



Perspective

Public Health in Haiti — Challenges and Progress

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It has been a year since the earthquake of January 12, 2010, devastated the poorest country in the Western Hemisphere. Piles of rubble remaining throughout the Haitian capital and a devastating

cholera epidemic provide stark reminders of the challenges that arise in the absence of the infrastructure and institutions that most of us take for granted. Strong public health systems are essential for maintaining and improving health and well-being. Fortunately, progress has been made in public health during the past year, which should encourage those who hoped that tackling the challenges of an unprecedented disaster could lead to long-term improvements in the health of the Haitian people.

The earthquake laid waste to what was arguably already the hemisphere's weakest public health system. Childhood mor-

tality before the earthquake was already high at 171 per 1000, women died in childbirth at an unacceptably high rate, and Haiti was a hot spot for diseases such as malaria, filariasis, and rabies that were controlled long ago in most other countries in the Americas. Underpinning these challenges was the fact that public health work was underfunded and understaffed. Routine coverage for measles-rubella vaccination was only 58%, national surveillance systems were unable to provide the most rudimentary data for decision making, and the national laboratory processed an average of only four bacteriology specimens per month.

The earthquake destroyed the building housing the Haitian Ministry of Public Health and Population (MSPP) (see photo). Meeting initially in a cramped set of rooms above a generator retailer, a small group of surviving Haitian public health leaders has worked to build public health systems that are better than before. Their efforts have been buoyed by generous support from around the world. The Pan American Health Organization has provided lead-



Collapsed headquarters of the Haitian Ministry of Public Health and Population, Port-au-Prince, Haiti.

ership for hundreds of international donors and institutions. As part of a U.S.-government-wide effort to assist with the public health reconstruction effort, the Centers for Disease Control and Prevention has deployed more than 300 technical experts to Haiti over the past year, and the U.S. Agency for International Development has provided additional experts and tens of millions of dollars.

The foundations of a functioning public health system are beginning to coalesce. A national surveillance system and a camp-based system serving the internally displaced population are reporting disease-specific data that have been used to assess reports of diphtheria and typhoid outbreaks and to monitor for increases in disease incidence warranting field investigations.¹ The national laboratory, one of the few public health structures in the capital to survive the earthquake, was equipped with rapid diagnostic tests for pathogens with a propensity to cause outbreaks, and its technicians were retrained to conduct confirmatory laboratory tests for surveillance for reportable diseases. Clinicians, recognizing the laboratory's capacity, have submitted specimens — an average of 181 bacteriology tests per month, to confirm diagnoses of typhoid, diphtheria, meningococcal meningitis, and leptospirosis.

The control of chronic infectious diseases such as AIDS and tuberculosis requires meticulous follow-up of patients to prevent treatment lapses that can promote antimicrobial resistance. After the earthquake, there were intense efforts to locate patients who had been receiving antiretroviral therapy, and by May 2010

the number of patients receiving therapy at sites supported by the President's Emergency Plan for AIDS Relief was back to 94% of pre-earthquake levels. By April 1, 67% of patients on pre-earthquake tuberculosis registries in the Port-au-Prince area were again receiving medication (as many as 30% may have died in the earthquake or moved away).

Nevertheless, long-standing public health problems remain. Efforts to improve roads to reduce traffic injuries, provide life-saving community and obstetrical services, and repair, upgrade,



Cholera Treatment Center, Artibonite Department, Haiti.

or build safe water and sanitation systems are just beginning to be scaled up. For example, in 2008, only 63% of Haitians had access to adequate water sources and 17% to improved sanitation facilities,² so fecal contamination of drinking water was common, and diarrheal disease was a leading cause of childhood deaths.

When cholera struck in mid-October, it moved easily from sewage to drinking water sources and spread within 2 months to all departments (provinces) of the country, sickening more than 170,000 people and killing more than 3600 by December 31, 2010.³ Almost unprecedented in its ferocity, the epidemic has tested the recovering public health system — which has, for the most part, performed admirably. Field

response teams from Port-au-Prince were on site investigating the earliest reports of severe watery diarrhea from Saint-Marc and Mirebalais on the day the reports came in. Technicians at the national laboratory identified the pathogen through rapid testing of stool specimens within hours and confirmed the results by microbiologic culture within 2 days. They also characterized the antimicrobial susceptibility of the organism, allowing the MSPP to issue treatment recommendations to clinicians, and they have confirmed the epidemic's spread to new departments and monitored for changes in antimicrobial susceptibility.

A nationwide surveillance system specific for cholera has tracked the epidemic with nearly daily reporting, allowing resources to be directed where they are most needed. The response has been adjusted as new information has come in from case-control studies, mortality surveys, and rapid assessments of the commodity supply chain. With training and increasing experience of clinicians and improvements in the supply chain, mortality in health care facilities in Artibonite, the first department affected (see photo), had fallen to the international standard of 1% by December 2010. New information about the use of antimicrobial agents and vaccine availability has prompted a recommendation that antibiotics be given to patients with moderate-to-severe cholera, including all hospitalized patients,⁴ and a strategic discussion is under way to explore the utilization and evaluation of a limited global supply of cholera vaccine.

Most important for the cholera response and for the future of

public health in Haiti, the MSPP has exerted consistent leadership. For example, the ministry initially declined free donations of rapid diagnostic tests for malaria, out of concern regarding sustainability in Haiti and potential diversion of resources from standard smear microscopy. After reviewing the Haitian National Public Health Laboratory's controlled comparisons between commercially available rapid tests and microscopy, the MSPP leadership changed its policy, enabling widespread availability of rapid tests in peripheral sites and continued use of microscopy in reference hospitals.⁵ Firm leadership that requires and implements data-driven decision making is unusual even for some countries with resources far exceeding Haiti's.

Much credit is due to the MSPP for its effective use of resources to address immediate public health challenges in the year since the earthquake. But as evidenced by the cholera out-

break, much remains to be done. Cholera will ultimately be controlled when municipal and rural water systems separate drinking water from sewage. Other countries in the Americas accomplished this task after the 1991 cholera epidemic. Although there are nonbudgetary challenges, development of a safe water and sewage system in Haiti is well within the range of resources provided by post-earthquake commitments of international assistance. Plans have already been developed, and donors found, for campaigns to eliminate filariasis, control canine rabies, and lay the groundwork for malaria control in coming years. Political stability will be essential, and a central challenge will be to train and employ an adequate public health workforce to carry on the work of the small cadre of public health leaders who have responded so admirably to the challenges in the post-earthquake period.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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