circulating strain of Salmonella Typhi, the bacterium that causes typhoid, was resistant to five classes of antibiotics.14 Experts estimate that in some areas of Pakistan, the majority of typhoid cases will be resistant to antibiotics by 2020, and they expect these drug-resistant strains to spread to other parts of the world, where the poor water quality and sanitation issues that are hospitable to typhoid are common.15 In late 2017, the Gavi Board approved $85 million to support the introduction of the new typhoid vaccine in eligible countries, but governments are only now submitting applications for support, and campaigns won’t start until 2019. Globally, typhoid already kills between 128,000 and 161,000 people a year, primarily in Africa and Asia.16 The spread of drug-resistant strains will raise that number even higher. New antibiotics to treat

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16 WHO, “Typhoid vaccine prequalified.”
Typhoid would help address the problem, but with innovative therapies taking more than a decade to bring to market, and with a likely poor return on investment given how carefully the drugs will need to be managed to limit further resistance, it seems unlikely major pharmaceutical companies in Europe or the United States will move forward with research and development without major incentives. The race will be to successfully produce and administer the new vaccine in critical locations, while at the same time improving water and sanitation conditions, before the drug-resistant typhoid strains arrive.

If these disease outbreaks in Europe, South America, and South Asia intensify, the implications for global health security will become more pronounced. Policymakers in the United States should be paying close attention and working with regional and national partners to identify avenues for bilateral and multilateral engagement. Neither USAID nor CDC maintains offices in Europe, although CDC does routinely second staff to WHO’s European Regional Office in Copenhagen. USAID no longer supports health programs in Brazil, but CDC, through an office situated within the Brazilian Ministry of Health, has had a long technical collaboration with Brazilian counterparts on issues ranging from HIV/AIDS to Zika, so it could be poised to offer assistance if it is requested. Both USAID and CDC support bilateral health work in Pakistan, USAID through its maternal and child health activities and CDC in collaboration with the government and academic research partners. With an annual gross national income (GNI) per capita of $1,440, Pakistan remains eligible for Gavi support.

As they have for the past two decades, U.S. policymakers should continue to prioritize global immunization initiatives. Domestically, the United States can invest public health dollars into researching technologies that make vaccines easier to produce, or to store, or to deliver to the most difficult to reach populations, wherever they are located. Congress can use the reauthorization this year of the Pandemic and All-Hazards Preparedness Act (PAHPA) to create incentives for drug manufacturers to undertake essential, if not necessarily profitable, research and development activities.

U.S. officials should also use the upcoming Gavi midterm review, scheduled to take place December 10–11, 2018, in Abu Dhabi, United Arab Emirates, as an opportunity to gather information in anticipation of making a robust pledge when the alliance holds its next replenishment in 2019. Policymakers should also seek opportunities within multilateral fora to highlight the important role vaccines play in promoting health security. Such opportunities include the next G7 Summit, to be hosted by Canada in June, or the G20 Leaders’ Summit, scheduled to take place in Buenos Aires at the end of November. At the same time, U.S. ambassadors and other top-level diplomats should also be encouraged to speak publicly about the issues, share lessons from the United States’ own experiences implementing immunization programs and addressing vaccine hesitancy, and identify

country and regional partners with which to collaborate in protecting global populations from vaccine-preventable disease.

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