

Cholera in Haiti

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In Haiti, cholera, a waterborne disease caused by the bacterium *Vibrio cholerae*, has affected the lives of many of the nation's citizens. This deadly bacterial disease, though not commonly reported in the United States, causes its victims to suffer from severe diarrhea, under nutrition, rapid dehydration, and even death. In this low-income country, the disease is spread via fecal-oral transmission by the ingestion of contaminated food and water, and unsanitary hygiene practices such as, the improper disposal of fecal matter and basic hand washing techniques. Those who succumb to the disease are not only physically impaired, but also lose thousands of DALYs¹ causing financial difficulties within families and even the nation's economy. The gravity of this situation is one of great concern primarily due to the fact that it is a highly preventable disease that the residents of Haiti are unable to surmount. The problem of cholera in Haiti needs to be effectively addressed by bringing global awareness, recognizing its ability to spread, and educating proper hygiene and waste disposal practices.

Cholera is recognized by symptoms of “profuse, acute watery diarrhea in persons” and “deaths caused by severe diarrhea and vomiting” (Piarroux et al., 1161). According to the Centers for Disease Control and Prevention, this bacterial disease is most often spread through the ingestion of contaminated food or drinking water by untreated sewage or the feces of an infected person. Although people of all sexes and age groups can fall victim to this bacterial disease, evidence shows that there are risk factors that make certain individuals more vulnerable to contract it. People whose stomachs are not making the normal amount of gastric acid and those with an O blood type are at higher risk of acquiring the disease (Harmon). Genetics and malnutrition, unfortunately, also play a major role as well (Harmon). In Haiti, the onset of the

¹ Disability-adjusted life year (DALY) is a measure of overall disease burden, expressed as the number of years lost due to ill health, disability, or early death. *World Health Organization*, http://www.who.int/mental_health/management/depression/daly/en/ (accessed November 19, 2014)

epidemic occurred predominantly in adult males working in rice fields (Barzilay et al., 606), thus indicating that even rural areas, those with agricultural occupations, and individuals living in poverty are among those that fall within the risk factors for the disease. Cholera can lead to deadly dehydration in as little as 24 hours, and without any kind of treatment, death from this disease can occur within hours (Reflecting Cholera Outbreak).

Prior to the earthquake that struck Haiti back in October of 2010, the existence of cholera was never reported in the nation. This unfortunate event left thousands of Haitians devastated and to suffer from the backlash of cholera's appearance. However, it was not this catastrophic tragedy that first introduced this bacterium into the country, but rather rumors that Nepalese troops from the United Nations Stabilization Mission in Haiti (MINUSTAH) that brought the bacterium from Nepal (Orata, Keim, & Boucher). These rumors were established on the basis that the Nepalese troops of MINUSTAH began their expedition in the small village of Meille in the city of Mirebalais, which was where the first hospitalized patients resided (Piarroux et al., 1162). This inadvertent introduction of this strain of cholera into Haiti resulted in the world's largest national cholera epidemic in recent memory (Barzilay et al., 603-606). The areas that were most affected included Mirebalais, St-Marc, Port-au-Prince, and several other communes in the coastal plain along the Artibonite River (Piarroux et al., 1162). Despite how the presence of cholera made its way into the country, it only satisfies the conclusion that the disease is highly transmissible to crossing international seas and is a major international health threat.



Fig. 1. Map of major cities in Haiti affected by the cholera outbreak (MSF USA)

Haitians that held residence in the areas that were most affected by the earthquake had a major problem of obtaining clean water and temporary toilets (Why Cholera Persists). Even since Haiti found its independence back in 1804, the country has been struggling to provide clean and safe water to its people (Reflecting Cholera Outbreak). Despite relief measures, Haiti's infrastructures for health care, water, and sanitation were severely damaged (Barzilay et al., 600). In 2008, an estimated 63% of the 9.8 million people living in Haiti had access to an improved drinking water source, with only 12% receiving piped, treated water, and only 17% had access to adequate sanitation (Barzilay et al., 600). Even aid organizations, like Partners In Health (PIH), report in their field research findings that many communities they worked in did not have access to potable water such as, wells, natural springs, and other sources, and did not have adequate sanitation in their homes (Global Hand Washing). Such lack of clean water sources and poor sanitation measures have led many of Haiti's people to openly defecate and spread the disease through waterways and the environment (Global Hand Washing).

As a result of the lack of proper toilets and access to clean water, the country's people resort to barbaric and unsanitary methods of handling and disposing their bodily excrements. According to an article published by NPR, the country relies on what is called, "bayakou", which are independent, secretive laborers who clean the cesspools under people's latrines. These individuals, who are mostly men, carry out this practice by climbing into latrines with nothing but their hands and a bucket, scoop out fecal matter, and find a different place to dispose of it (Why Cholera Persists). For those who cannot afford cesspools, which include most of the population, these individuals practice open defecation in fields or canals, especially in rural areas (Why Cholera Persists). Some individuals even resort to the method called, "flying toilet", which is where individuals defecate inside plastic bags and throw them in random areas that they see fit; as long as it is disposed of and out of their hands (Why Cholera Persists).



Fig. 2. Improper and unsanitary toilet systems where bayakous are used (Fortuné)

Haiti is known for its torrential rains, thus extremely dangerous for those who live in tents or in areas more prone to flooding to become more susceptible of acquiring the disease (Reflecting Cholera Outbreak). To confirm the extremity of Haiti's rainfall, Partners in Health report that sometimes the "harsh, continuous rains" causes markets to close, therefore leaving many families unable to buy water treatments such as chlorine (Reflecting Cholera Outbreak). Haiti's rains not only contribute as a barrier towards people's access to water treatment products, but they also provide a great reservoir for cholera to spread rapidly through waterways accelerated by heavy rains and flooding (Reflecting Cholera Outbreak). The lack of proper disposal of bodily excrements in addition to excessive flooding allows for fecal wastes to make their way into main water sources that Haitian communities depend on for washing, bathing, and drinking, and as a result, ultimately contract the disease.

Although this disease can infect people of all ages, it is especially distressing that it is capable of causing the deaths of many children, especially those that are 5 years and younger. The article from the *New England Journal of Medicine* reports that Haitian children under the age of 5 accounted for 78,938 cases of infection, 34,394 hospitalizations, and 580 deaths including 460 of 4,807 institutional deaths and 120 of 2,629 community deaths (Barzilay et al., 602). Many Haitian children encounter various challenges even while attending classes in schools which have no access to water, sanitation, or even soap for hand washing (Global Hand Washing). The reality for these hundreds of thousands of Haitian children resorting to relieving themselves in an open field or along a riverbed is without question, unsettling (Global Hand Washing). In Bocozel, a commune of St-Marc, the Departmental Direction of Health reported that three children died from acute watery diarrhea at school (Piarroux et al., 1163). On the other hand, it is uncommon for industrialized countries such as the United States to report child deaths

from cholera because of their good water and sewage treatment infrastructure (Ali et. al.). No child in the world, whether in a developing country or in an industrialized one, should die from watery diarrhea or any symptom of cholera for that matter.

Cholera is a deadly bacterial disease that continues to prey upon the Haitian people, slowly deteriorating their physicality and ultimately taking lives. In 2011, the annual global burden of cholera was estimated at 2.8 million cases and 91,000 deaths according to the article published in the *New England Journal of Medicine* (603). When cases of cholera were beginning to be reported after the 2010 earthquake up through 2013, the public health ministry reported 604,634 cases of infection, 329,697 hospitalizations, and 7,436 deaths from cholera in Haiti (Barzilay et al., 599). The UN estimated that if current trends continued, an estimated 45,000 cases could be expected in 2014. These numbers are incredibly high for a preventable disease. Majority of Haitians live under the national poverty line of \$2 per day (Haiti Overview), therefore the need of support and aid from foreign nations is critical. Temporary relief measures have been made, as stated by NPR when foreign aid provided short-term and limited numbers of porta-potties for victims who contracted cholera. However, despite these efforts, Haiti still continues to face the problem of accessing safe water and proper disposal of bodily wastes, resulting in climbing numbers of hospitalizations and deaths by cholera.

ONE's agriculture expert, Kelly Hauser, visited Haiti back in January of 2011 to work with another nonprofit to fight against cholera in Haiti. Unfortunately, during her time there she caught cholera, however, survived from the disease because of the immediate treatment she received. As she reported in her article, Hauser's treatment consisted of drinking large quantities of an electrolyte solution and taking one 300mg dose of an antibiotic (Hauser). Hauser, unlike thousands of Haitians who suffer from cholera, had access to oral rehydration therapy and

treatments, and therefore was able to overcome the negative effects of the disease. Hauser also reported that “nearly 4,000 people died because they did not have access to treatment advice and/or material they need to rehydrate themselves.” If Haitian residents were able to not only access treatments, but also in an affordable and timely manner, then the death toll of Haitians due to cholera would not have been so significant as they were. Kelly Hauser’s case only goes to show how simple it is to treat cholera and prevent thousands of deaths from occurring in Haiti.

Lauren McCarter, a summer Water Missions International (WMI) intern, wrote an article back in July of 2014 recounting her field experience in Haiti with regards to the cholera outbreak. During her time there, she interviewed Pastor Saint-Clair Destine, a local pastor in one of the Haitian communities. Ever since the outbreak struck in 2010, Pastor Saint-Claire Destine reported that many of the Haitians in the community live in constant fear of what will happen to the people and their children and elderly because they do not have adequate water to use for their needs (McCarter). Local clinics within this particular community were powerless to help those who were sick and without safe water to give people to drink, and most of the community did not completely understand the high threat of cholera that was among them (McCarter). The Pastor stated, “the population here does not know how cholera is spread and we have very little education about the prevention of such diseases,” clearly indicating that communities in Haiti need to be educated about the potential threats of waterborne diseases like cholera and what preventative measures they can enforce (McCarter). For this specific community, Water Missions International was able to construct a safe water solution, where the locals were no longer retrieving unsafe water from underground pumps, and where they were taught proper handwashing techniques and hygiene practices. WMI’s successful intervention in this fieldwork

alone was able to decrease the risk of unnecessary death due to cholera in a remote local community in Haiti.



Fig. 3. A child using ground handpumps to collect unsafe water near the church (McCarter)



Fig. 4. WMI educating the local community proper hygiene prevention techniques (McCarter)

Partners in Health recently opened up a public teaching University Hospital in the Haitian city of Mirebalais in response to the outbreak of cholera. The opening of Hôpital Universitaire de Mirebalais provided access to health care for those who previously had little to none. This aid organization also helped to open up 11 cholera treatment facilities, and even hired and trained more than 3,300 community health workers to identify and treat cases of cholera and run public hygiene education campaigns—all striving efforts towards containing and bringing awareness to the disease (After Earthquake). In addition, back in 2012, PIH even carried out a cholera vaccination project in Haiti. PIH's efforts of building a medical infrastructure in one of the major cities most affected by cholera, which was designed to provide better medical access to cholera victims, and their campaign towards specifically targeting the problem of this disease emphasizes the magnitude of the issue at hand.

To address the prevalence of Cholera in Haiti, certain precautions and strategies can be taken to improve the issue. Simple products such as buckets can be used to collect and store water from when it rains and installing water canal systems can provide access to safe water. Properly educating communities on how to effectively filter water by using mesh filters, and properly burying fecal wastes in designated areas can improve the quality of safe water. Basic sanitary methods such as the use of antibacterial soaps, antiseptics and chlorine for water treatment, are long-term initiatives for improving the hygiene standards within Haitian communities. Implementing these standard practices can influence the social norms within these communities with regards to waterborne disease. People worldwide need to show concern for this problem and address it aggressively because not only is cholera highly preventable and easily treatable, but it also has the ability to travel across international waters and potentially continue its infectious genocide, especially upon vulnerable impoverished populations.

Works Cited

- "After Earthquake, University Hospital Is Transforming Lives in Haiti." *Partners In Health*. N.p., 12 Jan. 2014. Web. 21 March. 2015.
- Ali, Mohammad, Anna L. Lopez, Young Ae You, Young E. Kim, Binod Sah, Brian Maskery, and John Clemens. "The Global Burden of Cholera." *WHO*. N.p., 24 Jan. 2012. Web. 21 March. 2015.
- Barzilay, Ezra J., Nicolas Schaad, Roc Magloire, Kam S. Mung, Jacques Boncy, Georges A. Dahourou, Eric D. Mintz, Maria W. Steenland, John F. Vertefeuille, and Jordan W. Tappero. "Cholera Surveillance during the Haiti Epidemic — The First 2 Years." *New England Journal of Medicine* 368.7 (2013): 599-609. *ProQuest*. Web. 21 March. 2015.
- "DALYs / YLDs Definition." *WHO*. World Health Organization, n.d. Web. 23 March. 2015.
- Fortuné, Fritznelson. *Gérald Saintilimé digging a hole for a new toilet system at the Tabarre Issa camp*. March 8. Haiti Grassroots Watch. Tabarre, Haiti. *Ayiti Kale Je Haiti Grassroots Watch Haïti Veedor*. Web. 17 April 2015.
- "Global Hand Washing Day: A Reflection on Water, Soap, and Infrastructure." *Partners In Health*. N.p., 15 Oct. 2014. Web. 21 March. 2015.
- "Haiti Overview." *The World Bank: Working for a World Free of Poverty*. The World Bank, 2014. Web. 21 March. 2015.
- Harmon, Katherine. "Why Is Cholera Spreading in Haiti Now?" *Scientific American Global RSS*. N.p., 25 Oct. 2010. Web. 21 March. 2015.
- Hauser, Kelly. "True Story: I Caught Cholera in Haiti." *ONE*. ONE Campaign, 24 Jan. 2011. Web. 04 March 2015.

- McCarter, Lauren. "Haiti: Life In The Time Of Cholera - Water Missions Blog." *Water Missions Blog*. Water Missions International, 15 July 2014. Web. 04 March 2015.
- Medecins Sans Frontieres Doctors Without Borders. October 2010. MSF USA. New York. *Haiti: MSF Teams Treating Cholera Patients in Saint-Marc, Artibonite Region*. Web. 19 April 2015.
- Orata, Fabini D., Paul S. Keim, and Yan Boucher. "The 2010 Cholera Outbreak in Haiti: How Science Solved a Controversy." Ed. Joseph Heitman. *PLoS Pathogens* 10.4 (2014): n. pag. *PubMed*. Web. 21 March. 2015.
- Piarroux, Renaud, Robert Barraix, Benoît Faucher, Rachel Haus, Martine Piarroux, Jean Gaudart, Roc Magloire, and Didier Raoult. "Understanding the Cholera Epidemic, Haiti." *Emerging Infectious Diseases* 17.7 (2011): 1161-168. *PubMed*. Web. 21 March. 2015.
- "Reflecting on the Cholera Outbreak in Haiti, Three Years Later." *Partners In Health*. N.p., 18 Oct. 2013. Web. 25 March. 2015.
- "Why Cholera Persists In Haiti Despite An Abundance Of Aid." *NPR*. NPR, 21 Mar. 2014. Web. 11 April. 2015.