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Perspective

Cholera in Haiti, Again

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holera is a severe diarrheal disease caused by a toxin produced by *Vibrio cholerae* that leads to life-threatening losses of fluid and electrolytes. According to the World Health Organization

(WHO), the gram-negative, curved, rod-shaped bacterium has been responsible for seven pandemics in the past 200 years. The current pandemic began in 1961 with the global spread of the El Tor O1 variant. El Tor (or Al-Tur) is a city on the Sinai peninsula where the variant was isolated in 1905; it had once been the site of an Ottoman quarantine station for pilgrims returning from the Hajj. Today, the variant is estimated to infect 1.3 million to 4.0 million people each year, causing 21,000 to 140,000 deaths.1

Early in my training, I volunteered to manage the care of hospitalized patients with cholera during separate outbreaks in the Philippines and Bangladesh. We clinicians saw as many as 100 patients a day, observing their facial expressions that revealed complete

physical and emotional exhaustion, deeply sunken eyes, dry mucous membranes, and remarkable loss of skin turgor. There is no fever with cholera. Most of our patients lost about 10% of their body weight, which correlated with our measurements of a plasma specific gravity of 1.035 or more (normal value, 1.025) and indicated severe dehydration.

With limited resources, simple protocols saved lives: we placed the patient on the canvas cholera cot with a hole for the buttocks above a calibrated collection bucket, infused a quantity of IV fluid based on the patient's weight (e.g., 5 liters for a patient weighing 50 kg), then kept up with losses by measuring and replacing the ongoing watery discharges containing flecks of cells and mucus ("rice-water stool"). Nearly

every patient survived. What kills patients are delays in receiving rehydration therapy.

A new outbreak of cholera anywhere merits our attention. Cholera was visited on the people of Haiti for the first time in 2010, months after the country had weathered a devastating earthquake. The disease's emergence was traced to infection carried by U.N. security forces from Nepal, where cholera is endemic. The 2010 outbreak had lethal consequences, with an estimated 820,000 cases and 10,000 deaths. Cholera appeared to have been eliminated from Haiti in 2019, only to resurface in 2022.

Now, two timely letters to the editor (both online November 30) provide updates on the resurgence of cholera in Haiti. The letter by Severe et al. outlines the miserable and chaotic social—political situation in Haiti that is aggravating a cholera resurgence and has disproportionately affected undernourished children. The age distribution of people with

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cholera in the 2010 outbreak was more representative of the entire Haitian population. The risk factors for infection this time around include poor hygiene, lack of safe drinking water, poverty, and malnutrition. Neighborhoods controlled by gangs have no doubt created formidable barriers to early rehydration, and the closing of some hospitals owing to a lack of fuel has limited the options for treating severely dehydrated patients.

In a second letter, Rubin et al. report data from their phenotypic and genetic examination of isolates collected in 2010 and 2022; the findings show strong similarity between these two sets of isolates. Control isolates from a circulating strain in Bangladesh were found to be distinct from the Haitian isolates. The investigators' findings raise several questions about the resurgence of the same strain after a period without cases: Is the El Tor variant more likely than earlier variants to survive in the brackish waters off Haiti, or more likely to be carried for longer periods by asymptomatic people? What exactly triggered the resurgence? We have no data on population immunity according to age to explain the high proportion of pediatric cases.

Both letters provide insights into a cholera resurgence occurring in a situation of severe social instability, and they are of substantial medical and scientific interest. Moreover, cholera amplified in any community is a threat to communities globally. Even the United States — with its strong medical system, excellent hygiene, and knowledge about rehydration — is at risk for cholera, which could be imported on one of sev-

eral daily nonstop flights from neighboring Haiti. Few U.S. physicians have experience treating cholera, and the children in our poorest neighborhoods might well be vulnerable.

I don't think we should wait for cholera to reach U.S. shores before we commit to strengthening public health structures and processes that would allow us to withstand not just a cholera outbreak but also a variety of other unexpected pandemics. Key initiatives might include working to boost vaccine acceptance in general, developing and implementing plans for minimizing poverty and food insecurity, and enhancing access to medical care. At the same time, we need to invest in partnerships aimed at controlling the sources of pandemics in distant countries in order to minimize global spread. These efforts could include the creation of international teams of first responders that are sanctioned by the WHO, the Centers for Disease Control and Prevention, and various governments and are supplied with adequate quantities of IV fluids, antibiotics, and vaccines.

A key lesson from the ongoing Covid-19 pandemic is that science alone cannot control a pandemic. Leadership is essential: decisions need to be made, trust earned, clear messaging preserved, the means of control succinctly articulated, and the public educated and inspired to act. Timing is critical. Early efforts to trivialize the scope of the Covid pandemic in the United States delayed the urgent steps needed to contain it, and we all suffered the consequences.

Pandemics are a natural part of life on a small planet challenged by climate change, harmful deforestation, rapid international air travel, the creation of megacities, civil strife and war, and increasing interactions between people and many nonhuman species. It is likely that these individual crises interact in a way that exacerbates their individual effects. The most worrisome outcome would be a polycrisis with multiple system failures in the realms of energy, international security, finance, and transportation — that overwhelms the available resources that could enable us to cope.2 Public health and political leaders, in partnerships with other systems experts, need a renewed social contract that entails unusual cooperation, driven by empathy and social values.

The resurgence of cholera in Haiti is yet another reminder that in our closely connected world, we cannot ignore the infectious misfortunes of other countries and the complex interactions among them. It is in our best interest to engage early, offering assistance and expertise, while reexamining our own public health strengths and shortcomings.

Disclosure forms provided by the author are available at NEJM.org.

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- 1. World Health Organization. Cholera. March 30, 2022 (https://www.who.int/news-room/fact-sheets/detail/cholera).
- 2. Lawrence M, Janzwood S, Homer-Dixon T. What is a global polycrisis? And how is it different from a systemic risk? Cascade Institute, September 16, 2022 (https://cascade institute.org/technical-paper/what-is-a-global-polycrisis/).

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