“EMPTY STOMACHS DON’T HAVE EARS”:

THE ROLE OF LOCAL CONTEXT IN SHAPING THE INTEGRATION AND IMPLEMENTATION OF

HEALTH EDUCATION FOR NEGLECTED TROPICAL DISEASES

by

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(Under the Direction of Sharan B. Merriam)

ABSTRACT

Neglected Tropical Diseases (NTDs) place a health burden on millions of people worldwide. These diseases are particularly harmful because they tend to strike most commonly in poor rural populations and urban slums in developing countries where are limited. In addition, populations are often infected by several of these diseases simultaneously, and particularly in sub-Saharan African countries. Integrating vertical disease programs is an innovative approach to NTDs, and integrated health education is an important feature of this approach. Two health behavior models helped frame this study: the *Health Belief Model* and the *Transtheoretical Model*. In addition, two health education models for NTDs framed this study: the *PRECEDE-PROCEED Model* and the *Interactive Model*. The purpose of this study was to understand how the local context shaped the integration and implementation of health education in Togo’s pilot Neglected Tropical Disease project. This study was guided by the following research questions: (1) How has the health education for Togo’s pilot NTD integration project been: a) integrated, and b) delivered thus far? (2) What factors shape the integration of NTD health education

messages and their delivery? A basic qualitative study design was used to explore these questions. Interviews were conducted with twenty participants from the national, district, and village levels of Togo's health system.

In Togo's pilot project, NTD health education messages were integrated through the health education materials. In particular, integration occurred through the process of developing key messages, and through designing the pictures in the materials. Using these materials, integrated health education was delivered primarily through village-level group meetings with the support of village leadership. The factors that shaped integrated health education were the socio-cultural factors and structural factors of: 1) gender, 2) local beliefs about illness and diseases, 3) the role of Traditional Healers, 4) poverty, and 5) lack of infrastructure.

Two conclusions emerged based on the findings of this study. First, integration of NTD health education hinges on selecting topics and pictures that are appropriate at the village level. Second, the delivery of integrated NTD health education is dependant upon the support of village leadership and the participation of village members.

INDEX WORDS: Integrated health education, Neglected Tropical Diseases, Health education, Developing country, Togo, Adult education.

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DEDICATION

This dissertation is dedicated to my two beautiful children, Aidan and Gabriella, whose warm love, bright spirits, and sense of humor inspire me every day. This dissertation is also dedicated to my loving husband Michael, whose encouragement and constant support were there when I needed it most, and made this accomplishment possible.

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“Empty stomachs don’t have ears.”
Togolese proverb

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CHAPTER ONE

INTRODUCTION

Background of the Problem

Neglected Tropical Diseases (NTDs) burden poor populations in developing countries around the globe where millions of people are currently infected and millions more are at risk (Engels & Savioli, 2006; Lammie, Fenwick, & Utzinger, 2006). NTDs are grouped together because they tend to occur in the same populations, where it is common for people to be simultaneously infected by several of these diseases (Lammie et al., 2006). NTDs are a heterogeneous group of bacterial, viral, and parasitic diseases that are treatable with existing drugs, yet have been neglected in terms of international attention, research, priority setting, and funding (Engels & Savioli, 2006; Kolaczinski et al., 2007) .

The international community is beginning to acknowledge that the global impact of NTDs has been underestimated and needs to be reassessed (Engels & Savioli, 2006). Even so, current World Health Organization (WHO) measures which compare disease burdens demonstrate that the burden of NTDs due to disability (29%) and death (22%) is comparable to or exceeds each of the "big three" which have been the primary focus of international disease prevention efforts (Lammie et al., 2006): malaria (13% & 12%), tuberculosis (11% & 18%), and HIV/AIDS (28% & 31%) (WHO, 2002). While attempts have been made to quantify the disease burden of NTDs, it is believed that the estimates have been too low (Molyneux, Hotez & Fenwick, 2005).

While there are many areas of the developing world where NTDs have a significant impact, the effect is most profound in Africa where it is estimated that 90% of the global disease burden from the most prevalent NTDs occurs (Molyneux, Hotez, & Fenwick, 2005). These diseases are: urinary and intestinal schistosomiasis, lymphatic filariasis, onchocerciasis, soil-transmitted helminth infections, African trypanosomiasis, kala-azar, buruli ulcer, and blinding trachoma (Molyneux et al., 2005). Parasitic and bacterial infections are found worldwide, but tend to flourish in warm tropical climates such as those in Africa, which facilitate rapid breeding as well as reducing the time for the development cycle within the intermediate hosts which transmit the infections (Onwuliri et al., 2005). Other factors are significant contributors to high infection rates, such as poor nutrition, poor living conditions, and an unsanitary environment, all of which relate back to general conditions of poverty (Onwuliri et al., 2005). Poverty is prevalent for millions of people in Africa, which puts them at higher risk of NTD infection.

Once infected with NTDs, people's lives are negatively impacted in many ways. Pain and suffering results from many physical effects such as ulcers, internal organ damage, disability due to anemia and gross deformities of the face, limbs and genitals, blindness, impaired growth and development, brain damage, and can ultimately result in death (Onwuliri et al, 2000). Once disabled by one or more NTD, people cannot be as economically productive and become poorer as a result (Onwuliri et al., 2005). This poverty is compounded by the cost of treating the illness, all of which leads to a cycle that reinforces poverty. This poverty can be framed not only in terms of material wealth, but also in a lack of relevant information needed to prevent infection (Onwuliri et al., 2005). As a result, the poor suffer disproportionately from NTDs (Molyneux, Hotez & Fenwick, 2005; Lammie et al., 2006).

While NTD health education and NTD programs in general have been neglected in the past, the international community is beginning to recognize the need to focus on this problem. Recently, major donors to the developing world have paid more attention to NTDs in the form of significant funding allocations. In 2006, the US congress approved an appropriation of $350 million for an integrated approach to NTDs, which has bolstered struggling programs and encouraged additional donors (Lammie et al., 2006). Funding has been allocated by the Bill and Melinda Gates Foundation, the World Health Organization, the President's Initiative on NTDs, and other bilateral and multilateral programs. These new and welcome programs are focused on medical interventions to control morbidity or eliminate seven NTDs. However, a broader approach is needed in order to address the complex issues of preventing and eliminating NTDs, and the inclusion of health education is a necessary element of any new approach that includes the goal of sustainability due to the critical role of human behaviors and activities that perpetuate the infection and re-infection cycles.

NTD Program Integration

Controlling and eliminating NTDs in Africa is typically approached through vertically structured programs with each addressing a specific disease (Molyneux et al., 2005). These programs operate in parallel to one another and for seven diseases use mass drug administration (MDA) over targeted but overlapping geographic areas as the primary method of disease control (Molyneux et al., 2005). NTD programs also tend to use similar program activities and approaches, and therefore overlap operationally (Brady, Hooper, & Ottesen, 2006; Lammie et al., 2006).

Since many NTDs occur in the same populations with significant geographical and demographic overlap, there is an opportunity to simultaneously treat people for multiple diseases

in an integrated fashion (Molyneux et al., 2005). In addition, some of the drugs simultaneously impact other diseases that are under-funded or not funded at all (Lammie et al., 2006; Molyneux et al., 2005). Operationally, vertically structured NTD treatment programs often utilize the national health system structure that is already in place to implement disease prevention activities, and therefore employ the same village volunteers, community health nurses, and district-level doctors and health officers to assist with program activities (Lammie et al., 2006). Program cost is always a consideration for funders, and a constraining factor on reaching disease treatment and elimination goals; however, by integrating multiple NTD program activities disease treatment could be more cost effective while increasing treatment opportunities for individuals and increasing positive health outcomes.

Integration offers an innovative approach to treating and preventing NTDs; however, it is a new approach that has been implemented to varying degrees in ten countries, but is in the initial stages of research. Several challenges have to be resolved, such as logistical issues, drug interactions, and the impact on local health systems (Lammie et al., 2006). USAID has allocated funding for integration and the WHO has published some guidelines on the drug use for MDAs (Tadesse, Hailemariam, & Kolaczinski, 2008). In order to be effective, integrated programs will need to be adapted to the particular ecological, epidemiological, and socio-cultural setting of each country, particularly in the critical area of health education.

Health Education and Behavior Change

The literature and preliminary research available on NTD integration focuses on the opportunities and challenges presented by particular diseases, drug uses, and operational issues, but no research could be found on health education for program integration. However, there is an understanding among program researchers of the need for an increased role of health education

within the substantial task of addressing NTDs (Molyneux et al., 2005). Effective education and communication have been insufficient because of limited resources and a de-emphasis on these activities (Kolaczinski et al., 2007). However, program directors and NTD researchers working in the field recognize that in order to successfully treat NTDs and integrate programs, "resources are urgently needed to improve on development, implementation, and evaluation of the health-education of each programme" (Kolaczinski et al., 2007, p.491).

The emphasis in NTD research, treatment, prevention and elimination efforts have focused on the encouraging advances and uses of drug treatment options. However, it is critically important in the control and elimination of tropical diseases that affected individuals can gain adequate health knowledge, in a manner which impacts their health practices and infection-related behaviors (Onwuliri et al., 2005). This is especially vital in the case of NTDs due to the role of human behaviors in their re-infection cycles (Onwuliri et al., 2005). Therefore, health education is important for improving the impact of the MDA, and for increasing the sustainability of the program after the MDA is stopped.

NTD transmission is enabled by human activities, which result in inadequate environmental sanitation such as indiscriminant dumping of refuse, and indiscriminant defecation. Poor personal hygiene also contributes to disease transmission due to inadequate hand washing, face washing and washing limbs. Handling contaminated soil, contaminated fruits and vegetables, and using feces as fertilizer also contribute to infection. These activities can also lead to contaminated water sources. In turn these behaviors lead to direct human to human infection and create conditions for human to host/vector re-infection, since many NTDs are carried by intermediary hosts such as mosquitoes, flies, or snails (Onwuliri et al., 2005). Local culture, beliefs and practices affect NTD patterns and prevalence; therefore any comprehensive

approach to prevention and elimination must include health education that is adapted to the local context (Onwuliri et al., 2005).

Health education components of NTD programs are often inadequate in their approach to local contexts. In general, health education is delivered by the medical practioners who view their role as delivering medical information as expert to client (Daley, 2006). The emphasis is on presenting content in a one-directional communication that focuses on medical facts (Daley, 2006). This approach does not incorporate a broader understanding of health. Definitions of *health* vary in the literature, but for the purposes of this study the definition of health will align with the UNESCO (1997) definition developed at the fifth international conference on adult education which states: "Health is essentially a social construct: it is created in the interaction between people and their environments in the process of everyday life: where people live, love, learn, work, and play." (p.5) This definition reflects the reality of NTD programs, which must address the social, cultural, and environmental factors that contribute to disease transmission. NTD health education which addresses behavior change is critical for interrupting the infection cycles and therefore is essential for program success.

Health Behavior Change and Adult Education

There is an abundance of research on health behavior change; however, behavior change models, theories, and approaches tend to be developed in the West and therefore we must proceed with caution when applying them to African contexts (Amenyah, 2005). This point is particularly salient since the limited impact of NTD programs on health behavior change thus far is attributed to a lack of attention to culture and other contextual factors, which are integral to health behavior change (Kolaczinski et al., 2007; Lammie et al., 2006; Onwuliri et al., 2005). Although there is little research on NTD health education, the literature on behavior change

approaches to HIV/AIDS in Africa is informative. Approaches such as *planned behavior theory* and *motivational interviewing* have had limited success in Africa (Hadera, Boer, & Kuiper, 2007; Thevos, Kaona, Siajunza, & Quick, 2000). Some adult education research also focuses on health behavior change for HIV/AIDS in Africa using learner-centered approaches (Preece & Ntseane, 2004), transformative learning (Amenyah, 2005), and critical theory (Preece & Ntseane, 2004), again with mixed results. While this research is not focused on NTD health behaviors, it provides insight into what has worked and what challenges might be faced when planning and designing NTD health education programs that focus on behavior change. Since there is very little research on NTD health education, and no research on NTD health integration, it is necessary to draw from other areas of research. However, this research from related fields further emphasizes that for NTD health education, "integrated programmes must be adapted to eco-epidemiological and socio-cultural settings" (Lammie et al., 2006, p.318).

While the concept of NTD program integration is relatively new at the global level, there is a momentum toward implementing this innovative approach. While more than ten countries have experimented with compiling a few NTD programs, Togo adapted a unique approach by having the Ministry of Health develop and elaborate all the tools for integrating the control of seven diseases. This process started with initial meetings between the Togo Ministry of Health and the Centers for Disease Control and Prevention and Health Development International in 2004. The approach was piloted in May 2007 and May 2008, in one district of Togo, with plans to implement the program nationally as soon as funding is available (Mathieu et al, unpublished manuscript). Initial findings from two evaluations of the pilot project indicate the need for more and improved health education (Verani et al, unpublished manuscript).

Statement of the Problem

Neglected Tropical Diseases (NTDs) have an enormous impact on the lives of people in developing countries, where these diseases tend to be chronic due to a lack of resources to effectively address the problem. NTD infections affect the world's poorest people and multiple diseases tend to occur in the same populations, particularly in sub-Saharan Africa where NTDs are prevalent. NTD infections cause many serious health problems including chronic illness, anemia, impaired growth and development, blindness, disability, and death. Individuals and families are burdened with a reduced quality of life, a restricted ability to earn a living, and the financial burden of medical treatment, all of which combines to deepen levels of poverty. Poverty in turn leads to greater vulnerability to diseases. Until recently, funding NTD prevention has not been a priority internationally; therefore, the level of resources needed to adequately treat these diseases has not been available to countries most in need.

Efforts to control NTDs are typically implemented through vertically structured national programs that are specific to one disease, with each disease having a different level of funding and different protocols, and with some diseases left unfunded. Therefore, multiple parallel programs are usually in place within one country, and not all diseases are treated due to a lack of resources. However, recently there has been a global impetus toward integrating NTD programs at a national level in order to increase the availability of health services without increasing the resources needed to do so. The integration of program activities combines existing strategies to target multiple diseases simultaneously. By integrating programs, previously unfunded diseases can be incorporated into national programs by attaching them to well-funded disease treatment activities. This innovative approach has the potential to increase positive health outcomes by effectively treating more people for more diseases.

In order to maximize the benefits of the integration approach, all program activities are considered for integration, including health education. Health education is vital for disease treatment and elimination because the education component of such programs makes crucial information about medication and disease prevention behaviors available to the people whose health is at risk. Re-infection due to human activities is a significant and critical feature of the infection cycle that perpetuates NTDs in sub-Saharan Africa, necessitating an approach that goes beyond medical treatment alone. Health education has an important role in motivating people to take the drugs during the MDA, and in educating people about the causes, symptoms, treatments and prevention of NTDs. Because integration is a new approach to NTD treatment, little research is available on program integration in general, nor can any research be found that specifically examines how NTD prevention and elimination programs' health education components have been integrated and what factors affect that integration.

Purpose of the Study

The purpose of this study was to understand how the local context shaped the integration and implementation of health education in Togo's pilot Neglected Tropical Disease project. This study was guided by the following research questions:

1. How has the health education for Togo's pilot NTD integration project been: a) integrated, and b) delivered, thus far?
2. What factors shape the integration of NTD health education messages and their delivery?

Significance of the Study

This study will make significant practical and theoretical contributions to the fields of adult education, health education, and more generally, into health education in developing countries. NTDs are prevalent in many developing countries where limited health care resources

and limited availability of accessible NTD health education compound cycles of poverty. NTDs cause many serious health problems, as well as being implicated in increased susceptibility to other serious and fatal infectious diseases such as malaria, tuberculosis, and HIV/AIDS. Therefore, any findings from this study which lead to improving health outcomes for individuals and populations affected by NTDs through an increased knowledge of how to approach NTD health education, both theoretically and in practice, would be a significant contribution to a dire global health problem.

This study will provide insight into the Western theories and models of health promotion, health education, and health behavior change, which have had limited applicability or success in African contexts thus far. This study will examine areas where these theories and models may need to be revised or adapted to African contexts, which share some similarities, and more broadly to other developing world contexts. Health behavior change research in Africa has not directly addressed the issues surrounding NTD infections, so this study represents a new area of inquiry. In general, NTD researchers acknowledge the need for health education as a vital part of the difficult task of preventing and eliminating NTDs. Furthermore, this study is focused on program integration, which is a new global approach to NTD treatment and prevention that holds possibilities for increased health outcomes. By linking program integration and NTD health education at this early stage, this study may further enhance the expected improvements that integration can make to NTD health outcomes.

Adult education perspectives may also contribute to improvements in NTD health education that could enhance health outcomes. An important step is investigating the socio-cultural, structural, and contextual factors that present opportunities and barriers for NTD health education through the lens of adult learning. This perspective may help confirm or give new

insight into the applicability of adult learning principles and practices to NTD health education in sub-Saharan African countries and by extension to other developing countries. Adult education can also make a significant contribution to efforts to encourage health behavior changes related to disease and infection by contributing a learner-centered approach that has been largely absent in NTD health education.

While this study will make contributions in several fields outlined above, it will also have significant implications for practice. As more international attention is beginning to focus on NTD prevention and elimination, all approaches to reaching improved health outcomes will be valuable. In the specific case of Togo, the findings from this study will provide the basis for the development of a revised and integrated NTD health education program, to be used by district doctors, district health nurses, and community health workers. In general, NTD program directors and program planners need more information on NTD health education in order to include effective health education in their programs. Health promoters and health educators also need improved knowledge in this area as they develop and design program approaches, materials, training programs, training tools, and practice protocols. The findings of this study could be applied to settings in other sub-Saharan West African countries, where other NTD programs are in place. The findings of this study may also be more loosely applied to other low-income countries in other regions, depending on the context. Adult educators working in developing countries will be able to either apply lessons learned in this study to other NTD programs or build on them. In general, Western and Southern practitioners will benefit from an increased awareness of factors affecting learning and health behavior change in a context substantially different from those in which Western theories and models were developed.

Examining the limits on the applicability of theories and practices across contexts is informative to researchers and practioners in health education, health promotion, and adult education.

Definition of Terms

For the purposes of this study, the following definitions will be used:

Health - This study aligns with the UNESCO (1997) definition developed at the fifth international conference on adult education which states: "Health is essentially a social construct: it is created in the interaction between people and their environments in the process of everyday life: where people live, love, learn, work, and play." (p.5).

Health Education is defined as any combination of learning materials and activities that promote an understanding of the targeted disease or diseases and promotes adaptation to health related behavior (Breiger, 1996).

Mass Drug Administration - "The large-scale treatment of endemic populations once or twice yearly to control or eliminate NTDs with four different drugs." (Mani, T. R. , Rajendran, R. Sunish, I.P., Munirathinam, A., Arunachalam, N., et al, 2004)

Neglected Tropical Diseases (NTDs) – This term refers to a group of up to 16 diseases in total, depending on which source is referred to, which tend to overlap in populations and individuals and most often occur in rural areas of low-income counties. "The term 'NTDs' is used because they exclusively affect the poor and marginalized in low-income countries and, until recently, received little or no advocacy or funding." (Kolaczinski et al., 2007, p.485). Seven NTDs are identified as being the most prevalent and approachable with current control tools: three soil-transmitted helminthiases (STHs), schistosomiasis, lymphatic filariasis (LF), trachoma, and onchocerciasis.

Program Integration – This term refers to: "linking vertical NTD control programs with a preventive chemotherapy package of up to four drugs. Because these drugs are either donated or are available generically, integrated control of the seven NTDs could be achieved at low cost and at great savings. The major elements of integration include coordinated use of preventive chemotherapy according to WHO (World Heath Organization) guidelines, inclusion of disease-control activities within the broader national health system and strong community involvement using community health workers." (Hotez, Raff, Fenwick, Richards Jr, & Molyneux, 2007, p 511).

CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this study was to understand how the local context shaped the integration and implementation of health education in Togo's pilot Neglected Tropical Disease project. This study was guided by the following research questions:

1. How has the health education for Togo's pilot NTD integration project been: a) integrated, and b) delivered, thus far?
2. What factors shape the integration of NTD health education messages and their delivery?

This chapter reviews the related literature that informs this study, and includes the following sections: Neglected Tropical Diseases (NTDs), NTD program integration, relevant health education theories and models, and behavioral and social science research on health education for infectious tropical diseases in developing countries.

Neglected Tropical Diseases

Neglected Tropical Diseases (NTDs) have impacted humanity since ancient times and currently affect approximately one billion people living in mostly poor tropical and subtropical regions worldwide (Engels & Savoli, 2006; Lammie, 2006; WHO, 2006). Millions more individuals are at risk of infection since NTDs are present in the environment (Lammie, 2006). Over 70% of the countries that are impacted by NTDs are low-income and lower-middle income economies, and 100% of low-income countries are affected by five or more NTDs (WHO, 2006). These diseases are concentrated almost entirely in poor populations in developing countries,

particularly in rural areas (Molyneux, Hotez, & Fenwick, 2005). Therefore, poor populations suffer and are infected at disproportionately high rates (Lammie, 2006).

NTDs are a group of bacterial, viral, and parasitic diseases that are grouped together because of some commonalities. Although they differ as diseases, they have a tendency to impact the same poor populations where individuals are often infected by several diseases at once (Engels & Savioli, 2006; Lammie, 2006; Molyneux, Hotez & Fenwick, 2005). Many NTDs co-exist in the same eco-epidemiological settings and therefore are related to each other spatially due to geographical overlap (Lammie, 2006). NTDs are a group of diseases that have been similarly neglected by the international health community as a research focus, and as a donor priority (Engels & Savoli, 2006; Kolaczinski, 2007). Various sources have overlapping lists of diseases that are considered to be in the NTD category, and there are multiple ways of counting the diseases. For example, soil-transmitted helminthiases (STHs), which includes hookworm, trichuriasis, and ascariasis, is sometimes counted as a group of diseases, and other cases is counted as three diseases. The World Health Organization (2006) is currently focusing on fourteen diseases in the NTD category (see Table 1).

Many NTDs are preventable, treatable, and curable, using currently available drugs, yet conditions of poverty contribute greatly to the infection and re-infection cycles, and to the limited control of these diseases. Some NTDs such as Lymphatic Filariasis (LF) have been targeted for elimination in some countries, and Guinea Worm has been targeted for eradication globally, as these are realistic goals for these diseases. Many NTDs are spread through host vectors such as insects or snails, and infections can be attributed to unsafe water, poor housing conditions, inadequate sanitation, poor nutrition, and limited access to health services (WHO, 2006). Interventions that target NTDs are based on two foundations: 1) early diagnosis and

quality care in the context of poverty and limited resources, and 2) large-scale regular preventive treatment in conjunction with transmission control, vector control, improved environmental sanitation, and improved standards of living (WHO, 2006).

TABLE 1: WHO List of 14 NTDs

WHO List of 14 NTDs	
In this box, NTDs targeted by the Togo project: ▪ Soil-transmitted helminthiases (hookworm, trichuriasis, ascariasis) ▪ Schistosomiasis ▪ Lymphatic Filariasis (LF) ▪ Onchocerciasis ▪ Trachoma ▪ Guinea Worm Disease	▪ Buruli Ulcer ▪ Chagas disease ▪ Cholera/Epidemic diarrhoeal diseases ▪ Dengue/dengue haemorrhagic fever ▪ Endemic Treponmatoses ▪ Human African trypansomiasis ▪ Leishmaniasis ▪ Leprosy

Half a million people die each year from NTD infections (Hotez et al, 2007; Lammie, 2006), yet the primary public health impact of these diseases is chronic disability and morbidity. In addition, new research indicates that the burden of NTDs has been substantially underestimated (Engels & Savioli, 2006). Children are the most susceptible to the effects of these infections, which impair development and cause chronic and permanent disability (Kolaczinski, 2007). These diseases can cause lifelong pain, social stigma, and a reduced ability to work, which in turn deepens levels of poverty. Because these diseases often overlap geographically, individuals are often infected by more than one of these diseases simultaneously.

Neglected Tropical Diseases are considered to be "neglected" on several levels. At the community level some of these diseases, such as Lymphatic filariasis (LF) and Leprosy, are neglected due to the fear, prejudice, and social stigma associated with those disfiguring diseases. Consequently, individuals with these diseases are often silent, so the diseases are poorly documented (WHO, 2006). At the national level, these diseases may be neglected politically and

by health services because they often affect marginalized populations with little political power to insist on health resources. In addition, although these diseases have a significant impact on quality of life because of on-going pain and disability they cause, they are not major killers. In poor nations with limited resources, the priority must be given to diseases with higher mortality rates such as malaria, HIV/AIDS, and tuberculosis (Molyneux, Hotez, & Fenwick, 2005; WHO, 2006).

NTDs are overlooked by Western nations, which are not directly impacted by these diseases. They are not threatened by these diseases because they do not spread easily and tend to be localized to specific geographical regions and particular climates (WHO, 2006). NTDs do not represent a significant commercial market for pharmaceutical companies because low-income countries are the most severely impacted, yet they do not have the resources to fund the development of new diagnostic tools, drugs or other treatments, nor do they have the resources to purchase them if they are developed (Molyneux, Hotez, & Fenwick, 2005; WHO, 2006). The fact that less than 1% of all new drugs registered from 1975 to 1999 were for tropical diseases illustrates this point (WHO, 2006). The overall result of the neglect of this group of diseases has been a lack of funding and advocacy to address NTDs (Kolaczinski et al, 2007).

At the international level, these diseases have been neglected in several ways. Donors and other areas of the international health community have given priority to three infectious diseases: malaria, HIV/AIDS, and TB, while other diseases relating to poverty have been overlooked (Kolaczinski et al, 2007; Molyneux, Hotez, & Fenwick, 2005). The United Nations' Millennium Development Goals (MDGs), which were endorsed by the international community, especially focus on reducing by half the number of people living in absolute poverty (http://www.un.org/millenniumgoals). The MDGs are major drivers of international activities

regarding health and poverty, yet they do not target NTDs specifically, but rather they focus on the "big three": malaria, HIV/AIDS, and tuberculosis (TB). Due to limited local financial resources in the countries impacted by these diseases, and the huge burden of the diseases, the priority for resources must go to diseases with high mortality rates – malaria, HIV/AIDS, and TB. The worldwide impact of NTDs has been overlooked especially in light of recent WHO (2002) measures that compare the burdens of diseases. According to these measures, the burdens of disability and death due to NTDs is comparable to or exceeds each of the big three. Current research also indicates that some NTDs have immunosuppressive effects, which may lead to an increased susceptibility to malaria, HIV/AIDS, and TB, although this research is still inconclusive (Finchum, Markus & Adams, 2003). Therefore, reducing NTDs infections may also dovetail with efforts to reduce the impact and infection rates of the big three.

While NTD programs have generally been neglected, the international community is beginning to recognize the importance of the problems posed by these diseases, and there is an increasing financial and political commitment to controlling these diseases (Kolaczinski et al, 2007). This recent development has been precipitated by substantial advocacy for the feasibility and cost-effectiveness of integrating the control of these diseases (Kolaczinski et al, 2007). In 2006, the US congress approved an appropriation of $350 million to address NTDs, which has strengthened struggling programs and brought attention to the issue, which in turn has persuaded other donors to seriously consider addressing these diseases. (Lammie, Fenwick & Utzinger, 2006). In the last year, major donors have increased their focus on NTDs by announcing substantial funding allocations. The Bill and Melinda Gates Foundation, the WHO, and the President's Initiative on NTDs as well as other multilateral programs have committed to funding mass drug administration (MDA) programs for NTDs in sub-Saharan Africa. However, those

funding commitments have not yet translated into funding availability, and the current global economic crisis may negatively impact the amount of funding that actually becomes available.

NTDs have a significant impact in many areas in the developing world; however, the prevalence and intensity of these diseases is most severe in sub-Saharan Africa. Ninety percent of the world's disease burden from NTDs is thought to occur in Africa (Molyneux, Hotez & Fenwick, 2005). Parasitic diseases tend to proliferate in warm, humid tropical climates such as those in sub-Saharan Africa because they facilitate accelerated breeding and a condensed time needed for the development cycle within the intermediate hosts that transmit NTD infections (Onwuliri et al., 2005). The result of these factors means that there is an increase in infective stages and therefore an increase in the number of people who are infected (Onwuliri et al, 2005). The effects of poverty in sub-Saharan Africa add to the high infection rates by creating condition in which the host vector has increased opportunities for breeding. Poor nutrition, poor living conditions and a lack of knowledge about the diseases and prevention measures, all contribute to increased infection rates and connect back to overall conditions of poverty (Onwuliri et al., 2005). Poverty is a widespread problem for millions of people and for all countries in sub-Saharan Africa, and as a result these populations are at risk for NTD infections. In turn, NTD infections contribute to poverty and decreased productivity for individuals and nations.

NTDs impact people's lives in many ways. The symptoms of NTDs include ulcers, damage to internal organ, gross deformities of the face, limbs, and male genitals, and swollen body parts. Other symptoms include nausea, fever, headache, vomiting, itching skin, loss of appetite, and weight loss. NTDs also cause disabilities due to anemia, permanent blindness, permanent deformities, impaired growth and development in children, and brain damage (Onwuliri et al., 2005). Once ill or permanently disabled by one or more NTD, people are

impacted economically because of lost work days and reduced productivity. There is also an impact on family members and caregivers of those who are infected with these diseases, because they also lose workdays in order to care for their loved ones. These diseases also reduce school attendance for children, thereby limiting their economic options in adulthood and contributing to the likelihood that they will remain in poverty throughout their lives. In addition, the cost of treating the illnesses places a financial burden on families.

While the likelihood of NTDs is increased by the conditions of poverty for individuals and countries, the impact of the symptoms of NTDs is to negatively affect economic activity, thereby perpetuating the cycle of poverty in a downward spiral (Onwuliri et al, 2005; WHO, 2006). The effects of NTDs on individuals, families, and communities is to limit economic and material wealth, reduce quality of life, and limit opportunities throughout a person's lifetime. The cycle of poverty in this context can be seen as a lack of adequate health services to treat these problems medically, but also as a lack of adequate health knowledge and health education which would provide the relevant information needed by people and their communities to actively participate in preventing NTD infections (Onwuliri et al, 2005). The need to address NTDs in a more aggressive and successful way requires an innovative approach that has a larger impact than focusing on one disease at a time.

NTD Program Integration

The innovative approach of program integration for treating NTDs has been discussed in the international NTD community, written about in the literature, and piloted in several countries. Programs that are integrated at some level are currently underway in Burkina Faso, Ghana, Mali, Niger, Nigeria, Uganda, and Togo (Hotez et al, 2007). NTD program integration is based on the concept of addressing NTDs through interventions that treat multiple diseases

simultaneously, rather than in separate vertically structured disease-specific programs. This approach is appealing due to the new availability of drugs that treat more than one disease, possible cost savings of treating several diseases concurrently, and the potential for improved health outcomes that result from treating diseases through integrated preventive chemotherapy programs (PCPs) that might otherwise be untreated due to under-funding. Program activities could be an area of savings, and therefore "a powerful argument for integration is the belief that significant cost savings can accrue from combining mapping activities, training and social mobilization, logistics and project management" (Lammie, Fenwick & Utzinger, 2006). Therefore, the benefits of program integration are economic and logistical, and may increase coverage when treatment strategies for multiple NTDs are aligned together.

NTD program integration is a promising approach in part due to the availability of four drugs: albendazole, ivermectin, azithromycin, and praziquantel, which are either donated by multi-national corporations or are now available in generic form, and therefore large-scale disease treatment is now possible at a low cost (Hotez, et al, 2007). These four drugs together treat seven of the most common NTDs: soil-transmitted helminthiases (hookworm, trichuriasis, ascariasis), schistosomiasis, lymphatic filariasis (LF), onchocerciasis, and trachoma (Molyneux, Hotez & Fenwick, 2005). Integration as a new strategy for treating NTDs through mass drug administration (MDA) reduces morbidity and increases program success at a lower cost (Lammie, Fenwick & Utzinger, 2006). The preventive chemotherapy using these four drugs is extremely cost effective and is estimated to be in the range of $0.50 per person per year (Molyneux, Hotez & Fenwick, 2005). This is a critical feature of program integration because resource constraints - both human and financial - require public health programs to be as cost-effective and efficient as possible (Lammie, 2006). Reliance on a wide array of public-private

partnerships has provided the availability of these four drugs, while community-based drug delivery engages communities and ensures a low cost of MDA delivery (Lammie, 2006).

Typically the approach to controlling and eliminating NTDs in Africa is through disease-specific vertically structured programs that operate nationally (Molyneux et al, 2005). These programs operate alongside each other within the same country and often treat overlapping populations. In general, each program identifies regions in the country where the individual disease is endemic through population surveys, and then treats people in that area through Mass Drug Administration (MDA). During the MDA, individuals who meet the treatment criteria based on factors such as age, height, and weight are given the drug or drugs in the appropriate dosage. In this way, large numbers of people in endemic regions are treated within a short timeframe of one to two weeks in order to interrupt the transmission of the disease (Molyneux et al, 2005). These national programs operate in corresponding ways by using MDA as the main approach to disease treatment, prevention, and elimination in the cases of LF and Trachoma. Vertical programs also parallel each other by treating the same people in the same geographic regions since many of these diseases occur in the same populations (Lammie Fenwick & Utzinger, 2006). Prior to integration, each national program has had its own guidelines, reporting mechanisms, timelines, and health education materials and delivery protocols (Mathieu, unpublished manuscript).

In addition, these vertical programs are often delivered to communities through similar operational mechanisms that utilize the country's existing health system, particularly community health workers, or village volunteers who deliver program activities at the community and village level. On the other hand, the programs are not coordinated with each other in terms of time, resources, procedures, or accountability measures. Some diseases are well-funded, while

others are under-funded when compared to the local health needs, and some diseases are not funded at all in particular countries. NTDs programs are supported by a variety of donors and organizations, which may be working with the country's Ministry of Health, but may not be aware of each other's activities or well versed in other programs' goals. Given the fact that there is a significant degree of NTD program overlap on many levels, and that the over-arching issues of individual and national poverty constrain disease treatments, prevention, and possible elimination, the new approach of NTD program integration provides a way forward and optimism for the future of addressing these terrible diseases, through this practical cost-saving approach.

The potential cost savings that result from integrating NTD programs in sub-Saharan Africa is determined by several factors. The target populations eligible for treatment for each disease will overlap to a greater or lesser degree within each country. Most sub-Sharan African countries are endemic for a combination of four or more NTDs, and the extent of the geographical overlap of these diseases determines the cost-savings that can result from integrated program activities such as the MDA (Brady, Hooper & Ottesen, 2006). The per-person cost of treating the diseases through separate programs, and the degree of overlap at the programmatic and operational level also determines the total savings of integration at the country level (Brady, Hooper & Ottesen, 2006). Projections of cost-savings are based on some uncertainties regarding the actual geographical distribution and prevalence of the diseases, which is not well known in some countries. In addition, there are other uncertainties about program activity costs, which are not always well documented and therefore make it difficult to make concrete projections about cost savings (Brady, Hooper & Ottesen, 2006).

Since NTD program integration is a new approach, many challenges to implementation exist, and some may not be fully realized since there is little experience to draw on yet. There are gaps in knowledge about the prevalence of NTDs at the local level, and a lack of detection methods for some diseases (Hotez et al, 2007). Some programmatic barriers to integration may exist at the local, national, or international levels that would impede the degree and rate at which integration could be implemented. There is also uncertainty about potential barriers to the integrated MDA due to drug interactions, and the future availability of the four drugs (Brady, Hooper & Ottesen, 2006). Nevertheless, the savings resulting from integrating MDA activities has been projected to be significant, between 10% to 50% savings for programs with similar stand-alone delivery strategies (Brady, Hooper & Ottesen, 2006). There are also unanswered questions about the potential for drug resistance to develop over time due to the rapid expansion of drug use (Hotez et al., 2007; Lammie et al., 2006). The complexity of implementing integrated programs also leads to questions of feasibility and local capacity. Some program activities may be more suited to a vertical approach such as surveillance, some treatments, and vector control (Canning, 2006). Finally, priority setting should include a forum in which communities and individuals affected by targeted diseases can have input into decision-making processes in order to enhance outcomes and sustainability (Canning, 2006).

The integration approach to the control, prevention, and possible elimination of Neglected Tropical Diseases (NTDs) in sub-Saharan Africa is currently largely dependent on a biomedical approach through mass drug administration (MDA) to affected populations. This approach has had some remarkable successes, for example the elimination of trachoma as an ongoing public health problem in Morocco (Smits, 2009). Despite this success, the MDA approach faces some significant problems in the achieving the required coverage due to uneven

access to funding and donated drugs, which has implications for limiting sustainability (Smits, 2009). Developing drug resistance is also a concern regarding long-term reliance on MDA for disease control (Smits, 2009). Unfortunately, while this a crucial component of battling these diseases, they are also sustained by levels poverty, and by other social and behavioral factors (Manderson, et al, 2009). Those working to fight these diseases have made great strides through innovations such as program integration, yet the social and behavioral factors that enable host vectors and pathogens to survive, thrive, and continue the re-infection cycle must also be included in any sustainable effort to control and reduce the impact of these diseases. Therefore, community participation in the MDA must be complimented by participation in vector control, improved hygiene and environmental sanitation. This dimension of NTD control, prevention and elimination programs is enabled through health education and information as critical features of the sustainability of NTD programs (Smits, 2009).

Health Behavior Change Models

The underlying focus of much of the health education for infectious tropical disease programs in developing countries is to facilitate health behavior changes in order to improve health outcomes for individuals and communities. Therefore, it is helpful to understand basic health behavior change models that have been in use for many years and have been applied to many health issues. The Health Belief Model and the Transtheoretical Model are discussed below to provide insight into how health behavior change is thought to occur. However, it is important to note that both of these models were developed in Western countries and are premised on different social contexts than may be found in developing countries. Their applicability to significantly different social contexts may be limited, particularly rural areas of developing countries where health-related resources are limited. These models may provide

insight into individuals' health behaviors, but should be seen as one dimension of a larger context in which individuals make health-related decisions.

Health Belief Model

The Health Belief Model (HBM) is one of the mostly widely used models in Western health-related contexts to explain health behaviors. This model was developed in the 1950s when public health providers noticed that individuals were not taking advantage of new public health programs. This model was eventually expanded and applied to public health problems and interventions to explain health behavior (Rosenstock, 1974a; Strecher & Rosenstock, 1997). In this model, ways of knowing and acting in relation to health are based on beliefs and attitudes, and are influenced by environmental factors and a person's interactions with others (Kirscht, 1974).

The Health Belief Model describes health behavior change as a sequence of linear stages and phases, which are mediated by cognition (Rosenstock, 1974b). In addition, it is thought that learning experiences shape subjective beliefs over time (Kirscht, 1974). Therefore, according to this model health education has a role to play in influencing health behavior change. In this model, a person's motivation to undertake a health behavior is divided into three main conditions: 1) individual perception, 2) mediating or moderating factors, and 3) likelihood of taking action. The first condition, *individual perception*, is influenced by the perceived susceptibility to and severity of a health issue. The second condition, *mediating or moderating factors*, can encompass many variables including knowledge, psychosocial variables, demographic variables, adherence, and motivational cues. Finally, the third condition, *likelihood of taking action*, is influenced by perceived and real benefits and barriers, self-efficacy, and intention (Strecher & Rosenstock, 1997). According to this model, health behavior change is

triggered by a readiness to begin action, which in turn is based on a balance of the multiple beliefs. The balancing of beliefs about susceptibility, severity, behavior efficacy, barriers, and self-efficacy lead to an individual deciding to take action and make a health behavior change. Some research shows that perceived barriers may be the most influential on behavior change (Strecher & Rosenstock, 1997).

One of the main criticisms of the Health Behavior Model is that it is based on values that arise out of Western culture's belief system about health (Janz & Becker, 1984). It is also value-laden in that one of the underlying assumptions is that there are correct and incorrect health-related beliefs. Thus, interventions based on this model focus on molding people's perceptions to conform to "appropriate" health beliefs. As a consequence, this model may be somewhat limited when applying it globally to health care contexts that differ greatly from the West. This model does not directly address the origins of an individual's health beliefs such as culture, socio-economic status, environmental factors, and life experiences, which inevitably shape a person's perspective on a particular health issue.

Nevertheless, this model is a useful tool in assisting researchers in studying and conceptualizing health interventions in developing countries, particularly where qualitative methods were used to explore the meaning of the three main conditions outlined by the model as they apply to a particular context (Rainey & Harding, 2005). Such studies inform other elements of a health intervention program, such as the adult education component which could be developed along with community members to address issues that arise in any of the three conditions outlined by the Health Belief Model.

Transtheoretical Model of Behavior Change

The Transtheoretical Model (TTM), sometimes called the Stages of Change model, was developed in the 1970s and combined the variables of change from many existing theories at the time (Prochaska, 1979). The model was originally applied to smoking cessation and then to a variety of other health-related behaviors. This model focuses on understanding the processes of change that help people intentionally change their behavior. This model describes six stages that evolve as a process rather than arriving at each stage as an event. The first stage is *precontemplation* in which people deny that there is a health problem, they may be resistant to change, or may be unaware that the behavior has negative consequences. They may even be demoralized and have given up on behavior change. In this first stage, the individual has no intention of making a change in the next six months. The second stage is *contemplation* in which a person may recognize the benefits of making a change. They also continue to overestimate the difficulty of changing, and are not ready to change; however, they are planning to make a change in the next six months. In the third *preparation* stage, the person has begun small steps toward the goal of making a change in the next month. In the fourth *action* stage, a person is actively making changes to the behavior or is acquiring new behaviors. In the fifth *maintenance* stage, the person has continued the behavior change for at least six months, and is actively resisting a relapse into the old behavior. The sixth and final stage is the *termination* stage in which there is no desire to return to the former behavior.

Originally the TTM was presented as a linear model in which people progressed through the stages in a straightforward fashion. However, as this model was tested in various settings, it was found that a spiral pattern is the best depiction of how people make health behavior change because most people have relapses and return to earlier stages. People can also remain in the

contemplation stage for long periods of time (Prochaska, DiClemente & Norcross, 1992). Further research also found that when planning health interventions, individualized and interactive approaches such as one-on-one counseling produced better results. This is because individuals are at different stages of change and individual approaches allow for stage-matched interventions (Levesques, Cummins, Prochaska & Prochaska, 2006).

While the TTM has provided insight into health behavior change in Western settings, there are some aspects of the model that limit its applicability to many other settings. The model is oriented to individual health interventions, which limits its usefulness in applying it to larger community-oriented or population-oriented health interventions. This model may have limited applicability in developing countries where funds and resources are very restricted and do not allow for availability of individualized interventions. In addition, the stages of this model are tied to six-month increments of time, which may not make sense in other societal and cultural contexts. Concepts of time are socially constructed, and this pivotal aspect of describing TTM stages of change would need to be examined and adapted to a non-Western context. This model is premised on the availability of the resources needed to make the health behavior change when the individual reaches the preparation and action stages of change. However, this assumption cannot be made in all contexts, particularly in developing countries where resources are limited.

Both the *Health Belief Model* (HBM) and the *Transtheoretical Model of Behavior Change* (TTM) document the stages of change that individuals are theororized to pass through in the process of adopting a new health-related behaviors. Both models identify stages or conditions in which external influences or factors that may intervene to initiate the change. In the case of the HBM this is referred to as *mediating or moderating factors*, and in the case of TTM this may occur in the *contemplation* stage or in the *preparation* stage. These are the points at which health

education interventions can begin to play a role in facilitating, supporting, and sustaining the relevant health behavior change.

Health Education for NTDs

Health education for NTD programs has two main areas of focus: 1) encouraging participation in the Mass Drug Administration (MDA), and 2) addressing health behaviors. The ways that humans interact with the environment leads to exposure to NTDs through host vectors and results in cycles of infection and re-infection. This aspect of NTD cycles is addressed by programs in a variety of ways including through health education approaches. At a basic level, health education concentrates on learning with the goal of helping people solve health-related problems (Brieger, 1996). The section below begins with a definition of health education for the purposes of this study, and is followed by a description of the PRECEDE-PROCEED Model (Green & Krueter, 2005) for the planning, development, implementation, and evaluation of health education and promotion programs. The PRECEDE-PROCEED Model has been adapted and applied by Kloos (1995) to do research on one NTD, Schistosomiasis. Next is a description of Schall's (1998) *Interactive Model* of health education for tropical disease control, and discussion of how this model compliments the PRECEDE-PROCEED Model. This section ends with a review of the literature on materials and delivery strategies for health education for NTD intervention projects.

Definition of Health Education

For the purposes of this study, *health education* is defined as any combination of learning materials and activities that promote an understanding of the targeted disease or diseases and promotes adaptation to health related behaviors. Health education for infectious tropical diseases such as NTDs in developing countries can be approached through a variety of lenses. Recent

studies on health behavior interventions for a variety of chronic infectious diseases that impact sub-Saharan Africa demonstrate how difficult it can be to bring about behavioral change (Parker, Allen & Hastings, 2007). Broadly speaking, health education for developing countries incorporate two general approaches, a developmental approach and/or a behavioristic approach (Breiger, 1996). Developmental approaches focus on the community, local co-operative activities, and capacity building (Clark & Gakuru, 1982). Behavioristic approaches focus on communication strategies for specific health related behaviors (Breiger, 1996). In this strategy, program planners determine which behaviors should be promoted in the messages, and they are delivered as statements of medical truth, which may have short-term effects on knowledge but are questionable for long-term sustainability (Breiger, 1996).

Health education must also incorporate educational principles and their application to a particular setting. The theoretical principles for health education are generally based on learning principles from the fields of psychology, theories of communication, and sociology (Schall, 1998), and models that focus on individual health behavior. The widely used Health Belief Model has a underlying assumption that an individual can change his or her behavior by focusing on cognition and motivation. This approach may not be realistic in NTD control programs in developing countries where social and economic factors around disease do not match assumptions of this model (Kloos, 1995). Another well-used model is the Transtheoretical Model, in which individuals and their environment interact to impact health behavior and is another approach that has been used in African development project with mixed results. Therefore, reviewing two models that specifically describe health education for an NTD intervention in a developing country is particularly useful.

Health Education Models

Below is a description of the PRECEDE-PROCEED Model (Green & Krueter, 2005) and Kloos' (1995) adaptation and application to his research on schistosomiasis. Schall's (1998) *Interactive Model* of health education for tropical disease control follows. A review of the literature on materials and delivery strategies for health education for NTD intervention projects ends this section

PRECEDE-PROCEED Model

The PRECEDE-PROCEED Model presents a map of content areas to be considered when devising and delivering health education. The main purpose of this model is not to predict or explain the various factors that can impact health behavior outcomes; instead it provides a framework within which to apply theories and concepts in order to plan and evaluate health behavior change programs (Green & Krueter, 2005). The authors distinguish between causal theory that looks for determining factors for an outcome, and action theories that look for explanations of how health interventions affect determining factors and outcomes (Greene & Krueter, 2005). The PRECEDE-PROCEED Model links the causal assessment and the intervention planning and evaluation into one framework.

The PRECEDE Model was developed by Green and his colleagues in the 1970s (Green, Krueter, Deeds, and Partridge, 1980) based on the idea that an educational diagnosis should precede an intervention plan. The acronym stands for Predisposing, Reinforcing, and Enabling Constructs in Educational/Environmental Diagnosis and Evaluation. This model addressed the concerns of some professionals at the time that health education was too preoccupied with implementing programs while overlooking the need to design interventions that were planned to strategically meet observable needs (Bartholomew, Parcel, Kok, & Gottlieb, 2001).

In 1991, the PROCEED component of the model was added to represent Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development, which incorporated a recognition of the importance of environmental factors as determinants of health and health behavior (Gielan, McDonald, Gary, & Bone, 2008). The authors recognized that a more ecological approach to health education was needed to address larger contexts of health.

In 2005, the PRECEDE-PROCEED Model was revised in response to an increased interest in ecological and participatory approaches as essential elements of public health programs in general, not only of health behavior change programs. In addition, this revision included new information from the field of genetics (Green & Krueter, 2005). In this most recent version, there are four planning phases, one implementation phase, and three evaluation phases. While there are some changes in the revised version of the model, the basic principle of participation has remained, and states that active participation enhances the possibility of change in the target population by allowing input into defining their priorities and goals, and developing and implementing solutions (Green & Krueter, 2005; Minkler, Wallerstein & Wilson, 2008). Consequently, each phase of the PRECEDE-PROCEED Model allows for the incorporation of input from the program's target audience and stakeholders. The model also provides a planning process that includes prioritizing the targets of the intervention according to which factors are most important and most changeable (Green & Krueter, 2005). This final point is particularly salient for programs that are implemented in developing countries where resources and infrastructure are limited.

Phase 1 of the PRECEDE-PROCEED Model consists of the social assessment, participatory planning, and situational analysis. A social assessment is the "application, through

broad participation, of multiple sources of information, both objective and subjective, designed to expand the mutual understanding of people regarding their aspirations for the common good" (Green & Krueter, 2005). In this stage, planners increase their understanding of the community where the program will be implemented by using multiple data collection activities, such as interviews, focus groups, observations, and surveys. The term *community* usually refers to a geographical area with defined boundaries, but may more generally refer to a group with shared characteristics, interests, values, norms, or behaviors (Minkler, Wallerstein & Wilson, 2008). The social assessment aims to articulate the needs and priorities of the community, and assesses their ability to problem-solve, their strengths and resources, and readiness for change. By focusing on strengths, the planners can form meaningful alliances with community members, which in turn can support higher initial commitment to the program, and longer-term sustainability (Bartholomew, Parcel, Kok, & Gottlieb, 2001).

Phase 2 of the PRECEDE-PROCEED Model consists of epidemiological, behavioral, and environmental assessments to identify health priorities, and their behavioral and environmental determinants. The epidemiological assessment identifies the health problems, issues, or goals that are the focus of the program. In addition, it looks at behavioral and environmental factors that could influence the health goals, and finally, it translates those priorities into measurable objectives for the program as it is being developed (Green & Krueter, 2005). The behavioral assessment is initiated at three levels. The first is the most immediate behaviors of the individual that contributes to the health issue. The second level is the behaviors of others who can directly affect the behaviors of the individuals at risk. The third level is the actions of decision makers that affect social or physical environments that could influence the individual at risk. Assessing these three levels increases the likelihood that the program planner creates a comprehensive and

effective program. The environmental assessment of Phase 2 consists of looking at social and physical factors that are external to the individual but which could be modified to support a health behavior or influence the health outcome. Changing environmental factors often necessitates the use of strategies other than education (Green & Krueter, 2005).

Phase 3 of the PRECEDE-PROCEED Model is an educational and ecological assessment of the antecedent and reinforcing factors related to the behavioral and environmental factors that are identified in Phase 2. The factors for Phase 3 are classified into three aspects that together influence the likelihood that behavioral and environmental change will occur; the three aspects are: *predisposing*, *reinforcing*, and *enabling* factors The *predisposing* factors are those that supply a rationale or motivation for the behavior, such as the person's knowledge, attitudes, beliefs, preferences, skills, and self-efficacy beliefs (Green & Krueter, 2005). *Reinforcing* factors are those that reinforce a behavior that provide a continual reward or reason to repeat or persist in the behavior. Examples of this would be social support, peer influence, and vicarious reinforcement (Green & Krueter, 2005). *Enabling* factors are those that allow a motivation or environmental policy to be enacted, and these factors can affect behavior directly or indirectly through environmental factors. These factors include programs, services, and resources needed for behavioral and environmental outcomes to be realized (Green & Kreuter, 2005).

Phase 4 of the PRECEDE-PROCEED Model is the administration and policy assessment and intervention alignment stage. At this point the program's components are selected and aligned with the priorities identified in the previous stages. The purpose of this phase is to recognize resources, organizational barriers and facilitators, and policies that are needed for program implementation and sustainability (Green & Kreuter, 2005). Green and Kreuter (2005)

suggest at this point that planners use one of several mapping techniques from the literature on program development.

Phases 5 to 8 of the PRECEDE-PROCEED Model deals with the implementation and evaluation of the health education program, at which point plans for data collection should be in place for evaluating the process, impact, and outcome of the program (Green & Kreuter, 2005). The details of these last phases of the model are less relevant to this study because the focus of this study is uncovering how the local context shapes the implementation and integration of the health education for this project.

The PRECEDE-PROCEED Model informs this study by providing a framework for considering the multiple dimensions that impact health education and its implementation within the specific context of the project in Togo. This model was developed as a tool for health education and promotion planners to consider these multiple dimensions in advance of the implementation of the program. However, since a health education component of the Togo project is already being delivered, this model will serve as a diagnostic tool that will inform a deeper understanding of the particular factors that are relevant to the local context in Togo. This study will explore factors that are the focus of Phase 3 of this model, the educational and ecological assessment, and my expectation is that the *predisposing*, *reinforcing* and *enabling* factors will surface through the interview data.

Kloos's Adaptation of the PRECEDE-PROCEED Model

The PRECEDE-PROCEED Model as described above, has been revised and updated several times since it was developed in the 1970s (Green, Krueter, Deeds, and Partridge, 1980). While the most recent version of the model was revised in 2005, it is still worthwhile to consider Kloos's (1995) adaptation of the PRECEDE-PROCEED model for application to his research on

schistosomiasis because this is one of the NTDs being integrated in the Togo project, and represents a case that parallels in some ways the application of the model to my study.

Kloos (1995) adapted the *PRECEDE Model* that describes a diagnosis of schistosomiasis that could be applied to other tropical diseases. Kloos' (1995) adaptation includes an examination of the epidemiological, social, behavioral, and educational elements of the disease intervention project. This view balances the individual versus environmentally focused models and suggests that the community is the optimal level to focus health interventions in developing countries. This balance is achieved by incorporating aspects of the individual, environment, regional and national factors, and by considering the socio-economic constraints that influence health behavior (Kloos, 1995). Kloos (1995) focused on identifying the *predisposing*, *enabling*, and *reinforcing* factors that indicate vulnerability to the disease, problematic behaviors that contribute to transmission and re-infection, and the social and health problems related to maintenance of the disease. This model provides an educational framework for developing a diagnosis to create a model for disease control that incorporates the role of human perceptions, attitudes and health related behaviors related to one NTD (Kloos; 1995; Schall, 1998). Strategies for action concerning this NTD could then be developed using this approach that reflect local needs and resources (Schall, 1998).

Interactive Model

Schall (1998) provides another useful model, which was developed for a schistosomiasis intervention, but could also apply to other infectious tropical disease interventions. Schall's (1998) application of the model focuses specifically on health education. This *Interactive Model* addresses "several difficulties that have to be considered, ranging from the viewpoint of the political decision that plans the policies and resources allocated to health research and programs

through to the problem of sustaining community participation" (Schall, 1998, p.55). This *Interactive model* includes three levels: 1) the decision level, 2) the executive level, and the 3) beneficiary level (Schall, 1998). The decision level encompasses the national and international organizations and agencies involved in making health policies and provide funding to research and/or programs. At the decision making level, some diseases, factors and strategies are highlighted or overlooked depending on what the current political focus happens to be, and what subject or diseases are dominant in scientific research at that point (Schall, 1998). While heath education for tropical diseases has received more attention in some literature, this area has "never received the necessary incentive or resources from the decision making level" (Schall, 1998). While this quote is now ten years old, a review of the literature indicates that the statement is still accurate regarding the limited research on the health education component of many NTD projects. The next level described in the Interactive Model is the executive level, which refers to the staff that plans, executes and evaluates the research and programs. This would include researchers, physicians, teachers, and members of the health system. This model emphasizes the importance of better integration among these actors in health education, and a better integration with the other levels (Schall, 1998).

The final level in the *Interactive Model* is the beneficiary level, which includes the population and communities involved in the research and/or the program (Schall, 1998). The requirement at this level is to participate in health promotion and disease control programs. As a review of the behavioral and social science literature on health education shows, the involvement at the beneficiary level depends on a complex host of issues. Schall (1998) provides list of Needs and Actions suggested for each level of the Interactive Model in order to "provide opportunities to clarify possibilities, difficulties and limits present in specific situations in order to develop a

better plan for disease control and health promotion" (p.56). The specific conditions of each community may require additional "needs and actions" and the concept of this model is to provide tools for tailoring health education to specific circumstances.

The Interactive Model of health education for tropical disease control complements the PRECEDE-PROCEED Model because its focus is on the actions needed at three program levels in order to implement health education, while the PRECEDE-PROCEED model is focused on the information that is needed to implement health education. This study operates at the executive level of the Interactive Model, which includes health educators and researchers "to identify the problems and needs of communities and control programs" and "should involve the communities in the control programs as well as the local authorities" (Schall,1998, p. 56). This study reflects the executive level of the Interactive Model by implementing research that will provide some identification of the problems or needs of the community in relation to the NTD project in Togo. It will also provide an initial step in involving several levels of the community in the project by voicing their experiences and opinions about the project and how health education may be shaped to better reflect their priorities.

Health Education for NTDs: Materials & Delivery Strategies

The level of effectiveness of health education depends on how materials are devised and then presented to individuals and communities through delivery strategies. This study is informed by examining the literature on both of these aspects of health education.

Materials

Many approaches to disease control, including health education, are created in a top-down approach constructed by health officials and translated into health messages by health personnel. This approach is devised for timely delivery, and accurate information, but

unfortunately may not be entirely relevant to the behaviors that it aims to impact in the lives of the target audience due to the specifics of the local context (Vlassoff & Garcia Moreno, 2002). In one study, the materials used for an integrated program that treated for schistosomiasis and soil-transmitted helminthes (STHs) contributed to local confusion about the need for treatment and did not help in overcoming resistance to the MDA. The decontextualized presentation of the information led to many misconceptions about the diseases and confusion about the validity of the information being presented (Parker, Allen & Hastings, 2007). In this case, the booklet was in English, not in the local language. The diagram of the life cycle of schistosomiasis was not well understood in terms of what it represented. There was no explanation about why repeated treatment was needed even if an individual was feeling well at the time of the MDA. Magnified representations of the schistome worms in the booklet made it impossible for people to accept the explanation that such large worms could enter their bodies. In addition, the suggestion to avoid entering lakes and rivers was untenable in that region (Parker, Allen & Hastings, 2007). In another example, messages that only focused on behaviors that interrupted one part of the diseases transmission cycle, such as drinking safe water, had a limited impact on health outcomes because other important parts of the transmission cycle were not well understood by the target population, and therefore other means of transmission continued through other behaviors even when people complied with the given messages (Tayeh, Cairncross & Maude, 1996).

These examples underscore the critical importance of contextualizing health education materials for NTDs so that they make sense to the target population. These examples also demonstrate how information in the health education materials can be accurate but still misleading and ineffective when presented in a decontextualized manner. The underlying

assumptions that inform the content and presentation in the health education materials need to be examined and matched to the local context. If this aspect of health education development is overlooked, materials can undermined the program's ability to convince individuals to participate in treatment through the MDA and in adopting targeted health behaviors.

Delivery Strategies

While it is critical to ensure that health education materials reflect the local setting, the delivery of the public health education is equally important. Delivery of health information must take into account several dimensions aside from the content. Political relationships between small rural communities and the urban capital can often be one of disenfranchisement. The Ministry of Health may be perceived negatively as an arm of the government and health programs need to consider this dimension when designing education delivery strategies (Parker, Allen & Hastings, 2007). Stereotypes and negative attitudes may also exist in the capital about people in remote outlying regions of the country, so that erroneous assumptions are made regarding the communities being served by the health interventions (Parker, Allen & Hastings, 2007). A general lack understanding between the urban and rural communities can manifest itself in the behaviors of the health workers from the capitol when in remote communities, and lead to a negative experience in the targeted communities (Parker, Allen & Hastings, 2007).

A disjuncture between rural and urban actors in health interventions can be compounded by strategies that use large amounts of volunteer labor for implementation (Parker, Allen & Hastings, 2007). Integrated programs for NTD disease control typically require that target communities contribute voluntary labor while the people at the international, national, and district level are paid for implementing the program (Parker, Allen & Hastings, 2007; Mathieu, manuscript; Verani, manuscript). People at the local level may derive some status and

satisfaction from assisting their relatives and neighbors, but enthusiasm can diminish over time. Volunteers consistently expressed frustration at the lack of remuneration for the number of hours or days spent working hard while losing other income generating opportunities in doing so. This loss of income due to volunteering was significant for some individuals and precluded them from participating in this role (Parker, Allen & Hastings, 2007; Verani, unpublished manuscript).

In one study, the irritation with this situation manifested itself in missing records that were held by the volunteers who distributed the drugs until they received some compensation (Parker, Allen & Hastings, 2007). One study documented an attempt to overcome the need to use community volunteers by distributing drugs at clinics instead; however, this distribution method led to a reduction in the number of people who participated in the drug distribution compared to the previous year (Parker, Allen & Hastings, 2007). In addition, problems can be reinforced by the ways in which volunteers are chosen and who does the actual drug distribution in each village (Parker, Allen & Hastings, 2007).

Many NTD health education strategies include delivery through local schools. This makes sense as a locus of community activity but may overlook or exclude altogether the poorest families who cannot afford to send their children to school. (Tayeh, Cairncross & Maude, 1996). Health education through the school system must be augmented by alternative approaches that reach individuals most in need and perhaps most isolated in their communities. The attention need in considering local realities is equally crucial in developing the content and materials, as well as the delivery of the health education. Two models that were developed specifically for health education of an NTD in developing countries are useful in framing this process.

Themes in Behavioral & Social Science Research on NTDs

The importance of local conditions and their impact on the development and delivery of health education is the focus of this study; however, it is also valuable to consider a larger global context of development and aid work that can impact partnerships between the local, national and international organizations working on particular projects, such as the NTD integration pilot project in Togo. Since the widespread achievement of independence by developing countries, post-colonialism has served to provide a perspective for continued examination and critique of concepts of development and the continued relevance of the colonial conceptions in international development and aid work. Post-colonial theory critiques the legacy of colonialism and imperialism as they are expressed in social relations that uphold privilege and oppression between the centers of power in the developed countries and the margins of power in developing countries (Said, 1978). The work of examining and critiquing the colonial experience enables a society to overcome colonialism and redefine itself (Mulenga, 2001; Tiffin, 1987/1995).

The decolonization of a culture and society is an on-going process of reclaiming, creating and recreating the local identity (Tiffin, 1987/1995). In an on-going sense, post-colonialism describes the reframing process that occurs after the physical withdrawal of the colonial power. However, postcolonial societies often continue to mirror colonial practices in many ways. "Internal colonialism" refers to ways in which colonial dynamics of center and periphery are continued within a post-colonial country, between cultural or language groups, or between rural and urban populations (Bray, 1993; Milligan, 2003). Internal colonialism may be expressed in the political dynamics between groups within a country.

Post-colonialism encompasses critiques of neo-colonialism, and development (Farred, 2001). Neo-colonialism contrasts to traditional historical forms of colonialism in which the

colonial power occupied the colonized country and exerted direct domination over an area (Atlbach, 1995; Bray, 1993). Neo-colonialism does not involve direct political control in the same way as colonialism, however it involves planned policies to maintain influence in developing countries implemented by developed nations or organizations, such as the International Monetary Fund (IMF), the World Bank (WB), and the World Trade Organization (WTO) (Altbach, 1995; Bray, 1993). Although developing countries are sovereign states, they may be economically and politically directed from outside the country (Bray, 1993). Neo-colonialism highlights the unequal power relations between countries and the role that international organizations can play in aligning with or reinforcing that power imbalance. It also points out that external organizations can operate and act in ways that support local and national agendas, rather than working to shape them with externally driven priorities.

The concepts of post-colonialism, neo-colonialism and development provide a perspective from which to understand the broad backdrop behind partnerships between local, national and international actors working on a specific project toward a particular goal. In the case of Togo, the country's history includes German and French colonization, ending in independence in 1960. While colonized, Togo had a special status unlike other West African countries, which gave it a higher degree of autonomy and a greater degree of Togolese participation in government (Murray, 1985). Several coups followed in the decade after independence and General Eyadema became the military ruler in 1967 (CIA World Factbook, 2009). Eyadema retained power and implemented a heavy military rule for almost four decades, and when he died in 2005, his son was installed by the military as president. The country has long been criticized by the international community for human rights abuses. However, there have been some democratic gains since 2005 that allowed for relatively free elections in 2007.

Togo is now beginning to re-enter the international community after years of political unrest. The World Bank and the International Monetary Fund have been supporting the government's efforts to implement economic reforms, but progress has been slow. Currently, economic growth is marginal due to underinvestment in industry, and strained relations with international donors (CIA World Factbook, 2009).

The larger context of Togo's place in the international community provides a backdrop for understanding the relationships between the donors and the national recipients of health intervention support for the integrated pilot project. Nevertheless, the importance of the local social, economic and cultural factors have been illustrated and emphasized in the literature for the successful treatment and health education interventions for infectious diseases (Tanner & Vlassoff, 1998). An important emphasis has been placed on tailoring infectious disease control to the local situation in overall health and development plans (Tanner & Vlassoff, 1998).

However, there is much discussion in the literature regarding the limited understanding and success of implementing effective health education for tropical diseases in developing countries (Schall, 1998). Many attempts at tropical disease interventions in developing countries failed to result in the desired health outcomes because the "beliefs, attitudes, behavioral patterns, knowledge and misconceptions of local populations and ecological features inherent to each environment were not taken into consideration" (Schall, 1998, p. 52). The focus on the epidemiological features of the targeted diseases is not sufficient to effect change, and a recognition of social and behavioral variables of disease became a new focus of health education (Manderson et al, 2009; Schall, 1998). It is now clear that local conditions that enable disease must be understood in order for an educational approach to be effective (Brieger, 1996, Manderson et al, 2009; Parker, Allen & Hastings, 2007; Pauwels, 2005; Schall, 1998).

Health seeking behavior and health status are impacted by a number of factors. A review of the research in behavioral and social sciences on infectious tropical diseases reveals a number of themes that have emerged over the last several years that are relevant to the questions of how local context shapes health education for NTDs (Manderson, et al, 2009). These themes should be considered when exploring how NTD health education messages are shaped, integrated, and delivered at the local level. The themes that emerge from a review of the literature directly relate to culture generally, and to specific dimensions of culture that relate to health and disease: traditional disease concepts, gender, social stigma, community participation, political dimensions, and environmental constraints. A review of these themes provides insight into the complex challenge of developing and delivering effective health education for NTDs in sub-Saharan Africa.

Culture

Culture impacts every dimension of health education and contextualizing the messages and delivery is crucial to its effectiveness (Pauwels, 2005; Schall, 1998). Many aspects of culture should be taken into account, such as the language (verbal and written), the visual language, gender roles and relations, beliefs and spirituality, collectivism and individualistic orientation (Pauwels, 2005). In order to be effective health education in a multi-cultural setting, education and disease control needs to acknowledge cultural identities and self-concepts, speak multiple languages, and accommodate cultural diversity (Pauwels, 2005). In addition, the health education should reflect the contextual nature of meaning.

In order to accomplish health education that reflects these complex aspects of a cultural setting, community participation is essential (Pauwels, 2005). Contextualizing the message, medium, and delivery of health education will determine the audience and how relevant it is to

the local community (Pauwels, 2005). At times, public health education messages overlook a community's cultural and socio-economic constraints, such as the availability of income to access the intervention being promoted, or the level of literacy required to read the embedded text (Pauwels, 2005). Issues around levels of local literacy are compounded in some countries by conflict over the use of the colonial language or the official language versus the local dialect. Health education that does not use the local language may be at a disadvantage in conveying messages that will be accepted by the community (Parker, Allen & Hastings, 2007). Grassroots efforts indicate that when the community takes ownership of a health problem, they are a powerful accompaniment to the formal avenues of health communication (Pauwels, 2005).

The role of individual families and the community in decision-making regarding health can be significant in certain cultures (Pauwels, 2005). Cultures can differ widely between collectivism and individualism, and this dimension should be considered when developing and implementing health education strategies (Pauwels, 2005). Any promotion of healthier behaviors must strike a balance between correcting damaging misconceptions regarding targeted diseases and behaviors, and directly going against local belief systems (Pauwels, 2005). Many local beliefs and behaviors that contribute to the spread of NTDs are deeply entrenched in local culture, such as religious dictates to wash in natural water (Schall, 1998), beliefs about the purity of children's feces (Onwuliri et al, 2000), and eating with hands and sharing communal food bowls (Onwuliri et al, 2000). Many such cultural traditions exist and are not easily changed by external educators. Traditional belief systems regarding health and disease operate alongside or without biomedical explanations, and are an important feature of cultural understandings of diseases (Schall, 1998). If possible, combining local beliefs, attitudes, or motivations with health messages can make health education more effective (Pauwels, 2005; Tayeh, Cairncross &

Maude, 1996). Therefore, local beliefs about diseases are not necessarily a barrier to health education, but can be challenging to overcome (Pauwels, 2005).

Traditional Disease Concepts

One crucial dimension of ensuring that health education impacts people in the context in which it is implemented, is grasping the local understanding of the biomedical symptoms of the targeted diseases. Symptoms may be interpreted as a sign of local witchcraft instead of a parasitic infection, as in the study of schistosomiasis and STHs in northern Uganda (Parker, Allen & Hastings, 2007). This study showed that even local informants who were associated with the formal health system were rarely able to describe or explain the life cycle or symptoms associated with a particular targeted disease (Parker, Allen & Hastings, 2007; Verani, manuscript). This begs the question about what level of understanding of a disease is needed on the community and individual level, to embrace biomedical explanations of disease to a degree that leads to adopting the necessary health behaviors to control for those diseases.

Locally understood ailments are usually identified according to a constellation of symptoms that are believed to cause that ailment, and sometimes correspond to the symptoms of targeted diseases (Parker, Allen & Hastings, 2007; Schall, 1998). Numerous studies document a wide variety of beliefs held by diverse African communities regarding the symptoms of NTDs, and the local names and beliefs about the causes those diseases (Onwuliri, 2000). These ailments have long been known in local communities since the corresponding biomedical illnesses have plagued people for centuries. The local ailments may be attributed to a number of causes. One example in northern Uganda illustrates how local beliefs can impact diseases. The local ailment called *awola* corresponds closely to the symptoms of schistosomiasis, but the illness is attributed to the death curse of an envious witch and involves an element of spiritual force (Parker, Allen &

Hastings, 2007). Local cures vary, but could include herbal remedies from a Traditional Healer, and involve séances to appease the spirits. Most significantly, the use of biomedical drugs from the health center to treat *awola* is considered dangerous. Only after *awola* has been treated by the Traditional Healer can drugs be safely sought for treatment of the symptoms, which results in a delay in treating the disease (Parker, Allen & Hastings, 2007). This example demonstrates how a locally identified illness corresponds to a biomedical disease, but the local understanding of that disease prevents people from seeking treatment.

Local use of biomedical names for diseases does not necessarily reflect an understanding of the etiology of the disease (Parker, Allen & Hastings, 2007). Furthermore, the symptoms of a targeted disease may be attributed locally to other causes such as a shortage of food. In one study, symptoms of hunger were attributed to a local ailment caused by worms (Parker, Allen & Hastings, 2007). Many indigenous medical systems in Africa are pluralistic and incorporate biomedical etiology into local understandings of sickness (Parker, Allen & Hastings, 2007). While these diseases are viewed locally as undesirable, there is also an acceptance of these diseases and symptoms as an inevitable part of life (Parker, Allen & Hastings, 2007). Individuals may simultaneously consult a range of local healers while also accessing biomedical treatment for an illness. (Parker, Allen & Hastings, 2007). The implications for health education is that local understandings and responses to the symptoms of parasitic diseases should be considered when developing and delivering messages. Local understandings may not necessarily be validated, but rather should be recognized as shaping the ways that health education may be convincing and effective in a local community. In addition, biomedical explanations are often presented in ways that are too abstract for people to connect to their own environment, and local health workers often miss the opportunity to build on local perceptions of diseases and disease

transmission (Brugha, Kevani & Swan, 1996). These beliefs have direct implications for national control programs, and in turn for health education.

A few studies show that widespread concern about the side effects of taking one drug inhibited some people from taking their dose of another the drug (Parker, Allen & Hastings, 2007; Verani, manuscript). A lack of understanding of the side effects, a feeling that the drug was too strong, and non-differentiation between the two drugs being administered reduced the effectiveness of the MDA. Several other side effects such as infertility, miscarriage, and increased overall weakness were erroneously attributed to the drugs given at the MDA (Parker, Allen & Hastings, 2007). Overlooking this side effect and community concern in the health education for the MDA led to avoidance of the free and effective treatment (Parker, Allen & Hastings, 2007; Verani, manuscript). Furthermore, a lack of understanding of the long-term effects of the diseases being treated by the MDA led to people not taking the drug if they felt well. People did not understand that it is possible to be infected and still feel well, therefore they did not see the need to take the drugs delivered though the MDA (Parker, Allen & Hastings, 2007).

Gender

Gender-focused research on infectious tropical diseases shows that poor women in rural areas are disproportionately impacted by these diseases when compared to men (Periago, Fescina, & Ramon-Pardo, 2004). Health education strategies need to account for gender differences, which are due to a complex interaction of socio-economic factors. In addition, models are needed that address gender inequities in infectious disease in a integrated manner because of the complexity of the underlying causes of gender differences (Periago, Fescina, & Ramon-Pardo, 2004; Vlassoff & Garcia Moreno, 2002). Women's health has been recognized as

an important focus of research, and some international and national attention has focused on planning or policies around women's health (Manderson et al, 2009; Periago, Fescina, & Ramon-Pardo, 2004). Women's health in developing countries has been linked to other goals, such as family planning and child survival rates (Periago, Fescina, & Ramon-Pardo, 2004). However, the "link between gender and exposure, risk, susceptibility, disease experience, and outcome" (Manderson et al, 2009, p. 4) has been shown through quantitative and qualitative studies. These studies show that gender differences in rates of infection correlate closely with economic activities and social status, and also highlight disparities in access to treatment (Manderson et al., 2009).

The World Health Organization (WHO) uses a framework that makes explicit the factors that impact gender for communicable diseases (Rathgober & Vlassoff, 1993). This model shows how gender variables interact with diseases, prevention, and treatment through three main factors of economic and productive activities, social activities, and personal factors (Rathgober & Vlassoff, 1993). At the household level, women are most impacted by the economic and productive consequences of infectious diseases, due the cost of health care and drugs, and the lost productivity due to personal illness and the illness of family members (Periago, Fescina, & Ramon-Pardo, 2004). Gender shapes relationships in the household and community that determine disease outcomes (Tanner & Vlassoff 1997).

In the majority of developing countries, unemployment is higher among women and salaries are lower, therefore women have fewer economic resources. While having lower incomes, women spend more of their income on health care for their children and other family members (Periago, Fescina, & Ramon-Pardo, 2004). Social determinants of infectious diseases include household and social roles and responsibilities, and other cultural norms that determine

levels of exposure. The extent of support networks, social stigma, and decision-making power on domestic and community levels also impact experiences of diseases (Manderson et al, 2009; Periago, Fescina, & Ramon-Pardo, 2004; Vlassoff & Garcia Moreno, 2002). Women's lower status in a household can impact their ability to access health information and make health decisions (Fonn, 2003). When health messages that are relevant to women are directed to men, their influence on women's behavior and understanding are reduced (Periago, Fescina, & Ramon-Pardo, 2004).

Conversely, one study in Ghana showed that when men were involved in children's health care, vaccination rates increased and treatments were completed sooner (Brugha, Kevani & Swan, 1996). This finding demonstrates the need to increase gender studies on men's participation in family health, and to improve educational messages for family health that focus on men rather than just on women as is traditionally the case (Brugha, Kevani & Swan, 1996). Man and women can experience disease differently in social, economic and personal ways (Brugha, Kevani & Swan, 1996). Studies have found that women wait longer to seek treatment because of their household responsibilities to other family members. They often take longer to recover than men because they continue working while still ill (Brugha, Kevani & Swan, 1996). Much of men's work is covered by other family members while men are sick, but much of women's work is left undone until they return to work (Brugha, Kevani & Swan, 1996). In a study of stigmatizing diseases, women were found to experience a greater degree of discrimination, and are more likely to be isolated from their communities and families. They are also more likely to be held responsible for their illness (Vlassoff, & Garcia Moreno, 2002).

When accounting for gender in the development of health education for tropical diseases, it must be acknowledged that women have specific health risks when compared to men. Women

are vulnerable to infectious diseases in ways that are shaped by biological, social and cultural factors (Tanner & Vlassoff, 1997; Vlassoff & Garcia Moreno, 2002). In addition, infectious disease and prevention programs have often reinforced gender stereotypes by focusing exclusively on women regarding family health (Vlassoff & Garcia Moreno, 2002). These infections diseases will not be eliminated without attention to social inequities, which must include health education that takes gender into account (Vlassoff & Garcia Moreno, 2002). The data that provides the foundation of infectious disease interventions has recently been found in a number of studies to contain biased information, due to the use of clinical records as the collection point where men are more likely than women to seek treatment (Vlassoff & Garcia Moreno, 2002).

Social Stigma

Some of the Neglected Tropical Diseases such as Lymphatic Filariasis (LF) and Onchocerciasis cause disfiguring conditions that impact people's lives by limiting their movements and causing chronic pain. LF can cause very swollen legs, feet, and genitals, and bumpy, itchy disfigured skin in the affected areas. Onchocerciasis causes blindness and can cause a disfiguring onchocercal skin disease (OSD), depending on the strain of the parasitic worm in the endemic in an area (Vlassoff et al, 2000). Unfortunately, the disfigurement caused by both these diseases can also lead to social stigma aimed at those who are affected. Studies on the disfigurement caused by these diseases show that social stigma is a reality for affected individuals and furthermore that the impact of social stigma is differentiated by gender (Person, Bartholomew, Gyapong, Addiss, &van den Borne, 2009; Vlassoff et al, 2000; Yakob, Deribe & Davey; 2008).

A multi-site study carried out on the stigma caused by OSD in Cameroon, Ghana, Nigeria, and Uganda, found that men and women experienced the disease differently and were stigmatized in different ways (Vlassoff et al, 2000). The most difficult aspects of the disease for those affected were found to be itching and dispigmentation. The biggest effect of OSD-related social stigma related to limiting prospects of marriage for men and women (Vlassoff et al, 2000). Other studies show that OSD leads to social isolation from family members and the local community due to erroneous local beliefs that disease is caused by dirtiness (Vlassoff et al, 2000).

In a comparative study of women with LF in Ghana and the Dominican Republic, social stigma related to several symptoms of the diseases (Person et al, 2009). Stigma by others was related to the enlarged and disfigured limbs, and to the sores and smells caused by them. The result of the stigma for women included loss of income, loss of social identity, social isolation, and decreased access to resources (Person et al., 2009). As a result of social stigma, these women suffered from depression, anxiety, fear, degraded body image, and in some cases suicidal thoughts (Person et al., 2009). These examples demonstrate the seriousness of social stigma as a side effect of the actual symptoms of infectious tropical diseases. Misinformation and erroneous local beliefs about the causes of the diseases contributed significantly to the social costs suffered by those affected. Therefore, the importance of considering these social factors when developing health education for NTDs must be highlighted and may contribute to motivation for health behavior change (Vlassoff et al, 2000).

Community Participation

There is increasing evidence in the research on health interventions that community based treatments are more successful when the communities themselves are responsible for organizing

them (Vlassoff & Manderson, 2002). When communities are active in decision-making and implementing health education activities, they participate in their own development in ways that reflect the social and cultural context of each community (Brieger, 1996). The involvement and cooperation of affected communities is essential for the success of health interventions for infectious diseases (Vlassoff & Manderson, 2002). Community development and participation in shaping health education messages and their delivery, increases its impact because the messages and delivery will reflect local meanings and concerns to a greater degree. This in turn increases the likelihood of the messages making a difference to health behaviors (Pauwels, 2005).

One monolithic set of health education actions cannot address the needs of each community (Brieger, 1996). Reliance on an externally determined health education agenda overlooks the contribution that a local community can make to the effectiveness of the health education messages and activities (Brieger, 1996). One model for community participation is a village health committee in which leaders of a village or district organize an assessment of the health needs and problems of the community and take a leadership role the planning and implementation of health programs. These community leaders could include village chiefs, traditional healers, and other respected members of the local community. In general these committees promote health in their community (Isley, Sanwogou & Martin, 1979). This approach to health education is framed from a development perspective so that the goal is local capacity building (Brieger, 1996).

Political Dimensions

The ways in which health interventions are delivered often highlight the social, political, and economic hierarchies experienced by rural or remote regions (Parker, Allen & Hastings, 2007). Small rural communities may feel disempowered vis-à-vis the national government, and

by extension regarding a country's Ministry of Health as an arm of the government. In one study in Uganda, the political nuances of this relationship led local communities to treat the advice delivered through health education with suspicion. (Parker, Allen & Hastings, 2007). Communities may look for a hidden agenda when coming from an experience of disempowerment.

In the Uganda example, political and economic insecurity on the part of the local community led to suspicion of the Ugandan government's motives in using the public health interventions, including the belief that the government was intentionally reducing the local birth rate and causing death (Parker, Allen & Hastings, 2007). These examples demonstrate how important it is to understand and overcome local misconceptions about the MDA. The power dynamics reflected in the MDA and the health education delivery must be socially acceptable because the "distribution of drugs in never politically neutral" (Parker, Allen & Hastings, 2007, p.178). This includes considerations of where, when, how and by whom the information is delivered.

The political will to address NTDs and their health problems may not be evidenced at the national and local level. A lack of policies and laws forbidding behaviors that cause infection in others may reflect a lack of understanding of the diseases' infection cycles, or a lack of political will to support this understanding with official policy. In one study, qualitative interviews revealed that people wanted the local political structure to be used to enforce health related policies for the good of the community. Subsequent to a health education intervention, people asked for health behavior policies to be enforced by local chiefs and headmen once they understood the cycle of parasitic infection and how individuals were contributing to illness in the community through specific avoidable behaviors (Parker, Allen & Hastings, 2007).

Environmental Constraints

In order to contain and reduce the impact of NTDs, some aspects of the environment must also be controlled to limit or stop human contact with host vectors. Health education for NTDs necessarily contains messages regarding behavior around sanitation, defecation, and clean water that may be unrealistic for targeted communities (Parker, Allen & Hastings, 2007). One study in Egypt for schistosomiasis control showed that although the health information to avoid exposure to contaminated water was well understood by youth and adults, people could not avoid the behavior for lack of an alternative water source (Kloos, 1995).

Water supply and contamination are directly related to the infection and re-infection cycles of many infectious tropical diseases such as malaria and NTDs. Impoverished communities in endemic areas do not have the resources or the technical means to improve their water supply in the foreseeable future, nor do low-income countries have the means to build or maintain large public works such as national water supply systems (Tayeh, Cairncross & Maude, 1996). Health education messages for NTDs include instruction on behavior regarding water such as washing hands, face, and legs, and avoiding natural water sources such as ponds. These messages may be correct for limiting the spread of disease, but must also reflect the local reality regarding the availability of and access to a clean water source, and availability and affordability of water filtration or purifying methods. In addition, community perceptions of the seriousness of the targeted diseases may be considered less pressing than other concerns such as poverty, hunger, lack of clean water, schools, power, roads and income (Kloos, 1995).

Chapter Summary

This literature review informs this study in significant ways. It establishes an understanding of the larger context of Neglected Tropical Diseases (NTDs) by describing which

diseases are included in this category and why the diseases are considered “neglected” on local, national and international levels. The impact and burden of this group of diseases is described, underscoring the interaction of NTDs with poverty. It points to a need for increased medical research and the development of tools, and the compelling needs to improve the effectiveness of NTD interventions through effective health education strategies.

The new innovative integration approach to NTD interventions holds promise for decreasing the impact of NTDs. This approach advocates compiling disease-specific vertical programs in order to realize a number of benefits. It is thought that NTD program integration will be more cost-effective due to the reduction of redundant program activities, which is a significant dimension to this approach because NTDs impact resource-poor countries. Program integration is also promising due to the availability of four drugs that treat seven diseases when combined, and thus have the potential to substantially decrease the prevalence of these diseases. NTDs are often overlapping geographically and in populations, so an integrated approach holds the promise of increased coverage and efficiency. Since NTD program integration is still a fairly new approach, there are some challenges and potential barriers that may need to be overcome. Nevertheless, the promise of improvements in NTD control, prevention, and possible elimination for some diseases in sub-Saharan Africa through program integration is significant.

Examining health behavior change models is instructive when developing health education messages, materials and delivery. One well-known model, the Health Belief Model, describes a linear progression through stages and phases that result in health behavior change. The Transtheoretical Model of behavior change is also a well-known model that has been applied in health behavior research for many years. This model outlines six stages of change, which may occur in a linear, but more likely a spiral fashion. While these models may be instructive for

health education in Western contexts where they were developed, they may have limited applicability to NTD interventions in developing countries. These models are premised on assumptions that may not be relevant in significantly different social and cultural settings.

Health education for NTDs in developing countries must focus on compliance with drug distribution, and increasing local knowledge and awareness in order to affect health behaviors. While health behavior change models are instructive, two models that specifically depict health education for an NTD intervention in a developing country are particularly helpful. The PRECEED-PROCEED Model identifies the community as the most relevant level for health education and it outlines three factors that indicate vulnerability to diseases to be incorporated into health education strategies. The Interactive Model details three levels that should be involved in the development and implementation of health education in order for it to be effective. In addition to these two models, the literature on NTD health education is enlightening regarding the pivotal factors that should be considered. Issues that arise because of the health education materials and content can undermine local participation in an NTD intervention. Similarly, delivery strategies can sabotage an otherwise well-developed NTD intervention.

Behavioral and social science research on infectious tropical diseases in developing countries reveal the importance of social, economic, and cultural factors in the success or failure of health education programs. Several themes emerged from a review of the literature that are relevant to NTD health education: culture, traditional disease concepts, gender, social stigma, community participation, political dimensions, and environmental constraints. These factors impact health status and health seeking behavior in targeted communities and therefore should be considered when developing and implementing NTD health education.

CHAPTER 3

METHODS

Introduction

This chapter presents an overview of the research methods that were used in this study. The purpose of this study was to understand how the local context shaped the integration and implementation of health education in Togo's pilot Neglected Tropical Disease project. This study was guided by the following research questions:

1. Thus far, how has the health education for Togo's pilot NTD integration project been: a) integrated, and b) delivered?
2. What factors shape the integration of NTD health education messages and their delivery?

This chapter is organized into the following sections: 1) design of the study, 2) sample selection, 3) data collection, 4) data analysis, 5) validity and reliability, 6) researcher bias and assumptions, and 7) translation issues.

Design of the Study

This study used the methods of a basic qualitative design, which encompass the characteristics of qualitative research (Merriam, 1998). *Qualitative research* is a general term that refers to an approach to research that is focused on understanding and explaining social phenomena as they occur in its natural setting, or in as natural a setting as possible (Merriam, 1998). The underlying premise of qualitative research is that people construct meaning through their interactions with their context and their world (Merriam, 2002). Therefore, from this

perspective reality is not fixed, but rather it is an interpretation that can be constructed through multiple lenses of meaning, and can change over time (Merriam, 1998; 2002). This means that when health education is delivered in a particular context or setting, different stakeholders at different levels of the health structure will have different interpretations of the content, and will likely have different ways of understanding and applying its meaning. Understanding the perspectives of various stakeholders is important for the design, implementation, and practice of health education in a particular setting, and has serious implications if overlooked. The *interpretive* qualitative approach means that the qualitative researcher is most interested in "understanding the meaning that people have constructed " (Merriam, 2002, p.4). Thus, the great value of qualitative research is in exploring people's differing interpretations of their experiences and their world from a naturalistic perspective (Denzin & Lincoln, 1994).

A qualitative research design best fit the purpose of my research because of the focus on surfacing multiple perspectives. Exploring the multiple perspectives of stakeholders throughout Togo's health structure was essential to understanding how NTD health education is being integrated in Togo's pilot project. The difficulty of devising NTD health education that impacts health behavior change is attributed in part to a limited understanding of how culture and other contextual factors can best incorporated into the messages and delivery (Kolaczinski et al., 2007; Lammie, Fenwick & Utzinger, 2006; Onwuliri et al., 2005). Addressing this gap in approaches to NTD health education required a qualitative research design with its emphasis on understanding context and meaning.

Qualitative research may be approached from a variety of philosophical or theoretical perspectives, but there are some characteristics that are part of most *interpretive* qualitative research designs (Merriam, 2002). First is the focus on understanding the meaning that

individuals in the research setting have constructed about their world and their experiences in regard to the questions that the researcher is investigating (Merriam, 1998; 2002). The focus is on exploring the participants' perspectives in order to bring to the surface the *emic*, or insider's, perspective. In my study, understanding the multiple perspectives of individuals at different levels of Togo's health structure was essential to examining the socio-cultural, structural and contextual factors, including barriers, that impact NTD health education integration. Since individuals at different levels of the health structure interact with NTD health education in different ways, multiple insider perspectives were important in providing a full and in-depth picture.

NTD health education is often designed and implemented by people outside the target communities. Therefore, providing insider perspectives is a missing element in informing how to effectively implement NTD health education, and is the significant contribution that this study makes. While the insider perspectives that surfaced through this study were specific to Togo and not generalizable in a broad sense, they nonetheless point to a crucial source of information that must be considered when NTD health education is designed and implemented in other settings.

The second characteristic that is part of most *interpretive* qualitative research designs is that the researcher is the principal instrument of data collection and analysis (Merriam, 1998; 2002). The researcher rather than another instrument such as a survey or computer program collects the study data. There are several advantages to the qualitative data collection approach, because the researcher can be immediately adaptive and responsive to the situation or context (Merriam, 1998; 2002). This means that the researcher can adapt to unanticipated situations and can take the whole context into consideration. Researchers can incorporate non-verbal information into their data and their assessment of the context. In addition, researchers can

process the data or lack of data in a certain area and can seek to clarify immediately at the research site. Researchers can seek opinions from respondents on accuracy (Merriam, 1998; 2002). This ability to be responsive to the research site and the participants was particularly important in my study because little is known about integrating NTD health education, and therefore while I was in the field I adapted in some ways to the circumstances in on the ground.

The third characteristic that is part of most *interpretive* qualitative research is that the researcher usually works in the field. Because of the emphasis of qualitative research on examining a phenomenon in its natural setting, going into the field, or to site where the phenomenon occurs, is an important research strategy. By researching the phenomenon in its natural context, the researcher can gain a broader, more holistic understanding of the social unit or process that is the focus of the study (Merriam, 1998). In my study, the fieldwork entailed traveling to the capital of Togo, Lome, where I interviewed three National Coordinators for disease intervention programs, two retired National Coordinators who now consult for the NTD integration project, and the Director of the Department of Information, Education, and Communication for Togo's Ministry of Health. I then traveled to the northern part of the country to the Douri district where the integrated NTD health education is being piloted. Once in Douri, I interviewed people at other levels of the health system, including the District Doctor, the District Supervisor of Laboratories, and the Community Health Nurses from the three villages of Bara, Sotou, and Akato. In addition, I interviewed community leaders from the same three villages, including three Village Chiefs, three Traditional Healers, three Village Volunteers, and one Region Chief.

The fourth characteristic that is common to most *interpretive* qualitative research is that it follows an inductive research process in which the researcher is building concepts, hypotheses or

theories, rather than testing existing theories (Merriam, 1998; 2002). The focus for the qualitative researcher is in understanding the meaning that the phenomenon has for those involved in it, and to explore that meaning through interviews, observations, and other related sources of data such as documents (Merriam, 2002). By building this depth of data from the field, the qualitative researcher can work toward establishing themes, categories, typologies, concepts, tentative hypotheses, and substantive theory (Merriam, 2002). Currently, little is known about integrating NTD health education, so the inductive nature of qualitative research was well suited to the task of exploring this relatively new area.

Lastly, rich description is also an important characteristic that is common to most *interpretive* qualitative research. Rich description means that the researcher uses the data to draw a detailed picture of the phenomenon that is the focus of the study, so that the reader can gain a full understanding of the phenomenon (Merriam, 1998; 2002). This also ensures that if the reader wants to apply the findings to a different context, there is enough information to assess whether the findings can reasonably be transferred to another setting (Merriam, 1998; 2002). This rich description is comprised of descriptions of the context, the participants, and the activities that are the focus of the study (Merriam, 2002). Rich description also includes a combination of data such as photographs, excerpts from documents, field notes, participant interviews, video, and electronic communication. This data contributes to and supports the findings of the study, as well as providing the material to provide rich description (Merriam, 1998; 2002).

Sample Selection

Qualitative research uses purposeful sampling to select "*information-rich cases* for study in depth" (Patton, 2002, p. 230). Purposeful sampling means selecting a sample that best matches the purpose of the study, the research questions that are posed, the resources available to engage

in the study, and any other constraints on the study that are present (Patton, 2002). Because qualitative research is focused on gaining an understanding of a particular phenomenon from the perspective of the participants, it makes the most sense to purposefully select participants that have pertinent experience with that phenomenon (Merriam, 2002). It is important to choose participants and settings from which the researcher can learn the most (Merriam, 1998; 2002).

The purpose of this study was to examine how local context shapes NTD health education integration and implementation in Togo. This setting provided the opportunity to capture uniquely instructive information since Togo is the only country to implement integration of six NTDs along with malaria. The diseases that are integrated in this pilot program are: lymphatic filariasis, trachoma, onchocerciasis, schistosomiasis, and soil-transmitted helminthes (STH), guinea worm, and malaria. Malaria is not an NTD, but is one of the better-funded diseases with which NTD programs can be integrated. Further, this integration project has not yet been implemented nationally in Togo, but is currently being piloted in the northern Douri district, therefore that was the district where I did much of my data collection.

Prior to doing this study, there were integrated health education materials in use by the Community Health Nurses (CHN) in local clinics, but according to project documents it was unclear how the materials were being used. Village Volunteers were also using the materials, but information about their use of the materials was unavailable because it had not been documented or tracked. In addition, there was little information about how or when the materials were being used, nor was there a procedure in place for their use or a description of what was taking place in practice in terms of other forms of integrated NTD health education in the field, such as posters, radio announcements, public meetings, and so on. In late 2008, there was a plan to increase the

effort to deliver integrated NTD health education in the Douri district in 2009, but this effort was put on hold due to a lack of funding.

The goal of this research was to gather perspectives from a cross-section of Togo's health system, and from community leaders in order to gain as holistic an understanding as possible. The process of preparing for the implementation of program integration has been underway since 2004 in the form of meetings and document preparations such as guidelines and tools. The first integrated Mass Drug Administrations (MDA) took place in May 2007 and again in May 2008.

Each district in Togo is divided into sub-districts known as *Unite de Soins Peripherique* (USP) or Peripheral Care Units. There are 11 USPs in Douri, each of which has a nurse responsible for health-related activities. The nurses also supervise the activities of Village Volunteers (VVs) who are individuals selected by their villages for this role, and usually have a few years of primary school education and are literate. The VVs are usually men, because women are typically less well educated than men; in addition, men in this society usually have more time available to take on the responsibilities of this role. VVs receive monetary incentives for some activities they conduct and each work in one of a total of 104 communities in the Douri district. There are approximately 300 community members for each Village Volunteer.

A purposeful sampling strategy identified interviewees who represented stakeholders at different levels of the Togo health system, including the community members, all of whom are involved in piloting the integrated NTD program in the Douri district of Togo. The integration team scheduled all the interviews for me in Lome, and arranged for both of the translators who worked with me. In Douri, a doctor arranged the village interviews for me. I surpassed my original goal of interviewing at least two individuals from each level of the health system, and at least two individuals from each type of community member, in order to gather data from a cross

section of those involved in developing, delivering, and facilitating NTD health education. I conducted a total of twenty interviews for this study.

After discussing the possible study participants with the Togo Project Director, and the integration team in Lome, they identified participants who work in the capital at the national level of Togo's health system, but also had past field experience to draw upon. Before beginning the interviews at the Douri district level, I met with the Regional Director as a courtesy call and to receive his approval for conducting my study. After my interview with the doctor, he arranged for me to conduct my interviews in three villages in the district. The names of the villages and the district have been changed to protect confidentiality. The participants are identified by number to protect their identity, and the identity of the one female participant is protected by the use of male pronouns for all the participants.

Data Collection

Qualitative data is gathered by the researcher and arises out of three kinds of data collection: "(1) in-depth, open-ended interviews; (2) direct observation; and (3) written documents" (Patton, 2002, p. 4). Information about people's knowledge, understanding, opinions, feelings, and experiences are found in the interview data, and can be substantiated by direct quotes from those interviews (Patton, 2002). The observations provide "detailed descriptions of people's activities, behaviors, actions, and the full range of interpersonal interactions and organizational processes" (Patton, 2002, p. 4) and direct quotes spoken in context that are observable by the researcher. The documents can provide many types of data, including quotations, passages, records, and relevant quantitative information. Interviews were the primary source of data for this study, and other data such as observations in Lome and in the villages were included in the study. In addition, I used project documents as data for this study.

Interviews

Interviews provide an important source of data about things that cannot be observed directly by the researcher. Thoughts, feelings, and intentions cannot be directly observed, nor can actions that have taken place in the past, nor can we fully observe the meaning that people attribute to the world around them (Patton, 2002). Interviews give the researcher an opportunity to explore the perspectives of individuals who are relevant to the topic of the study. Patton (2002) identifies three basic types of qualitative interview: informal conversational interview, general interview guide approach, and the standardized open-ended interview approach. Merriam (1998) also identifies three categories of interviews along a continuum from "highly structured, questionnaire-driven interviews", to semi-structured interviews, to "unstructured, open-ended, conversational formats" (p.74). In general, qualitative interview studies tend toward a less-structured format in order to allow the interviewees to reveal how they conceptualize the world in their own way (Merriam, 1998). Open-ended questions allow for responses that are unexpected and unique to the person being interviewed. Typically there is information that needs to be gathered from all interviewees, and these questions are more standardized (Merriam, 1998). However, questions that are used to explore issues may vary in their wording and in the order that the researcher asks them to each interviewee. This gives the researcher the flexibility to respond to the interviewee and situation at hand in order to allow the perspective of the interviewee to emerge (Merriam, 1998).

Standardized open-ended interview guides (see Appendix A) were used to collect data for this study from the various perspectives represented by the stakeholders. The interview questions were based on the research questions posed in the purpose statement. I used three interview guides, one for each level of the health system: 1) participants involved at the national level, 2)

participants from the health system working in Douri district, and 3) community members. The interview guides ensured that even though the interview participants in this study differed from one another in their roles within Togo's health structure, the same topics were covered with individuals from each level of the health system, and in the communities. This approach provided consistency in the content of the data that I collected and helped to maintain the focus of the study. A standard consent form and consent procedures were used according to the protocols established in the IRB. Before conducting any interviews, all protocols and consent forms were approved by both CDC and UGA IRBs. Togo Ministry of Health approval requirements were met.

Because I conducted my study in an operational research project of the CDC, my main contact in the Togo NTD program was the Primary Investigator of that research project in Togo, with whom I had regular email and face-to-face contact. I went to the field as part of the larger research project, and I had assurance from several sources before I went that people in Togo would be very willing to meet with me because I was associated with the project. Once I arrived in Lome, I conducted interviews at the Ministry of Health over a one-week period, and then I traveled to the Douri district to conduct interviews at the district and village level.

The twenty participants were interviewed for one to two hours, with most interviews lasting roughly an hour. The participants were identified by the project team as being the most involved and relevant individuals to the development of the health education materials and to the implementation of the integrated NTD health education pilot project. Interviews in Douri were conducted in four villages: Tchame, Bara, Sotou, and Akato. The four villages where I conducted interviews were chosen for several reasons. The first and most important reason for choosing each village was its participation in the integration project. The doctor and the medical assistant

were interviewed in Tchame, because that is where the District Hospital is located. The other three villages were identified by the doctor, and he gave permission for me to conduct my interviews there. A second consideration was that the local language spoken in each village needed to be Kabiye because that was the local language spoken by my translator, other than English and French. Kabiye is not spoken in two villages in the Douri district, and therefore I could not conduct interviews in either of those two villages. In addition, we avoided one village because they had already been involved in several surveys recently, and therefore we did not want to burden the leadership of that village with participating in another study.

The interviews were conducted within a two-week time frame. Interviews were conducted in offices, in Health Centers, and in Village Chiefs' meeting huts. As the interviews took place, I reflected on each one and made notes on initial codes that emerged. After each interview was transcribed, I continued to identify categories and used the constant comparative method to analyze the data from each interview, and then between the interviews. Through this process more articulated categories emerged that addressed the research questions that were the focus of the study. Categories were further refined through the process of writing up the findings.

Program Observation

While the primary form of data in this study was interviews, the role of deliberate observation as a data collection method requires the researcher to be a careful and systematic observer (Merriam, 1998). While in Togo, I was in the role of observer (Merriam, 1998), and I took field notes to record my observations.

Relevant Documents and Materials

Existing documents were particularly helpful in assessing the current state of the NTD health education program in Togo, and in identifying limitations on further integration. These

documents and data included existing integrated Togo NTD health education documents, training documents, Togo integration manual & guidelines, piloted integrated health education materials, and non-integrated health education materials that I documented while in Togo.

Data Analysis

Qualitative data analysis is the process of deriving findings from the raw qualitative data (Patton, 2002). The process of arriving at the findings from the raw data will depend on which data analysis technique the researcher employs. Qualitative researchers choose data analysis techniques that align with the theoretical traditions or disciplines that the study arises from. Qualitative researchers should plan to begin data analysis as soon as data collection begins, so that data collection and analysis become simultaneous tasks (Merriam, 1998). The advantage of beginning the analysis process as data collection begins is the research design can emerge out of what is learned from each interview to guide the direction of the research (Merriam, 1998). Therefore, the data collected also informs the direction of the next data collected and each step reinforces the other.

In this study, I used the constant comparative data analysis method, which is a basic and common strategy used by qualitative researchers because it aligns with the inductive, concept-building orientation of qualitative research (Merriam, 1998). The first step is to use the constant comparison method within a single interview, document, or set of field notes. Then, the same process is used within another interview, after which the two interviews can be compared to each other, and so on. Identifying categories from the data, often called *coding*, occurs when one set of data is compared with another new set of data so that categories begin to emerge (Dey, 1999). A *category* must be able to stand alone as a conceptual element, and its *properties* are aspects or elements of the category. Further, categories and their properties must be analytical and

conceptual not just direct representations of the data. In addition, categories and their properties must be *sensitizing*, meaning that they provide the reader with a clear and in-depth understanding of the people in the study (Dey, 1999). As concepts are compared and contrasted throughout the data analysis process, the degree of abstraction of concepts will tend to increase, and integrating concepts will also emerge from the data (Dey, 1999). At its core, the process of coding is creating, "shorthand that distills events and meanings without losing their essential properties" (Charmaz, 2002, p.684).

Researchers develop general themes or categories by reading related literature, and from other sources such as professional definitions used in their field, local constructs of the phenomenon, researchers' values and prior experiences, and characteristics of the phenomena being studied. The researcher's theoretical orientation also frames how themes develop. For example, grounded theorists tend to look in the data for processes, actions, assumptions, and consequences (Coffey & Atkinson, 1996). The interview questions themselves also frame the content of the data, which then influences the codes that emerge during analysis of the data (Charmaz, 2002).

The initial stage of generating categories in my study occurred while I was conducting interviews in Togo. I kept field notes throughout the time that I collected data in Togo, and documented my impressions of themes that begin to emerge. In addition, I documented my observations and impressions about each participant and the context of each interview. When possible I listened to the interviews again at the end of each day and used this iterative process to inform the interviews that followed. In this way, the data analysis process began in the field simultaneously with the data collection as is suggested by Merriam (1998). Once I returned to

Atlanta, I transcribed the interviews in the order in which I had conducted them, and completed an iterative data analysis process.

The interviews were transcribed with each line of each page numbered in sequence from the first line of the transcript through to the final line of the transcript. Then each transcript was analyzed using open coding in a column on the left side of each page of each transcript, and using a computer file where I recorded and stacked categories and sub-categories as they emerged. Once each transcript had been coded, then the codes were combined to develop the concepts and categories embedded in that data. Each transcript was coded separately, and then the concepts and categories that emerged from each interview were combined to form the findings for the study. This constant comparison method was used within each interview first, then by comparing one interview with another interview, and so on. The field notes and documents were also analyzed using the constant comparison method, as described above.

I initially coded all the transcribed interviews based on the research questions and the interview questions. Next, I looked for themes in the coded interviews and while building themes, some themes collapsed into sub-themes and were refined throughout this process. All of the codes and themes were substantiated by excerpts from the raw data, and data from debriefing sessions, field notes and documents when relevant. Finally, the findings emerged out of the codes and themes that were written up in Chapter 4 of this dissertation.

In addition to analyzing the interviews, I collected a number of relevant documents here in Atlanta and while I was in Togo. This took the form of project documents, and photographs of posters and billboards. When analyzing mass media health education materials, and NTD pilot project materials, I looked for relevancy to the target population and to what extent the messages aligned with the socio-cultural, structural, and other contextual factors, including barriers, which

emerged out of the interview data. For example, I was interested in whether the messages are presented at a literacy level that was realistic for the target population, and whether they addressed the cultural beliefs about the diseases targeted by the pilot program.

Validity and Reliability

The aim of good research is to conduct a study in an ethical way, which results in valid and reliable findings (Merriam, 1998). In qualitative research, the study should address issues of internal validity, reliability, and external validity. Internal validity refers to how closely the findings reflect reality (Merriam, 2002). The question of what is reality must in turn be addressed. Qualitative research is based on the understanding that perceptions of reality are multiple and changing, and that individuals construct their own reality (Merriam, 2002). The goal of qualitative research is to bring these differing perceptions of reality to the surface. In addition, researchers as the primary instrument of data collection also bring their own perceptions of reality to bear on the study. Therefore, it is important in any qualitative study to include strategies that increase internal validity.

Triangulation is a strategy to increase internal validity by including multiple sources and approaches to the data. In my study, triangulation was achieved in several ways. First, the inclusion of interview participants who are stakeholders from all levels of the Togo health system ensures that multiple perspectives on the research questions were included in the data and the findings. Second, working with translators who are familiar with contexts that I worked in, and including debriefing sessions with them in the study design provided additional perspectives on the meaning of the participants' responses to some interview questions, as well as providing cultural insight. Third, including documents and other documentation such as photographs as

data, provided another source to confirm findings and provided a separate source for data to arrive at triangulated findings.

In addition to triangulation, using *member checks* is another way to increase internal validity (Merriam, 2002). In this strategy, the participants in the study review tentative findings in order to see if the findings seem to reflect their reality (Merriam, 1998; 2002). This strategy was possible to a limited degree in this study due to the lack of access to the participants in Togo once I returned to Atlanta. Another strategy to increase internal validity is *peer review* in which colleagues read and comment on the findings (Merriam, 1998; 2002). As a graduate student, peer review is built into the research process through the involvement of my committee. In addition, I have received feedback from the Togo NTD integration project Director who lives in Atlanta to also act as a peer reviewer. By including a statement of the researcher's bias in the study, internal validity is also increased by giving readers of the findings insight into the researcher's positionality (Merriam, 2002).

External validity is also a concern in qualitative research. This refers to the degree to which the findings of a study are applicable to other situations (Merriam, 1998). External validity can be increased by triangulation through multiple data sources, which is a strategy built into this study as described above. The use of rich, thick description also increases external validity by providing ample information for the consumer of the research to judge the degree to which the study and the findings are applicable to another situation (Merriam, 1998).

Reliability refers to "the extent to which research findings can be replicated" (Merriam, 2002, p.27). This means that if the study were repeated, the degree to which the same results would be found. Since qualitative studies deal with people's behavior and perceptions of reality at one moment in time, study results are not static and findings may change if the study is

replicated. However, reliability in qualitative research more importantly refers to "*whether the results are consistent with the data collected*" (Merriam, 2002, p.27). Strategies that ensure reliability are triangulation, peer examination, making explicit the researcher's positionality, and creating an audit trail. An *audit trail* consists of a detailed documentation of the procedures and methods used. In qualitative research this includes an account of how the data were collected, how categories emerged, and crucial decision-making throughout the study (Merriam, 2002). In my study, this included many forms of documentation: recordings of all interviews, photographs, writing field notes, detailed observations, and a research journal.

Researcher Bias and Assumptions

Researcher bias is a factor in all research, beginning with the selection of the research question itself. The most basic assumption underlying my interest in this research is that adult education theory and practice can make a significant contribution to researching, designing, and implementing effective health education in developing countries, and in this case specifically in Togo. I further presumed that cultural context is a key element in adult education, and my undergraduate degree in social anthropology continues to inform my worldview through a cultural lens.

Since NTD health education is an under-researched topic, I believe that this study can make a contribution to effective NTD health education in Togo, and perhaps in other countries. I believe that understanding the socio-cultural and structural contexts in which health education is implemented is critical to understanding how to do health education effectively. I trusted that the participants in this study would have the ability to describe and reflect on their experiences and their context in ways that I was able to understand and interpret. I assume that my position as an outsider was be an asset by providing a perspective and insight that is useful, even vital, to

answering the research questions in a way that is instructive when developing the integrated NTD health education for Togo.

I also think that people can change their health related behaviors and activities and that providing health information which includes choices that are viable and realistic in a particular context is essential to its effectiveness. Based on my understanding of the literature, I believe that interrupting the NTD infection cycles is not sustainable over the long term through mass drug administration alone, and that addressing people's behaviors and activities that contribute to the re-infection cycles must be an integral part of NTD prevention and elimination programs. In a more general sense, I feel that it is important to reduce the impact of NTDs on people's lives, particularly since high infection rates in sub-Saharan Africa relate back to larger issues of poverty and social justice.

I have long had an interest in Africa and have previously traveled extensively on that continent, including in Togo. I have had a long-term interest in working in developing countries due to an awareness of the privilege and opportunity that I live with in North America and how starkly that contrasts with many other parts of the world.

Translation Issues

Two translators assisted in conducting the interviews for this study. Togo is a French-speaking country and most formal education is conducted in French. In addition to this national language, individuals speak one or more of the local languages. I was surprised to discover that many of the participants were familiar with English and could understand or speak some English in the interviews. Two of the interviews were conducted in English without a translator, while the rest were conducted with the assistance of one of the two translators. After asking my question in English, the translator repeated the question in French for the participant. The

participant usually replied in French and then the translator repeated the answer in English. Sometimes, the participant understood the English question and would respond without translation. In other cases, participants responded in a combination of French and English. I speak some basic French and often understood the participant's response. In some cases, portions of the interview were conducted solely in English. Even in the villages, most people spoke French well, so only two interviews were conducted in Kabiye, a local language in the Douri district.

Two translators assisted me with the study. The first translator lives in Lome and helped with all of the interviews there. He is a professor of American Literature at Lome University, and received his Masters degree in America Literature in West Virginia. He is currently working on his Doctorate degree. The second translator lives in Menga, the town where I stayed while I conducted interviews in four villages around the Douri district. He is a middle school English teacher in Menga, and received his qualifications to teach English at Lome University. Both translators had worked with international researchers in the past. In addition to translating while I was conducting the interviews, both translators acted as key informants and provided insight and explanation when I had questions about the interviews themselves or about other things I observed as part of the experience of conducting the interviews. Translation between languages inherently includes the potential for problems in collecting data that conveys the meaning intended by the participants, and therefore I will take several steps to address these issues.

Prior to beginning the study, the consent forms, verbal consent scripts, and the three interview guides were translated into French. The interviews were conducted using simultaneous translation between the translator, the interview participants, and myself so there was an opportunity for clarification during the interviews. Both translators speak English and after each

interview, I had a debriefing session with the translator after most interviews in order to ask questions and verify my impressions of the participant's responses. These debriefing sessions were valuable forms of data that I recorded in my field notes. I reflected back on them later when I was transcribing the interviews. The interviews were transcribed in English. I had three people in Atlanta to help me with translation issues once I began transcribing the interviews, one of whom is Togolese. My goal was to transcribe the interviews into English with the closest possible meaning to what was intended by the interview participants.

CHAPTER FOUR

FINDINGS

Introduction

This chapter presents the findings from a qualitative interview study that examined the health education for a health intervention project in Togo, West Africa. The purpose of this study was to understand how the local context shapes the integration and implementation of health education in Togo's pilot Neglected Tropical Disease project. The two questions that focused this study were: (1) How has the health education for Togo's pilot NTD integration project been: a) integrated, and b) delivered, thus far? And, (2) What factors shape the integration of NTD health education messages and their delivery? These questions were examined from the multiple perspectives of the twenty interviewees who came from various levels of the Togo Ministry of Health. National Coordinators working in the country's capital were interviewed to gain a broad perspective. To gain a district level perspective, I interviewed a doctor and medical assistant in the Douri district where the project is being piloted. At the village level, Community Health Nurses were interviewed. Community leaders from three villages in the Douri district were also interviewed to gain the perspective of the targeted population. These community leaders had some involvement with the implementation of the health education, and included Village Volunteers, Village Chiefs, Traditional Healers, and one Region Chief.

Lymphatic Filariasis (LF) was the entry point for NTD integration in Togo because the international organizations that traditionally fund LF were strongly supporting this idea. These organizations included the Centers for Disease Control Atlanta, Health and Development

International, and the World Health Organization. Initially, much of the work included convincing other National Coordinators of the benefits of integration.

This chapter is organized into two sections. The first section presents profiles of the twenty participants. This is followed by the findings related to the two research questions. Finally, this chapter ends with a chapter summery.

Participant Profiles

Participants at the national level had differing degrees of knowledge of and participation in the development and implementation of the integrated NTD project. At the national level, some interviewees showed great reserve at the beginning of each interview, but warmed up quickly once the interviews were underway. In discussions with my Lome translator, he guessed that this behavior was due to suspicions about my intentions in conducting the interviews. He explained that due to the unstable political climate in Togo, and the dictatorship that is currently in place, many members of the government are fearful that they could be removed from their positions. Therefore, I was initially under suspicion of having some intention of reporting on them or assessing how well they were doing their jobs.

I made every effort at the beginning of each these interviews to put the participants at ease and be transparent about my purpose in conducting the study. I was also careful to emphasize the fact that I was there in the role of a graduate student with people more senior than me monitoring my study. Once I began the interviews, these interviewees relaxed as it became clear that the topics discussed in the interviews had nothing to do with questioning their job performance.

By contrast, interviewees in the Douri district were eager to discuss the issues posed by the interview questions and participated enthusiastically in the study from the beginning of each

interview. I had the sense that there may be a limited forum for people working at the village level to express their concerns and the challenges faced in their health education work. A summary of all the participants appears in Table 2.

TABLE 2: Participants

Participants:	**Location:**	**Job/Role:**	**Age:**
1.	Lome,	Medical Consultant	60s
2.	Lome	National Coordinator	30s
3.	Lome	National Coordinator	30s
4.	Lome	National Coordinator	30s
5.	Lome	National Coordinator	60s
6.	Lome	National Director	30s
7.	Tchame, Douri District Capitol	Doctor	30s
8.	Tchame, Douri District Capitol	Medical Assistant	30s
9.	Bara	Community Health Nurse	40s
10.	Bara	Village Chief	60s
11.	Bara	Traditional Healer	40s
12.	Bara	Village Volunteer	30s
13.	Sotou	Community Health Nurse	40s
14.	Sotou	Village Chief	50s
15.	Sotou	Village Volunteer	20s
16.	Sotou	Traditional Healer	40s
17.	Akato	Community Health Nurse	30s
18.	Akato	Village Volunteer	40s
19.	Akato	Village Chief/ Traditional Healer	70s
20.	Akato	Region Chief	70s

All but one of the participants were men; in order to protect the confidentiality of the one female participant, all participants are referred to in this text with male pronouns. Their ages ranged from the youngest participant in his 20s, to the oldest two participants who were in their 70s. At the national level, three of the interviewees were directly involved in the pilot NTD integration project team, two were involved in the project in a consulting role at integration meetings, and one was new to his position as a national coordinator and therefore was not involved in the consulting phase before the project was implemented in the pilot phase in the

Douri District. Most of the interviews were conducted in French with the help of a translator, but English and the local language of Kabiye were also used in a few interviews.

Participant 1

Participant 1 works in Lome as a medical consultant. He spoke very enthusiastically about the integration project and his work. He was very engaged throughout the interview and was interested in talking about the process of developing integrated NTD materials.

Participant 2

Participant 2 is a National Coordinator who was enthusiastically supportive of the integration project. He was lively and animated throughout the interview.

Participant 3

Participant 3 is a National Coordinator who participated in the selection of the key messages to be included in the materials. His participation in the integration project was through the consultation meetings. These meetings were held for the purpose of getting many National Coordinators at the Ministry of Health to collaborate with the integration team on identifying areas of overlap between the programs that are vertically structured and therefore usually focus on just one disease.

Participant 4

Participant 4 works in Lome as a National Coordinator. He discussed issues about the health system and delivery of health messages in rural villages. He was also knowledgeable about the integrated NTD health education materials.

Participant 5

Participant 5 was instrumental in supporting the idea of integration and working on the process of identifying the diseases and messages that could be combined. Subsequently, he worked on developing the integration tools for the pilot project, including the key messages and the health education materials. However, he is now retired from the Ministry of Health, and is no longer involved in the NTD pilot project.

As with many of the interviews at the Ministry of Health, Participant 5 was stern and reserved at the beginning of the interview. However, not long into the interview he warmed up and was very animated. His expressions and gestures during the interview conveyed his passion and enthusiasm for the project.

Participant 6

Participant 6's position entails directing staff in the development of materials and messages for the Ministry of Health. This includes radio spots, posters, flip charts, games, and materials such as those developed for the NTD pilot integration project. In Lome, he works with artists, and local specialists in developing health materials and messages. He also consults with Community Health Nurses and Village Volunteers of the target communities.

Participant 6's role in the NTD integration project was to assist in developing health education materials once the key messages had been chosen by the National Coordinators of the seven diseases that were combined in the materials. He showed great reluctance in the interview to critique or comment on the materials. He did not comment on the key messages. However, he spoke in detail about other issues, such as the creation of the materials, the input of the target communities, and the role of Traditional Healers.

Participant 7

Participant 7 works in the Douri District where the NTD project is being piloted. He was fairly new to his job and therefore he was not involved in developing or giving local feedback on the integrated NTD materials. He worked closely with Participant 8.

Participant 7 was able to give a local perspective on the materials, and how they are used within the district. He was highly interested in talking about the issues around health education in the villages.

Participant 8

Participant 8 works in Douri District. He has been in his position for several years and he knows the district well because he is from here originally. He was engaged and enthusiastic throughout the interview.

Participant 9

Participant 9 is the Community Health Nurse (CHN) in Bara. As was true for all the CHNs that I interviewed, he was originally from the village where he was now working. He was interested and engaged during the interview, which took place in his office in the Community Health Center where he works. The primary health concern that he spoke of at the beginning of the interview was malnutrition as it related to poverty. He asked for more help from international agencies such as UNICEF providing packaged food to the community. He expressed particular concern for the children and pregnant women in the community.

Toward the end of the interview, the Health Center became loud with the sounds of women talking and babies crying. As it turned out, we had our interview right before the CHN gives weekly check-ups to the babies in the village.

Participant 10

Participant 10 is the Village Chief of Bara, who spoke emotionally about the health problems of his community. As the village leader he conveyed a sense of responsibility for the wellbeing of the community members, but also a sense of feeling his limitation in terms of the resources available to him to improve his community's health. In addition to discussing the health issues that relate to NTDs, he was perhaps even more concerned with basic issues related to the lack of infrastructure in the community. He specifically highlighted sanitation issues as a big problem in his community, and he felt that the absence of a clean water source was a primary concern for him as the community leader.

Participant 11

Participant 11 is the Traditional Healer (TH) in Bara. Out of the three THs who participated in the study, he was the only one who had received formal training from the health system. His training included learning how to identify certain diseases that his treatments could not cure, such as malaria. He was trained to refer those patients to the Health Center. He spoke about implementing these concepts in his practice by curing some patients, and taking others to the community's Health Center. He participated in the interview with interest, and identified dirty water as the primary health problem in his village.

Participant 12

Participant 12 is the Village Volunteer in Bara. He identified ignorance as the biggest obstacle for him in doing his work. He said that community members are not aware of the existence the diseases depicted in the materials, so he felt his biggest task was to make them aware that they exist. He also identified women as an important focus for his teaching because of their role in the home. He was animated and interested throughout the interview.

Participant 13

Participant 13 is the Community Health Nurse in Sotou, and was originally from this village. Participant 13 was very interested in talking about his experiences and the obstacles he faced in his role in the community. Because of his level of interest and effusiveness on the topics raised by the interview questions, this was the longest interview that I conducted totaling over two hours. His level of commitment to his community, as well as his frustration at the current conditions for community members came across throughout the interview. He was particularly concerned with the health of women, especially pregnant women, in his community because of their powerlessness within marriage to make their own health decisions. He spoke and understood some English, which he used in parts of the interview; however, he spoke primarily in French.

Participant 14

Participant 14 is the Village Chief in Sotou. He spoke of poverty as the biggest health problem in his community because community members could not afford to buy drugs. He also pointed out that there was a shortage of drugs at the Health Center itself, indicating limited resources at the district level. He also asked for more food aid, as some had recently been provided by UNICEF.

Participant 15

Participant 15 is the Village Volunteer in Sotou. He was reticent to say much throughout the interview, and answered all the interview questions without expanding on the topics very much. During the interview, I was unsure why he was reluctant to talk more as this was unlike any of the previous interviews. I was puzzled by this and later, I discussed it with the translator.

He read Participant 15's behavior as shyness towards outsiders, which seemed unusual for a Village Volunteer.

Participant 16

Participant 16 is the Traditional Healer in Sotou. He had not received formal training from the health system, but cooperated with the CHN in referring patients to the Health Center when they had illnesses that he could not cure. He was knowledgeable enough about malaria to recognize the symptoms, but wished that he could get training and learn more. He indicated that poverty was an important health issue that he saw in his traditional practice.

Participant 17

Participant 17 is the Community Health Nurse for Akato. He was originally from this village. He was interested and animated throughout the interview. His biggest concern with the delivery of health education was to convince community members that the diseases really exist. He said he took advantage of unplanned opportunities to teach villagers about the symptoms and disadvantages of the disease. He was interested and engaged throughout the interview.

Participant 18

Participant 18 was the Village Volunteer in Akato. He spoke about delivering health education in a context in which he had to convince villagers the diseases exist. His own understanding of the diseases depicted in the materials was inaccurate, which became clear in the process of the interview. He was interested throughout the interview and expanded on the topics raised in the interviews. He spoke some French and some Kabiye, the local language.

Participant 19

Participant 19 is the Village Chief as well as the Traditional Healer in Akato. He had received no formal training from the health system in his role as TH. He said that malaria was

the biggest health issue in his community. He was concerned that the integrated materials were confusing, with too much information on one page. He also felt that people in the village were too busy to attend group meetings, but they should slow down and listen. He also felt that nutrition was a main health issue in his community. He was animated and humorous throughout the interview. He spoke French and Kabiye during the interview.

Participant 20

Participant 20 is the Region Chief for the region around and including the village of Akato. He was very interested in discussing the issues raised in the interview. He is an older man, who was animated and humorous throughout our time together. He asked many questions during and after the interview in the interest of learning more about the topics raised during our discussion. Given his position in the broader community, it was notable that he made a point of participating in the study. I was surprised by his lack of health knowledge regarding the key messages depicted in the NTD health materials. He was a retired officer in the Togo military who had now returned to the community to serve as the Region Chief. He spoke French and Kabiye during the interview.

Findings

Data analysis of the interviews, field notes, and documents yielded findings related to each of the research questions. As can be seen in Table 3, there are three major findings answering the questions of how NTD health education for Togo's pilot NTD integration project has been integrated and delivered thus far. Health education for this project has been integrated through the health education materials and delivered at the village level through group meetings and unplanned teaching opportunities, and through the involvement of community leadership.

Factors that shape the integration of NTD messages and their delivery are socio-cultural factors and structural factors.

Integration of NTD Health Education Messages

In answering the first research question, the data showed that the integration of NTD health education that is being piloted in the Douri district is occurring through the materials. The health education materials were integrated through the development of key messages by the

TABLE 3: Findings

Integration of NTD Health Education Messages
1. Health Education Materials a. Developing Key Messages b. Pictures
Delivery of Integrated NTD Health Education
1. Village-Level Group Meetings a. Meetings Organized by Village Volunteer b. Meetings with Existing Groups 2. Unplanned Teaching Opportunities 3. Involvement of Village Leadership a. Village Chiefs b. Village Volunteers
Factors That Shape Integrated NTD Health Education
1. Socio-Cultural Factors a. Gender b. Local Beliefs about Illness & Disease c. Role of Traditional Healers 2. Structural Factors a. Poverty b. Lack of Infrastructure i. Water & Latrines ii. Education

NTD integration team at the national level that are reflected in four key messages, which are also represented primarily through the pictures in the materials.

Health Education Materials

The analysis of the participants' discussion of the integration of the health education for the NTD pilot project revealed that it took considerable effort at the national level to select the topics and categories to be integrated for the final key messages to be selected, and for the health education materials to be developed.

The two areas that were the focus of interviewees' comments about the materials were: 1) Developing Key Messages, and 2) Pictures. When I asked participants to comment on each of the four pages containing a key message, none of the participants discussed the brief text that accompanies each picture, nor did they comment on the titles on each page. The text on each page was not mentioned by participants when describing health education delivery, nor was any other form of written communication mentioned for health education delivery for the project. The pictures were the primary teaching aid when delivering integrated NTD health education.

Developing Key Messages

The national program for Lymphatic Filaraisis (LF) provided the starting point for the integration of several NTDs in Togo. This was the case because of the backing and encouragement that this vertical program received from the international funders working with this program. In addition, at the time when the NTD integration project started, both LF and Malaria programs were directed by the same National Coordinator, so integration of those two diseases made an easy entry point for the integration project. Participant 2 explained it like this:

> Because LF is an entry point of integration, yes, because our partner, who is a traditional (funding) partner of LF, came with this idea and LF is the entry point…Because the

> traditional partners of LF support the idea of integration. Like CDC Atlanta, like HDI… the other person is WHO (World Health Organization). Also, I think that the three organizations very strongly support this idea.

The momentum for the NTD integration project was created largely because of the encouragement of the external funders.

The National Coordinators of the targeted diseases decided upon the topics to include in the integrated health messages in a consultation process, through which the information and messages that were common to several diseases were combined on each page. At times, the integration team had to convince other National Coordinators of the benefits of integration versus the existing vertical model in place, and this was the first step, as Participant 2 described:

> Okay, you have many program vertical programs. Every Coordinator has leadership of their program. It is difficult now to put everybody together and see one person, or have one person in charge of all of this. This one activity you do progressively, to change the minds of every person. But I think that it is possible now because they can see the benefit of this.

This process was somewhat unwieldy at first as many National Coordinators were involved. Participant 2 described the initial meetings:

> The first time we organized all the meetings for, I think, twenty-four diseases, yes, everything! And we saw if the directors (National Coordinators) had the means to see how we can integrate diseases. And we found that difficult to take lot of diseases to begin with. It is possible when you are identifying three, five, six to begin with. If after we have success, we can add another disease. But everybody was very enthusiastic about

this idea, but the practicality is very difficult. But the concept, everybody agreed about the concept.

Initially, the meetings at the national level started by considering twenty-four diseases for integration, and then it was narrowed down to the diseases that could realistically be combined together. After a yearlong process of meeting as a group, and individually with integration team members, who were based out of an office at the Ministry of Health (see Photo 1), the health education materials were developed. As Participant 1 explained, "First, you have a monthly meeting for the coordinators, including the Educational Service…So every month we had a meeting to see which activities that you can [combine] for the different programs you can include in the NTD".

Figure 1. Integration Project Office at the Ministry of Health in Lome, Togo.

In addition to organizing group meetings, the integration team members met with National Coordinators individually to further clarify which activities and information overlapped in a way that could be integrated. Participant 2 described this process of narrowing down the focus to arrive at the areas of overlap for integration:

> The first time, you have a meeting for all Coordinators to search for the things you can integrate. You do more meetings to identify for first time the diseases we can integrate before we choose the activities you can integrate. After that, you go to see the persons, one by one, the Coordinators one by one, to take the
>
> information from every program. And after, you then have the job of (selecting) the activities (which overlap). You can do it easily. After this you make the tools (materials).

The materials that Participant 2 referred to above, include the health education materials.

After going through the process of deciding on key messages for the health education materials, the integration team had the materials developed with the assistance of a designer, in consultation with the Information, Education and Communication (IEC) Department of the Ministry of Health. Participant 1 explained that, "We (National Coordinators) discussed it and we called a designer who designed key messages". Once the pictures were developed by the designer, a committee at the IEC office gave feedback on the pictures to ensure that they are relevant in rural communities. Participant 5 explained that the next step was to test the newly developed materials in the community, "These materials were to be used by the Village Volunteers, so it was through them it was tested, and we have one district doctor who was in the pilot district".

Through the consultation process, the decision was made to include integrated messages for six Neglected Tropical Diseases (NTDs) plus Malaria. Malaria is not a "neglected" tropical

disease; rather, it is a well-funded high-profile disease. One of the strategies of the integration approach is to align NTDs with better-funded diseases to increase coverage in target populations of less well-funded diseases. This approach was taken in Togo where seven diseases were included in the integrated health education materials: 1) Lymphatic Filariasis (LF), 2) Onchoceriasis, 3) Trachoma, 4) Schistosomiasis, 5) Soil-Transmitted Helminthiases (STH), 6) Guinea Worm, and 7) Malaria.

When considering the areas of overlapping health messages relevant to these seven diseases, the integration team arrived at four key messages for the health education materials: 1) Prevention messages related to hygiene and sanitation behaviors, 2) Prevention messages related to mosquitoes, 3) Symptoms that can be prevented by taking medicine at the Mass Drug Administration, and 4) Seeking treatment at the Health Center. These key messages were then developed into four pages of health education materials with each page representing one of the key messages. Figure 2 shows how the NTD health messages were integrated as described above.

Documents from the integration project identified the health messages for each of the seven diseases that should ideally be included in the health education materials to be delivered to the target population. These are the messages that were selected through the consultation process with National Coordinators described above. An analysis of these selected messages when compared to the health education materials that were developed and then used in the pilot project, revealed how and to what degree the selected messages were represented in the materials. Table 4 shows the results of this analysis.

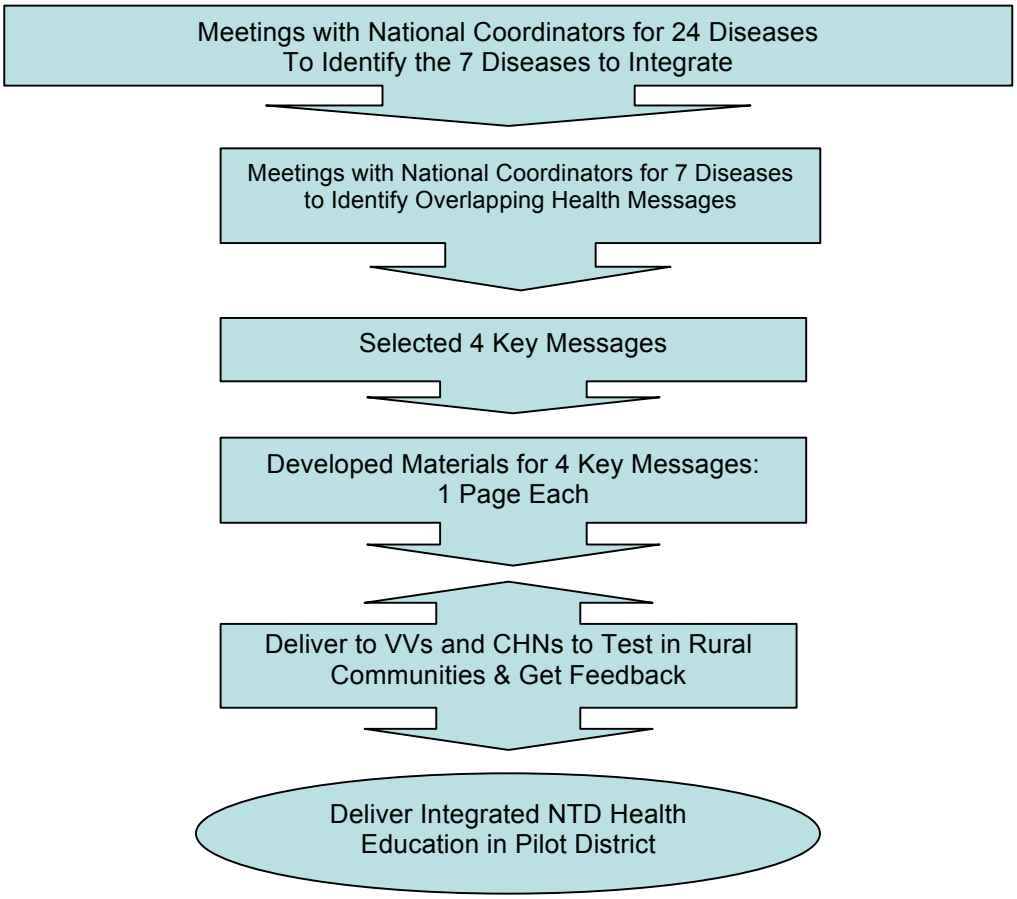


Figure 2. Process of Developing Integrated Key Messages & Materials

The analysis represented in Table 4 shows the diseases that are included in each of the four key messages. By looking down the columns in Table 4 for each key message, it is evident that none of the key message pages include information relevant to all seven diseases. The empty boxes indicate the diseases that are omitted from each page.

By looking across the rows of Table 4, we can see which key messages contain the information for each individual disease. The empty boxes in each row indicate which key messages omit information for a particular disease. The *Total* column, shows the total number of health messages for each disease that are included in the key message materials. The totals from this column range from as low as one, to a high of seven. Therefore, there is an uneven

distribution of health information for the seven diseases that are integrated in the project materials.

TABLE 4: Four Key Messages Represented in the Integrated Materials

Diseases Targeted in Pilot Project:	**(1) Prevention: Hygiene & Sanitation Behaviors**	**(2) Prevention: Messages related to mosquitoes**	**(3) Symptoms: Prevented by MDA**	**(4) Treatment: Go to the Health Center**	**TOTAL # OF MESSAGES BY DISEASE**
Soil Transmitted Helminthiases	▪ Man using a latrine ▪ Food covered by a net ▪ Man & woman washing hands in a bowl		▪ Child with a large belly ▪ People gathered in village for MDA		5
Schistosomiasis	▪ Man using a latrine ▪ Man & woman washing hands in a bowl ▪ Boy turning away from lagoon (don't swim)		▪ Man urinating with blood into water ▪ People gathered in village for MDA	▪ Boy urinating with blood into water	6
Lymphatic Filariasis	▪ Man washing his enlarged leg	▪ Man with enlarged leg ▪ Enlarged Scrotum ▪ Woman sleeping under a bed net	▪ Woman with enlarged leg	▪ Man with enlarged leg ▪ Enlarged Scrotum	7
Onchocerciasis			▪ Blind man led by a boy ▪ People gathered in village for MDA		2
Trachoma	▪ Man using a latrine ▪ Man washing his face		▪ Man with trachoma in his eye ▪ People gathered in village for MDA	▪ Man with trachoma in his eye	5
Guinea Worm				▪ Guinea Worm emerging from a man's foot	1
Malaria	▪ Men & woman in a clean compound	▪ Woman lying sick in bed ▪ Woman soaking a bed net ▪ Woman taking medicine		▪ VV giving medicine to man with a fever ▪ A pregnant woman at the Health Ctr	6
Unknown				▪ Mother taking 2 children to Health Ctr.	1
TOTAL # OF DISEASES ON EACH PAGE	5	2	5	6	

We can see in an analysis of the columns of Table 4, each page contains a key message that compiles, or integrates, information from at least two and up to five of the seven diseases.

This kind of compilation of health messages for multiple NTDs is in accord with the NTD integration approach discussed in the literature. This integrated method of presenting health information for NTDs is contrary to the usual practice in vertically structured programs of developing key messages that are specific to one disease.

Each key message page includes information relevant to only some of the seven diseases. Therefore, when each key message page is considered on its own, integration of the seven diseases included in the Togo pilot project is not evident. However, when considered as a unit, the four key message pages integrate all of the seven diseases together. The majority of the ideal messages identified in project documents are
included in the materials for the four key messages, with only three out of a total of thirty-five messages being omitted. One additional message is included in the materials, which is not identified with a particular disease in project documents.

Three messages that are identified in project documents as "ideal" for inclusion in the key messages, do not appear in the health education materials. The three omitted messages are: 1) for Onchocerciasis, the "Drugs are distributed for free", 2) for Guinea Worm, to "Notify the VV or a village authority of each case or suspected case", and 3) for Malaria, to "Treat every fever as malaria." On the other hand, one message that was included in the integrated materials was not identified as "ideal" for inclusion, but appears on the page for the fourth key message, *Treatment: Go to the Health Center.* It is included in the chart as "Unknown", and is a picture of a mother taking two children to a village Health Center.

The key messages do not highlight identifying the seven diseases by name, rather the concepts of cause and effect, and doing desired health behaviors are emphasized. Participants

expressed that learning about each disease was not optimal or necessarily possible for community members. Participant 8, explained:

> It is not necessary for people to know which disease causes which symptom. What is important is for people to know that when you do this [behavior] you will catch this disease [pointing to the symptoms depicted in the materials].

In general, participants at all levels of the health system, and village members, agreed that the key messages were relevant to the target population. Participants often had suggestions for improving specific images in the materials, but did not disagree with the key messages in the materials. Community members of the target population were not expected to be direct consumers of the materials themselves without the guidance of the Village Volunteer or the Community Health Nurse (CHN). With this in mind, the materials were developed as teaching tools to be used primarily by the Village Volunteers (VV), who may only have a few years of primary school education. Therefore, the level of language in the written text, and the complexity of the messages themselves were directed at the VVs. Participant 1 referenced this limitation that her team had during the process of selecting key messages:

> It is difficult to integrate everything. It is very, very difficult because you have lot of activities (to integrate) but if you want to integrate everything, the Village Volunteers are not at a high level, and they are confused. The activity (teaching the key messages) is possible only when it is also easy for the Village Volunteers to do.

Participant 8, from the Douri district where the integration project is being piloted, also spoke of the limitations of the community members in understanding the information presented in the materials for the four key messages. He articulated the idea of the VV as the conduit for the health messages to the community:

I understand the images, but they need some explanation for the population. The population cannot understand what it means the first time (they see it). So they need the community health workers (VVs) to explain the images to the population. It is not enough just to show them, they have to explain.

As Participant 8 points out, the community members do not have direct access to the meaning of the materials by themselves. The key messages must be explained by the VVs in order to be understood by the intended consumers of the information at the village level.

Pictures

The integrated materials are primarily pictorial, which is of crucial importance due to the low level of literacy in rural villages. Each of the four key messages is presented in color pictures and text on a one-page standard 8.5 by 11 inch paper: 1) Prevention: hygiene and sanitation behaviors, 2) Prevention: messages related to mosquitoes, 3) Symptoms prevented by the Mass Drug Administration, and 4) Seek treatment at the Health Center (see Appendix D for these pages with English translation). All of the four pages have a the title, "Togo Integration Project" in French in black letters at the top of the page, and then a larger title in colored letters stating the key message for that page. Under the key message title, each page has color pictures of the health information for each key message (see Pages 1-4 below).

The layout of three of the key messages parallel one another: Pages 1, 2, and 4. All three have a color borders with several color pictures inside the border, each depicting a health message associated with the key message for that page. On each page, under each individual picture there is text in small letters with a brief explanation for each picture. The text ranges from three to twelve words per picture, all in French. When asked to talk about each of the four key

message pages, none of the participants commented on the text, rather, they only talked about the pictures.

All the pictures were drawn by a local artist, and they depict the health messages in rural village settings. Some of the pictures illustrate desired health behaviors and some depict symptoms of the seven diseases integrated in the materials. On the page for the fourth key message, there is a mixture of pictures showing three desired health behaviors and four disease symptoms, and the pictures are arranged in a way that does not convey the difference between these two types of pictures. A person who cannot read the text under each picture, would not necessarily be able to determine the relationship between these two types of messages. On the page for the third key message, there are five pictures of the symptoms that are prevented by the MDA, and a picture of the desired health behavior: people in a village setting taking the drugs. The relationship between these two types of pictures is conveyed by arrows pointing from the desired behavior to the symptoms and the words in French reading "If not!!" in bold red letters. Participants felt that the arrangement of the pictures on the third page more clearly conveyed the meaning of the key message compared to the arrangement of the pictures on the fourth page.

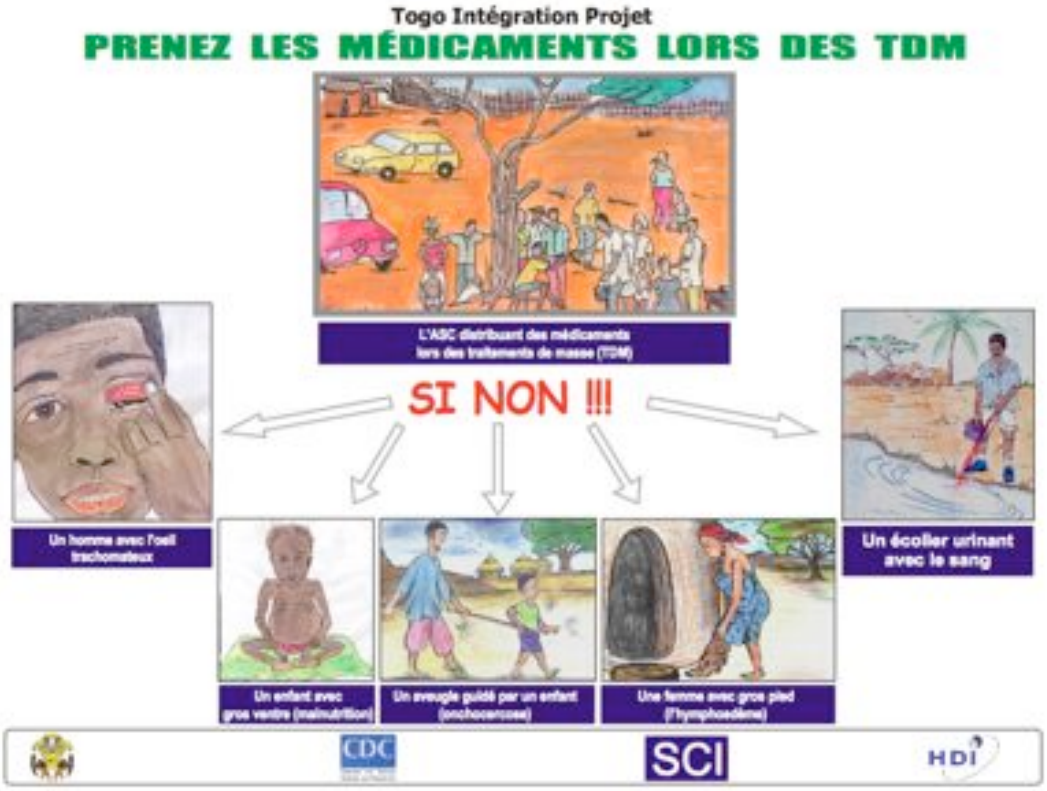
The pictures in the materials were designed to convey an underlying message in addition to the messages that are shown in pictorial form. The pictures that show the village settings depict two types of huts: round huts with a conical thatched roof, and rectangular huts with four walls and a thatched roof. The round huts are ones that are the cheapest to build and are typically lived in by poorer people in rural communities. In contrast, the rectangular huts are more expensive to build, and represent a degree of prosperity in rural areas.

On Page 2, the topic is prevention messages related to mosquitoes, and the pictures include images of round and rectangular huts. In the villages, round huts are the least expensive

Page 1. Key Message One: Prevention Related to Hygiene & Sanitation Behaviors

Page 2. Key Message Two: Prevention Messages Related to Mosquitoes

Page 3. Key Message Three: Symptoms Prevented by MDA



Page 4. Key Message Four: Seek Treatment at the Health Center

to build, whereas rectangular houses cost more money to build. Therefore, round huts are associated with limited individual resources. Participant 6 explained why the two shapes were included in the pictures:

> It is a village, inside the village where the houses are like this. The hidden message here is that if you fall sick you will be poor. You will live in poor
>
> houses. If you are in good health, you save enough money to build a nice house.

This comment indicates that while the pictures for the key messages were being designed, the collaborators were aware of the connection between health and poverty levels in the rural communities, and also of the need to convey this message to the target population.

The process of designing and approving the materials for the key messages involved having artists draw the pictures, and then getting approval from the Department of Information, Education and Communication in Lome. Participant 6 explained the process of designing the pages for the key messages:

> You call upon artists and when they arrive, you show them what you have prepared, your opinion, and all this. They go and do the first draft and bring it to you - if you agree with them (the pictures) then you continue and if you don't agree then you change it back. Sometimes when you do this, me, myself I would agree, but I have a committee and in the committee we may change it ourselves. We may switch the thing before giving our consent or not.

Participant 6 explained further that the members of the committee who gave approval of the pictures included members of the targeted communities, usually the Village Volunteers and the Community Health Workers. This was to ensure that the pictures reflected the reality of the rural community members targeted by the materials (see Figures 3 & 4). He described it like this,

“My collaborators in the town, they look at it, then they bring it to us. They say if there is some picture in it we have to change because it is not adapted to the situation.” Later in the interview, he commented several times that if the community members don not see a representation of themselves in the pictures, they will not relate to the messages and ultimately will not accept the health messages.

Overall, participants felt that the majority of the pictures used in the materials were representative and relatable at the community level. However, there were a few details in some of pictures that participants commented on as needing to be changed to better reflect the realities in the villages. Some participants made specific recommendations for adjusting or improving details in individual the pictures, or the layout of the pictures on the page. None of these

Figure 3. Rural Douri District in Northern Togo.

recommendations for improvement referred to the text on any of the pages. The materials are used by the health educators in the villages, not by village members directly.

The pictures included in the materials are essential for conveying the information to the target population because people in the villages have a low level of literacy. The pictures become the primary teaching tool when the Village Volunteers are teaching health messages to groups gathered in the village and when they teach one-on-one. Participant 15, the Community Health Nurse from Akato village talked about the importance of the pictures

Figure 4. Village in Douri District.

> I find the materials very useful in the exercise of my job because it is illustrative, and when I show these to the population they understand more quickly than if I just talked to them. And I can even give an example: When I came this morning to the Chief's house,

> he had some difficulty in giving the name of a certain disease, but if I had the picture, I would just show it and I'm sure that he would understand very quickly, so the materials are very useful.

The Village Volunteers and the Community Health Workers considered the pictures the most effective teaching tool, and these pictures are the component of the health education materials that they use most often. Participant 15, the CHN from Sotou, emphasized this when he said, "I use the materials and most of the time it's the images, the pictures. Those pictures help the population to know what I am saying." Specifically, they considered pictures of the symptoms of the diseases to be the most valuable to them in teaching village members about diseases. They also considered them the most valuable for convincing people to take preventative measures since they depicted how serious the effects of the diseases can be. Overall, Village Volunteers and Community Health Workers felt that the design of the materials was adapted to the way they used them with groups rather than one-one-one, but had concern about the how the size of the pictures impacted how the materials could be used. Participant 15 from Akato explained:

> It will be better to make it bigger, especially for those people who are a little bit old whose sight is not as good as young people. But if it is for young people or about young people, it is not a problem. And especially if it is a small group, it is also good. But if the group is a larger, it is not sufficient, it is not large enough. The pictures are not large enough for a larger group.

Integrating the NTD health education messages for the pilot project in Togo took considerable effort at the national level. The first stage was identifying the seven diseases that were chosen for integration, and the second stage was developing the four key messages that

represented areas of overlap among the seven diseases. Designing and getting community feedback on the materials was important for maximizing the relevance of the materials at the village level. The pictures were of primary importance due to the very low literacy levels of the target population.

Delivery of Integrated NTD Health Education

In answering the first research question, the data showed that the delivery of the key messages of the integrated NTD health education that is being piloted in the Douri district is occurring primarily through group meetings at the village level, as well as through some occasional and unplanned teaching opportunities. The delivery of the health education is possible through the support and involvement of the village leadership. As Participant 3 described it, "Campaigns are together, everything works together, with people together, you campaign for all diseases, not for a single one."

Village-Level Group Meetings

Participants at all levels emphasized the most common method of integrated NTD health education delivery in the villages was at group meetings organized by the Village Volunteers and held outside in a central location in the village that was specified by the Village Volunteer. The data showed that in each village these group meetings had two significant and overlapping qualities; first, that they are instructor-centered, and second, that a segment of the village members do not attend any of the meetings, while the same members of the village tend to show up to most meetings.

Meetings Organized by the Village Volunteer

Participants reported that the same teaching format was used in each village that I visited whereby the Village Volunteer made it known in the village a few days ahead of time that a

health education meeting was planned at a certain time and at a specific location. Village members were free to choose to attend the meeting or not. At the specified time for the meeting, village members would show up and sit on the ground, or on benches provided in that meeting place. Participants described the meeting size as usually between fifteen and twenty people. I observed one such meeting place where the benches were fixed to the ground in rows, and the Village Volunteer demonstrated his position at the front of the group, similar to a traditional classroom set up with the teacher at the head of the class. In other villages, the meeting place was an open area adjacent to the village.

The Village Volunteers that I interviewed described a teacher-centered instruction style in which they would begin the health education meeting with a pre-determined topic. The Village Volunteer then used the pictures from the health education materials to assist in explaining the message that was being delivered. The information was taught using an oral explanation of the health information, emphasizing the concept of cause and effect for preventing symptoms. Participant 16, the Village Volunteer in Sotou, described the teaching process that he typically used at the group meetings that he organizes in the village:

> First of all, I talk about a certain disease. For example, some prevention, for example, how to wash hands before eating. I give them a piece of advice. And in the group there would be some people who will be reluctant, and some react to hearing that, even though washing your hands before eating is what should happen. It is at that time that I take out my picture and I show them that if you do not wash your hands before eating, this is what you will have as a disease.

Participant 16's explanation of his teaching method points out the need to make a connection for the learners between the desired health behavior and the health consequences of

not doing that behavior. He also highlights the crucial role of the health materials in conveying that message and helping the community members to relate their actions to the disease symptoms that community members experience. He also refers to the fact that he meets with reluctance from villagers to accept the health messages.

The Village Volunteer from Bara, Participant 12, described a similar teaching process as described above by Participant 12, but elaborated further on how he verified whether or not the learners understood the health messages he had conveyed in the group meetings:

> First of all I greet them and I present them with the theme of the discussion, whether it is hand washing, or it is diarrhea, or whatever theme we are going to discuss. I tell them the theme first. And when we finish the discussion I ask them for feedback, that is, I ask them questions to see or to find out whether they have understood what I said. If I notice that they have understood, we separate (end the meeting). But if I find out that some have not understood what I said, I give them the opportunity to ask me more questions and I will answer, and after that we arrange another meeting time if possible.

As he described, he usually followed each teaching session with a question and answer session. This format helped the Village Volunteers to determine whether the information had been understood by the individuals attending the meeting.

Participant 12 began the teaching sessions by verifying the existing knowledge level of the learners to inform his decision-making about what information to teach. As he described, the health education materials were essential for surfacing this knowledge among the learners:

> First, I use them because they are the materials that helps us (health educators) the most. First, I show the picture to the population and I ask them what they are seeing. Each one says what he sees. And when it is incomplete, I complete the other information for them.

Participant 12 also made reference to the importance of his presence in ensuring that village members attended the meetings:

> I am the first one to go to the venue, the meeting place, because if I do not go early and some people come and they do not see me, they will vanish. So I arrive first and when I notice the people have come in great number, I start my work.

Another method that the Village Volunteers used to convey the seriousness of the health issue being discussed was to use a member of the group as an example of the difficulty and discomfort experienced during the specific illness being discussed. If the Village Volunteer knew that a community member had suffered from the illness, he would use that person as an example of what to avoid. The Village Volunteers sometimes asked individuals to talk to the group about their experience of the illness that was being discussed.

Village Volunteers said that the topics for the group meetings varied and that the topics were chosen by the Village Volunteers for each meeting. The topic may be communicated to the VV by the Community Health Nurse, or they may decide for themselves which topic to talk about at a meeting. Mr. Marc from Sotou described his approach to presenting health messages:

> What I usually do is this: Since the community is a majority illiterate, I cannot give appropriate information on all the five diseases at the same time. What I do is I choose a topic, maybe hygiene or malaria, and I tell them how to prevent malaria for example. I advise them to sleep under the mosquito net. If it is hygiene, I tell them how to be clean. I told them that to avoid diseases. Or I can choose a precise disease, as I said malaria or any other disease. I tell them I give advice on how to prevent that disease.

Village Volunteers also mentioned that the same topic is sometimes repeated at several meetings. Participant 12, the Community Health Nurse from Bara, explained the reason for repeating the messages:

> I think that repeating it has to be first. We have to do this many times in a year or many times in a month so that people get more information. But, we give more information because when you talk of something only once and disappear, they forget…so it has to be repeated.

Like many of the participants, Participant 12 attributed the need for repetition of the health messages to the low level of education in the rural villages. When asked to explain why repetition was needed, he responded:

> Ignorance, because of ignorance. It is not the way that they are used to doing it (health behaviors). They ignore that. But I know that I am teaching something important.

All of the participants delivering village-level health education expressed frustration that many people in the villages were not receptive to the health messages that they were conveying. The group meetings in each village were usually attended by the same community members each time, while other community members rarely or never attended the group health education meetings. In Bara village, the VV explained that primarily men attended his meetings, in Akato it was women, and in Sotou, the group that attended was mixed with some men and some women. However, the VVs could not fully explain the pattern of attendance in their villages.

Meetings with Existing Groups

Although most of the health education described by the participants was delivered to groups organized by Village Volunteers in villages, they also mentioned other approaches that were used less frequently. One approach to speaking with groups that came out of the data, was

unplanned opportunities that arose through chance meetings with groups of people who were already assembled for another purpose. Participant 18, the VV from Akato, described how he used those chance meetings as an opportunity to teach health information:

> I see some little opportunities. Once you see a small group somewhere if you know that they are from your community you go and talk to them. Whether you have planned to meet them or not, if you see them you can go and talk to them, just as we are sitting here. If I arrive as a community health worker, after our conversation I can seize the opportunity to bring you the information.

In this way, when groups are gathered to socialize in the village, it can also be used as an opportunity to teach health education by the VV.

Village Volunteers also talked about taking advantage of the fact that small groups are already organized in the villages, such as farming cooperatives. They go to the places where those groups meet, and use it as a teaching opportunity to give health messages. Participant 16, the VV in Sotou, explained how he took advantage of these teaching opportunities:

> In the community here, the way I use the information is through the cooperative work groups, they are working for one another. So I, as the community health worker, I have to get informed on whose farm people are working at today. When I am informed, I go to that place and I give the information to workers on their farm.

Since the study was conducted during the intensive planting season in Togo during which farmers must spend long days working in the fields, the village level participants mentioned farming co-operative groups as a way to take advantage of the fact that people were forming themselves into groups daily, which provided a secondary way of delivering the health messages to groups of villagers.

Unplanned Teaching Opportunities

While most of the participants discussed integrated NTD health education at the community level that focused on speaking with groups, CHNs and VVs mentioned that they took the time to educate community members one-on-one when the opportunity arose, for example when treating patients at the Health Center (see Figure 5). This use of "teachable moments" was described by Participant 17, the CHN from Akato, when he said that:

> I am sometimes in meetings to give information to people. Some other times during a consultation, that is when people come for consultation in the (Health) Center, I see the opportunity to show them the disadvantages of those diseases or the consequences the disease has on people.

Figure 5. Village Health Center.

Participant 1, one of the integration team members at the national level, also spoke about the incidental health education that took place in rural communities:

> If he (Village Volunteer) comes and he missed somebody (at the MDA), and he comes to give the drugs to a few persons, he can take this opportunity to do some sensitization and if it is the day of the market, he can talk about it. He does it every time he can have a group or many persons together to talk about the integration and all the diseases.

Mr. Didier, the District Supervisor of Laboratories, described socializing as another unplanned teaching opportunity that Village Volunteers take advantage of:

> When they are finished working, by the end of the day, they go to drink some local beer. So when they go to drink it, those community health workers (Village Volunteers) can go and tell them or give them the information on their health and hygiene.

Village Volunteers and CHNs spoke of occasionally going from house to house to do health education. For example, Participant 12 visited women in their homes after group meetings to check whether they were implementing the health behaviors he had taught:

> I look to see that (they are doing the health behavior) when I finish my meeting. I sometimes visit some houses, and I make sure there is a change in the behavior of the women. For example, if a woman was usually not covering her pots of water, after the meeting I meet them at the home to check if she uses the cover to protect the water. So I look there to check for change (in health behavior).

Health educators took advantage of many unplanned teaching opportunities in their communities.

Involvement of Community Leadership

The delivery of health education in villages takes place through the involvement of the community leadership. The VVs are community leaders in their role as the primary health

educators at the village level. VVs draw on the authority of the Village Chiefs to set the place and time of the community health meetings and to call village members to the meetings. During the interviews in the villages I observed friendly and cordial relationships among the Community Health Nurses, Village Volunteers and Village Chiefs. It was clear that they worked well together, and that the VVs and CHNs showed a measure of respect and deference to the position and authority of their Village Chiefs.

Village Chiefs

Participants at the village level, as well as at the national level, spoke about the significant role of the Village Chiefs in promoting the community health meetings. Village Chiefs play an important role in health education at the village level by sanctioning the activities of the Village Volunteers. They are involved in getting the message out to village members about upcoming health education meetings, and through them VV activities attain legitimacy. Participant 18, the VV in Akato explained:

> To get people to the meeting, I first of all go and see the community leader to let him know, and he is that one who asks the Gongoneur (town crier) to pass the message. And he (Gongoneur) gives the date and the hour and the venue of the meeting.

The Gongoneur is the community drummer who communicates to people within several miles of the village to pass along important messages from the Chief. The Gongoneur uses a special kind of loud drum and drumming stick to communicate over distances using a drumming language. Participant 2 described the involvement of the Gongonneurs in communicating to the villagers about health education activities:

> The Gongonneurs give the message of chief of village. Yes, it is the word of the Village Chief of that village. The Chief wants to give information to the population; it is through

the Gongonneurs, and if you go to the village you talk with Chief of Village to give the message through the Gongonneurs.

Participant 1 gave more details about how often, and how far in advance community members were asked to attend the health education meetings through the announcements of the Gongonneurs:

> To call people to announce to them, they (Gongonneurs) do it twice (per day): once in the morning and once in the evening, for those who work on the farm and field. So, they (Gongonneurs) tell them that, "The chief invites all of you to participate in three days. In the morning [of the third day], there will be a big meeting in the village near this place." Before that day, they (Gongonneurs) inform the people by doing those things twice a day, in the morning and in the evening. On the very day [of the meeting], early in the morning, they will do it again.

The Village Volunteers, Community Health Nurses, and National Coordinators spoke about the value of the Village Chief in sanctioning and promoting the health education meetings through traditional communication methods. However, Village Chiefs had a different view of their position of authority in the village. Participant 19, the Chief from Akato, spoke about how the power of Chiefs in this role had diminished over time:

> Formerly, or in the olden times, people used to be obedient to the Chief, and when we had them summoned they just rushed to come. But nowadays because of the new democracy which people misinterpret, they do not respect Chiefs when we call them. They may just look at us and go away. That is because of democracy, which is not well understood. People think they should not be bothered by anybody else. There is also what you call a reluctance, people are reluctant. People act like they do not want to change.

> And many people now are not submissive. They do not respect anybody. That's why when there are some meetings or committee activities they do not participate.

Participant 19's comment on the diminishing role of Chiefs to compel community members to attend health education meetings was supported by the data, which showed that a portion of the community in each village did not attend the meetings.

Village Volunteers

The VVs who participated in this study spoke of regularly performing health education activities in their villages, primarily in the form of group meetings. However, VVs do not have the authority in their villages to set the meeting time or place without the Village Chiefs giving their agreement first. The VVs ask the Village Chief for permission to hold a health education meeting, and the Village Chief announces the meeting himself, and reminds the villagers about the meeting through the Gongonneurs, or town criers. The Gongonneurs use drums to convey the message to villagers in the fields about the meeting.

Participants from the national level down to the village level spoke of VVs as the primary health educators in the villages. As Participant 1 explained, "To give information from the health system in Togo, you need to have the Village Volunteers." Because of the importance of this role, they are chosen by the community members based on a few qualifications. The VVs have more education than most of the villagers, usually two or three years of primary education so that they can read and write basic French. Another important quality of the VV is community trust. Participant 1 explained why this is important:

> I believe they have to trust if he (Village Volunteer) has told (the villagers) to take the drug. They choose the person from in and around the community. They need trust in the

> Village Volunteer before they will take the drug…the community all know the Village Volunteer.

Not only is trust an essential dimension of the VVs' role, but the VV should also be well known and well liked. Participant 1 simply put it this way, "If they do not like the Village Volunteer, they do not come (to the meetings)".

Village Volunteers are the least educated and lowest members of the hierarchy through which health education is delivered. Participants felt that VVs needed support and training in order to do their work. Participant 3 expressed this concern in reference to the VVs ability to understand the integrated materials themselves:

> I am afraid about whether the health workers in the village can use such a large number [of pictures in the materials], to talk about so many diseases at the same time, unless we teach them how to use it. When you come (to the villages) with something like that, you need something that is summarized. Can they summarize all these diseases if it is at that level (of complexity)? This is a lot of information, all at the same time. The (village) people might get confused...The person giving the information, the health worker, cannot talk about these diseases at the same time, unless you train them well. It is important because it would be difficult for the villagers to grasp all this information at the same time. Give them one (topic) and another one, another one, if you give them all of it at the same time they might get confused.

Participant 3's expression of concern above indicates that the VVs level of knowledge about the integrated health messages may be a barrier to villagers learning the key messages, unless the VVs receive specific training in how to use these materials.

In addition to needing more supervision and training support, one of the problems for Village Volunteers that was mentioned by participants was the minimal compensation that the Village Volunteers received for their job. The insufficient compensation restricts the quantity of health education they are able to deliver. Participant 6 was one of the participants who spoke about this issue:

> I think the problem is rewarding the Village Volunteers because instead of going to their own farm, they are giving health information to people, but what they are paid is not that consistent. So they need it. They do not pay them regularly, only sometimes, when they have a chance, they will give them something. So these people are doing this job for free. My opinion is that just giving them some backing will help, so that they can do more.

In general, participants commented on the minimal payment and support for Village Volunteers was a problem that interfered with the delivery of health education.

Delivery of integrated NTD health education is being implemented mainly through group meetings in the rural communities. With the support of Village Chiefs, health educators take advantage of the opportunity to teach health information at group meetings that they have planned, as well as meeting with existing groups in the community. Health educators also capitalize on many unplanned opportunities to teach health education.

Factors That Shape Integrated NTD Health Education

The data showed that the factors shaping the integration messages and their delivery were the socio-cultural factors of gender, and the local beliefs about diseases and illness, and the role of Traditional Healers. In addition, the structural factors of individual poverty and national poverty that translates into a lack of adequate infrastructure shaped the health education messages and their delivery.

Socio-Cultural Factors

The socio-cultural factors that came through strongly from the data were the salience of gender, the importance of local beliefs about illness and diseases, and the important role of Traditional Healers regarding the health of village members. The importance of gender in the findings was telegraphed by the fact that all the participants in the study, except for one, were men. According to the participants, Togolese society is patriarchal and male-dominated, and this was evidenced in the hierarchy in Ministry of Health as well as the village hierarchy, which reflected this social norm.

Gender

Interviewees at all levels of the Ministry of Health identified the subordinate role of women as a problem as it relates to access to health services, including health education. An analysis of the pictures on the four key message pages for the number of male and female images reveals a bias toward representation of males. The results of the analysis can be seen in Table 5.

Because the materials were developed for adult education, most of the images in the materials depict adults; however, some children are also shown in the pictures. Some of the pictures of children show obvious gender identification, and some do not depict a discernable gender. The number of images of men and male bodies in the materials is twenty-five, virtually double that of pictures of women, which totals thirteen. The number of boys depicted in the materials totals five, whereas no girls were represented in the images. When the number of

TABLE 5: Number of Male & Female Images in Health Education Materials

Key Messages	Men/ Male Bodies	Boys	Women	Girls	Children*
(1) Prevention: Hygiene & Sanitation Behaviors	7	1	1	0	0
(2) Prevention: Messages related to mosquitoes	2	0	4	0	0
(3) Symptoms: Prevented by MDA	11	2	4	0	3
(4) Treatment: Go to the Health Center	5	2	4	0	1
TOTAL	**25**	**5**	**13**	**0**	**4**
	TOTAL Male Images: 30		**TOTAL Female Images:** 13		

*Gender not discernable.

images of men and boys are added together, there is a total of thirty male images. By contrast, when the number of images of women and girls are added together, there is a total of thirteen female images. Thus, the female images in the health education materials represent only thirty percent of the pictures that have a discernable gender. Therefore, the male-dominated aspect of Togolese society is reflected in the over-representation of males in the health education materials.

According to participants, the majority of the Village Volunteers are men, and participants talked about the impact of this fact on women needing health information. Participant 6 explained that a male VV made women reluctant to seek their help:

> When they (women) first think they are sick, they will not go to the man - to the Village Volunteer. They will wait for one or two days before they go, so it is

important…something needs to be done about that; and one of the reasons why I am saying we need to reinforce women is so that women talk to women, and then women go to that man, the Health Worker (VVs and CHNs).

Women are impacted by their own health issues, as well as family members' health issues. Participant 6 spoke about why it is important to have more women involved in delivering health information:

> Health problems - the first person to be affected are women, but the health workers (VVs and CHNs), the majority of them are men, making it difficult for them (VVs) to understand. The men probably cannot address female issues properly and the people who are more often victims are women. I am thinking of giving more responsibilities to women's groups, those women's groups already exist in the communities. For instance, if a health worker now speaks to a pregnant woman, and says, "You need to sleep under a mosquito net, you need to go to hospital for examination of this fetus", if the same thing is told to her by the women in her groups, that would give it more weight. Afterwards, when the health worker and the women's groups also say the same thing, that would make more impact on the woman.

The Community Health Nurse in Sotou, Participant 13, explained how women's position in Togolese marriage impacted their ability to make health related decisions for their family:

> The reason given by women themselves is that they have the will to go and have their children vaccinated, but the real problem is the position of the husbands. The child may be sick and instead of both taking the child to the hospital, they (husbands) normally say, "Farm, farm work, we have farm work" (farm work is more important). The lady is obliged to follow him (to the farm), believing it's all right to follow him (and not treat the

sick child). That's why it is difficult to solve that problem, but the women are willing to solve their children's health problems.

Participant 13 recounted a story of an incident in a neighboring village in which many women were barred from accessing prenatal health care by their husbands. He had traveled to that village to give information about the importance of prenatal care, but once he got there he discovered that most of the pregnant women were not participating the prenatal care offered there. The women explained the problem to him:

> They said it is their own husbands who do not help them to come to hospital. They are the ones who impregnate them and once that is done, finished, their task is over. They are left to themselves, women are left to themselves without any help of their husband.

While access to health care is restricted for women by their husbands, they did participate in the group meetings on health education. No consistent pattern of men's or women's attendance at these meetings was evident in the data. Uneven participation by gender of village members in health education activities varied in its character from village to village. The pattern of participation was different in each village; however, the commonality among the villages was that in each place the same members of the village attended the health education meetings regularly, and other village members missed these sessions altogether or rarely attended. The result of this pattern is that the health messages are not reaching some members of these communities. However, no gender pattern of attendance at the group meetings emerged from the data.

Local Beliefs about Diseases and Illness

Overall, there was a sense of frustration on the part of the participants at the community level that the integrated health messages being delivered were not adopted by community

members. Traditional patterns of treatment for illness and diseases view the health system negatively as the place of last resort for people who are very ill or dying. Hospitals are seen as expensive and as the place where people only go to die. In addition, participants explained that people at the community level lack a biomedical understanding of the diseases depicted in the materials. Participant 17, the CHN in Sotou, described a major challenge for him when teaching about the diseases in the NTD materials, he said:

> The most important thing to consider while giving the information to the community is to make people believe that those diseases really exist. And that they are really severe, they do a lot of harm and people should not think that it is a sorcerer or is a witch who is killing them. Because very often that is what the people think when they are suffering severely, or they are suffering seriously.

Village members have little understanding of how the health behaviors that are depicted in the health education materials and are explained by the VVs in village meetings relate to the symptoms they experience. Local beliefs about the causes of illness do not lead to people to seek medical treatment. Participant 4 explained:

> Today people still believe in witchcraft. When they (villagers) are first sick, instead of going straight to the hospital, they believe it is an attack from a witch. So that is what they are thinking. When a child dies, people believe it is witchcraft. When they have small pox, when you have it here (Togo), there is nothing you can say to convince them…it is just witchcraft.

Traditional cultural beliefs about the causes of illness were not the only barriers that emerged from the data. Participants also talked about new religious sects that have recently taken hold in

Togo as a barrier to health education delivery. Participant 4, discussed new religious sects in Togo as a serious but localized problem:

> The main threat is still these sects, these new sects. The Celestial Church. The Celestial Church is from, I think people said they come from Nigeria. And they (The Celestial Church) tell them when they are sick, not to go to the hospital. They will pray and heal them. These churches are only permitting healing through prayer. Here is another example, one about vaccination. I saw them (villagers) sitting down and saying "Do not come near my place. Here it is God who is doing miracles. So go away." And it has become a difficult thing that we are facing. But, it is not that widespread.

The lack of biomedical understanding of disease has consequences for getting the diseases treated. Participant 18, the Village Volunteer in Akato, described resistance from community members to taking drugs distributed at the Mass Drug Administration:

> We have to let people know that if they are given some drugs they must necessarily swallow them all. Because we've got some people who give reasons, and they refuse to take some drugs when they are given some. So we have to insist, give them some advice, that if they are given certain medicine they have to take it.

The refusal to take the drugs results from a lack of understanding of how the drugs work in the body to fight the diseases. As Participant 18 described the experience of people in the village after the MDA:

> Some have gotten their leg swollen worse after taking some drugs. Some others feel some itchiness on the skin and they are scratching themselves. So that is why when there's a repetition of the MDA, they refuse to take it.

Multiple symptoms that result from one disease may be considered unrelated by community members. This observation was brought home to me very concretely in an interview with one of the village chiefs. In the course of the interview, he asked me to explain some of symptoms depicted in the health education materials. He was very surprised when I told him that two of the symptoms result from one disease: Lymphatic Filariasis. He was equally surprised when I explained that the disease is transmitted through a mosquito bite.

VVs and CHNs explained local beliefs about the causes of illness and diseases, which varied from village to village. The explanations given included: too much sun exposure, evil spirits, curses, spells by witches, and taboos on certain foods. Other beliefs about local illness can inhibit recovery from that illness. Participant 4 talked about a belief in, "Rationing food when you are sick, they should not be forbidding any food, forbidden for the child." In this example, the local belief was to withhold certain foods from children when they are ill. A belief in witchcraft, curses and evil spirits is common in the rural villages, and people have a minimal understanding of medicines. Participant 13, the CHN in Sotou, described the steps that the people in his community usually follow when they become sick:

> Some people, when they fall sick, the first thing they do is take bottled medication. They go to a market by the roadside to buy some drugs which are counterfeited, that is, which are not good drugs. They are made in Nigeria without any control and those drugs are not approved by the World Health Organization…Second when they notice that the counterfeited medication is not working, they go to the Traditional Healers with the idea that maybe he knows somebody who is doing that to him. And when they reach the house of the professional healer, he also has necessarily something to tell them about maybe a sorcerer or a witch who is behind him, who is doing that harm to him. And it's

> when that Traditional Healer is not in position to help, that he says okay go to hospital and see whether you can be healed there. And sometimes at that very time the situation has become very serious. And sometimes this (Health) Center, being a small one, I am not also in a position to help, and we ask him to go to (where there is a hospital).

Several participants suggested that Westerners are seen as a source of health resources and also are seen as suspect in their motives. Suspicion and misinformation about Western motives in general, and of the drugs in particular, was present in cities and in rural areas. This suspicion led the people in one village to refuse to take drugs given at the MDA. Participant 12, the VV in Bara, explained:

> At the time we give Praziquantel, some (villagers) had diarrhea, some vomited, and when after that we came to talk about it again, they said no. They'll never take it because White people want to kill them.

The data showed that in rural village and in cities, there is misinformation and some suspicion about drugs provided from Western sources.

Role of Traditional Healers

Participants confirmed the central role of Traditional Healers (THs) in Togolese society as the first person villagers typically go to for help when they are ill. People in Togo, especially in villages, usually seek treatment for illnesses from the TH first, before approaching the CHN or the VV. Participants confirmed that THs have a valid role in society treating certain ailments at a low cost. However, since treating illness is the THs livelihood, they have been reluctant to refer people to the VV or CHN when their patient has an illness that they are unable to treat because that represents a loss of income. THs see themselves in competition with the health system for patients and the income generated by illness. National level participants, as well as the THs

themselves, mentioned the idea of compensating THs when they refer a patient to the hospital or CHN. The Ministry of Health has begun to address this issue by recognizing the significant role of Traditional Healers (THs) in community members' health by creating an association for THs and by offering them limited training about diseases THs are unable to cure.

Several participants said that THs only refer patients to the hospital when they are dying, because it is bad for business when someone dies under their care. Participant 7 explained:

> The worst case is the traditional healer himself. When he notices that he is not able to save the patient, he kicks him (the patient) out of his house because he knows that maybe the person will die and he does not want the person to die in his house.

This is one of the explanations for people's reluctance to access the health care providers because the hospital is known as the place where people die. In addition, the hospital and treatment there are expensive, which adds another deterrent to accessing those health resources. Participant 7 explained:

> I hope that we can sensitize those Traditional Healers to let them know that if there is a critical situation or a disease for a patient, they have to quickly free the patient so that the patient comes to the hospital.

The Togo Ministry of Health has recognized the problem of delayed treatment of illnesses that results from the custom in Togo of consulting the Traditional Healer first, and seeking medical help as a last resort. The Ministry of Health has begun to officially recognize the Traditional Healers by creating an official association for them and by inviting the leadership of that association to national meetings with the Ministry of Health. Participant 6 described how the Village Volunteers are becoming more involved with THs as part of an effort by the health system:

> We are educating the (Traditional) Healers now so that we are now collaborating. They have their own association today. The Association of Healers, and the health workers know about them, their number, and where they are so that they can just look and see what they are doing and give them the proper advice.

He elaborated further on why the THs have become more collaborative with the Ministry of Health:

> The major thing that has provoked that change in behavior is that they have started giving them a kind of acknowledgment. In the olden times they were looked down upon, but now that the health workers started showing some consideration for them. They are happy about that. Now they have even set up these small groups and they even have somebody now at the head, the National Leader of the Healers. Whenever something is to be done in the Ministry of Health, they have the National Leader invited. Of course, the phenomenon is not as widely spread, but it is coming. Now it is in the cities; you move bit by bit down to the grassroots. They [THs] are closer than us to the community.

In addition, Traditional Healers have begun to receive training about some of the priority diseases, so that they can diagnose the diseases they are unable to treat, and more quickly refer those patients to the CHN or to the hospitals. Participant 11, the Traditional Healer from Bara, was one of the THs who had received training from the health system. He described how the training has impacted his practice:

> When I see patients, if I notice that I am able to cure the disease, I will cure it. I will treat this disease. If I feel that's not possible for me to treat the person, I will take the person to the hospital…I have once been trained, and many diseases have been shown to us

[THs]. And we were educated about the diseases we are able to cure, and those we are unable to cure.

The THs described themselves as cooperating with the health system, even if they have not participated in formal training. Participant 16, the TH from Sotou, had not received formal training but recognized malaria as a disease he could not cure. He knew this because of information he had received from the VV. He talked about his encounters with malaria:

> When a patient comes, I try to look at the person closely. I look at the eyes and the palms. If it looks like it is malaria, I ask the person to go to the Health Center, but unfortunately some of them do not go there. They will change to another Traditional Healer. I think that maybe because those people think that by going to the hospital they will spend a lot of money. I do not have any training, but it is from the Village Volunteers that we get the information on how malaria manifests itself, what the symptoms are of malaria.

Participant 16's comment illustrates the conflict that THs are in with regard to the health system. When he refers patients to the Health Center, they may not follow his advice. In any case, he has lost a customer and consequently he has also lost money. Lack of money also drives the patients' decision not to access the health care in the community. Participant 19, the Village Chief and Traditional Healer for Akato, was another TH who had not received formal training from the health system, but was very receptive to the idea of collaborating together. He spoke of the conflict he felt between working with the health system and doing what is in his own best interest as a TH:

> I find the idea (collaboration) very good. It is a good idea because we have to unite to fight the diseases. The Traditional Healers and the health system have to unite to fight diseases, but how (to do it) is also difficult. We were already told that we should work

together. Now it is difficult though because we (THs) have been advised that if somebody comes to us, we have to ask whether the person has seen the CHN. It is only when the person has not been cured at the hospital, that we can try our (traditional) medicines.

This comment indicates that while the health system is working toward collaboration with THs, there is also a conflict of interest inherent in that collaboration for the THs. The Ministry of Health has begun to put some strategies in place to overcome this limitation on community access to health services, but these strategies are narrow in scope and in the initial stages of implementation.

Structural Factors

Two structural factors were revealed in the data as important elements in integrating and delivering health education in this context. The first was overall poverty, which directly translated into issues of limited time and money for village members. The second factor that impacts health education messages is a lack of infrastructure, specifically the availability of clean water and the absence of latrines in most communities. This absence of basic infrastructure reflects the limited resources at the national level.

Poverty

Time and money were the two aspects of individual poverty in the rural setting that emerged as barriers to individuals' participation in health education meetings. Participants expressed a direct connection between the time needed to attend group health education meetings as taking way time from economically productive activities of community members, mainly farming. In addition, for community members, health information from the health system is implicitly related to unaffordable health costs since health services are not free in Togo.

The VVs and CHNs explained that some people in the village did not consider the health education meetings important. The VVs and CHNs identified time and money as two reasons that the village members give for not attending the meetings. The VVs explained that time spent in the fields is essential to the survival of individuals in the village by providing the food needed for their families. Time in the fields also represents money that will be earned by raising crops that can be sold in the market for the money needed to buy other essentials. The health education meetings that the VVs organize in the villages represents a burden to some villagers in terms of the time required to attend the meetings. The explanation is tied to the underlying poverty and economic situation for most community members because time spent on farming produces food for family consumption and for income. Therefore, time spent on health education meetings can be perceived as a waste of this valuable resource.

The importance of time is relevant to the integration of health messages because VVs and CHNs felt that combining the information for multiple diseases reduces the amount of time they spend delivering health education messages for the targeted diseases to the community members. Participants felt that the timesaving dimension of integrating the messages was an obvious benefit for the health educators and for the targeted learners. There was strong support among the participants for integrating the messages due to the increased time efficiency for the Village Volunteers and CHNs who were doing the health education in the villages. The timesaving aspect of integration was an advantage for the person delivering the health education, as well as for the target population. As Participant 17, the CHN from Akato, explained:

> I feel that the advantage is that I will not bother people too much; I will not bother them by calling them (for meetings) every day. Since the information is combined, we will take maybe one day to talk about all those diseases, and it will be a good thing because when I

call them today, tomorrow I call them again, another day, another time, it will become an annoyance for them. So I find that combining them it saves time. So it is a good thing for me.

The time saved by presenting combined information results in shorter and fewer community health education meetings, which VVs felt made it more likely that community members may attend.

Participants expressed a close relationship in the village setting between health services and expenses. As members of the health system, VVs are associated with the health-related expenses such as buying medicine, visiting the nurse, and visiting the hospital (see Figure 6).

Figure 6. Douri District Hospital

The health education messages also relate to spending money on health services that are unaffordable for most community members.

The CHN in Bara, Participant 9, described how lack of money causes a delay in community members seeking medical help for illness:

> Usually people think they have no money to go to hospital. First when they get sick, they start taking infusions, that is the potions from herbs, or tree leaves, or tree roots. They cook them and they make some potions to drink. Only when they find out that the disease is not getting better, they come to the hospital. So they try to treat themselves at home traditionally before coming to the hospital.

Participant 9 further explained the connection between poverty and the villagers' reluctance to access health services, "It is because drugs are expensive that people fear to come to hospital." In general, poverty delays or prevents villagers from getting the medical help they need in a timely fashion. Participant 7, explained, "The population is only poor. They cannot provide themselves the health care. They cannot pay the health fees."

Poverty also prevents the target population from adopting some of the health behaviors depicted in the integrated NTD materials. Participants pointed out that the hygiene messages that suggest washing with soap may not be attainable in villages where people cannot afford to buy soap. Another example of this was the messages about the use of mosquito nets. Participant 4 pointed out this mismatch between health messages and the realities of village life, "Poverty. That is why if you ask them (villagers) to sleep under mosquito nets, at the moment they do not have money to buy the mosquito nets there is nothing that they can do. So this is a barrier (to health behaviors)."

Integrating the information was also seen as a way to use resources more efficiently by covering information about several diseases in the same materials. In addition, any discussion of illness and accessing the health system also represents money to village members because the individuals in Togo must pay for health services.

Lack of Infrastructure

Clean and proper water use and sanitary defecation are issues that have a serious impact on health at the village level. These two health topics are related as health behaviors. Messages about water use and proper defecation in latrines appear in the integrated NTD materials as components of the four key messages. The data showed that messages related to these topics are of prime importance to participants.

Water & Latrines

In the interviews, participants emphasized these two health topics, which emerged as critical and basic to the health messages needed in rural communities. Regarding latrines, Participant 7 explained:

> Where the problem lies is at the level of hygiene. Even though we have given information to people about how to observe hygiene, it is not yet observed because there are also some factors for them: the lack of lavatories in houses. Most of them do their defecations in the open air. They do not have a room or water closet [latrine] to do that. So at that level there are still some problems.

He continued on this topic by explaining the connection between indiscriminant defecation habits and the absence of clean water sources:

> But since they (latrines) do not exist, they (villagers) are allowed to do it everywhere, which transmits many diseases. Apart from that, we have also the problem of wells or

water taps, because now people are getting water wherever they can find it. Seeing that we are in the rainy season, water can come from somewhere where there is defecation, but they are obliged to get water from the river and it causes many diseases. So if some water taps can also be built, it will change many things and better the health condition of people.

The lack of latrines and clean water in most villages reflects the general lack of infrastructure in the country. These areas of infrastructure relate directly to some of the messages in the health education materials, and to the spread of diseases in rural areas of Togo. When I asked Participant 17, the CHN in Akato, about the messages in the materials that focus on the proper use of latrines and on washing with clean water, he responded by talking about the underlying problem of poverty:

> Here is a problem of poverty. To ask somebody to build a latrine, it is unbelievable because the person does not have enough money necessary to do it. Now, we have also the (problem of) clean drinking water, that is water from the tap or from the pump, but not many people can afford it, they cannot buy it.

Participant 8 explained that village people need information about how to build a latrine before they can adopt the health behavior depicted in the materials. See Figure 7 for an example of a village latrine, an uncommon amenity at the village level:

> The information we can give to the population is to ask them to make some holes for doing their defecation, some place that can be protected by building around the hole, so that their defecation is not done in the open air. That would help the population not to defecate everywhere if possible.

Figure 7. Village Latrine.

Education

The under-education of the Togolese population is another reflection of the lack of a sufficient infrastructure that would support health education. Participant 17 described the barriers in his community to people adopting the health behaviors described in the integrated NTD materials. He insisted that, "Ignorance that is the biggest thing that prevents people from changing their view. Apart from that, we also have poverty. Poverty does not help people to change their behavior."

Because of low education levels, participants were concerned that by integrating the information for multiple diseases, the messages might be more confusing for learners than presenting each disease individually. Participant 4 said that, "Putting all of these (diseases)

together for the population that is illiterate, it might be confusing." This concern was borne out in the data at the national level, and in the pilot district. Participant 13, the CHN in Sotou described the pictures as being especially useful for doing his job because of the low level of education in the target population:

> I find the use of it very easy, very fine because it makes it easy for us nurses and Village Volunteers to convey the real message because the community is in the majority illiterate. They have not gone to school, so it's not very easy to say that in French, or for them to understand. And the appropriate themes do not exist in the local language. So once I use this image, for example, even if you don't call it by the local name, they understand. So the use of these materials is very useful.

The factors that shaped integrated NTD health education in the rural district where this project was piloted were socio-cultural factors and structural factors. The socio-cultural factors of gender and the local beliefs about disease and illness were the most salient for participants. The structural factors that emerged as most strongly shaping integrated health education delivery were poverty and a lack of infrastructure.

Chapter Summary

The purpose of this study was to understand how local context shapes the integration and implementation of NTD health education in Togo's pilot project. The first task was to discover how the health education was being integrated and delivered to village communities. The next task was to surface the factors that shape the integration of the health education messages and their delivery. The data indicated that the integration of the health education occurred through the identification of seven targeted diseases to be integrated. Subsequently, four key messages were developed that encompassed some areas of overlapping health messages for all seven

diseases. The design and content of the pictures in the health education materials was of primary importance and value as a teaching aid, due to the low levels of literacy in the targeted population.

The data showed that the delivery of the integrated NTD health education occurred mainly through village-level group meetings. The support of the village leadership was needed for Village Volunteers to organize the group meetings. Village Volunteers also taught health information to existing community groups. Community health educators, both Village Volunteers and Community Health Nurses, took advantage of unplanned opportunities to teach health education messages.

The factors that emerged from the data as shaping integrated NTD health education were several socio-cultural factors, and structural factors. The most salient socio-cultural factors were gender, local beliefs about illness and diseases, and the role of Traditional Healers in the health of community members. The structural factors that were most significant were poverty and the lack of infrastructure as they limited health education delivery to individuals and communities.

CHAPTER 5

CONCLUSIONS, DISCUSSION, IMPLICATIONS, AND SUGGESTIONS

Introduction

The purpose of this study was to understand how the local context shapes the integration and implementation of health education in Togo's pilot Neglected Tropical Disease project. The two questions that focused this study were: (1) How has the health education for Togo's pilot NTD integration project been: a) integrated, and b) delivered, thus far? And, (2) What factors shape the integration of NTD health education messages and their delivery? A qualitative research design was used to explore these issues.

The study found that integrated NTD health education was delivered predominantly through village-level group meetings led by Village Volunteers with the involvement of the village leadership. The study also determined that socio-cultural and structural factors shaped the integration and delivery of the health education.

Conclusions and Discussion

Two conclusions were drawn from the findings of the study. First, integration of NTD health education hinges on selecting topics and pictures that are appropriate at the village level. Second, the delivery of integrated NTD health education is dependant upon the support of village leadership and the participation of village members. Each of these conclusions is discussed in detail below.

Conclusion One: Integration of NTD health education hinges on selecting topics and pictures that are appropriate at the village level, and consider the limiting socio-cultural and structural factors.

The literature on NTD control and elimination programs shows that typically they are vertically structured and operate nationally alongside each other while treating populations which overlap geographically (Lammie, Fenwick & Utzinger, 2006; Molyneux et al, 2005). Each national program tends to have its own guidelines and procedures, including health education materials and delivery mechanisms (Mathieu, unpublished manuscript). In addition, a variety of organizations and external donors may work with each program through a country's Ministry of Health.

The description of NTD programs in the literature matched the reality in Togo. This in turn shaped the manner in which the key messages were developed for the pilot integration project. The participation and cooperation of the National Coordinators at the Ministry of Health was necessary in order to identify the seven diseases to be integrated, and then to identify the overlapping health messages. Finally, the four key messages for the integrated health education materials were then specified by the National Coordinators through a cooperative process. The health messages were overlapping and the geographical location of the diseases were overlapping in the target population, so for the Togo project, integration of health education was possible. The study showed that these considerations determined the content and delivery of integrated NTD health education.

The literature indicates that programmatic barriers to integration may exist at the local, national, or international levels that would inhibit the possible speed and extent of integration for NTDs (Brady, Hooper & Ottesen, 2006). In Togo's case, the process of developing health

education materials and then implementing delivery moved relatively quickly as it took only one year of development before the pilot program began implementation. The study showed that the difficulties that they faced were due to the somewhat unwieldy process of providing a forum for the perspectives of many National Coordinators, especially in the early stages before they had narrowed down from twenty-four to seven diseases. Togo's small size may account for the relatively smooth development process that was evidenced in this study of identifying diseases for integration, highlighting areas of overlap, and then developing key messages for integrating many diseases.

The top-down approach to NTD health education integration was an efficient approach in Togo in terms of the relatively short timeline that the project achieved between starting the initial integration process with National Coordinators and actual implementation in communities. This approach is also efficient in terms of minimizing the staff resources needed to move through the development stage to implementation. However, community participation or input from the target population was not included in the development process of integrated health messages. The literature indicates the importance of giving target communities the opportunity to participate in the decision-making process at the program development stage in order to improve program sustainability and outcomes (Canning, 2006). Thus, it is uncertain whether the integrated NTD health education will be a sustainable effort long-term based on the observed paradigm of top-down decision-making and minimal community input into program development.

Within the process of developing the integrated key messages and the pictures to convey those messages in the materials, an effort was made to ensure that the pictures reflected the rural village conditions of the target population. Participants at the national level emphasized that the

pictures must be relatable to the target population and reflect their reality. Some feedback from the Village Volunteers and Community Health Workers was included once the materials were in the final stages of development. However, gender inequities in Togolese society were reflected in the under-representation of women in the health education materials. Only thirty percent of the images in the key messages depicted women, and these women were shown in traditional roles. In addition, community members did not have a forum for direct participation in developing the integrated health education materials and delivery in Togo, which may have implications for the level impact the health education can achieve.

In addition to gender, local beliefs about illness and disease limited health education need to be considered when integrating the information for multiple diseases. Understanding the traditional disease concepts of the target communities is an important dimension of presenting and implementing health education that is meaningful and ultimately impactful (Parker, Allen & Hastings, 2007; Schall, 1998). Many studies provide a record of a wide variety of beliefs in diverse African communities; furthermore, local understandings of disease can prevent people from seeking medical treatment (Onwuliri, 2000). This study supports previous studies' findings in that local beliefs about the cause of disease and illness limited people's understanding of the key messages depicted in the materials.

The data from this study supported the findings from other studies by showing that side effects from the drugs given at the MDA led to suspicion of the drugs, the motives for giving them, and ultimately led community some members not to take the drugs at all. Some studies show that this lack of understanding caused some people to avoid taking the drugs altogether and stayed away from the Mass Drug Administration. (Parker, Allen & Hastings, 2007; Verani, manuscript). The integrated materials used in Togo did not address the issue of side effects on

Page 3 of the integrated materials, which is dedicated to information about the Mass Drug Administration.

In addition to socio-cultural factors, structural factors also impacted the integration of the NTD health education. The World Health Organization (WHO, 2006) points to poverty, unsafe water, poor housing conditions, and limited access to health services as significant structural factors in the spread of NTD infections. Contextualizing the integrated messages and mediums of health education in terms of a community's social and economic constraints is an important aspect of making it relevant to the local community (Pauwels, 2005).

The literature on NTDs describes how these diseases converge primarily in poor rural populations in developing countries, particularly in sub-Sharan Africa (Engels & Savoli, 2006; Molyneux, Hotez, & Fenwick, 2005; Lammie, 2006; WHO, 2006). This was reflected in this study in which the target population was in poor rural villages in northern Togo, which is a poor developing nation. These factors reflect the individual and national poverty described in the literature.

The literature on NTD program integration asserts that one of the main advantages of this innovative approach is the possible cost savings of treating several diseases together which is vital due to the limited resources in developing countries for treating these diseases (Lammie, Fenwick & Utzinger, 2006). While this study did not investigate issues of program cost, a related finding came from the data. Participants felt that integrating the materials saved time in the delivery of NTD health education. Furthermore, the study found that time and money as they related to poverty were limiting factors at the village level; therefore, integrating NTD health education has the potential to address concerns related to individual poverty at the village level through the time-saving aspect of combining information for several diseases.

National poverty in developing countries leads to inadequate health knowledge and health education (Onwuliri et al, 2005). National poverty can result in a limited education system and low levels of literacy. The level of literacy of the target population should be taken into consideration when health education materials are integrated and developed, both in terms of the contents and the text included in the materials (Pauwels, 2005).

In the Health Belief Model (HBM), ways of knowing and acting in relation to health are based in part on beliefs and attitudes (Kirscht, 1974). The model describes a process in which individuals progress through several conditions necessary before health behavior change can be put into action. According to this model, the first condition for a person's motivation to do a health behavior must start with the individual's perception of susceptibility to and the severity of a health issue. (Kirscht, 1974; Rosenstock, 1974b). However, the model has been criticized for being based in Western cultural beliefs about health. As a consequence, health interventions such as health education may aim to persuade people to conform to "appropriate" health beliefs, and may therefore be limited in its applicability to developing country contexts, which differ greatly from this premise (Janz & Becker, 1984). The model does not directly address the origins of a person's health beliefs such as culture, socio-economic status, environmental factors, and life experiences.

The findings of this study confirmed the critique of the HBM model with regards to its limitations regarding local knowledge and beliefs about diseases. Local perceptions and beliefs about the causes of disease were different from bio-medically based information that was the basis of the integrated health education. Participants felt that one of the main challenges to health education in the integration project was convincing people that the diseases really exist. In contexts such as the one where this study was conducted, individuals may not perceive illness as

related to the disease itself, let alone a susceptibility to it. In addition, the data showed that there was serious suspicion about the drugs themselves and the motivation behind their distribution. Therefore, the first stage asserted by the HBM would not be applicable, or would not be achieved in this context by health education alone.

Similar to the HBM, the *Transtheoretical Model* of Health Behavior Change (TTM) describes six stages that people pass through within the process of making health behavior change. The first stage of this model describes the *pre-contemplation* stage in which people deny they have a health problem, or they are resistant to change. The first stage assumes that the individual has a Western bio-medical understanding of a disease, but does not believe that he or she is susceptible to it. By contrast, participants in Togo reported that, in general, local understandings of disease diverge from bio-medical explanations. Instead, diseases were said to often be attributed to witchcraft and curses, or stemmed from particular religious beliefs. Multiple symptoms of one disease were not associated with each other, and were not understood as aspects of one disease. The absence of a basic understanding of disease itself is not accounted for in the TTM as a pre-condition for the first stage of the model to be possible.

Both the HBM and the TTM are based on an assumption of that the individuals they describe accept Western understandings of disease. Because of this limitation of both models, neither one addresses scenarios in which the existence of diseases with a bio-medical definition are not accepted as existing. The findings of this study regarding local beliefs about diseases highlight this limitation of both models, and reinforce the literature that contends that any effective educational approach must include an understanding of local conditions (Brieger, 1996, Manderson et al., 2009; Parker, Allen & Hastings, 2007; Pauwels, 2005; Schall, 1998).

Breiger (1996) points out that in the case of NTD education, two themes are of primary importance: 1) participation in the Mass Drug Administration (MDA), and 2) highlighting positive health behaviors. The study showed that Togo's integrated NTD materials paralleled these themes, with one of the four key messages focused on participation in the MDA, and the other three key messages focused on positive health behaviors as they relate to symptoms. In addition, teaching the cause and effect relationship between behavior and disease symptoms was included in the materials. These themes were communicated in the materials through pictures that reflect village life.

Breiger (1996) states that, in general, health education in developing countries tends fall into two categories, either a developmental approach or a behavioristic approach. The behavioristic approach is described as one in which the program planners decide which behaviors should be included in the health messages (Breiger,1996). Throughout the development process, the integrated NTD messages were selected with a focus on promoting individual health behaviors that related to the seven targeted diseases. The focus was on communicating specific health behaviors originating from the medical perspective of the National Coordinators who were involved in the process and the integration team. Thus, Togo's integration project confirms Brieger's (1996) assertion by following a behavioristic approach. Brieger (1996) also cautions that the behavioristic approach may have a short-term impact on knowledge in the target population, but its long-term sustainability is uncertain. Thus, the literature indicates that the long-term sustainability of the health messages conveyed in the integrated NTD messages is uncertain.

The literature on the PRECEDE-PROCEED Model, highlights the need for active participation of the target population in defining their own priorities and goals. Community

involvement in developing and implementing solutions helps to ensure that programs meet observable needs (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Green & Krueter, 2005; Minkler, Wallerstein & Wilson, 2008). Other literature on NTD health education also emphasizes the importance of community participation in active decision-making and shaping health education messages. Therefore, an externally imposed health agenda may have limited effectiveness (Brieger, 1996; Isley, Sanwogou & Martin, 1979; Pauwels, 2005; Vlassoff & Manderson, 2002). In Togo's integration project, the process of developing the key messages and the materials themselves, as well as the village-level delivery of the integrated health education did not include direct involvement of the target population. Therefore, the development process that Togo's project followed to develop the health education component is missing a key feature that would increase the scope of its effectiveness.

Phase 1 of the PRECEDE-PROCEED Model of health education is the social assessment in which planners use multiple data sources to increase their understanding of the community where the program will be implemented, such as interviews, focus groups, observations and surveys. Similarly, Schall's (1998) *Interactive Model* describes involvement at the "beneficiary" level to clarify and give feedback on conditions in the community, and to provide guidance in creating the materials and delivery of health information that are relevant to the community "beneficiaries." These models are based on the assumption that resources are available for these activities; however, in a developing country programs may not have the time, resources, personnel, or local capacity to implement this stage.

Phase 2 of the PRECEDE-PROCEED Model is an epidemiological, environmental, and behavioral assessment to identify health priorities (Green & Krueter, 2005). A version of this type of assessment was part of the process of developing the project's health education.

However, the goal of integration for several diseases drove the assessment process from a different direction than what is described in the model. The model describes a process of identifying health problems, issues, or goals and looking at the behavioral and environmental factors that could influence the health goals of the program. By contrast, the integration process did not specify particular health priorities from the outset, rather the degree to which the epidemiological, environmental, and behavioral dimensions overlapped for multiple diseases determined what was included in the integrated key messages of the health education materials. In other words, integration of multiple diseases was the goal that drove the process of identifying health priorities, not necessarily the identified health priorities of the target communities.

Kloos (1995) adapted the *PRECEDE Model* as a diagnosis for program models for disease control that incorporates the role of perceptions, attitudes and health related behaviors of the target population. Strategies for action can be developed using this approach that reflect local needs and resources (Schall, 1998). Some limited feedback processes were used in the NTD integration process to get local input from Village Volunteers and Community Health Nurses once health education materials had been developed. This aspect of the integration process reflected to some degree the diagnosis advocated in Kloos' (1995) model. However, a thorough diagnosis stage was not in place during the development of Togo's integrated key messages and materials.

The literature on health education materials for NTDs shows that approaches to health education for disease control are often created in a top-down approach constructed by health officials and translated into health messages by health personnel. This approach is devised for timely delivery, and accurate information, but unfortunately may not be entirely relevant to the behaviors that it aims to impact in the lives of the target audience due to the specifics of the local

context (Vlassoff & Garcia Moreno, 2002). The materials for NTD integration were created through the top-down process described in the literature, by involving National Coordinators, project consultants, and the integration team itself.

Pauwels (2005) and Schall (1998) point out the importance of contextualizing health education materials in terms of the type of language used, the pictorial elements of the materials, gender roles, beliefs, spirituality, collectivism and individualistic orientation. Through the integration and development process, the NTD materials were contextualized in some important dimensions. The use of text in the materials was minimal in recognition of the very low levels of literacy in the target population; the text was included as a guide to the health educators rather than for use by the learners. In addition, the pictorial elements of the materials occupied the majority of the space in the materials. The pictures are full color and relatable to target communities because they were drawn by a Togolese artist and they depict village life. Participants in the process of developing key messages and materials were aware of the limited biomedical understanding of disease in the target population. As a result, the materials focus on conveying information about symptoms and health behaviors, rather than emphasizing teaching about the diseases themselves. The integrated NTD materials were not contextualized well with regard to the limiting socio-cultural and structural factors identified in the study and mentioned in the literature.

In sum, the literature indicates that effective and sustainable NTD health education is dependent on including topics that are contextualized to local conditions, are relevant to the target population, and which are developed through a process that includes some element of community participation. Togo's integration process included some effort to develop key messages and materials that were relatable at the village level. In addition, participants showed

an awareness of some of the limiting socio-cultural and structural factors experienced in the target communities.

Conclusion Two: The delivery of integrated NTD health education is dependant upon the support of village leadership and the participation of village members, and is significantly limited by socio-cultural and structural factors.

The literature on NTD programs describes them as typically being vertically structured. These programs run in parallel to one another within the same country, yet deliver their programs through similar operational mechanisms while treating the same people in geographically overlapping regions (Lammie Fenwick & Utzinger, 2006; Molyneux et al., 2005). These programs overlap especially through the use of the country's existing health system to deliver programs, particularly through Village Volunteers. The integrated NTD health education was delivered through the same existing mechanism of using the Village Volunteers as the primary source of health education in rural villages. Furthermore, the data showed that the Village Volunteer was not the sole actor in delivering health education, but that the support of the Village Chief must be in place in order for the group meetings to be organized. Thus, while the current literature acknowledges the important role of the Village Volunteer, this study revealed that the village leadership has a critical supporting role in health care delivery.

This study found that the socio-cultural factors of gender, the local beliefs about illness and diseases, and the role of the Traditional Healers significantly limited the delivery of integrated NTD education. Many tropical disease interventions in developing countries have been unsuccessful because the beliefs, attitudes, behavior patterns, knowledge and misconceptions of the local population were not taken into account (Manderson et al, 2009;

Schall, 1998). Furthermore, local beliefs and behaviors can contribute to the spread of NTDs, but are not easily changed by educators (Onwuliri et al, 2000; Schall, 1998)

Research on the gender dimension of tropical diseases shows that NTDs impact women disproportionately, and that health education strategies need to account for gender inequities (Periago, Fescina, & Ramon-Pardo, 2004; Vlassoff & Garcia Moreno, 2002). Research shows that gender differences in infection rates closely parallel social status and disparities in access to health care (Manderson et al, 2009). Furthermore, gender impacts social roles and responsibilities, and other cultural norms in communities that impact disease outcomes (Manderson et al, 2009; Periago, Fescina, & Ramon-Pardo, 2004; Vlassoff & Garcia Moreno, 2002). Women's lower status in the home can affect their ability to access health information and to make health decisions (Fonn, 2003). Therefore, health education messages and delivery should take gender into account.

The literature shows that contextualizing NTD health education requires giving attention to gender issues, including the particular health risks of women and how their social role limits access to health care and health education (Brugha, Kevani & Swan, 1996; Fonn, 2003; Manderson et al, 2009; Periago, Fescina, & Ramon-Pardo, 2004; Tanner & Vlassoff, 1997; Vlassoff & Garcia Moreno, 2002). This study confirmed this finding from the literature, and showed that gender is a limiting factor for women in Togo that shapes their access to health services, and their ability to make health-related decisions.

In addition, the health system itself is male-dominated, with only one out of the twenty participants in this study being a woman. The participants recognized this as a problem and felt that women should be able to get health information from other women. They recognized that women may avoid or delay accessing health services from men. Participants were also concerned

with women's lower status within marriage, and saw this as a barrier for women to getting the health information and services for themselves and their children. However, some women were attending the group health education meetings in the villages and there was no definitive attendance pattern by gender. Therefore, women had access to integrated NTD health information, but participants observed that women's social status was a limitation on their ability to act on health information.

Local beliefs about the causes and cures for illness influence how communities view health information and where people go for help with illness. (Manderson, et al., 2009). Many local beliefs and behaviors that contribute to the spread of NTDs are deeply entrenched in local culture (Schall, 1998), such as the role of Traditional Healersin community wellness. In some contexts, people may consult Traditional Healers and seek medical treatment at the same time (Parker, Allen & Hastings, 2007). Studies show that the use of local cures for NTDs by Traditional Healers can delay medical treatment of diseases and worsen symptoms. This is true in Togo, where community members typically seek treatment from the Traditional Healer first, before getting medical help from the CHN, or informing the VV. This is problematic since THs cannot cure NTDs. Participants reported that medical treatment is seen as a last resort for people who are seriously ill or dying. In addition, THs have little incentive to refer their patients to the CHN or hospital since this results in a loss of income for the TH.

In addition to socio-cultural factors, this study found that the structural factors of poverty and a lack of infrastructure also significantly limited the delivery of health education. This study found that these factors also limited the delivery of integrated NTD health education. The delivery of health education was limited by structural factors related to national poverty, namely the lack of clean water sources, the absences of latrines in many villages, and the very low level

of education in rural villages. In order to reduce the impact of NTDs some aspects of the environment must be controlled to curtail or stop human contact with host vectors, by changing people's health behaviors. Unfortunately, health education messages about behaviors regarding sanitation, defecation, and clean water are sometimes unrealistic for the target population (Parker, Allen & Hastings, 2007). People are not able to adhere to health behaviors about water and contamination because of a lack of a clean water supply (Parker, Allen & Hastings, 2007). In addition, community perceptions about the gravity of the health issues caused by the targeted diseases may be less important in the community than other serious problems such as poverty and hunger (Kloos, 1995). Furthermore, the limited national resources often mean that no clean water supply is promised or will be available in the foreseeable future (Tayeh, Cairncross & Maude, 1996).

Issues around the use of clean water and proper defecation in Togo echo the literature in asserting them as serious limitations on delivering the health education messages in the integrated NTD messages in the materials (Kloos, 1995; Parker, Allen & Hastings, 2007; Tayeh, Cairncross & Maude, 1996). Key messages in the integrated NTD materials about clean water use, washing, and proper defecation were not generally applicable in the villages I visited. Participants felt that hygiene was a very serious issue, particularly the issue of indiscriminant defecation practiced in villages because latrines do not exist in most communities. Participants connected these issues back to national poverty, the lack of infrastructure in general, and to individual poverty. Since there was no expectation that infrastructures would be provided by the Togolese government, participants felt that it was critical to include health messages that instructed people on *how* to create clean water and dig latrines for themselves. However,

participants again indicated that individual poverty was a barrier to villages creating this simple infrastructure.

This study confirmed that illiteracy in the target communities shaped how health information could be taught in the villages. Participants felt that low education levels in the villages meant that the integrated messages might be too confusing for the learners, and this concern was borne out in the data which showed that some community leaders did not understand the health information themselves. On the other hand, the materials were designed for non-literate populations. The key messages are conveyed primarily with pictures and with minimal text.

The *Health Belief Model* describes three conditions that are necessary for a person to start a health behavior. The first condition is an individual's perception of susceptibility to or severity of a health issue (Strecher & Rosenstock, 1997). This first condition emphasizes the individual and is based on an underlying assumption that an individual would have the ability to access information and form an opinion independently. However, this emphasis on the individual is not necessarily applicable to the rural context in a developing country. Individuals in the target population in Togo do not have direct access to health information, but rather the Village Volunteer and the Community Health Nurse are the primary deliverers of health information and they are in possession of the health education materials. Due to restricted individual and national resources, low literacy rates, gender issues, and local understanding of diseases, health information is not readily available to individuals. The materials and key messages for the Togo pilot project were developed with the knowledge that the target population is mostly non-literate, and with the premise that the VVs and CHNs would be the conduit through which community members would gain access to the information. Therefore, in the context of Togo's integration

project, the first condition of the *Health Belief Model* could not be fully met. This finding highlights the mismatch between the conditions in Togo and underlying assumption of the *Health Belief Model* regarding the moderating conditions and resources available to individuals.

Similarly, the second stage of the Transtheoretical Model (TTM) is the *contemplation* stage in which an individual has received health information and may recognize the benefits of making a change in behavior (Prochaska, 1979). The Village Volunteers were the primary sources of health information in the villages, and were therefore in the role of stimulating the *contemplation* stage for individuals in their village. Through the group meetings and unplanned teaching opportunities, and through the support of the village leadership, health education was available to community member. However, a the six month time frame described in the model for the *contemplation* stage is not particularly realistic in rural areas of developing countries where the rate at which change can occur may be much slower. Some studies have shown that even in contexts where the resources for health behavior change were available, people can remain in the *contemplation* stage for long periods of time (Prochaska, DiClemente & Norcross, 1992). The data in this study identified socio-cultural and structural factors that limit individuals and communities in their health behaviors.

Therefore, the *contemplation* stage as described in the TTM may be stimulated by the integrated NTD health education delivery that was evidenced in this study. In spite of this, it may not lead to the next step of taking action as described in the TTM because of significant barriers that are faced by people in developing countries such as Togo.

Other research on the TTM has shown that individualized and one-on-one health behavior counseling may produce better results than working with groups (Levesques, Cummins, Prochaska & Prochaska, 2006). In addition to teaching groups in the villages, Community Heath

Nurses and Village Volunteers in this study took advantage of unplanned teaching opportunities to convey health information to individuals one-on-one. Thus, while the primary source of health education in the village was delivered at group meetings, the health educators recognized what the literature also show: that teaching to individuals was a valuable component of health education in their village settings.

The literature on the PRECEDE-PROCEED Model points to programs, services, and resources as *enabling* factors for encouraging and sustaining positive health behaviors (Green & Krueter, 2005). Thus, according to this model the integrated health education that was delivered in Togo is an *enabling* factor for positive health behaviors for NTD prevention and treatment. The involvement of the village leadership in supporting the health education delivery was also a factor that falls into the *enabling* category according to the model. The village leadership, including the Village Chiefs, Community Health Nurses, and the Village Volunteers, acted as resources in their communities that enabled the delivery of health education to groups and encouraged the participation of village members in those group meetings.

Although *enabling* factors were present in the communities where the integrated NTD health education was delivered, other socio-cultural and structural factors were also present which proved to be limitations on the delivery of health messages. Thus, the degree to which these resources were actually enabling learning to occur through health education delivery needs to be examined further.

Kloos' (1995) adaptation of the *PRECEDE Model* suggests that the community is the optimal level for health education interventions in developing countries. Similarly, Schall's (1998) *Interactive Model* includes the involvement at the beneficiary level in the planning stages of health education, so that delivery can be tailored to the specific conditions and circumstances

in communities. Schall's (1998) model advocates for the involvement of local authorities in disease control programs. Other literature also points out the importance of community participation in developing health messages in order to increase the relevance and success of health education (Brieger, 1996; Isley, Sanwogou & Martin, 1979; Pauwels, 2005; Vlassoff & Manderson, 2002). In addition, community health education delivery should consider where, when, how, and by whom health messages are taught (Parker, Allen & Hastings, 2007).

The integrated health education in Togo reflects the delivery method suggested by Kloos (1995) and Schall (1998). Integrated NTD health education was primarily at the community level in group meetings that were organized though the authority of the village leadership. Kloos' (1995) model suggests that this type of health education delivery incorporates dimensions of individual, environmental, regional, and national factors as well as socio-economic constraints. The study showed that health education was delivered by the VVs in a way that reflected individual constraints, such as the time constraints of village members working on their farms, and the general lack of literacy skills.

There was minimal involvement in the development stage of the integrated NTD health education at the beneficiary level; some Community Health Nurses and Village Volunteers gave feedback on the materials once they had already been designed. However, the data also showed that at the beneficiary level, health educators in the villages had significant latitude to tailor the health messages and the manner in which they were delivered in their communities. Village Volunteers chose the health messages that they wanted to deliver at each meeting. They also chose the time, day, and place that each message was delivered to accommodate the constraints of the community members. VVs and CHNs also occasionally taught health messages one-on-one to meet the information needs of individuals in the community. Thus, in practice health

educators at the beneficiary level had significant control over the delivery of health education. This differs from Schall's (1998) *Interactive Model* that advocates beneficiary involvement in the planning stage; nevertheless, the data showed that community control of health education was considerable.

The delivery of integrated NTD health education in Togo relied upon the activities of Village Volunteers in their communities, with the support of the Village Chiefs who assisted in organizing the meetings and broadcasting that information in and around the villages. Aspects of the Health Belief Model and the Transtheoretical Model relate to the study; however, both models have limited applicability to the findings. The importance of health education like what is in place in Togo as an *enabling* factor is highlighted in PRECEDE-PROCEED. Both Kloos (1995) and Schall (1998) point to the importance of community level input and involvement, which is reflected to some degree in Togo's pilot project.

As the literature points out, social and behavioral factors, as well as individual and national poverty shape and significantly limit the integration and delivery of health education for NTDs. This research confirmed that the socio-cultural factors of gender, the local beliefs about disease, and the role of the Traditional Healers are of primary concern in shaping health education. In addition, structural factors of poverty, and a lack of infrastructure shaped and limited the ways in which NTD health education was integrated and delivered to the target communities. Furthermore, well-known health behavior change models, the HBM and the TTM, are based on premises that do not apply in the case of Togo.

Implications for Practice

At present, Neglected Tropical Diseases (NTDs) affect roughly one billion people living in mostly low-income countries around the world. Poor people in developing countries are the

most affected, especially those in rural areas (Engels & Savoli, 2006; (Molyneux, Hotez, & Fenwick, 2005; Lammie, 2006; WHO, 2006). The conditions of poverty increase peoples' susceptibility to NTDs, including inadequate health knowledge and health education that would allow individuals and communities to be involved in preventing and treating NTD infections (Onwuliri et al, 2005; WHO, 2006). Due to the limited funds available to address these diseases, the innovative cost-saving approach of program integration for these diseases holds promise (Lammie, 2006; Lammie, Fenwick & Utzinger, 2006; Molyneux, Hotez & Fenwick, 2005). Since many of these diseases are enabled through social and behavioral factors, a sustainable effort to control these diseases should include health education to improve community control of the vectors of disease, hygiene, and environmental sanitation (Smits, 2009).

At the programmatic level, this study provides a model of how the health education integration process was put into place in the field. Since integration is such a new approach to dealing with NTDs, the literature on integration is primarily a theoretical discussion of how vertical programs might be combined. Programs that are integrated to some degree are in place in approximately ten countries (Hotez et al, 2007). However, no literature could be found that described the integration of the health education component of these programs. Therefore, this study provides a starting point for examining this process in practice. Togo's project could provide leadership and guidance for other projects seeking to integrate health education for several diseases. In addition, this study is one of the first to integrate as many as seven diseases, and thus provides insight into a successful process that could otherwise be potentially unwieldy. Thus, this study can be used as a model that demonstrates a pioneering approach to integrating NTD health education and can encourage other NTD projects and health educators to use this study as a starting point in developing their own integration process.

At the planning level, Togo's project provides an example of an integration process that was successful in several important dimensions. Aspects of the national level top-down approach can be adopted by program planners to capitalize on the efficiency of this method of identifying the diseases to be included, and for identifying the key messages that were included in the materials. This approach was efficient in terms of the relatively short time it took to move from developing and preparing materials through to piloting the integration project in the target communities., so it is recommended when a short time-frame is a priority. This can be particularly relevant in developing countries where the health problems caused by NTDs are very serious, so a short time frame in the developmental stage of a program means that implementation of the program can occur quickly. In this way urgent health issues can be addressed quickly.

Program planners and developers for integration should accessed the national leadership of vertical NTD programs in the development stage of the integration project; this ensures that the project is informed by expert knowledge from many perspectives. Togo's project was efficient in terms of the relatively limited resources needed to move through the development process, and this streamlined approach is particularly applicable in developing countries with few resources for health education. Although the approach in Togo was mainly top-down, some expert knowledge from the community was included in the process in the form of feedback from some Village Volunteers and Community Health Nurses. Even this minimal level of community involvement is advisable whenever possible. Thus, in terms of the efficiency of time and resources used, this study demonstrates an approach that works in circumstances where resources are limited.

The study of Togo's project documents the specific approach that was used to develop the integrated health education materials, which could then be applied by other project planners with similar goals. Other projects that are focused on isolating and promoting overlapping information for multiple diseases could apply the steps taken in the Togo case. This method allows NTD programs for multiple diseases to avoid being redundant in the health information they delivered. Like the method that emerged out of this study, it is advisable to incorporate an awareness of the barriers faced by the target population other while developing materials. The amount and level of written text in materials should reflect local literacy rates. The use of pictures in the materials should be carefully considered as an important element to address low literacy. In addition, using a local artist to create pictures increases how relatable the material are, and is important to contextualize the images to the target culture. When possible, consulting with a local expert in health communication would also ensure that materials are relevant at the community level. All of these steps were taken in the Togo project and were aimed at enhancing the effectiveness of the materials for the learners. Other project planners who are developing integrated NTD health education materials can learn from the process in Togo and consider implementing these steps where applicable and feasible.

In addition to learning from the successes of Togo's integration project, program planners can also benefit from examining where this study found challenges and areas for improvement. For example, the Togo project made an effort to reflect the barrier of low-literacy into the materials, but missed the opportunity to reflect other barriers experienced in the target communities. The literature highlights the need for some kind of community input prior to developing the health education so that it is contextualized for the target population, thereby increasing sustainability (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Kloos, 1995; Schall,

1998). The study found that the materials were not contextualized to some socio-cultural and structural limitations that shaped health education in the villages. This finding can be instructive to other health education planners and educators. The process of articulating health education goals should include some form of community input. Projects can develop and implement mechanisms for community input and involvement in defining project messages, development of materials, mode of delivery, and overall goals. Contextualizing messages is important because presenting unrealistic or unattainable health messages may be discouraging to learners, and the messages may lose credibility. In addition, creating health education that has limited effectiveness in the community wastes time and resources that are especially restricted in developing countries.

On the other hand, limited resources may also restrict the ability of projects to incorporate comprehensive community feedback, so creative ways of accessing community input must be found. Existing community knowledge, should be seen as a valuable guide when developing implementation plans. Village Chiefs, Village Volunteers, Traditional Healers, other community leaders, and the community members themselves should be viewed as experts in their needs and priorities. Focus groups, community meetings, and one-on-one interviews should be considered as ways of tapping into this local knowledge. Incorporating local perspectives into the way health education is planned and delivered is recommended as a way to increases local buy-in for the Togo project, and for other similar projects.

Program planners and adult educators working in communities and implementing programs can apply lessons from this study about adapting to community needs. Including community input into decision-making for programs is important for improved program outcomes and sustainability (Canning, 2006). Although some limitations were not taken into

account when designing and developing the materials, the Village Volunteers and Community Health Nurses in Togo were given the latitude to adapt to community needs with regard to the time, place, and day when the information was taught. They were also free to pick which topic from the key messages they would teach at each group meeting. This demonstrates the benefit of allowing some community control over the delivery of health education. In that regard, health education can be tailored to each community.

Policy makers at the Ministry of Health in Togo, and national program planners can apply the findings of this study when considering the ways in which health education is delivered in rural village communities, and the central role that Village Volunteers play in teaching about health in their communities. Other developing countries utilize similar systems of using volunteers as outreach for the Ministry of Health into their communities. The use of volunteer labor for program implementation is problematic because of the imposition on volunteers' time without remuneration (Parker, Allen & Hastings, 2007; Verani, unpublished manuscript). In Togo, Village Volunteers were the main conduit of integrated health information in their villages. In order to improve health knowledge in rural communities, the role of the Village Volunteer could receive more support in several ways. They could be incorporated more formally into the health system and receive more health training as well as teacher training. If they received more compensation for their work, that would free up their time from other income-generating activities to focus on community health. In addition, the Ministry of Health could work more closely with the Village Chiefs and capitalize on this community resource to improve community health. More focus on the assets at the community level may also increase community buy-in to health related activities.

Another important resource in communities that emerged from this study is the role of Traditional Healers in Togo's community health. The study showed that Traditional Healers in Togo are the primary source of health services in rural communities. People seek help with illness from Traditional Healers first, and only go to the medical system as a last resort. This presented itself as a limitation on delivering health education in villages in Togo. However, the Traditional Healers could also be viewed as an important asset and health resource particularly in light of their leadership role.

Togo's Ministry of Health has begun initial stages of officially acknowledging Traditional Healers' status and value by creating a national association for them, and by starting to provide them with health training. This is a positive and progressive step that could increase health information and learning in communities through the health seeking behavior that is already being practiced in communities. Traditional Healers who participated in this study expressed interest in receiving health training, and in collaborating with the health system. Togo's Ministry of Health, and that of any other country contemplating this approach, will need to create a way to enhance collaboration through incentives to the THs. The study found a conflict of interest for THs between referring their patients to Health Centers, and the loss of income in doing so. Program planners and developers can apply the findings about Traditional Healers from this study when developing materials and delivery strategies. Togo's key messages did not include any references to THs, despite the fact that people in villages seek treatment from them first. Rather than ignoring their role in communities, materials and education delivery need to address the reality on the ground in people's lives in order to be relevant.

Program planners and health educators can also apply the findings about local beliefs about disease and illness. Local beliefs were a limitation on health education delivery, so

understanding traditional disease concepts enables the process of addressing those issues in the health education materials. Rather than ignore the reality of the target communities, acknowledging local beliefs creates an opportunity to contextualize health information, offer solutions to this limitation, and potentially make health education more meaningful.

Another limitation on health education that surfaced in this study is gender. At national and cross-national levels, policy makers can apply this finding broadly by beginning to raise awareness about gender inequity in health education and services as the first step in the long-term undertaking of addressing this issue within the health system. Better representation of women within the Ministry of Health, at the national level, at the district level, and in communities is another long-term goal that could come out of these findings. Health education planners and designers, can include women in the development process to better reflect their perspective, and women can be better represented in the materials. Some participants suggested including women's groups in the delivery strategy. Addressing gender inequity may mean including messages aimed at increasing men's involvement in family health. In general, women's subordinate position in Togolese society, and in other societies, can be countered at many levels to increase access to health information and services.

This study helps point out to policy makers, program planners, and health educators the significance of moving away from a behavioristic approach to health education toward a more developmental approach. Togo's project focused on promoting specific health behaviors, whereas the findings showed the limitations on health education delivery could be addressed at a community level. The developmental model, which focuses on community capacity building, may be more effective in rural village settings similar to the context of this study. The developmental approach could include community initiatives to increase basic knowledge of

diseases to connect them to symptoms and illness. It could also include instructions on how to build a community latrine, or individual latrines, rather than instructing people to use latrines where few or none exist. It could also include lessons on how to access a clean water source, or how to create clean water in villages. Health messages that provide solutions to basic community health limitations could empower villages to work towards implementing solutions to their health problems. This would also increase the likelihood of people adopting positive health behaviors, and increase the sustainability of those behaviors.

The developmental approach would need to be grounded in a realistic assessment of a community's ability and willingness to make changes, despite structural limitations such as individual and national poverty. Health programs and educators may need to address the more pressing community needs in advance of or in tandem with the targeted health messages. Meeting urgent community needs such as access to clean water and latrines, would shore up the capacity of communities to then adopt the recommended health behaviors. Program planners and health educators should avoid promoting health behaviors that are not possible in communities due to the absence of the necessary infrastructure. Since the developmental approach is aimed at engaging people at the community level, policy makers and planners should consider involving community leaders like Village Chiefs as a valuable resource in enabling community activities. The study showed that in Togo, Village Chiefs played an important role in enabling health education delivery by endorsing group meetings and announcing meetings through the Gongonneurs. Planners should aim to maximize the resources that already exist in communities, such as the leadership that is in place, and local forms of communication such as Gongonneurs by integrating these resources into implementation plans.

The findings of this study provide an examination of a project that breaks new ground in terms of the number of NTDs that are integrated in the health education materials. This project provides a model for other programs to follow and learn from when developing and implementing similar projects in developing countries where issues may be parallel. Integrating NTD health messages is dependant on the process of developing relevant health messages and materials that resonate within the target communities. However, community input and feedback are recommended to contextualize the health messages and delivery. Contextualizing integrated NTD programs increases the likelihood that socio-cultural and structural limitations in communities will be acknowledged and incorporated into programs in a way that increases sustainability. Focusing on community resources and assets through a developmental approach is also important to create more opportunities to meet needs and priorities identified by the community. Village Chiefs and Traditional Healers are resources in the community who can prove to be assets to a health education programs. For current and future practitioners who are involved with integrating NTD health education, and for policy makers at the national and international levels, this study sheds light on how to integrate and implement NTD health education for multiple diseases, and how to enhance and build on the process that was used in this project.

Suggestions for Future Research

Further research on the issues surrounding the integration of health education for NTDS, and the subsequent implementation of the integrated health education in target communities would build on this study's findings. The sample selected for this study indicates several areas for further investigations. This study selected a sample of participants from several levels of the health system and from the communities within the target population. This provided a spectrum

of perspectives on the research questions, which was an especially informative approach for a new topic in the literature. Future studies could deepen our understanding of each of these multiple perspectives by focusing on only one or two levels within the health system or in the community. It is basic and pressing to listen to the perspectives of all the actors in the process of integrating health education, especially those in the community who do not typically have a voice in the planning stage. More fully articulated perspectives of Village Chiefs, Community Health Nurses and Village Volunteers would provide a richer understanding of what health education looks like on the ground.

Other community members that are of particular interest as a focus for future research are Traditional Healers. In Togo, the role of Traditional Healers was found to be a limitation on health education, and exploring the dimensions of this finding seem critical for the future success and sustainability of NTD integration projects in similar contexts. On the other hand, this study found that Traditional Healers are a significant resource in their communities, and were interested in collaborating with the health system. Although collaboration is problematic as the health system is currently structured in Togo, future research on this topic could provide insight on creating mechanisms through which Traditional Healers could play a positive role in the health system. This in turn could increase the long-term sustainability of such projects.

The findings regarding gender and women indicate the need for further research on providing accessible health education and health services for women in Togo, and in other similar contexts. This suggests future research on delivering health information, and on health learning for women specifically, and on gender roles as they impact integrated health education. Additional research on men and male gender roles is also recommended, particularly with regard

to women's health decision making within marriage. Additional research is also needed on men's role in family health in contexts where similar gender roles are limiting health education.

Implementing integrated programs is complex, so some activities may be better implemented through vertical programs (Canning, 2006). The findings of this study are unclear on this point, and further research would help address this question. Participants raised concerns that the complexity of the integrated health information might be confusing for learners in rural communities where educational levels are very low. Research that seeks to verify or refute this concern would be helpful to health educators in developing future programs. Finding the optimal degree of complexity for program efficiency without losing comprehension for learners could lead to increased learning, and reduce confusion and misunderstanding of health messages.

Some of the literature used in framing this study indicates the need to include community input into the design and development of health messages, and implementation in target communities (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Brieger, 1996; Canning, 2006; Green & Krueter, 2005; Isley, Sanwogou & Martin, 1979; Minkler, Wallerstein & Wilson, 2008; Pauwels, 2005; Vlassoff & Manderson, 2002). This study showed that by focusing on diseases and disease symptoms, an opportunity was lost to incorporate community-level priorities into health education. However, guidance on how to engage non-literate, under-educated rural communities in developing countries in the process of program development and implementation is scarce in the literature. Research on this topic that resulted in guidance for practitioners in the field would prove valuable for enabling this process. Such practical guidance, based in research, could encourage more program leaders to implement mechanisms for community input that could result in health education programs that are better contextualized and lead to increased learning.

According to the PRECEDE-PROCEED Model (Green & Krueter, 2005), health education is a factor that enables positive health behaviors, which was one of the primary goals of the integrated health education in this study. However, this study showed that significant limitations on health education delivery were present in the target communities. Further research is needed to explore the degree to which these and other limiting factors hinder health education and learning, and conversely, the degree to which health education can be a resource to overcome these limitations. A specific factor that limited health education in Togo was the local beliefs about diseases and illness. Any reference to these local beliefs was absent from the integrated materials. Further research on this factor would help illuminate the influence it has on health learning, and could possibly provide guidance on how to address local beliefs within materials and in teaching practices.

Further research on integration itself is indicated by this study. According to the literature on integration, the key features of this approach are: combining vertically structured disease programs in order to reduce program costs, reduce program overlap, increase efficiency, and to combine well-funded programs with under-funded programs to increase disease treatment (Brady, Hooper & Ottesen, 2006; Lammie, 2006; Lammie, Fenwick & Utzinger, 2006; Molyneux et al, 2005). Further research is needed to clarify what is meant by program integration.

This study showed that partial integration was implemented for overlapping messages for seven diseases. However, it was not clear how or whether the non-overlapping messages, which were not included in the integrated health materials, were still being delivered by other programs. It is not clear from this study whether true program integration of health education for the seven targeted diseases was achieved in Togo's pilot project or whether the pilot project was

implemented in tandem with the vertical programs that were also teaching the same key messages. More research is needed on this and other integration projects to explore these issues. If the Togo project was in place in tandem with the existing vertical programs, then it is possible that program duplication resulted from this integration project. Since program duplication is counter to one of the main goals of integration, further investigation into the integration process would be helpful in this and other integration projects.

Chapter Summary

Many questions remain about the integration of NTD health education. This study provides a beginning for exploring these questions, and demonstrates the potential for many positive outcomes from this approach.

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APPENDICES

APPENDIX A

[1] Interview Guide:
National Coordinators

In this interview, I would like to ask you about health education that combines the information for these diseases:

LF, Malaria, Onchoceriasis, Trachoma, Schistosomiasis, STH, Guinea Worm (surveillance)

Background information:

1. Circle: Male Female
2. Please tell me your job title, and how long you have been doing this job.
3. Have you had other positions in the health system? How long did you do that job?
4. Please tell me how long you have been involved with the integrated tropical disease pilot project in Douri?

Interview Questions

(1) Describe any ways that you were involved in developing the integrated health information about these diseases. Prompts: flipchart, posters, radio messages, posters, community meetings, Town Criers (Gongonneurs)
(2) What do you think are important things to consider when combining the information for all the diseases?
(3) What information do you think is the most important to include? Why?
(4) Describe any ways that you give health information about these diseases in your role as a _____ [name of position in health system]. Prompts: Training staff; discussing education delivery with staff.
(5) Describe the ways that health information about these diseases is given to the community by other members of the health system? Prompts: Flipchart, community meetings, posters, talking to patients.
(6) Who are the audiences for these different methods of delivering this health information?
(7) What are some other ways that people get information about these diseases? Prompts: Who do they talk to; what do they look at or read; how do they hear about it; where would they hear about it. (Town Criers (Gongonneurs), posters, radio messages)
While looking at the flipchart: (8) Are you familiar with this?

Prompts: Where, when, who, what, why
While looking at the flipchart: (9) How is this tool useful or helpful for health education in the community?
Showing each of the 4 pages: (10) What do you like about how the information is given on this page?
Showing each of the 4 pages: (11) What would you change about how this health information is given?
Showing each of the 4 pages: (12) Is there anything else that you think should be added?
(13) What do you think are the advantages of combining information about all 7 diseases?
(14) What do you think are the disadvantages of combining information about all 7 diseases?
(15) What suggestions do you have for other ways to give health information about these diseases that would work well in the communities?
(16) Describe how you think communities could be involved in their own health education?
(17) Describe the things that affect community participation in health education activities for these diseases? Prompts: location, certain village members, social networks, etc
(18) What cultural beliefs and practices affect how people learn about these diseases?
(19) What you think are the main challenges for changing people's health behavior for these diseases?
(20) Is there anything else that you would like to say before we end the interview?

APPENDIX B

[2] Interview Guide:
Doctors, Medical Assistants, Community Health Nurses, Village Volunteers

In this interview, I would like to ask you about health education that combines the information for these diseases:

LF, Malaria, Onchoceriasis, Trachoma, Schistosomiasis, STH, Guinea Worm (surveillance)

Background information:

5. Circle: Male Female
6. Please tell me your job title, and how long you have been doing this job.
7. Have you had other positions in the health system? How long did you do that job?
8. Please tell me how long you have been involved with the integrated tropical disease pilot project in Douri?

Interview Questions:

1. What do you think are important things to consider when combining the information for all the diseases?
2. What information do you think is the most important to include? Why?
3. Describe any ways that you give health information about these diseases in your role as a _____ [name of position in health system]. Prompts: Using flipchart, community meetings, training village volunteers, talking to patients.
4. Describe the ways that health information about these diseases is given to the community by other members of the health system? Prompts: Flipchart, community meetings, posters, talking to patients.
5. Who are the audiences for these different methods of delivering this health information?
6. What are some other ways that people get information about these diseases? Prompts: Who do they talk to; what do they look at or read; how do they hear about it; where would they hear about it. (Town Criers (Gongonneurs), posters, radio messages)
While looking at the flipchart: 7. Are you familiar with this? Prompts: Where, when, who, what, why
While looking at the flipchart: 8. How is this tool useful or helpful to you in your role as _____ [name of position in health

system]?
Showing each of the 4 pages: 9. What do you like about how the information is given on this page?
Showing each of the 4 pages: 10. What would you change about how this health information is given?
Showing each of the 4 pages: 11. Is there anything else that you think should be added?
12. What do you think are the advantages of combining information about all 7 diseases?
13. What do you think are the disadvantages of combining information about all 7 diseases?
14. What suggestions do you have for other ways to give health information about these diseases that would work well in the communities?
15. Describe how you think communities could be involved in their own health education?
16. Describe the things that affect community participation in health education activities for these diseases? Prompts: location, certain village members, social networks, etc
17. What cultural beliefs and practices affect how people learn about these diseases?
18. What you think are the main challenges for changing people's health behavior for these diseases?
19. Is there anything else that you would like to say before we end the interview?

APPENDIX C

[3] Interview Guide:
Village Chiefs, Traditional Healers

In this interview, I would like to ask you about health education that combines the information for these diseases:

LF, Malaria, Onchoceriasis, Trachoma, Schistosomiasis, STH, Guinea Worm (surveillance)

Background information:

9. Circle: Male Female
10. Are you married?
11. Can you please tell me your age?
12. Do you have any children? How many? What are their ages?

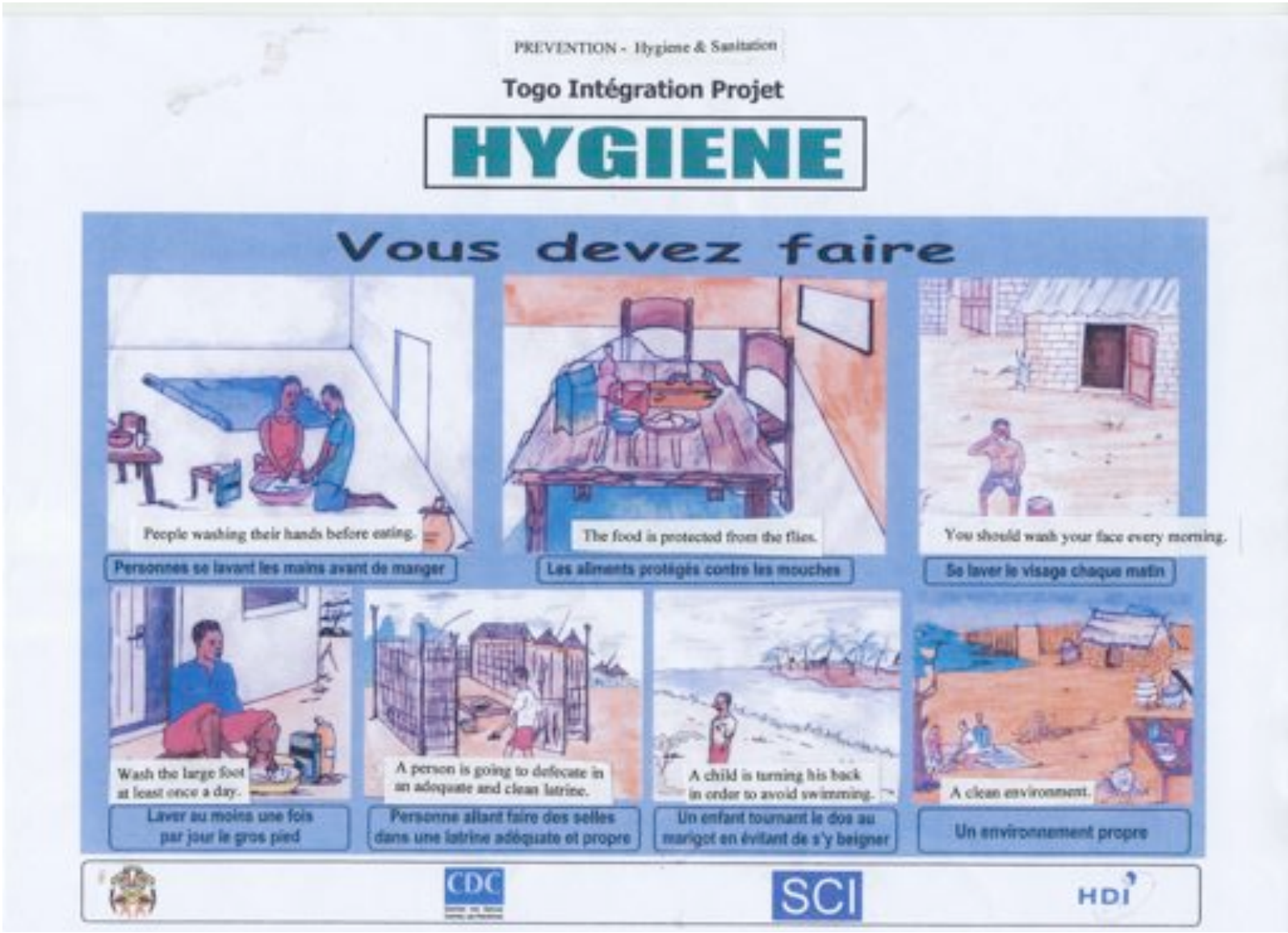
Interview Questions:

1. What is the most important health information to you?
2. What are some ways that you get information about these diseases? Prompts: Who do they talk to; what do they look at or read; how do they hear about it; where would they hear about it. (Town Criers (Gongonneurs), posters, radio messages)
While looking at the flipchart: 3. Are you familiar with this? Prompts: Where, when, who, what, why
While looking at the flipchart: 4. How is this tool useful or helpful to you?
Showing each of the 4 pages: 5. What do you like about how the information is given on this page?
Showing each of the 4 pages: 6. What would you change about how this health information is given?
Showing each of the 4 pages: 7. Is there anything else that you think should be added?
8. What do you like about combining information about all 7 diseases?
9. What don't you like about combining information about all 7 diseases?

10. What other ways do you want to get health information about these diseases?
11. Describe how you and your village could be involved in learning about these diseases?
12. Describe the things that affect community participation in health education activities for these diseases? Prompts: location, certain village members, social networks, etc
13. What you think is most difficult for people to change their health behavior for these diseases?
14. Is there anything else that you would like to add before we end the interview?

APPENDIX D

Integrated Key Message Pages with English Translation


PREVENTION - Hygiene & Sanitation
Togo Intégration Projet
HYGIENE
Vous devez faire
People washing their hands before eating.
Personnes se lavant les mains avant de manger
The food is protected from the flies.
Les aliments protégés contre les mouches
You should wash your face every morning.
Se laver le visage chaque matin
Wash the large foot at least once a day.
Laver au moins une fois par jour le gros pied
A person is going to defecate in an adequate and clean latrine.
Personne allant faire des selles dans une latrine adéquate et propre
A child is turning his back in order to avoid swimming.
Un enfant tournant le dos au marigot en évitant de s'y baigner
A clean environment.
Un environnement propre
CDC
SCI
HDI

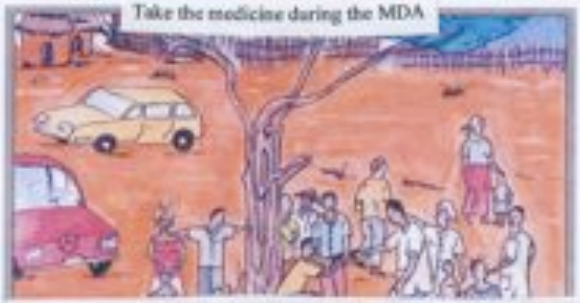

PREVENTION – Nets & Drugs
Togo Intégration Projet
Sleep under a soaked (treated) mosquito net.
DORMIR SOUS MOUSTIQUAIRE IMPREGNEE
Protégez-vous contre les piqûres de moustiques
Protect yourself against mosquito bites.
Pour éviter
In order to avoid
Large foot (LF).
Gros pied (l'hymphoedème)
Large scrotum.
Grosse bourse (hydrocèle)
A person suffering from malaria.
Personne atteinte du paludisme
Vous devez faire
You have to do
Soak and re-soak the mosquito net.
Imprégner et réimprégner les moustiquaires
Take the medicines.
Prendre les médicaments
Sleep under the soaked (treated) mosquito net.
Dormir sous moustiquaire imprégnée
CDC
SCI
HDI

SYMPTOMS

Togo Intégration Projet

PRENEZ LES MÉDICAMENTS LORS DES TDM

Take the medicine during the MDA



The CHW distributes medicines during the Mass Drug Treatment (MDA).

L'ASC distribuant des médicaments lors des traitements de masse (TDM)

SI NON !!!

IF NOT

A man with a "trachomic" eye.

Un homme avec l'oeil trachomateux

A student urinating with the blood.

Un écolier urinant avec le sang

A child with a big belly.

Un enfant avec gros ventre (malnutrition)

A blind person guided by a child (Onchocerciasis).

Un aveugle guidé par un enfant (onchocercose)

A woman with a large foot. (LF).

Une femme avec gros pied (l'hymphoedème)

CDC

SCI

HDI

TREATMENT – Go to the Health Center

Togo Intégration Projet

IL FAUT ALLER EN CONSULTATION AU CENTRE DE SANTE

One has to go and consult at the Health Center.

CDC SCI HDI