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Infections and Inequalities: A Cultural Perspective on the Economic, Political, and Social Influences That Govern Medical Care in Haiti.

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Précis:

The recent catastrophic earthquake that occurred in Haiti raises many concerns**.** From an economic standpoint many people and politicians wonder what will become of this impoverished nation in terms of recovery efforts. On many occasions Haiti has been plagued with poverty and an unequal balance between sharing of goods and services. One of the main issues at hand is access to adequate health care. Medicine is a pivotal aspect in life for any individual. It provides a guideline for individual well-being, along with nurturing and caring responsibilities he or she has towards another. However, statistics have shown that millions of men, women, and children around the world lack access to basic medical necessities.

This paper will focus on diseases, such as tuberculosis that can be easily contained and cured often run rampant amongst families and neighbors living in the slums in Haiti. It will also explain the economic discrepancies, political imbalance, and social issues that govern health care in developing countries such as Haiti. It will correlate the lack of financial support with the presence of poverty, by emphasizing that developing countries receive less funding because they are underdeveloped. In addition, Haitian cultural beliefs and the use of home-made remedies prevent the use of the little medical care available. These factors are results of poor living conditions along with the lack of funding for proper medical treatments from economically stabilized nations.

Consequently, the most overlooked aspect of providing medicine is the social protection of the poor in developing countries. It is the issue of understanding the social and inequalities that mostly affects the poor in underdeveloped regions of the world. The basis of health-care employment, along with the cultural beliefs of the citizens in these countries, is often

misunderstood. It is imperative that a physician acknowledge the issues that affect the poor, economically and socially. Given their conditions, due to poverty and lack of any health regulated infrastructure, they become vulnerable and exploited. These two factors alone make it extremely difficult to get proper medical treatments.

Overall the funding of health care in developing countries is scarce. The Haitian government does not put emphasis on acquiring more funding for Haiti's unregulated health issues. In most situations, their economic status, cultural beliefs and practices does not allow them to get the necessary medical treatment. Moreover, under these economic conditions home, remedies are the cheapest option they have. However, these remedies are not always the best solution. This paper will raise awareness to the issues that hinder health care in third world countries such as Haiti. Many of the necessities that are taken for granted in well-stabilized nations are gold for the citizens of Haiti.

In addition, this paper will cover the epidemic of tuberculosis that occurred in Haiti in late 1980's to early 1990's. Tuberculosis is a curable disease; however, Haitian citizens who lack access to medical care die from it. Under these circumstances, I will also illustrate the pathology of tuberculosis in terms of preventive measures, the morphology of the bacteria, and treatments. Furthermore, the poor living conditions along with the deficiency in health care regulations and treatments provide a gateway for the disease to easily spread. In addition, this is one of the most expensive and treatable diseases in Haiti; however, due to the financial status of the majority of Haitian citizens who succumb to this infection they are not able to get the proper treatment.

Furthermore, I will also cover the basis of accessing health care as an inherent human right. This emphasizes on understanding the social barriers or difficulties that prevent the

production of an adequate health care system, not only in Haiti, but in other poor countries as well. In addition, these issues also indicate how health care in these countries is often governed by politics and other philosophical theories that are often useless or misunderstood. Asserted by Dr. Paul Farmer:

> A truly committed quest for high-quality care for the destitute sick starts from the perspective that health care is a fundamental human right. In contrast, commodified medicine invariably begins with the notion that health is a desirable outcome to be attained through the purchase of the right goods and services. Socialized medicine in industrialized countries is no doubt a step up from a situation in which market forces determine who has access to care[1(page 158)].

This emphasizes the value of accessing adequate health care as a medium for living in a society that provides an equal share for each individual. The progression of an adequate health care infrastructure in Haiti is hindered by economic, political, and social discrepancies that govern the fabric of Haitian existence.

Introduction

In all part of life health is an important aspect. In many situations individual well-being, whether financially or socially, all depends on high quality health standards. In many regards"Every man who lives is born to die," wrote John Dryden[1(page 8)], some three hundred years ago. That recognition is tragic enough, but the reality is sadder still. We try to pack in a few worthwhile things between birth and death, and quite often succeed. It is however, hard to achieve anything significant if, as in sub-Sahara Africa, the median age at death is less than five years old. That, I should explain, was the number in Africa in the early 1990s[1(page 71)], before the AIDS epidemic hit hard, making the chances worse and worse. Having made it beyond those early years, it may be difficult for us to imagine how restricted a life so many of our fellow human beings lead, what little living they manage to do. Many of us who live in well-stabilized nations are not aware of these issues that affect these people. The world goes on as if nothing much has happened.

The situation does, of course, vary from region to region, and from one group to another. But unnecessary suffering, debilitation, and death from preventable of controllable illnesses characterize every country and every society, to varying extents. As we would expect, the poor countries in Africa or Asia or Latin America provide crude obvious illustrations of severe deprivation, but the phenomenon is present even in the richest countries. From access to health care, better school system, and access to jobs demonstrates an unequal separations on standards of living. Indeed, the deprived groups in the "First World" live in many ways, in the "Third." For example[1(page 84)], African Americans in some of the most prosperous U.S. cities (such as New York, Washington, or San Francisco) have a lower life expectancy at birth than do most people

in immensely poorer China or even India. Indeed, location alone may not enhance one's overall longevity.

How can we come to terms with the extensive presence of such adversity, and the most basic privation from which human beings can suffer? Do we see it simply as a human predicament as an inescapable result of the frail of our existence? That would be correct had these sufferings been really inescapable, but they are far from that. Preventable diseases can indeed be prevented, curable ailments can certainly be cured, and controllable maladies call out of control. Rather than lamenting the adversity of nature, we have to look for a better comprehension of the social causes of horror and also of tolerance of societal abominations. Farmer points out what he calls "structural violence" which influences "the nature and distribution of extreme suffering." As he explains, "a physician anthropologist's effort to reveal the ways in which the most basic right, along with the right to survive—is trampled in an age of great affluence." He argues, "Human rights violations are not accidents; they are not random in distribution or effect. Rights violations are, rather, symptoms of deeper pathologies of power and are linked intimately to the social conditions that so often determine who will suffer abuse and who will be shielded from harm"[1(page 76)].

Those "social conditions"[1(page 76)] and their discriminatory effects are the subject matter of this general investigation and the specific issues that establish the overall picture of powerless and deprivation. The drama, the tragedy, of the destitute sick concerns not only physicians and scholars who work among the poor but all who profess even a passing interest in human rights. It's not much of a stretch to argue that anyone who wishes to be considered humane has ample cause to consider what it means to be sick and poor in the era of globalization and scientific advancement. The asymmetry of power can indeed generate a kind quiet brutality. We know, of

course, that power corrupts and absolute power corrupts absolutely. However, the inequalities of power in general prevent the sharing of different opportunities[1(page 16)]. This paper will also examine the struggle for social and economic rights as they are related to health.

Haiti and Tuberculosis

Brief History of Haiti's Culture and Health Discrepancies

In order to focus on the issues that hinders Haiti's health care infrastructure it is imperative to note some important facts on Haiti's culture and the island as a whole. Haiti[2(page 6)], officially the Republic of Haiti is a Caribbean country. Along with the Dominican Republic, it occupies the island of Hispaniola, in the Greater Antillean archipelago. The total area of Haiti is 27,750 square kilometers (10,714 square mile)[2] and its capital is Port-au-Prince. Haitian Creole and French are the official languages. Haiti's regional, historical and ethno linguistic position is unique for several reasons. It was the first independent nation in Latin America and the first black-led republic in the world when it gained independence as part of a successful slave rebellion in 1804.

Haiti is the poorest country in the Americas. Contrary to popular belief, however, it is not the poorest in the Western Hemisphere. On various occasions, it has experienced political violence throughout its history. Haitian politics have been contentious. Most Haitians are aware of Haiti's history as the only country in the Western Hemisphere to undergo a successful slave revolution. On the other hand, the long history of oppression by dictators including François Duvalier[2(page 45)] and his son Jean-Claude Duvalier has markedly affected the nation. France and the United States have repeatedly intervened in Haitian politics since the country's founding, sometimes at the request of one party or another. Cité Soleil, Haiti's largest slum in the capital of Port-au-Prince has been called "the most dangerous place on Earth" by the United Nations[3].

By most economic measures, Haiti is the poorest country in the Americas. It had a nominal GDP of 7.018 billion USD in 2009, with a GDP per capita of 790 USD[4], about $2 per person per day, according to the World Bank. It is an impoverished country, one of the world's

poorest and least developed. Comparative social and economic indicators show Haiti falling behind other low-income developing countries particularly in the hemisphere since the 1980s. Haiti now ranks 149th of 182 countries in the United Nations Human Development Index report in 2006. About 80% of the population was estimated to be living in poverty in 2003[3(page 62)]. Most Haitians live on $2 or less per day. Haiti has 50% illiteracy, and over 80% of college graduates from Haiti have immigrated, mostly to the United States.

About 66% of all Haitians work in the agricultural sector, which consists mainly of small-scale subsistence farming, but this activity makes up only 30% of the GDP. The country has experienced little formal job-creation over the past decade, although the informal economy is growing. Mangoes and coffee are two of Haiti's most important exports. Haiti's richest 1% owns nearly half the country's wealth. Haiti has consistently ranked among the most corrupt countries in the world on the Corruption Perceptions Index[5]. Since the day of "Papa Doc" Duvalier, Haiti's government has been notorious for its corruption.

Half of the children in Haiti are unvaccinated and just 40%[3(page 54)] of the population has access to basic health care. Even before the 2010 earthquake, nearly half the causes of deaths have been attributed to HIV/AIDS, respiratory infections, meningitis and diarrheal diseases, including cholera and typhoid, according to the World Health Organization. Ninety percent of Haiti’s children suffer from waterborne diseases and intestinal parasites. Approximately 5%[4] of Haiti's adult population is infected with HIV. Cases of tuberculosis (TB) in Haiti are more than ten times as high as those in other Latin American countries. Some 30,000[4] people in Haiti suffer each year from malaria.

Morphology and pathogenesis of Tuberculosis

Consequently, tuberculosis is a common and deadly infectious disease in Haiti cause by the mycobacteria, *Mycobacterium tuberculosis* in humans. The bacteria usually attack the lungs but can also affect other parts of the body. It is spread through the air, when people who have the disease cough, sneeze, or spit. Most infections in humans result in an asymptomatic, latent infection, and about one in ten latent infections eventually progresses to active disease, which, if left untreated, kills more than 50% of its victims. It is a communicable disease and highly contagious.

Mycobacterium tuberculosis is a small aerobic non-motile bacillus bacterium. It thrives in oxygen-rich regions of the human body. When people suffering from active pulmonary TB coughs, sneeze, speak, or spit, they expel infectious aerosol droplets 0.5 to 5 µm in diameter[6]. A single sneeze can release up to 40,000[6] droplets. Consequently, each one of these droplets may transmit the disease, since the infectious dose of tuberculosis is very low and inhaling less than ten bacteria may cause an infection. People with prolonged, frequent, or intense contact are at particularly high risk of becoming infected, with an estimated 22% infection rate[6].

A person with active tuberculosis untreated can infect 10 to 15[6] other people per year. Some risk factors include areas where TB is common, people who inject drugs using unsanitary needles, residents and employees of high-risk congregate settings, medically under-served and low-income populations, high-risk racial or ethnic minority populations, children exposed to adults in high-risk categories, patients immune-compromised by conditions such as HIV/AIDS, people who take immunosuppressant drugs, and health care workers serving these high-risk clients.

The *M. tuberculosis*[6] family is complex and includes four other TB-causing mycobacterium: *M. bovis*, *M. africanum*, *M. canetti* and *M. microti*. *M. africanum* is not widespread, but in parts of Africa it is a significant cause of tuberculosis. *M. bovis* was once a common cause of tuberculosis, but the introduction of pasteurized milk has largely eliminated this as a public health problem in developed countries. *M. canetti* is rare and seems to be limited to Africa, although a few cases have been seen in African emigrants.

TB infection begins when the mycobacteria reach the pulmonary alveoli, where they invade and replicate within the endosomes of alveolar macrophages. It hides inside the macrophage to avoid degradation by enzymatic reactions. The primary site of infection in the lungs is called the Ghon focus, and is generally located in either the upper part of the lower lobe, or the lower part of the upper lobe of the lungs. The bacteria are picked up by dendritic cells, which do not allow replication, although these cells can transport the bacilli to local lymph nodes. In a worst case scenario, further spreading of the bacteria is through the bloodstream to other tissues and organs where secondary TB lesions can develop in other parts of the lung (particularly the apex of the upper lobes), peripheral lymph nodes, kidneys, brain, and bone. All parts of the body can be affected by the disease, though it rarely affects the heart, skeletal muscles, pancreas and thyroid.

Tuberculosis is classified as one of the granulomatous inflammatory conditions. This means that cells of the human immune response forms an aggregate around infected macrophages with the bacteria. Macrophages, T lymphocytes, B lymphocytes and fibroblasts are among the cells that aggregate to form a granuloma, with lymphocytes surrounding the infected macrophages. The granuloma functions not only to prevent dissemination of the mycobacteria, but also provides a local environment for communication of cells of the immune system. Within

the granuloma, T lymphocytes secrete cytokines such as interferon gamma, which activates macrophages to destroy the bacteria with which they are infected. Cytotoxic T cells can also directly kill infected cells, by secreting perforin and granulysin.

Importantly, bacteria are not always eliminated within the granuloma, but can become dormant, resulting in a latent infection. Another feature of the granulomas of human tuberculosis is the development of cell death, also called necrosis, in the center of tubercles. To the naked eye this has the texture of soft white cheese and was termed caseous necrosis. If TB bacteria gain entry to the bloodstream from an area of damaged tissue they spread through the body and set up many foci of infection, all appearing as tiny white tubercles in the tissues. This severe form of TB disease is most common in infants and the elderly and is called miliary tuberculosis. Patients with this disseminated TB have a fatality rate near 100%[6] if untreated. However, if treated early, the fatality rate is reduced to near 10%[6].

Interleukin 2[7] (IL-2) is an interleukin, a type of cytokine immune system signaling molecule, which is a leukocytotrophic hormone that is instrumental in the body's natural response to microbial infection and in discriminating between foreign (non-self) and self. IL-2 mediates its effects by binding to IL-2 receptors, which are expressed by lymphocytes, the cells that are responsible for immunity. IL-2 is normally produced by the body during an immune response. When environmental substances (molecules or microbes) gain access to the body, these substances (termed antigens) are recognized as foreign by antigen receptors that are expressed on the surface of lymphocytes. Antigen binding to the T cell receptor (TCR) stimulates the secretion of IL-2, and the expression of IL-2 receptors IL-2R. The IL-2/IL-2R interaction then stimulates the growth, differentiation and survival of antigen-selected cytotoxic T cells via the activation of the expression of specific genes.

Treatments for tuberculosis

Research has been conducted where patients with active TB do not produce enough IL-2 to jumpstart the immune system in the case of microbial infections. Furthermore, researchers are trying to find ways to stimulate IL-2 secretions in active TB patients using their own blood and testing it with different forms of vaccines. There are 10 drugs currently approved by the U.S. Food and Drug Administration (FDA)[8] for treating TB. Of the approved drugs, the first-line anti-TB agents that form the core of treatment regimens include: Isoniazid, Ethambutol, Rifampin, and pyrazinamide. Isoniazid[8] is an organic compound that serves as an anti-tuberculosis medication in prevention and treatment. It is available worldwide, inexpensive and is generally well tolerated. It is manufactured from isonicotinic acid, which is produced from 4-methylpyridine.

When inside bacterial cells it must be activated by a bacterial catalase-peroxidase enzyme called KatG. KatG couples the isonicotinic acyl with NADH to form isonicotinic acyl-NADH complex. This complex binds tightly to ketoenoylreductase known as InhA, thereby blocking the natural enoyl-AcpM substrate and the action of fatty acid synthase. This process inhibits the synthesis of mycolic acid, required for the mycobacterial cell wall. Ethambutol[8] is a bacteriostatic antimycobacterial drug meaning it limits the growth of bacteria by interfering with bacterial protein production, DNA replication, or other aspects of bacterial cellular metabolism. It is sold under the trade names Myambutol and Servambutol. These drugs are used in combination of each other in order to prevent bacterial resistance.

Regimens for treating TB have an initial phase of 2 months, followed by a choice of several options for the continuation phase of either 4 or 7 months. Treatment completion is

determined by the number of doses ingested over a given period of time. Although basic TB regimens are broadly applicable, there are modifications that should be made under special circumstances (i.e., HIV infection, drug resistance, pregnancy, or treatment of children). Tuberculosis has been treated with combination therapy for over fifty years. Drugs are not used singly (except in latent TB or chemoprophylaxis), and regimens that use only single drugs result in the rapid development of resistance and treatment failure. The rationale for using multiple drugs to treat TB is based on simple probability in order to reduce the evolution of resistant strain of the bacteria.

DOTS[9] stands for "Directly Observed Therapy, Short-course" and is a major plank in the World Health Organization (WHO) global TB eradication program. The DOTS strategy focuses on five main points of action. These include government commitment to control TB, diagnosis based on sputum-smear microscopy tests done on patients who actively report TB symptoms, direct observation short-course chemotherapy treatments, a definite supply of drugs, and standardized reporting and recording of cases and treatment outcomes. The WHO advises that all TB patients should have at least the first two months of their therapy observed. This means an independent observer watching patients swallow their anti-TB therapeutic medicine. A common mistreatment that occurs under this program is that patients often neglect to take their medicine and this approach allows medical personnel to assess that their patients are on track to recovery. The independent observer is often not a healthcare worker and may be a shopkeeper or a tribal elder or similar senior person within that society. DOTS strategy is used with intermittent dosing.

Treatment with properly implemented DOTS has a success rate exceeding 95%[9] and prevents the emergence of further multi-drug resistant strains of tuberculosis. Administering DOTS, decreases the possibilities of tuberculosis from recurring, resulting in a reduction in

unsuccessful treatments. This is in part due to the fact that areas without the DOTS strategy generally provide lower standards of care. Areas with DOTS administration help lower the number of patients seeking help from other facilities where they are treated with unknown treatments resulting in unknown outcomes. However if the DOTS program is not implemented or done so incorrectly positive results will be unlikely. In order for the program to work efficiently and accurately health providers must be fully engaged, links must be built between public and private practitioners, health services must be available to all, and global support is provided to countries trying to reach their TB prevention, and treatment aims. Some researchers suggest that, because the DOTS framework has been so successful in the treatment of tuberculosis in sub-Saharan Africa, DOTS should be expanded to non-communicable diseases such as diabetes mellitus, hypertension, and epilepsy.

The WHO extended the DOTS program in 1998 to include the treatment of MDR-TB (called "DOTS-Plus")[9]. Implementation of DOTS-Plus requires the capacity to perform drug-susceptibility testing (not routinely available even in developed countries) and the availability of second-line agents, in addition to all the requirements for DOTS. DOTS-Plus is therefore much more resource-expensive than DOTS, and requires much greater commitment from countries wishing to implement it. Resource limitations mean that the implementation of DOTS-Plus may lead inadvertently to the diversion of resources from existing DOTS programs and a consequent decrease in the overall standard of care. Monthly surveillance until cultures convert to negative is recommended for DOTS-Plus, but not for DOTS. If cultures are positive or symptoms do not resolve after three months of treatment, it is necessary to re-evaluate the patient for drug-resistant disease or non-adherence to drug regimen. If cultures do not convert to negative despite three months of therapy, some physicians may consider admitting the patient to hospital so as to

closely monitor therapy. The recent earthquake also make matters worse. According to health care practitioners in Haiti most of their surviving active TB patients have fled and now living in densely packed areas where they can spread the disease pretty quickly. An exact number of new cases is unknown as this moment. However, experts[10] are noting that patients who were under treatment before the earthquake are the highest priority for treatment to prevent the disease to spread or the bacteria becoming resistant.

Earthquake January 12, 2010

The tragic earthquake that raveled this country makes us aware the lack of government leadership in the region. Similarly, this catastrophe provides a gateway for the whole world to see the difficulties Haitian citizens faced on a daily basis. For example, it shows the Haitian government vulnerability and dependability on foreign aid to provide aide for their own people in terms of provide food and adequate health care services. Likewise, many Haitian citizens are aware that their government receives some sort of funding from the US. For that reason many assume that government officials keep these funds for themselves since government officials do not address or even resolve issues that plague this country. In addition throughout the country's history many government officials are notoriously known for keeping a secret stash of funds for themselves that they receive from foreign countries.

The earthquake was a catastrophic magnitude 7.0 M[11], with an epicenter near the town of Léogâne, approximately 16 miles west of Port-au-Prince, Haiti's capital. The earthquake occurred on Tuesday January 12, 2010 during rush hour when everyone was going home from their respective work. Twelve days later, at least 52 aftershocks measuring 4.5 or greater had been recorded. As of February 12, 2010, an estimated three million people were affected by the

quake; the Haitian Government reports that between 217,000[12] and 230,000 people had been identified as dead, an estimated 300,000 injured, and an estimated 1,000,000 homeless. The death toll is expected to rise. They also estimated that 250,000 residences and 30,000 commercial buildings had collapsed or were severely damaged.

The earthquake caused major damage to Port-au-Prince, Jacmel and other settlements in the region. Many notable landmark buildings were significantly damaged or destroyed, including the Presidential Palace, the National Assembly building, the Port-au-Prince Cathedral, and the main jail. Among those killed were Archbishop of Port-au-Prince Joseph Serge Miot, and opposition leader Micha Gaillard. The headquarters of the United Nations Stabilization Mission in Haiti (MINUSTAH)[13], located in the capital, collapsed, killing many, including the Mission's Chief, Hédi Annabi. Many countries responded to appeals for humanitarian aid, pledging funds and dispatching rescue and medical teams, engineers and support personnel.

Communication systems, air, land, and sea transport facilities, hospitals, and electrical networks had been damaged by the earthquake, which hampered rescue and aid efforts; confusion over who was in charge, air traffic congestion, and problems with prioritization of flights further complicated early relief work[14]. Port-au-Prince's morgues were quickly overwhelmed; tens of thousands of bodies were buried in mass graves. As rescues tailed off, supplies, medical care and sanitation became priorities. Delays in aid distribution led to angry appeals from aid workers and survivors, and some looting and sporadic violence were observed. On 22 January the United Nations noted that the emergency phase of the relief operation was drawing to a close, and on the following day the Haitian government officially called off the search for survivors.

In the nights following the earthquake, many people in Haiti slept in the streets, on pavements, in their cars, or in makeshift shanty towns either because their houses had been destroyed, or they feared standing structures would not withstand aftershocks. Construction standards are low in Haiti; the country has no building codes[15]. Engineers have stated that it is unlikely many buildings would have stood through any kind of disaster. Structures are often raised wherever they can fit; some buildings were built on slopes with insufficient foundations or steel works. A representative of Catholic Relief Services[16] has estimated that about two million Haitians lived as squatters on land they did not own. The country also suffered from shortages of fuel and potable water even before the disaster. President Préval and government ministers used police headquarters near the Toussaint L'Ouverture International Airport as their new base of operations, although their effectiveness was extremely limited; several parliamentarians were still trapped in the Presidential Palace, and offices and records had been destroyed. Some high-ranking government workers lost family members, or had to tend to wounded relatives. Although the president and his remaining cabinet met with UN planners each day, there remained confusion as to who was in charge and no single group had organized relief efforts. The government handed over control of the airport to the United States to hasten and ease flight operations, which had been hampered by the damage to the air traffic control tower.

Appeals for humanitarian aid were issued by many aid organizations, the United Nations and president René Préval. Raymond Joseph, Haiti's ambassador to the United States, also pleaded for aid and donations[17]. However, slow distribution of resources in the days after the earthquake resulted in sporadic violence, with looting reported. There were also accounts of looters wounded or killed by vigilantes and neighborhoods that had constructed their own roadblock barricades. Dr. Evan Lyon of Partners in Health, working at the General Hospital in

Port-Au-Prince, claimed that misinformation and overblown reports of violence had hampered the delivery of aid and medical services. Former U.S. president Bill Clinton acknowledged the problems and said Americans should "not be deterred from supporting the relief effort"[11] by upsetting scenes such as those of looting. In many neighborhoods, singing could be heard through the night and groups of men coordinated to act as security as groups of women attempted to take care of food and hygiene necessities. During the days following the earthquake, hundreds[17] were seen marching through the streets in peaceful processions, singing and clapping.

Furthermore, many countries responded to the appeals and launched fund-raising efforts, as well as sending search and rescue teams. The neighboring Dominican Republic[18] was the first country to give aid to Haiti, sending water, food and heavy-lifting machinery. The hospitals in Dominican Republic were made available, and the airport opened to receive aid that would be distributed to Haiti. The Dominican emergency team assisted more than 2,000 injured people, while the Dominican Institute of Telecommunications (Indotel) helped with the restoration of some telephone services. The Dominican Red Cross coordinated early medical relief in conjunction with the International Red Cross. The government sent eight mobile medical units along with 36 doctors including orthopaedic specialists, traumatologists, anaesthetists, and surgeons. In addition, 39 trucks carrying canned food were dispatched, along with 10 mobile kitchens and 110 cooks capable of producing 100,000[10(page 2)] meals per day.

These unfortunate scenes of events demonstrate the struggle that many Haitians face living in these subpar conditions. However, through all this turmoil Haiti is a beautiful country with a lively community. Haitian citizen takes pride in their culture through the different rhythm of music they create along with their finest cuisines that is inspired from Dominican Republic and Cuba. They also forms close ties with each other in a neighborhood to resolve problems or

obstacles that is affecting one individual with the little resources each possess living in the slums.

It is a marvel to witness the hospitality of a Haitian citizen towards another.

The Correlation of Health Care and Poverty

Health care discrepancies in underdeveloped regions

During the endemic of AIDS in third world countries in the 1980's and early 1990's[19] many people suffer. Many people and physicians are aware that AIDS is caused by the Human Immuno-defiency Virus which makes the human body more susceptible to secondary opportunistic infections. In countries where access to health care is scarce many people are left untreated with diseases that can lead to the eradication of an entire family. Research has been completed which shows a relationship between poverty and the access to basic medical needs. In countries where poverty is rampant many people do not have the knowledge or necessary tools to take preventive measures against highly contagious diseases.

On that perspective this brings the result of a research on the pandemic of tuberculosis in South Africa due to capitalism[20] and other industrialized movements. It illustrates the spreading of the disease among the poor predominantly blacks and their lack of access to proper medical treatments. In addition it explains how whites who get infected with the disease have the ability to receive proper medical treatments due to their easy access to medical treatments. It also explains how black workers are more susceptible of becoming infected with the disease based on their occupation as oppose to white workers in the same field. This brings up the issue of the government lack of regards to prevent the spread of the disease among blacks versus whites.

This prime example gives us the notions that, Do we North American eat well because the poor in the third world do not eat at all? Are we North Americans powerful, because we keep the poor in the third world weak? Are we North Americans free, because we help keep the poor in third world oppressed?" Often the organizations such as the Ministry of Health that provides funding for health care to developing countries is traditionally is underfunded and offers worse

quality care. In addition, many have argued that the health care system is a market where who can afford it have rights to it and who can't are out of luck. It strongly illustrates the reasons why poor countries are underfunded since it does not make a "good" business model. However, it also explains the lack of health care economic regulations in these countries to prevent them from being underfunded in the first place. In many cases access to health care is treated as a commodity instead of a human right[1(page 158)].

Illustrating the aspect of accessing health care as an inherited human

Medicine and its allied health sciences have for too long been only peripherally involved in work on human rights. Fifty years ago, the door to greater involvement was opened by Article 25 of the Universal Declaration of Human Rights, which underlined social and economic rights: "Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing, and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control"[1(page 213)].

Furthermore, from the preferential option for the poor, many people believed that the right to health care, housing, decent work, protection against hunger, and other economic, social, and cultural necessities are as important as civil and political rights or more so. However, according to Dr. Farmer, the intervening decades have seen little progress in the efforts to secure social and economic rights, even though many people living in poor regions of the world take pride to gains in civil or political rights. As the global market economy pulverized traditional societies and moralities and drew every corner of the planet into a single economic machine,

human rights emerged as the secular creed that the new global middle class needed in order to justify their domination of the new cosmopolitan order[1(page 213)].

These are some of the many issues that hinder countries such as Haiti in terms of building a proper health care infrastructure. The Haitian government's handling of external funding often does not reach or meet the needs of the public. Often the funding[21] they receive ends up in the hands of their political allies, who use that same money to oppress the public via political threats, rape, and beatings or flat out executions. Furthermore, these supporters also hinder the progress of the few and caring individuals who decide to resolves health care issues that affect poor Haitian citizens. Furthermore, the mindset of Haitian citizens towards doctors is not pleasant. In many situations the very few doctors that are in Haiti focus on preventive measures rather than treatments due to the shortage of medical supplies. However, Haitian citizens view this practice as an exploit tactic due to their economic means. In addition, this makes the issues at hand more difficult for the few modest doctors who truly want to provide medical care for the public. Of course, there are doctors who use this tactic to make money off the uninformed patient. With such practices this makes accessing basic medical care impossible for the average Haitian citizen.

Consequently, it is imperative not only to provide medical care in such places but to also protect the issues of the poor since they are often the most uninformed and the most exploited[15]. Furthermore, as a physician, one needs to understand the social aspect in regards to providing medical care in these regions of the world. According to Dr. Paul Farmer, physicians and medical anthropologist are expected to underline the importance of culture in determining the efficacy of efforts to combat diseases. During his time in Haiti they learned that many of the most important variables initial exposure to infection, reactivation of quiescent tuberculosis,

transmission to household members, access to diagnosis and therapy, length of convalescence, development of drug resistance, degree of lung destruction and most of all mortality are all strongly influenced by economic factors.

Therefore, doctors may instruct their patients to eat well. But the patients will "refuse" if they have no food. They may be told to sleep in an open room and away from others, and here again they will be "noncompliant"[1(page 158)] if they do not expand and remodel their miserable huts. They may be instructed to go to a hospital. However, if hospital care must be paid in cash, as is the case throughout Haiti, and the patients have no cash, they will be deemed "grossly negligent"[1(page 158)]. Moreover, most patients often produce their own remedies from natural sources in most cases which provide a quick cure but it is not prophylactic meaning it does not have any preventive advantages. Likewise, it only has economic advantages for the patient since the ingredients to make these remedies are often very cheap and easily attainable for everyone to use.

Understanding the political and social aspects that prevent adequate health care practices in underdeveloped regions

The government also employs armed militia[21(page 3)] to disrupt the clinics of the few doctors who decide to provide medical care to the sick due to the split of political parties. Often when there is uproar of violence and political scrutiny the country is split or more precisely brutally oppressed by the current regime in order to remain in power. With such practices the majority of Haitian citizens are not only fighting for their well-being but their very own existence as well. Furthermore, this also brings up the issue of US meddling in the internal affairs of the government and occupying Haiti with their military presence. Throughout Haiti's

history Haitian citizens often wonders who runs the country. Is it the US or Haiti's government officials?

In addition, many research and data have been collected that illustrates US policies that failed in the region which have an impact on its status in a global perspective. From the start of 1915 to the exile of former president of Haiti Jean-Bertrand Aristide in 2004 were all dictated by the USA. Haiti depends on foreign aid to make progress, and when the U.S. ceases funding for humanitarian affairs in the 1990s[1(page 45)], it had an adverse effect on the public . In any case, the aid through official channels had never been substantial. Before the embargo the US was giving Haiti one-tenth what it was distributing in Kosovo[1(page 47)]. On the contrary, claims heard since the embargo from the mouths of former ambassadors and the Bush administration that hundreds of millions of dollars[1(page 47)] flowed to Haiti are correct, though misleading. Aid did flow, just not to the elected government. Most of it went to non-government organizations, and some of it went to the anti-Aristide opposition[2(page 111)].

U.S organizations such as the International Republican institute[22] and the National Endowment for Democracy[23] funneled hundreds of thousands, perhaps millions, of dollars to the opposition. The cuts in bilateral aid and the diversion of monies to the opposition meant that little effort could be made, in a country as poor as Haiti, to rebuild schools, health care infrastructures, roads, ports, telecommunications, or airports. During the span of three years, the US government, the European Union, and international banks have blocked $500 million[2 (page 176)] in aid to Haiti's government ravaging the economy of a nation already twice as poor as any in the Western hemisphere. The cutoff, intended to pressure the government to adopt political reforms, left Haiti to struggle to meet even basic needs and weakened the authority of elected officials. However, the US is one of the big contributors to any Haitian crisis. We all witness

with the current earthquake tragedy the US have provided many goods and services to the people of Haiti. Quite frankly, this is well overdue. In recent decades the country was oppressed by armed military men funded by the United States.

In this sense, Haitians do experience impunity, but it comes from the U.S. government, not from their own government. "America" observes Christopher Jencks in a recent interview, "does less than almost any other rich democracy to limit economic inequality"[1(page 161)]. Furthermore, during the "Baby Doc" era in which Francois Duvalier was a dictator of Haiti, it is noted that more than $200 million[1(page 161)] in U.S. aid passed through the hands of the junta. These factions were put in place to disrupt Haitians from expressing their concerns towards the government. The U.S. meddling in the internal affairs of Haiti, for better or for worse, dictates how non-government citizens are treated.

Methodology

Medicine is a pivotal aspect in life for any individual. It provides a guideline for an individual well-being, along with, the nurturing and caring responsibilities he or she has towards another. However, statistics have shown that millions of men, women, and children around the world lack access to the basic medical necessities. A major issue that propose this deficiency in medical treatments in these countries are due to the lack of funding, government regulations, and in extreme cases cultural norms and beliefs. This has devastating effects on what some people considered natural human rights as in access to all basis necessities for survival.

In order to understand the most logical reasoning for the lack of health care treatments in Haiti is to understand the people. Haiti is a country which have been driven by countless dictators and occupied by foreign countries throughout its history after gaining its independence from slavery. These dictators along with their failed policies and deprivation of natural rights to the citizens of Haiti create a rift between them and their own government. To tackle these issues I needed to read about the modest doctors who work in Haiti, historians who were born and live in Haiti during its prime along with its demise in the hands of careless politicians.

Being born in Haiti allows me to capture and remember some of the moments that occurred in Haiti during my little time there. Even as child I was a witness of the U.S. military occupation of Haiti in 1994. Likewise, along with, my own family experiences and discrepancies faced, will also guide me to illustrate the economic, social, and political turmoil that plagues Haiti. Haiti is a place where there are few resources available to the common men whereas government officials lounge in paradise. It is imperative to approach this issue with a broad sense of how governmental control affects public health and many other entities in the country.

Health Benefits

Demonstrating the adverse effects of poverty on health

Based on research by the World Health Organization (WHO) health is now higher on the international agenda than ever before, and concern for the health of poor people is becoming a central issue in development. Indeed, three of the Millennium Development Goals (MGDs) call for health improvement by 2015: reducing child deaths, maternal mortality, and the spread of HIV/AIDS, malaria and tuberculosis. The nations of the world have agreed that enjoying the highest attainable standard of health is one of the fundamental rights of every human being, without distinction of race, religion, political belief, economic or social conditions. Beyond its intrinsic value to individuals, health is also central to overall human development and to the reduction of poverty[24(page 14)].

- **The poor suffer worse and die younger**: They have higher than average child and maternal mortality, higher levels of disease and more limited access to health care and social protection. Furthermore, gender inequalities and disadvantages further the health of poor women and girls. For poor people especially, health is also a crucially important economic asset. Their livelihoods depend on it.

Ensuring that the poor have access to affordable and quality health services is not sufficient in itself to improve the health of the poor. The major determinants of their health depend on actions that lie outside the health sector. Some key factors are crucial to implement policies that would help to reduce poverty: without higher incomes, poor people will not be able to afford food or health services. Moreover, without growth in revenues, governments will not increase their financing of health services. Other sectoral policies, too, are critically important, especially those for education, food security, safe water, sanitation and energy.

- **Food security and nutrition are critical factors influencing the health of the poor:** Nearly 800 million people in developing countries are chronically hungry. Under-nutrition affects the immune system, increasing the incidence and severity of diseases and is an associated factor in over 50% of all child mortality. Development agencies should focus on improving food security in rural and urban areas through interventions that aim to increases income as well as through targeted maternal and child nutrition programs.
- **Poor people's health and mortality are directly affected by exposure to environmental threats:** Poor people often live in low-quality urban settlements, or in remote villages on marginal land. There they have limited access to safe water and sanitation, and are exposed to indoor as well as outdoor air pollution. These environmental conditions are a major cause of ill health and death among poor people. The importance of these basic causes of poor health must be integrated into developmental policies.

These factors are associated with the health of the poor in underdeveloped countries. Haiti, in general, is always governed by politics that leaves its under-privileged citizens in an exploitative state. Not only Haitians face this issue but everyone who lives in an underdeveloped country. Only about 60% of Haiti's 8 million residents have access to any form of health care services, according to the Pan American Health Organization (PAHO)[25]. Most people rely on public facilities where they must pay a minimal fee based on income and family size. Recent events have worsened this already bleak situation by the earthquake. Amid this crisis, Haiti's 700-bed state university hospital, the largest public medical facility in Port-au-Prince, had no doctors or nurses on duty. Furthermore, it is noted by the World Health Organization that for every 10,000 Haitian citizens there is only one physician available.

For this purpose, the DAC Guidelines on Poverty Reduction[24] present a practical definition of poverty, placing it in a broader framework of causes and appropriate policy actions. The five core dimensions of poverty reflect the deprivation of human capabilities: economic (income, livelihoods, decent work), human (health and education), political (empowerment, rights, voice), socio-cultural (status, dignity) and protective (insecurity, risk, vulnerability). Measures to promote gender equality and to protect the environment are essential for reducing poverty in all these dimensions. This also puts an emphasis that some categories are particularly affected by severe poverty, among them indigenous populations, minority and socially excluded groups, refugees or displaced persons, the mentally or physically disabled and people living with HIV/AIDS. These groups are among the poorest of the poor in many societies and require special attention in policy action for poverty reduction.

Gender inequality is a major determinant of poverty and ill health. Poor women and girls living in Haiti are worse off, in relation to assets and entitlements, within the household and in society. Socio-cultural beliefs about the roles of men and women contribute to this inequality. Poor women and girls may experience even deeper disadvantage in access to resources for health, such as cash and financing schemes, services, and “voice”. Some categories of women and children are especially vulnerable. For example, elderly widows, unsupported female and child-headed households, and street children. Women are also major producers of health care through their roles as household managers and care takers. However, the health, including the reproductive health, of poor women and girls suffers from inadequate nutrition, heavy workloads and neglect of basic health care, factors aggravated by exposure to sexual abuse and interpersonal violence. All have a serious effect on human development and the formation of

human capital. Action on gender inequalities is therefore an essential element of a pro-poor approach to health[24(page 21)].

Policies and strategies to help improve access to health care in underdeveloped countries such as Haiti.

Investment in health is also increasingly recognized as an important and previously under-estimated means of economic development. As the Commission on Macroeconomics and Health (CMH) of the World Health Organization (WHO)[24(page 21)] has shown, substantially improved health outcomes are a prerequisite if developing countries are to break out of the cycle of poverty. Good health contributes to development through a number of pathways, which partly overlap but in each case add to the total impact**:**

- **Higher labor productivity**. Healthier workers are more productive, earn higher wages and miss fewer days of work than those who are ill. This increases output, reduces turnover in the workforce, and increases enterprise profitability and agricultural production.
- **Higher rates of domestic and foreign investment**. Increased labor productivity in turn creates incentives for investment. In addition, controlling endemic and epidemic diseases, such as TB, HIV/AIDS, is likely to encourage foreign investment, both by increasing growth opportunities for them and by reducing health risks of personnel.
- **Improved human capital**. Healthy children have better cognitive potential. As health improves, rates of absenteeism and early drop-outs fall, and children learn better, leading to growth in the human capital base.
- **Demographic changes**. Improvements in both health and education contribute to lower rates of fertility and mortality. After a delay, fertility falls faster than mortality, slowing

population growth and reducing the “dependency ratio” (the ratio of active workers to dependants). This demographic dividend” has been shown to be an important source of growth in per capita income for low-income countries.

In addition to their beneficial macro-economic impact, health improvements have intergenerational spill-over effects that are clearly shown in micro-economic activities, not least in the household itself. In many cases a Haitian family probably will endure a cycle of poverty for many generations to come. Moreover, the “demographic dividend” is particularly important for them since they tend to have more children, and less to “invest” in the education and health of each child. With the spread of better health care and education, family sizes declines. Children are more likely to escape the cognitive and physical consequences of childhood diseases and do better in school. These children are less likely to suffer disability and impairment in later life and so are less likely to face catastrophic medical expenses and more likely to achieve their earning potential. Then, as healthy adults, they have more resources to invest in the care, health and education of their own children.

A pro-poor health approach[26] is one that gives priority to promoting, protecting and improving the health of the poor in developing countries. It includes provision of quality public health and personal care services, with equitable financing mechanism. It goes beyond the health sector to encompass policies in areas that affect the health of the poor disproportionately, such as education, nutrition, water and sanitation. Finally, it is concerned with global actions on the effects of trade in health services, intellectual property rights, and the funding of health research as they impact on the health of the poor in developing countries.

Furthermore, a pro-poor health approach builds on the following four pillars. Health systems, health financing and broader social protection, key policy areas beyond the health sector, and promoting policy coherence and global public goods. The way in which development agencies can support a pro-poor health approach should be determined by the specific context of each partner country. Development agencies should consider the different kinds of transition occurring in partner countries and associated economic, social and political factors influencing pro-poor health interventions.

As stated above, improving the health of the poor is an investment in economic growth and development and should be a priority for reducing poverty. The lack of resources allocated to health is not the only obstacle to the effective implementation of pro-poor health policies, but it is a major, and inescapable, part of the problem. A minimally adequate set of interventions and the infrastructure necessary to deliver them is estimated to cost in the order of USD (in millions) 30 to 40 per capita to meet the basic health needs of the poor. In 2000, the WHO[27] calculated a figure of USD 60 per capita for a more comprehensive health system. This compares with an average level of health expenditures in the least developed countries of USD 11 per year. Current spending, much of which is not for the poor, falls far short of the minimum basic needs. Without money to buy vaccines and drugs, to build and equip facilities, to ensure adequate staffing and to manage the health system, governments in these regions of the world will be unable to make progress in improving the health of the poor.

Health Care Practices and Funding

Sometimes the lack of substantive freedom 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. In other cases, the inequality links closely to the lack of public facilities and social care, such as the absence of epidemiological programs, or of organized arrangements for health care or educational facilities, or of effective institution for the maintenance of local peace and order. In still other cases, the violation of freedom results directly from a denial or political and civil liberties by authoritarian regimes and from imposed restrictions on the freedom to participate in the social, political and economic life of the community.

We live in an age of science, technology, and economic affluence when, we can, for the first time in history, deal effectively with the diseases that ravage humanity. And yet the reach of science and globalization has stopped short of bringing reasonable opportunity for survival within the grasp of the deprived masses in our affluent world[1(page 6)]. The wonders of medicine are crucial for human existence. I have demonstrated the entities that prevent over 800[24(page 24)] million women, men, and children in developing regions of the world from experiencing that wonder, and especially, the men, women and children that reside in Haiti. The fact that I was part of those 800 million I can understand and relate to what these children are going through on a daily basis. There are many road blocks from every perspective of life that dictates our existence and separates us from our responsibilities towards each other. In poor regions of the world government officials operates on the basis of what is beneficial to them and their intermediate

families. Their sole purpose is to protect their families' well-being because they too were in dire poverty before they bullied they way into office.

This represents a vicious cycle where one of the poor rise within the social elite with governmental control, at the same time, promising equal change and prosperity to all citizens of Haiti[2(page 112)]. Suddenly, they do not practice what they preach and start destroying the same people who elected them in office in the first place. There is a notion that when someone lives in a hostile environment in which they lack resources they try to live off the little they have. In most situations the little amount of resources they have does not often cover all their basic needs and necessities. It's unfortunate that government officials do not cater to the public needs.

In my opinion I feel as if governments are reliable for the public well being. From an economic standpoint in the case of Haiti I can understand how unfortunate it is that the government cannot fully cater to the public need due to lack of resources. It only gives them a bad reputation when they refuse to listen to their concerns and resolve the need of the public. Moreover, Haitian citizens also have to understand the discrepancies the country and the government have. The racial tension that rises amongst people of different shades of color makes Haiti a battlefield for democracy[2(page 78)]. If you are a light-skinned Haitian citizen you are more likely to be equipped with tools to be successful in the social class. Furthermore, most of government officials are often light-skinned Haitians. On the other hand if you are dark-skinned Haitian citizen you will not be taken seriously or well equipped to climb up the social ladder. In that instance it creates a self hatred amongst the people.

Therefore, when these issues are at play it is often difficult to generate a collective understanding to tackle all the issues everyone is facing. Health care is one of the most crucial

issues that everyone faces in Haiti no matter the social class affiliations. However, those who are less equipped and have less resources often do not have access to medical care. As I illustrated, this puts them in a cycle where their families may end up in a never-ending poverty cycle which is detrimental to their well-being. Health care is something most of us take for granted. In the U.S. health care is treated as a commodity and is considered a big profit industry. At the same time, 50[1(page 123)] million people living in the U.S. can't afford health care insurance or just uninsured. Lately, there is a big debate on health care reform which in my opinion is not necessary. I believe that if there are an disproportionate number of people lacking access to medical care there should not be a debate whether it's good for the people and how insurance companies are compensated. However, as long as, the health care reform does not have a negative effect on the majority of the public I do not understand what is the issue at hand.

As mention above, I've demonstrated all the issues that hinder progression of an adequate health care infrastructure in Haiti. In most if not all instances it comes down to the economics of the country along with the support, or the lack thereof, from other well stabilized nations. Whether we choose to accept it or not the world revolves around science. Furthermore, science provides an infrastructure where an individual existence depends on it, if they decide to put it into good use. Medicine and access to medicine should not be treated as a commodity but a substance that everyone inherits as a natural way of living. Furthermore, many people living in well-stabilized nation often wonder how the vast majority of people in regions of the world live with so little, while they take their choices and access to anything beyond our dreams for granted, and asking 'if God exist why do many people suffer, or why he let these things happen.' However, we never come to realize that our own greed puts them in these situations not God. There is, of course, plenty of poverty in the world which we live. But more awful is the fact that

so many people including children from disadvantaged backgrounds are forced to lead miserable and precarious lives and to die prematurely. That predicament relates in general to low incomes, but not just that. It also reflects inadequate public health provisions and nutritional support, and the absence of social responsibility and of caring governance.

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Appendix A

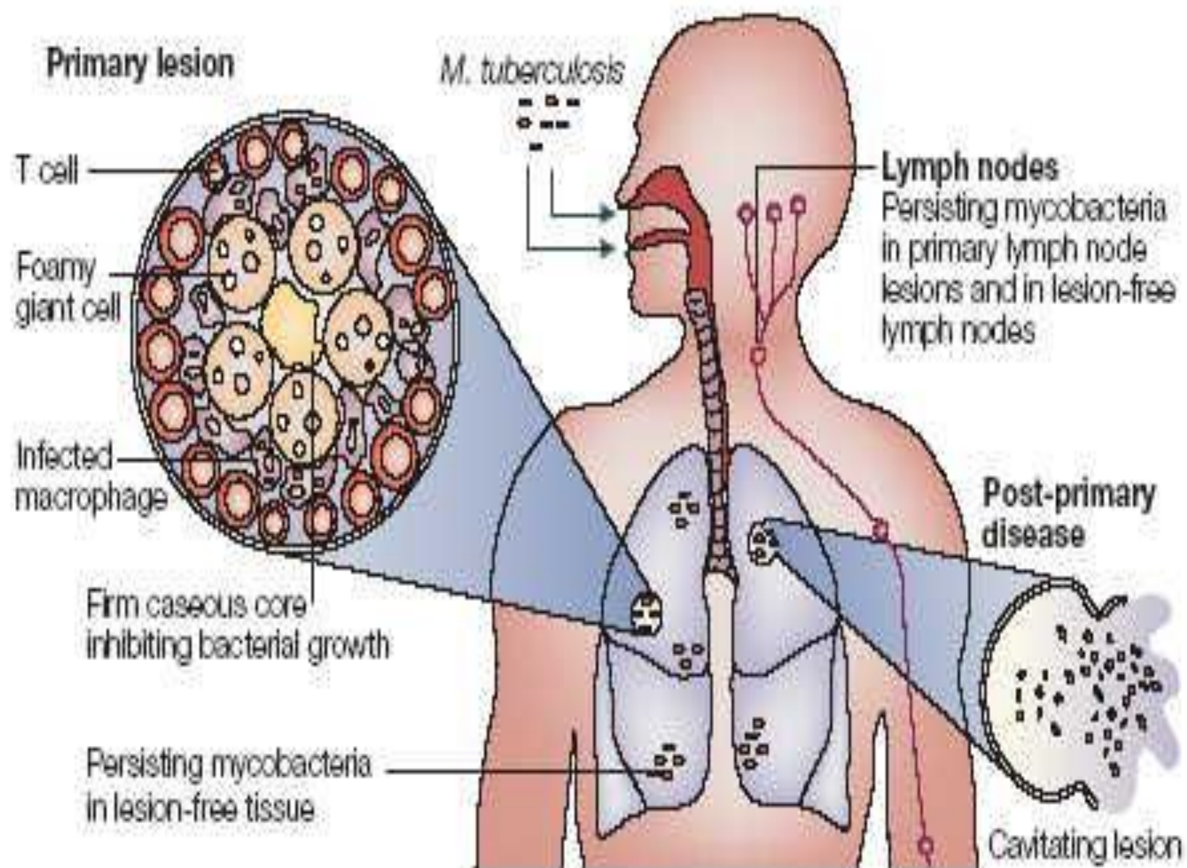

Figure 1. This is the pathogenesis of tuberculosis. The bacteria travel to the lungs and initiate an immune response in which causes immune cells such as macrophages to aggregate around it. Furthermore, these infected macrophages will eventually explode resulting in further tissue damage[39].

Appendix B

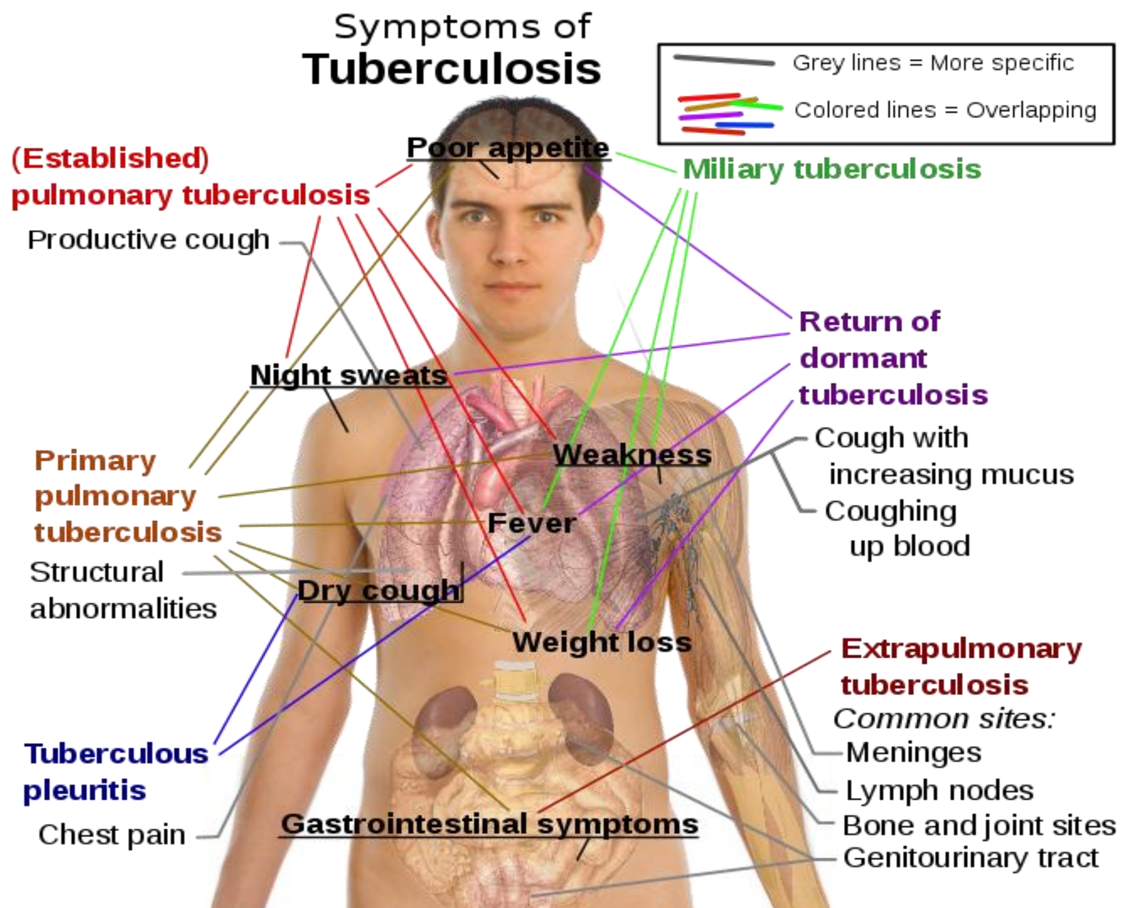

Figure 2. This picture shows the symptoms of tuberculosis. Even though the bacteria mostly affect the lungs it also has the ability to migrate to other regions of the body[39].

Appendix C

Isoniazid (INH)

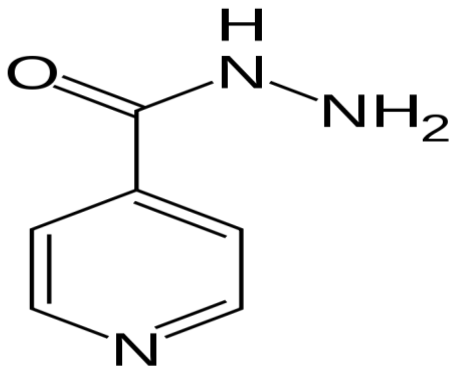

Figure 3. Structure of isoniazid. One of the drugs that are considered first-line treatment for active TB[40].

Ethambutol (EMB)

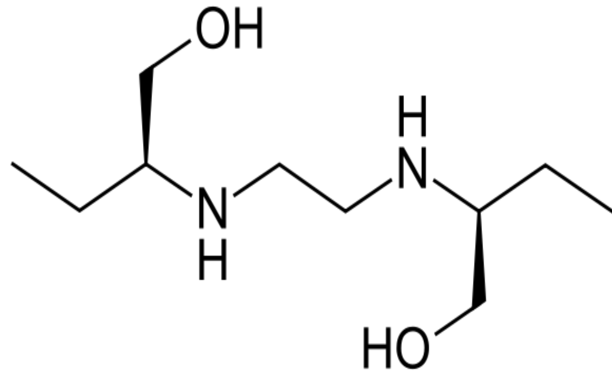

Figure 4. Structure of ethambutol. First-line drug treatment for active TB[40].

Interleukin 2

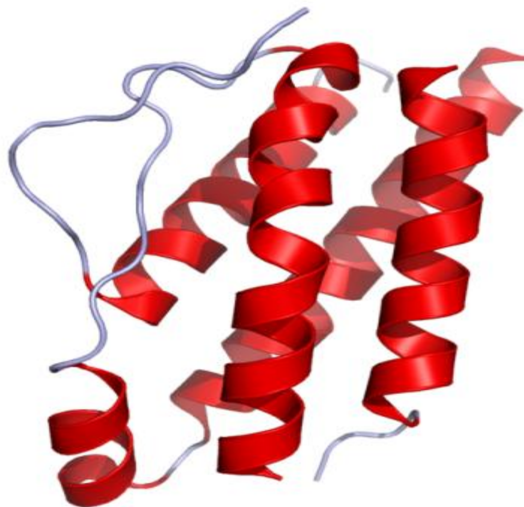

Figure 5. Human Interleukin 2 Crystal Structure. This molecule is one of the main key research subjects to determine its efficacy in stimulating macrophage detection of mycobacterium[40].

Appendix D

Case Detection and Treatment Success Rates under DOTS

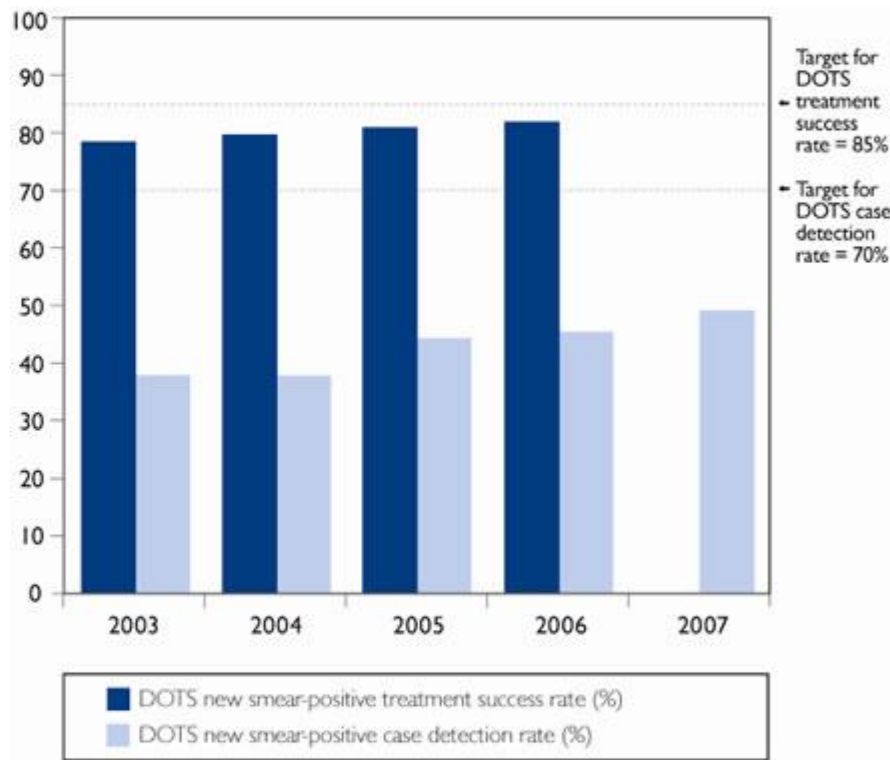

Figure 6. This figure illustrates the success rate of the DOTS program in treating tuberculosis in Haiti[41]. Upon the WHO implementing this guideline to cure TB in Haiti has improving the overall well-being of individuals who succumb to this disease.