EXPLORING HOW THE CHOLERA OUTBREAK OCCURRED TEN MONTHS AFTER THE EARTHQUAKE WAS HANDLED

By Ruthnande Kessa

Haiti was not only hit by a 7.0 magnitude earthquake in 2010, but also suffered a cholera outbreak ten months later, in October 2010. Prior to the earthquake, Haiti had been hampered by weak health system the lack of clean water and adequate sanitation. After this devastation, the Haitian people, the government, and non-governmental organizations found themselves dealing with the unexpected cholera outbreak. The Ministry of Public Health took some measures to control the outbreak and prevent its spread. However, two years after the earthquake, the international community, the Haitian government, as well as the Dominican Republic developed a new policy to set the island of Hispaniola free of cholera by 2022. This paper explores the barriers to obtaining this goal in order to understand if Haiti will be prepared in the case of a second cholera outbreak. However, the purpose of this study was to explore how the Ministry of Public Health (MSPP) and International Organizations handled the cholera outbreak that occurred in October 2010, ten months after the earthquake.
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by

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CHAPTER I

Introduction

On January 12, 2010, Haiti experienced a devastating earthquake in the western part of the country. The capital city, Port-Au-Prince, was hit hard. The 7.0 magnitude (on the Richter scale) earthquake struck with an epicenter about 15 km southwest of the capital. At first the Haitian government did not release any statistics on the devastation because the number of deaths was increasing daily. However, one month after the earthquake, on February 12, 2010, the Haitian government reported that between 217,000 and 230,000 were dead, about 300,000 were injured, and one million were homeless. Exactly 10 months later, on October 21, 2010, a cholera outbreak was confirmed in Haiti according to the Center for Disease Control website (CDC, 2010d). The cholera outbreak was a surprise to the Haitian government, as well as to the international health organizations who were helping after the earthquake. This paper will examine the policy of the Ministry of Public Health of Haiti (MSPP) and the role of Non-Government Organizations (NGOs) in Haiti’s public health sector to explore the nation’s readiness to deal with a possible second cholera outbreak. However, the purpose of this study was to explore how the Ministry of Public Health (MSPP) and International Organizations handled the cholera outbreak that occurred in October 2010, ten months after the earthquake.
Research Question

The purpose of this study was to explore how the Ministry of Public Health and the international organizations handled the cholera outbreak that occurred in October 2010, ten months after the earthquake. This study will analyze the ten years action plan created by the MSSP and the international organizations to eliminate cholera in Haiti. Is Haiti at risk for a second cholera outbreak sometime in the future?

Methodology

Step one in exploring this issue was visiting, and reviewing the policies posted on ministry of public health websites, and the websites of the many non-governmental agencies working in the field of public health in Haiti. The Polk library website was used to consult peer-reviewed articles that focused on the issue. The data used in this study was secondary data. Most of the articles were in French because not much was found in English.
CHAPTER II
Literature Review

Overview of Haiti

I was born and raised in Haiti. Haiti was the first Caribbean country to achieve independence, and the only nation in world history born of a successful slave revolt. Haiti has been suffering from decades of poverty, environmental degradation, violence, and political instability. From the effects of the aforementioned problems, it has become the poorest country in the western hemisphere. According to the latest household survey (ECVMAS, 2007 & 2012), 6 million out of 10.4 million (59%) Haitians live under the national poverty line of $2 per day, and there are over 2.5 million (24%) living under the national extreme poverty line of 1 dollar per day. Haiti is also one of the most unequal countries. Since its independence, Haiti has been plagued by political instability. The lack of foreign investment contributes to the declining economic situation of the country (Concern Worldwide, 2012). Haiti’s politics have gone through much chaos over the past 200 years. The country suffered 32 coups and has a long history of oppression by dictators. The political instability left the country with huge social and economic problems.

Haiti is mostly a mountainous country with a tropical climate. Its location, history and culture once made it a potential tourist hot spot, but instability and violence, especially since the 1980s, have severely dented that prospect. In 1925, Haiti had 60% of its original forest covering the lands and mountainous regions. Since then, Haiti’s
residents have cut down an estimated 98% of its original forest cover for use as fuel for cookstoves, destroying fertile farmland soils and contributing to deforestation (Estupiñán-Day et al, 2011).

Figure 1. Deforestation in Haiti (Allian, 2011).

In addition, according to the United Nations, Haiti has severe environmental issues, including soil erosion. Deforestation has also caused severe flooding annually in Haiti. Many forests that used to cover the steep hills surrounding Haiti’s river basin retain soil, which in turn retains water from rainfall and reducing river flood peaks and conserving flows in the dry season are all gone now. Deforestation has resulted in much of the soil being released from the upper catchments. Many of Haiti’s rivers are now highly unstable, changing rapidly from destructive flooding to inadequate flows.

The United Nations Environment Program is working on the Haiti Regenerative Initiative, an initiative targeting to reduce poverty and natural disaster vulnerability in Haiti through ecosystem restoration and sustainable resource management.
Environmental degradation is a major problem in Haiti and it has a significant impact on the availability and access to potable water. It actually contributes to the spread of cholera. Throughout the entire country, poor waste management practices and the lack of modern sewage and sanitation systems are among the environmental factors that affect the health of the population.

**Water and Sanitation**

Water is a significant component of life on earth, and safe drinking water and sanitation are fundamental for good public health. There are about 884 million people who lack access to safe drinking water, and contaminated water is responsible for 1.6 million deaths per year, primarily in children under age 5. Approximately 88% of diarrheal diseases are the result of unclean water and poor sanitation (“Global WASH-Related Diseases”, 2012).

Once a consistent system of safe drinking water and sanitation are established, cases of cholera are virtually eliminated as the experience of most industrialized nations demonstrates (Talavera & Perez, 2009). Ensuring access to safe water and sanitation is complicated, but many policymakers and global health organizations around the world have been working to address the issue according to UNICEF’s most recent Water, Sanitation, and Hygiene (WASH) statistics. However, improvements in sanitation still lag far behind. At least 2.5 billion people still lack access to improved sanitation and over 1 billion have no access to any sanitation facilities and are forced to defecate in the open (Talavera & Perez, 2009). For communities like Haiti without proper access to
sanitation, the introduction of a clean water access point may not be enough to eliminate the spread of disease. As more and more people migrate to urban centers, the need for both safe water access and sanitation will continue to grow.

Sources of the Cholera in Haiti

The cholera outbreak spread so rapidly because of the chronic health, water and sanitation issues long facing Haiti. Fifty percent of urban residents, and thirty percent of rural residents have no access to potable water, and eighty-three percent of the population had no access to adequate facilities for excreta disposal according to WHO/UNICEF (WHO/UNICEF 2012). The lack of good hygiene practices among the majority of the population, especially those who do not have access to basic health services, was the main factor accelerating the rapid spread of cholera. Moreover, prior to the earthquake and cholera outbreak, 46 percent of the Haitian population had no access to health care. The Ministry of Public Health and People (MSPP) defined access by the distance that the people must travel to reach the nearest health center. The worst, they are unable to pay for the cost of the services, do to the fact that a large majority of the Haitian population do not have access to health care (MSPP, 2011).
According to the World Bank, more Haitians gained access to improved drinking water over the last decade, but reducing the gap between urban and rural water access remains a challenge. In rural parts of Haiti, less than half of the population has access to improved water sources and only 26 percent of people have access to improved sanitation. The limited resources available for water supply outside of metropolitan Port-au-Prince were focused on urban water supply in secondary towns. In addition, according to the Ministry of Public Health and People in Haiti the rural water units had limited funds to run and therefore, they were inactive. There was also no specific institution responsible for sanitation. Without an institutional presence in rural areas, it was difficult to prioritize investments in order to reach the neediest citizens (World Bank, 2013).

Local communities could not properly maintain infrastructure, and many rural water systems were managed by water committees consisting of unpaid volunteers elected by the community. Most water committees have been unable to collect sufficient funds for operation or routine maintenance such as testing the water and changing the pipes. Adding to these challenges, a cholera epidemic struck Haiti in October 2010 because of unclean water, since cholera is water-borne disease. The lack of clean water
and sanitation in rural areas made people more vulnerable to the disease, fueling the spread of the epidemic (World Bank, 2013).

**Sanitation Issue Prior to the Earthquake**

According to World Health Organization (WHO), safe drinking water is the “quality of drinking-water is a powerful environmental determinant of health. Assurance of drinking-water safety is a foundation for the prevention and control of waterborne diseases” (WHO, 2012a). There are many factors that limit Haitians’ access to safe drinking water, including the geologic, ecologic, sociologic, and economic factors of Haiti. Prior to the earthquake, many Haitian households were living with a lack of running water, inadequate housing, and unsanitary conditions where they do not have tap water running in their homes. A few people that live in the valley have access wells or surface water, however the majority of the people who live in the mountains depend on rain water or spring water. Not everybody in the rural have access to a toilet mostly what they call in Haiti latrine. With the latrine the feces just go directly to the ground and may contaminate the ground water they are using for drinking and cooking. The situation was aggravated by the earthquake. A large majority of the population is at a high risk for major infectious diseases, while only a few have access to basic health care. A constant shortage of health care personnel and hospitals’ lack of resources became even more evident after the earthquake (WHO, 2012b).

The last major cholera outbreak in Latin America began in Peru in 1991. That outbreak was the continent’s 7th pandemic. The outbreak spread to many neighboring
countries. However, Haiti and the Caribbean did not record any cases during that phase of pandemic according to WHO. First cholera cases in Haiti started to be reported on 14 October 2010 in the department of Artibonite from where the outbreak rapidly spread along the Artibonite River affecting several departments according to the ministry of Public Health of Haiti (MSPP 2011). In one month, all departments were affected with a high case fatality rate in remote rural areas and areas with difficult access to health services.

**Cholera History in Haiti**

The origin of the cholera in Haiti is very important to know since it was carried by the Nepal troops of the United Nations. It was awareness of everyone to know. A study from *Laboratore National se Sante Public* confirmed the disease was the *V.Cholerae* serogroup O1. There was a large concentration of people diagnosed in the area of Artibonite and it was the location where the first death occurred according to the MSPP (MSPP, 2011). Cholera may have been brought to Haiti by the United Nations, because a genetic comparison of the Haitian epidemic strain with other strains seen from around the world suggests that it looks likes strains that existed in southern Asia and Nepal (Tappero and Tauxe, 2011). For that reason, the United Nations has been blamed for bringing cholera in Haiti because of negligence; the soldiers contaminated the river of Artibonite with their sewage (Boncy et al, 2013). The sewage was dumped in the river because there was a lack of environmental and water policies of Haiti or the existing policies were too weak and failed to apply.
Cholera Definition

Cholera is a bacterial infection that results in a dehydrating and often fatal diarrheal illness. Cholera is an extremely virulent diarrheal disease caused by the ingestion of food or water contaminated with the Vibrio cholerae bacterium (WHO, 2012c). It is a disease of poverty and inequality and is primarily found in poor communities with limited access to safe drinking water or sanitation. The bacterium is passed from person to person via food and water contaminated with infected feces. Haiti ranks at the absolute bottom of the International Water Poverty Index. British researchers developed the index to examine water access, environmental sustainability and the states of general living conditions. They used five different criteria to construct the index: resource, access, use, capacity, and environment (CDC, 2010).

The cholera epidemic in Latin America and Caribbean in the 1990s killed about 12,000 people in 21 countries, however Haiti had not reported any cholera epidemic before October 2010 outbreak. The epidemic in 1990s was finally controlled after eight years of international public health efforts and massive investments in infrastructure, water supply and sanitation in the region (WHO, 2012c).

The World Health Organization has estimated that three to five million people become infected with cholera each year, and about 100,000-120,000 deaths occurred annually (WHO, 2011b). 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 (CDC, 2010a). 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 (CDC, 2010a). Prior to the action plan set up by the Ministry of Public and People of Haiti, only 69% of Haitians had access to improved drinking water, and only 32% had access to improved sanitation (WHO/UNICEF, 2010).

Figure 3. People affected my the cholera outbreak (Medecins Sans Frontieres, 2012)
On 20 October 2010, Vibrio cholera O1 Ogawa was laboratory confirmed. The rapid spread of the disease occurred due to limited access of the population to safe drinking water and sanitation. Since many people were being displaced to go to rural areas, a limited spread was observed in internal displaced persons camps with access to water and sanitation. Suddenly, November of 2010, the first cases were detected in the Dominican Republic. In some areas of the Dominican Republic, a local transmission rate with a total of 191 lab confirmed cases in 2010 (MSPP, 211).

Figure 4. Where the first case of cholera were found, (PAHO, 2011).

**Location Haiti**

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). The cholera outbreak that was followed by the earthquake was two big tragedies had a major impact on the water and sanitation of Haiti.

**Area Affected by the Cholera Outbreak in Haiti**

This table 1 shows shows the areas that were mostly affected by the cholera in Haiti by departments. In the United States the land is divided by states, but in Haiti the land is divided into departments. The department of Artibonite was the most affected area in Haiti, and that is where the cholera started and then spread to the other regions (Mahan et al, 2013).

<table>
<thead>
<tr>
<th>Department</th>
<th>Total Cases</th>
<th>Hospitalized Case Fatalities</th>
<th>Non-Hospitalized Case Fatalities</th>
<th>Case-Fatality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artibonite</td>
<td>66,285</td>
<td>568</td>
<td>322</td>
<td>1.3%</td>
</tr>
<tr>
<td>Centre</td>
<td>24,782</td>
<td>201</td>
<td>182</td>
<td>1.5%</td>
</tr>
<tr>
<td>Grande Anse†</td>
<td>15,351</td>
<td>343</td>
<td>497</td>
<td>5.3%</td>
</tr>
<tr>
<td>Nippes</td>
<td>3,618</td>
<td>62</td>
<td>93</td>
<td>4.2%</td>
</tr>
<tr>
<td>Nord†</td>
<td>27,930</td>
<td>590</td>
<td>45</td>
<td>2.3%</td>
</tr>
<tr>
<td>Nord Ouest</td>
<td>16,410</td>
<td>176</td>
<td>72</td>
<td>1.5%</td>
</tr>
<tr>
<td>Nord Est</td>
<td>11,833</td>
<td>117</td>
<td>150</td>
<td>2.2%</td>
</tr>
<tr>
<td>Ouest†</td>
<td>26,404</td>
<td>255</td>
<td>121</td>
<td>1.4%</td>
</tr>
<tr>
<td>Port-au-Prince**</td>
<td>67,579</td>
<td>416</td>
<td>141</td>
<td>0.8%</td>
</tr>
<tr>
<td>Sud†</td>
<td>13,791</td>
<td>181</td>
<td>55</td>
<td>1.7%</td>
</tr>
<tr>
<td>Sud Est</td>
<td>3,083</td>
<td>76</td>
<td>172</td>
<td>7.7%</td>
</tr>
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Table 1. Area Affected by the Cholera, (MSPP, 2011)
CHAPTER III

International Organizations

After the earthquake, Haiti received tremendous assistance from many countries and international organizations. Some of them were already in place, but within the same week, many humanitarian organizations came to help. The main organizations that collaborated with the Haitian government right in addition to the Dominican Republic were the following: the Pan American Health Organization (PAHO), the Center for Disease Control (CDC), Unicef, the United States Agency for International Development (USAID), World Vision, World Health Organization (WHO), Red Cross, Medecin Sans Frontier, Oxfam, CARICOM the Haitian Diaspora and many others (PAHO, 2012). However, among all organizations that were assisting to fight the spread of cholera, many of them have joined the Ministry of Public Health and People to develop a policy not only to control and prevent the spread of cholera but also eliminate it completely from the island of Hispaniola. It was believed that they would only be successful if a policy was developed as partners. As they did for polio they believe that can do it for the cholera in the past. The measures of prevention were needed at first.

International Organizations Living Haiti

It was a significant challenge to meet the urgent and sustainable needs in order to tackle the cholera epidemic of Haiti. After the earthquake there were numerous NGOs that spread all over the country to help. There were many people from across the world
that came also to volunteer to help including many NGOs from different countries such as Red Cross, help from churches including local organizations. The NGOs helped the Haitians to have access to drinking water, sanitation and hygiene by providing water bottles. They also gave access to free water to the people living in the camps. The distribution of free water in the camp reinforced the work of DINEPA or to create sustainable access to quality water in the camps and neighborhoods. The NGOs also provided portable toilets to the camps. With all of these services provided after the devastation, the quality of drinking water and sanitation increased in Haiti. Even later after the cholera outbreak, these NGOs helped to keep the cholera from spreading and provided urgent care as necessary to people who were living in the camp. Then, the problem became responding to basic needs of the people in the camp such as access to potable water, proper waste and sewage disposal as well as proper sanitation (Rajasingham, 2011).

**Measures and Preventions**

The Ministry of Public Health of Haiti (MSPP), the Pan American Health Organization (PAHO), Center for Disease Control (CDC), and many other health organizations have established nationwide daily cholera surveillance and circulated educational messages encouraging people with acute watery diarrhea to use oral rehydration solution (ORS) and to look for immediate medical care. MSPP and partners had also developed and disseminated messages by having spots on television and radio, including billboards on the street, as well as training facilitators to train others. The
Haitian government encouraged the people to treat their drinking water and to improve hand-washing, food preparation, and cleaning practices (Azman, 2012). Meanwhile they were working on a community survey to determine knowledge levels and practices that the community members had regarding cholera and the use of oral rehydrating solution (ORS). In order to determine the need for additional prevention messages as necessary, MSPP and partners worked closely to support the cholera treatment, enhanced the existing health-care institutions, and introduced new cholera treatment centers with the Haitian government and nongovernmental partners (MSPP, 2012).

The Ministry of Public Health and People focused of five immediate priorities listed below (Tappero and Tauxe, 2011)

a) Prevent deaths in health facilities by distributing treatment supplies and providing clinical training;

b) Prevent deaths in communities by supplying oral rehydrating solution (ORS) sachets to homes and urging ill persons to seek care quickly;

c) Prevent disease spread by promoting point-of-use water treatment and safe storage in the home, handwashing, and proper sewage disposal;

d) Conduct field investigations to define risk factors and guide prevention strategies;

e) Establish a national cholera surveillance system to monitor spread of disease.

The national cholera surveillance established a daily health officials report to monitor the epidemic spread and to position cholera prevention and treatment resources across the country. For the first week the Ministry of Public Health and People of Haiti gathered
data everyday from all the health facilities across the country over the phone to report the result to the press (Tappero and Tauxe, 2011).

Figure 5. How to Prevent Cholera from Spreading, (MSPP, 2011)

Challenges

Sanitation issue.

One of the biggest challenges for the Ministry of Public Health of People in Haiti was the rainy seasons after the cholera outbreak. As seen in 2011, 2012 and 2013, there was a great risk that cholera cases may increase during the upcoming rainy season that already started (MSPP, 2014). The current situation should neither be seen as an acceptable background of cases nor justify a cutback in preventive actions. On the contrary, during this period of low incidence, control activities targeting residual foci are more likely to be effective. Unfortunately, community health activities appear insufficient
and poorly suited. The present analysis from the graph below (figure 6), mildly severe but objectively documented, should be received as an incentive to maximize efforts to prevent new outbreaks during the rainy season and ultimately eliminate cholera from Haiti (MSPP, 2014).

Figure 6. Rainy Season Impact Cholera pick, (MSPP, 2014).

**Burial of dead.**

In many situations, the location of cemeteries or burial grounds can risk contaminating water tables. In the initial days of the cholera outbreak, there were many fatalities, rendering existing burial grounds insufficient. This could have forced communities or local authorities to select unsuitable low-lying or flood-prone land for burial, which in turn could have exacerbated the cholera outbreak. It was essential to ensure that environmental conditions were evaluated before communities selected burial
grounds. Communities and government authorities should have been the risk of water-table contamination, which would prolong the outbreak (Action Plan, 2012).

**History of Water Quality and Sanitation of Haiti**

Access to safe drinking water and sanitation has been a long-standing challenge in Haiti. However, during the United States occupation of Haiti between 1915 and 1934 the water supply and sanitation initiatives were among many infrastructure projects that were carried out by the U.S. military. By the late 1940s, water quality and sanitation in Haiti continued to be a challenge. In 1948 the United Nations offered technical services to Haiti and gave some recommendations on how to improve the services by increasing access to sanitation, and water supply quality; but in 1962 Haiti got a loan from Inter-American Development to enhance its water supply. In 1968, the Haitian government created the Central Autonome Metropolitaine d’Eau Potable (CAMEP) responsible for providing water services to the Metropolitain area of Port-au-Prince. Haiti’s effort to improve the water supply and sanitation faced other challenges in the political climate. During 1974-1980, the PAHO, the regional arm of the WHO, offered technical assistance to enhance governance and community planning related water in Latin America Caribbean, including Haiti (Gelting at all 2013).
In 1977 the service National d’Eau Potable (SNP) was created by the Haitian government to provide water supplies to all areas outside the metropolitan. However, because of lack of resources, SNP focused only on the urban zones in secondary cities rather than rural areas. All the rural areas stayed with unimproved sources of water. By 1986, Haiti was among the top three regional recipients of loans from the Inter-American Development Bank for water supply and sewage. In 1980s the Duvalier administration sought for bilateral assistance for WASH program from the U.S. government. Through the WASH rural water supply project, USAID in 1985 funded NGO CARE to set up 40 water supply systems in southern Haiti with the goal of serving 160,000 persons with drinking water. But, because of violence and the collapse of the Duvalier Regime in 1986, this delayed the implementation of the rural water project because CARE offices and warehouses were ransacked (Gelting at all 2013).

From 1986 to the 2000s, Haiti started to have some improvement in the water supply and sanitation. The international donors were cautious in lending money to Haiti, because of Haiti’s own political issues. A 1999 report by the United Nations Development Program and Haiti’s Planning and Foreign Cooperation noted that foreign assistance to Haiti was considerably decreased in the late 1990s (Gelting at all 2013).
In the mid 2000s, the foreign assistance for Haiti started to flow again. A reform of the water and sanitation sector was voted unanimously into a law by the Haitian parliament and published in March 2009. The reform created a regulatory body called National Directorate for potable Water and Sanitation (DINEPA). The role and mandate of DINEPA was to develop reforms of water and sanitation sector nationally, to oversee regulation of water and sanitation sector, and to monitor stakeholders involved. As part of the reform, the functions of CAMEP or SNP were integrated into DINEPA. The Idea behind it was to provide water and sanitation to the municipalities (Gelting at all 2013).

**Sources of Water in Haiti**

The major sources of water in Haiti are from surface and groundwater. However, the availability and water sources are different from urban to rural.

<table>
<thead>
<tr>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>43% Water sale by bokits</td>
<td>5% Water sale by bokits</td>
</tr>
<tr>
<td>8% Rivers</td>
<td>49% Rivers</td>
</tr>
<tr>
<td>7% Spring</td>
<td>21% Spring</td>
</tr>
<tr>
<td>2% Rain</td>
<td>5% Rain</td>
</tr>
<tr>
<td>10% Wells</td>
<td>8% Wells</td>
</tr>
<tr>
<td>4% Borehole</td>
<td>5% Borehole</td>
</tr>
<tr>
<td>20% Taps</td>
<td>2% Taps</td>
</tr>
<tr>
<td>10% Public Water Fountain</td>
<td>7% Public water fountain</td>
</tr>
<tr>
<td>1% Water Trucking</td>
<td>2% Water trucking</td>
</tr>
<tr>
<td>3% Other</td>
<td>1% Other</td>
</tr>
</tbody>
</table>

Table 2. Source of Water in Haiti, (Gelting at all 2013)

Before the earthquake, the quality of water and sanitation was decreasing a lot. Haiti has the lowest quality of water and sanitation in the Caribbean. Only 63% of the population had access to improve of drinking water, 17% had access to improved
sanitation. There was not any excreta system in Haiti until September 2011. In the past, the human feces waste used to discharge in the ravines and the Caribbean Sea because of lack of treatment plant (PAHO, 2012).

**Current Water and Sanitation of Haiti**

According to DINEPA, sixty-nine percent of Haitian population now has access to an improved drinking water source. Urban coverage is seventy-seven percent; on the other hand, the number drops to forty-eight percent in the rural area. In order to improve access to water at the rural areas, (DINEPA) decided to strengthen its presence in rural areas. So, in 2012, 266 Water and Sanitation Municipal Technicians (TEPAC) were hired, trained and deployed nationwide, in 133 communes. Therefore, the TEPAC are currently conducting a water network inventory and reporting water quality data (WHO/UNICEF, 2010).

DINEPA is putting in place structure by region in order to respond quickly to emergencies and planned events draining crowds. With the funding from UNICEF, DINEPA was able to set up a core consisting of backup mobile toilets, vacuum trucks, a network of technicians capable in different places in the country. Thirty-three stations of water treatment and there were twenty-nine rehabilitated including three were installed in Artibonite, DINEPA just installed an office in the town of Grande Saline a photovoltaic station for the treatment of spring water Saumatre. This station will serve a population of about 1500 to 2000 people. Following the cholera epidemic that originated along the Artibonite River, the Dinepa adopted emergency measures in the municipalities and
localities in Artibonite and Central Plateau. These activities consisted of a quick inventory of the needs of the area with a view to provide practical and appropriate responses (DINEPA, 2013).

**WHO General Policy**

The World Health Organization has an Emergency Risk Management and Humanitarian Response department that works closely with Member States, international partners, and local institutions to help communities prepare for, respond to, and recover from emergencies, disasters and crises. However, they did not have an emergency plan in place for the cholera outbreak that happened in Haiti in October, 2010 even though WHO was committed to:

- “Saving lives and reducing suffering in times of crises
- Building efficient partnerships for emergency management and ensuring these are properly coordinated
- Advocating for political support and consistent resources for disaster preparedness, response, and recovery
- Developing evidence based guidance for all phases of emergency work in the health sector
- Strengthening capacity and resilience of health systems and countries to mitigate and manage disasters
• Ensuring international capacity is available to support countries for emergency response through training and establishment of surge capacity” (MSPP, 2012).
CHAPTER IV

Ministry of Public Health in Haiti

On the second anniversary of the earthquake, the Haitian government and the international community decided that it was time to close the plague chapter of the cholera by having short and long-term actions to help the Haitian people to fight this pandemic. Moreover, the Haitian president on January the 11th, 2012 joined the Pan American Health Organization (PAHO), World Health Organization (WHO United Nations Children’s Fund (UNICEF), and the United States Centers for Disease Control and Prevention (CDC) to put together an Action Plan to mobilize major investments in water supply and sanitation with the aim of eliminating cholera in Haiti. However, the immediate goal was to prevent cholera from becoming endemic in Haiti. The elimination of this disease in Haiti entails interrupting its transmission; block it totally (Action Plan, 2012).

To do that the partners are requesting donor countries and organizations to finance investments in order to meet the commitments made to Haiti following the earthquake of January 2010. The requesting fund will go straight to support construction of water supply as well as sanitation infrastructure. These investments are very important to give Haiti a new level of access to potable water and sanitation to the levels of neighboring countries. The goal is to eliminate cholera in Haiti for the next 10 years (Action Plan, 2012). If everyone could have access to good water quality, the cost of drinking water per gallon from the water companies will drop and there will be less risks of waterborne
diseases. From my experience the water quality has decreased because the entire family was affected by typhoid in the 1990s. Since then we had been buying the water bottles or the 5 gallons since there was nine of us in the house.

**Ministry of Public Health and People New Vision**

This new policy is being applied in the 10 departments of Haiti and coordinated by the Ministry of Public Health and People. The priority is the rural villages and communities where there is a lack of health facilities in order to protect the welfare of the population. This policy has a short-term and long-term plan. The short term is to integrate the component of emergency plan for the cholera and long-term plan is the development of health such as water supply and sanitation (MSPP, 2012).

The plan of action will be lead by a national committee that composed of all social sector ministries as well as the ministry of Finance. This will have to evaluate and monitor the action plan and as well as advocate for reinforce and enhance both legislative framework and regulations including administrative and management procedures. This action plan requires great collaboration of the National Directorate for Water Supply and Sanitation (DINEPA) and the ministry of public health and people. The DINEPA will be issues regarding the cooperation modalities with various ministries involved in implementing the plan of action (MSPP, 2012).

The ministry of public health will have to decentralize to reach the most isolated population areas, since the objective is for the entire population to have access to a health post within a reasonable distance. Because the goal was to reduce the incidence of
cholera while improving water supply and sanitation coverage, and promoting greater awareness among the population about the importance of better services impacting health such as primary health care, solid waste management, water supply and sanitation facilities (MSPP, 2012).

The contribution of the NGOs in this action plan is very important in improving health and sanitation services, however the Haitian government has make sure that they are well integrated in the public health system in order to reach the long-term goals. The NGOs have to follow all the guidelines established by the Haiti government to better fit in the technical assistance into the public health structures.

Goal and Objective of the New Policy

In order to avoid deaths and reduce the suffering caused by the cholera epidemic, the Haitian government’s main policy was to put in place a solid approach to prevent and stop a secondary spread of the cholera in Haiti. Haiti’s plan sought to improve access to drinking water and improve sanitation by 2022. While the Dominican Republic’s plan sought to improve drinking water quality and to increase access to sanitation services for the estimated 500,000 people (9.6% of the population) that were without such services (PAHO, 2012b) The following specific goals were set to be achieved over ten years by 2022;

- “Increase access to potable water to at least 85 percent of the population would be a good effort.
• Increase access to improve sanitary and hygiene facilities to at least 90 percent of the population; will lower cholera in Haiti, including other related diseases.

• Increase collection of solid waste in the metropolitan area of Port-au-Prince to 90 percent and in secondary cities to 80 percent.

• Strengthen the public health system to facilitate access to health care services for 80 percent of the population by increasing the number of physicians and nurses per 100,000 population.

• Strengthen epidemiological and laboratory surveillance for early detection of all cholera cases and other diseases under surveillance. This will be achieved through an integrated surveillance system, better information, feedback, an information administration and regulations for communications.

• Ensure research on outbreaks and response linked to surveillance activities.

• Ensure a strong laboratory surveillance component to examine the possible serotypes and genotypes, as well as eventual changes in antimicrobial resistance among Vibrio cholera strains in Haiti.

• Intensify education of the public about household hygiene and food hygiene to the extent that by 2022, 75 percent of the general population in Haiti will have knowledge of prevention measures for cholera and other diarrheal illnesses.

• Put in place an evaluation tool to measure the impact of activities related to cholera, water-borne diseases, and more broadly socioeconomic indicators such as absenteeism from schools and workplaces” (MSPP, 2012).
Figure 7. Finance Needed to Eliminate Cholera in Haiti, (Action Plan, 2012)
### Area Intervention by Lead Agency

<table>
<thead>
<tr>
<th>Area of Intervention</th>
<th>Lead Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water supply and discharge of wastewater</td>
<td>DENEPA</td>
</tr>
<tr>
<td>Solid waste management</td>
<td>DINEPA/ Ministry of Public Works</td>
</tr>
<tr>
<td>Health care</td>
<td>Health Services Directorate/ MSPP</td>
</tr>
<tr>
<td>Essential medicines</td>
<td>Pharmacy Directorate- DPMMT/MSPP</td>
</tr>
<tr>
<td>Epidemiological surveillance</td>
<td>Epidemiology Directorate- DERLR/MSPP</td>
</tr>
<tr>
<td>Promotion of health and hygiene</td>
<td>Health Promotion Directorate/ DHSPE/ MSPP</td>
</tr>
<tr>
<td>Food hygiene and micronutrients deficiencies</td>
<td>General Directorate- MSPP</td>
</tr>
</tbody>
</table>

Table 3. Area Intervention by lead Agency, (Action Plan, 2012)

The Center for Disease Control (CDC) is currently providing technical assistance to DINEPA in the following projects such as expansion of the environmental monitoring and response in Port-au-Prince, development of Household water treatment National Strategy to regulate and promote this sector, development of DINEPA’s Hygiene Promotion Strategy and workforce capacity at DINEPA by helping develop the training materials and funding part of the program.
New Policy of DINEPA

DINEPA wants to increase the access to clean water and sanitation nationally. The goal is to increase drinking water to 40%, and 25% for sanitation in the rural areas of Haiti where the situation is crucial by 2015 to.

Limitations of New Policy

The new policy that was put together two years after the earthquake to solve the cholera issue in Haiti has serious financial issues. The ten year campaign to prevent, control and eliminate cholera in Haiti would cost about 2.2 billion dollars, but for the first two years Haiti would need about $443.7 million for the implementation of the plan, while the Dominican Republic’s plan calls for a total $77 million in investments, including $33 million over the next two years. But, because of lack of funds, the non-governmental organizations formed a Regional Coalition of about 20 agencies to help Haiti by raising some money. The Regional Coalition has gathered together more than $29 million in new funds to implement the action plan. However, much more will be needed (PAHO 2012).

However, the United Nations has its own program to support Haiti to prevent a cholera outbreak within 2 years. It has elaborated an additional two-year plan to support the first two-year plan. This included immediate prevention by vaccinations and other prevention efforts as needed such as hand washing and proper sanitation including water quality. Last year they were supposed to have raised $38 million, but they raised only $10 million. This year the plan was for about $40 million, but only $6 million has been raised.
The Haitian government says that they need $448 million to carry out the first two year plan (Mspp, 2011).

By this year the goal is to reduce the rate of the cholera from 3% to less or equal to 0.5% and by the end of 2017 to reduced it to 0.1% or less; finally, in 2022, to eliminate cholera to 0.015 or less in the island with technical and financial support of the international community and binational coordination (Plan d’élimeation du cholera en Haiti, 2012). This will require lots of efforts to meet this short goal because on 4 November, 2014 the department of North was flooded. There are many people homeless and many of them were displaced. Many of the sanitation structures are now probably threaten or even damaged.

**Weaknesses of the Action Plan**

- Who will replace the work that NGOs are doing right now to support the action plan, once they leave? Many of the humanitarians already left because of lack of finance.

- Many health facilities refuse to handle cholera cases unless they receive a supplementary payment; because most health care centers lack extra funds. The facilities may be willing to help, but again, finances are a significant challenge.

- Lack of the presence of an ambulance system and lack of easy access to gas and resources to maintain the ambulances. Fewer hospitals have access to ambulances mostly in the capital of Port-au-Prince, and the service is not always guaranteed for many reasons.
• Inaccessibility to health facilities and in certain cases there is no road at all to go to one point to another. Many people in rural areas do not have access to healthcare facilities, because not too many leave the area and they are scattered. The geographic position of these communal sections is often ambiguous, and transportation is another limitation as well.

• Private transportation is very expensive. Having private transportation is not always guaranteed because of the expense. Most of the time they use cattle for transportation.

• Some foreign NGOs do not participate in meetings and intervene independently and without legal recognition. This is one of the reasons that many humanitarians had to leave. In order to bring their support, they have to be legal in Haiti.

• They government had to recognize them and they have to report every year to the Haitian government. If they are incapable of doing that they will not be able to stay. When the earthquake first happened the door was opened to the humanitarians.

• Lack of funds to meet the short term goal which is reducing cholera in Haiti from 3% to 0.5 by the end of 2014 is being threatened now.

• No emergency plan for the rainy season besides the prevention plans that everyone has followed every single day (May to November). According to the Ministry of Public and People the number of cases of cholera usually increases during this period.
• Many humanitarian organizations have left Haiti. Several organizations already left, and they were the ones that used to provide the basic hygiene care at the shelters.

• The “Action Plan” is threatened because many NGO’s in the public health area that are supporting the “Action Plan” are running out of funds. Education of the public about household hygiene and food hygiene needs to be intensified in TV and Radio.

• In order for the MSPP to promote and encourage the population to sanitarians experts would need to be hired. However, there are not many because there is not any environmental health program at the colleges in Haiti. They would have to train the environmental science students or offer sanitarian experts as a minor because of the need.

• The restaurants also need improvements in sanitation. There should be health inspectors or sanitation engineers visiting the restaurants, the hotels, the public places, the shelters, the schools and the work places to make sure that hygienic guidelines are met.

• There should be a local public health office in each of the communes to promote good healthcare by promoting hygiene and sanitation which, if not controlled or monitored, are not only sources of cholera but also can be home to many other waterborne and foodborne diseases.

• DINEPA and MSPP should not only improve working on improving the public water sources, but they should increase their capacity so more people could have
access to clean drinking and potable water in the metropolitan area as well as the rural including the most isolated cities.

- Each citizen should have proper access to dispose their waste without affecting their environment and the natural resources such as the soil and water that they are all depend on for a living.
- It should be an obligation that all homes should have access to a toilet, no matter where one is in the country.

**Threats**

- Rainy season is coming, and there could be major outbreaks without the real capacity to handle them, because of the lack of sanitation, the number of cholera cases usually increases (Handzel, 2011).
- There is usually not enough access to safe drinking water and latrines. Most of the people use spring water or water from the river without treating it. They use the water to drink and for all household purposes (Handzel, 2011).
- Lack of adequate finance is usually the most significant inconvenience, not too much money goes for sanitation and the public health when the government votes for the budget every year (Handzel, 2011).
- Many cultural factors involved in getting the population to understand the disease of cholera because it is new to the people. The are many who would go to voodoo priest to be treated instead of going to a health center (Grimaud & Legagneur, 2011)
• Some NGOs, local community organizations, and religious groups are not aware of the coordination of efforts currently under way (Handzel, 2011).

**Strengths of the Action Plan**

• The area of intervention was well identified and so was the distribution of tasks. The partners know who is carrying this out, and that they support the government’s goals.

• The NGOs who are working in the area of public health all reported to the Ministry of Public in a monthly meeting, because each of them was delegated to work on a specific project.

• The Ministry of Public Health and DINEPA were also developing partnerships with the municipalities to improve water quality and sanitation including hygiene.

• DINEPA coordinated activities with CAMEP and NSP to improve water quality and sanitation in both metropolitan and rural areas. The public water systems have become chlorinated to decrease the risks of infections.

• The cholera treatment center should not be separated from the health centers, except in cases of an epidemic surge or an increase patient load. In addition, the Haitian government has put in place some specialized units to people affected by the cholera to get special treatment for the cholera.

• Cholera should be treated like all other diseases. Therefore, the Haitian government with the support of the United Nations is providing vaccines to vulnerable people in the red zones.
• The vaccine to treat the cholera should be given in all of the 565 communes in Haiti. The areas mostly affected by the cholera are already under treatment, such as Artibonite, Plateau Central, the North and the West.

• Many health care professionals will be trained to provide care to patients affected by cholera and all other diarrheal diseases. Many of them are already trained to be placed in the special treated health center to provide appropriate care to the victims.

• An appropriate structure of the transfer process is put in place for the departure of NGOs. The Haitian government is putting in place structure to continue the work that was assigned to the NGOs leaving Haiti.

• Another strength would be to offer easy access to the community to chlorine products such as chlorox or chlorine and aquatabs, especially in rural areas.

• Collaborate with the private sector to maintain good hygiene and proper sanitation in the communes that are at the highest risk for cholera. Because the Haitian government will probably not be able to execute the plan on its own, there should be a plan for communication to work together with the private.

• Establish agreements with the civil society institution and the media to promote access to education on food, hygiene and sanitation; it will lower the cholera cases if everyone can have access to the prevention and control policy.
Current Evolution of the Cholera

The first two year plan to eliminate the cholera in Haiti is December of 2014. In the summer of 2014 he Haitian government with World Bank and United Nations joined together to evaluate where Haiti is right now vis-à-vis the ten year plan that they put together two years ago regarding clean water, improved sanitation and better health (World Bank, 2014). World Bank group president Jim Yong Kim pledged $50 million ahead to support clean water, improve sanitation and better health to eliminate cholera in Haiti; and also called donors and other partners to join to improve water and sanitation in Haiti for all Haitians to prevent waterborne diseases (World Bank, 2014). This project will reach about 2 million people in cholera hot spots of rural Haiti, by providing all schools and clinics in the communes that are highly affected by the cholera priority water and sanitation services. According to the president of the World Bank group, “We have made significant progress in controlling the cholera epidemic in Haiti, but too many people are still getting sick, mainly because they don’t have access to clean water and lack sanitation systems. Cholera remains endemic and water borne diseases are one of the leading causes of infant mortality in Haiti,” said Kim (World Bank, 2014, P1). He added by saying, “Expanding coverage of safe water and sanitation is possible. We cannot ignore this opportunity to prevent thousands more Haitian children from dying from waterborne diseases,” (World Bank, 2014, P1) Haiti and its partners are strongly committed to eliminate cholera in Haiti and prevent a second outbreak.
Table 4. Update of the Cholera Evolution, (MSPP, 2014)

<table>
<thead>
<tr>
<th>Year</th>
<th>Oct-Dec. 2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Jan-June 2014</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>185,351</td>
<td>352,033</td>
<td>101,722</td>
<td>58,650</td>
<td>7,451</td>
<td>705,207</td>
</tr>
<tr>
<td>Deaths</td>
<td>4,101</td>
<td>2,927</td>
<td>927</td>
<td>572</td>
<td>32</td>
<td>8,559</td>
</tr>
<tr>
<td>Fatality Rate</td>
<td>2.2%</td>
<td>0.8%</td>
<td>0.9%</td>
<td>1.0%</td>
<td>0.4%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

The cholera remains endemic in Haiti. Many efforts have been made to control the cholera, from January to June 2014 only 32 people died from the cholera. However, people in the rural are still in high risk. According to World Bank the control measures have been effective, but the cholera still remains a significant risk. However, the number of cases has dropped considerably compare to the last three years while Haiti still deals with the cholera. At the same time, the Haitian government and its partners continue to work on the elimination of the cholera; which requires sustainable actions from both parties (World Bank, 2014).

The current situation of the cholera in Haiti requires the government and its partners to maintain and strengthen surveillance and rapid response actions that have been effective in decreasing cases and deaths. Whereas they are continuing to increase investments to improve access to water and sanitation for longer terms solution to prevent future outbreaks. At the same time, they are working to eliminate the cholera by
improving access to healthcare and at the same time reinforce public water and sanitation systems in urban and rural of Haiti (World Bank, 2014).

The Most Important Part of the Plan

Cholera is caused by poor sanitation and a lack of proper hygiene habits. Since there is a lack of clean and safe water in Haiti, that causes the infection to spread rapidly in the country. As waterborne disease, the best solution is to have access to good sanitation and hygiene which are basic needs to live a healthy life.

According to, Dennis Cherian, senior director of health and HIV/AIDS at World Vision, “access to clean drinking water, hygienic living and sanitary conditions is a basic human right that all people should enjoy” (PAHO, 2012b). The partnership with multiple NGOs who were working in the field of Public Health combined with the experiences and skills of the Haitian government needs to continue to reinforce water and sanitation qualities and public health systems. This partnership will lead the country to a good path to meet the goal of the Action Plan by 2022; because quality drinking water and proper sanitation including good hygiene are keys to eliminate cholera on the island. “One important approach to preventing cholera and eventually eliminating its transmission is through major improvements in water, sanitation and hygiene infrastructure,” mentioned Jon Andrus, PAHO deputy director (PAHO, 2012b).

Wastewater and other human waste can also cause people to be sick, especially when it gets into the drinking water. Sanitation and hygiene can protect people and other
living organisms in the community where they are living. Cholera is mostly transmitted through the fecal-oral route and the ingestion of fecally contaminated water. Water can spread disease very rapidly because water is indispensable to live. Cholera can be prevented and controlled only by ending the fecal-oral contamination cycle where it is guaranteed that people have appropriate sanitation, proper hygiene, and access to safe drinking water for the whole population. It is important to build more latrines in order that everybody could have access to a latrine instead of urinating or defecating in an open land. This can be a long term solution to prevent future outbreaks.

**Some Ideas to Improve Sanitation in Haiti**

Haiti is at a point where things have to shift to another direction. It is now time to stop putting the good thoughts on paper, but to take action. It has been too long since Haiti been dealing with paper and having meetings everywhere. The time has come to have concrete action. Haiti needs to see results.

There should be a policy supporting that each house that is built needs to have at least one toilet. Many low income neighborhoods do not have access to a latrine, including many houses isolated in the rural areas. People usually urinate and defecate on an open land that has water that flows upstream causing the feces to be carried by wind or run off to the surface water such as rivers, springs and lakes. These sources of water are used for all household purposes such as drinking and cooking without being processed or disinfected.
It is very common to see unusual things happen upstream from the springs from what I remember of my experience of living in Haiti. The people upstream may have a pasture where there might be animal feces and even human feces. Therefore, the population needs to be educated more about sanitation. In the capital of Port-au-Prince, most of the stores do not have toilets. In many schools the latrine conditions are not met. The Ministry of Public Health should have a policy to reinforce proper sanitation in the workplace, schools, public places and the businesses.

In order to reach everyone the population needs to be mobilized. There should be an awareness campaign in the entire country of Haiti to teach the people on what proper sanitation is and why it is so importance. To carry this out, it would be beneficial to create some social groups as facilitators to go to the churches, the open market, the schools, and other areas to advocate and educate for better sanitation in order to lower the risk of all the diseases that relate to poor sanitation. Having spots in the radio and TV shows regarding proper sanitation and having it also in schools as a course to reach all the households would be good ways to educate the people of Haiti. Make the teaching available and clear to everyone to hear and understand the message of promoting better sanitation and health in for all.

**How Haiti Should Measure its Success**

“How Haiti is the only country in the entire world whose sanitation coverage decreased in the last decade” mentioned Dr. Rishis Rattan according to (Walton and Farmer, 2011).
An action plan was created by the Haitian government, the Dominican Republic and organizations working in the field of the public health to eliminate the cholera from island Hispaniola. In order to be successful, Haiti would need about $2.2 billion according to the plan to eliminate cholera completely in Haiti. The majority of the Haitians do not have access to a hygiene and sanitation system, about $8 million of them according to the United Nations. They rely on open fields in ravines, riverbanks, and sometimes anywhere as mentioned previously. Port-au-Prince itself produces over 900 tons of human excreta everyday based on United Nations.

Prior to the earthquake and the cholera outbreak, diarrhea used to be the number one killer of children under five and the second primary cause of all death in Haiti (PAHO, 2012f. Knowing that cholera is a water-borne illness that relates to poor sanitation and to unclean water, it is very likely that cholera will become endemic in Haiti, because the full funding that is necessary for Haiti to eliminate cholera completely has not been achieved. The death rate in the countryside today is more than 4% of those infected die due to the lack of cholera treatment centers. At the epidemic’s peak, there used to be about 285 per month. However, today, there are only 28 deaths a month per cases of cholera. Once their financing ran out, most humanitarian agencies abandoned the country (PAHO, 2012e).

In order for the Action plan to be successful, the DINEPA and Ministry of Public Health of Haiti have to be able to provide the basic sanitation needed to the entire nation; the majority of the population should have access to proper sanitation such as potable, clean drinking water. At least each family should have a toilet in their home. Water
treatment centers should be developed, especially in the bigger cities. Basic healthcare should be provided to everyone no matter where they are in the country. The people should maintain cholera prevention education. Vaccines should continue to be given to the population. The country should work to develop more excreta sites. It is important to have quick and easy access to treat cholera and having emergency plan for the rainy seasons to control the increasing risks of cholera infections.

If the DINEPA and the Ministry of Public Health are able to reduce the death rate from cholera by establishing measures to increase healthcare for all and improve sanitation and at the same time seek ways to obtain more funds; Haiti could move forward in the effort to reduce diseases that have become epidemics. If lack of finances will continue to be a limitation, perhaps the goal might not be met as it is expected. There probably is a short term relief but any time in the future cholera could become a second epidemic in Haiti because it has remained endemic. DINEPA is working on the construction three treatment centers of human feces in three different locations in Haiti. The first one that was built in September 2011 is now closed, because the fees paid by the excreta truck companies did generate enough money to keep it running. It could remain financially stable after some humanitarian organizations had left. It also broke down with a problem of a lack education of the people that were served in the camps. Trash was deposited in the toilets and the treatment plant was not suitable for trash. They could handle only water and human feces. It cost DINEPA about $2.5 million to build it, but unfortunately it had to shut down. They are trying to get it open by using some of the government equipments (PAHO 2012c).
In August of 2014, the United Nations launched the second step, of the vaccination campaign against the cholera. The campaign is under control of the Haitian government. The vision of this campaign is to vaccinate 200,000 people in areas where people are the most vulnerable to the disease; for example, in the departments of Artibonit, le Plateau Central and the Ouest. According to the experts, the oral vaccines of two doses against the cholera are sure to offer a sustainable protection to about 70 percent for a period of two years in the endemic zones. In 2013, there was a similar campaign that was given by the Haitian government with the support of the United Nations. They reached a population of 107,000 people around the North and the Plateau Central. The idea behind these campaigns was to reach the long term goal of eliminating the cholera in the island (Dowell and Frieden, 20014).

The Haitian and the Dominican governments in the presence of the European Union Representative met together to approve the constructions of three hospitals. These hospitals will be near the border of Haiti and the Dominican Republic. These hospitals will able to provide the care necessary to the sick people so they do not to need to go to the Dominican Republic for treatment (Dowell and Frieden, 20014).

In order to provide better care, in September the Haitian government dedicated a new health center in the area of Cabaret. In the future they hope to transform it into a hospital. With international support the Public health Ministry and for People in Haiti has built four hospitals and 32 health centers, thirty-four treatment units for the cholera and eleven other sanitation structures throughout the country for the last three years (Dowell and Frieden, 20014).Moreover, 20 hospitals, 56 health centers, 9 specialized centers, and
4 other structures have been rehabilitated by the Haitian government. In addition, five hospitals and seventeen health centers are under construction according to the ministry of Public health Ministry and for People according to Dr. Florence D. Guillaume (Dowell and Frieden, 20014)

Having four treatment plants running in Haiti would be a big step for the country. It will slow down the epidemic; specifically, having all these facilities available to the Haitian community, those that were not in existence prior to the earthquake, will make tremendous changes in the people’s health. It would control cholera from spreading not only within the country but to the neighboring countries (Dowell and Frieden, 20014).

What Comes Next, After the 2022 Plan is Met and Some Recommendations

After the 2022 Action Plan to eliminate cholera in Haiti, it would be important to continue maintaining or increasing the sanitation in Haiti by having waste water treatment plants in all ten departments. Instead of having latrines, every household could have modern toilets; hopefully, the entire feces waste collected goes to the waste water treatment plant. In order to preserve the ground water and the soil from contamination, waste water treatment plants and educated people to run them are necessary, because ground water in Haiti has been contaminated in many areas for too long. Increase access to healthcare in all the rural areas. It would be beneficial to everyone’s health if every household could have access to running tap water in their homes, because it will decrease the risk of infections. Access to running tap water would also keep kitchens tools clean; thus, decreasing the chance for the food to get contaminated.
It would be great if Haiti would have access to waste management including the most isolated cities, because they tend to get neglected with development projects. This time, the best way to improve sanitation and prevent an outbreak of waterborne disease would be to include all cities. Proper waste management is a great need, especially to keep the beaches as clean as possible, keeps the soil free from contamination, and the fresh water potable. It would be important to reinforce the water policies and regulations to protect the surface and ground water nationwide; not only to control and prevent waterborne diseases, but also to control or eliminate the living organisms in water. If the Haitian government, along with the help of the NGOs, finds a way to obtain the funding that is necessary to promote the basic sanitation, Haiti would be a whole different world and all Haitians could live in peace without a threat of cholera.

So far Haiti has made numerous efforts to control the cholera outbreak that surprisingly attacked the Haitian people in 2010. Improving the health system by giving everyone access to safe drinking water and providing adequate sanitation, including raising awareness of the population on how to protect themselves against cholera is a good plan of action. The action plan taken by the international committee in 2012 to eliminate the cholera in Haiti was a well-made decision. However, the policy in place to meet the goal has some barriers. Financial issues are a major barrier because the for two year plan, the money that was necessary to achieve the goal of eliminating cholera by 2022 is not yet available. Will the goal really be achieved with all of the weaknesses and the financial barriers since Haiti is a poor country and it does have this money available to reach the goal by 2022 without the help of the international organizations including
Haitians living abroad. The Ministry of Public Health and People has a long way to go to raise awareness, so that people who are far away know how to protect themselves as well as have access to the basic needs such as safe drinking water, proper disposal waste as well as sanitation and hygiene. If the Ministry of Public health and People failed to provide the basic health care and access to safe drinking water as well as good sanitation to the ten departments and to the 140 communes Haiti will still be at risk for a second cholera outbreak. MSPP should continue to raise awareness about the cholera by television, radio, billboards and workshops until everyone is been sensitized and been vaccinate every 2 years Haiti will not be able to survive a second outbreak.
CHAPTER V

Conclusion

Haiti has long-suffered from improper sanitation and poor hygiene issues. One of the main reasons was because some part of the country was limited by finances and from political turmoil. The public health sector was really limited in providing appropriate healthcare necessary to the population. The access to proper sanitation and health had decreased with the growing of the population. Adjustments had not been made to improve life of the people. The cholera outbreak needed only one drop of water or less to cause an overflow of disease organisms to hamper the situation. With the effects of the 2010 earthquake that hit Haiti combined with the cholera endemic, also in 2010, proper sanitation and quality of water both remain problems today. The lack of finance is a big demand in order to set the Hispaniola free of cholera. Everything is in place, including plans for improved water quality and treatment of those who may become ill from water-borne diseases. The Haitian government has great support from the NGOs, and the plan is there. The main limitation is the lack of funding, because if Haiti had the money that is necessary to meet the plan, all of the ambiguity including all the limitations and barriers will no longer to be a threat to set the island free of cholera. The question is, will really Haiti will have access to the $ 2,220,022,500, to execute the Plan of Action. The Ministry of Public Health and Population (MSPP) itself needs US$ 269,660,000 to provide better care; the National Directorate for Water Supply and Sanitation (DINEPA) needs US$ 1,577,362,500; and for the Ministry of Public Works, Transport, and Communications
(MTPTC) and the Ministry of the Interior and Local Communities (MICT): US$ 373,000,000 according the plan that the Haitian government and the NGOs had put together to eliminate cholera totally in Haiti.
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