Haitian-Dominican Relations in Times of Cholera: Migration, Public Health and Human Security on the Border

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HAITIAN-DOMINICAN RELATIONS IN TIMES OF CHOLERA: MIGRATION, PUBLIC HEALTH AND HUMAN SECURITY ON THE BORDER

By
Erin Christine Coldsmith

A THESIS

Submitted to the Faculty of the University of Miami in partial fulfillment of the requirements for the degree of Master of Arts

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HAITIAN-DOMINICAN RELATIONS IN TIMES OF CHOLERA: MIGRATION,
PUBLIC HEALTH AND HUMAN SECURITY ON THE BORDER

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The purpose of this study was to examine how the cholera outbreak in the Dominican Republic has affected the human security of both Haitians and Dominicans living in the Dominican Republic. Additionally, it explores whether the policies implemented to control the spread of cholera on the border with Haiti have been effective or have detrimentally affected the human security of the population of Dajabón. An ethnographic study was conducted in Dajabón, Dominican Republic from September 15, 2011 until October 21, 2011. Data was collected through observation, ethnographic mapping and semi-structured, open-ended interviews with residents, public officials and healthcare workers in Dajabón. This thesis establishes that current border control policies implemented on the Dominican border with Haiti in the province of Dajabón are ineffective in preventing the cross-border spread of cholera, detrimental to human security and public health, and have stigmatized the Haitian population. This thesis argues that real progress in controlling cholera can only be made through increased cooperation and solidarity between the Dominican Republic and Haiti in the area of public health.
To my parents, whose unwavering love and support has given me the strength to pursue my dreams. Thank you. I love you both more than you can imagine.

To my late grandmother, who instilled in me all of the lessons of life that one could never learn in a classroom.

To my grandfather, who gave me my first Spanish lesson. Gracias!

To my brother and sister, who provided the comic relief that got me through many long nights of writing.
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Chapter 1: INTRODUCTION

On January 12, 2010, a devastating earthquake struck Port-au-Prince, Haiti. Reported death tolls vary greatly, but exactly one month after the earthquake, on February 12, 2010, the Haitian government reported between 217,000 and 230,000 dead, an estimated 300,000 injured, and one million homeless (as cited in Haiti will not die, 2010). Just 10 months later, on October 21, 2010, a cholera outbreak was confirmed in Haiti (CDC, 2010b).

The cholera outbreak caught the international health community by surprise. Cholera is an extremely virulent diarrheal disease caused by the ingestion of food or water contaminated with the *Vibrio cholerae* bacterium. The World Health Organization estimates that three to five million people are infected with cholera each year, resulting in 100,000-120,000 deaths annually (WHO, 2011a). According to the U.S. Centers for Disease Control and Prevention, two conditions must be met for a cholera outbreak to occur. First, there must be “significant breeches in the water, sanitation, and hygiene infrastructure used by groups of people, permitting large-scale exposure to food or water contaminated with *Vibrio cholera* organisms,” and second, “cholera must be present in the population” (CDC, 2010a).

Diarrhea was a common illness in Haiti prior to the earthquake. Studies suggest that the average child in Haiti experienced between four to six episodes of diarrhea each year and 5-16% of all child deaths were attributed to diarrhea (CDC, 2010a). The January 2010 earthquake destroyed Port-au-Prince’s already fragile water, sanitation, and hygiene infrastructure, further exacerbating the
challenge of providing potable water and adequate sanitation to the population following the earthquake. While there were certainly significant weaknesses in the water, sanitation, and hygiene infrastructure in Haiti, a cholera outbreak was considered “extremely unlikely” because cholera was not present in the Caribbean and had not been reported in Haiti since 1960 or earlier (CDC, 2010a).

But, much to the surprise and dismay of the international health community, cholera did resurface in Haiti. According to the World Health Organization’s Global Task Force on Cholera Control, the first suspected cases were reported in Haiti’s Artibonite department on October 14, 2010. By December 31, 2010, cholera had spread to all ten of Haiti’s departments, leading to the infection of a reported 179,379 individuals and to 3,990 deaths. (WHO GTFCC, 2011).

At the onset of the Haitian cholera outbreak, public health officials in the Dominican Republic began implementing measures to try to prevent the epidemic from spreading into Dominican territory. Despite their efforts, the first case of cholera was reported in the Dominican Republic on November 16, 2010 (CDC, 2010c).

**Hypothesis and Research Question**

The purpose of this study was to examine how the cholera outbreak in the Dominican Republic has affected the human security of both Haitians and Dominicans living in the Dominican Republic. The study explores whether the policies implemented to control the spread of cholera on the border have been
effective or have disproportionately increased the vulnerability of certain populations. Due to the highly infectious nature of cholera and the severity of the illness, a thorough assessment of prevention policies is necessary. If certain populations are disproportionately affected by the illness and current policies fail to address these vulnerabilities or even increase the vulnerability of at-risk populations, this must be identified and rectified in order to control the spread of cholera and save lives.

My hypothesis is that the current border control and migratory policies implemented in the Dominican Republic under the guise of protecting the Dominican population from cholera are in fact ineffective, detrimental to human security and public health, and promote nationalistic and racial policies.
Chapter 2: METHODOLOGY

In order to test my research question and hypothesis, I conducted a case study of the province of Dajabón in the Dominican Republic. Dajabón occupies a very unique place in the history of Haitian-Dominican relations. Located in the northwestern Cibao region of the Dominican Republic, Dajabón is separated from the Haitian city of Ouanaminthe by the Massacre River. The Massacre River earned its name after a company of boucaniers, or cattle rustlers and pillagers, were killed along its banks in 1728 (Matibag, 2003). More widely known, however, is the massacre that took place here in 1937, when thousands of Haitians were systematically slaughtered under orders from then-president Rafael Trujillo (Turits, 2002). This area, which was reported by the U.S. Legation as “absolutely devoid of Haitians” following the massacre of 1937 (as cited by Turits, 2002, p. 621), is today the site of a bi-national market where an estimated 10,000 Haitians cross the border into Dajabón every Monday and Friday to buy and sell goods. The bi-national market is an interesting microcosm in which large numbers of Haitian and Dominican buyers and venders interact on a bi-weekly basis, sustaining both the Dominican and Haitian local economies. It is also the site where Haitians interact with Dominican officials, including the military, police, migratory officials, and public health officials.

This study was designed as an ethnographic study, and data collection was conducted in Dajabón, Dominican Republic, between the dates of September 15, 2010, and October 7, 2011, in Dajabón.

1 10,000 is an estimated number given to me by a senior migration official during the course of an interview on October 7, 2011, in Dajabón.
2011, and October 21, 2011. Due to the relatively short amount of time that I was able to spend on-site, I used methods that allowed me to collect large amounts of data in a short period of time. I conducted ethnographic mapping and spent much of my time observing the places where Haitians, Dominicans, and officials interact. I also used semi-structured, open-ended interviews to gather data from the residents of Dajabón. The interview questions were open-ended to gather as much data and detail as possible during each interview session. Each interview question was approved by the University of Miami’s Institutional Review Board and informed consent was obtained from each study participant.

There was no risk to study participants and there was no financial or material benefit given to anyone who participated in this study. The participant was able to withdraw from the study at any time.

All data were entered into text files for analysis. Data are kept in an encrypted, password-protected computer file. No personally identifiable information was entered and I was the only person with access to the data. The data were kept in a locked room in my home while in Dajabón, and I personally transported the data back to Miami, Florida. All interview questions, consent forms, and interactions with participants were conducted in Spanish.

The criteria for inclusion in this study were that each participant must be age 18 and over, in healthy condition, willing to participate, and living in Dajabón. The criteria for exclusion were individuals with any one of the
following conditions: under the age of 18, hospitalized or visibly ill, mentally ill, intoxicated, and those residing outside of Dajabón.

While I was able to communicate in very elementary Haitian Creole, my command of the language was not at a level at which I felt comfortable interpreting interview responses from the Haitian Creole-speaking population for inclusion in this study. All interview participants were fluent in the Spanish language and, although some had spent considerable time in Haiti, self-identified as Dominican. I interacted daily and had many lengthy conversations in Spanish with the ethnic-Haitian population that came to Dajabón daily to work, or that sold goods in the bi-national market. These two particular subgroups were ineligible for inclusion in this study as they were not residents of Dajabón. I was also able to converse with the non-Spanish speaking Haitian population with the help of bilingual Spanish-Haitian Creole colleagues who worked in the Servicio Jesuita a Refugiados y Migrantes office in Dajabón. These colleagues were kind enough to interpret for me on multiple occasions so that I could converse with the Haitian Creole speaking population, however these individuals did not fulfill the eligibility criteria for interview participation and inclusion in this study.

Recruitment was conducted on a one-on-one basis. I visited sites where locals frequent, explained the study, and if individuals were willing to participate, he or she signed an informed consent form and an interview was conducted. Participation in the study began only after the participant signed the informed consent form. Participation in the study was voluntary. Each participant was free
to decline or withdraw from the interview at any time, and no incentive was offered.

I visited the bi-national market in Dajabón at least once a week, observing interactions between Haitians, Dominicans, and public officials. I also visited the provincial hospital, the Ministry of Public Health office, and the Immigration and Customs office in the city of Dajabón, as well as the Red Cross, the clinic, the Civil Defense office, the mayor’s office, and the water treatment plant in the town of Partido, Dajabón, which was dealing with a cholera outbreak during my visit.

A thorough literary review was also conducted, using secondary sources to construct the conceptual framework within which the data compiled in the case study were be analyzed.
Chapter 3: LITERATURE REVIEW

Human Security

The concept of security has for too long been interpreted narrowly: as security of territory from external aggression, or as protection of national interests in foreign policy, or as global security from the threat of a nuclear holocaust. It has been related more to nation-states than to people...Forgotten were the legitimate concerns of ordinary people who sought security in their daily lives (UNDP, 1994, p. 22).

Human security emerged as a topic of debate in the early 1990s following the end of the Cold War and represents a shift of focus from the traditional concept of the safety of states from external threats to the safety of individuals and communities (Tadjbakhsh 2007). The concept of human security, while not new, is largely attributed to the United Nations Development Programme’s (UNDP) Human Development Report of 1994 which argued that the concept of security must shift from “an exclusive stress on territorial security to a much greater stress on people’s security” and “from security through armaments to security through sustainable human development” (UNDP, 1994, p. 24). There were three major trends in the 1990s that greatly facilitated the emergence of the concept of human security. These three trends were the changes in the world peace and security environment as a result of the end of the Cold War, the improved understanding of socioeconomic development, and the process of globalization (Chen and Narasimhan, 2003).

Traditionally, the notion of security has been state-centric and the analysis of security as a subfield within international relations theory has predominantly
focused on security relations among states (Morgan, 2007). Traditional approaches to security examine a nation’s defense of its territorial integrity and the defense of its citizens from external dangers in the international system. The means used to protect the state from external aggression have traditionally been military – including protecting borders, fighting wars, and deterring aggressors (Heymann, 2003).

Robert L. Ostergard Jr. explains that after World War II, due to the bipolar nature of the international system, the focus of scholars in security studies was on Soviet-American relations and preventing nuclear war (2002). As many of the writers in security studies during this time were from the United States and Western Europe, much of the scholarship on security during the Cold War focused on United States and European national security (Ostergard, 2002). Ostergard states that, “arms races, deterrence, co-operation and theoretical concepts such as bipolarity, realism, neo-realism, and institutionalism were placed in the context of relations among the major powers, but in fact had little relevance to the rest of the world” (Ostergard, 2002, p. 334). Security studies thus developed narrowly, as the primary theoretical focus was the interaction between the United States and the Soviet Union, largely ignoring the fact that other regions of the world had very real security concerns that were not related to the Cold War (Ostergard, 2002).

The security issues that were neglected during the Cold War era are now at the forefront of the international policy agenda. The security landscape of the world has changed drastically since the end of the Cold War, forcing scholars,
global actors, and policymakers to look beyond traditional approaches to security and consider modern threats to the global population. One can no longer limit the scope of security to territorial protection and state sovereignty. Lloyd Axworthy asserts that while the protection of the state against external aggressors is important, it is not sufficient to guarantee the safety of its peoples (2001). Axworthy states that “protecting civilians, addressing the plight of war-affected children and the threat of terrorism and drugs, managing open borders, and combating infectious diseases are now part of the dialogue” (Axworthy, 2001, p.19).

As one looks deeper into the factors that affect the security of individuals living in developing countries, it becomes apparent that the great majority of the factors that affect the poor have little to do with external military aggression but rather with internal conflict and the failure of their own governments to provide basic services for their population. These insecurities include economic impoverishment, the threat of violence, and the impact of illness (Chen and Narasimhan, 2003). While issues affecting the developing world have often been ignored by industrialized countries, globalization is forcing global actors to look seriously at the issues and insecurities faced by the developing world.

Internal conflict has the potential to provoke massive population migration, resulting in large numbers of internally displaced people, international refugees, or both. Natural disasters or complex emergencies in countries lacking adequate response systems can quickly transform from short-term devastation into long-term economic and political instability (Chen and Narasimhan, 2003). Chen
and Narasimhan assert that infectious disease epidemics can lead to massive political and economic shockwaves from the cessation of exports, the repulsion of foreign tourists, and the discrediting or paralysis of government. The negative impact of disease is a real concern -- since the 1990s, more than 24 new viral and bacterial agents have been discovered and the threats of antibacterial resistance as well as the weaponization of bacteria and viruses by bio-terrorists are real (Chen and Narasimhan, 2003).

The concept of human security expands the scope of security from the protection of the nation-state to include protection of the individual and has the potential to bring together seemingly divergent fields, such as health and security, to address the needs of the world’s population (Chen and Narasimhan, 2003).

Human security is not an easily defined concept, and is deliberately broad. According to the UNDP Human Development Report of 1994:

Human security can be said to have two main aspects. It means, first, safety from such chronic threats as hunger, disease and repression. And second, it means protection from sudden and hurtful disruptions in the patterns of daily life – whether in homes, in jobs or in communities. Such threats can exist at all levels of national income and development (UNDP, 1994, p. 23).

There are four essential characteristics of human security. The first is that human security is a universal concern (UNDP, 1994). The basis of this characteristic is the idea that although threats may differ in degrees of severity in different areas of the world, there are certain threats that affect all people. These
include unemployment, drugs, crime, pollution, and human rights violations (UNDP, 1994).

The second characteristic is that human security is international. There are many threats that cannot be contained inside national borders, and a threat in one area of the world can quickly cross territorial boundaries and have direct and indirect consequences in other nation-states. These are threats such as famine, disease, pollution, drug trafficking, terrorism, ethnic disputes, and social disintegration (UNDP, 1994).

Third, the Human Development Report argues that human security is easier to ensure through early prevention than later intervention (UNDP, 1994). This is certainly the case with health security, as early prevention in health can lead to the advancement of other areas of human security such as economic security. This statement is reinforced by a 2001 report issued by the Commission on Macroeconomics and Health, chaired by Jeffrey Sachs, which states that “extending the coverage of future health services, including a relatively small number of specific interventions, to the world’s poor could save millions of lives each year, reduce poverty, spur economic development, and promote global security” (Sachs, 2001, Preface).

The fourth essential characteristic is that human security is people-centered (UNDP 1994). The needs of populations like internally displaced people and those with high risk factors for contracting an infectious disease cannot be met by security measures traditionally used to protect the state. While traditional
security measures cannot always secure the population from threats such as infectious disease, taking preventative measures to reinforce the public health system and protect the population from everyday threats can, in turn, strengthen the state by having greater internal security and stability (Chen and Narasimhan, 2003).

The 1994 Human Development Report explores seven main categories of security that affect the individual: economic, food, health, environmental, personal, community, and political security (UNDP, 1994). According to the UNDP, economic security requires an assured basic income, usually stemming from productive work and only provided by a public financial safety net as a last resort (UNDP, 1994). The concept of food security means that people have both physical and economic access to food either by growing it themselves, buying food, or taking advantage of public food distribution programs. There is more than enough food in the world to feed the population, however not everyone has access to food due to inadequate distribution systems and a lack of purchasing power (UNDP, 1994). Health security, the primary focus of this study, is largely linked to conditions of poverty and human development. Health security shows the interdependent nature of human security; the security of one’s health is often determined by the level of one’s economic, food, and environmental security. Nobel Prize-winning economist Amartya Sens asserts, in his renowned text Development as Freedom, that as development removes major obstacles to freedom like tyranny, poor economic opportunities, systematic social deprivation, the neglect of public facilities, and the intolerance or overactivity of repressive
states, increasing positive development will in turn expand the freedoms enjoyed by members of that society (Sen, 2000). Sen also asserts that lack of freedom is, at times, directly related to economic poverty. Economic poverty can detrimentally affect one’s ability to live a healthy life, as illustrated in the following passage from Development as Freedom:

Sometimes the lack of substantive freedoms relates directly to economic poverty, which robs people of the freedom to satisfy hunger, or to achieve sufficient nutrition, or to obtain remedies for treatable illnesses, or the opportunity to be adequately clothed or sheltered, or to enjoy clean water or sanitary facilities (Sen, 2000, p. 4).

Environmental security is based upon the fact that human beings need a healthy living environment in order to lead healthy and productive lives. According to the UNDP, one of the greatest environmental threats in developing countries is to water, and much of the contamination in the water systems is due to inadequate sanitation systems (UNDP, 1994). Personal security is the security from physical violence. Threats of physical violence can be in the form of threats from one’s own state, threats from other states, threats from groups (ethnic tensions), threats from individuals and/or gangs, threats directed against women and children, and threats to oneself (UNDP, 1994). Community security refers to security from ethnic tensions, genocide, and oppression based on one’s belonging to a particular group and/or community (UNDP, 1994). Last, but certainly not least, political security refers to one’s ability to live in a society in which one’s basic human rights are honored (UNDP, 1994).
In the final analysis, human security is a child who did not die, a disease that did not spread, a job that was not cut, an ethnic tension that did not explode in violence, a dissident who was not silenced. Human security is not a concern with weapons – it is a concern with human life and dignity (UNDP, 1994, p. 22).

The notion of security has transformed greatly as balances of power have changed over time and globalization has forced new concerns onto the international policy agenda. One of these concerns, included in the concept of human security, is the health of populations. Just as the traditional notions and analysis of security studies focused almost exclusively on the protection of the state against external actors, the traditional approaches to health in the international system were largely state-centric. And, just as globalization has transformed how global actors must approach international security, so too has it forced a transformation in the approach to securing health.

**Health and the International System**

The advent of the modern international system and the concept of state sovereignty is typically traced back to the Treaties of Münster and Osnabrück, commonly known as the Peace of Westphalia of 1648, which mark the end of the 30 Years War (Goldstein and Pevehouse, 2010 and Croxton, 1999). The Peace of Westphalia of 1648 marks not only the end of the 30 Years War, but also, in the political field, the emergence of a modern system of sovereign states (Falk, 2002). Leo Gross wrote, in 1948, that the Peace of Westphalia of 1648 created “a new system characterized by the coexistence of a multiplicity of states, each sovereign within its territory, equal to one another, and free from any external authority” (Gross, 1948, p. 28-29). David Fidler describes the Westphalian system of
international governance as having three core principles: the principle of sovereignty, the principle of non-intervention, and the principle of consent-based international law (Fidler, 2004).

The core principles of the Westphalian system also characterize the nature of international health diplomacy from roughly 1851 until the end of World War II (Fidler, 2004). The public health emphasis during this period was on the protection of the state and its economic interests from the exogenous threat of infectious disease. David Fidler asserts that there are four political characteristics of the Westphalian approach to infectious disease control (Fidler, 2004). The first of these characteristics is that states are the dominant actors in the international system. Secondly, Fidler asserts that the international governance of infectious diseases was dominated by the interests of the world’s great powers. Thirdly, international cooperation was focused only on inter-state threats. And lastly, the method through which states effected cooperation was through treaty law (Fidler, 2004). The security of the state was put before the needs of the individual, and the state’s economic interests were given priority over providing basic medical services and potable water to the individuals living within the state’s territory (Fidler, 2004).

Stern and Markel explore the approach to international health through the origins of international health organizations and regulations and assert that there are two distinct eras of infectious disease control in the period from 1851 to 1945 (Stern and Markel, 2004). The first portion, from 1851 to 1881, is characterized by the International Sanitary Conferences, the first of which occurred in Paris in
1851 and set the foundation for modern multinational health organizations (Stern and Markel, 2004). The first International Sanitary Conference brought together physicians and politicians from eleven European countries in order to formulate a utopian quarantine policy to address the spread of cholera while protecting economic interests and trade routes (Stern and Markel, 2004).

The first International Sanitary Conference produced little substantive policy due to disagreements between scientists and policymakers from the participating countries, however some conclusions were drawn. It was during the first International Sanitary Conference in 1851 that the delegates established that the cordon sanitaire was ineffective in preventing the spread of cholera (Huber, 2006). The term “cordon sanitaire” is derived from the French -- *cordon* meaning “line or border” and *sanitaire* meaning “sanitary” (Cordon Sanitaire, 2012). A *cordon sanitaire* is defined by the Oxford Dictionaries as “a guarded line preventing anyone from leaving an area infected by a disease and thus spreading it” (Cordon Sanitaire, 2012).

The delegation from Austria, where the *cordon sanitaire* had been used to combat the plague, stated during the 1851 conference that:

> While establishing maritime quarantines against cholera, we leave the door open as far as the land borders are concerned; and we cannot act otherwise, because everyone will recognize, I think, the impossibility of erecting a *cordon sanitaire* at the border of a country (as cited in Huber 2006, p. 460).
The delegation from France similarly stated:

And now the communications between the peoples, today so numerous and more and more rapid; the navigation by steamship, the railways, and on top of that this happy tendency of the populations to visit each other, to mix, to merge, a tendency that seems to make of different peoples a sole and large family, and you will be forced to admit that for such a disease, so widespread and under these conditions, cordons and quarantines are not only powerless and useless, but they are, in the very great majority of cases, impossible, and that everything shows that their time has passed (as cited in Huber, 2006, p. 460).

A total of ten International Sanitary Conferences focusing on the containment of epidemics were held between the years 1851 – 1900. Each conference addressed the most urgent threat of the time, notably cholera, plague, and yellow fever (Stern and Markel, 2004). The objective of these conferences was not to protect the world from these infectious diseases but to protect Europe, even though other regions of the world saw much higher mortality rates (Huber, 2006). Sheldon Watts claims in *Epidemics in History: disease, power, and imperialism* that more than 25 million people died of cholera in India between 1800 and 1925, whereas 130,000 deaths due to cholera were recorded in Britain during the same period (Sheldon Watts cited in Huber, 2006, p 461). The representatives at the International Sanitary Conference stated that their objective was defending Europe against an evil that originated in Asia. They likened themselves to the Roman Empire and Christian Crusaders as they set out to civilize the “Orient” under the auspice of hygiene (Huber, 2006). Howard-Jones affirms this philosophy by stating that “implicit in all these strivings towards the foundation of an international health agency was, not a wish for the general betterment of the health of the world, but the desire to protect certain favored
(especially European) nations from contamination by their less-favored
(especially Eastern) fellows” (Howard-Jones, 1950).

The second period described by Stern and Markel is the period between
1881 and 1945, characterized by the introduction of Germ Theory and
Bacteriology. During the 1890s, representatives at the International Sanitary
Conferences began reaching a consensus on the regulation of international
sanitary and quarantine policies (Stern and Markel, 2004). During much of the
19th century, “most European and American physicians believed cholera was a
locally produced miasmatic disease – an illness brought about by direct exposure
to the products of filth and decay” (Cholera Epidemics in the 19th Century, 2012).
Bacteriology is the study of bacteria, and Germ Theory states that “specific
microscopic organisms are the cause of specific diseases” and “…encouraged the
reduction of diseases to simple interactions between microorganism and host”
(Bacteriology, 2012 and Germ Theory, 2012). The cholera bacillus was identified
by Robert Koch in 1884, and as Germ Theory and Bacteriology progressed and
were accepted by the delegates attending the International Sanitary Conferences,
it became possible to draft basic regulations to contain the spread of cholera
(Robert Koch, 2012 and Stern and Markel, 2004). Many of these regulations
were codified into national law and international health organizations such as the
Pan American Health Organization and the Office International d’Hygiene
Publique were subsequently formed in 1902 and 1907, respectively (Stern and
Markel, 2004).
The post-Westphalian governance framework emerged in 1948 after the end of World War II and was solidified by the end of the 1970s. During the United Nations Conference of 1945 it was unanimously decided that a single global health organization should govern the international health system. The constitution of the World Health Organization was subsequently drafted and was entered into force in 1948 (Stern and Markel, 2004). One of the functions of the World Health Organization is “to act as the directing and coordinating authority on international health work” (WHO, 1946)

The post-Westphalian international health structure is based on the principles of individual rights, solidarity, and universal justice (Fidler, 2004). The preamble to the constitution of the World Health Organization, which was ratified on April 7, 1948, focuses on human rights and the rights of the individual rather than the rights of the state (Fidler, 2004). There were three major shifts in policy that marked the emergence of a post-Westphalian form of international health governance. The first was that policy began to focus on health within states rather than concerning itself exclusively with the transmission of diseases across international borders. The second was the World Health Organization’s effort to eliminate infectious diseases in developing countries (Fidler, 2004). This policy approach signaled a new emphasis on the needs of the most vulnerable rather than the most powerful states. The third policy shift was the emergence of the “Health for All” strategy, which was unveiled at the World Health Organization/UNICEF International Conference on Primary Health in 1978. This strategy was meant to
address “the right to health, health solidarism among nations, and global redistributive justice for health” (Fidler, 2004).

**Securing Health**

Every three seconds a young child dies – in most cases from an infectious disease. In some countries, one in five children die before their fifth birthday. Every day 3,000 people die from malaria – three out of four of them children. Every year 1.5 million people die from tuberculosis and another eight million are newly infected. Behind each of these deaths lies a human tragedy. Because these diseases affect mainly young children and adult breadwinners, their impact on families can be catastrophic. Children may lose one or both parents to an infectious disease. The AIDS epidemic alone has left over eight million children orphaned. To make matters worse, families risk being driven into debt through lost earnings and high health care costs – trapping them in a vicious circle of poverty and ill-health (WHO, 1999, np).

Global disparities between the developed and undeveloped world in access to healthcare are troubling. The diseases causing the most fatalities in the developing world are AIDS, acute respiratory infections, diarrhea, tuberculosis, malaria, and hepatitis (Goldstein and Pevehouse, 2010). Of the 600 million people suffering from a tropical disease in 2010, there were 400 to 500 million people suffering from malaria (Goldstein and Pevehouse, 2010). When looking at health disparities, one must look past treating the symptoms of illnesses with drugs and other means and address the underlying determinants of health and the causes of the disparities between the developed and undeveloped regions of the world.
Globalization has brought the developed and undeveloped worlds to a greater level of interconnectedness through increased economic interaction and human migration. Migration and trade have long been associated with the introduction and spread of infectious diseases, but what has amplified this threat is the scale, speed, and reach of present-day global interactions (Wilson, 2003). More than 1.4 million people cross international borders everyday on international flights, facilitating the rapid, massive, and global dispersal of biological material (Wilson, 2003).

Germs do not recognize international borders so the control of infectious diseases requires international cooperation (Fidler, 2004). The human right to health is articulated in various international covenants to which the Dominican Republic is a party. Article 25.1 of the Universal Declaration of Human Rights, which was adopted by General Assembly Resolution 217 A(III) on December 10, 1948, affirms: “Everyone has the right to a standard of living adequate for the health of himself and of his family, including food, clothing, housing and medical care and necessary social services…” (UN General Assembly, 1948).

The International Convention on the Elimination of All Forms of Racial Discrimination was adopted and opened for signature and ratification on December 21, 1965 (UN General Assembly, 1965). The Convention was entered into force on January 4, 1969, and was ratified by the Dominican Republic on May 25, 1983 (UN General Assembly 1965). Article 5 (e)(iv) of this Convention states that:
Article 5: State Parties undertake to prohibit and to eliminate racial discrimination in all its forms and to guarantee the right of everyone, without distinction as to race, colour, or national or ethnic origin, to equality before the law, notably in the enjoyment of the following rights:

Article 5 (e) (iv): The right to public health, medical care, social security and social services (UN General Assembly, 1965).

The Convention on the Rights of the Child was adopted and opened for signature, ratification, and accession on November 20, 1989 (UN General Assembly, 1989). The Convention entered into force on September 2, 1990, was signed by the Dominican Republic on August 8, 1990, and was ratified by the Dominican Republic on June 11, 1991 (UN General Assembly, 1989). Article 24 of this Convention states that:

Article 24 (1): State Parties recognize the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health. State Parties shall strive to ensure that no child is deprived of his or her right of access to such health care services (UN General Assembly, 1989).

Article 24 (2) goes on to state that State Parties will take the appropriate measures to combat disease and malnutrition through “the application of readily available technology and through the provision of adequate nutritious foods and clean drinking water, taking into consideration the dangers and risks of environmental pollution” (UN General Assembly, 1989).

The International Covenant on Economic, Social and Cultural Rights was adopted and opened for signature, ratification, and accession on December 16, 1966. The Covenant entered into force on January 3, 1976, and was ratified by

Article 12 of this Covenant recognizes “the right of everyone to the enjoyment of the highest attainable standard of physical and mental health” (UN General Assembly, 1966). In the year 2000, the United Nations Committee on Economic, Social and Cultural Rights issued General Comment No. 14 to further expand Article 12 of the 1966 Covenant.

General Comment No. 14 affirms that health is a fundamental human right and that everyone has the right to enjoy the highest attainable standard of physical and mental health (United Nations Committee on Economic, Social, and Cultural Rights (CESCR), 2000). Article 4 acknowledges that:

The right to health embraces a wide range of socio-economic factors that promote conditions in which people can lead a healthy life, and extends to the underlying determinants of health, such as food and nutrition, housing, access to safe and potable water and adequate sanitation, safe and healthy working conditions, and a healthy environment (CESCR, 2000).

General Comment No. 14 states that the “highest attainable standard of health,” as described in Article 12.1 of the International Covenant on Economic, Social and Cultural Rights of 1966, takes into account biological and socio-economic preconditions as well as the state’s available resources. The right to health must therefore be understood as “a right to the enjoyment of a variety of facilities, goods, services, and conditions necessary for the realization of the highest attainable standard of health” (CESCR, 2000). According to General Comment No. 14, the right to health contains the following four elements: availability, accessibility, acceptability, and quality.
Both the *Convention on the Rights of the Child* and *General Comment No. 14 to the International Covenant on Economic, Social and Cultural Rights* specifically mention the necessity of access to safe and potable drinking water; however, access to potable water and sanitation was not declared an independent human right until 2010 (UN News Center, 2010). By defining access to safe drinking water as an independent human right, the United Nations has placed the responsibility on governments to ensure that their citizens have access to safe drinking water.

Water is essential for human survival and, as such, water quality can affect many other aspects of life. A major contaminant of water is untreated sewage due to a lack of adequate sanitation facilities. According to the World Health Organization, “one gram of feces may contain 10 million viruses, one million bacteria, 1000 parasite cysts and 100 worm eggs” (WHO, 2011b). Unsafe drinking water is one of the leading causes of diarrhea, which can be caused by bacteria, protozoa, and viruses, and which is most commonly transmitted through unclean water, eating with dirty hands, and spoiled food. Children, especially those from poor families living in unclean surroundings, are the most susceptible to contracting water-borne illnesses such as diarrhea (Levine, 2007). Diarrheal disease causes nearly 20% of all child deaths and dehydration from diarrhea kills between 1.4 and 2.5 million babies each year. Diarrhea as a result of consuming unsafe drinking water is most prevalent in developing countries, where children suffer an average of three cases of diarrhea each year, leading to the death of 20 out of every 1,000 children (Levine, 2007). Most of these deaths are preventable.
through improved water and sanitation services and simple rehydration treatments that can be administered in the home (Levine, 2007).

According to 2010 data from the World Health Organization and the United Nations Children’s Fund, 2.6 billion people in the world lacked access to improved sanitation facilities and 884 million people lacked access to improved drinking water (WHO and UNICEF, 2010).

The 2006 Human Development Report showed that “people living in the slums of Jakarta, Indonesia; Manila, the Philippines; and Nairobi, Kenya, pay 5-10 times more per water unit than those in high-income areas in their own cities – and more than consumers pay in London or New York” (UNDP, 2006, p. 7). Water inequities also affect the potential of children to grow up not only physically but intellectually healthy. Worldwide, children lose an estimated 443 million school days each year due to water-related illnesses, and an estimated half of these days are due to intestinal parasites transmitted through water and fecal material (UNDP, 2006).

Children with infections are twice as likely to be absent from school as those without. Even when infected children attend school, they perform less well: tests point to adverse effects on memory, problem solving skills, and attention spans... so bouts of diarrhea in childhood can pave the way to reduced earning power and poverty in adulthood (UNDP, 2006, p. 45).

Comparatively, it is estimated that 3.2 billion working days would be saved for people between the ages of 15 and 19 if there were a reduction in the incidence of diarrhea (UNDP, 2006).
The necessity of traveling to another area to collect water also decreases economic progress. An estimated 20 billion working days would be gained if water access were more readily available (UNDP, 2006). A World Health Organization study found that worldwide $170 billion were lost due to complications from unsafe water and sanitation, or to time spent collecting water instead of working and/or attending school. The cost to Latin America alone was estimated at $29 billion (UNDP, 2006).

There are many political factors involved in water and sanitation services. As water has been declared an independent human right, governments are expected to respect, protect, and fulfill their population’s right to water (WHO, 2003). The World Health Organization states that: “the obligation to respect requires that State Parties (governments ratifying the treaty) refrain from interfering directly or indirectly with the enjoyment to the right to water” (WHO, 2003, p. 7). The duty to protect obligates states to “prevent third parties such as corporations from interfering in any way with the enjoyment of the right to water,” and the obligation to fulfill obligates states to “adopt the necessary measures to achieve the full realization to the right to water” (WHO, 2003, p. 7).

Cholera

Every day, millions of tons of inadequately treated sewage and industrial and agricultural wastes are poured into the world’s waters...Every year, more people die from the consequences of unsafe water than from all forms of violence, including war – and the greatest impacts are on children under the age of five (UN Water, 2010, p. 1).
Adequate water and sanitation systems are imperative to prevent waterborne illnesses such as cholera, which remains “one of the most feared infectious diseases in public health” (Lee, 2001, p. 6). Caused by the consumption of food or water that has been contaminated with the *Vibrio cholerae* bacterium, cholera is an acute diarrheal disease that causes severe dehydration and, when left untreated, has the potential to kill within hours (WHO 2011a).

As of September 17, 2011, the week during which I began my research in Dajabón, Haiti had reported 447,333 cumulative cholera cases and 6,332 deaths due to cholera to the Pan American Health Organization (PAHO, 2012c and 2012e). As of the same date, the Dominican Republic’s Ministry of Health had reported to the Pan American Health Organization (PAHO) a total of 18,093 cholera cases and a total of 314 cholera-related deaths (PAHO, 2012c and 2012e). According to these statistics, the case-fatality rates in Haiti and the Dominican Republic as of September 18, 2011 were 1.42% and 1.74% respectively (PAHO, 2012a). Haiti has made great strides in reducing the case fatality rate, which was 7% at the beginning of the epidemic; some regions experienced case fatality rates as high as 10% (Farmer, 2011).

Cholera is hardly a new phenomenon. Deaths from dehydration caused by severe diarrhea are found in Sanskrit writings, and cholera-like epidemics have been documented in the Indian subcontinent since the 16th century (Lee, 2001). An epidemic, or disease outbreak, is defined by the World Health Organization as “the occurrence of cases of disease in excess of what would normally be expected
Cholera outbreaks were largely confined to the Indian subcontinent until the early 19th century, when the disease spread to other regions as a result of globalization and increased human interaction (Lee and Dodgson, 2000).

In 1817, these changes caused the first of seven cholera pandemics when the disease spread beyond the Indian subcontinent (Lee, 2001). A pandemic is defined as “an outbreak of a disease that occurs over a wide geographic area and affects an exceptionally high proportion of the population” (Pandemic, 2012). According to Lee and Dodgson, many factors contributed to the spread of cholera during this period, including:

…The movement of British troops and camp followers throughout the region, construction of irrigation canals without sufficient drainage ditches to raise cash crops, building of a national railway system, impoverishment of rural people by land reforms and taxation, and mass migration as a result of economic hardship (Lee and Dodgson, 2000, p. 218).

During this period, cholera was spread from South Asia, where it had become an endemic disease, to the Far and Middle East via trade links, religious pilgrimage, and military expansion (Lee and Dodgson, 2000). Outbreaks are considered to have become endemic when a large proportion of the population has become immune or semi-immune to infection (Zuckerman, Rombo and Fisch, 2007). The spread of cholera was further accelerated by increased transportation and globalization, and came to be considered a “worldwide disease” in 1826 with the onset of the second pandemic (Lee and Dodgson, 2000). During the second pandemic, which lasted until 1838, cholera spread from Asia to Africa, Europe,
North America, South America and the Caribbean, following immigration patterns, troop movements, and the slave trade (Lee and Dodgson, 2000).

European and North American industrial centers characterized by poor sanitation, poverty, malnutrition, and overcrowding proved fertile for cholera (Lee and Dodgson, 2000). The mortality rate of untreated cholera is approximately 50% and cholera infection caused hundreds of thousands of deaths during each pandemic (Lee, 2001). “From a local disease, cholera became one of the most widespread and deadly diseases of the nineteenth century, killing estimated tens of millions of people. Not coincidentally, cholera traveled the same routes around the globe as European imperialism” (Lee and Dodgson, 2000, p. 221).

The first six pandemics were the result of the classic O1 Vibrio cholerae biotype. The seventh cholera pandemic, which began in Indonesia in 1961 and which continues today, presents a new challenge. The cause of the seventh pandemic was a different biotype of Vibrio cholera. This new biotype, known as El Tor, has proven more difficult to eradicate. While the El Tor strain of cholera is less virulent, it is able to survive longer, shows increased resistance to antibiotics and chlorine, and causes a higher proportion of asymptomatic infections, allowing carriers to unknowingly spread the disease (Lee and Dodgson, 2000).

According to Lee and Dodgson, two principle epidemiological differences distinguish the seventh pandemic from past cholera pandemics: spatial dimension and temporal dimension. The seventh pandemic has been more widespread and
has lasted longer than any other cholera pandemic. Approximately 1.72 million cholera cases have been reported to the World Health Organization from 117 countries between the years of 1961 and 1989 (Lee and Dodgson, 2000). Modern mass transit has likely contributed to the geographical spread of the seventh pandemic. The average duration of commercial and bulk carrier flights are shorter than the incubation period of most diseases, allowing for the increased geographical spread of disease over a short period of time (Lee and Dodgson, 2000).

The *El Tor* biotype of cholera was first reported in Peru in January 1991, and by mid-February of that year there were 12,000 confirmed cases (Lee, 2001). It proceeded to spread rapidly across the South American continent and resulted in 1.4 million reported cases and over 10,000 deaths (Lee and Dodgson, 2000). It is unknown how cholera first arrived in Peru, but it is believed to have been transported to the region by a Chinese grain ship named *Feng Xian*. The *Feng Xian*, which arrived to Peru with several ill crew members on board, released its infected bilge water into the Peruvian coastal waters (Lee, 2001).

Cholera harms not only the health of a population but also its economy. It is estimated that Peru’s tourist industry lost $150 million, shrimp exports fell by $270 million, and overall losses to gross domestic product were estimated at $770 million in 1991 alone (Lee, 2001). Eager to soften the blow to the economy, government officials downplayed cholera’s risk to the fishing and tourist industries. In 1991, to decrease public alarm and show the world that the Peruvian fishing exports were still fit for consumption, the Peruvian Minister of
Health ate *ceviche*, a raw fish delicacy, on television. This gesture backfired, however, when the Minister of Health subsequently fell ill with cholera (Lee, 2001).

The eighth cholera pandemic, which began in 1993, exists simultaneously with the seventh pandemic. The eighth pandemic is distinguished from the seventh pandemic because it involves yet another biotype of *Vibrio cholerae*. *Vibrio cholerae* O139 was detected in Bangladesh in January 1993 and is the first non-O1 strain of cholera that has caused epidemic cholera (Lee, 2001). The first six pandemics were caused by what is considered the “classical” strain of cholera. The seventh pandemic was caused by the *El Tor* strain of cholera and the eighth pandemic is caused by the O139 Bengal strain (Lee, 2001). The following diagram shows the different strains of cholera.

*Figure 1: Vibrio Cholerae Strains* (Lee 2001)
The political implications of a cholera outbreak can be widespread and can lead to questions about the overseers of public health and water and sanitation issues. Only 1% of cholera cases are actually reported to the World Health Organization (Zuckerman, Rombo and Fisch, 2007). According to Zuckerman, Rombo, and Fisch, there are various reasons for the under-reporting of cholera, including limited surveillance systems, variations in reporting guidelines, and the reliance on laboratory confirmation of cases (Zuckerman, Rombo and Fisch, 2007). The World Health Organization asserts that after cholera has been confirmed in a population, the clinical case definition is sufficient for diagnosis and confirmation of cases, as bedside testing is not often available (WHO, 2012b). Political and economic motives for under-reporting include fear of sanctions that could affect trade and tourism (Zuckerman, Rombo and Fisch, 2007). As previously stated, the Peruvian economy lost $770 million in a single year due to the cholera outbreak in 1991 (Lee, 2001). Politicians therefore have significant incentive to under-report cholera cases to hide their country’s inability to address the outbreak. Cholera outbreaks also expose any weaknesses in water and sanitation systems. “Epidemics or explosive outbreaks generally occur in underdeveloped areas with inadequate sanitation, poor hygiene, and limited access to safe water supplies” (Zuckerman, Rombo and Fisch, 2007, p. 522). Faced with a cholera outbreak, local populations that do not have access to the necessary water and sanitation services could begin to demand the services or question why they were not receiving them in the first place. These questions
could threaten the positions of political appointees and public health workers, as was seen in the Venezuelan outbreak during the seventh pandemic:

The national publicity surrounding the epidemic threatened the legitimacy of public health institutions in Delta Amacuro State, and some said the epidemic revealed major shortcomings in the overall ‘indigenous policy’ of the state government. The stigma attached to cholera, and its associations with backwardness, lack of hygiene, poverty, and inadequate public health infrastructures and administrators, led to the dismissal of the directors of the Ministry of Health and Public Assistance, the Office of Indigenous Affairs, and other agencies (Briggs, 2001, p. 670).

The under-reporting of cholera can be dangerous. Many policy decisions relating to prevention and control are determined by case incidence and surveillance reports. If healthcare workers and policymakers underestimate the severity of the outbreak, they will not be able to adequately address the outbreak or advise the locals and travelers to the region of the necessary precautions to avoid infection (Zuckerman, Rombo and Fisch, 2007). Zuckerman et al assert that, “underestimation of the risk of cholera impedes the implementation of strategies to combat the disease” (Zuckerman, Rombo and Fisch, 2007, p. 528).

Culture, race, and socioeconomic issues also play a role in how governments react to cholera epidemics. Stern and Markel assert that, “infectious disease interventions sometimes converged with distorted assumptions about race, ethnicity, and class that reflected and perpetuated inequities in health status and access” (Stern and Markel, 2004, 1476). Cholera, long associated with poverty and a lack of hygiene, has at times led to the stigmatization of certain populations. This stigmatization can be seen in the cholera outbreak in the Orinoco Delta in Venezuela during the seventh pandemic, where cholera was racialized and
depicted as an indigenous problem (Briggs, 2001). The cultural practices of the indigenous were blamed for the high rates of infection rather than the water, sanitation, and health systems that failed this population or the Ministry of Health that had failed to effectively control the outbreak. At the beginning of the epidemic in the Orinoco delta, “there were no clinics, missions, schools, government offices, or stores there when the epidemic hit. Physicians were not available to treat patients or explain what was taking place” (Briggs, 2003, p. 3). This fact, along with the absence of safe water and sanitation, were not cited as possible causes of cholera in the delta. Instead, the Minister of Health, the nation’s highest-ranking public health official stated after visiting the delta that the high rates of cholera in the area were due to the “eating habits” of the indigenous (cited in Briggs, 2001, p. 671). Dr. Daniel Rodriguéz, Chief of the Regional Office of Epidemiology in Amacuro state, stated on January 14, 1994:

> The Indian is accustomed to living in conditions of very bad environmental hygiene; that’s why there was so much cholera. We know the situation of these people: they eat on the floor, and they defecate – or let’s say, they don’t have a system of defecating discretely. They do it in open air. The flies, which land on food, land first on the feces and then on the food and then on the bottle, the pacifier of the child, and then they give it to the bottle (Briggs, 2003, p. 206).

Briggs asserts that such statements, which go far beyond scientific explanations for transmission, “evoke stereotypes of indígenas as ignorant, unsanitary, and backward” (Briggs, 1999, p. 9). Absent from the official dialogue, however, is an explanation as to why basic services are not available in this region. Dr. Magdalena Benavides, the Regional Director of the Ministry of Health and Social Assistance for Delta Amacuro, is Delta Amacuro’s highest-
ranking public health official. Benavides and two other regional public health officials reported to the press on August 11, 1992, that the epidemic was due to the *indígenas* from Mariusa and other areas “who flee in terror from their habitat toward populated centers…trying to escape the JEBU (spirit) that is causing the disease among the Warao” (Briggs, 2003, p. 101). Again ignoring scientific explanations for the outbreak and its transmission, this explanation for the outbreak involves a disease being inflicted on the population by an indigenous spirit. Dr. Benavides continues:

In the city, well, there are sewage facilities, toilets, etc. But in the delta – they bathe, they go poo-poo, and everything [in the same place]. In the same spot that they contaminate the water, they contaminate the fish, and this establishes a vicious cycle. And they don’t have this habit of washing their hands… They don’t use toilet paper, nor do they protect their hands, well [when defecating]…I don’t even know how they wipe themselves. So there is nothing like, ‘Look, your fingernails are dirty. Wash them!’ No, nothing like that. So then this contamination – anus, hand, mouth – is constant among them. It would be unlikely that an *indígena* would wash his or her hands. First, it’s that they eat on the floor (Briggs, 2003, p. 206-207).

Similarly, Dr. Ricardo Campins, a physician in La Tortuga, stated that the mental and psychological state of the *indígenas* and their cultural practices would be the reason cholera would likely persist in the region for centuries to come:

Dr. Ricardo Campins, November 13, 1994:

There are many factors that I think are responsible for maintaining – and will keep on maintaining – cholera. Because I imagine – it’s been a while since I’ve been in the delta – but I imagine that they must still be seeing cholera in the delta, even if the health authorities say they aren’t. It’s that they [the Warao] defecate in the river; they eat raw fish; they eat seafood; [they eat] these squid raw. All the fruits of the sea, especially in the outer part of the delta, they eat raw. They defecate in the river, or let’s say that
they don’t have any kind of minimum sanitary norms, right? And evidently due to the geography of the delta, to the way in which it is formed, is such as to maintain that disease for years, centuries, you see, because of those same conditions, as much mental as natural. Well, first the mental or psychological ones of the *indígenas*, right, and then the part that has to do with the geography of the delta – these two things become conjoined and they make a spiral. And that is a spiral that will maintain it, right, that will maintain it for a long time (Briggs, 2003, p. 216).

According to Charles Briggs, the public health officials of Delta Amacura saw themselves as the forces of modernity, “waging heroic struggles against politicians, merchants, *indígenas*, and other characters who, to varying degrees, represented a traditional, backward world” (Briggs, 2001, p. 684). Far from modern, however, were the tools that the public officials were using to wage this struggle against the “backward world.” The very methods used by officials to control cholera – quarantines, cordons sanitaires, and chemoprophylaxis – are described by the Pan American Health Organization and World Health Organization as “pre-modern, irrational responses to cholera epidemics” (as cited in Briggs, 2001, p. 684). Dr. Benavides does not state that the lack of access to safe water and sanitation are the culprits for the cholera outbreak, but rather it is the movement of the *indígenas*.

Dr. Benavides, March 31, 1995:

The most serious problem [during the outbreak] was the problem of the movement of the *indígenas* – that is, those *indígenas* went all over the place. When some *indígenas* died over here, they lost themselves somewhere else, in the areas that had not been infected, and they infected the ones who came from here. Or let’s say that this movement was what screwed us up, because cases of cholera started to come up all over the place. That was the problem… (Briggs, 2003, p. 210)
As the epidemic continued, many of the *indígena* fled to the cities to be further away from cholera and closer to the clinics. Officials decided to curb this movement towards the cities by instructing the Venezuelan National Guard to inspect all vehicles, and “forcibly prevent individuals whose bodies, clothing, and beaded jewelry led to their categorization as *indígenas* from traveling to Caracas and other cities” (Briggs, 2003, p. 301). The only people meeting the description of *indígena* who were allowed to pass were those carrying a letter of permission from the Regional Office of Indigenous Affairs (Briggs, 2003). As more and more *indígenas* arrived in the cities, “people were rounded up at night – when no reporters were watching – and taken by military transport to Delta Amacuro” (Briggs, 2003, p. 301).

While the case of Venezuela is distinct, it shares many similarities with the public health response to the current cholera outbreak in the Dominican Republic.

**Haitian-Dominican Relations**

Haitian-Dominican relations are far from simplistic and have long been categorized as a history of conflict. Samuel Martinez argues that while the idea that Haiti and the Dominican Republic are fated to be enemies is an old one, such ideas do not take into account the historical and contemporary instances of cooperation and converging interests between the two nations (Martinez, 2003). Martinez asserts that:

> Were the whole story to be told, the end product would be a story so full of contradictory emotions and impulses – of tenderness and violence, love
and hatred, incorporation and rejection of the Haitian “other” – that no theme as monolithic as “anti-Haitian ideology” could contain it (Martinez, 2003, p. 81).

These contradictory sentiments are certainly evident in the Haitian-Dominican borderlands. From the late 19th century through the 1920s, both the Haitian and Dominican economies were heavily invested in the sugar industry (Derby, 1994, p. 492). The sugar estates, which employed Haitian and other immigrant laborers, were far removed from the Haitian-Dominican borderlands (Turits, 2002). Marginalized from major Dominican urban centers due to a lack of infrastructure, the Dominican borderlands were on the periphery of Dominican society and were very distinct. The local economies of Haitian and Dominican border towns, rather than being sustained by the sugar industry, were sustained by cattle, coffee, and other types of agricultural production. Lacking infrastructure to connect the Dominican border area to Dominican urban and economic centers located further east, the producers residing in the Dominican borderlands maintained economic networks with affluent Haitian urban centers and an international economy was developed (Derby, 1994).

The border, very porous during this period, had little significance for local residents. Many residents crossed the border several times each day, and Richard Lee Turits states that many ethnic Haitian children living in the Dominican Republic attended school in Haiti, came back to the Dominican Republic for lunch, returned to Haiti for afternoon classes, and then crossed back to their homes in the Dominican Republic in the evening (Turits, 2002, p. 595). Percivio
Díaz, interviewed by Richard Lee Turits and Lauren Derby in 1988, explained that in the early 20th century:

This place was made of an amalgam of people, of Haitian men marrying Dominican women and Dominican men marrying Haitian women. Many here are the products of Dominican-Haitian unions. So many that right away there were more Dominican-Haitians than pure Dominicans…There never were many pure Dominicans here (Turits 2002, p. 596).

Family genealogies date the ethnic Haitian population in the northern Dominican border area from approximately 1885 onwards, and from the central border area from 1850 onwards (Derby, 1994, p. 508). During the early 20th century there was no prevailing class hierarchy in the northwest border region of the Dominican Republic and Dominican and Haitian residents experienced high levels of integration. There were still distinctions between Haitian and Dominican ethnicities, however Turits asserts that these differences were ethnic and cultural distinctions rather than differences in nationality. Under the Dominican Constitution at the time, ethnic Haitians born in the Dominican Republic were Dominican citizens (Turits, 2002, p. 597-598). This is no longer the case.

Far from embracing this high level of integration that was enjoyed by the Haitian and Dominican border populations, the Dominican elite perceived ethnic Haitians as a threat. The Dominican elite saw the fluidity across the border and the highly integrated nature of the ethnic Haitian population in the Dominican Republic borderlands as an “invasion” that was “‘Haitianizing’ and ‘Africanizing’ the Dominican frontier, rendering popular Dominican culture more savage and backward, and injecting new and undesirable African admixtures into
the Dominican social composition” (Turits 2002, p. 599). In an attempt to gain greater control over the borderlands and gain economic benefits by reorienting the economic markets away from Haitian urban centers and towards the Dominican towns and cities, markets were built on the Dominican side of the border and it became law in the 1920s that official documents must be presented for people to pass through the port of entry in Dajabón (Turits 2002, p. 599).

While the Haitian-Dominican borderlands were largely marginalized from the sugar industry, Haitians laborers were essential to the Dominican sugar estates. The official recruitment procedures of Haitian laborers were established in 1915 (Martinez, 1995, p. 41), and there were 100,000 Haitian laborers and dependents living in the Dominican Republic by 1926 (Martinez, 1999, p. 66).

During the Rafael Leonidas Trujillo regime, from 1930 to 1961, anti-Haitian propaganda was systematically broadcast throughout the Dominican Republic. While anti-Haitian political discourse certainly pre-dated the Trujillo era, the prominence of anti-Haitian rhetoric in contemporary Dominican culture and national politics is largely a result of the propaganda disseminated through the schools, broadcast and print media, and national commemorations and holidays during the thirty-one years under the Trujillo regime (Martinez, 2003). Trujillo’s policies regarding Haitians were highly ironic and contradictory. President Trujillo himself was of Haitian descent. His maternal grandmother, Luisa Erciná Chevalier, was Haitian (Turits, 2002, p. 609). In the early 1930s, Trujillo provided financial support for Haitian artists, politicians and newspapers. He visited Haiti on multiple occasions, where he handed out gifts, pictures, and even
kissed the Haitian flag (Turits, 2002, 611). Turits reflects that in the end, “his efforts to establish strong relations with Haiti and to ingratiate himself with Haitian elites were, it appears, efforts to gain control over the Haitian state and people” (Turits, 2002, 611). The demarcation of the Haitian-Dominican border was successfully negotiated in 1936, and Trujillo began a tour of the border region in August 1937 (Turits, 2002, 612-613). The motive for what happened next is still puzzling. As Trujillo was concluding his tour of the border region, a dance was held in his honor in Dajabón on October 2, 1937. It was at this dance that Trujillo proclaimed:

> For some months, I have traveled and traversed the frontier in every sense of the word. I have seen, investigated, and inquired about the needs of the population. To the Dominicans who were complaining of the depredations by Haitians living among them, thefts of cattle, provisions, fruits, etc., and were thus prevented from enjoying in peace the products of their labor, I have responded, ‘I will fix this.’ And we have already begun to remedy the situation. Three hundred Haitians are now dead in Bánica. This remedy will continue (Quoted in Turits, 2002, p. 613).

The Dominican military forces began the systematic slaughtering of ethnic Haitians in the border region. The massacre was not carried out with guns, but rather with machetes, bayonets and clubs. Quieter than guns, these weapons reduced noises that would have alerted Haitians to flee and allowed the state a certain measure of deniability in its role in the genocide, as weapons such as machetes and clubs are normally indicative of civilian uprising rather than military violence (Turits, 2002, p. 615).

When Trujillo called an end to the massacre just five days later on Friday, October 8, 1937, most of the 20,000 to 50,000 ethnic Haitians living in the
province of Monte Cristi, just north of Dajabón, had either been killed or had fled to Haiti (Turits, 2002, p. 621). In Dajabón, a report filed in the local parish stated: “Father Gallego of Dajabón has lost two-thirds of his population, at least 20,000. In certain chapels, in Loma and Gouraba, 90 percent of the population has disappeared” (as cited in Turits, 2002, p. 621).

Ethnic Haitians were not the only ones traumatized by the massacre and the subjective ways through which the soldiers determined who would live and who would die. Most of those killed during the massacre were Dominican nationals (Turits, 2002, p. 616). When the massacre began one’s citizenship or place of birth was rendered meaningless. Rather than through official documents, one’s nationality was determined by one’s ability to pronounce the Spanish “r” correctly in words such as *perejil* (parsley) and *tijera* (scissors) (Turits, 2002, p. 616). The unprovoked slaughter of ethnic-Haitians was so inexplicable to local ethnic-Dominicans that many thought that they could be next. Many of those killed during the massacre had been residing in the Dominican Republic for generations (Turits, 2002, 620). The multiethnic, highly integrated and largely harmonious society that once existed in the border region was destroyed.

The slaughter - and the memories of this slaughter – established for the first time a profound social division, clear hierarchy, and increasing cultural distance between the populations in the Dominican Republic and Haitian frontiers. And over time this rendered official anti-Haitianism plausible at the popular level, which in turn legitimized as ‘protection’ state control over the frontier and an impermeable border with Haiti (Turits, 2002, p. 631).

Anti-Haitian policies did not halt with the end of the massacre. Rather than responding militarily, Haitian President Vincent accepted an indemnity
agreement, signed on January 31, 1938, in Washington, D.C., which stated that the Dominican government “recognizes no responsibility whatsoever [for the killings] on the part of the Dominican State” (Turits, 2002, 623). The signing of this indemnity agreement not only legitimized the systematic slaughter of thousands of ethnic Haitians, many of whom were Dominican citizens, but it also paved the way for additional anti-Haitian legislation.

Lauren Derby states that:

The Sanitation Official of Monte Cristi registered complaints about the high incidents of beggars in the northern Dominican border towns and the presence of “illegal” Haitian immigrants walking the streets and endangering public health and welfare through their contamination with “contagious diseases.” These immigrants were seen as making a “sad spectacle” which “prejudiced[d] the good customs and concept of culture of our society (Derby, 1994, 504).

Lauren Derby explains that, “the anti-Haitian discourse which became official in the 1940s associated Haitians with all forms of bodily pollution, especially disease and contagion” (Derby, 1994, p. 504).

It seems, however, that these anti-Haitian discourses are only employed when useful. Samuel Martinez asserts that “anti-Haitian propaganda puts forward the Haitian immigrant as a scapegoat for problems in the Dominican political economy while state-sponsored immigration from Haiti has created a mass of malleable nonunion labor” (Martinez, 2003, p. 83). This movement of labor was even further regulated and institutionalized when Haitian president Jean-Claude Duvalier was paid $2 million to ensure an annual shipment of Haitian laborers to the Dominican Republic (Martinez, 1995, p. 2).
The Dominican sugar industry’s reliance on Haitian labor continues today. Samuel Martinez asserts that using Haitian labor in the Dominican sugar cane fields is more attractive than employing Dominicans for various reasons. “The sugar companies and the Dominican state have realized savings as a result of the lower wages, the substandard living and working conditions, the unpaid social security benefits, and the inferior labor unionization rights they have accorded immigrant workers” (Martinez, 1995, p. 2). Haitian workers are subjected to conditions that Dominican citizens are not – they are made to work extra hours, denied a weekly day of rest, and arbitrarily relocated from non-sugar producing areas to sugar-producing areas (Martinez, 1995, p. 2). Many of the Haitians born on these sugar estates face yet another threat to their security; many are stateless.

In the Dominican Republic, race, not place of birth, now determines whether one is considered “Haitian” or “Dominican.” There are hundreds of thousands of ethnic Haitians living in the Dominican Republic who are considered “stateless,” and there are an estimated two to three million people in the Dominican Republic who are undocumented – at least one-fifth are estimated to be children (Kosinski, 2009, p. 382). A stateless individual is considered to be “any person who is not considered as a national by any state through its nationality legislation or constitution” (Kosinski, 2009, p. 378). There are two legal principles that determine nationality at birth: *jus soli* and *jus sanguinis*. *Jus soli* can be translated as the “right of soil” and *jus sanguinis* can be translated as the “right of blood” (Kosinski, 2009, p. 380). In countries where one derives citizenship according to the principle of *jus soli*, being born within a state’s
territory is sufficient to earn and be granted the right to citizenship. In countries that honor *jus sanguinis*, however, “citizenship is based on bloodline and is usually determined by the nationality of one or both parents or other more distant ancestors” (Kosinski, 2009, p. 380-381). Problems arise when some nations honor the *jus soli* principle to derive citizenship and others honor the *jus sanguinis* principle, or nations honor a combination of both; such is the case in Haiti and the Dominican Republic.

Article 11 of the 2002 Constitution of the Dominican Republic granted citizenship to all those born on Dominican soil except the children of foreign diplomats and those who are considered to be “in transit” (Constitución de la República Dominicana de 2002). Birth certificates were systematically denied to children born of Haitian parents, which the state justified by labeling the parents as migrant workers “in transit” even though many had lived in the Dominican Republic for decades. The 2004 General Law on Migration states that health centers must register births, but those deemed “non-residents” are to be issued a pink birth certificate which states that the child is a foreigner (Ley General de Migración No. 285-04, 2004). The law also requires that the child be listed in a “book of foreigners” since the child will not be granted Dominican citizenship (Ley General de Migración No. 285-04, 2004). This law, which grants Dominican citizenship only to those born of parents deemed to be “residents” of the Dominican Republic, legalized and institutionalized the denial of birth certificates to Haitians.
Historically, birth registration has been systematically withheld from children born to Haitian parents, who are often migrant workers. Unregistered children are not issued birth certificates and thus rendered stateless, as they cannot prove their nationality, where they were born, or to whom (Kosinski, 2009, p. 383).

A 2005 ruling by the Inter-American Court of Human Rights found this law to be a discriminatory violation of human rights and subsequently ordered the Dominican government to register all births in the country (Kosinski, 2009, p. 383-384).

But rather than honoring the ruling by the Inter-American Court of Human Rights, the Dominican Republic further institutionalized the 2004 General Law on Migration by adding a clause to the 2010 Constitution of the Dominican Republic. Article 18 of the 2010 Constitution of the Dominican Republic further excludes who is eligible for Dominican citizenship by excluding not only those who are considered to be “in transit” but also those who are born to parents who are in the country without legal residence (Constitución de la República Dominicana de 2010).

The human security of the majority of Haitians in the Dominican Republic is fragile. The primary reason that Haitians migrate to the Dominican Republic is to escape poverty (Ferguson, 2003, p. 8). An estimated 80% of Haitians live in “abject” poverty and have little to no economic security (Ferguson, 2003, p. 8). Seeking greater economic security, many Haitians migrate to the Dominican Republic. While seeking greater economic security in the Dominican Republic, Haitians find themselves in a precarious state of being as many other aspects of security are denied.
Haitian workers on sugar plantations often work under conditions tantamount to slavery, as they have no legal protection in the country, and are completely at the mercy of their employer. There are numerous reports of clothes and other belongings being locked away, or wages withheld, in order that workers cannot leave (International Confederation of Free Trade Unions 2002 Report as cited in Ferguson, 2003, p.14).

Haitians in the Dominican Republic live in a constant state of uncertainty. Deportations are conducted on a regular basis, often in mass expulsions (Human Rights Watch, 2002, p. 11). Haitians, and Dominicans of Haitian descent, are singled out for deportation based on the color of their skin (Human Rights Watch, 2002, p. 11). Those accused of being in the country illegally are rarely given the opportunity to provide documentation proving their legal status.

In a typical case, a Haitian immigrant or Dominican of Haitian descent is stopped on the street by a Dominican immigration or army official. The official may ask him or her for her documentation or, in occasional instances, demand a bribe. Some deportees report that if they produce documentation, it is confiscated or destroyed…As a rule, deportees are given no opportunity to contact their families, retrieve their belongings, collect their paychecks, or in any way prepare for departure. Dropped off at the border and told to walk to the other side, they typically arrive in Haiti with little or no money, indeed, often with nothing more than the clothes on their back. They may have to beg for food and for a place to sleep (Human Rights Watch, 2002, p. 11).

Haitians residing in the Dominican Republic are an exceptionally vulnerable population due to discriminatory policies that allow and even promote the systematic and institutionalized denial of human rights to Haitians and Dominicans of Haitian descent. The cholera prevention measures that have been implemented on the border with Haiti under the pretext of protecting the Dominican population from cholera are no exception.
Water, Sanitation and Cholera in Haiti and the Dominican Republic

As previously stated, there are two conditions that must be met for a cholera outbreak to occur. First, “there must be significant breaches in the water, sanitation, and hygiene infrastructure used by groups of people, permitting large-scale exposure to food or water contaminated with Vibrio cholerae organisms,” and second, “cholera must be present in the population” (CDC, 2010a).

The state of the water, sanitation, and hygiene infrastructure in Haiti is precarious, as has been shown by the severity of the recent cholera outbreak. The Dominican Republic faces serious infrastructure problems as well. UNICEF reports that in 2008, 14% of the population of the Dominican Republic lacked access to improved water sources, and 17% were without improved sanitation services (WHO and UNICEF, 2010).

The devastating earthquake that struck Port-au-Prince on January 12, 2010, took Haiti’s water and sanitation infrastructure from bad to worse. As of 2008, only 12% of the Haitian population received piped water in the home and only 17% had access to improved sanitation services (WHO and UNICEF, 2010). An international Water Poverty Index was compiled by Peter Lawrence, Jeremy Meigh, and Caroline Sullivan in 2003 that shows the correlation between water availability and household welfare, and the impact that water scarcity has on human populations (Lawrence, Meigh and Sullivan, 2003). The index assesses resources, access, capacity, use, and environment according to a variety of data
sets. The following table, extracted from Lawrence, Meigh, and Sullivan’s study, explains the data usage.

Table 1: Structure of index and data usage in Water Poverty Index (Lawrence, Meigh and Sullivan, 2003)

<table>
<thead>
<tr>
<th>WPI Component</th>
<th>Data Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>- internal freshwater flows</td>
</tr>
<tr>
<td></td>
<td>- external inflows</td>
</tr>
<tr>
<td></td>
<td>- population</td>
</tr>
<tr>
<td>Access</td>
<td>- % population with access to clean water</td>
</tr>
<tr>
<td></td>
<td>- % population with access to sanitation</td>
</tr>
<tr>
<td></td>
<td>- % population with access to irrigation adjusted by per capita water resources</td>
</tr>
<tr>
<td>Capacity</td>
<td>- purchasing power parity per capita income</td>
</tr>
<tr>
<td></td>
<td>- under-five mortality rates</td>
</tr>
<tr>
<td></td>
<td>- education enrolment rates</td>
</tr>
<tr>
<td></td>
<td>- Gini coefficients of income distribution</td>
</tr>
<tr>
<td>Use</td>
<td>- domestic water use in litres per day</td>
</tr>
<tr>
<td></td>
<td>- share of water use by industry and agriculture adjusted by the sector’s share of GDP</td>
</tr>
<tr>
<td>Environment</td>
<td>Indices of:</td>
</tr>
<tr>
<td></td>
<td>- water quality</td>
</tr>
<tr>
<td></td>
<td>- water stress (pollution)</td>
</tr>
<tr>
<td></td>
<td>- environmental regulation and management</td>
</tr>
<tr>
<td></td>
<td>- informational capacity</td>
</tr>
<tr>
<td></td>
<td>- biodiversity based on threatened species</td>
</tr>
</tbody>
</table>

Of the 147 countries assessed in this index, Haiti ranked last and the Dominican Republic ranked 64th (Lawrence, Meigh and Sullivan, 2003). Prior to the 2010 earthquake, a mere half of the population of Port-au-Prince, Haiti, had access to some form of modern sanitation (latrines, etc.), and only two-thirds had access to tap water (Farmer, 2011).
TABLE 2: Haitian and Dominican population using improved drinking water sources as of 2008 (WHO and UNICEF, 2010).

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Haiti 2008 (%)</th>
<th>Dominican Republic 2008 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of population using improved drinking water sources, 2008, TOTAL</td>
<td>63</td>
<td>86</td>
</tr>
<tr>
<td>% of population using improved drinking water sources, 2008, URBAN</td>
<td>71</td>
<td>87</td>
</tr>
<tr>
<td>% of population using improved drinking water sources, 2008, RURAL</td>
<td>55</td>
<td>84</td>
</tr>
</tbody>
</table>

TABLE 3: Haitian and Dominican population using improved sanitation facilities as of 2008 (WHO and UNICEF, 2010).

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Haiti 2008 (%)</th>
<th>Dominican Republic 2008 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of population using improved sanitation facilities, 2008, TOTAL</td>
<td>17</td>
<td>83</td>
</tr>
<tr>
<td>% of population using improved sanitation facilities, 2008, URBAN</td>
<td>24</td>
<td>87</td>
</tr>
<tr>
<td>% of population using improved sanitation facilities, 2008, RURAL</td>
<td>10</td>
<td>74</td>
</tr>
</tbody>
</table>

A report issued in 2010 by the World Health Organization and UNICEF’s Joint Monitoring Program for Water Supply and Sanitation (JMP) reports the status of safe-drinking water and sanitation services (WHO and UNICEF, 2010). The 2010 report issued by the WHO and UNICEF’s Joint Monitoring Program, titled “Update on Progress on Sanitation and Drinking Water” defines improved and unimproved sanitation. According to the 2010 update, unimproved sanitation can
consist of open defecation, unimproved facilities, or shared facilities. Open defecation is defined as: “when human feces are disposed of in fields, forests, bushes, open bodies of water, beaches or other open spaces or disposed of with solid waste” (WHO and UNICEF, 2010, p. 12). Unimproved facilities are defined as facilities that: “do not ensure hygienic separation of human excreta from human contact. Unimproved facilities include pit latrines without a slab or platform, hanging latrines and bucket latrines” (WHO and UNICEF, 2010, p. 12). Shared facilities are: “sanitation facilities of an otherwise acceptable type shared between two or more households. Only facilities that are not shared or not public are considered improved” (WHO and UNICEF, 2010, p. 12). Improved facilities, on the other hand, “ensure hygienic separation of human excreta from human contact” (WHO and UNICEF, 2010, p. 12). Flush systems that run to a piped sewer system, septic tank, or pit latrine are considered improved sanitation. Improved sanitation also includes ventilated improved pits, pit latrines with a slab, and composting toilets (WHO and UNICEF 2010, p. 12).

The World Health Organization and UNICEF’s Joint Monitoring Program similarly define unimproved drinking-water sources as: “unprotected dug well, unprotected spring, cart with small tank/drum, surface water (river, dam, lake, pond, stream, canal, irrigation channels), and bottled water” (WHO and UNICEF, 2010, p. 13). Other improved drinking water sources are defined as: “public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs or rainwater collection” (WHO and UNICEF, 2010, p. 13). Improved drinking-water piped onto premises is defined as: “Piped household water connection
located inside the user’s dwelling, plot or yard” (WHO and UNICEF, 2010, p. 13).

These definitions were used in the 2010 update to assess the status of water and sanitation services in Haiti and the Dominican Republic. The report differentiates between the services available in urban areas, rural areas, and each nation as a whole. The trends in availability of services can be seen in Tables 5-7, which show the progression of available services in the years 1990, 2000, and 2008.

In terms of sanitation facilities, the Dominican Republic has realized a 4% increase in the use of improved sanitation facilities in urban areas, a 13% increase in rural areas, and an overall 10% increase in improved sanitation facilities nationwide (WHO and UNICEF, 2010). While the improvements are commendable, 17% of the Dominican population is still without access to improved sanitation facilities.

The use of improved sanitation facilities in Haiti has declined drastically between the years of 1990 and 2008. The percentage of the urban population of Haiti with access to improved sanitation facilities fell from 44% in 1990 to 24% in 2008, and 9% of the urban population is still without any form of sanitation and is forced to defecate outside (WHO and UNICEF, 2010).

Rural areas of Haiti are facing even greater sanitation challenges. Like urban areas of Haiti, the percentage of Haitians living in rural areas with access to improved sanitation facilities declined between 1990 and 2008. As of 2008, a
mere 10% of Haitians living in rural areas had access to improved sanitation facilities and a whopping 49% of the population had to defecate openly (WHO and UNICEF, 2010).

National averages show that the percentage of the Haitian population with access to improved sanitation facilities declined 9% between the years 1990-2008, from 26% to 17% (WHO and UNICEF, 2010).

TABLE 4: Use of sanitation facilities in Urban Areas of Haiti and the Dominican Republic (WHO and UNICEF 2010).

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haiti</td>
<td>DR</td>
<td>Haiti</td>
</tr>
<tr>
<td>Improved Sanitation Facilities</td>
<td>44%</td>
<td>83%</td>
<td>34%</td>
</tr>
<tr>
<td>Shared Facilities</td>
<td>45%</td>
<td>9%</td>
<td>35%</td>
</tr>
<tr>
<td>Unimproved Facilities</td>
<td>1%</td>
<td>5%</td>
<td>21%</td>
</tr>
<tr>
<td>Open Defecation</td>
<td>10%</td>
<td>3%</td>
<td>10%</td>
</tr>
</tbody>
</table>

TABLE 5: Use of sanitation facilities in Rural Areas of Haiti and the Dominican Republic (WHO and UNICEF 2010).

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haiti</td>
<td>DR</td>
<td>Haiti</td>
</tr>
<tr>
<td>Improved Sanitation Facilities</td>
<td>19%</td>
<td>61%</td>
<td>15%</td>
</tr>
<tr>
<td>Shared Facilities</td>
<td>12%</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Unimproved Facilities</td>
<td>7%</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td>Open Defecation</td>
<td>62%</td>
<td>20%</td>
<td>56%</td>
</tr>
</tbody>
</table>
TABLE 6: Total use of sanitation facilities in Haiti and the Dominican Republic (WHO and UNICEF 2010).

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haiti</td>
<td>DR</td>
<td>Haiti</td>
</tr>
<tr>
<td>Improved Sanitation</td>
<td>26%</td>
<td>73%</td>
<td>22%</td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared Facilities</td>
<td>21%</td>
<td>10%</td>
<td>18%</td>
</tr>
<tr>
<td>Unimproved Facilities</td>
<td>6%</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td>Open Defecation</td>
<td>47%</td>
<td>11%</td>
<td>40%</td>
</tr>
</tbody>
</table>

While improvements have been made in the Dominican Republic on access to improved sanitation facilities, the percentage of the population of the Dominican Republic with access to improved drinking-water services has actually declined. 98% of the urban population of the Dominican Republic had access to improved drinking water in 1990, while only 87% of the urban population had access in 2008 (WHO and UNICEF, 2010). Conversely, the percentage of people living in rural areas with access to improved drinking water sources has increased from 76% in 1990 to 84% in 2008. The national percentage of the population with access to improved drinking water has declined 2%, from 88% in 1990 to 86% in 2008, as can be seen in Tables 8-10 (WHO and UNICEF, 2010).

In Haiti, the use of improved drinking water sources did increase from 1990 to 2008, however 37% of the Haitian population still lacked improved drinking-water in 2008. The use of improved drinking-water sources increased in
urban areas of Haiti from 62% to 71%, and in rural areas of Haiti from 41% to 55% (WHO and UNICEF, 2010).

TABLE 7: Use of drinking-water sources in Urban Areas of Haiti and the Dominican Republic (WHO and UNICEF 2010).

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haiti</td>
<td>DR</td>
<td>Haiti</td>
</tr>
<tr>
<td>Total Improved Water Source</td>
<td>62%</td>
<td>98%</td>
<td>67%</td>
</tr>
<tr>
<td>Improved: Piped on Premises</td>
<td>27%</td>
<td>94%</td>
<td>24%</td>
</tr>
<tr>
<td>Improved: Other</td>
<td>35%</td>
<td>4%</td>
<td>43%</td>
</tr>
<tr>
<td>Unimproved</td>
<td>38%</td>
<td>2%</td>
<td>33%</td>
</tr>
</tbody>
</table>

TABLE 9: Use of drinking-water sources in Rural Areas of Haiti the Dominican Republic (WHO and UNICEF, 2010).

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Haiti</td>
<td>DR</td>
<td>Haiti</td>
</tr>
<tr>
<td>Total Improved Water Source</td>
<td>41%</td>
<td>76%</td>
<td>49%</td>
</tr>
<tr>
<td>Improved: Piped on Premises</td>
<td>2%</td>
<td>46%</td>
<td>3%</td>
</tr>
<tr>
<td>Improved: Other</td>
<td>39%</td>
<td>30%</td>
<td>46%</td>
</tr>
<tr>
<td>Unimproved</td>
<td>59%</td>
<td>24%</td>
<td>51%</td>
</tr>
</tbody>
</table>
TABLE 9: Total use of drinking-water sources in Haiti and the Dominican Republic (WHO and UNICEF, 2010).

<table>
<thead>
<tr>
<th></th>
<th>Haiti</th>
<th>DR</th>
<th>Haiti</th>
<th>DR</th>
<th>Haiti</th>
<th>DR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Improved</strong></td>
<td>47%</td>
<td>88%</td>
<td>55%</td>
<td>87%</td>
<td>63%</td>
<td>86%</td>
</tr>
<tr>
<td><strong>Water Source</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Improved:</strong></td>
<td>9%</td>
<td>73%</td>
<td>10%</td>
<td>72%</td>
<td>12%</td>
<td>72%</td>
</tr>
<tr>
<td><strong>Piped on Premises</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Improved:</strong></td>
<td>38%</td>
<td>15%</td>
<td>45%</td>
<td>15%</td>
<td>51%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unimproved</strong></td>
<td>53%</td>
<td>12%</td>
<td>45%</td>
<td>13%</td>
<td>37%</td>
<td>14%</td>
</tr>
</tbody>
</table>

A 7.0 magnitude earthquake struck Port-au-Prince, Haiti, on January 12, 2010, decimating the city’s infrastructure, killing more than 300,000 people and leaving more than 1.5 million more homeless (Farmer et al, 2011). Haiti’s pre-existing water and sanitation difficulties were exacerbated by the earthquake and certainly met the first of the CDC’s conditions necessary for a cholera outbreak: “there must be significant breaches in the water, sanitation, and hygiene infrastructure used by groups of people” (CDC, 2010a). A cholera outbreak was not anticipated after the earthquake, however, due to the fact that the second condition, that cholera be present in the population, was not met. The following passage on the unlikeliness of a cholera outbreak in Haiti was taken from a February 2010 Pre-Decisional Brief for Public Health Action from the U.S. Centers for Disease Control and Prevention:

An outbreak of cholera is very unlikely at this time... While the current water, sanitation, and hygiene infrastructure in Haiti would certainly facilitate transmission of cholera (and many other illnesses), cholera is not
circulating in Haiti, and the risk of cholera introduction to Haiti is low. Most current travelers to Haiti are relief workers from countries without endemic cholera, and they are likely to have access to adequate sanitation and hygiene facilities within Haiti, such that any cholera organisms they import would be safely contained. Similarly, importation of cholera through contaminated food has not been documented in Haiti in decades and is unlikely to become a problem during the relief efforts (CDC, 2010a).

Believing a post-earthquake cholera outbreak highly unlikely, public health authorities were largely unprepared for the outbreak, which was first reported in the areas of Saint-Marc and Mirebalais, Haiti (Farmer et al, 2011).

How cholera arrived in Haiti is contested, but it can be said with certainty that cholera was imported into the country. The Haitian Ministry of Public Health and Population (MSPP) reported that the cholera outbreak was caused by *Vibrio cholerae* O1, serotype Ogawa, biotype *El Tor* (Piarroux et al, 2011). A cholera outbreak was reported in Kathmandu, Nepal, on September 24, 2010, and Nepalese troops deployed as part of MINUSTAH, the United Nations Stabilization Mission in Haiti, arrived in Meye, a subdistrict of Mirebalais, Haiti, on October 9, 12, and 16, 2010 (Piarroux et al, 2011).

Cuban medical brigades reported to the Haitian MSPP that in the week leading up to October 18, 2010, they had treated a total of 61 cases of acute watery diarrhea in Mirebalais. On October 18, they discovered 28 new cases including two deaths (Piarroux et al, 2011). Piarroux states that:

The first hospitalized patients were members of a family living in Meille [sic], a small village 2 km south of Mirebalais. On October 19, the investigators identified 10 other cases in the 16 houses near the index family’s house. Five of the 6 samples collected in Meille from these outpatients, who became sick during October 14-19, yielded *V. cholerae* O1, serotype Ogawa, biotype *El Tor*…Meille village hosted a
MINUSTAH camp, which was set up just above a stream flowing into the Artibonite River…The Haitian epidemiologists observed sanitary deficiencies, including a pipe discharging sewage from the camp into the river. Villagers used water from this stream for cooking and drinking. (Piarroux et al, 2011, p. 1162).

The Secretary-General of the United Nations appointed an Independent Panel on January 6, 2011, to investigate the source of the cholera outbreak. The report, which was issued on May 4, 2011, concludes that, “the evidence overwhelmingly supports the conclusion that the source of the Haiti cholera outbreak was due to contamination of the Meye Tributary of the Artibonite River with a pathogenic strain of current South Asian type Vibrio cholerae as a result of human activity” (Cravioto, Lanata, Latagne, Nair, 2011, p. 29). The panel goes on to assert that such an explosive outbreak would not have been possible without simultaneous deficiencies in the water, sanitation, and health systems. The panel concluded that:

The Haiti cholera outbreak was caused by the confluence of circumstances as described above, and was not the fault of, or deliberate action of, a group or individual. The source of cholera in Haiti is no longer relevant to controlling the outbreak. What are needed at this time are measures to prevent the disease from becoming endemic (Cravioto, Lanata, Latagne, Nair, 2011, p. 29).
Chapter 4: CASE STUDY OF DAJABON

Dajabón is a province in the northwestern region of Cibao in the Dominican Republic that covers a land area of 1009.12 square kilometers. Haiti forms Dajabon’s western border; the northern, eastern, and southern borders of Dajabón are formed by the Dominican provinces of Monte Cristi, Santiago Rodriguez, and Elías Piña, respectively (ONE, 2008).

The province of Dajabón is made up of five municipalities and four districts. The municipalities of Dajabón are: Dajabón, Loma de Cabrera, Partido, Restauración, and El Pino. The four districts of Dajabón are Cañongo, Capotillo, Santiago de la Cruz, and Manuel Bueno (ONE 2008). As of the 2002 census, the total population of the province of Dajabón was 62,046 people, with a population density of 69.11 inhabitants per square kilometer (ONE 2008). See Table 17 for the population distribution among the various municipalities and municipal Districts.

<table>
<thead>
<tr>
<th>Minicipality/District</th>
<th>Total</th>
<th>Under the age of 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dajabón</td>
<td>23,244</td>
<td>2,720</td>
</tr>
<tr>
<td>Cañongo</td>
<td>2,2441</td>
<td>250</td>
</tr>
<tr>
<td>Loma de Cabrera</td>
<td>11,071</td>
<td>1,288</td>
</tr>
<tr>
<td>Capotillo</td>
<td>1,774</td>
<td>198</td>
</tr>
<tr>
<td>Santiago de la Cruz</td>
<td>2,426</td>
<td>300</td>
</tr>
<tr>
<td>Partido</td>
<td>7,562</td>
<td>680</td>
</tr>
<tr>
<td>Restauración</td>
<td>6,908</td>
<td>922</td>
</tr>
<tr>
<td>El Pino</td>
<td>4,485</td>
<td>455</td>
</tr>
<tr>
<td>Manuel Bueno</td>
<td>2,135</td>
<td>167</td>
</tr>
<tr>
<td>TOTAL</td>
<td>62,046</td>
<td>6,980</td>
</tr>
</tbody>
</table>
Water and Sanitation Services in Dajabón

At the time of the 2002 census, the province of Dajabón was far behind the national average in sanitation services. In 2002, only 23.59% of the people living in the province of Dajabón had a lavatory inside their home, compared to the national average of 54.21%. Common pit latrines, used by 68.74% of the population of Dajabón, consist of “a square, rectangular or circular pit dug into the ground, covered by a hygienic cover slab or floor, with a hole through which excreta fall into the pit” (WHO Fact Sheet 3.4, no date, p. 17). The 2002 census indicated that 1,226 people in Dajabón, 7.68% of the population, had no form of sanitation services (ONE, 2008). This lack of sanitation services is dangerous not only to individuals but to the community as a whole. As seen with the swiftness of the cholera transmission in Haiti, a single point of contamination can cause a rapid outbreak.

TABLE 11: Sanitation services by household as of the 2002 census (ONE, 2008)

<table>
<thead>
<tr>
<th>Type of Sanitation Service</th>
<th>Total Number of Households in Dajabón</th>
<th>Percentage of Dajabón</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathroom in Home</td>
<td>3,767</td>
<td>23.59%</td>
<td>54.21%</td>
</tr>
<tr>
<td>Latrine</td>
<td>10,979</td>
<td>68.74%</td>
<td>38.01%</td>
</tr>
<tr>
<td>None</td>
<td>1,226</td>
<td>7.68%</td>
<td>7.77%</td>
</tr>
<tr>
<td>Total</td>
<td>15,972</td>
<td>100%*</td>
<td>100%</td>
</tr>
</tbody>
</table>

Household waste is also a potential water contaminant. In Dajabón, as of the 2002 census, trash was picked up by city services at only 46.55% of the households. The other households resorted to burning their trash, throwing it
outside of their home, or taking it to a trash dump themselves. As shown in the table below, 1.21% of the population even reported disposing of their trash by throwing it in rivers or streams (ONE, 2008).

<table>
<thead>
<tr>
<th>Elimination of Trash</th>
<th>Number of Households in Dajabón</th>
<th>Percentage of Households in Dajabón</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picked up by the City</td>
<td>7,435</td>
<td>46.55%</td>
<td>55.80%</td>
</tr>
<tr>
<td>Picked up by Private Companies</td>
<td>9</td>
<td>0.06%</td>
<td>3.68%</td>
</tr>
<tr>
<td>Burn the Trash</td>
<td>5,335</td>
<td>33.40%</td>
<td>23.66%</td>
</tr>
<tr>
<td>Throw it outside of the home</td>
<td>2,523</td>
<td>15.80%</td>
<td>5.39%</td>
</tr>
<tr>
<td>Throw it in a dump</td>
<td>394</td>
<td>2.47%</td>
<td>5.98%</td>
</tr>
<tr>
<td>Throw it in a river or stream</td>
<td>193</td>
<td>1.21%</td>
<td>3.71%</td>
</tr>
<tr>
<td>Other</td>
<td>83</td>
<td>0.52%</td>
<td>1.78%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>15,972</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Like the various forms of sanitation and waste disposal in Dajabón, there are various ways the population obtains its drinking water. As of the 2002 census, only 38.04% of the population of Dajabón had a water source inside of the home. The remaining population obtains water from a variety of sources -- 36.58% of the population obtains water from a faucet outside of their home, an additional 7.61% obtain water from a public faucet, and the remaining households obtain water from sources such as springs, rivers, streams, wells, rainwater, and/or water trucks (ONE, 2002). The methods by which the people of Dajabón obtain water, compared to the national norms, are shown in Table 20.
TABLE 13: Provision of Water Services by Household (ONE, 2008)

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Percentage of Homes in Dajabón</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor Plumbing, Water from Aqueduct</td>
<td>38.04%</td>
<td>35.90%</td>
</tr>
<tr>
<td>Faucet outside of home, water from Aqueduct</td>
<td>36.58%</td>
<td>24.80%</td>
</tr>
<tr>
<td>Public Faucet, water from Aqueduct</td>
<td>7.61%</td>
<td>18.17%</td>
</tr>
<tr>
<td>Spring, River, Stream</td>
<td>6.77%</td>
<td>5.14%</td>
</tr>
<tr>
<td>Well</td>
<td>3.42%</td>
<td>6.68%</td>
</tr>
<tr>
<td>Rainwater</td>
<td>0.37%</td>
<td>1.47%</td>
</tr>
<tr>
<td>Water Truck</td>
<td>6.15%</td>
<td>6.65%</td>
</tr>
<tr>
<td>Other</td>
<td>1.04%</td>
<td>1.18%</td>
</tr>
<tr>
<td>Total</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

**Health in Dajabón**

According to data from a 2006 report from the Secretary of the State of Public Health and Social Assistance in the Dominican Republic (SESPAS), the province of Dajabón had 17 clinics, two municipal hospitals and one provincial hospital (SESPAS 2006 cited in ONE, 2008).

The accessibility of hospitals and clinics does not necessarily mean that the entire population has received the necessary vaccinations or seeks treatment when ill. As shown in the tables below, only 43.3% of the children under the age of five had received all of their vaccinations, malnutrition rates in children under the age of five are as high as 14.46% in some areas, and illnesses such as diarrhea and fever are common (ONE, 2008).
TABLE 14: Vaccination rates in children between 18 and 29 months of age (ONE, 2008)

<table>
<thead>
<tr>
<th>Child Vaccination</th>
<th>Vaccination Rate</th>
<th>National Vaccination Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children with Vaccination Card</td>
<td>57.9%</td>
<td>62.0%</td>
</tr>
<tr>
<td>Children with Complete Vaccination</td>
<td>43.3%</td>
<td>52.9%</td>
</tr>
<tr>
<td>Children who have not been vaccinated</td>
<td>14.9%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

TABLE 15: Children under the age of five who showed symptoms of the following illnesses in the two weeks prior to the survey (ONE, 2008)

<table>
<thead>
<tr>
<th>Illness/Symptoms</th>
<th>Percentage of Dajabón</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children with Acute Respiratory Infection</td>
<td>7.2%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Children with Fever</td>
<td>20.3%</td>
<td>20.9%</td>
</tr>
<tr>
<td>Children with Diarrhea</td>
<td>18.9%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Children with Tuberculosis</td>
<td>0.2%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

TABLE 16: Estimated prevalence of malnutrition in children between the ages of 6 and 59 months in the province of Dajabón (ONE, 2008)

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Chronic malnutrition per 100 children</th>
<th>Number of chronically malnourished children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dajabón</td>
<td>6.63</td>
<td>176</td>
</tr>
<tr>
<td>El Pino</td>
<td>12.27</td>
<td>69</td>
</tr>
<tr>
<td>Loma de Cabrera</td>
<td>8.71</td>
<td>138</td>
</tr>
<tr>
<td>Partido</td>
<td>7.42</td>
<td>46</td>
</tr>
<tr>
<td>Restauración</td>
<td>14.46</td>
<td>115</td>
</tr>
<tr>
<td>Province of Dajabón TOTAL</td>
<td>8.75</td>
<td>544</td>
</tr>
<tr>
<td>National TOTAL</td>
<td>10.10</td>
<td>N/A</td>
</tr>
</tbody>
</table>
As of the 2002 census, 56.2% of the households in the province of Dajabón were considered to be in poverty. Of those households in poverty, 15.2% were considered to be in extreme poverty (ONE, 2008).


<table>
<thead>
<tr>
<th>Municipality</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dajabón</td>
<td>3,120</td>
<td>47%</td>
</tr>
<tr>
<td>El Pino</td>
<td>1,012</td>
<td>58.3%</td>
</tr>
<tr>
<td>Loma de Cabrera</td>
<td>2,431</td>
<td>61.6%</td>
</tr>
<tr>
<td>Partido</td>
<td>1,092</td>
<td>54.4%</td>
</tr>
<tr>
<td>Restauración</td>
<td>1,314</td>
<td>80.1%</td>
</tr>
<tr>
<td>Province TOTAL</td>
<td>8,969</td>
<td>56.2%</td>
</tr>
<tr>
<td>National TOTAL</td>
<td>897,605</td>
<td>40.9%</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Municipality</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dajabón</td>
<td>518</td>
<td>7.8%</td>
</tr>
<tr>
<td>El Pino</td>
<td>274</td>
<td>15.8%</td>
</tr>
<tr>
<td>Loma de Cabrera</td>
<td>672</td>
<td>17.0%</td>
</tr>
<tr>
<td>Partido</td>
<td>208</td>
<td>10.4%</td>
</tr>
<tr>
<td>Restauración</td>
<td>758</td>
<td>46.2%</td>
</tr>
<tr>
<td>Province TOTAL</td>
<td>2,430</td>
<td>15.2%</td>
</tr>
<tr>
<td>National TOTAL</td>
<td>171,308</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

To gather information on the measures that had been taken in Dajabón to prevent cholera, I began by meeting with the directors and senior level officials of various public offices in Dajabón, including representatives of the Ministry of Public Health, Hospital, Migration and Customs Offices, and local healthcare workers. The findings from these interviews illuminate the challenges facing officials and residents in Dajabón.
**Ministry of Public Health: Actions Taken**

According to a senior public health official in the province of Dajabón, directly after the initial outbreak of cholera was confirmed in Haiti on October 21, 2010, a team of international epidemiologists from multiple organizations came to Dajabón to train public health officials in cholera prevention. The intent was to keep cholera from spreading to the Dominican Republic. In October 2010, after the training by the team of international epidemiologists, a meeting was held between all of the Dominican Ministry of Public Health offices in the provinces along the Haitian border.

From the training and meetings, a cholera prevention strategy was developed and implemented in Dajabón. The strategy involved three categories: border control; education; and reinforcement of water, sanitation, and hygiene infrastructure.

**Border Control Strategies**

Health care professionals working near the border crossings were trained by public health officials in the diagnosis, handling, and treatment of cholera. A *cordon sanitaire* was implemented on the border and teams of health care workers maintained a presence at the crossings to improve cholera screening. The team checked people that they suspected were infected with cholera.
Hand-washing stations were installed on the bridge where Haitians enter the Dominican Republic to attend the bi-national market that occurs every Monday and Friday. “All Haitians” entering the Dominican Republic were required to wash their hands with chlorinated water and guava soap. The hand-washing stations were only in use on Monday and Friday when the market was held. I took the following photo of the hand-washing stations located on the bridge to enter the binational market from Haiti during the market on Friday, October 21, 2011.

It’s also important to note that this bridge is not the official border crossing for immigration into Dajabón and is only used for entrance into the
Hand-washing stations were not installed at the official border crossing. At the onset of the outbreak, the market in Dajabón was closed for “a few markets” and was then re-opened.

At the official border crossings, Haitians entering the Dominican Republic were required to step on a mat soaked in chlorine designed to kill any bacteria on the Haitians’ feet and prevent the circulation of Vibrio cholerae.

Haitians were prohibited from entering the Dominican Republic with homemade foods or any form of water, even purified water. Haitians attending the market had to buy water in the Dominican Republic.

**Educational Campaign**

Public health officials began distributing materials educating the population on cholera prevention at the onset of the outbreak in October 2010. A representative from the Ministry of Public Health office for the province of Dajabón assured me that public health officials went to every home in the province to ensure that the entire population had the information necessary to prevent cholera in their homes.

There were also flyers and brochures distributed throughout the province with information on how to prevent cholera. Informational talks were held when the outbreak began in the Centro de Madres and Clubes Culturales (Mothers Centers and Cultural Clubs).
The message that the public health staff was attempting to disseminate was that people must do three things to curb the spread of cholera. This included washing their hands before eating and not eating food from street vendors or homemade foods for sale. The third directive was to disinfect water with five drops of chlorine per gallon. This water can then be used to brush one’s teeth; wash the dishes, fruits, and vegetables; and to cook. If chlorine is not readily available, the water must be boiled to avoid infection.

Training was conducted in all hospitals in the province to train doctors and nurses in cholera prevention, diagnosis, and treatment.

**Reinforcement of the Water, Sanitation and Hygiene Infrastructure**

According to public health officials, the Ministry of Public Health began to monitor the water chlorination in the aqueduct and distribution systems throughout the province in October 2010 when the outbreak began in Haiti. It also began to monitor the water treatment plant to ensure that the water was being adequately treated for consumption. Training was provided to all health care personnel in the province and the personnel launched a study of the number of homes without access to indoor plumbing or a latrine.

The public health officials also spoke with the owners of businesses that employed a lot of Haitian workers. They were instructed to provide sanitary facilities and facilities for workers to wash their hands. This was especially important on the dairy farms and the owners were advised to construct latrines and hand-washing stations on the farms so that each employee could wash his or
her hands before milking the dairy cows. This measure was intended to prevent contamination of the milk.

According to a senior regional public health official who I interviewed on October 21, 2011, there had only been 55 cases of laboratory-confirmed cholera in the province of Dajabón.

**Hospital Dajabón**

Various prevention measures were taken in the Ramón Matías Mella Hospital in Dajabón when the outbreak began in October, 2010. The first was to prepare a separate, 10-bed unit to treat those with cholera if an outbreak occurred.

The hospital personnel were also trained in sanitary measures to prevent co-infection and the spread of cholera inside the hospital, and in methods to effectively treat each patient. The personnel were trained by the public health staff and also by staff from the Pan American Health Organization (PAHO). The personnel practiced treating a cholera case by performing case simulations with the public health staff and personnel from the PAHO. They also completed written exercises.

If a patient arrives at the hospital with symptoms of cholera, hospital personnel were instructed to educate both the patient and his family in ways to disinfect their home and prepare their food and water to prevent re-infection of the patient or the spread of the disease.
According to the hospital official, measures for community abatement are being managed by the Ministry of Public Health and the hospital does not oversee that process. The official from the Ramón Matías Mella Hospital stated that public health officials have visited the aqueduct and requested that the water be chlorinated. The Pan American Health Organization also sent a water chlorinator, which has been installed in the hospital. This was installed as a preventative measure in case there was a large outbreak and the hospital needed immediate access to large amounts of purified water.

At the provincial level, short orientation sessions have been held by public health officials in the schools, cultural centers, and the mother’s center, and programs have been broadcasted over the radio and on television. The information has been distributed in two languages: both Spanish and Haitian Creole, so that Haitians living in Dajabón have the information as well.

The official from the hospital in Dajabón said that as of October 3, 2011, a total of 33 patients with symptoms of cholera had traveled from Partido to seek treatment in the hospital after the outbreak that began in Partido on September 21, 2011. He stated that laboratory tests are being performed on all of the patients, and he was waiting for the results from the epidemiologists. The official was told that approximately 300 samples from patients with symptoms of cholera from the outbreak in Partido had been submitted for analysis but the official results had not yet been received.
The official also stated that while they have received cases of cholera from Partido, they have also received patients with *Salmonella, Shigellosis*, diarrhea from nervousness, and diarrhea from consuming other types of poorly prepared foods.

The hospital official had received very few patients seeking treatment from Haiti. The reason for this is that the Cuban medical team set up a treatment center in Ouanaminthe, as well as World Vision International, Doctors of the World, and the Red Cross. For this reason, there were very few patients coming from Haiti to seek treatment in Dajabón. The only cases that came from Haiti were the most critical cases that required a hospital and were not able to be handled in the treatment center that had been set up in Ouanaminthe.

Of the 33 cholera cases that arrived from Partido, only four were Haitian: one woman and three men. The official from the hospital in Dajabón stated:

> Medicine is universal, and we treat human beings: their legal status does not matter. The doctors and nurses here in the hospital have been instructed to treat anyone who comes through the door that needs treatment, whether they’re Dominican, Haitian, Chinese, Japanese, it doesn’t matter. The personnel in the hospital do not ask for documentation because they are health care professionals, not migration officials. That is the job of migration officials. Anyone who comes to the hospital will be treated.

**Migration**

According to an interview with a senior migration official in Dajabón, approximately 10,000 Haitians enter to attend the bi-national market in Dajabón
every Monday and Friday. I took the following photo on the morning of Monday, October 10, 2011, as Haitians were waiting for the bridge to be opened to enter Dajabón for the binational market.

The market is located in an enclosed, controlled area. Passports and visas are not required to enter the Dominican Republic to attend the market. Everyone enters in the morning and must leave in the evening. The bridge across which people enter from Haiti to attend the market opens in the morning at 8:00 a.m. and closes at 6:00 p.m. By law, there are no international taxes or fees that are required to enter to attend the market. Haitians entering the Dominican Republic for reasons other than to attend the market are required to have a passport and visa.
The official stated that, contrary to some reports, the border was not closed when the cholera outbreak began. Rather than closing the border, migration officials only allowed the entry of those Haitians with passport and visa. Those with passport and visa could enter as they pleased.

The official stated that the market was closed for one or two market days (over the course of approximately one week), and then was re-opened. Closing the market is very inconvenient for Haitians because many buy and sell goods there. The official stated that in the market there are no health controls and there are too many people in one place. The only way for the Dominicans to control the spread of cholera in the market is to encourage people to eat before going to the market and not to eat or touch their mouth with their hands while in the market.

The official stated that, regarding cholera, migration officials only help enforce the policies implemented by the Ministry of Public Health: “There is a team of medics that works on the bridge on market days, but they [the medics] are the ones who are working to control the epidemic. Migration officials just try to assist them with anything they may need while working in the border area.” The official stated that the mat saturated with chlorine that had been placed on the bridge to disinfect people’s feet had been removed by public health officials at the official border crossing many weeks prior to the interview. Migration officials currently fumigate all vehicles entering from Haiti and sprayed them with chlorinated water.
The official stated that when there is an epidemic on one side of the border, migratory control is important but this is something that the Ministry of Public Health has to organize. The Ministry of Public Health is the organization expected to outline the policies to prevent a cholera epidemic. Migration officials can assist public health in whatever policies they implement on the border, but the epidemic has thus far not affected migratory operations. For example, the cholera outbreak has not affected the average rate of deportations. If Haitians are in the Dominican Republic illegally, they will be deported back to Haiti. Migration officials will detain those who are illegal and turn them over to Haitian authorities at the border.

The official stated that if a Haitian in the country illegally seeks medical treatment in a hospital or a clinic, he/she will be treated and will not be bothered by immigration officials while in the hospital. The Director of Migration stated that in Dajabón more Haitians go to the public hospital and are treated there than Dominicans, and none of them have related problems with deportation.

**Cholera in Dajabón**

Despite the efforts of the public health officials, three outbreaks had occurred in the province of Dajabón by the time that this study concluded on October 21, 2011. These outbreaks occurred in the neighborhoods of Caratá and Los Arrollos, and in the town of Partido.

According to provincial public health officials, it was their policy to perform laboratory tests on all suspected cases of cholera. A senior public health
official stated that 700-720 lab tests were conducted in total, and of those only 55 tested positive for cholera.

The official said that only laboratory-confirmed cases are reported at the national and international level, because one cannot assume that all cases of diarrhea are cholera. There are other infections that can cause diarrhea.

**The outbreak in Caratá**

The outbreak in Caratá in mid-April, 2011 occurred, according to a provincial public health official, because of a Haitian community without access to basic sanitation (no bathroom, latrine, etc). The official stated that: “The Haitians in the community defecated in the mouth of the river, and the river became contaminated with cholera. The Haitians were removed from this area and put in another area of town. They were given latrines in this new area.” The public health official went on to say that, “all of the Haitians in that community were in the country illegally. After removing the Haitians and chlorinating the water, there were no additional cases of cholera in that area.” The total number of suspected cases of cholera is unknown, however the public health official confirmed that there were six laboratory-confirmed cases. The official could not recall if any of the six confirmed cases were Haitian.

**Los Arrollos**

The outbreak in Los Arrollos occurred in August, 2011. According to the public health official, “a Haitian’s home is located near the water intake, and the Haitian
did not have a bathroom or latrine. The Haitian defecated outside of his home, and this is how the water became contaminated.” The total number of cases are unknown; however, there were five cases confirmed positive by laboratory tests. Two of the confirmed cases were Haitian patients, and three of the confirmed cases were Dominican.

**Partido**

There are varying accounts of what took place in Partido. I will first relay the information that I received from health-care workers and local public officials in Partido, and I will then relay the information that I received from a senior Ministry of Public Health official.

**The outbreak in Partido according to health care professionals at local clinic**

Partido is a town in the province of Dajabón with a population of 7,562 at the time of the 2002 census (ONE, 2002). On the night of Wednesday, September 21, 2011, three patients arrived at the local clinic with acute watery diarrhea. There were no common denominators between the patients – age, neighborhood, workplace, common restaurant, etc. – that could have caused each of them to fall ill with diarrhea.

On Thursday, September 22, 2011, many more people arrived at the clinic with the same symptoms. Again, there was nothing that seemed to connect the
patients. The medics realized that the water must have been the cause of the diarrhea. According to the medics in the clinic, the people reported that the water coming out of the faucets in their homes was dirty – it was coming out of the tap with grains of dirt, but the people were drinking it anyway – without boiling it or chlorinating it to kill any bacteria that may have been present. (I observed this as well in Dajabón. Dirty, discolored water ran out of the faucet in my own home at times. The woman I was living with stated that dirty water comes out of the faucet when there are heavy rains in Loma de Cabrera, a nearby town.) As of October 5, 2011, a total of 227 patients had been attended to in the clinic in Partido with symptoms of cholera. There were a total of 16 patients that arrived between the dates of October 2-4, 2011, the three days prior to my visit to the clinic. The medics in the clinic did not know how many patients had sought treatment in other health centers such as the hospitals in Dajabón or in Santiago. According to an official in the Dajabón hospital, 33 patients arrived from Partido with symptoms of cholera.

In the clinic in Partido, various measures were taken to prevent contamination within the clinic. All water in the clinic was chlorinated, everyone who entered the clinic was required to wear latex gloves, and all surfaces (floor, seating, etc.) were disinfected with chlorine.

Each person who entered the clinic was diagnosed and treated, and the most serious cases were referred to the hospitals of Dajabón or Santiago, depending on the gravity of the case. As of the date of my visit, October 5, 2011, a total of 21 patients had been referred to hospitals for treatment.
All patients demonstrating symptoms of cholera were treated as if they had cholera. Public health officials performed lab tests on only 20 of the 227 patients who were treated in the clinic. Of the 20 patients, laboratory tests confirmed that seven (35%) were infected with cholera. The rate of infection of those seen in the clinic with watery diarrhea is therefore estimated at 35%. It can therefore be concluded that 79 of the 227 patients who presented themselves in the clinic with acute watery diarrhea were infected with cholera (35% of 227).

Various factors can account for the remaining 65% who had symptoms of diarrhea and/or vomiting. When the news broke that the water system had been contaminated with *Vibrio cholerae*, many people panicked to the point that they made themselves ill.

There were others who became ill because they consumed too much chlorine while attempting to purify their water. Some people even drank pure chlorine in an attempt “to kill any bacteria in their body,” resulting in the chemicals burning their esophagus. Others developed allergic reactions to chlorine because they used too much to purify their water and disinfect their homes.

Measures were immediately taken to address the outbreak. There are only three doctors who work in the clinic in Partido, so it was impossible for them to go house to house to notify people of the outbreak and educate them about how to protect themselves. Instead, the clinic used promoters to go throughout the town and distribute information.
According to medics in the clinic, three days after Public Health and the Instituto Nacional de Aguas Potables y Alcantarillados (The National Institute for Potable Water and Sewage Systems or INAPA), cleaned the aqueduct the number of cases diminished significantly. The Ministry of Public Health and INAPA closed the water pump, chlorinated the tank, and chlorinated the aqueduct. Still, medics said that though the number of confirmed cases decreased, people still arrived at the clinic with symptoms of cholera. According to a doctor in the clinic, the origin of the contamination is still unknown. It appears there was another source of contamination that was not identified.

The majority of the patients who arrived with symptoms of cholera were adult males between the ages of 20-75. Very few children became ill. One of the doctors told me that she was surprised that so many of the patients had consumed water straight from the tap without any type of filtration or purification. The patients knew there was cholera in town, but they did not think that they would get sick from drinking the water. Some had said that they had “filtered” the water by straining it to remove the dirt/sediment, but they did not boil or chlorinate it.

Adults thought to be infected with cholera were treated with the antibiotic Doxycyclin. All those over the age of eight were given 300mg of Doxycyclin and were required to take the pills in the presence of a clinic doctor because many healthy people wanted the antibiotic to prevent cholera. It was explained to them that Doxycyclin is used only to cure someone who is already infected and that taking it before infection could produce drug resistance. Those working in the clinic were afraid that people would misuse the medication or try to sell it, so
everyone who was prescribed the medication was required to take the dosage before leaving the clinic. Children under the age of eight and pregnant women were given the antibiotic Azitromicina and were also required to take the recommended dosage in the presence of the clinic staff.

**Measures taken by the local Red Cross volunteers**

The local Red Cross volunteers were integral in the outreach efforts when the outbreak began in Partido. The local office in Partido has a total of 71 volunteers. All of the volunteers also have their normal jobs, so they volunteered time as they were available. Six Red Cross volunteers held meetings throughout Partido to disseminate information regarding the outbreak and prevention measures that should be taken in the home. All of the Red Cross efforts were in support of the Ministry of Health.

According to an interview with a local Red Cross official, INAPA was at the time chlorinating the water daily since the start of the outbreak, and the population is today using bottled water rather than tap water.

In addition to holding talks throughout the community, Red Cross officials began going house-to-house to distribute a brochure about cholera prevention along with a bottle of Clorox bleach.

Red Cross officials noted the help they received from local firefighters, who were essential outbreak responders because they have an ambulance. Red Cross officials and firefighters worked together to reach those who were ill.
In addition, seven volunteers are dedicated to fumigating and disinfecting the houses of those infected. According to the Red Cross official, the provincial Director of Public Health, Dr. Rafael Salas Ubiera, also visited Partido and spoke to the children in the school about cholera prevention.

**Measures taken by the city council**

According to an interview with the vice-mayor of Partido, the city council took many actions in response to the outbreak. Educational sessions were held in the community to inform the population and also to distribute written instructions on how to avoid becoming infected with cholera. Sessions were also held in the schools, and the schools were taking all other the necessary steps to avoid contamination.

Clorox, detergents, and guava soap was distributed throughout the community. The aqueduct was chlorinated and the homes of the people infected were fumigated and disinfected. Transportation to medical centers was also offered to anyone demonstrating symptoms of cholera.

According to the vice-mayor, the Ministry of Public Health has confirmed and reported seven cases of cholera in Partido, but it only took samples from 20 patients. The vice-mayor also said that the city learned later that there was an aqueduct that had never been connected to the treatment plant, but that those in charge of maintaining the aqueduct had always chlorinated it.

**Ministry of Public Health official**
A senior public health official, interviewed on October 21, 2011, gave me the following explanation for the outbreak in Partido:

The outbreak in Partido in late-September and early October, 2011 began due to contamination of the Maguaca River with *Vibrio cholerae*. The aqueduct in Partido was damaged, and water had not arrived to the town for many days. INAPA installed an aqueduct that ran directly from the river to the population so that the people would have water, even though this water was not treated. INAPA did this without realizing that the Maguaca River was contaminated. The people of Partido were aware that the water coming from this aqueduct was not treated, and were told to take the necessary precautions (boiling, chlorinating the water) to purify the water before consuming it. But people fell ill because the river did indeed become contaminated and the people of Partido did not take the necessary precautions to disinfect it.

Other public health officials, lawyers, and residents of Partido have disputed the above account. They assured me that the town was never without water, and the aqueduct in question had been supplying water directly from the river to the residents without any treatment for many months. I was told by residents of Partido that it was not known by the local population that this water was not treated. The local population did not know that this particular aqueduct was not connected to the treatment plant, and that the water that they were consuming was not treated. This fact did not come to light until the river became contaminated with cholera and the population, who had been consuming untreated water from this aqueduct, fell ill. I was informed by public health officials that after analyzing water samples from the river, it was found that the river was contaminated not only with *Vibrio cholerae*, but also with *Salmonella* and *Shigella*, all of which are known to cause diarrhea. According to the U.S. Centers for Disease Control and Prevention:
Salmonellosis is an infection with bacteria called *Salmonella*... Most persons infected with *Salmonella* develop diarrhea, fever, and abdominal cramps 12 to 72 hours after infection. The illness usually lasts 4 to 7 days, and most persons recover without treatment. However, in some persons, the diarrhea may be so severe that the patient needs to be hospitalized. In these patients, the *Salmonella* infection may be spread from the intestines to the bloodstream, and then to other body sites and can cause death unless a person is treated promptly with antibiotics. (CDC, 2010d).

Shigellosis is an infectious disease caused by a group of bacteria called *Shigella*. Most who are infected with *Shigella* develop diarrhea, fever, and stomach cramps starting a day or two after they are exposed to the bacteria. The diarrhea is often bloody. Shigellosis usually resolves in 5 to 7 days. (CDC, 2009).

According to the senior public health official, after the initial outbreak in Partido the public health staff tested area water quality and found it needed chlorination. I was told by a Red Cross volunteer that the level of contamination of the river and the amount of bacteria and/or other contaminants that were present in the water had not been released to the public. The Ministry of Public Health and INAPA closed the town’s water pump, disposed of the water in the tank, chlorinated the holding tank, and the number of cases dropped considerably. According to the official, after closing and chlorinating the water tank there were only two additional suspected cases of cholera. These two additional cases were Haitian citizens in a rural area. There were no additional cases in Partido. This official’s statement that there were no additional cases in Partido after the aqueduct was chlorinated is contrary to what was reported by the local clinic. The local clinic stated that there seemed to be a second point of contamination because even after the water pump was shut down and the aqueduct chlorinated, people
were still arriving to the clinic with symptoms of cholera, albeit in greatly reduced numbers.

The public health official stated that lab tests were taken from all suspected cholera cases. He said that they took twenty samples from patients in Partido and sent them to the lab in Santiago for analysis. The lab tests showed that seven of the 20 patients with diarrhea were positive for cholera. I then reminded him that there were not only 20 suspected cases of cholera in Partido – according to the Policlínica, 227 people had arrived to the clinic with symptoms of acute watery diarrhea. The public health official then stated that there were other reasons that people could have had diarrhea and they only took samples from the 20 patients that public health workers believed had cholera.

According to the public health official, when the people heard about the cholera outbreak and its dangers they were “filled with fear.” The news reported that a Haitian had died in the water intake in Partido and that the water was contaminated because there was a cadaver in the intake. This was false, but many convinced themselves they were sick because they thought that they had been drinking from a water tank with a dead body in it. Many were so upset that they began vomiting and thought they had cholera.

**Interviews with local residents of Dajabón**

The purpose of the interviews with local residents was to evaluate what the general population of Dajabón knew about cholera; what preventative
measures were being taken in the home, if any; and how effective the people thought the programs to prevent cholera were. A total of 25 residents of Dajabón were interviewed and the same 11 questions were asked of each participant.

**Question 1: Do you know what cholera is?**

Of the 25 interview participants, 20 identified cholera as an illness. Five of the participants did not know what cholera was. Of those five, four indicated that they had heard the word cholera before, but were not sure what it was. One participant indicated that he had never heard of cholera before.

**Question 2: Do you know what the symptoms of cholera are?**

When each participant was asked if he or she could identify the symptoms of cholera, the responses varied. Most participants identified diarrhea and vomiting as symptoms of cholera.

Table 19: Responses to Interview Question 2:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Number of participants who indicated each symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhea</td>
<td>20</td>
</tr>
<tr>
<td>Vomiting</td>
<td>19</td>
</tr>
<tr>
<td>Fever</td>
<td>6</td>
</tr>
<tr>
<td>Headache</td>
<td>5</td>
</tr>
<tr>
<td>Stomachache</td>
<td>3</td>
</tr>
<tr>
<td>Thirst</td>
<td>2</td>
</tr>
<tr>
<td>Nausea</td>
<td>1</td>
</tr>
</tbody>
</table>

**Question 3: Do you know how a person can become infected with cholera?**

The purpose of this question was to determine how the participants believed cholera is transmitted. The knowledge of cholera transmission can be
used to evaluate the efficacy of the educational campaign in Dajabón. If a population does not know how an illness is transmitted, it cannot effectively protect itself from infection. Only 25% of people infected with cholera are symptomatic. The other 75% of people infected with cholera can spread the illness through their fecal matter if the necessary precautions are not taken (WHO, 2012b). It is therefore necessary that the entire population is aware of how cholera is transmitted and how to avoid infection. Of the twenty-five interview participants, only ten mentioned contaminated water when asked to describe how cholera was transmitted. Participants gave the following responses to this interview question:

Table 20: Responses to question 3: “Do you know how a person can become infected with cholera?”

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drinking contaminated water or eating contaminated food</td>
</tr>
<tr>
<td>2</td>
<td>Drinking water or eating food that isn’t hygienic</td>
</tr>
<tr>
<td>3</td>
<td>If one touches fecal materials</td>
</tr>
<tr>
<td>4</td>
<td>Not washing your hands</td>
</tr>
<tr>
<td>5</td>
<td>Contaminated water</td>
</tr>
<tr>
<td>6</td>
<td>If a person who lives in your home has cholera and goes to the bathroom, you can get cholera. Also if you eat without washing your hands, you can get cholera.</td>
</tr>
<tr>
<td>7</td>
<td>Dirty water and dirty hands</td>
</tr>
<tr>
<td>8</td>
<td>Eating foods that haven’t been adequately cooked, and drinking dirty water</td>
</tr>
<tr>
<td>9</td>
<td>Drinking water that isn’t purified</td>
</tr>
<tr>
<td>10</td>
<td>When one has poor hygiene, and if people don’t wash their hands</td>
</tr>
<tr>
<td>11</td>
<td>By food</td>
</tr>
<tr>
<td>12</td>
<td>Not washing your hands, and not washing your foods</td>
</tr>
<tr>
<td>13</td>
<td>By anything dirty, and by bad water</td>
</tr>
<tr>
<td>14</td>
<td>Contaminated water and food</td>
</tr>
<tr>
<td>15</td>
<td>Not washing your hands well</td>
</tr>
<tr>
<td>16</td>
<td>Dirty hands and mud</td>
</tr>
<tr>
<td>17</td>
<td>Eating foods without washing them, not washing your hands after you go to the bathroom, contaminated water</td>
</tr>
<tr>
<td>18</td>
<td>Through contamination: not washing your hands before eating, and not washing your hands when you go to the bathroom.</td>
</tr>
</tbody>
</table>
Question 4: Do you drink tap water or only bottled water?

Twenty-two of the participants reported only drinking purified bottled water. Two participants reported that they drink both purified water and water from the tap. They buy bottled water when they can afford it, but when they don’t have enough money they drink water from the tap. One participant reported drinking water only from the tap.

One of the participant, during the course of the interview, stated that she only drinks bottled water – never from the tap. However, during the interview, the participant got herself a glass of water. After having stated that she only drinks bottled water, she filled a glass with water from the tap and drank from it.

Question 5: Do you purify your water before drinking it? If so, how?

None of the three participants who reported drinking water straight from the tap performed any type of purification prior to consumption. One woman claimed that she adds lemon to the water because it makes it taste better. While lemon is cited by the Hesperian Foundation as a method to purify water during cholera outbreaks in resource constrained environments, I have not found any
other mainstream health organization that endorses the use of lemon to disinfect water during a cholera outbreak (Hesperian Foundation, no date). The second participant stated that he did not do anything to filter or purify the water. He drinks the water directly from the tap. The third participant stated that she uses a filter to remove dirt and sediment, but does not boil or chlorinate the water to purify it.

**Question 6: Do you brush your teeth, wash the dishes, and wash fruits and vegetables with tap water or bottled water?**

I observed that many people in the town took care to drink purified water but did not realize that they could also become infected through the contamination of water used for activities other than drinking – such as brushing teeth, washing the dishes, or washing fruits and vegetables.

Fourteen of the 25 participants reported brushing their teeth with unpurified tap water. Twelve of the participants reported using unpurified tap water to wash their dishes, and nine reported using tap water without any type of chlorination or soap when washing fruits and vegetables for consumption.

**Table 21: Responses to Question 6**

<table>
<thead>
<tr>
<th>Number</th>
<th>Brush Teeth</th>
<th>Wash Dishes</th>
<th>Wash Fruits/Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>2</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>3</td>
<td>Bottled water</td>
<td>Tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>4</td>
<td>Tap water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>5</td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Tap water with Soap</td>
</tr>
<tr>
<td>6</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>7</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Bottled water</td>
</tr>
<tr>
<td>8</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Boiled tap water</td>
</tr>
<tr>
<td></td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>---</td>
<td>---------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>9</td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>10</td>
<td>Tap water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>11</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>12</td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Wash with tap water, then rinse with bottled water</td>
</tr>
<tr>
<td>13</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>14</td>
<td>Normally with bottled water, but sometimes he/she forgets and uses tap water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>15</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>16</td>
<td>Tap water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>17</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>18</td>
<td>Bottled water</td>
<td>Bottled water</td>
<td>Chlorinated bottled water</td>
</tr>
<tr>
<td>19</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>20</td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>21</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>22</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>23</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
<tr>
<td>24</td>
<td>Bottled water</td>
<td>Chlorinated tap water</td>
<td>Chlorinated tap water</td>
</tr>
<tr>
<td>25</td>
<td>Tap water</td>
<td>Tap water</td>
<td>Tap water</td>
</tr>
</tbody>
</table>

**Question 7: Has anyone spoken to you previously about how to prevent cholera?**

The Ministry of Public Health reported that they went house-to-house in the entire province of Dajabón to distribute educational brochures and chlorination materials such as Clorox bleach, and to personally speak with the population to inform them of prevention measures to take in the home.

Public officials also said that radio announcements, television announcements, and educational sessions were held with groups throughout the province. The responses to this question show that people obtained their information from a variety of sources.
Three participants reported hearing about cholera on the radio, one reported hearing about cholera on television, one indicated that he had heard about cholera through various media, and five reported hearing about cholera from talks given in the hospital and other venues. Four participants indicated that they had received no information at all about cholera – neither in person, nor through the media, nor through brochures.

While many participants reported receiving brochures distributed by public health after the outbreak began and hearing public health announcements on the radio or television, none of the participants mentioned that a public health representative came to their house to speak with them, as the public health officials indicated that they had done. The first participant indicated that he had spoken with health workers in the street, but was not sure what organization they were affiliated with.

Table 22: Responses to Interview Question 7:

<table>
<thead>
<tr>
<th></th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>People who are in charge of that sort of thing – health. Doesn’t know what organization they were with.</td>
</tr>
<tr>
<td>2</td>
<td>People on the radio</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>Heard of it on the TV, but no one has held talks/meetings or anything</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>There were papers distributed</td>
</tr>
<tr>
<td>7</td>
<td>My aunt told me. She heard from the public health people.</td>
</tr>
<tr>
<td>8</td>
<td>They gave a talk in the clinic.</td>
</tr>
<tr>
<td>9</td>
<td>I worked in the hospital before I retired – I already knew about it.</td>
</tr>
<tr>
<td>10</td>
<td>People from Solidaridad Fronteriza, Public Health announcements, chlorine companies</td>
</tr>
<tr>
<td>11</td>
<td>Media</td>
</tr>
<tr>
<td>12</td>
<td>On the radio</td>
</tr>
<tr>
<td>13</td>
<td>Gave talks in the schools</td>
</tr>
<tr>
<td>14</td>
<td>There have been talks, and he also heard it on the radio</td>
</tr>
<tr>
<td>15</td>
<td>Public Health sent out brochures</td>
</tr>
</tbody>
</table>
People say that you need to drink bottled water, but I don’t have money for bottled water or chlorine.

I haven’t heard of anything in Dajabon, but I have while traveling in other areas.

Public Health gave out brochures.

No

There was a program in the hospital.

There were brochures distributed.

They gave talks in the hospital.

There was an organization in the street, but I don’t know which one it was.

No

The women from Solidaridad Fronteriza

Table 23: Responses to Interview Question 8:

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<table>
<thead>
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<tbody>
<tr>
<td>1</td>
<td>Radio programs</td>
</tr>
<tr>
<td>2</td>
<td>I’m sure they’re doing something, but it isn’t much. It isn’t enough.</td>
</tr>
<tr>
<td>3</td>
<td>Spread the word through the media</td>
</tr>
<tr>
<td>4</td>
<td>Doesn’t know</td>
</tr>
<tr>
<td>5</td>
<td>They haven’t done anything here</td>
</tr>
<tr>
<td>6</td>
<td>Doesn’t know</td>
</tr>
<tr>
<td>7</td>
<td>Doesn’t know</td>
</tr>
<tr>
<td>8</td>
<td>Radio programs</td>
</tr>
<tr>
<td>9</td>
<td>Television programs, purifying the water, prohibiting people from bathing in the river</td>
</tr>
<tr>
<td>10</td>
<td>They put a chlorination system in the customs area on the border so that Haitians don’t bring cholera. That’s why there’s no cholera in Dajabón.</td>
</tr>
<tr>
<td>11</td>
<td>They closed the market for a while so that the Haitians didn’t come in</td>
</tr>
<tr>
<td>12</td>
<td>They put chlorine in the water tank</td>
</tr>
<tr>
<td>13</td>
<td>They distribute chlorine</td>
</tr>
<tr>
<td>14</td>
<td>Don’t know if they’ve done anything or not</td>
</tr>
</tbody>
</table>

Question 8: What is the government doing to prevent cholera?

Four of the participants said that the government is not doing anything to prevent cholera. Seven participants said they do not know what the government has done to prevent the spread of cholera. One participant said that he is sure that the government is doing something – but whatever it is, it isn’t enough. Four participants said the government has taken preventative measures on the border so that Haitians do not spread cholera.
They hand out brochures and have programs on the radio.

They haven’t done anything.

Doesn’t know.

They use the media to tell people about cholera. They say that you have to maintain hygiene.

They’ve taken preventative measures, but I don’t know what they have done.

A prevention program – they put chlorine and a hand-washing station in the border and they (Haitians) have to step in chlorine before coming into the Dominican Republic.

They put hand-washing stations on the border so that the Haitians wash their hands.

They give out chlorine and hand sanitizer.

Doesn’t know – hasn’t heard of anything.

They haven’t done anything.

Nothing – they want us all to die.

Question 9: Do you think that migration affects the spread of cholera? If so, how?

Twenty of the 25 participants indicated that migration affects the spread of cholera. Three participants indicated that migration does not affect the spread of cholera, one participant indicated that migration sometimes affects the spread of cholera, and one participant did not know.

The 20 participants who indicated that migration does affect the spread of cholera and the one participant who indicated that migration sometimes affects the spread of cholera were asked to elaborate upon why they think that migration affects cholera. Of these 21 participants, 12 mentioned that it is due to the migration of Haitians. Their responses, very similar to those seen in the Amacuro State outbreak in Venezuela, are as follows:

There’s no control on the border. They let the Haitians come in. If a Haitian comes and he has cholera, he can spread it.

Haitians have little hygiene. Some know how to take care of themselves and some don’t.
Haitians don’t take care of themselves. They eat with dirty hands. They pee and poop wherever they want. They’re dirty.

There is a lot of cholera in Haiti, and they come over here.

They contaminate the river because not everyone has a latrine. A Haitian passes by the river and drinks the water and becomes infected.

When they cross the border from Haiti, if they step in poop and don’t wash their hands, they can become infected. Haitians also sell foods that aren’t hygienic. They do not wash their hands.

Those (Haitians) who pass through customs can’t infect other people because they have to step in chlorinated water and this disinfects them. Those (Haitians) who enter by the river can infect anyone because they haven’t been disinfected.

Haitians don’t wash their hands.

The majority of the illnesses come from Haiti.

Haitians bring cholera over here (3 respondents stated this).

Question 10: Do you know how cholera came to exist in the Dominican Republic?

Seventeen of the participants responded that cholera comes from Haiti. Of these 17, two participants stated that cholera is a result of the earthquake. One of the participants stated that, “Haitians do not have a culture of hygiene. Haitians are in the entire country [Dominican Republic]. They pee and poop anywhere.” Five of the participants stated that they did not know how the outbreak began.

One participant stated that cholera came from the United Nations soldiers. One participant stated that a foreigner brought the illness when the person landed in the International Airport of the Americas in Santo Domingo. One participant stated that cholera came from contaminated water.

Question 11: Where would you go if you thought that you had cholera?
Each participant reported that they would go to the clinic or hospital if they thought that they had cholera. One participant indicated that she would have to go to the hospital because they do not treat cholera in the clinics. Four participants stated that they would have to go to a hospital, because the clinics only treat people who have money and can pay for the services.
Chapter 5: ANALYSIS

Cholera has a very short incubation period, ranging from two hours to five days. This short incubation period can lead to very explosive outbreaks because cases can multiply very quickly. Only 25% of those infected with cholera develop symptoms. The other 75% of those infected show no symptoms, but these asymptomatic cases are still able to infect others since pathogens are present in the infected person’s feces for 7 to 14 days (WHO, 2012b).

In order to prevent the spread of cholera, the World Health Organization recommends the provision of potable water and proper sanitation to those who are without these basic services. Equally important is an effective educational campaign using the media and community leaders to inform and reinforce basic hygiene behaviors and food safety (WHO, 2012b).

In order to control the spread of cholera, the World Health Organization identifies six essential actions that states should take. The first method of control is the proper and timely management of cases in treatment centers (WHO, 2012b). While cholera treatment units were prepared in the hospital in Dajabón as well as in clinics throughout the province, increased surveillance and improved case-finding methods are necessary in the Dominican Republic. Case fatality rates continue to be higher in the Dominican Republic than in Haiti. As of February 25, 2012, the case fatality rate in Haiti was 1.34% whereas the case fatality rate in the Dominican Republic was 1.73% (PAHO, 2012b). As of this same week, Dajabón had reported a case fatality rate of 1.72%, whereas the Haitian province
Nord-Est, directly across the border, reported a case fatality rate of 1.19% (PAHO, 2012b). As of February 25, the Nord-Est province in Haiti had managed a reported total of 27,269 cases that had resulted in 324 deaths. As of this same week, the Dajabón province in the Dominican Republic had managed a reported total of 233 cases that had resulted in 4 deaths (PAHO, 2012d and 2012f). As of the year 2008, 83% of the Dominican population had access to sanitation services, compared to only 17% of the Haitian population. Similarly, 86% of the Dominican population had access to potable water services, whereas only 63% of Haitians had this access (WHO and UNICEF, 2010). The large difference in the volume of cases between Haiti and the Dominican Republic is largely a reflection in the disparity of availability water and sanitation services between the two countries. The differences in the availability of water and sanitation services are reflected in the number of cases reported, but the case-fatality rate has less to do with water and sanitation and more to do with the effectiveness of case-finding methods, diagnosis and the treatment received. The Dominican Republic, which has experienced a much lower volume of cases, should not be experiencing a higher case-fatality rate. 80% of symptomatic cases of cholera demonstrate mild to moderate diarrhea and dehydration that can be treated by Oral Rehydration Salts. Approximately 20% of cholera cases will be severe, and will require intravenous fluids for rehydration (WHO, 2008).

It is also important that cholera cases be accurately recorded and reported. The policy in the Dajabon province is to only report cholera cases that have been confirmed by laboratory tests. During the outbreak in Partido in late September
and early October 2011, a total of 227 patients had been treated for symptoms of cholera at a single clinic. Of these 227 patients, laboratory tests were only performed on 20 patients. Of these twenty tests, seven were positive for cholera. What was reported to the public was that there were seven confirmed cases of cholera. This type of reporting is misleading and can adversely affect prevention campaigns. If the real extent of an outbreak is not reported, the local population may not take the outbreak as seriously as they should, and policymakers will not have the necessary information to make informed policy decisions. As of February 25, 2012, the province of Dajabón had reported a total of 233 cholera cases to the Pan American Health Organization (PAHO, 2012d). This number is misleading, however, because during the outbreak in Partido alone, 227 patients had been seen in the clinic with symptoms of cholera and 33 patients had traveled from Partido to the hospital in Dajabón to seek treatment. This is a total of 260 patients treated for cholera-like symptoms during one outbreak. These patients received a clinical diagnosis that determined that their symptoms were characteristic of cholera and were treated accordingly. Under-reporting the number of affected cases does a disservice not only to the local population affected by the outbreak but also to the healthcare workers dealing with the outbreak. It is important that healthcare workers receive the materials and supplies that they need to effectively treat patients.

With timely treatment and case management, the World Health Organization asserts that case fatality rates can be lowered to less than 1% (WHO, 2008). Case finding initiatives must be aggressive during outbreaks in order to
reach patients in time. Patients cannot always make it to treatment centers on their own. As the patients are dealing with the symptoms of cholera, their feces continue to spread infectious organisms (Farmer 2011). Paul Farmer asserts that, “we must expand case finding, patient transport, and treatment and integrate such efforts into the public health system to facilitate responses to future cholera epidemics” (Farmer 2011, p. 4).

Second, healthcare professionals must be trained in case management to avoid spreading cholera inside the treatment center (WHO, 2012b). This training took place throughout the province of Dajabón and, according to public health officials, in every province in the Dominican Republic.

The third essential action is to stock sufficient medical supplies to manage cases in the event of an outbreak (WHO, 2012b). Such measures were taken in Dajabón in areas like the clinic in Partido and the hospital in Dajabón, where treatment units were prepared, sanitary measures were taken, and increased accessibility to purified water was achieved.

Fourth, improving the community’s access to water, sanitation, and waste management is essential, as well as improving vector control (WHO, 2012b). Each of the outbreaks that occurred in Dajabón was due to a breach in the water and sanitation infrastructure. The official explanation for the outbreaks in Caratá and Los Arrollos was that an individual without basic sanitation services defecated close to a river, subsequently infecting those who consumed the contaminated water. The outbreak in Partido was likely due to a breach in the
water and sanitation infrastructure as a portion of the population was consuming water from an aqueduct that was not connected to the treatment plant. Ensuring that the entire population has access to basic water and sanitation services and that all water and sanitation facilities are in proper working order is essential if cholera is to be controlled. According to interviews with public health officials in Dajabón, a thorough review was conducted of all the aqueducts in the province at the onset of the outbreak in Haiti in October 2010 to ensure that all aqueducts were being properly maintained and appropriately chlorinated. The officials stated that the monitoring of the water distribution system was continuous. The officials also stated that a study was launched when the outbreak began in 2010 to identify all of the homes in the province that were without water and sanitation services. If this was the case, why had the homes in Caratá and Los Arrollos that were without sanitation services not been identified? The outbreak in Caratá began in mid-April, almost six months after the study had been initiated by the Ministry of Public Health. The outbreak in Los Arrollos occurred in August, approximately 10 months after the prevention campaign was initiated. Public health officials stated that the point of contamination in both of these outbreaks was a home near the river that had no form of sanitation services and that those living in the home defecated outside, thus contaminating the river. It was not until after the outbreak began that the homes were identified and the people were provided with sanitation services. The breach in the aqueduct in Partido should also be questioned. If the water distribution system was being monitored since October 2010, the fact that there was an aqueduct that was not even connected to
the treatment plant should have been identified by local officials. When the cholera outbreak began, water tests were taken to identify any contaminants. At this time, it was identified that *Vibrio cholerae* was not the only bacteria present in the water. *Salmonella* and *shigella* bacteria, both of which cause diarrhea (CDC, 2009 and 2010d), were also present. Had the breach in the water system been identified earlier and the system adequately chlorinated, the severity of the outbreak could have been greatly diminished, and any illnesses related to the consumption of water contaminated with the *salmonella* or *shigella* bacteria could have been addressed.

The fifth critical action identified by the World Health Organization is to improve the hygiene and food safety practices of individuals in the community (WHO, 2012b). The Ministry of Public Health’s education campaign centered around three core messages that public health workers were attempting to disseminate to the population. The first message was to wash hands before eating. The second message was to not consume food from street vendors or homemade foods for sale. The third message was to disinfect water with five drops of chlorine per gallon This water can then be used to brush one’s teeth; wash the dishes, fruits, and vegetables; and to cook. If chlorine is not readily available, the water must be boiled to avoid contamination. It is very important that the population follow these directives to prevent infection. The question is, however, whether the message was effectively disseminated.

A large emphasis was placed on the washing of hands. Hand washing stations were installed at the border crossing to enter the market and the Haitians
crossing the border were instructed to wash their hands upon entry. This emphasis led many people to believe that cholera was spread by contact – by touching things that are “dirty.” The following responses were given by interview participants when asked to explain how a person can become infected with cholera:

- Not washing your hands.
- When one has poor hygiene and if people don’t wash their hands.
- Not washing your hands and not washing your foods.
- Not washing your hands well.
- Dirty hands and mud.
- Through contamination: not washing your hands before eating, and not washing your hands when you go to the bathroom.
- If you don’t wash your hands and if you don’t have good hygiene in your home. You can also become infected when you go to the bathroom.
- Dirty hands, and going to the bathroom without washing your hands.
- Through trash and anything dirty.
- If you are close to someone who is sick (spread by contact).
- From another person who is sick (through contact with them).

While the washing of hands is a very important prevention measure, the emphasis on the washing of hands has led many to believe that cholera is spread through contact rather than the consumption of contaminated water and/or food. This misconception also gives a partial explanation as to why so many people think that the illness is spread by Haitians rather than contaminated water. The chlorinated mat that was placed at the border crossing reinforces this thought. This measure taken by the Ministry of Public Health further stigmatizes the
The Haitian population as the perception is that the Haitians are bringing the bacteria into the Dominican Republic on their feet and their hands. They are requested to step on a chlorinated mat and wash their hands in chlorinated water before entering the market. The Haitians also have a separate entrance to the market than the Dominicans. I entered and exited the market via the “Haitian” entrance on many occasions. One day I was stopped by a military official, who told me that I should not enter that way. He told me, “Don’t go in that way, it’s dangerous. That’s the Haitian entrance. The Dominican entrance is over here.” There are no hand-washing stations or chlorinated mats at the Dominican entrance to the market.

The sixth action recommended by the World Health Organization is that the public be informed about the disease on a regular basis (WHO, 2012b). As shown by interview responses, there are many different mediums through which the population of Dajabón obtains its information. There are also different opinions about how cholera is contracted, what the symptoms are, how cholera can be controlled, and what measures are being taken locally to protect the population. Uniform messaging and information dissemination is essential to prevent confusion and misinformation. It is also necessary to make sure everyone receives the information. A single point of contamination in an area without adequate water and sanitation facilities can affect an entire community, so it is imperative that everyone be aware of the prevention measures to take in the home.

There were interview participants who were not even aware of what cholera was
prior to my speaking with them. In order for the population to protect itself, uniform information must be disseminated to all members of the community.

Many effective prevention and control measures have been taken in the clinics and hospital of Dajabón. But there have also been measures that are detrimental to the health security of the community. One of these measures is the *cordon sanitaire* that was implemented on the border. The World Health Organization characterizes the use of a *cordon sanitaire* during a cholera outbreak as “ineffective, costly, and counter-productive” (WHO, 2012b, p. 4). The World Health Organization goes on to state that setting up a *cordon sanitaire* on the border is a measure that “diverts resources and hampers good cooperation spirits between institutions and countries instead of uniting efforts” (WHO, 2012b, p. 4). This is most certainly the case in Dajabón, as the *cordon sanitaire* has effectively stigmatized the Haitian population and shifted the public perception of cholera from an illness caused by the ingestion of a bacteria to an illness brought to the Dominican Republic by Haitians.

The public discourse on the explanation for the presence of cholera in Dajabón is focused, not on water and sanitation, but on culture and ethnicity. The official explanation that was provided to me by the Ministry of Public Health for the outbreak in Caratá, Dajabón, was that “the Haitians in the community defecated in the mouth of the river and the river became contaminated with cholera.” The solution for controlling the outbreak in Caratá, as explained by a public health official, was removing the Haitians. The official stated, “The Haitians were removed from this area and put in another town. They were given
latrines in this new area...After removing the Haitians and chlorinating the water, there were no additional cases of cholera in that area.” This explanation is especially ironic since the official could not recall if any of the six patients who were confirmed to be infected with cholera were Haitian.

The official explanation for the outbreak that occurred in Los Arrollos in August, 2011, was that “a Haitian’s home is located near the water intake, and the Haitian did not have a bathroom or latrine. The Haitian defecated outside of his home, and this is how the water became contaminated.” Absent from the discourse was the fact that as of the 2002 census there were 1,226 households in the province of Dajabón, 7.68% of the population, that had no form of sanitation services (ONE, 2008). Also absent from the dialogue was the fact that as of the 2002 census, 6.77% of Dajabon had absolutely no water service and collected its drinking water from springs, rivers, or streams (2008). The nationality of the man who lived near the water intake is irrelevant as to whether or not this man had cholera and contaminated the river. The public health official did not indicate that this man was infected with cholera – the only part of the official explanation about how the river became contaminated was that the man was Haitian. There are many Dominican citizens who do not have water or sanitation services – the real questions that beg to be asked are the following: Why is 7.68% of the population without any form of sanitation service? Why is 6.77% of the population forced to collect water from rivers and streams because it has no form of water service? And why, if part of the public health campaign that began in Dajabón in October, 2010, was to identify all households without basic water and
sanitation services and make sure they were provided with these services, were these issues not already identified and addressed prior to the outbreak?

The outbreak that occurred in Partido was largely due to the fact that part of the population of Partido was receiving water from an aqueduct that was not even connected to the treatment plant. This fact was not included in the dialogue. What was broadcasted on the news was that a Haitian had died in the water intake, and that this was the point of contamination. Absent from the dialogue was the fact that a government-maintained aqueduct was constructed without even connecting the aqueduct to the treatment plant. Also absent from the dialogue was that there were other contaminants in the river that were causing the population to contract diarrhea. *Salmonella* and *Shigella* bacteria were also found in the river. And finally, absent from the public eye was the fact that the results of the laboratory tests on the water in the aqueduct and in the river were not released to the public.

The prevention campaign in Dajabón focused on the border with Haiti. Every Monday, a team of public health officials manned hand-washing stations as an average of 10,000 Haitians entered the Dominican Republic to attend the market. Inside the market, however, there were no sanitary facilities, no irrigation, and no health standards. In the middle of the market was a small pond of standing water that was created by the rain. I took the following picture while walking through the market on October 10, 2011.
I took the following picture was taken in the binational market in Dajabón on Friday, October 14, 2011.
Food is sold from blankets placed in the mud, and pigs meander through the market unchecked. There are no hand-washing stations inside the market where people are buying, selling, and consuming food. Neither are there hand-washing stations at the entrance to the market. There are only hand-washing stations on the border, and only Haitians were requested to wash their hands and disinfect their feet on chlorinated mats. The team of medics on the border man the hand-washing stations and monitor the Haitians as they enter, looking for people who “look to be infected.” This procedure is both ineffective and costly. The team of medics spends two of their five working days each week on the border, telling people to wash their hands as they enter the Dominican Republic to attend the market. On various occasions I observed individuals, both Haitian and Dominican, going to the bathroom in the field on the outer edge of the market as there were no latrines or sanitary facilities inside. Whether or not Haitians wash their hands prior to entering the market is irrelevant if there are no sanitation facilities inside the market. Bacteria do not distinguish between Haitian and Dominican and unless all those who enter the market are subject to the same sanitary procedures, the actions of the team of medics on the border is largely arbitrary. The perception that this gives the Dominican population is that the Ministry of Public Health in Dajabón finds the Haitians entering the market to be a greater threat than the actual underlying conditions that could cause cholera to spread – inadequate water and sanitation.
The measures that have been taken on the border in Dajabón have focused the public discourse on the Haitian population in the Dominican Republic rather than on the officials in charge of maintaining the water, sanitation, and health infrastructure. It was determined during the first International Sanitary Conference in 1851 that a *cordon sanitaire* is ineffective in controlling cholera (Huber, 2006). Forcing Haitians to step on a mat soaked with chlorine could kill bacteria that the person has on his feet but does nothing to kill a bacteria that he might carry in his body. Likewise, requesting that Haitians, but not Dominicans, wash their hands prior to entering the market will not curb the spread of bacteria. What these measures do achieve, however, is the reinforcement of the stigma that was cast upon Haitians as part of the official government discourse under the Trujillo regime in the 1940s: the stigma that “associated Haitians with all forms of bodily pollution, especially disease and contagion” (Derby, 1994, p. 504).

**Policy Implications**

On January 11, 2012, representatives from the Pan American Health Organization (PAHO), the World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC), and UNICEF met at the PAHO Headquarters in Washington, D.C. to launch a “Call to Action for a Cholera-Free Hispaniola.” Simultaneous launches were held in the Haitian Ministry of Health in Port-au-Prince, Haiti, and the National Palace in Santo Domingo, Dominican Republic (UNICEF Press Centre, 2012). This “Call to Action” is intended to move “from cholera control to cholera elimination through essential investments...
in water, sanitation, and hygiene infrastructure” in order to “ensure that cholera does not remain endemic in Hispaniola” (UNICEF Press Centre, 2012 and PAHO/WHO, CDC, UNICEF, 2012). In attendance at the Washington, D.C. launch were: Dr. Mirta Roses, director, PAHO/WHO; Dr. Kevin De Cock, director, Center for Global Health, CDC; Sanjay Wijesekera, chief of water and sanitation, UNICEF. Michel Joseph Martelly, president of the Republic of Haiti; and Leonel Fernández, president of the Dominican Republic, attended the launch via video (UNICEF Press Centre, 2012).

According to PAHO, CDC, and UNICEF, four key processes must happen to eliminate cholera from Hispaniola. The first is to “improve water, sanitation and hygiene infrastructure as a priority for governments and the international community” (PAHO/WHO, CDC, UNICEF, 2012). Political will is essential for this project to be realized. Cholera needs to be eliminated on the island of Hispaniola, and state-centric approaches will not achieve this end. The only way to eliminate cholera in Hispaniola is to realize an integrated bi-national campaign to address the water, sanitation, and hygiene infrastructure island-wide.

The second key process is to “create a task force for water, sanitation, and hygiene infrastructure” (PAHO/WHO, CDC, UNICEF, 2012). This task force will include the leading experts in water and sanitation from a variety of institutions including governments, non-governmental organizations and private foundations. This group will be led by representatives from the Haitian and Dominican governments and high levels of cooperation and coordination between the two governments will be essential.
The third key process is to “develop a detailed plan and timeline for water, sanitation, and hygiene infrastructure” (PAHO/WHO, CDC, UNICEF, 2012). A detailed, bi-national strategy will be developed to address the water, sanitation, and hygiene infrastructure as well as educational campaigns and community involvement. An analysis will be conducted of the existing infrastructure and a strategic plan will be developed to leverage all available resources and identify and address the most at-risk populations.

The fourth key process is to “honor pledged post-earthquake funds to recruit new partners” (PAHO/WHO, CDC, UNICEF, 2012). Billions of dollars have been pledged by organizations and governments to assist in post-earthquake reconstruction (PAHO/WHO, CDC, UNICEF, 2012). A significant portion of these funds should be allocated to improve the water, sanitation, and hygiene infrastructure of both the Dominican Republic and Haiti. The majority, if not all, of these funds is pledged to reconstruction in Haiti. Applying these funds to not only build the necessary infrastructure in Haiti but also to reinforce the water and sanitation infrastructure in the Dominican Republic is essential to eliminate cholera on the island.

In order to prevent cholera from becoming endemic in Haiti and the Dominican Republic, solidarity in public health must be a priority for both the Government of Haiti and the Government of the Dominican Republic. Cholera does not respect political boundaries, and neither should the island’s public health program.
Chapter 6: CONCLUSION

The task at hand is no longer to keep cholera from entering the Dominican Republic – it has already arrived. The task is now to keep cholera from becoming endemic. In order to achieve this, the Dominican Republic must leave behind the nationalist, state-centric mindset and concern itself with human security rather than national image. As the delegate from France stated at the first International Sanitary Conference in 1851, “you will be forced to admit that for such a disease, so widespread and under these conditions, cordons and quarantines are not only powerless and useless, but they are, in the very great majority of cases, impossible, and that everything shows that their time has passed” (Huber, 2006). The cordon sanitaire, considered outdated in 1851, should certainly not be the focal point of the Dominican Republic’s prevention campaign again cholera. Not only powerless and ineffective, the cordon sanitaire places a wedge even further between the Haitian and Dominican nations. Rather than allowing cholera to be used to further divide Haiti and the Dominican Republic, cholera should rather be a rallying point around which the Haitian and Dominican governments can come to a real consensus for the health and security of their populations. The “Call to Action for a Cholera-free Hispaniola” presents an opportunity for island-wide cooperation in public health. Bacteria does not recognize race, nationality, age, or gender. It will therefore require an integrated approach to provide basic water and sanitation services in both Haiti and the Dominican Republic.


