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Global Health Paradigms through the Lens of Tuberculosis Control

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Abstract

This thesis discusses how international organizations like the World Health Organization (WHO) and the World Bank contribute to the persistence of infectious diseases, such as tuberculosis, in developing and developed countries. Their intervention into responsibilities and roles formerly the domain of governments, either domestic or imperial, along with the introduction of the concept of the human right to health, added another dimension to the changing discourse of the roles and responsibilities of national governments to their people, and of nation-states to each other.

The founding of WHO and the World Bank in different ideological bases led to contrasting approaches to health, and contrasting health policies. Of the two paradigms have evolved from these different ideological bases, I argue that the prevailing paradigm (Selective Health Care) – characterized by low level government provision of health services, and the presence of vertically implemented issue-specific programs – is partially attributable for the lack of health system-building in developing countries and for the narrow focus that disease- and health-related programs and strategies in many countries have. On the other hand, the contrasting paradigm, Comprehensive Health Care, presents an economically untenable course of action for the majority of countries. Using the example of tuberculosis control, this thesis examines the influence of the prevailing paradigm on WHO’s formation of its tuberculosis control strategy, and the trickledown of the paradigm into the control programs implemented by developing countries. China’s tuberculosis control program, which was based on WHO’s strategy, is compared to New York City’s tuberculosis control program, which incorporated aspects of the contrasting paradigm, and analyzes the effect their different approaches have had on the effectiveness of these programs.

The primary outcomes of the formation of WHO’s tuberculosis strategy within the Selective Health Care paradigm have been the strategy’s continuing emphasis on implementation and expansion of a treatment regimen with varying levels of effectiveness, and the stagnation of pharmaceutical and pathological research and development. I argue that in order to keep up with the evolution of drug-resistant diseases, WHO, the World Bank, and other leading sources of health policy and aid need to operate outside the frameworks of these paradigms and their ideological groundings and focus on the issues and solutions at hand. They need to integrate cross-discipline data and cross-sector factors of health into their policy-making process, in order to fully address the multifaceted nature of health.
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Glossary

CHC – Comprehensive Health Care

Chemotherapy – combination drug therapy

DOTS – Directly Observed Therapy Short-course

Extensively drug resistant (XDR) tuberculosis – strains of tuberculosis resistant to isoniazid and rifampicin, as well as to any fluoroquinolone and any of the three injectable second-line drugs

First-line drugs – a class of drugs used in combination to treat drug-responsive tuberculosis

Incidence – the number of new and recurrent cases of disease in a given population in a given period

Incidence rate – the proportion of new and recurrent cases in a given population, usually calculated per 100,000 persons

IUATLD – International Union against Tuberculosis and Lung Disease

Multidrug resistant (MDR) tuberculosis – strains of tuberculosis resistant to isoniazid and rifampin, two first-line drugs integral to any standard treatment regimen

Prevalence – the number of total cases of disease in a given population in a given period

Prevalence rate – the proportion of total cases of disease in a given population, usually calculated per 100,000 persons

Second-line drugs – a class of drugs used to treat MDR tuberculosis

SHC – Selective Health Care

WHO – the World Health Organization
I. Introduction

At the turn of the 21st century, the increasing incidence and perceived virulence of acute infectious diseases, such as SARS, brought new attention to the field of global health. At the same time, established actors and institutions, such as the World Health Organization (WHO), as well as the policies they espoused, also received renewed scrutiny. The continuing risk posed by chronic infectious diseases such as tuberculosis and malaria, despite the multitude of eradication and control efforts that have been attempted over the decades, caused both scholars and international actors to reconsider the theoretical paradigms that shaped health approaches in the past and continue to shape them in the present. Although the prevailing health approach in the developing world has been nominally effective in controlling and responding to modern infectious diseases, such as animal flus, their focus on simple clinical containment and treatment reduced their effectiveness against complex chronically infectious diseases. An example of the insufficiency of this approach is the collective body of anti-tuberculosis efforts enacted by WHO and other institutions, whose continuing failures reflect the ineffectiveness of the prevailing theoretical paradigm on chronic infectious diseases. This essay aims to discuss the discourse about global health approaches and the results when divergent approaches are applied in developing and developed nations, so the appropriateness of historically prevalent theoretical paradigms in global health are reconsidered and reevaluated.

The prevailing theoretical paradigm guiding global health approaches exists as one polarity of a continuing discourse in the global health arena. Called Selective Primary Health Care (SHC), it calls for unilateral approaches centered on the clinical aspect of disease. The opposing paradigm – Comprehensive Primary Health Care (CHC) – calls for addressing multivariable sources and contributors of ill-health and disease (Davies 2010, 36; Unger et al.
Both are inextricably tied to concepts of vertical and horizontal approaches, similar to those applied in economics to institutions. As in economics, vertical approaches are applied top-down, and their aims and goals are issue- and disease-specific. Conversely, horizontal approaches encompass a multitude of institutions and actors to comprehensively strengthen the system as a whole. As in finance and economics, arguments for the application of one or the other paradigm or approach depend in large part on their perceived economic efficiency. However, other unspoken factors that are nonetheless recognized by global health scholars and policy-makers also affect which theoretical paradigm is promoted (Unger et al. 2011, 4).

Among these factors are the shifting political and ideological currents which sprang from new ideas of statehood, human rights, government responsibility, and international standing promulgated after the Second World War. Politically, the foundation of the League of Nations, following World War I, followed by the United Nations, and many other international or non-state organizations, after World War II began challenging the dominance of the Westphalian concept of sovereignty\(^1\). Although technically international organizations with little enforceable legal powers over individual nations, some, notably the United Nations, have risen in international law to become supranational entities to which states are subject.

On a different level, non-state entities like the World Bank and the International Monetary Fund hold sway over the internal affairs of developing countries, through the policy conditions they attach to financial loans. WHO, through its aid conditions and policy recommendations, also helped shape developing countries’ health systems. In the post-war

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\(^1\) The Westphalian concept of sovereignty was established at the Peace of Westphalia in 1648 and forms the basis for both the popular understanding of international relations as well as the realist interpretation of state actions. The Treaty of Westphalia established the prioritization of individual state sovereignty in international relations, together with the resulting principles of non-intervention and self-determination. Although it also established the legal equivalency of states in international law, states remain unequal in all other international arenas. See Gross, Leo. “The Peace of Wespahalia, 1648-1948”. American Society of International Law 42, no. 1(1948): 20-41. [http://www.jstor.org/stable/2193560].
decades, the competition between WHO and the World Bank, combined with the social movements of the time, greatly influenced the direction global health policies took. At the state level, the widespread decolonization that occurred throughout the twentieth century resulted in formerly imperialist states wondering about their responsibilities to former colonies. Where the Westphalian system would have barred their intervention, the new system of international cooperation, represented by the post-war foundation of the UN, instead called for their active assistance to their former colonies, as well as to other developing nations.

At the same time, technological advancements in medicine resulted in dramatic results in treating previously untreatable diseases. Among them were chronically infectious diseases such as smallpox, malaria, polio, and tuberculosis. For the first time in history, it seemed that eradication of these diseases, which had plagued the earliest civilizations, was possible. Many of these diseases were first experienced by Western imperialist nations when they colonized countries in Asia and Africa; they were consequently labeled as “tropical diseases”, distinguishing them as belonging to what were seen as the less civilized conditions and populations of the colonial states (Bashford 2006, 6). The other-ing of so-called tropical diseases in this fashion discouraged Western nations from addressing the multitude of factors in their colonies that had a combinatory effect on overall health outcomes. Instead, vertical programs that addressed specific health issues and diseases that depended on seemingly straightforward technological solutions were implemented over comprehensive system building strategies (Unger et al. 2011, 4; Frenk et al. 2011, 13).

The advantages of such vertical programs were their perceived comparative cost-effectiveness and the relative ease of outcome measurements. Where comprehensive system building programs would affect a multitude of outcomes, the results of disease-specific programs
could be seen clearly in reduced disease-related mortality, disease incidence, and disease prevalence\(^2\). However, while they were temporarily effective at treating cases of disease, they were ineffective as preventative measures in their spread and persistence from the colonies to imperialist nations. Nevertheless, their believed effectiveness, especially when held against the economic resources available to developed nations and international organizations for addressing health matters in developing nations, resulted in their continued promotion (Frenk \textit{et al.} 2011, 13).

A number of major health successes in the mid-twentieth century also supported the use of such programs as major components of public health policy, in comparison to health system building. The success of mass vaccinations against polio, and in developed countries, against diphtheria, pertussis, tetanus, meningitis, and measles, strongly indicated the effectiveness of simple, targeted solutions. The global eradication of smallpox by the 1970s also seemed to firmly cement the perception of the global applicability of disease-specific programs with solutions based in modern medical technology. However, proponents of such vertical health programs neglected to recognize that such diseases had certain pathological traits that made them susceptible to control and eradication efforts. Relatively simple cell structures, slow rates of infection, or small windows of infectiousness, were among the factors that made controlling and eradicating these diseases possible (Unger \textit{et al.} 2011, 4; Atkinson \textit{et al.} 2005).

In comparison, diseases like tuberculosis that are more complex biologically and pathologically have resisted both control and eradication efforts around the world. While

\(^2\) In epidemiology and any discourse around health, the distinction between incidence and prevalence are extremely important. Incidence refers to the occurrence of new cases, whether by infection, reporting, or by some other means of discovery. Prevalence refers to the absolute number of existing cases of disease. The rate of incidence is usually described in terms of number of new cases per 100,000 persons, although incidence rates for extremely widespread diseases may be described in terms of lower orders of magnitude, e.g., in X number per 10,000 persons. The prevalence rate refers to the number of persons, out of every 100,000 (in general) persons that currently have the disease of interest.
developed nations have, for the most part, managed to nearly eradicate tuberculosis in native-born populations through comprehensive programs with clinical as well as community components, the incidence of tuberculosis, particularly of drug-resistant strains, in immigrants and indigent populations pose significant risks of setbacks to the goal of eradicating tuberculosis. Developing nations, many of whose tuberculosis (and overall public health policies) were, or are, guided by aid-related policy conditions stipulated by the World Bank, WHO, and others, have been even less able to control tuberculosis (WHO 2012). Although ostensibly guided by ideologies intended to improve the human lot, multiple factors, including those mentioned above, resulted in the widespread recommendation by these institutions of tuberculosis-specific programs.

The major cornerstone of these tuberculosis programs is a treatment regimen developed in the mid-twentieth century, called directly observed short course therapy. (see Chapter 3). Heavily dependent on direct observation of patients and on a strict combination-drug regimen, it was rejected by developed nations as unnecessary and inapplicable in civilized populations. Developed by British clinicians in India and Hong Kong in the 1960s, it took nearly two decades before federal health bureaus in the US, along with other developed nations, realized that the severity of tuberculosis superseded their prejudices against using a regimen developed for colonial populations (Bayer and Wilkinson 1995). Conversely, WHO recognized the cross-applicability of such regimens in developing nations around the world, though it insisted on further feasibility and efficacy studies before incorporating DOTS into its policy recommendations (WHO 1994).

DOTS was nearly universal by the late 1990s, supported by the perceived success of numerous control projects around the world. Among the most lauded was the World Bank-
funded effort in China, implemented in 1991. On a much lesser scale, the successful tuberculosis control effort conducted in New York City in the late 1980s and early 1990s, which was due in part to DOTS, was also seen as to support the applicability of the regimen to both developed and developing nations. However, by the turn of the 21st century, the results of the China project diverged from those of the New York project. While some progress had been made in reducing prevalence, the incidence rate remained at unacceptably high levels. To complicate matters, the massive increase in mobility that allowed for and accompanied the emergence of the migrant worker population, reduced the ability of health ministries to accurately report rates of incidence and prevalence. Incidences of multidrug-resistant and extensively drug-resistant strains of tuberculosis also increased as unforeseen consequences of the implementation of DOTS (Tang and Squire 2005; Chen et al. 2002; Geng et al. 2002). In China and New York (as well as anywhere there were anti-tuberculosis programs), non-standard administration of anti-tuberculosis drugs as a result of inadequate DOTS implementation promoted the evolution of drug-resistant strains of tuberculosis.

While clinicians in New York were able to use second-line drugs to treat the few cases of MDR-TB that occurred during the outbreak of the early 1990s, patients with MDR-TB and XDR-TB in developing countries were often treated again with the same first-line drugs to which they were resistant. In developing countries, the (re)treatment of tuberculosis patients with MDR-TB and XDR-TB with first-line drugs was a direct consequence of the relationship between the financial aid and national health-policies, particularly those governing disease-specific programs (Fair, Hopewell, and Pai 2007). WHO, the World Bank, and other

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3 Multidrug-resistant tuberculosis (MDR-TB) refers to strains of tuberculosis that are resistant to isoniazid and rifampicin, the two most widely utilized first-line anti-tuberculosis drugs. Extensively drug-resistant tuberculosis (XDR-TB) refers to strains of tuberculosis that are resistant to isoniazid and rifampicin, as well as to any fluoroquinolone and any of the three injectable second-line drugs (http://www.who.int/mediacentre/news/notes/2006/np29/en/index.html).
organizations often released aid money for tuberculosis control programs on the condition that their treatment regimens be implemented and followed to the letter (Farmer 2001). The DOTS regimen as disseminated by WHO and the World Bank called for total reliance on first-line drugs, even in the face of MDR-TB and XDR-TB.

In the late 1990s, WHO released an expansion to the DOTS regimen called DOTS-Plus. It was meant to respond to the increasing incidence of MDR-TB and XDR-TB, by incorporating a number of steps that were missing from the DOTS regimen, such as testing for drug-susceptibility as part of initial diagnostic testing. It also allowed the usage of second-line drugs in individualized treatment regimens that adhered to its standard framework for treating drug-resistant TB (WHO 1996). However, it predicated the implementation of DOTS-Plus on the existence of effective DOTS-programs, resulting in a tautological problem. Effective DOTS programs prevented the occurrence of drug-resistant tuberculosis, precluding the need for DOTS-Plus (Garner, Alejandria, and Lansang 2006).

Other arguments against the implementation of DOTS-Plus in developing countries recalled similar arguments against the implementation of CHC. While certainly effective, they were too costly when measured against similar analyses of cost and effort in DOTS and SHC, respectively. For developing countries, the decision of whether to further divide already limited health budgets to treat what are still a small (though increasingly growing) fraction of tuberculosis patients was a difficult one but not unanswerable. For countries whose ability to treat tuberculosis patients depended on their adherence to WHO policies, it was clear that DOTS, without DOTS-Plus (i.e., treatment for MDR-TB with second line drugs), was the answer. Although some studies have been carried out over the years since the creation of DOTS-Plus, the
stark difference in the number of references to DOTS-Plus in comparison to DOTS, illustrate the reluctance of tuberculosis program managers to implement DOTS-Plus.⁴

Since the setting of DOTS as the universal standard for tuberculosis treatment from the 1990s onward, development in new anti-tuberculosis drugs and vaccines have, until very recently, stagnated. Such research has not kept pace with the increasing resistance of new strains of tuberculosis. The reliance of the global effort against tuberculosis on primarily first-line drugs, combined with the majority of demand originating in developing countries with limited financial resources, have resulted in the reluctance of pharmaceutical companies to invest resources in research and development of new anti-tuberculosis drugs.⁵ At the same time, anti-tuberculosis programs have also faced shortages in second-line drugs, as a result of increased global demand and insufficient production (Beasley 2013). A reversal of this trend began in the late 2000s when recognition of the stagnation of tuberculosis control brought renewed attention to the disease. Clinical trials for the first tuberculosis vaccines to be developed in 90 years were initiated (Steenhuysen 2013). Although the first vaccine to be tested failed, the event was offset by the approval of a new anti-tuberculosis drug by the Food and Drug Administration (USA), as well as the knowledge that other potential vaccines are also in clinical trials (Clarke 2012).

While some pharmaceutical companies and national health ministries are renewing their commitment to combating tuberculosis, among other infectious diseases, the refocusing on the search for the magic bullet, whether a vaccine or a new drug, only emphasizes the continuation of prevailing theoretical paradigms. Although development of new drugs and vaccines are

⁴A search in Google Scholar for articles containing the terms “DOTS”+tuberculosis-“plus” resulted in roughly 21,600 results. A search for articles containing the terms “DOTS-plus”+tuberculosis resulted in roughly 1740 results, or 8% of the number of results for DOTS.
⁵The lack of development in anti-tuberculosis drugs is part of a trend in lackluster antibacterial drugs development, according to Reuters. See Kelland, Kate. “Antibiotic Resistance a “Catastrophic Threat” – UK Medical Chief”. Reuters, March 10, 2013. http://www.reuters.com/article/2013/03/11/health-antibiotic-resistance-idUSL6N0C0BXO20130311.
important in combating infectious diseases, comprehensive system-building and addressing non-health factors are necessary in order to achieve global eradication of chronic infectious diseases. Key policy-makers and donor-states must recognize the myriad unspoken factors influencing their decisions while the discourse between the global health paradigms of Comprehensive Health Care and Selective Health Care continues. As globalization persists in tying the populations of developing and developed nations closer together, the economic North needs to move beyond historical models and paradigms of health and development in order to effectively respond to the increasingly widespread incidence of drug-resistant forms of chronically infectious diseases. Instead of maintaining the idea of health as an issue to be addressed by individual nations, health problems such as the high prevalence of tuberculosis and other infectious diseases, should be considered international problems and collectively addressed. The first step in doing so will be recognition of all actors and stakeholders of the disparate and fragmented discourses across disciplines, followed by the synchronization of scientific and medical recommendations with policy formation in both developing and developed nations.

II. Methodology

The information in this thesis was collected from a variety of sources ranging across the disciplines and sectors that contribute to and shape health policy. Information regarding global health paradigms was gathered primarily from essay collections on global health politics, diplomacy, and ideologies. As much as possible, collections published within the last five years were chosen such that they discuss issues brought to the forefront by events such as the SARS and swine flu outbreaks. Among these issues is the supremacy of sovereignty when illnesses travel so quickly. Another issue is the extent to which health and disease information is part of the public domain, and the extent to which governments should make such information available,
especially when international efforts are needed to address issues originating in a single state. Information on tuberculosis prevalence and incidence was gathered from tuberculosis status reports and treatment recommendations from the World Health Organization, the US Centers for Disease Control and from the New York City Department of Health and Mental Hygiene’s Tuberculosis Control Bureau. Further data were collected from the US Census and articles published in academic journals such as the *Lancet* and *British Medical Journal*.

This thesis discusses global health using the framework of ideological paradigms, rather than only in terms of national and organizational policies, for one overarching reason. When examined, the basic rationales for implementing certain types of health systems and programs have tended to boil down to the twin concerns of economic cost and government/social obligation to fulfill the human right to health. These are the two characteristics defining the two paradigms used to interpret the health policy decisions of organizations and nations around the world. Furthermore, whether examined in depth or not, the essays from which information was gathered for the first two chapters of this thesis, all framed their discussion of global health politics and diplomacy within the paradigms discussed here. Although this thesis attempts to demonstrate the outdated nature of these paradigms, it is still important to understand their role in framing the current and past discourse around global health.

Tuberculosis control policies were chosen to exemplify the divergent policy consequences of the different paradigms because of a number of reasons. Foremost among them is the longevity of the disease in human history, and the history of eradication and control attempts inter- and intra-nationally that, with the advent of effective drug treatments, cover the same timeline as the development of the global health paradigms. Although the two examples chosen here – China’s tuberculosis control program and New York’s tuberculosis control
program – have factors that preclude them from being perfectly comparable, they are both widely acknowledged policy successes, despite their divergent ideological bases, policy approaches, and scope. These two jurisdictions have established histories of tuberculosis control programs and health systems that changed in response to the influence of WHO – and for China, that of the World Bank – and which continue to evolve to meet the needs of their populations and their financial and ideological constrictions.

The second reason that tuberculosis control is used in this thesis to concretize the theoretical discussion of global health paradigms is the continuing danger that tuberculosis infection presents to the health of the world’s population. It is currently one of the deadliest infectious diseases in the world and among the most widespread. Although it is nearly forgotten in developed countries, it remains a leading cause of death in countries like China and India. As large sources of temporary and permanent immigrants to developed countries such as the US, the state of tuberculosis in these developing countries remains of concern to developed countries. Against this context, the discourse around tuberculosis is schizophrenically optimistic and pessimistic as different trajectories in tuberculosis control in developed and developing countries are reported on.
II. Discursive Paradigms in Global Public Health: The World Health Organization (WHO) and the World Bank

Following the end of the Second World War, the establishment of the United Nations and other international organizations began to erode the supremacy of the Westphalian system of nation-states. Responsibilities and activities, such as the granting of aid and developmental assistance, that previously belonged solely to developed nations were taken on by international organizations. Among the post-war organizations that took on these responsibilities were the World Bank and the World Health Organization. Although they were established with different aims, they became representatives of opposing theoretical and ideological paradigms in global health. While they came to support the same approach to health policy more often than not due to political and economic pressures, their divergent ideological goals and bases characterize the discourse over the most applicable paradigm. In turn, these paradigms and ideologies have been used to interpret the policy decisions made by nation-states and health organizations.

The basis of the evolving discourse over global health paradigms lies in the changing roles of nation-states, both developed and developing, in realizing the human right to health. Although international organizations existed before 1948, the years following the end of the war saw increasingly large numbers of organizations replacing or supplementing governments as service providers, particularly in the field of health. Furthermore, the status and character of the human right to health (i.e., whether it included care or access) was also a matter of dispute between WHO, the World Bank, and state governments. Ongoing dialogues from the imperialist era about the responsibilities of developed nations to the health of (former) colonies and developing nations relative to maintaining the health security of their borders continued into the

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6 Generally understood, as applied to nation-states, health security refers to the safety of populations or borders against to outside health threats, whether infectious disease or biological attack. However, usage of “health security”
post-war period as part of the discourse (Frenk et al. 2011, 13). WHO and the United Nations (UN) affirmed the human right to health in their constitution and charter, respectively, as well as in the Universal Declaration of Human Rights (UDHR) and a series of other international agreements. On the other hand, the World Bank considered health to be a commodity like any other. It saw in health the opportunity for economic liberalization, in the privatization of health markets and diminishing of the role of governments. The World Bank’s foundation as one of the post-war institutions of the Bretton Woods Conference signaled its commitment to lowering trade barriers and stimulating post-war reconstruction (Cohen 2001).

Two theoretical paradigms of health care provision arose from the difference in perspective about healthcare. Comprehensive Primary Health Care recommends the creation or reformation of health systems in aid-receiving countries to provide comprehensive healthcare services characterized by the combination of all medically necessary health care services with disease-specific programs. The other model, called Selective Primary Health Care, advocates for the government provision of only a very small number of primary care services alongside disease-specific programs, with the remaining health services provided by private entities. It would be simplistic to say that WHO or the World Bank (and other organizations) were consistent proponents of one or the other paradigm. Which paradigm was supported by each organization changed depending on the politics of the time, on who was leading which organization, as well as what their relationships with other actors and stakeholders were (Davies 2010, 36; Brown and Cueto 2006, 84; Unger et al. 2011, xxxiv).

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This chapter traces the histories and positions of the World Health Organization and World Bank in relation to their (and their donors’) changing perceptions of the perceived responsibilities of developed nations and international organizations towards developing nations.

**International Health versus Global Health**

One of the many factors that have driven different understandings of health between and within nations and international organizations is the shift in discourse between international health and global health. Although scholars have different definitions of what exactly separates “international” from “global” health, and they recognize the sometimes ambiguous and overlapping use of each term, there are several characteristics that are generally agreed upon to distinguish one from the other. In the twentieth and twenty-first centuries, there was a gradual shift in the language of academic and political publications from the use of “international health” to “global health”, which paralleled shifts in perspectives and policies. Understanding these terms and their political, historical, and ideological underpinnings are integral to understanding how they shape the discourse around the aforementioned health paradigms.

International health is generally used to refer “to health in countries where imperialist powers extended their military and commercial reach, and after the Second World War to former colonies” (McInnes and Lee 2012, 7). For the most part, discourses within the framework of international health focused on communicable “tropical diseases” that posed a threat to trade and Western health security, and which could be resolved using Western technologies and knowledge (*Ibid.*, 8, 51; Frenk *et al.* 2011, 12). The concept of vertical disease-specific programs that sought to eradicate and control infectious diseases arose from this understanding of international health and the unilateral health actions taken by imperialist countries in their colonies (Frenk *et al.* 2011, 12). Unger *et al.* argue that in colonies and post-colonial countries,
“diseases were managed in isolation, as a quick and cheap way of dealing with health problems without having to provide a comprehensive service” (2011, 4). Moving forward into the latter half of the twentieth centuries, health aid and health-oriented actions from many Western nations continued to follow this pattern of thought and action (Ibid.).

In contrast, “global health” is characterized by the recognition of the increasingly interconnected and globalized nature of modern life, particularly as related to health and disease transmission. It is also characterized by the increasing promotion, at least in theory, of multi-lateral approaches to international responses to health problems. The use of “global” instead of “international” attempts to re-center the discourse on a level above that of the nation-state, as well as to encompass both individuals and non-governmental organizations as stakeholders and actors in the field (Tarantola et al. 2011, 58). The goal of global health is to elevate the health needs of the world population above the individual concerns of nations (Brown et al. 2006, 77). Global health advocates are generally associated with “diagonal” approaches to disease-control which pair disease-specific programs with general capacity building and health system reform (Frenk et al. 2011, 13). Where international health focused on the dangers of infectious diseases from developing countries to the security of developed countries, global health recognizes the existence of public health problems in developed countries as well as developing countries, whether the country in question is high-, middle-, or low-income (Ibid.).

A third approach from international health (and its “vertical” approach to health) and global health (with its “diagonal” approach) is the “horizontal” approach, which advocates primarily for capacity building of health systems in aid-receiving nations with a focus on primary health care (Ellner et al. 2011, 119). During the 1970s, this approach to health care

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7 The term “capacity building” is generally understood as the strengthening of a particular framework in order to expand its scope of services and reach, as well as to increase the efficiency and the effectiveness of services provided by the system.
followed national and social movements around the world\(^8\) to rise to prominence at the 1978 Alma Ata conference organized by WHO. There “the goal of achieving health [care] for all by the year 2000 through a *primary health care approach*” (emphasis in original) was set by the delegations from 201 countries, UN agencies and non-governmental organizations (NGOs) (Tarantola *et al.* 2011, 53). Soon after the conference, WHO’s power and influence in the global health arena began to be surpassed by the World Bank. The World Bank’s support of the vertical approach gained it the financial clout to encourage the worldwide return to disease-specific programs and aims rather than primary health care.

**The World Health Organization and Global Health**

WHO was formed in the wake of World War II, as a continuation of a trend towards international cooperation against health threats and issues that began in 1851 (McInnes and Lee 2012, 136). In 1851, cholera epidemics ravaging Europe and Asia forced states to collaborate to ensure the health security of their borders by enacting measures to deal with any incidences of disease that appeared at or within their borders (*Ibid.* 105). The measures that the states agreed upon at the International Sanitary Conferences set up in 1851 were extremely limited in scope. They included only agreements to share monitoring and surveillance data, in addition to at-the-border measures such as quarantine procedures (*Ibid.*). Their goal was only preventing diseases and disease-carriers from entering state territories without infringing on the sovereignty of participating states and their colonies. The measures did not address the possibility of aiding those who were already suffering from the disease or finding other ways of preventing outbreaks. When the International office of Public Health and the League of Nations Health Organization were formed, they too were preoccupied with disease control from a vertical approach (*Ibid.*).

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\(^8\) Several important political and social events and movements that occurred or continued in this period were the anti-Vietnam War protests, the feminist, environmentalist, civil rights movements, and the Green Revolution.
Upon its formation, WHO absorbed and took over the duties formerly carried out by the International Office of Public Health (est. 1907), the League of Nations Health Organization (est. 1920), and the United Nations Relief and Rehabilitation Administration (est. 1943) (Brown et al. 2006, 80). Its constitution reflected the post-war idealism that was pervasive at the time in its claim that health was a “state of complete physical, mental and social well-being and not merely the absence of disease and infirmity” (Brown and Cueto 2012, 18). In the same year as the formation of WHO, the United Nations General Assembly adopted the Universal Declaration of Human Rights (UDHR), which asserted the human right to health in Article 25: “‘Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, shelter, housing, and medical care and necessary social services’” (Brown et al. 2006, 80). From 1948 to 1953, the first director-general of WHO, George Brock Chisholm, attempted to fulfill these ideals. He was repeatedly thwarted by the national interests of the member states, particularly the United States (US) (Brown and Cueto 2011, 19). In the following decades, the director-general of WHO’s relationship with the US continued to shape and characterize its policies and recommendations.

In 1953, Chisholm was succeeded by Marcolino Candau, who had a history of working with the Rockefeller Foundation (est. 1913) and their vertical disease-specific programs (Ibid.). As a result of his history and familiarity with disease-specific programs, Candau and WHO initiated a malaria-eradication scheme that was heavily backed by the United States. Soon afterwards, WHO also initiated a smallpox-eradication scheme at the urging of the Soviet Union. Technological advances, along with smallpox’s slow transmission rate and the US’s willingness to collaborate with the Soviet Union to eradicate smallpox made it possible to achieve that goal, while blunders in the malaria-eradication project led to failure (Ibid., 20-21; Unger et al. 2011, 4).
However, the success of the smallpox eradication project was a vindication for supporters of the vertical health approach, which offset the failure of the malaria eradication effort.

In the 1960s and 1970s, widespread decolonization, “the spread of nationalist and socialist movements, and the dissemination of new theories of development that emphasized long-term socio-economic growth rather than short-term technological intervention”, international interest in the “Chinese ‘barefoot doctors’”\(^9\), and pressure from the Soviet Union, among other factors, pushed the WHO away from the vertical approach (Brown and Cueto 2011, 21). WHO acknowledged the importance of having strong health systems were important correlations to the success of disease-specific programs. Consequently, in 1968, “Candau called for a comprehensive and integrated approach to curative and preventative care services” (Ibid.). Candau’s successor, Halfdan Mahler, followed Candau’s turn towards a horizontal approach to health (i.e., comprehensive primary healthcare), making “Health for All by the Year 2000” his goal (Ibid.).

In 1978, the Comprehensive Primary Health Care movement within WHO and around the world came to a head at the Alma Ata conference. “PHC [Primary Health Care] promoted comprehensive care and community participation in public services…to democratize public oriented services, with users being called to co-manage health services together with professionals and civil servants” (Unger \textit{et al.} 2011, 4). The Alma Ata Declaration, which came out of the conference, reaffirmed the status of health as a human right. The Declaration also asserted that health was a \textit{positive} right, which governments and international organizations had

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a responsibility to provide to all people (McInnes and Lee 2012, 66). Delegations from over 200 countries and organizations attended the conference and affirmed the ideals encompassed by the Declaration (Tarantola et al. 2011, 53).

**The Rising Influence of the World Bank**

Just a year after the Alma Ata conference, there was another conference in Italy held between representatives from the World Bank, USAID, UNICEF, the Rockefeller Foundation, and other prominent international organizations. There, Selective Primary Health Care was proposed as an alternative. Characterized as “pragmatic, low-cost interventions that were limited in scope and easy to monitor and evaluate”, they strongly recalled the vertical disease-specific programs carried out by imperialist nations in their colonies in order to control disease without investing in health systems (Brown and Cueto 2011, 22). Also in 1979, the World Bank created a population, health, and nutrition department to fund “stand-alone health programmes and health components of other projects”, although it had been making loans for health-related programs since 1970 (Ibid.).

Faced with a scarcity of resources in the face of demand for loans, the World Bank began calling for greater efficiency in the use of funds. It “strongly promoted free markets and a diminished role for national governments”, and gave out funds on the condition that structural adjustment measures be enacted in loan recipient states (Brown et al. 2006, 85). These measures in effect created health systems where the majority of health care services were located in private markets and the government’s role was primarily to diminish private market inefficiencies as much as possible. Throughout the 1980s and 1990s, the World Bank continued to promote the privatization of health systems. In 1987, it called for “a series of market-oriented reforms – increasing user fees and expanding the role of the private sector” (Bennet 2011, 474). Then in
1993, it released a report titled “Investing in Health” that called for greater separation between the various actors in health care, such as healthcare providers, the government, and purchasers of healthcare (*Ibid.*, 475).

During this period in the 1980s and 1990s, WHO was unable to compete with the World Bank to push Comprehensive Health Care due to several factors. Among them was the decline in funding from donor countries during the economic depression following the oil crisis of the 1970s. Furthermore, the US’s decision to withhold its regular contribution to WHO in protest of WHO’s Essential Drug Program – because of objections from the American pharmaceutical industry – severely impacted WHO’s influence in the global health arena (Brown *et al.* 2006, 85).

In addition, during the debt crisis of the 1980s, many developing countries were trying to cut down on government spending, while Comprehensive Health Care called for economic commitments these countries were not able to make (Bennett, 474). In contrast, the World Bank was able to increase its funding for health from about $100 million to over $1 billion from the early 1980s to the 1990s (Davies 2010, 38). By 1990, “[T]he World Bank’s loans for health had surpassed WHO’s entire budget” (*Ibid.*).

Furthermore, questions soon began to arise about the effectiveness of Comprehensive Primary Health Systems after the Alma Ata conference. Traditional indicators of progress such as infant and childhood mortality, which heretofore had been declining, began showing signs of stagnation and increase (Tarantola *et al.* 2011, 54). Disease-specific programs located within Comprehensive Primary Health Systems still could not reach the people that needed services the most and funding “dependent on international sources” raised long-term concerns about sustainability and viability (*Ibid.*). In addition, the combination of declining or withdrawing international funds and programs, the global economic crisis, the scarcity of local funds devoted
to replacing withdrawn international funds and programs, and World Bank/International Monetary Fund-backed structural adjustment programs that discouraged government funding of health, all contributed to the failure of Comprehensive Primary Health Care implementation efforts (Ibid.). Nonetheless, the attempt at implementing Comprehensive Primary Health Care realigned the dialogue about health from an individual basis to a population-basis, such that health inequities not only between individuals within a country but also between demographic and population groups between states were brought into the discussion.

Conclusion

The difference between the World Bank and WHO’s approach to health care was that the Bank “viewed health care not as a need, much less as a right, but as a demand, defined by the consumers’ ability and willingness to pay” (Unger et al. 2011, 5). While WHO had swung back and forth between horizontal and vertical approaches, comprehensive health care and selective health care, its underpinning ideological goal of “heath care for all” was verbalized in its constitution. However, which approach was implemented and endorsed depended on more than ideals. Politics, personal relationships, inter- and intra-national interests, the economic climate, and many other factors, interlocked in a web of influences that for the majority of the time supported selective primary health care and the increasing privatization of health systems and services.

Selective primary health care suited the economic and political goals of donor nations because they were seen as low-cost and low-effort. On the part of recipient nations, they were preferable because they called for less government involvement and less government spending. Their effects, particularly in the case of disease-control programs, were much easier to measure
and quantify in the short-term than comprehensive health programs, which were long-term investments and were harder to measure.

The effect of the tug-of-war between the World Bank and WHO, and the paradigms accompanying their guiding principles, has been ongoing with regard to tuberculosis control. There has been continuing endorsement by WHO of directly observed therapy short course (DOTS) as the primary treatment regimen, with variants only allowed where DOTS has already been implemented. The debilitating effects of structural adjustment programs on healthcare access are only partially balanced by collective drug programs, such as the Green Light Committee (under WHO’s Stop-TB Campaign) and its affiliates, which ostensibly negotiate down the prices anti-tuberculosis drugs by pooling the demand of disparate countries. The next chapter will analyze the WHO’s Stop TB Campaign in the context of the shifting discourse around global health and the dual paradigms that have dominated the discourse since the twentieth century.
III. Global Health Paradigms through Tuberculosis Control Policies

The policy effects of the discursive tug-of-war between the dual paradigms in global health are evident in the global health community’s approach to infectious disease. While HIV/AIDS has held political and public attention since its appearance in the 1980s, the various efforts to control and eradicate chronic infectious diseases such as tuberculosis particularly demonstrate the conflicting political, economic, and ideological factors driving the shifts in policy approaches. Responses and efforts to so-called tropical diseases especially reflect these changes due to the historical ties of these diseases to former colonies of current major donor-states. In particular, the World Health Organization and the World (Development) Bank’s oftentimes competing programs and approaches to anti-tuberculosis policy formation embody the ongoing tensions between global health paradigms.

The World Bank’s economically liberal agenda increasingly gained ground in international health policies as it rose to financial and political prominence in the late twentieth century (Davies 2010, 38). To a great extent, the World Bank replaced WHO as the dominant guiding authority for low- and middle-income countries in the development and growth of their health-related systems and activities. WHO’s policies changed with the political and ideological affiliations of its directors-general, but for the most part it attempted to adhere to its ideological basis in the belief of the human right to health (care). That ideological grounding manifested in endorsements of the Comprehensive Primary Health Care paradigm of health at the peak of WHO’s influence in the 1970s. However, the plummeting global economy from the end of the decade onwards, among other factors, rendered WHO’s approach unpopular with developing and

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10 As mentioned in the previous chapter, the World Bank’s roots in the post-war reconstruction efforts enacted by the Bretton Woods conference have resulted in the continuation of the Conference’s aims towards market liberalization, despite the so-called breakdown of the Bretton Woods system.
developed countries around the world, which sought to battle numerous health problems as well as societal and developmental issues, all with limited financial resources.

By the late 1980s and early 1990s, WHO recognized the World Bank’s greater global influence and reestablished its role as technical experts in clinical health and disease-control programs. In doing so, WHO ceded to the World Bank the responsibility of funding health-related programs, as well as the influence over the direction such programs would take. However, by establishing itself as the source of technical and policy guidance, WHO was able to partner with the World Bank in guiding health projects around the world. In doing so, WHO was able to indirectly implement further studies of treatment and control regimens already vetted by institutions such as the International Union against Tuberculosis and Lung Disease (IUATLD) (IUATLD 2010). Such World Bank-funded, but WHO-guided tuberculosis-control projects in China, India, Africa, among other countries and regions yielded data that later formed the foundation for WHO’s later anti-tuberculosis campaigns. The rhetoric of these campaigns became increasingly comprehensive in their advocacy for strengthening public health systems (WHO 1994b; WB 1993). However in practice, persistent prioritization of cost-effectiveness and economic utility resulted in the continuing reliance on a treatment regimen whose implementation contributed enormously to the increasing incidence of multidrug resistant tuberculosis around the world (WHO 2012).

**WHO and the World Bank’s Anti-tuberculosis Efforts**

Currently, the most widespread anti-tuberculosis effort is the World Health Organization’s Stop-TB Campaign, which in its various forms has guided anti-tuberculosis programs around the world since the early 1990s (WHO 1996; WHO 2012). While the International Union against Tuberculosis and Lung Disease has actively worked against global
tuberculosis since the 19th century, it has primarily taken done so through the funding and directing of treatment and vaccine research (IUATLD 2010). WHO was among the biggest international organizations to take an interest in the disease and also have the financial and political clout to direct and affect disease control policies. Although WHO has been involved in anti-tuberculosis efforts since its inception after the Second World War, it renewed its anti-tuberculosis efforts when the appearance of HIV/AIDS, as well as other factors, began to reduce the effectiveness of existing tuberculosis control programs. It re-engaged its tuberculosis program in 1988, after years of understaffing and underfunding (WHO 1994b). In 1989, WHO released the results of a global prevalence survey begun in 1975 that demonstrated the stagnation of the decline in tuberculosis prevalence rates. Concurrently, it also launched tuberculosis control guidelines which recommended a new short course regimen of combined chemotherapy. Due to the variations in program capacity between developing and developed nations, WHO recommended daily treatment where possible in order to diminish the chances of patient non-adherence. In addition, WHO recommended that where intermittent therapy was the norm, that clinicians conduct direct observation or supervision of patients (WHO 1991, 12). Although the treatment regimen had been strongly supported by medical professionals and medical studies since the 1960s, it was only two decades later in the 1980s that enough studies had been conducted in WHO’s opinion to definitively show the effectiveness of directly observed therapy (Dye 2008; Murray 2004).

While WHO mentioned the correlation between the strength of the existing public health system and program effectiveness, it emphasized technology and program based activities whose goals were narrowly aimed at specific aspects of tuberculosis control programs. In keeping with the trends of the time, as they were shaped by international politics and economics, WHO placed
the focus of its treatment and control program on looking for the medical “magic bullet” that would eradicate tuberculosis, rather than strengthening health systems as a whole. As a result, the stated goals of WHO’s treatment guidelines were program support and research and development. Practically, the guidelines centered on ensuring proper drug quality and patient compliance to treatment regimens and standardization of drug combinations (WHO 1989).

However, by 1994, WHO’s approach to tuberculosis control changed. In 1993, WHO declared tuberculosis a global health emergency and reformulated its policy recommendations for nations and organizations to combat tuberculosis. Where its plans in 1991 focused on the clinical aspect of disease control (i.e., ensuring patient compliance, and drug quality and standardization), the central point of its 1994 report was the importance of strengthening health systems and a “horizontal” approach to disease control. Towards this end, WHO stated that, “[w]hile effective TB control needs to have some vertical aspects, the best TB control is done at the Primary Health Care level [and] WHO’s TB policy is built on that foundation” (WHO 1994a).

On the other hand, WHO’s language in other parts of the 1994 report echoed that of the World Development Bank’s 1993 global health report, one of the most representative documents of the ideologically driven vertical and Selective Primary Health Care approaches. The usage of economically based methods and arguments such as weighing “the cost-effectiveness of addressing different diseases” and justifying greater health investments by levying them against greater future medical costs in the same way the World Bank did in its earlier report was WHO’s concession to the World Bank. Further it acknowledged the World Bank’s current standing at the top of the global health hierarchy (WHO 1994a).

The World Bank’s 1993 report laid the ideological groundwork for nearly all health-related activities conducted in low- and middle-income countries in the following decade. It
exerted influence over the health systems of developing nations through funding of disease-control projects, such as the 1991 tuberculosis-control study in China (see Chapter 4), and through the tying of funding to mandatory structural adjustment programs (Davies 2010, 42). In the 1993 report, the World Bank asserted the responsibility of governments to get “value for money” when investing in health. To do so, it endorsed the government provision of only essential clinical services where market failures would preclude widespread access to healthcare. At the same time, it also asserted that the main objective of public health policy should be to increase marketization and competition between healthcare providers, which it claimed “should increase consumer choice and satisfaction and drive down costs” (World Bank 1993, 58). As a result of these policies, countries like China, which received funding for anti-tuberculosis projects, essentially dismantled or failed to establish working public health systems in order to comply with the World Bank’s loan conditions (Ibid.).

These policy failures were apparent as early as 1993, only two years after they were implemented in China, and in other high-burden countries11. As a result, the components of WHO’s 1994 framework for tuberculosis control illustrates the beginning of a move away from the Selective Primary Health Care model advocated by the World Bank towards the more integrated approach currently in place. The steps that were formulated then – which include government commitment, case detection, (directly observed) short course chemotherapy (shortened into DOTS by WHO), assured drug supply, and monitoring systems – now comprise the first component of WHO’s current anti-tuberculosis strategy, titled, “Pursue high-quality DOTS expansion and enhancement” (WHO 2012, 4). The other components of WHO’s

campaign include addressing HIV, multidrug resistant tuberculosis (MDR-TB), and the needs of at-risk populations; strengthening health systems; engaging care providers; empowering patients and communities with TB; and promoting research (Ibid.).

Although WHO’s programmatic response to tuberculosis has expanded to include comprehensive measures, its continuing reliance on DOTS (directly observed therapy short course) as the cornerstone of its control efforts, reflect the persisting barriers towards better global health presented by historical, political, and financial factors.

**Directly Observed Therapy (DOTS) and DOTS-Plus**

DOTS was primarily developed in the 1950s and 1960s by British clinicians in Madras, India, and Hong Kong. The density of the populations in these cities relative to the number of hospital beds meant it was impossible for tuberculosis patients to be treated in sanatoria like tuberculosis patients in the West. Combination drug regimens had just been made possible by successive discoveries of effective drugs in the 1940s and 1950s but incidences of drug resistance occurred in pace with new drug discoveries (Reider 2002). Combination drug regimens were developed in response to combat drug resistance. However, the need for a high threshold of adherence to the treatment regimen in order to prevent drug resistance meant clinicians had to find some way of ensuring compliance in patients without the controlled environment provided by hospitals and sanatoria. Among the early methods that were tried were pill counting, surprise home visits, and urine testing for the byproducts of anti-tuberculosis drugs, but all failed to ensure a high enough level of compliance (Bayer and Wilkinson, 1995).

These early efforts confirmed the importance of maintaining a strict, regular regimen. They confirmed that, to a certain extent, the drug combination used was less important than the regularity of treatment. As a result, clinicians in Madras and Hong Kong incorporated direct
observation of patients, requiring that patients show up at medical centers on a regular schedule to be administered their treatment. In Hong Kong, the regular clinical visits by patients under direct observation to receive injections and oral medications allowed completion of therapy within an average of two and a half months, compared to the standard twelve to eighteen months of long-course combination chemotherapy without direct observation (Ibid.). The clinicians in Madras and Hong Kong also respectively studied the efficacy of intermittent therapy and the possibility of a shorter treatment regimen, which were both later incorporated into the modern standard DOTS regimen (Ibid.).

However, in the mid-1960s, when the efficacy of direct observation with short-course chemotherapy had already been proven effective in Madras and Hong Kong, clinicians in developed countries such as the United Kingdom and the United States denied the applicability of directly observed therapy in cities facing similarly high rates of noncompliance. The situating of these studies in India and Hong Kong, both colonies of Britain, characterized the findings as relevant only to poor, illiterate colonists (Ibid.). In the US, concerns about infringing patients’ liberties along with association of noncompliant patients with the lowest socioeconomic class, as well as with mental or social deficiencies (e.g., alcoholism, criminal conviction), further contributed to the reluctance of healthcare providers to advocate directly observed therapy for all tuberculosis patients. Most of all, concerns about the expense of the widespread use of directly observed therapy precluded its recommendation and implementation.

Even so, as early as the late 1960s, there were isolated cities and hospitals in the US that adopted directly observed therapy in spite of the aforementioned concerns and prejudices. They were convinced by International Union Against Tuberculosis and Lung Disease (IUATLD) funded efficacy studies of DOTS, which were held throughout the 1970s and 1980s in numerous
African countries, including Tanzania, Malawi, and Mozambique. The collective success of these studies encouraged the global health community’s acceptance of the regimen’s applicability and cost-effectiveness in low-income countries (Broekmans 1998; Murray 2004). These studies, led by Karel Styblo, expanded the strictly clinical regimen developed by the clinicians in Madras and Hong Kong into a treatment and control strategy, rather than just a treatment regimen. It was for this reason that Styblo became known as the developer of DOTS, as it is utilized and recommended by WHO (i.e., with the accompanying principles of government commitment, regular access to high-quality drugs, etc.) rather than the early developers in Madras and Hong Kong (IUATLD 2010).

Increasing incidences of both drug susceptible and multidrug resistant tuberculosis throughout major cities in the US eventually led to directly observed therapy being made the standard of care in the US by the Advisory Council for the Elimination of Tuberculosis (ACET) in 1993 (Bayer and Wilkinson 1995). Meanwhile WHO began advocating short course therapy in 1989, and strongly recommended direct observation. WHO was comparatively less reticent to recommend directly observed short-course therapy (retrospectively shortened into DOTS in 1996) because the countries looking to WHO and the World Bank for policy guidance were socioeconomically on the same level as India and Hong Kong, as well as the IUATLD study countries (WHO 1996).

However, while WHO may have been marginally ahead of the rest of the international health community in the 1980s, its continuing reliance in the present on the same components of DOTS, including the same combination drug regimens, has in turn become a problem. The success of the early DOTS programs was due to their strict implementation and control of patients’ treatment regimens. As mentioned previously, the strictness with which the regimen
was adhered to was found to be more important than the combination of drugs used. On the other hand, if the recommended combination of drugs was used but the treatment schedule was not adhered to, patients were more likely to develop drug-resistance. As such, WHO’s continuing reliance and emphasis on DOTS, without improving program implementation or patient/clinician compliance, contributes to the growing incidences of multidrug resistant and extensively drug resistant tuberculosis.

WHO created an expanded version of DOTS, called DOTS-Plus in 1998 in response to rising numbers of multidrug resistant tuberculosis. But it persisted to prioritize DOTS, even in situations and populations where it is known that full DOTS implementation is not possible or that the strain of tuberculosis is not susceptible to the first-line drugs used in DOTS, has been immensely damaging to control efforts (Yasodhara et al. 2010). In 2012, a study found that only a quarter of tuberculosis patients receive treatment based on international standards (Migliori and Sotgiu 2012, 955). Despite this statistic, WHO continues to advocate the implementation of DOTS instead of encouraging the improvement of DOTS or the development of a new treatment regimen (WHO 2012).

According to physician-activist Paul Farmer, who worked to improve the tuberculosis treatment program in Haiti and Peru, the problems lie with several of WHO’s core standards for DOTS (Farmer 2001). The first problem is that DOTS does not test for drug susceptibility. There is no way to tell whether the strain of tuberculosis the patient has is susceptible to any of the first- or second- line anti-tuberculosis drugs. The second is that DOTS retreatment standards call for the use of the same first-line drugs that failed to cure the patient the first time around (whether it was due to patient dropout or provider failure) with just one additional first-line drug. Furthermore, DOTS does not allow for the possibility of primary multidrug resistant tuberculosis,
\textit{i.e.}, the possibility that the patient did not develop MDR tuberculosis from treatment non-compliance, but was originally infected with a resistant strain. As a result, the patient is treated with ineffective first-line drugs, wasting resources and time (Farmer 2001).

DOTS-Plus, while an improvement over DOTS, also has its own problems. WHO recommends that DOTS-Plus only be implemented where an effective DOTS program already exist (Garner \textit{et al.} 2006). Although DOTS-Plus standards include testing for drug susceptibility and individualized treatment with second-line drugs, the precondition of existing \textit{effective} DOTS programs is counter-intuitive. As Garner and Farmer both point out, DOTS was designed to prevent the emergence of MDR tuberculosis. Where there are effective DOTS programs, there should not be any need for DOTS-Plus programs (\textit{Ibid.}; Farmer 2001). In addition, considerations of cost-effectiveness still drive the discourse over whether more resources, if any, should be devoted towards greater expansion of DOTS-Plus. From the introduction of DOTS-Plus in 1998 to today, the question of whether focusing more on MDR tuberculosis would detract from efforts targeting drug-susceptible tuberculosis, which remains the majority of incident cases, has been a topic of debate (\textit{see} Garner \textit{et al.} 2006; Nardell 2003).

An important consideration is the fact that these cases still occur for the most part in low- and middle-income countries. A major contributing factor to the stagnation in the decline in tuberculosis in China was the occurrence of both primary and developed MDR tuberculosis in tuberculosis patients as a result of poor implementation of DOTS. China was in the middle of implementing a large-scale study about the feasibility of DOTS when DOTS-Plus was developed. The status of China’s tuberculosis control program at the time disqualified it for consideration in the introduction and implementation of DOTS-Plus. By contrast, when New York City
experienced a resurgence of MDR tuberculosis in the late 1980s and early 1990s, there was no question about whether or how to treat those infected with MDR tuberculosis with DOTS-Plus.

Tuberculosis still remains associated with colonialist paternalism and the responsibility of Western nations to help developing countries implement cost-effective, standardized disease-control programs. The persistent designation of tuberculosis as a tropical disease – as evidenced from studies supported by the Tropical Disease Foundation and the various Schools of Tropical Medicine – reinforce the distinction between diseases of the third-world and those of the first. The reluctance of Western nations to adopt therapies first proven to work in tropical, formerly colonial countries is followed by the reluctance to develop and adapt new therapeutic regimens to ameliorate and replace failing programs. WHO’s increasing emphasis on Comprehensive Primary Health Care, reflect and represent the paradigmatic conflict in the global health arena, and the deeper historical, social, and perhaps racial foundations of the debate.
IV. Tuberculosis Control in China

China’s and New York City’s tuberculosis control programs in the early 1990s illustrate the difference in outcomes from the implementation of health systems within the Selective and Comprehensive Health Care paradigms. Both localities experienced a resurgence of tuberculosis incidence during the 1980s, and implemented new control and treatment programs based on WHO’s guidelines for directly observed therapy short-course (DOTS). However, New York City’s program expanded to include non-tuberculosis-related services and incentives while China’s program remained narrowly limited to tuberculosis screening and treatment. As an extension of China’s health system, China’s tuberculosis control strategy exhibit many of the negative effects of Selective Health Care (SHC). While the anti-tuberculosis program closely follows WHO’s clinical treatment guidelines for tuberculosis, the non-clinical aspects of the program strongly reflect the influence of the World Bank’s economically liberal principles. These were the result of the combination of two factors: First, there was a period of structural reform characterized by de facto deregulation and privatization across the country during the 1970s and 1980s; second, was a World Bank loan for the mass implementation of a DOTS program and the attendant conditions to granting the loan, which further advanced the marketization of the Chinese health sector.

The tuberculosis control study, based on DOTS, had problems that were apparent as soon as two years after its initialization in 1991. There were issues of access, and the study’s effect on the incidence and prevalence rates in China were uncertain. Nonetheless, the tuberculosis control project was deemed a success at its conclusion in 2002. It was subsequently hailed by WHO, the World Bank, and the Center for Global Development, among other organizations, as a model for tuberculosis control. Furthermore, the perceived success story of the project has been used in the
past two decades to support WHO’s endorsement and recommendation of directly observed therapy short-course (DOTS) in its global anti-tuberculosis campaigns. In addition, China has implemented additional tuberculosis control projects with WHO, the World Bank, and other international agencies based on the claimed success of that first project. However, China still remains on WHO’s list of high-burden countries, meaning that it has among the highest incidence and prevalence rates of tuberculosis in the world. Defined respectively as the number of new and recurrent cases and the number of existing cases, incidence and prevalence rates are common indicators of disease burden. Incidence and prevalence rates are estimated new and existing cases per 100,000 persons in the population. China also has among the highest rates of drug-resistant tuberculosis in the world, only behind India. China’s history of tuberculosis control under the guidance of the World Bank, and the principles of economic liberalization that guided the reform era, illustrate the contradiction in actual and perceived outcomes that result from Selective Health Care.

This chapter aims to untangle, as much as possible, the complex history of projects and reforms, to locate (as much as possible) the overall approach taken by China to tuberculosis control within the global health paradigms of SHC and CHC (Comprehensive Health Care), and to evaluate whether the outcomes have fulfilled predictions of success and cost-effectiveness.

**Current State of Tuberculosis in China**

According to WHO estimates for 2011, approximately 1 million new cases are reported every year in China (WHO 2012b “China Report”). Furthermore, based on Chinese surveys of drug resistance in 10 provinces, drug-resistance is one of the most important issues facing public health practitioners in China, as well as abroad; “All the provinces [surveyed] had levels of MDR (multidrug-resistant) tuberculosis above the global median, and some have been classified as
global “hotspots” of MDR tuberculosis” (Zhao et al. 2012, 2161). “WHO estimates that a third of the world’s cases of MDR tuberculosis are in China” (Wang et al. 2007, 694). Approximately 25% of all new cases are resistant to isoniazid or rifampin, two of the front-line drugs used against tuberculosis (Zhao et al. 2012, 2161). A percentage of Chinese tuberculosis patients contract extensively drug-resistant (XDR) tuberculosis, defined as disease that is resistant to the two main first-line drugs, isoniazid and rifampin, as well as two or more second-line drugs (Ibid.). Translated into absolute numbers, there are about “110,000 incident cases of MDR tuberculosis and 8200 incident cases of XDR tuberculosis” in China every year (Ibid.). While these numbers are small compared to China’s population, they indicate a growing trend of drug resistance in China, reflecting the failure of its tuberculosis control and treatment programs.

These high rates of drug-resistance – which Zhao et al. note are underestimates – are due in a large part to the structure of the Chinese health system and the consequences of its de facto privatization following the Opening and Reform in the early 1980s. For the most part, China’s health system remained the same structurally as it was during the pre-Opening-and-Reform era. There are clinics and hospitals with scaled levels of capability at the local, county, and provincial levels to which individuals present themselves when they are ill. County and provincial level health facilities are associated with higher levels of care, as well as with higher expense. As a result of these associations of quality care with cost, potential patients have a tendency to put off seeking treatment. When they do seek treatment, they tend to do so at hospitals rather than at lower levels of health facilities (Yip et al. 2012, 835).

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12 After the death of Mao Zedong, Deng Xiaoping initiated a period of economic and structural reforms known in Chinese as the Opening and Reform Period. These reforms begin in 1978 and were characterized by widespread privatization and decollectivization of formerly state-run enterprises and rural communes, respectively. For more information, see “Chinese Economic Reform”. Wikipedia. Last modified March 22, 2013. http://en.wikipedia.org/wiki/Chinese_economic_reform.

A significant change from the reforms of the 1980s has been in the financing of health services and the resultant behavior of health practitioners. Previously, rural residents paid into a collective health fund that subsidized or reimbursed any health costs that participants incurred. Urban residents were covered by insurance schemes provided by the government or workplaces (Tang and Squire 2005, 95). These insurance schemes and the low mobility of individuals allowed for mass vaccination, screening, and treatment programs to be carried out, as part of comprehensive health improvement strategies, resulting in the annual decline in prevalence of 5-10% from 1957 to 1979 (Goldman 1989, 296). The decline slowed to an annual rate of 4.4% during the reformation period from 1979 to 1990 (Chen et al. 2004, 420). Following the reforms, government funding of “private” healthcare facilities – all health facilities other than Centers for Disease Control (CDC)-operated hospitals and clinics – decreased from 32% to 16% (Wang et al. 2007, 692). The restriction of health services provided at CDC-affiliated facilities to “essential” services, and government defunding of all other healthcare facilities closely followed Selective Health Care guidelines as promoted by the World Bank. Newly privatized health facilities were now the source of most health-related services, and they were expected to fund operations through service fees and drug sales. These prices were set by provincial ministries separate from the central Ministry of Health, in order to make up for the loss in government funding. Individuals were no longer covered by their previous collectivist schemes and were now responsible for paying healthcare costs out-of-pocket (Ibid.).

In addition to financial cost, individuals also faced another barrier to health care. Prior to the reform period, the hukou system – known in English alternately as the household registration system and the residence permit system – categorized individuals and households as residents of rural or urban areas. During the collectivist era, the hukou system was a means of census-
keeping and resource allocation. It also functioned as a means of mobility control because it tied an individual’s access to social services to their registered locality. The hukou system was loosened slightly during the reform era to enable a small degree of geographic mobility, but it remained difficult to change one’s registered residency. When the reforms dismantled the rural communes and state-owned enterprises, the hukou system was retained. Services such as healthcare continue to be tied to the locality and rural/urban status of one’s registered residency. Local governments and agencies continued to be responsible for funding and providing access to the social services remaining under the purview of the state after the reforms. As during the collectivist era, the difference in resources in each province, and the different healthcare facilities serving the villages and cities in them, continued to determine the quality of care afforded to residents (Chan and Zhang 1999, 818).

The hukou system restricts patients from seeking care outside of the province to which they are registered. Currently, there are, of course, exceptions for the wealthy, and for both informal and formal residents of wealthy provinces and metropolitan areas such as Shanghai. However, in the 1990s, migration was still limited to a very small part of the population. The change in sources of healthcare funding for hospitals and individuals deeply hindered tuberculosis control efforts. Healthcare providers, no matter what level, are required to refer individuals presenting with tuberculosis symptoms to tuberculosis dispensaries\(^{14}\), located at the county-level office of the Chinese Centers for Disease Control (CDC). But survey data shows that there was no enforcement of this rule. In 2000, up to 90% of patients with tuberculosis were

\(^{13}\) The hukou system has been under significant debate in recent years due to its constriction on access to social services in contrast to the mobility of the modern Chinese population. For more information, see Xiaogang Wu and Donald J. Treiman. “The Household Registration System and Social Stratification in China: 1955-1996”. *Demography* 41, no. 2 (May 2004): 363-384.

\(^{14}\) Depending on geographic location, study design, translation, or other factors, tuberculosis clinics are also known as tuberculosis dispensaries and/or chest centers. Their capabilities usually encompass some forms of diagnostic screening and testing, and administration of treatment whether through drug disbursement, or directly observed therapy.
diagnosed and treated in hospitals and other health facilities instead of being referred to CDC tuberculosis dispensaries (Wang et al. 2007, 693). These patients then “were given tests and drugs as long as they could pay”, often in excess of what was required or beneficial (Ibid., 692). This encouraged patients to drop out of treatment once symptoms abated or they ran out of money. The result was that only 20% of tuberculosis patients treated in hospitals regularly accessed their medication (Ibid.). Furthermore, while patients were prescribed excessive ancillary tests for diagnostic purposes, they were not being tested for drug-susceptibility for two reasons: such tests were not part of the routinely available or performed procedures at local tuberculosis clinics, and they were not part of the basic WHO-recommended DOTS strategy (Zhao et al. 2012, 2166). Along with excessive use of first-line anti-tuberculosis drugs, these conditions increased the “risk of relapse, treatment failure, and acquired resistance” (Ibid.). Zhao et al. found that the nonstandard use of first-line anti-tuberculosis drugs was pervasive. Up to 11% of the new tuberculosis cases they surveyed “had been treated previously with tuberculosis drugs even though they had never received a diagnosis of tuberculosis” (Ibid.).

The effects of these deficiencies in healthcare funding on tuberculosis control were evident as early as the early 1990s, and were among the reasons China undertook its first two tuberculosis control projects after the reformation era. The withdrawal of health funding and the poor practices of hospitals and physicians had led to a resurgence of tuberculosis, and the Chinese government looked to international organizations for guidance. This led to the implementation of new tuberculosis control projects ostensibly based on WHO’s DOTS guidelines. One was funded by a loan from the World Bank with various levels of matching by local governments, and one by the Chinese Ministry of Health. The World Bank provided $58 million; the total cost of that project is estimated to be $130 million (Seymour 2004). The project
covered approximately half of China’s population at the time (Tang and Squire 2005, 94). The “project followed the internationally recommended DOTS strategy, which has five components: political commitment; case detection by sputum smear microscopy, mostly among self-referring symptomatic patients; standard short-course chemotherapy administered under proper case-management conditions, including directly observed therapy; a system to ensure regular drug supplies; and a standard recording and reporting system” (Chen et al. 2004, 417). Most notably, the project provided free diagnostic assessment and treatment (Chen et al. 2002, 431). However, that was possible only because the counties in which the World Bank chose to conduct the project were chosen “in general [for their] pre-existing capacity to carry out DOTS” (Ibid.). Of the twelve provinces that were included, only four provinces were low- or middle-income provinces when their per capita incomes were measured against the national average income per capita (Bogg and Diwan 1996).

In contrast to the World Bank project, the Ministry of Health provided $560,000 for its project and covered a fifth the number of people, who lived primarily in the low-income provinces not covered by the World Bank (Ibid.; Tang and Squire 2005, 94). Although the project ostensibly “provided financially subsidized treatment to those smear-positive TB patients identified in the project counties” (Tang and Squire 2005, 94), it only provided free diagnostic services and treatment to “poor” patients – though how this was determined was unclear – and paid lower incentives to hospitals and doctors for referrals (Bogg and Diwan 1996). As a result, both healthcare providers and healthcare facilities in the Ministry of Health funded counties had disincentives to diagnose tuberculosis when they could generate more revenue through misdiagnosis of tuberculosis.
In the World Bank funded project counties, the prevalence of tuberculosis declined a total of 44.4% from 1990 to 2000 (Seymour 2004, 5; Tang and Squire 2005, 96). In comparison, the prevalence in the Ministry of Health funded project counties only declined by 12.3% (Tang and Squire 2005, 96). However, despite the differences in funding and results, both projects suffered from several of the same problems. Poor compliance by both hospitals and CDC tuberculosis dispensaries to treatment requirements meant that “over 70% of TB patients, most of whom did not register with county [CDC] TB dispensaries, were estimated to fail to complete standardized treatments” (Ibid., 97). However, registered patients still received the standard treatment at a higher rate from CDC tuberculosis clinics than non-registered patients. Slightly over half of patients that registered and were treated by tuberculosis dispensaries “received the recommended standardized anti-TB treatment”. In comparison, only a fifth of hospital-treated patients received the recommended treatment because hospitals misdiagnosed or delayed diagnosis of tuberculosis patients in order to generate revenue from the sale of drugs and tests, rather than receive the smaller sum given by the government for referrals and tuberculosis treatment (Ibid., 97, 99).

Furthermore, lack of commitment by local governments, demonstrated by inadequate matching of World Bank funds, resulted in lower amounts of financial incentives paid to hospitals and dispensaries to encourage referrals and adherence to recommended treatments. As a result, many CDC tuberculosis dispensaries, which were supposed to provide free treatment, charged for anti-tuberculosis drugs, overprescribed tests, and extended treatment periods (Ibid., 97). In rural areas, village healthcare providers only received 30-40 yuan\textsuperscript{16} per tuberculosis patient (Ibid., 100). They were unwilling to adhere to the strict schedule required for directly observed therapy to be successful. Rural patients were also unwilling, or unable, to undertake the costs of daily visitations to the village health stations to take their medication. As a result, large

\textsuperscript{16} approximately $4.83 - $6.44 in 2013 dollars
numbers of both village workers and patients deviated from the treatment, leading to early dropout and increased drug resistance.

Due to the various revenue-seeking practices of hospitals and CDC tuberculosis dispensaries, a study in 2002 found that the financial burden of tuberculosis treatment had not been lessened by either the World Bank or Ministry of Health funded control projects. Instead, the ostensible shift to free or subsidized anti-tuberculosis treatment for patients only changed when patients would most feel the financial cost of tuberculosis treatment. There were negative correlations between household income and expenditure with poorer patients paying greater paying higher costs for treatment (Xu et al., 369, 370). As before the implementation of the projects, healthcare facilities at higher levels in the healthcare system (e.g., a provincial hospital versus a village clinic) were also associated with higher costs. In the two counties surveyed by Xu et al., poorer individuals spent on average 96-98% of their total household income on medical expenditures (Ibid.). However, in a national survey conducted in 2000, it was found that total costs, including direct and indirect costs, to a new tuberculosis patient could be as much as two times their annual income. Total cost to a relapsed patient was on average about 2 to 2.6 times their annual income (Tang and Squire 2005, 98).

Patient costs combined with poor general awareness of tuberculosis and its symptoms to diminish the likelihood of potential tuberculosis patients to seek healthcare. “A National Health Service survey reported that Chinese people from the poor areas were less likely to self-report illness because they thought chronic cough, having sputum, etc. were not abnormal” (Ibid., 99). For urban migrant workers, who may account for as much as 10% of the Chinese population, the costs of being diagnosed with tuberculosis are even greater. Due to the hukou system, they were unable, for the most part, to receive treatment without leaving their place of work to return to
their home counties and report to the CDC tuberculosis dispensary there (Sleigh 2007, 626). Migrant workers are both poorer and more at risk for tuberculosis, and less able to bear the financial costs involved in treatment (including indirect costs such as travel and lost revenue). They are also less likely to receive adequate treatment because their predominantly rural hometowns do not have the same health and technological capabilities in comparison to the urban areas where they work (Ibid.).

Despite all of these problems, the World Bank funded project, and to a much lesser extent, the Ministry of Health funded project, has been seen as a success by the international community. WHO proclaimed the World Bank project “one of the most successful DOTS-programmes in the world” (Xu et al. 2006, 365). It is included as a case study in a report by the Center for Global Development called Millions Saved: Proven Success in Global Health even though as early as 1996, the source of its success has been debated (Levin et al. 2004; Squire and Tang 2004, 391). It has been used to support claims such as “rapid DOTS expansion can be achieved…to more than 90% [coverage] of target areas and population”, and “a high cure rate can be achieved and maintained” (Chen et al. 2002, 434). These claims have been made even though the claimants acknowledge that extreme underreporting of tuberculosis cases diagnosed outside of CDC dispensaries and discarding of dropout cases are major reasons for the high reported rates of coverage and cure (Ibid.).

In 2002 following the conclusion of the decade-long projects, China received another loan from the World Bank in order to continue providing “free” tuberculosis treatment to patients diagnosed at CDC tuberculosis dispensaries and to expand coverage to counties not included in the first project (Wang et al. 2007, 692). At the same time, the Chinese central government recognized the problems that lack of funding created, from the healthcare provider’s perspective
and from the patient’s perspective. As a result, the Chinese central government drastically increased funding of CDC programs beginning in 2002 from $300,000 to $4.8 million (Wang et al. 2007, 692, 693). It also revised the law by criminalizing health facilities’ failure to report tuberculosis to the national internet-based infectious disease registry. However, it did not criminalize the failure to refer patients to CDC dispensaries or inform patients of the availability of free or subsidized treatment. It also did not address the issue of relapsed cases of tuberculosis, continuing to offer free treatment to only first-time sputum smear-positive tuberculosis patients (Ibid.). Furthermore, even though it had increased funding to the CDC, only a small percentage was devoted to anti-tuberculosis programs, such that in 2005, the Ministry of Health found that these programs still faced a funding gap of 23% (Ibid.). Another problem that was not resolved was the overlapping and competing ministries and bureaus that have a hand in incentivizing healthcare providers to pursue revenue-seeking activities instead of promptly diagnosing tuberculosis patients and adhering to treatment standards.

These factors of funding, corruption, disincentives, and poor infrastructure contribute to the high prevalence of MDR tuberculosis in China and in other countries that rely on directly observed therapy. Because of the DOTS strategy’s reliance on first-line anti-tuberculosis drugs and strict adherence to the treatment schedule, the continuing endorsement and implementation of DOTS in countries like China that have high rates of MDR tuberculosis or near-MDR tuberculosis is counter-productive and ethically unsound. Without addressing the factors to failure that exist on structural and societal levels, continuing and expanding the DOTS-based tuberculosis control program will increase the economic burden of treatment on patients and the societal burden of the disease both within China’s borders and outside them. The high prevalence of tuberculosis in China is deadly tied to with its highly mobile population. As mentioned,
Chinese urban migrant workers account for at least 10% of the population and hundreds of thousands of the Chinese middle class travel abroad as students, tourists, businesspeople and immigrants. Chinese students studying in the United States alone numbered almost 200,000 between 2011 and 2012 (McMurtrie 2012). While these students and their middle-class peers are less likely to be infected with tuberculosis due to their higher standard of living compared to migrant workers, the high prevalence of the disease in China precludes their exception as possible carriers of tuberculosis when they travel.

Yip et al. report that China began reforming its healthcare system in 2009 in response to the problems created by the combination of privatization, bureaucratic price-setting of drugs and services, and government defunding of health care. But Yip’s team is pessimistic about what has already been done. They note the piecemeal way that reforms are progressing, city-by-city, and the addition of further bureaucratic agencies. However, some of these cities have begun the process of changing and removing the pricing structure of drugs and services for their local health facilities in order to decrease the incentive to overprescribe or mis-prescribe them to tuberculosis patients (Yip et al. 2012, 839-840). Local governments have also begun to offer incentives to medical students to practice for limited amounts of time in underserved areas. This effort was enacted to improve quality levels of primary health care in rural townships, but “[r]etention of qualified health professionals in rural areas…has been difficult” due to the continuing lack of government funding towards doctors’ salaries and maintenance of health facilities (Ibid., 839).

Among the difficult issues facing China, as well as the international community, is how to evaluate the progress made by these reforms and projects that are undertaken disparately but overlap in aim, scope, and management. Tang and Squire point to example of the fallacy in
proclaiming the 1991 World Bank funded project a success when the prevalence surveys in 1990 and 2000 that are used to establish the point are different in design, scale, and diagnostic criteria (2004, 391). The result is “a fair bit of statistical contortion” that ignores confounding factors such as differences in socioeconomic status (Ibid.). They also point out, this does not mean the project was a failure and that DOTS was not effective, only that DOTS is, possibly, not the cure-all that WHO makes it out to be (Ibid.).

In the face of what some have called epidemic-levels of MDR tuberculosis, China, other high-burden countries, and the international organizations managing their disease control programs would do well to re-evaluate their reliance on DOTS, and the appropriateness of its unaltered and unaugmented implementation in health systems such as China’s. They also need to refocus attention on the development of new drugs and treatment regimens. Such efforts toward which have stagnated since the endorsement and implementation of DOTS worldwide. Furthermore, as local governments and health bureaus across China have begun realizing, it is necessary to comprehensively address non-clinical and non-health determinants of health outcomes, in addition to obviously health related factors, in efforts to address specific diseases and to improve general health levels. The Chinese government’s reluctance to either fund comprehensive health programs or to ensure universal access to services it has deemed “essential” reflect the failure of the Selective Health Care approach to adequately account for the willful deprivation of health services by governments. By allowing governments to “decide” which services are essential, SHC enables governments to shirk their responsibility to give access and to provide the human right to health.
V. Tuberculosis Control in New York City

Tuberculosis control and health care in the United States, and particularly in New York City during the 1990s, provide a contrast to the approach utilized by China. Although both countries followed a general trend of decreasing tuberculosis incidence until the 1970s and 1980s, China’s program was significantly less effective at decreasing tuberculosis rates than programs implemented in the US. A number of disparities can be accounted for by the difference in financial resources, as well as in other factors such as a smaller population and more advanced medical technology. But the greatest difference can be attributed to the comprehensive approach taken by state health departments to tuberculosis control. The result of the United States’ approach to tuberculosis control has been a general decline in tuberculosis incidence and prevalence. At the same time there has been dichotomization of tuberculosis incidence between native-born populations and foreign-born population.

For the majority of native-born Americans, tuberculosis incidence has been in decline since the mid-twentieth century. However, the homeless, indigent, and immigrant populations did not experience the same rate of decline in tuberculosis incidence and prevalence. While both have declined in these populations, they remain at greater risk of developing and contracting tuberculosis, and constitute a growing majority of tuberculosis patients. Comprehensive efforts during an outbreak in New York City in the mid-1980s to early 1990s had dramatic effects on decreasing tuberculosis risk in these populations, demonstrating the swift effectiveness of such approaches. However, tuberculosis control programs have not advanced with the developments in disease pathology and epidemiology. As in China, it necessary to reevaluate the strategies of the past and adapt them to meet the challenges now presented by the evolution of tuberculosis, healthcare in the US, and the diminishing barriers to disease posed by national borders.
Tuberculosis in the United States

Within the United States, the persistence of tuberculosis is attributed in a large part to the prevalence of tuberculosis in foreign-born individuals, and the high prevalence of tuberculosis in their countries of origin (CDC 2005). Foreign-born individuals have only accounted for the majority of new tuberculosis cases annually since 2003, but they have persistently accounted for over 40% of new cases annually since 1998 (CDC MMWR 2004). In 2011, Asians overtook Hispanics to become the ethnic group with the highest rates of tuberculosis (CDC 2012, 181). The prevalence rate among Asians was 25 times greater than that of Caucasians; over 95% of Asian individuals with tuberculosis were foreign-born (Ibid.; CDC 2012, 183). The Asian countries that accounted for the most cases of tuberculosis in 2011 were “the Philippines, Vietnam, India, and China” (Ibid).

As one might expect, states with the greatest proportion and number of immigrant populations report the highest rates of tuberculosis. The top four states – New York, California, Texas, and Florida – have historically accounted for the greatest number of tuberculosis cases for this reason (CDC 2012). Among native-born individuals, the incidence rate was 1.5 cases per 100,000 persons, indicating the near eradication of the disease in this population. In comparison, the incidence rate for foreign-born individuals was 17.3 cases per 100,000 persons (Ibid.). The incidence rate for Asians was roughly 21 cases per 100,000 persons (Ibid.). These are rates aggregated from numbers reported by individual state health departments to the CDC.

As in China, tuberculosis control in the United States is located primarily at the sub-national level, within state health departments. Likewise, the fragmentary nature of tuberculosis control programs and bureaus across the United States both contribute to and exacerbate the persistence of tuberculosis. Although the CDC releases treatment guidelines for healthcare
providers and health departments across the nation, it is up to individual states to implement effective control programs and take on the bulk of responsibilities against the resurgence of tuberculosis (CDC 2003). Furthermore, institutions such as Immigration and Customs Enforcement as well as state Departments of Corrections also conduct health-related activities. These vary in their implementation of tuberculosis treatment and control programs.

However, there are a number of national institutions that have historically participated in the effort against tuberculosis. The National Tuberculosis Association, now the American Lung Association, was established in 1904 and began the practice of collecting data that came out of surveillance efforts (Schneider, Moore, and Castro 2005, 183). It also released the first guidelines for diagnosing and treating tuberculosis in 1920, in order to more accurately gather surveillance data. In 1944, the US government mandated the establishment of a national anti-tuberculosis program. Although national morbidity and mortality\(^\text{17}\) data were made available by the National Tuberculosis Association in 1933, the United States Public Health Service (USPHS) Tuberculosis Control Program put into place a national TB surveillance system in 1952. At this time, tuberculosis was made a reportable disease, meaning that states were obliged to report the incidence of tuberculosis cases to the CDC. However, states only reported aggregate data until 1985, whereupon the computerization of the surveillance system facilitated the switch to individual case reports. Although state-level health departments were the basic reporting unit in the United States, several other jurisdictional units including New York City, the District of Columbia, Puerto Rico, and protectorates or territories in the Caribbean and Pacific were also required to report tuberculosis data to the CDC (Ibid., 184).

Tuberculosis in New York City

New York State has consistently reported high rates of tuberculosis, the majority of which originate from within New York City. Despite this, the city’s tuberculosis control program has continuously been known as one of the most effective. Prior to the 1990s, the US, and New York City, paralleled China in its health trajectory, though of course, they started at a higher health baseline. Tuberculosis rates consistently declined until the late 1970s, as a result of comprehensive programs and widespread access. In the 1970s, diminished health funding resulted in the weakening of health systems and disease control programs, similar to the effects of the privatization and defunding of the healthcare system in China. While there was an increase in tuberculosis rates across the nation, New York City was especially affected. Its large immigrant population and the economic and societal problems it experienced at the time exacerbated the effects of the weakened tuberculosis control program. Like China, it implemented a DOTS-based treatment program. However, China’s program kept narrowly to the clinical aspects of tuberculosis – screening and treating. In contrast, New York City’s program expanded to include treating and addressing non-disease-based factors that nonetheless influenced treatment success. These included encouraging lifestyle changes (e.g., smoking cessation, drug rehabilitation), improving the living environment, and enrollment in social programs (e.g., Medicare). The comprehensive nature of the treatment regimen, in incorporating the different levels and contributors to health, was the main reason for its clear success, compared to China’s control effort, which was one component of a problem-riddled system.

Prior to the development of effective drug therapies, New York City’s tuberculosis control program saw steady declines in incidence due to the comprehensive nature of the treatment strategy. In addition to free laboratory services and intensive nursing follow-up of
tuberculosis patients, the treatment regimen included education about reduction of risk factors, such as changing one’s diet and proper biological waste disposal to reduce transmission of bacteria (Fujiwara, Larkin, and Frieden 1997, 135). However, upon the development of effective anti-tuberculosis medications, in the mid-twentieth century, outpatient treatment replaced closed sanatoria. Hospital beds devoted to tuberculosis patients were eliminated. Due to the belief that anti-tuberculosis medication no longer made it necessary to monitor lifestyle-related risk factors, these aspects of treatment were eliminated (Ibid.).

Throughout the 1950s and 1960s, the introduction of effective drugs for tuberculosis resulted in an approximately 80% decrease in the incidence rate, although declines slowed beginning in the 1970s (Ibid.). The consistent declines created a sense that eradication was a matter of time, leading to complacency in the public sphere. As a result, in the early 1970s, federal funding earmarked for tuberculosis control was eliminated. Instead Congress introduced block grants for communicable diseases without the requirement that funds be allocated for tuberculosis control, leaving it up to the states to decide how to distribute the funds (Murray 2004). Consequently, many tuberculosis control programs were dismantled or diminished to the point of ineffectiveness. After decades of declines in tuberculosis rates, in 1986, the CDC documented a 2.6% increase nationwide in case numbers (Schneider, Moore, and Castro 2005, 184).

New York City’s tuberculosis program was severely impacted by the change in federal funding, in combination with the across-the-board cuts from the state and city governments that saw social institutions and safety nets dismantled. While the funding cuts resulted in the closure of two-thirds of tuberculosis outpatient clinics, numerous closures of mental health facilities, the advent of the HIV/AIDS epidemic, and shortages of low-income housing exacerbated the effects
of the economic downturn of the 1980s on health outcomes (Paolo and Nosanchuk 2004, 288). As a result, tuberculosis rates in New York City began increasing in 1979, seven years earlier than nationally (Brudney and Dobkin 1992, 442). From 1982 to 1992, the homeless population nearly tripled in number. The city attempted to ameliorate the situation by establishing homeless shelters, but the gathering of so many people, many of whom were substance abusers, only exacerbated the transmission of tuberculosis (Paolo and Nosanchuk 2004, 288).

When New York City public health officials noticed incidence rates increasing in 1979, they obtained a small amount of additional funding from the CDC to initiate a preliminary supervised therapy program for tuberculosis patients that had been identified as non-compliant (Fujiwara, Larkin, and Frieden 1997, 136). Factors that had been identified in the non-compliant target population were alcoholism, substance abuse, repeated missed clinical appointments, and mental health problems (Brudney and Dobkin 1992, 444). While these factors were not addressed by the health workers making daily visits to observe patients taking their medication, they were characteristic of patients who had been determined to lack the capability to regularly ingest their medication. However, due to the privacy infringement issues that were among the non-economic factors New York, and other city and state, health officials did not implement universal DOTS for all TB patients.

The preliminary supervised therapy program only encompassed daily home visits to patients to supervise ingestion of medication. It did not fulfill all the aspects of DOTS, and was even more understaffed and underfunded than the regular tuberculosis control program. Although treatment completion rates and cure rates were above 90%, the lack of staff restricted the number of patients in the supervised therapy program to about 60, less than half the number of patients referred each year (Brudney and Dobkin 1992, 444; Fujiwara, Larkin, and Frieden
1997, 136). As a result, the majority of tuberculosis patients were enrolled in the regular anti-
tuberculosis program for ambulatory patients, despite observed non-completion rates as low as
11%, and cure rates as low as 15% (Paolo and Nosanchuk 2004, 289). A consequence of such
low completion and cure rates among tuberculosis patients was increasing incidences of both
primary and secondary drug-resistant tuberculosis from infection of drug-resistant strains and
from development of drug-resistance, respectively (Fujiwara, Larkin, and Frieden 1997, 137).

In 1992, the levels of tuberculosis had risen to epidemic levels. There were nearly 4000
cases that year alone. Concerns about infringements of patients’ liberties began to be seen as
lesser evils than uncontrolled tuberculosis. Federal, state, city, and community organizations and
health bureaus – ranging from the CDC, the New York State and City Tuberculosis Control
Programs, local university hospitals, and community groups – agreed to organize and implement
a full-fledged DOTS program (Ibid.). DOTS was made the standard of care for tuberculosis,
albeit by a voluntary opt-in basis. However, in order to opt-out of DOTS, both patient and case
worker needed to justify why supervision could not be accomplished at either the patient’s home
or workplace (Ibid.). As the program progressed and DOTS providers became more invested in
their patients’ outcomes, informal locations for DOTS expanded to include street corners, public
transportation stations, or even crack (cocaine) dens (Ibid., 139).

The program was established with multiple entry points and both public and private
providers, including community centers, hospitals, homeless shelters, and prisons. Furthermore,
social services agencies that facilitated access to entitlements, substance abuse treatment, and
housing were all enlisted to participate in incentivizing patients to adhere to treatment regimens
(Klein and Naizby 1995, 3). Several DOTS clinics were established within residential structures,
such as homeless shelters and halfway houses, where patients were most at risk of non-
compliance. This directive was among a number of actions taken by the Department of Health to remove barriers to compliance. Other incentives and subsidies provided were financial incentives, transportation tokens, food coupons, food supplements, and even meals at the DOTS location. If a patient missed an appointment, case workers from the Department of Health would visit all known hangouts of the patient as well as all listed addresses in any databases, such as shelter check-ins or addresses registered with Medicaid (Fujiwara, Larkin, and Frienden 1997, 139). However, intermediary interventions such as phone calls, home visits, and other reminders were also found to assist adherence to DOTS regimens (Ibid.). Most of all, initial testing for drug susceptibility and close monitoring of side effects allowed caseworkers to effectively treat patients with maximum effectiveness and minimum drop-out.

Aside from the comprehensive nature of the New York DOTS program, it was also notable for two additional activities. The first was the implementation of a prevention and prophylactic program for contacts of DOTS patients who were likely to have been infected and at risk of developing the disease. These contacts were found when DOTS patients were initially referred and taken into the treatment program. As with DOTS, they were required to take a combination of drugs according to a strict schedule and were offered the same or similar incentives and enablers to encourage adherence. One strategy used by DOTS providers was distribution of incentives to family members of the patient upon completion of courses of treatment. In this way, patients were more motivated to complete treatment and held to greater accountability by their family members (Ibid.). The second activity that the DOTS program did to increase adherence was to provide incentives proportional to the risk of non-compliance. As an example, patients with HIV co-infections and who were also substance abusers, or former or
transitioning inmates, were all offered incentives with greater total financial value to complete DOTS or the prevention therapy (Ibid., 140).

Perhaps the most effective element of the DOTS program was the leeway afforded to providers to threaten non-compliant patients with detention until they were either deemed non-infectious or until they were cured (Ibid.). The New York City Health Code was amended in 1993 to specifically allow for the detention of non-compliant patients until the patients reached either, depending on the judgment of their caseworker. Although fewer than 50 patients were detained at any time, the existence of such an option gave both patients and DOTS providers greater incentive to ensure compliance to DOTS. Although issues about intrusions into patient privacy were among the concerns that dogged the program’s initial implementation, the fact of the matter was that the populations with which DOTS providers were working had always been subject to greater infringements of liberties during their access to social services (Ibid.). For example, social stigmatization of the poor, the homeless, and substance abusers has resulted in strict conditions to access to homeless shelters (Phelan et al. 1997, 323)\(^\text{18}\). The two-sided nature of services provision to these populations was applied in this way towards DOTS patients (Fujiwara, Larkin, and Frienden 1997, 141).

The effect of the DOTS programs were almost immediate, despite the fact that in the first year in 1992, only slightly over 500 patients out of approximately 3800 reported cases were enrolled in the program (Ibid., 140; NYC DOHMH 1994a). Incidence rates peaked in 1992 and declined about 14% in 1993 to roughly 3200 cases, as the DOTS program expanded to include greater numbers of patients (NYC DOHMH 1994a). In 1994, the decline continued, with the

confirmed diagnosis of roughly 3000 cases (NYC DOHMH 2004b). According to some estimates, in the same period 1992 to 1994, the DOTS program prevented at least 4000 transmissions of tuberculosis and at least 800 patients from progressing into the active disease (Paolo and Nosanchuk 2004, 290). From 1992 to 1998, incidence rates declined roughly 4% annually due to the success of DOTS in preventing or curbing infectiousness (NYC DOHMH 2007, 31).

However, the more incidence rates declined, the less attention, funding and effort were put into DOTS. The financial and assistive incentives are no longer offered. In 2003, after a decade of decline, a small increase of about 1% was documented. It was just enough to renew efforts to control tuberculosis in the city but sent a signal about the importance of constant programmatic support and funding (NYC DOHMH 2003). Furthermore, treatment of immigrants and latent tuberculosis infection, which had been issues during the outbreak, became greater in importance as the case rate for foreign-born patients stayed stagnant while the case rate for native-born patients decreased. Contact finding for current or referred tuberculosis patients was less vigorous than a decade ago, with patients treated at NYC Bureau of Tuberculosis Control chest centers having a much lower rate of completion of prevention therapy (Ibid.).

However, consistently declining rates ultimately led to the closure of chest centers until in 2011, there was only one Bureau-operated center per borough in the city. In addition to managing the roughly 700 cases that were diagnosed in 2011, the chest centers also conducted follow-up evaluations for over 3100 immigrants with tuberculosis screening classifications (NYC DOHMH 2012). Between 2009 and 2011, there was a gradual shift in the proportion of patients treated by non-Bureau providers from just over 40% of cases to over 50% of cases (Ibid.). With federal and state funding again impacted by the economic climate, there was no
way the Bureau could keep up with the number of people identified as either active or latent disease carriers. From 2009 to 2011, there were about 2100 new cases identified, but nearly 3800 additional suspects. From the new cases, there were 15,000 contacts identified, only about 12,000 of which were evaluated. Among those, roughly 19% were found to have latent tuberculosis infection (*Ibid*.).

In order to target the growing proportion of cases among the immigrant communities in the city, foreign-language campaigns were launched in collaboration with community groups and local businesses. Furthermore, small outbreaks in ethnic neighborhoods, such as Sunset Park and Harlem, prompted quick responsive action in the treatment of patients and the genotyping of the tuberculosis strain. There was continual follow-up in the form of community education and enlistment of local businesses and social groups in the dissemination of information (*Ibid.*). However, the non-mandatory nature of treatment for latent tuberculosis among immigrants, even those that arrive with tuberculosis screening classifications, indicating the presence of latent tuberculosis, only increase the risk of later disease activation (Bakalar 2013).

As always, the cost to the city and the state, as well as to the patient, remains the central issue about tuberculosis treatment. The city provides free testing and DOTS treatment at Bureau of Tuberculosis Control clinical centers. But the closing of centers and subsequent downsizing of center staffs, accompanied by the discontinuance of incentives, has made it much more difficult for both patients and latent carriers to obtain treatment. The same can be said of tuberculosis programs nationally; they experienced the same patterns of outbreak in the 1980s and 1990s and responded in much the same way with variations of the DOTS regimen.

Similarly, other states have gradually scaled back and dismantled their tuberculosis programs since the end of the outbreak of the early 1990s. Instead, they rely on the mandatory
pre-immigration medical exam to prevent the entry of tuberculosis carriers. However, the problem with this is that individuals with latent tuberculosis infection are among those allowed to immigrate, and undocumented immigrants bypass the medical exam entirely. Furthermore, although immigrants now account for a majority of tuberculosis cases, cases in native-born populations still constitute a significant portion of the total caseload. Though these cases still mainly occur in indigent populations such as the homeless, they also occur wherever people live in poor, crowded conditions such as in prisons or housing projects. In contrast to New York City during the outbreak, federal and state institutions such as Immigration and Customs Enforcement (ICE) and state Corrections facilities in fact contribute to the problem of tuberculosis transmission and drug resistance. Although these institutions test admitted individuals for tuberculosis upon intake, they are often prevented from initiating or completing patient treatment regimens by orders from upper levels that result in the transfer or deportation of patients (Schneider and Lobato 2007, 10).

The comprehensive actions that made up the DOTS program in New York during the outbreak of the 1990s resulted in swift and consistent declines in tuberculosis incidence and prevalence. In contrast, the current diminished and piecemeal programs across the United States, much as in China, contribute to the persistence of tuberculosis in the US and foreshadow the development of drug-resistant tuberculosis in the US. Although DOTS was the core of the various anti-tuberculosis efforts and programs across the United States and in China, it was the additional factors, i.e., the inclusion of seemingly unrelated institutions and factors, in both the provision of patient incentives and the alteration of lifestyles that made the New York program as successful as it was in as short a time frame. The market structure of the health industry in the US is similar to that in China, and the majority of services are obtained through private
institutions. But the difference in government funding, the commitment of service providers, and the recognition of the patients themselves of the dangers posed by the resurgence of tuberculosis made it possible for New York to take a horizontal approach to tackling the outbreak. However, as in the 1970s, the appearance of eradication threatens the security of funding for the program. Furthermore, the lack of evolution in the program to actively address the dual issues of increasing drug resistance and of latent infections threatens to set back the gains that have been made in the past two decades. Also, the failure to address increasing rates of independent risk factors such as homelessness and poverty across the nation have negative implications going forward.
VI. Conclusion

Overview

Through the discussion of historical and prevailing theoretical paradigms in global health, this essay explores a few of the multiple overlapping layers of influence which inform and shape global and national health policy decisions made by international organizations and state governments. This essay also explores the policy interpretations of these paradigms as they are implemented in developing and developed countries. Using the framework of tuberculosis control concretizes the theoretical arguments that were discussed in this essay and demonstrates the effects of poor global health policies on national and global health outcomes. At the same time, this framework also illustrates the difficulty of attributing failures to singular sources because of the constant shifts in policy within national borders and within international organizations. However, that does not preclude the recognition of certain elements, such as structural adjustment conditions to loans, as having had a greater role in shaping ineffective national health policies than other factors. Through the discussion and acknowledgment of the wide range of factors in global and national health, and their role in the failures of specific health efforts (using the case of tuberculosis control), this essay seeks to move the various discourses beyond the framework of the theoretical paradigms to focus on areas of agreement and progress.

Because of their seeming definitiveness and opposition to one another, the paradigms discussed have formed the foundation for justifying and interpreting global health policy decisions. The paradigms are broadly centered on two opposing ideologies based respectively in neoliberalism and economic-efficiency, and in the human right to health. The advantage of the former, at least in the political sphere, is its clarity of boundaries and its enabling of governments to withdraw or provide health services as their finances and ideologies allow. Selective Health
Care, which arose from these principles, calls for a mixed private-public provision of health care. The government bears little of the burden and is responsible for only basic primary services, which would be neglected by the market or otherwise unavailable to citizens. It also includes services for certain diseases of global or national threat, which citizens were unlikely to be able to afford on their own. In this thesis, the case of China’s health system after its Opening and Reform in the early 1980s and from the 1990s onward, after it received a World Bank loan and implemented the structural changes stipulated by the Bank, is an example of a Selective Health Care system. As it shifted from a command economy into a de facto capitalist country, comprehensive access to all health care services were revoked as collective insurance schemes were dismantled. Instead, the Chinese government only provided basic primary services, such as vaccinations. Several disease-specific programs were slowly reintroduced as the combination of widespread poverty and lack of healthcare access began to have consequences in the Chinese population. The tuberculosis control program, which was enabled by partial financing from the World Bank, was one such program. This program followed the standard set for disease-specific programs within Selective Health Care systems; it was narrowly focused on detection and treatment, and disregarded factors that were not immediately related to tuberculosis.

The standardization of narrowly focused, disease-specific programs that depended on clinical treatment and medical technology was a consequence of the rapid succession of medical discoveries in the twentieth century and the success of the smallpox eradication campaign. Diseases such as polio and measles were largely beaten back through vaccinations. It seemed that all diseases were likewise susceptible to these new medical technologies. However, characteristics of disease pathology (not discussed in this paper) also played a role in the relative ease with which people were able to control those diseases. In contrast, rapidly evolving disease
causing bacteria, such as those that cause tuberculosis, cannot be approached in the same fashion. As a consequence, WHO’s recommendations for tuberculosis control programs, which rely on a treatment regimen over fifty years old, does not, and will not, have the same efficacy as those earlier eradication and control programs. Similarly, these same strategies will not have an effect against diseases like the multiple flu strains, coronaviruses (e.g. SARS), and retroviruses (e.g., HIV/AIDS), all of which have biological and pathological characteristics that have so far made them resistant to eradication through the same methods of vaccination and treatment.

Another theoretical paradigm, rooted in the human right to health, gave rise to the concept of Comprehensive Health Care (CHC) systems. In these systems, the government, or a public-private mix, provides primary care services in addition to higher level health services, including disease screening, control, and treatment. For example, some single payer health care systems such as Canada’s are examples of CHC systems in that the government provides for all medically necessary health services. These services can run from annual physicals to surgery or long-term care. However, Comprehensive Health Care systems are rarer and harder to identify due to several reasons. Already mentioned are those reasons of cost and difficulty of implementation that have made them unpopular to governments. The lack of clarity of the meaning and extent of the human right to health, and the resulting difficulty of ascertaining when a healthcare system has met and fulfilled the parameters of this right, are further reasons for the difficulty of recognizing and identifying CHC systems. However, elements of Comprehensive Health Care have been employed towards specific health goals such as the control of tuberculosis in New York City.

The economic crisis of the 1980s, in combination with other factors, led to the resurgence of tuberculosis to “epidemic” rates in New York City. In order to address the problem, public
health officials expanded the scope of their tuberculosis program, from simple screening and treatment dispensing to directly observed therapy. Public health officials then moved outside the clinic and into untraditional areas, such as homeless shelters and public transportation hubs, in order to ensure patient adherence to treatment regimens. Initial incentives of financial payments to offset transportation costs grew to include food stamps and greater amounts of money. Ultimately, treatment grew to include health and life counseling, such as smoking cessation and drug rehabilitation, since these were factors that greatly contributed to the failure of treatment adherence. The addressing of health- and non-health related aspects outside of the disease directly is another component of Comprehensive Health Care. The overall effect of this aggressive, all-inclusive health campaign was not only a rapid reversal of the rising incidence of tuberculosis but better overall health outcomes in enrolled patients. In contrast, China’s tuberculosis control program was, at best, effective in slowing the increase in tuberculosis incidence in certain well-off provinces. At worst, the program contributed to the increasing prevalence of drug-resistant tuberculosis.

There has been proven efficacy of programs that incorporate elements of CHC and the acknowledged link between quality of health care access and quality of individual health status by health organizations such as WHO. But the financial costs of sustaining CHC systems in the long run continue to be seen as having greater weight against the health benefits to be gained. This is particularly true as chronic diseases requiring long-term palliative care overtake acute diseases in countries across the globe.

**Trends and Issues**

Several trends and issues emerged as important influences or consequences of the global health paradigms. One important influence is the continuing discursive and political centering of
international relations in the nation-state. The foundation of international organizations such as
the World Health Organization (WHO) and the World Bank, alongside the increasingly
transnational and borderless nature of certain aspects of modern life (e.g. communications,
business), led some observers to speculate on the atrophying of the Westphalian nation-state’s
supremacy in the international field. But the actions and recommendations of international
organizations such as WHO and the World Bank belie that claim. They are driven to a large
extent by the politics of individual donor states, and are patterned on historical relationships
between imperialist countries and their colonies. The theories and philosophies that justified the
“civilizing” influence of imperialists prior to World War II are still applied to justify the degree
of control the World Bank has over developing nations’ various structural policies, particularly
in the area of health. One such consequence of this relationship is the propensity for developing
nations’ health policies to concentrate on disease-specific interventions rather than on the
development and implementation of comprehensive public healthcare systems. Based on data
discussed in this thesis, this pattern of behavior mimics that of imperialist nations, who, reluctant
to invest in the health infrastructures of their colonies, instead concentrated on containment of
acute health issues. The result has been the prolongment, and in some ways exacerbation, of the
status quo between developed and developing nations. In turn, that has been a major contributing
reason for the implementation of Selective Health Care systems and poor health outcomes in
World Bank loan-receiving countries, such as China.

A consequence of the chain of effects leading from transference of the imperialist-
colonialist relationship, to the preference for Selective Health Care systems and standalone
disease-specific health interventions, is disease control programs’ continuing reliance on
outdated technology and treatment regimens. Particularly in the case of tuberculosis, WHO’s
recommended treatment regimen has not significantly changed since it was first formulated in the early 1990s. Furthermore, when WHO adopted the strategy, it was already a number of decades late, relative to when the regimen was first proven effective. At that time, the dangers of non-adherence and the resulting drug-resistance were already strongly emphasized. However, WHO’s recommended strategy failed to ensure strict adherence, though the fault lay equally as well with individual nations’ health providers, with the World Bank (who guided the implementation of the strategy in many developing countries) and with other parties.

The international reliance on rapidly outdated and increasingly ineffective drugs has had several effects. Nonstandard dispensation of these drugs as well as regimen non-adherence led to the evolution of drug-resistant tuberculosis. Continuing treatment with the same drugs only increased the resistance of the disease-causing bacteria. At the same time, new drugs and methods of testing were not being developed because there was no incentive to do so. New second-line drugs were only used in developed countries for their few cases of multi-drug-resistant tuberculosis because of their high cost. Attempts to introduce second-line drugs into the standard WHO regimen were met with resistance from multiple fronts. However, the main reason was that WHO wanted effective implementation of its standard first-line treatment regimen to be achieved before introducing second-line drugs. As such, health officials in developing countries, especially those who depended on financial loans from WHO and the World Bank to fund their health programs, were reluctant to independently introduce non-standard regimens due to the relatively low cost-benefit tradeoff of treating drug-resistant patients.

WHO ostensibly addressed the problem of the cost of second-line tuberculosis drugs through the creation of a committee, to which health programs and organizations could apply for
membership. Benefits included drastically reduced second-line drug prices, made possible through the pooled demand of the members’ patients. However, the committee also only allowed membership to those programs and organizations that followed WHO guidelines and had already implemented an effective tuberculosis treatment program based on first-line drug regimens. As discussed in this thesis, the existence of effective tuberculosis control programs using first-line drugs precluded the need for second-line drugs, since effectiveness was measured by cure rates and drug susceptibility. The catch-22 thus created only encourages providers to disregard drug-resistant patients as non-adherent patients rather than drug-resistant. In doing so, the fault lies with the patient, not the provider which appears to be following WHO guidelines. On the other hand, this means that the patient may have some chance of receiving second-line drugs.

Despite these precautions, the appearance of resistance to second-line drugs has increased around the world. As with resistance to first-line drugs, cases of extensively drug resistant tuberculosis occur in areas with that receive uncertain supplies and quality of drugs, mainly China, India, and Africa. In the 2000s, increasing drug resistance, not only in tuberculosis but in other diseases, renewed scientific efforts to develop new tests, vaccines, and drugs to target these diseases. New research into the pathological mechanisms of these diseases also gave greater insight into possible methods of treatment and vaccination. However, the pace of research has not kept up with the development of drug resistance. Only one new drug has been approved by the FDA since the turn of the century, and a promising vaccine trial failed.

Furthermore, the continuing economic recession has begun to produce withdrawals in health funding across the world that will have consequences not only in regards to tuberculosis, though it is certainly affected, but to the health of the global population. The economic situation in Greece led to massive shortages of essential drugs. In early 2013, Los Angeles experienced an
outbreak of tuberculosis in its Skid Row that eventually spread across California and still continues to affect individuals and communities. Both first- and second-line drugs, as well as tuberculin skin tests, are in short supply in the US as demand increases in the developing world.

**Recommendations and Discussion**

Ultimately, this discussion of the theoretical paradigms and their practical implementations and implications seeks to demonstrate the futility of operating within these frameworks, as well as trying to interpret policy actions with these frameworks. One has proven ineffective at providing adequate access and adequate care; the other has proven too costly and ideologically disruptive to implement. However, there are rhetorical and policy elements that proponents of both paradigms have found in common. The downside is that, for the most part, these are rooted in historical imperial paternalism, aimed now towards developing countries and native- and foreign-born indigent populations, and have grabbed onto outdated technology. Between WHO and the World Bank, this common ground emerged in the form of utilitarian arguments for the provision of healthcare services, with the assertion that healthier populations were more productive populations. However, the stronger emphasis on the part of the World Bank for economic efficiency in healthcare provision encouraged the formation and implementation of SHC and targeted health programs, such as the WHO-led STOP-TB campaign and the “Global Plan to Stop TB”.

While WHO has significantly increased the scope of the Global Plan to include health system strengthening and other non-clinical factors, such as community education and engagement, the primary emphasis still remains on the implementation of directly observed therapy programs using only first line drugs. The decline in global prevalence rate of tuberculosis that has occurred since the development of WHO’s DOTS based tuberculosis
strategy may be pointed out by some readers. While DOTS has had some effect in reducing worldwide prevalence rates, its prevention and treatment effectiveness is not proportional to the danger the various strains of tuberculosis pose. WHO’s branding and marketing of DOTS was a key component to the widespread adoption of the regimen and strategy. It is understandable for WHO to be reluctant to invest resources in devising and marketing a new strategy, as it did DOTS. But the current strategy’s weaknesses need to be addressed. Moreover, WHO needs to review all its disease-specific strategies and remove barriers to greater treatment and healthcare access, such as the aforementioned policy conditions to accessing second-line tuberculosis drugs and updated diagnostic and treatment technologies as they are developed.

It may be argued that the rhetorical shift in academic, and other, publications towards “global health” is indicative of current or future policy shifts towards more integrated health approaches. There has not been enough evidence of these to confirm or deny these shifts. Approaches to tuberculosis, as with other diseases, for the most part continue to be perceived and implemented vertically, in isolation from other health- and disease-related factors. On the other hand, increasing numbers of organizations and actors like the Bill and Melinda Gates Foundation have entered the global health field in the last few decades, separate from the auspices of WHO and the World Bank. Through initiatives like the “Grand Challenges in Global Health”, the Gates Foundation, among others, is acting outside the traditional ideological frameworks by foregoing the ideological discussions that dominate the World Bank and WHO’s approach to health aid. Instead, they attempt to target the underlying cross-sector reasons for poor health outcomes in addition to addressing the symptoms of illness. As an example, the aim of the Grand Challenges is to incentivize cross-discipline innovation and research to address problems at every level of health and society. By going around institutions like WHO and the World Bank, these new actors
in global health give health stakeholders an avenue of action outside of the prevalent paradigms that may in turn lead to new solutions to prevailing health problems.

An issue not discussed in depth in this thesis is that which pharmaceutical companies present to public health. They hold increasingly important places in modern society as the world’s population ages and have demonstrated their growing influence as a sector during negotiations for international agreements. It is important to incentivize pharmaceutical companies to develop and produce more effective drugs to treat infectious diseases found primarily in developing countries, rather than focusing their attention on chronic lifestyle diseases. Patent laws regarding drugs need to be reviewed such that essential drugs can be manufactured and obtained cheaply, and yet maintain a high quality standard. Globally, governments need to devote more money towards funding health systems and research, not only in their own countries but in developing countries. The ease of travel today has securitized the issue of health and disease, though this aspect is quickly forgotten once the latest flu or virus passes.

More research should also be conducted in pathology and the biological mechanisms of disease, and the findings better integrated into policy development. While some clinical research into new drugs, vaccines, and diagnostic tests is being conducted again, less research is being conducted in the pathology of disease transmission and infection. For example, it was only in

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19 Two agreements that are particularly relevant to this point are the General Agreement on Trade in Services (1995) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (1995). Patent protections for drugs and conditions for the manufacture of generic drugs were among the issues that the pharmaceutical companies (primarily in the US) were able to influence to their advantage. For more information on this topic, see Ellen F.M. T’Hoen. “TRIPS, Pharmaceutical Patents and Access to Essential Medicines: Seattle, Doha and Beyond”. In Economics of AIDS and Access to HIV/AIDS Care in Developing Countries: Issues and Challenges, edited by Jean-Paul Moati et al., 39-68. Paris: ANRS, 2003.
2013 that one research study discovered the pathological similarity in immune system responses to leprosy and tuberculosis bacteria, despite the known similarities between the two diseases.\textsuperscript{20} It is unknown how or whether this information will be integrated into pharmaceutical research and policy development but WHO and other originators of health and disease-related policies need to consider how new findings in this field would improve effectiveness of disease control and treatment strategies.

Another issue that was not discussed in depth in this thesis includes health screenings for immigrants and disease pathology. Screening immigrants for disease is another strategy where lingering imperial paternalism, racism, and the securitization of health intersect. Likewise, its effectiveness at preventing disease further should be reexamined and translated into more equitable immigration policies. This avenue of discussion is especially pertinent to the United States due to the large numbers of both documented and undocumented immigrants that arrive every year. Although only a small percentage of these have any sort of infectious diseases, whether active or latent, the US’s ability to secure its borders and ensure the health of its residents is a national conversation, vis-à-vis the US government’s responsibility to provide healthcare.

This return to a central question of global health illustrates the interconnectedness of the issues relevant to people and nations today, in contrast to the limited responses of organizations and governments to these questions and issues. As this thesis utilized cross-disciplinary data, so should global health actors, from WHO and the World Bank to national and local governments, expand outside the bounds of the paradigms discussed in this thesis, and consider data from all sectors when creating or implementing health policies.

I. Introduction


II. Discursive Paradigms in Global Health: Between the World Health Organization and the World Bank


III. Global Health Paradigms Through the Lens of Tuberculosis Control Policies (Post-WWII to the Present)


### IV. Case Study: Tuberculosis Control in China


V. Case Study: Tuberculosis in the United States


Annotated Bibliography


This book discusses the myriad ways that global health intersects with other disciplines, ranging from international law and national security. Davies comprehensively discusses the actors and stakeholders in global health and how their respective positions influence their decision-making process. Furthermore, Davies discusses the theoretical paradigms guiding the interactions within the global health field, as well as between global health and other disciplines.


This collection of essays exhaustively covers the range of issues in global health, from the role of WHO to gender-based biases to the politics of aid. The authors discuss the transition in the international field from a Westphalian system to a post-Westphalian system, based on the linguistic transition of “international” to “global”. In addition, further theoretical and ideological background for the development of the global health paradigms are discussed in depth.


One of the seminal papers that exemplify the goals of the Selective Health Care paradigm, this report lays out the theoretical reasons for health approaches based on SHC. Using multiple examples of disease- and issue-specific programs that have shown “success”, such as the China tuberculosis control program, it attempts to demonstrate how funding targeted at specific goals is preferable to overall system-wide improvements.