

Evaluating the Use of Community Health Workers to Provide Maternal Healthcare Services in Haiti

By:

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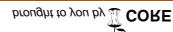
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1 ABSTRACT

Objective: The aim of this study was to assess the effectiveness of community health workers (CHWs) who provide maternal health care in reducing maternal mortality rates in Haiti.

Methods: This study consists of three components: (1) a literature review to describe the Haitian health system and the current role of CHWs in providing maternal healthcare; (2) stakeholder interviews to solicit varied perspectives on the viability of engaging CHWs to provide maternal healthcare services in Haiti; and (3) a conceptual model to estimate the impact of two CHW interventions, promotion of skilled care for childbirth and intermittent preventive treatment of malaria (IPTp), on the maternal mortality ratio (MMR).

Results: Haiti's fragmented health system is ill-equipped to address the health needs of its population. Poor outcomes, such as high MMR, are due in part to a lack of human resources. The presence of CHWs offers an opportunity to fill a gap in resources and reduce MMR. By offering prenatal care services at the community level, CHWs may be able to lower rates of maternal mortality and link patients with the formal healthcare system.

Conclusions: CHWs are currently involved in the implementation of both governmental and non-governmental healthcare programs in Haiti. They serve as the link between communities and the formal healthcare system; however, their capabilities in maternal healthcare are limited. Due to a combination of social norms and lack of technical competencies, CHWs are ill-suited to provide childbirth assistance or other highly skilled maternal healthcare services. However, given their position in the community, knowledge of the local context, and increased integration into the formal healthcare system, CHWs are well positioned to provide prenatal healthcare services and connect women to better skilled maternal health care.

2 LITERATURE REVIEW

2.1 CURRENT STATE OF THE HAITIAN HEALTH SYSTEM

The Haitian health system is structured along three tiers – the first is comprised of 700 primary level hospitals, linked to a referral network of secondary community hospitals; the second consists of 10 department level (regional) hospitals; and the third includes four University Hospitals of Haiti and numerous specialty centers. Of the healthcare institutions in these three tiers, approximately 30.62% are public, 46.14% are private and 23.24% are a mix of public and private. The formal health system is available to an estimated 60% of the Haitian population. (MSPP, 2013) Traditional medicine also remains prominent in Haiti. This includes both plant based medicine as well as persons who are considered to have a gift, such as a healer or a traditional birth attendant (TBA).

Although intended to be a nationally cohesive and standardized system, in reality the provision of care in Haiti is fragmented and uneven. In addition to governmental and traditional medical systems, there is a large network of non-governmental organizations (NGOs). Even prior to the

2010 earthquake, NGOs proliferated to address the dual problems of failing governmental infrastructure and hesitancy on the part of the U.S. to give the Haitian government direct financial aid. These NGOs have been criticized for operating almost as a parallel healthcare system. Estimates of the number of NGOs in Haiti range from 863 (UN Office for the Coordination of Humanitarian Affairs) to 10,000 (US Institute for Peace). The Haitian Ministry of Public Health and Population (MSPP) lists only 343 NGOs, although it is widely assumed that the Haitian government is under-reporting the presence of NGOs in-country. (Ramachandran, 2012)

In 2012, the MSPP released the *Plan Directeur de Santé 2012-2022*, which cites several weaknesses of the Haitian health system. One of the highlighted weaknesses is a significant lack of human resources. The MSPP estimated that Haiti has 5.9 doctors or nurses and 6.5 other healthcare professionals per 10,000 people, far short of the WHO's recommendation of 25 healthcare professionals per 10,000 people. Some underlying drivers of this shortage are thought to be the lack of a strategic human resources plan for the health sector, weaknesses in the medical education system, absence of an official registration system to accurately document the presence of doctors in country, and a need for professional societies for other health professionals. (MSPP, 2013)

The already weak Haitian healthcare system was further challenged when, on January 12, 2010, an earthquake killed more than 200,000 people and rendered an estimated one million people homeless. In October 2010, a cholera outbreak followed. United Nations forces from Nepal, sent to Haiti to help the country rebuild post-earthquake, inadvertently introduced cholera to Haiti by contaminating the Artibonite River with cholera-infected sewage. This gave rise to an ongoing epidemic that has killed thousands. (Pallardy, 2016; Transnational Development Clinic, 2013)

In 2011, in an effort to rebuild the healthcare system following the earthquake, the MSPP announced the establishment of the *Paquet Essentiel de Services et Soins de Santé* (PES). The PES is a package of health services that was intended to be implemented nationwide to provide support following the devastation of the earthquake. (Advancing Partners & Communities, 2014) Despite the MSPP's announcement in 2011, there have been no published reports about the PES. Multiple sources suggested that the PES may still be in development and that Haiti is currently implementing an older set of guidelines – the *Paquet Minimum de Services* (PMS) – that was most recently updated in 2006. (Wright, 2015) The MSPP has been overseeing and implementing the PMS across the country since 2003, in conjunction with a network of partners including the national healthcare system, private healthcare providers, faith-based healthcare organizations and NGOs. (Advancing Partners & Communities, 2014)

2.2 STATUS OF MATERNAL MORTALITY IN HAITI

Haiti has the highest maternal mortality rate in the Western hemisphere. Despite international attention and an influx of humanitarian aid, the MMR¹ hovers around 380 deaths per 100,000 live births. An estimated 10% of deaths among women ages 15-49 years are due to maternal

¹ Maternal mortality ratio (MMR) is calculated as the number of maternal deaths per 100,000 live births.

causes, the majority of which are occurring in the prenatal and perinatal stages.² (Maternal Mortality Estimation Inter-Agency Group, 2014) The five primary drivers of maternal mortality are eclampsia (36%), hemorrhage (22%), infection (20%), gynecological disorders (11%), and other conditions, such as anemia (11%). (Prins, et al., 2008)

The high MMR may in part be due to a lack of maternal healthcare providers. In a 2005 Demographic and Health Survey, 88% of women stated that the main obstacle preventing them from seeking healthcare was the dearth of health personnel. (Prins, et al., 2008) In the *State of the World's Midwifery, 2011 report* the United Nations Population Fund (UNFPA) reported that the midwifery workforce in Haiti included 373 general practitioners with some midwifery experience, 221 obstetricians, 174 midwives³ and 40 other health professionals with some midwifery competencies. (Department of Maternal, Newborn, Child and Adolescent Health, 2011) This translates into 3 providers with midwifery experience for every 10,000 women of reproductive age. This explains why, in 2013, only 37% of childbirths were overseen by a skilled provider.⁴ (Maternal Mortality Estimation Inter-Agency Group, 2014) Notably, for women in the lowest quintile of wealth, only 10% were assisted by a skilled provider.

The 2012 Demographic and Healthy Survey found that women who reported receiving assistance during delivery said their assistance came from one of eight sources: traditional birth attendant with a childbirth kit⁵ (29%), traditional birth attendant without a childbirth kit (23%), doctor (23%), nurse (13%), traditional healer/parents/other (8%), no one (2%), nurse/midwife (1%), or auxiliary health agent (<1%). (MSPP, IHE, ICF, 2013) Traditional birth attendants (TBAs) are the most popular for childbirth assistance (52% of the total); yet, they do not work in health institutions and have often not received formal medical training. Instead they are members of the community, often healers or priests, who feel called to assume responsibility for childbirth and post-partum care in their community. Of the categories of health care worker in the survey, only doctors, nurses and nurse midwives are considered skilled providers. (Rassas, 2014).

Using data from the World Bank Databank, a 2014 study found a significant association between the presence of skilled providers and MMR, even when controlling for confounding variables. (Cuomo and Baek, 2014) Based on their analysis, the authors recommended that health programs seeking to reduce maternal mortality identify countries in which high MMRs are primarily driven by low rates of birth overseen by skilled providers, and identify potential “sociocultural barriers to the implementation of interventions on births overseen by skilled health workers.” (Cuomo and Baek, 2014)

In Haiti, USAID cited multiple contributors to a shortage of healthcare personnel including irregular payment of salaries, salaries not keeping up with inflation, and lack of a coherent personnel policy from the MSPP. Secondary obstacles included patient preference for female providers and a “brain drain” of experienced providers to private sector programs within or

² Perinatal is defined by the WHO as the period from 154 days of gestation to 7 days after birth.

³ Midwives are defined by the UNFPA as health professionals “educated to undertake the roles and responsibilities of a midwife regardless of their education pathway to midwifery, whether direct-entry or after basic nursing.”

⁴ Skilled providers are defined by the DHS program as “doctors, nurses, nurse midwives, and auxiliary nurses.”

⁵ The term “matrone avec boite,” is used to refer either to a traditional birth attendant (TBA) who has received formal training or to a TBA who has with them a birthing kit. These kits are provided by hospitals/NGOs and contain items such as a clean plastic sheet, sterile exam gloves, alcohol wipes, a bar of soap and hand sanitizer.

outside Haiti. (Prins, et al., 2008) A 2015 technical brief by UNAIDS, UNFPA, UNICEF, UN Women, and the World Bank suggests that “the crisis in human resources for health is one of the most critical factors underlying the poor performance of health systems, especially in underserved and hard-to-reach areas.” (H4+, 2015)

2.3 ROLE OF THE CHW IN HAITI

When faced with insufficient number of trained healthcare professionals, many organizations have used CHWs to bridge the gap. The WHO defines a CHW as

“any health worker who performs functions related to health-care delivery, was trained in some way in the context of the intervention; but has received no formal professional or paraprofessional or tertiary education, should be members of the communities where they work, be selected by the communities, be answerable to the communities for their activities and should be supported by the health system.” (UNFPA, ICM, WHO, 2014)

The UNFPA suggests that, as members of the community in which they work, CHWs can influence access to health services and information including: “basic health information about healthy pregnancy, safe birth options, newborn care, nutrition, breastfeeding support, family planning, and HIV prevention.” (UNFPA, ICM, WHO, 2014) In addition, the WHO and partner organizations defined a list of core and additional interventions which CHWs could undertake. Further detail on these interventions can be found in the Appendix. (H4+, 2015)

The Haitian government began training CHWs in 1982. At that time, they provided a few maternal and child healthcare services. By 1989, CHWs were allowed to administer vaccines and vitamin A postpartum. Since then, CHWs have assumed even more responsibilities. In a 2010 study by Partners in Health, the authors conducted focus group discussions and interviews with 462 CHWs. Study participants reported that they often perform activities outside of their scope of work, and would like to receive training in more clinical tasks. The study concluded that CHW’s “constitute a human resource pool that can be used to improve access to care and services despite the shortage of higher level healthcare professionals.” (Jerome G., Ivers L.C., 2010)

A few years ago the MSPP moved to standardize CHWs activities across the country by instituting a governmental training program. CHWs who complete the 5 module program are termed *Agents de Santé Communautaire Polyvalent* (ASCPs) and receive a diploma from the MSPP. (Note: For simplification, this paper will refer to both ASCPs and CHWs as CHWs). In addition to their previous roles, CHWs became responsible for education and management of chronic diseases, treatment of pneumonia, disaster preparedness, and family planning education (e.g. breastfeeding and birth spacing). (Gebrian, Personal interview, 2016)

The government delivers maternal health services through a combination of public sector health facilities and CHWs who provide community level health services and refer patients to public health facilities when necessary. A 2015 USAID report notes that Haiti’s package of health services implicitly excludes the following maternal health services: social support during

childbirth, home visits for women and children across the continuum of care, and women's groups (comprised of women in the community, meant to increase knowledge, empowerment, and social support around pregnancy). (Gardella, 2006) The 2012 Demographic and Health Survey concluded that "coverage of maternal health services appears to be associated with wealth, education level of the mother, and rural versus urban place of residence." (Wright, 2015)

Several organizations in Haiti are currently engaging CHWs. Partners in Health employs CHWs to support people living with chronic diseases such as HIV and tuberculosis. (Partners in Health, 2014) The Haitian Health Foundation (HHF) is an NGO that has been working in Haiti since 1986 and "follows the model of community-based primary care." Their model includes health clinics and home visits conducted by CHWs to "provide community based treatment for common illnesses, such as pneumonia and diarrhea." HHF has incorporated the governmental training program into their own programming. (Jerome G., Ivers L.C., 2010) Depending upon the program, CHWs wages are either paid by the Haitian government or by an NGO. CHWs who work in HHF's programs are paid by HHF. (Kaplan, et al., 2015)

CHWs have been shown to improve maternal health when providing services such as family planning, sexual health and postnatal care. The UNFPA promotes the use of CHWs to "facilitate access to cost-effective care, especially for women and families in geographically remote or urban poor settings without transportation," and notes that they should be considered as part of the healthcare delivery strategy, including extending coverage of essential maternal health services. In 58 countries, midwives are supervising CHWs in an effort to strengthen the connection between health facilities and the communities they serve. These relationships have the potential to improve continuity of care and increase utilization of healthcare services. The UNFPA proposes that countries struggling with midwife shortages set up CHWs to support midwives, deliver care collaboratively and encourage women in the community to utilize the healthcare system. (UNFPA, ICM, WHO, 2014)

3 STAKEHOLDER INTERVIEWS

3.1 SELECTION OF INTERVIEWEES

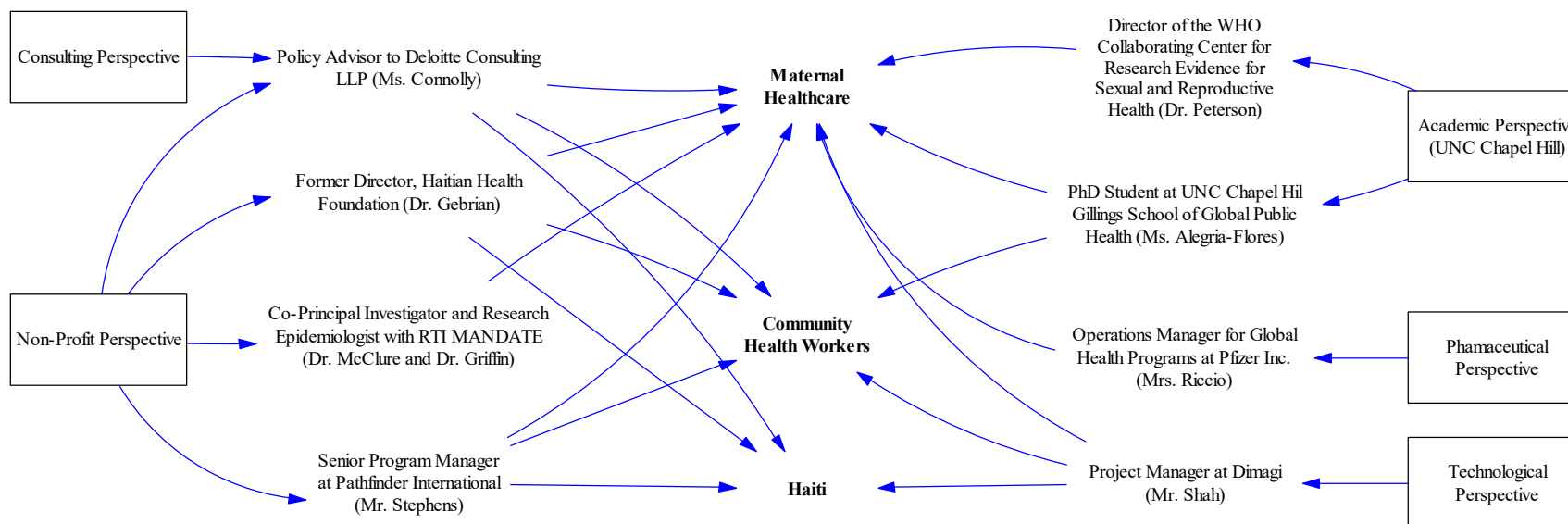
To supplement the literature review, eight stakeholder interviews were conducted to solicit varied perspectives on the viability of engaging CHWs to provide maternal healthcare services in Haiti. The stakeholders were chosen to represent a wide range of viewpoints, including academic, non-profit, consulting, pharmaceutical and technological backgrounds. All stakeholders have experience in one or more of the three priority areas – maternal healthcare, community health workers and Haiti – and four of the interviewees have experience in all three areas.

3.2 RECRUITMENT OF INTERVIEWEES

The initial set of stakeholder interviews were arranged through the UNC Chapel Hill network. They included Dr. Herbert Peterson and Ms. Kei Alegria-Flores (UNC Gillings School of Global Public Health); and Dr. Elizabeth McClure and Dr. Jennifer Griffin of the RTI MANDATE Team. The second set of interviews was arranged by the author based on past professional relationships. These included Ms. Caroline Connolly (had previously worked with the author in Haiti as part of the proposal team for the USAID SSQH project). Dr. Bette Gebrian of the Haitian Health Foundation; Mr. Ben Stephens of Pathfinder International; Mr. Sheel Shah of Dimagi, Inc.; and Mrs. Riccio of Pfizer.

Figure A. Concept map of eight stakeholder interviews, including the interviewee’s perspectives and knowledge areas

The model below presents a visual depiction of each interviewees’ connection to the topic of this paper, as well as their perspective on the issue. Insights from the interview have augmented the literature review. They are also represented in Figure B. Interview transcripts can be found in the Appendix.



3.3 INTERVIEW GUIDE

An interview guide was developed to structure and provide consistency across the stakeholder interviews. The guide consisted of an introduction of the research topic and questions around the core themes of CHWs, maternal healthcare and Haiti. At the conclusion of each interview, time was always left for the interviewee to suggest an area for further research, or to offer information on a topic that had not yet been discussed. Each interview built on the one before it, as a means of exploring themes and testing emerging hypotheses. For example the role of men in childbirth, as introduced by Ms. Alegria-Flores, became a point of discussion in subsequent interviews. So too did the role of the TBA in the community, as introduced by Dr. Bette Gebrian. In this manner the interview guides ensured that the central themes of this paper were consistently addressed, while allowing for the flexibility to explore each stakeholder's area of expertise and to validate statements made by other stakeholders.

3.4 INTERVIEW INSIGHTS

Stakeholder interviews revealed the following key insights:

Total Cost of Services

1. Cost is a major determinant of programmatic ability. But is rarely approached as an ethical or implementation issue.
2. Due to the large number of NGOs in Haiti, any cost analysis must include government and NGO resources.
3. Limitations of mortality data and cost transparency in Haiti present a significant challenge to accurate costing.

Health System Fragmentation

4. The large number of NGOs in Haiti leads to an extremely fragmented health system.
5. The fragmented nature of the health system in turn draws in more NGOs.

Community Health Workers

6. CHWs are selected by the community in which they live.
7. The MSPP training program endows them with polyvalent responsibilities.
8. They are associated with Western medicine,
9. Due to the fragmented nature of the health system, they may be paid either by MSPP or by NGOs.
10. They are well positioned to provide prenatal care.

Decision Makers in the Family

11. Maternal health roles are defined primarily by cultural norms.
12. Healthcare is family-based, not individual. Although older women are in charge throughout the pregnancy, men are often in charge at time of birth.

13. The lack of direct messaging to males and lack of male attendance at prenatal care appointments results in an absence of birth plans and increased rates of maternal mortality. NGOs are attempting to disrupt this cycle with the introduction of men's associations aimed at increasing their participation in pregnancy preparedness.

Traditional Birth Attendants

14. TBAs come to their role because it is a calling. They are older (age range typically 40-60 years), have another occupation (such as healer or priest) and usually cannot read or write. About one fourth of all TBAs are male.
15. TBAs are responsible for birth and postpartum care.
16. They do not provide prenatal care services.

Use of Clinics

17. Clinic use is affected by both social and financial costs.
18. Clinic use is hindered by the traditional practice of traveling home to give birth and by the distance of a woman from the clinic (especially in rural areas).
19. Utilization can be increased via word of mouth. Women who have a good experience at the clinic are more likely to go back and to tell their friends about it.
20. Older women rely more on word of mouth referrals to facilities and providers than younger women, who are more willing to try the clinic without referral.

Maternal Mortality

21. Maternal mortality could be reduced by increasing the number of births overseen by a skilled health worker and by increasing the rate of prenatal care coverage.

3.5 INTERVIEW INSIGHTS CONCEPT MAP

The insights listed above were gathered into a comprehensive model, as a means of depicting their relationships and interactions. The following pages discuss each component of the model, and the resulting insights. The complete model is displayed at the end of this section.

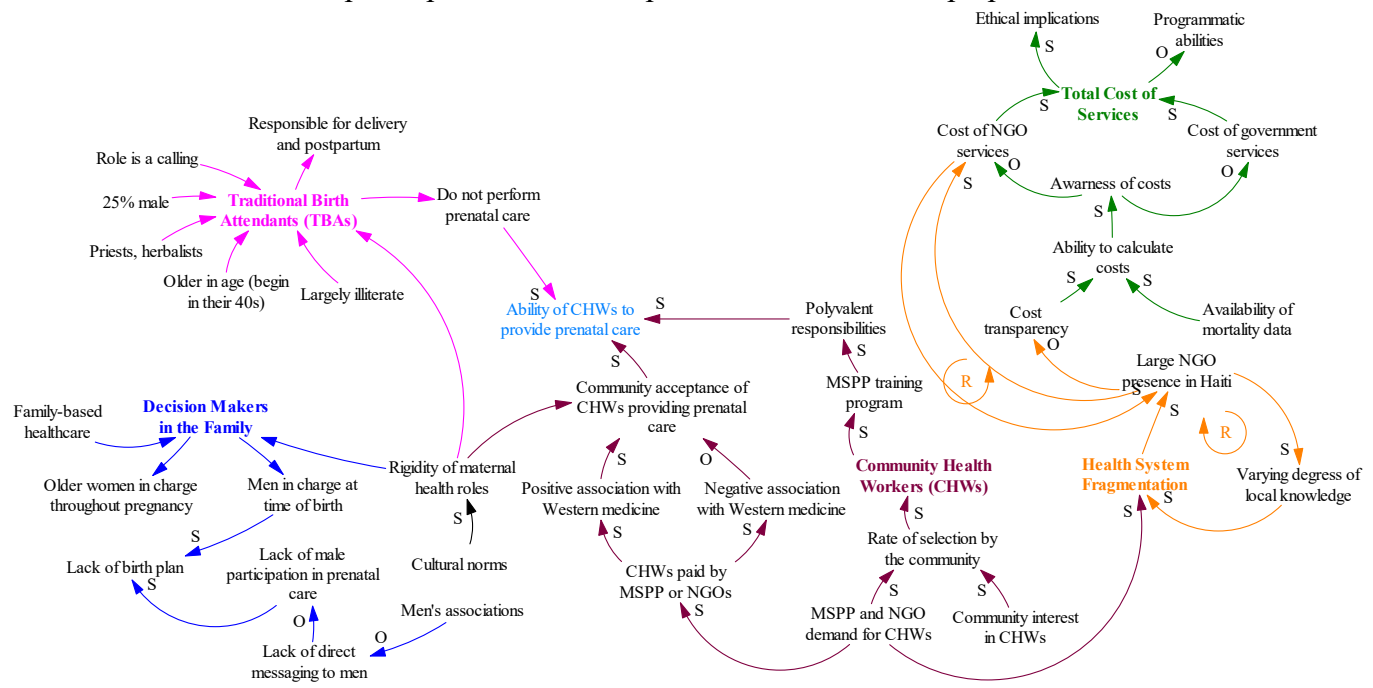
Within the model, arrows denote cause and effect relationships: when the first variable changes, it triggers a change in the second, all else equal. Arrow labels indicate whether the variables move in the same (S) or opposite (O) directions. Feedback loops are created when a chain of cause and effect circles back to trigger further change in a variable. When the cycle reinforces the initial/earlier change, the loop is described as reinforcing and denoted with an R. Loops that counteract earlier change bring balance into the system (balancing loops are labeled with a B). Variables of focus in this paper are highlighted in bold. Each component is color-coded to assist in explaining the larger model.

This model is not exhaustive. It represents the results of the research conducted for this paper and should be used to direct further research and discussion.

NGOs. This demand ties into health system fragmentation, as there are parallel systems working with the same resource. Part of the population of CHWs goes through the MSPP's training program, at the end of which they are certified as having polyvalent responsibilities. At this point, CHWs are considered capable of providing multiple healthcare services, including certain aspects of prenatal care. In addition to ability, community acceptance is critical. Cultural norms contribute significantly to the rigidity of maternal health roles in Haiti. CHWs are paid either by the MSPP or by NGOs, and are therefore significantly associated with Western medicine. This association may be either positive or negative, and may therefore either increase or decrease the community's acceptance of CHWs providing prenatal care services. Ultimately the ability of CHWs to provide prenatal care is determined both by their skill set and by the community's comfort level with this role.

Decision Makers in the Family (Dark Blue): Maternal health roles and a tradition of family-based healthcare influence decision making roles within the family. Older women are in charge throughout the pregnancy; however, men take charge at time of birth. The lack of direct messaging to men has a negative impact on their participation in prenatal care. Their absence from prenatal care planning, leads to families not having a birth plan in place. This is especially dangerous for women in rural areas, where access to emergency transport is limited and travel time to a clinic is often greater than one hour. (Urrutia, 2012) To address this, NGOs are forming men's associations, which aim to increase the participation of men in prenatal care, and their preparedness for childbirth.

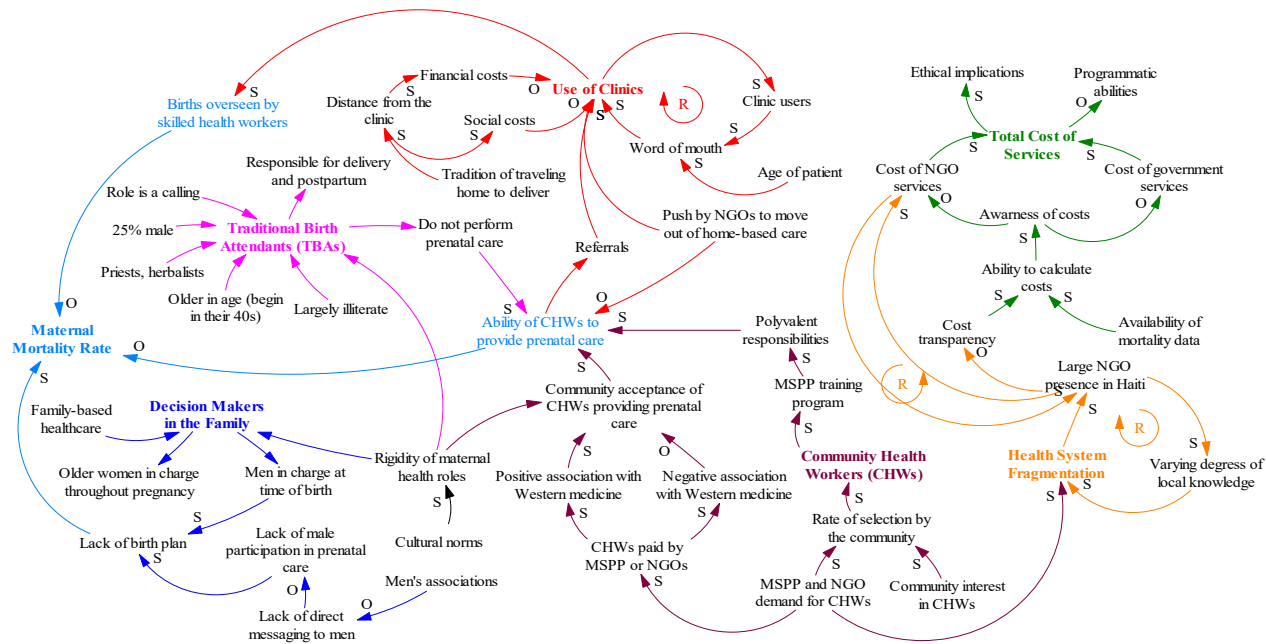
TBAs (Purple): TBAs view their role as a calling. They are usually older, illiterate, and have another role in the community (often as a priest or an herbalist); 25% of them are male. They are responsible for childbirth and for postpartum care. They do not perform prenatal care services, which increases the ability of CHWs to fill this gap in care and provide prenatal services to the community.



Use of Clinics (Red): Financial and social costs reduce use of clinics. They are driven in part by the distance a woman lives from the clinic, as well as by the tradition of traveling home to deliver. The second reinforcing loop shows how the use of the clinic leads to increased word of mouth, which in turn impacts use of the clinic. Older women are more susceptible to word of mouth, and rely on recommendations from family or friends. Younger women are more willing to try the clinic without a recommendation. CHWs can indirectly impact the maternal mortality rate through referrals. Referrals increase clinic usage, which ultimately increases the number of births overseen by skilled health workers.

Outcomes of Interest (Light Blue): The three outcomes of interest are ability of CHWs to provide prenatal care, births overseen by skilled health workers, and the maternal mortality rate. CHWs can impact maternal mortality directly, by providing prenatal care such as IPTp, or indirectly through referrals to clinics. Another driver of maternal mortality, lack of a birth plan, might also be addressed through prenatal care, but was not considered as closely in this study.

Figure B: Concept map of interview insights



4 CHW DELIVERY OF PRENATAL CARE SERVICES

4.1 PROPOSED CHW PRENATAL CARE INTERVENTIONS

An estimated 90% of women in Haiti receive prenatal care, however only 67% have four prenatal care visits, as recommended by the WHO. (MSPP 2012) Literature review and interviews with key stakeholders suggested that prenatal care would be the most appropriate area of intervention for CHWs in the field of maternal healthcare. CHWs are well positioned to address this low rate of prenatal care adherence. Given their location in the community and their familiarity with the patients, they can conduct prenatal care visits, thereby reducing the burden on the patient of traveling to a clinic, and establishing a familiar point of contact with the healthcare system. This study focused on two components of prenatal care in particular: promotion of skilled care for childbirth and intermittent preventive treatment of malaria (IPTp). These interventions appear in the *WHO Recommended Core and Additional CHW Interventions*, and were selected for their perceived feasibility of implementation and potential for impact.

(1) Promote and support skilled care for childbirth: As noted earlier in this paper, the rate of maternal mortality is associated with the presence of a skilled health worker (SHW) at childbirth who is trained to deal with complications that arise during pregnancy, including hemorrhage and infection, two of the primary drivers of maternal mortality in Haiti. (Cuomo and Baek, 2014)

There is potential for CHWs who conduct prenatal care visits in their community to educate their patient on the benefits of having a SHW at childbirth. There is also precedent for such an approach. Pathfinder International, through the USAID Services de Santé de Qualité pour Haïti (SSQH) grant, is working with government-trained CHWs. In particular, the program has introduced a mobile application called mSanté. The app was developed with input from CHWs and is modeled after the MSPP training curriculum. It includes elements of water and sanitation, family planning, child health, and maternal health. Built by Dimagi, under the CommCare program, the app is intended to walk a CHW through a patient education session, provide messaging and imagery for direct consumption by the community member, collect data, and facilitate referrals to clinics/facilities by allowing CHWs to send a referral to the facility and receive notice from the facility when a follow up visit is required (Stephens, 2016).

(2) IPTp during prenatal care visits: “Malaria is considered as one of the 10 principal causes of death in Haiti.” (Bony, et al., 2015) In endemic areas, an estimated 25% of pregnant women are infected with the disease, which can become severe and cause maternal mortality. Malaria can also cause severe anemia, leading to congestive heart failure and mortality due to hemorrhage. (Schantz-Dunn, J., Nour, N.M., 2009) The probability of maternal death due to malaria infection is between 10%-50%. (IVCC, 2011) The WHO lists IPTp for malaria for women living in endemic areas as a Core CHW intervention in pregnancy care. Given a history of poor adherence to prophylactic medication and antenatal care, the WHO now recommends “administration of [IPTp] with sulfadoxine/pyrimethamine.” This consists of curative doses of 1,500 mg sulfadoxine and 75 mg pyrimethamine. (Deloron, et al., 2011) A minimum of three doses are recommended, to be delivered at each prenatal care visit following the first trimester. In 2014, approximately 17% of eligible pregnant women received three or more doses of IPTp,

while 40% received two or more doses and 54% received one dose. (Institute of Medicine, 2003) The study identified several common barriers to diagnosis of malaria and use of IPTp, including lack of awareness of the risk of malaria to pregnant women, concerns over the safety of the malaria medication, poor adherence to antenatal care guidelines and challenges accessing the healthcare system. As the country works to eliminate malaria, the study recommended “culturally-appropriate community-level and health provider training and education in regards to prevention and treatment.” (Boney, et al., 2015)

4.2 BARRIERS TO CHW’S PROVIDING PRENATAL CARE

There are three primary barriers to CHWs providing prenatal care, such as the proposed interventions:

(1) Decision-Making Barriers: Cultural norms and traditional maternal health roles present a decision-making barrier. As noted above, the older woman in the household (usually the mother-in-law) is often in charge during the time of birth; decision-making authority shifts to the man of the house (usually the father) during childbirth. (Alegria-Flores, 2016) For CHWs this presents a challenge. All decision-making members of the family will need to receive prenatal care education. In addition to the logistical challenges of educating entire families, there are cultural impediments to including the men in prenatal care counseling.

(2) Care-Seeking Barriers: Older women in the community are hesitant to try the clinic unless they receive a recommendation for a facility or provider. Word of mouth is powerful for these women. One bad experience has the potential to dissuade a community of patients from utilizing the formal healthcare system. Younger women are more open to trying the clinic, at least once; however, even they struggle with the social and financial costs of seeking care. (Alegria-Flores, 2016) Even if the care is provided for free, women might not seek care at the clinic if their husband is away working, if childcare is unavailable, or if the amount of lost wages are perceived to be too great to warrant the trip. (Gebrian, Personal interview, 2016)

(3) Task-Shifting Barriers: The role of TBAs presents a task-shifting barrier. There is a fairly rigid social construct around who performs what duty in the community. TBAs are responsible for childbirth and postpartum care, but they avoid certain tasks such as vaccine delivery, blood pressure, folic acid delivery, and birth preparedness, seeing it as outside their scope. (Gebrian, Personal interview, 2016)

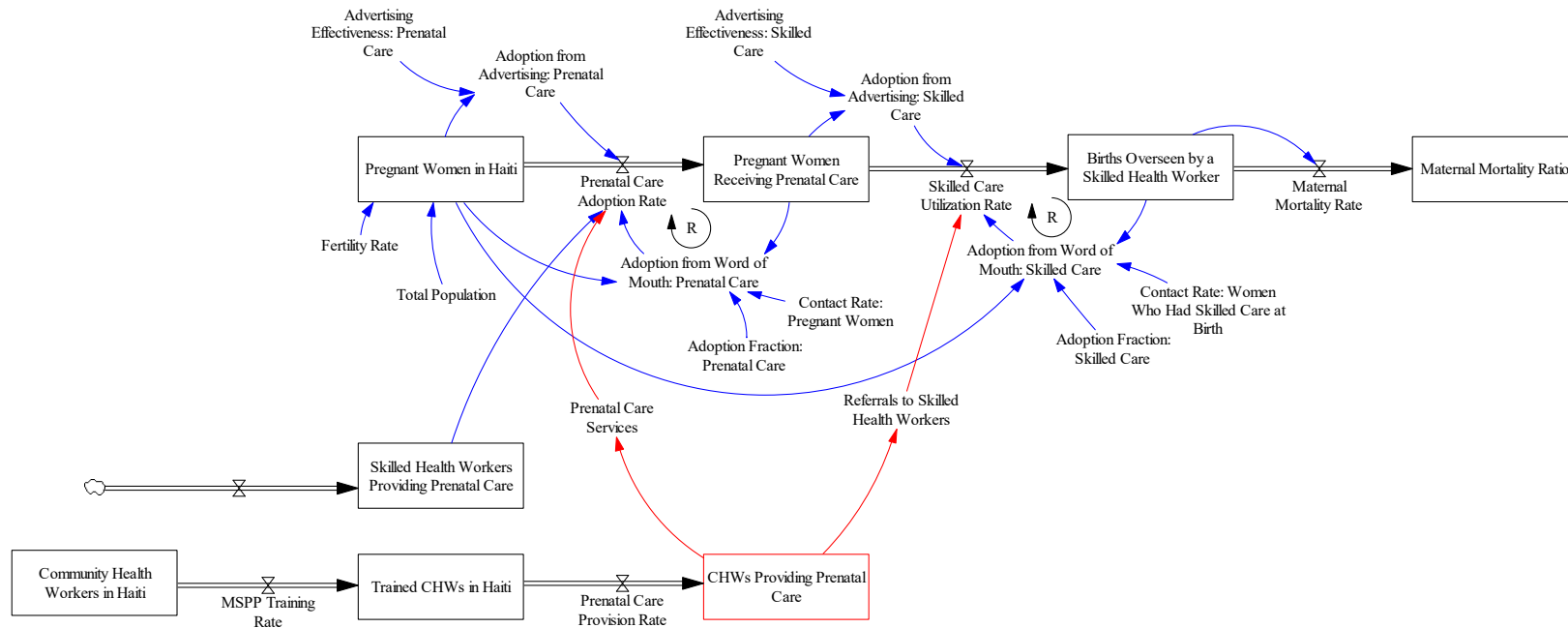
The CHWs can be in attendance at childbirth, but the real point of intervention occurs after the delivery when the CHW visits the mother to conduct a postpartum assessment. (Gebrian, Personal interview, 2016) CHWs are associated with Western medicine, with hospitals and clinics. They are linked with the MSPP and are remunerated for their work. CHWs have very little to do with childbirth, which could present a challenge for provision of prenatal care.

4.3 CONCEPT MAP OF INTERVENTIONS

The following is a concept map of the proposed interventions. The model includes three flows. The first represents pregnant women in Haiti and the likelihood that they receive prenatal care and give birth with a SHW present. Adoption and utilization rates are influenced by word of mouth as well as advertising (i.e. MSPP or NGO marketing campaigns). The number of births overseen has a direct relationship to MMR. The second flow depicts the number of skilled health workers providing prenatal care. The third shows community health workers in Haiti, the rate at which they receive MSPP training, and whether they offer prenatal care services.

This model was designed using Vensim software. Boxes represent stocks, black arrows represent flows and rates of flow are indicated on the hourglass icons. Reinforcing loops are indicated with an R. Auxiliary variables are shown as floating text. Their impact is indicated with blue arrows. Red arrows highlight the two potential interventions – promote and support skilled care at childbirth and IPTp – and the impact pulling these levers might have on the flow of pregnant women and the eventual MMR.

Figure C. Areas of Possible Intervention for CHWs in the Patient Care Lifecycle of a Pregnant Woman in Haiti.



5 RECOMMENDATIONS & CONCLUSION

5.1 RECOMMENDATIONS

A review of the literature and interviews with key stakeholders led to the following recommendations:

(1) Prenatal care provision should be increased, in an effort to reduce maternal mortality.

Because prenatal care reduces maternal and child morbidity and mortality, it is important to “encourage birth preparedness and the skilled assistance in labor and delivery.” (Institute of Medicine, 2003) Unfortunately, women in Haiti infrequently seek prenatal care; when they do, it is often too late. In a study of *Maternal and Congenital Syphilis in Rural Haiti*, the HHF found that women were initiating prenatal care around 23-25 weeks of gestation. The delay was attributed to five possible drivers: (1) lack of education regarding the need for prenatal care, (2) economic costs of the visits, in the form of lost revenue, (3) potential social costs of the visit, (4) desire for privacy regarding the pregnancy, and (5) lack of awareness of the pregnancy. Following the study, HHF submitted recommendations to the Haitian MSPP, including a suggestion that the government “undertake national education campaigns about the importance of early prenatal care.” (Lomotey, et al., 2009)

(2) CHWs are well positioned to provide prenatal care.

CHWs are a largely untapped resource with regards to prenatal care provision. CHWs are known, respected, and often selected by their communities. Although they are not currently trained to provide more intensive maternal healthcare, they could be engaged to provide certain prenatal care services. Such a strategy could extend the way in which CHWs are used in Haiti; however, any evaluation would require further understanding of cultural norms and community perceptions of CHWs providing prenatal care.

(3) All CHWs should complete the MSPP training program.

Although well-positioned to provide prenatal care, CHWs require competencies and training to deliver maternal health care and understand their role in linking women to the formal healthcare system. The MSPP training curriculum presents an opportunity to standardize CHWs’ skills across government and NGO programs. All CHWs, regardless of their program affiliation, should complete the training program and receive MSPP certification as an ASCP. This will be a critical step towards insuring high-quality pre- and peri-natal care. In the long term, this training might also allow increased mobility of CHWs across organizations. For example, if an NGO loses funding or transitions out of a community, such standardized CHW training would allow rapid integration of the CHWs into the new NGOs or MSPPs

(4) TBAs should be incorporated in promoting use of clinics.

Incorporating TBAs into childbirth in the clinic setting might assist the transition from home birth to clinic births. Past programs have experimented with incentivizing TBAs to bring women to the clinic for childbirth by compensating them for each mother who delivered in the clinic. TBAs were allowed to remain with the women throughout childbirth, and in some instances the rooms themselves were modified to accommodate cultural practices. (Alegria-Flores, 2016) Practices such as these that integrate cultural expectations with Western medical practice might see more success by raising the community's comfort level with clinic-based maternal healthcare. In addition, to have both male (TBA) and female (nurse) supports working together to assist a woman in childbirth would reduce gendered barriers associated with childbirth.

(5) Involve men in prenatal care.

Successful healthcare delivery in Haiti requires consideration and involvement of the entire family. NGOs in Haiti are therefore addressing decision-making barriers within the home. For example, as part of their KOMBIT program, HHF instituted monthly men's association meetings to discuss issues related to family healthcare, and maternal healthcare in particular. The men formed "maternal evacuation committees" and became responsible for ensuring that the road into the village was passable for an ambulance. They also received health screenings of their own, including blood pressure and dental care. Through these meetings men became more engaged in the maternal healthcare process. (Gebrian, Personal interview, 2016)

(6) Increased referrals to skilled health workers and delivery of IPTp would reduce MMR

Prenatal care interventions, such as referrals to skilled health workers for delivery and provision of IPTp treatment, could reduce maternal mortality in Haiti. For every 1% increase in the number of births overseen by a skilled health worker, MMR could be reduced by four deaths for every 100,000 live births. (Cuomo and Baek, 2014). Additionally, the probability of maternal death if infected with malaria is 13%; however, only an estimated 9% of women receive IPTp in Haiti. There are opportunities for CHW intervention to reduce each driver of maternal mortality. These interventions are estimated to be feasible, as determined by cultural norms, the training level of CHWs and both donor and governmental acceptance of CHWs providing these services.

(7) A cost-benefit analysis would be challenging, and requires further study.

Further studies are needed to evaluate the cost effectiveness of engaging CHWs to provide maternal healthcare services. Cost is a primary driver of the effort to translate funding into addressing unmet need. (Peterson, 2016) An in-depth cost benefit analysis on the impact of CHWs in prenatal healthcare would be very helpful. However, estimating the costs of both the interventions and maternal mortality will be extremely difficult. A cost analysis would have to account for the resources NGOs are bringing into Haiti. (Gebrian, Personal interview, 2016) A significant share of the healthcare resources would not be accounted for unless a cost study was able to account for NGO and governmental healthcare spending. Such a cost assessment would be time-consuming and challenging to validate.

5.2 CONCLUSION

The current presence of CHWs in Haiti represents a potential resource to improve pre- and perinatal care and reduce MMR. As members of the communities in which they work, CHWs offer a unique combination of local knowledge and familiarity with the formal healthcare system. CHWs are already accepted by local communities, and the Haitian government has training programs for CHWs delivering important healthcare services. Expanding the CHWs' scope of services to include prenatal care could reduce maternal mortality through referrals to clinics as well as provision of limited services, and could help Haiti work towards their Millennium Development Goal target of 155 maternal deaths per 100,000 live births. (Maternal Mortality Estimation Inter-Agency Group, 2014)

6 APPENDIX A – STAKEHOLDER INTERVIEW TRANSCRIPTS

6.1 INTERVIEW WITH DR. HERBERT PETERSON – JANUARY 7, 2016

The interview was conducted via Skype on January 7, 2016. The author was studying in Thailand at the time. Dr. Peterson was in Chapel Hill, NC. The call lasted approximately 25 minutes.

Background of the interviewee

Dr. Herbert Peterson is the Kenan Distinguished Professor in the Department of Maternal and Child Health at the University of North Carolina at Chapel Hill Gillings School of Global Public Health. He is a professor of Obstetrics and Gynecology at the University of North Carolina at Chapel Hill School of Medicine and Director of the World Health Organization Collaborating Center for Research Evidence for Sexual and Reproductive Health. Dr. Peterson holds a BA in Biology from Wittenberg University and an MD from the University of Pittsburgh. (UNC Gillings School of Global Public Health, 2015)

Transcript of the interview⁶

Caitlin: Good morning Dr. Peterson. Thank you for taking the time to speak with me today. As Dr. Weinberger mentioned in his email, I'm pursuing my MSPH/MBA at UNC Chapel Hill. My Master's Thesis is focusing on whether it would be possible to engage community health workers to provide maternal healthcare in Haiti. As part of my research, I'm interviewing stakeholders in the field of maternal healthcare to gather their opinion on the viability of engaging community health workers in this way. I have a few aspects of my thesis question that I'd love to gain your thoughts on, but before we dive in I was hoping you could tell me a little bit more about yourself and about the partnership between UNC and the World Health Organization.

Dr. Peterson: We are the WHO Collaborating Center for Research Evidence for Sexual and Reproductive Health. We're doing work mainly on two fronts: one of which is assuring that the science is there to give the best guidance about what policies, programs and practices are optimal, and that has been primarily through our work with evidence-based guidance.

Caitlin: As part of your evidence-based guidance work, have you done any work with human resources for health?

Dr. Peterson: Most of it is really about practice – here's what is appropriate medically for whoever is providing the care. We have medical eligibility criteria for contraceptive use, etc. the WHO works on guidelines. Most of what we've done is in family planning. Most of the task shifting front has been in maternal health work. There is a task shifting guideline from the Department of Reproductive Health and Research that you could find online. It was released within the last 3-5 years.

⁶ Note: This transcript has been edited slightly.

Caitlin: How would countries go about implementing the guidelines the WHO puts out?

Dr. Peterson: We're moving into the science of implementation. We're just in the process now of looking with UN agencies as to how we can best support that. We've been linking academic programs together, which will inform some of the work on implementation. I was working on some of that stuff today but we're not there yet. You're asking really important, thoughtful questions that we could talk for hours about.

Caitlin: How do you go about determining medical eligibility criteria for something like contraceptive use?

Dr. Peterson: The assumption is that all modern methods are safe for everybody unless there is a reason to believe otherwise. We look at all the evidence to determine whether there is a method/condition interaction for which it would not be good to use that method. We measure the risk for using that method of contraception. For example 1 = no restriction and 4 = wouldn't use the method.

Caitlin: How does culture impact your recommendations?

Dr. Peterson: Culture doesn't impact that front at all. This is a medical issue. Either there is a biologic vs. non biologic problem. It does not get into acceptability at any level. There's a lot of other guidance about decision making for contraceptive use, but that's outside of the scope of what we're doing.

Caitlin: What has been the most exciting part of your work with the WHO?

Dr. Peterson: UNC I think is increasingly moving towards addressing implementation issues and we certainly strong encouraged and supported and contributed to that because we firmly believe that the next vistas in public health, global health and domestic health are going to be shaped to some extent by how successful we are in addressing implementation issues. There has been far less scientific contributions to how to do it. And part of this new discipline of implementation science is still very new. It needs to be developed. There are multiple disciplines that we're drawing on in public health. We're in the process of putting together a syllabus for a course that starts on Monday online for implementation science. The school is moving aggressively in that direction.

Caitlin: How do cost considerations factor into your work, your recommendations?

Dr. Peterson: Cost is certainly a major determinant of the work that we're doing globally. But it hasn't been approached as an ethical issue or implementation issue. It's a major determinant of our ability to get these things done. For contraceptives there's a global initiative called FP2020, about \$4B has been raised to procure commodities to meet unmet needs. There is a reproductive coalition that has been formed of over 300 organizations to get commodities procured with that funding. How do you go from funding to meeting unmet need? Costs are factored in at every level. Need to consider procurement of supplies, etc.

Caitlin: Are there any other resources I should look into, or people I would benefit from speaking with?

Dr. Peterson: Look carefully at UNFPA’s work. They are the UN’s implementing agency for maternal health. UNICEF does a little bit, primarily in the HIV arena (preventing mother to child transmission). On the UN front it’s WHO and guidance primarily, with task shifting, but the closer you get to implementation the more you’re looking at UNFPA.

[Closing remarks and thank you].

6.2 INTERVIEW WITH MS. KEI ALEGRIA-FLORES – JANUARY 18, 2016

This interview was conducted via Skype on January 18, 2016. The author was in Thailand at the time. Ms. Alegria-Flores was in Chapel Hill, NC. The call lasted approximately 25 minutes, at which point internet connection was lost. The final question in the interview was therefore answered via e-mail.

Background of the interviewee

Kei Alegria-Flores is a PhD student in the Department of Health Policy and Management of the University of North Carolina at Chapel Hill Gillings School of Global Public Health. Prior to enrolling in the doctoral program, Ms. Alegria-Flores worked for the Inter-American Development Bank where she was “part of a research team that explored women’s networks during pregnancy and birth.” She has also worked as a consultant to the Pan American Health Organization. While at the Gillings School, Ms. Alegria-Flores was selected as a Fogarty Global Health Fellow. She spent 11 months in Peru researching barriers to adherence of multi-drug resistant tuberculosis treatment and potential solutions for implementation in low resource settings. Ms. Alegria-Flores holds a BS in Molecular Biology from the University of California, Los Angeles and an MPH from The George Washington University Milken Institute of Public Health. (LinkedIn.com, 2016), (Alegria-Flores, Kei, 2016), (Gillings School of Global Public Health, 2014)

Transcript of the interview⁷

[Greetings. Confirmation that Ms. Alegria-Flores was available to speak for 30 minutes. Overview of the thesis’ specific aims and the goal of the interview].

Caitlin: In our email correspondence you mentioned that you worked for the Inter-American Development Bank (IDB) and that your research team “explored women’s networks during pregnancy and birth.” Could you explain the goal of your work with the IDB? (Alegria-Flores, Kei, 2016)

Ms. Alegria-Flores: We were looking at five different countries in Central America. The problem we had found was that over the years there had been many interventions trying to reduce maternal mortality rate but nothing had worked very well. We wanted to figure out what

⁷ Note: This transcript has been edited slightly.

it is they were doing wrong. Somebody came up with the hypothesis that maybe it was the people they were targeting – maybe it wasn't the right audience. In rural areas it's not the women who are pregnant who make the decisions to go to the community health workers (CHWs) or to the clinic (that was the original hypothesis), especially in times of emergencies.

We went and did egocentric networks. If you do a regular network analysis you need a closed network so you really need to interview everyone who is part of that specific network. We did a few egocentric studies. We could interview the women and the key stakeholders that kept appearing. We interviewed a bunch of husbands and fathers. We interviewed a bunch of CHWs and healthcare providers. We did not get to interview the mother-in-law. In the majority of the places we went, we found that it was usually whoever the older woman was in the house (usually the mother-in-law) was the one who was kind of in charge throughout the pregnancy in terms of getting the woman in touch with the birth attendant or taking the woman to the clinic.

But in the moment of birth, especially if there is an emergency, women in the family have no say whatsoever. It's usually the father, if he's available. He has not heard any messages, he has not gone through any prenatal care appointments. So there is no plan. Usually that's the issue. That it's a last-minute gathering of resources. So women would get stuck in a place, dying because of the fact that there was no specific plan for what to do or the family was not really as interested as they should have been in the well-being of the woman.

There was only one case, in Panama, where it was always the women who made decisions. But it was in a very small community. Our team was trying to make an argument for the man needing to be a huge part of, not just the workshops, but the planning. There needs to be a birth planning aspect to these workshops that the man needs to be involved in.

Caitlin: Do you think it's specific to Central America that a man would have such a strong role?

Ms. Alegria-Flores: I think it's across developing countries, but machismo may be stronger across Central America but it's not that big of a difference. It's not a desire to be involved in the pregnancy and birthing process, it's more that the men have all the power, as opposed to other cultures where it's a woman's job so it's left all to women. If it's the first time a woman is giving birth she has absolutely no power, no decision power. They're also so young ... as the women get older and have more children (5-6 children) they seem to be the ones who seek out their own birth attendants. They have a bigger network in the community that they can rely on.

Caitlin: When they seek out birth attendants, are the women electing to go to a clinic?

Ms. Alegria-Flores: The new generation (younger women) were definitely more willing to try the clinic, however they had bad experiences which of course made them not want to go back.

Caitlin: Could you elaborate on the different roles of CHWs vs. birth attendants in these communities?

Ms. Alegria-Flores: CHWs really didn't get involved with anything to do with births, babies etc. They are very different roles. Traditional birth attendants (TBA) are from a very young age

called to that role. Most of them will tell you they had a moment or a dream when they had a calling. CHWs is more of a concept that has come from the hospitals and the clinics. The clinics have come and said, 'well you seem to have leadership in this area and you know something about health.' From the outside they come, they find somebody, they train them, they become CHWs, and in some cases they even get something in exchange for that. In the case of TBAs, they usually don't get anything. In very few cases did I hear that the government came and trained TBAs. Maybe they got a kit from them that they never used. They are not very effected by the outside, Western medical world. But CHWs seem to be a lot more connected to Western medicine in that sense.

It would be interesting I think for CHWs to try to become TBAs or just to help with births in general. But the barrier that I would predict would be that maybe other CHWs just have never done it and might be kind of grossed out by these things. A lot of people who do this TBA role have to be okay with all the blood and the smells and the trauma and it's not really for everyone. CHWs do a different kind of work. They are communicating and trying to check up on people. Especially in traditional communities it's such taboo (anything that has to do with the vagina). Especially if the CHWs are male, that would be a huge no-no in such rural areas. I think it would be interesting to see how many CHWs would be willing to do births, and how many would be trainable, and how many would be willing and accepted by the community.

Caitlin: As part of my research I am exploring which tasks would be most appropriate for the CHWs to take-on. Given some of the barriers you have just mentioned, what are your thoughts on task-shifting prenatal care to the CHWs, vs. a more highly skilled role, such as delivery of uncomplicated pregnancies?

Ms. Alegria-Flores: I think there are many ways you can test this. I think it's complicated to train on assisting with births. It was to be someone who wants to do it. In each community they have all these practices, for example maybe wrapping the woman afterwards, covering her in oils, the different foods they're supposed to be eating during the birthing process, and people from the outside are not going to be able to train CHWs in those things. It's very personal and context-specific. Every community has their own way – what to do with the umbilical cord, how to wrap the baby, etc. teaching people would be very hard to do as an outsider. But if you focused more on prenatal healthcare, how to do prenatal care, maybe even how to introduce a woman to the idea/concept of going to the clinic for prenatal care and also the idea of giving birth there...

There was a period of time when programs were paying the TBAs to bring women to the clinic. Every time they would bring a woman to the clinic they received a minimal amount. That was something they got compensated for. That was working well while there was money to do that. The clinics were allowing the TBAs to stay with the women throughout the birthing process. They're adjusting more to that. They're willing to have a room designed in such a way (depending on what the practices are in each community). Everybody talks about the reputation of each doctor and the birthing room.

Caitlin: In your experience with community programs, are there men connecting with the health workers? Or women only?

Ms. Alegria-Flores: The men never went to any prenatal care visits. It was odd to hear of a story of a husband who would go to prenatal care visits or who would be there when the worker came for prenatal care visits at home. If they came it was for the actual birth at the clinic or at the house.

Caitlin: *What are the driving factors, in your opinion, behind women choosing to visit a clinic for their birth (vs. choosing a home birth)?*

Ms. Alegria-Flores: I only have qualitative data and memory to go from, but it seemed to me that it was a generational shift that was more related to being less attached to traditional ways for younger women. I believe it's related to the change in cultural norms overtime and being more open to Western medicine. For older women who gave birth in health centers, it seemed to be more associated with word-of-mouth pointing at specific physicians or clinics that provided exceptional care to women. Women who have birth would go back home and tell their friends or other community members and women in that particular community would be more likely to give birth at that health center for that reason, even in older generations. That being said, the large majority preferred to give birth at home, surrounded by their family and supporting system, with access to all the right foods and a warm bed.

[Thank you and closing remarks via e-mail, having lost internet connection after 25 minutes of conversation via Skype].

6.3 INTERVIEW WITH MS. CAROLINE CONNOLLY – MARCH 1, 2016

The interview was conducted via the phone on March 1, 2016. The author was in Texas at the time. Ms. Connolly was in Massachusetts. The call lasted approximately 30 minutes.

Background of the interviewee

Caroline Connolly is a Policy Advisor to Deloitte Consulting LLP in their Federal Practice. Prior to joining Deloitte, Ms. Connolly worked as the Director of Program Development at Pathfinder International. During her time at Pathfinder, she represented the organization in the bid for the five-year, USAID-funded project *Services de Santé de Qualité pour Haiti (SSQH)*. Pathfinder won the bid, and is now working to “improve health outcomes in central and southern Haiti.” (Pathfinder International, 2013)⁸ Ms. Connolly also has experience as the Director of International Operations for Facing History and Ourselves, and as a Foreign Service Officer for USAID. She holds a BA from Wheaton College, an MPH from Columbia University’s School of Public Health, an MPA from Columbia University’s School of International and Public Affairs, and an MA with a focus on South East Asia from the University of London School of Oriental and African Studies. (LinkedIn.com, 2016)

⁸ The author was working for Deloitte Consulting LLP at the time, as part of the team pursuing the SSQH bid in conjunction with Pathfinder International.

Transcript of the interview⁹

[Greetings. Thank you and confirmation of time allotted to speak today].

Caitlin: Could you tell me a little about joining Deloitte, and the kind of work you are doing for them now?

Ms. Connolly: [Ms. Connolly joined Deloitte in November 2014]. I'm in the Federal Practice currently. I spent 10 months in Kiev with Deloitte. Recently I was working on PowerAfrica. I've been working on their gender portfolio related to PowerAfrica and developing a policy aspect to it, so we can make sure gender has a voice.

Caitlin: In our email correspondence you mentioned that Sheryl Martin's project has been successful in Haiti. What is it about Sheryl, the organization, or the project that has made it successful?

Ms. Connolly: [Sheryl is currently Chief of Party for Palladium in Haiti]. Sheryl Martin's project is probably the one in Haiti that has been most successful. She understands Haiti. She could reach deep into people she knew in-country to fill vacancies and make people move. If you don't have that 'Rolodex' of people you can pull upon to make a project work in many different ways – technical side, political side, negotiations die – having resources mentally as well as to take on a lot of negativity in a country that's going through complete turmoil

Caitlin: How do you select which local organizations to work with in-country, who enable you to succeed on the political side and the negotiations side? For example, I remember we partnered with FOSREF and GHESKIO in Haiti – how do you select which local organizations to team with?

Ms. Connolly: It's more important for the Chief of Party (COP) to have that skill set. Then you want to pick one or two local groups, whether it's in one particular province, for example. They have to know the players. They have to know what has been tried, what hasn't been tried. I see so many for-profit organizations that go in, they have these great models, and they haven't been tested. You have to go beyond the writing, you need to go there and say: 'ok we know we have great people internally but they've never lived in country for more than six months and they haven't worked with the donor.' Increasingly with a lot of donors, especially with USAID, you need to have somebody who really knows the rules, as well as the technical and the managerial side. If you can't get all of that in one person, I like to have a Deputy Finance and a Deputy Technical on the team.

Caitlin: How do developing countries, such as Haiti, respond to the present of for-profit companies working in the international development space?

Ms. Connolly: In Haiti, the nonprofits didn't work. Is it just the nature of Haiti? That's what my gut is saying. You have Palladium Futures, which is a for-profit, which is succeeding. But a lot of for-profits go in, they have great ideas, which are not doable on the ground.

⁹ Note: This transcript has been edited slightly.

Caitlin: Palladium Futures is a name that is relatively new to me. Could you expand more on their work?

Ms. Connolly: Futures has been huge for a long time. They were leaders in policy work and health systems strengthening. They were purchased by a group called GRM, an Australian group with a huge presence in Africa through GRM England that gets funding from The Department for International Development (DFID). They purchased Futures and then purchased Palladium and decided to take that name. They recently purchased an analytical group from DC and an economic growth organization. They've been very strategic on buying the groups that will expand what they're doing without cutting into what they were known for. They're building their portfolio of donors.

Caitlin: What about other organizations in-country?

Ms. Connolly: The Partners in Health model in Haiti is great, but extremely expensive. It's just not sustainable. It's unclear if their ideas are coming from the roots (in-country) or from ideas they have in your head. Both are great. But it needs to be adapted to the country context.

[Thank you and closing remarks].

6.4 INTERVIEW WITH DR. BETTE GEBRIAN – MARCH 2, 2016

The interview was conducted via Skype on March 2, 2016. The author was located in Texas at the time. Bette was in Haiti. The call lasted approximately 45 minutes.

Background of the interviewee

Dr. Bette Gebrian has been “living and working in community oriented primary care for almost 30 years.” (Gebrian, Bette, 2016) Previously the Public Health Director for the Haitian Health Foundation (HHF), where she worked for over 25 years, Dr. Gebrian is current a Consultant for the University of Connecticut (UConn) Office of Global Affairs and a faculty member at the UConn Schools of Medicine and Nursing. She is a recipient of a Global Health Award for Expert on Maternal and Child Health in Haiti – Best Practices in Global Health 2008, and the 2011 University of Connecticut Alumni Association’s Humanitarian Award. In 2010 PBS featured her work in a special entitled *Saving Haiti’s Mothers*. Dr. Gebrian holds a BS in Nursing from UConn, an MPH from The Johns Hopkins University School of Public Health and a PhD in Anthropology from UConn. Her dissertation was entitled “Community Participation in Primary Healthcare in Rural Haiti: an Ecological Approach.” (UConn Alumni Association, 2011), (LinkedIn.com, 2016)

Transcript of the interview¹⁰

[Greetings. Thank you and confirmation of time allotted to speak today. Overview of thesis question and goals of the conversation].

¹⁰ Note: This transcript has been edited slightly.

Dr. Gebrian: [In reaching to a description of the thesis' specific aims]. Trying to discover the cost of impact on maternal mortality is extremely difficult. The epidemiological surveillance of mortality, which often happens in the home as it pertains to women, is not well documented. In regards to CHWs improving prenatal and perinatal care – I've been doing it for 27 years – unless you have at least 10 years of really good mortality data on a population base, you cannot make assumptions about impact on maternal mortality. So though we set up in KOMBIT, everything from women to family to community to nearby hospital relationship with an ambulance, we were told that the data was too small to really talk about an impact that could be representative of what is possible even though we're really good at it, for the rest of Haiti.

I'm not sure I would use the "impact" on maternal mortality. In addition, costing it would mean making sure that everyone did the national death certification in the community. Coming up with a business model would be a theoretical exercise, and not able to be implemented, unless you're talking about a small population near a hospital and talking about urban health agents.

Caitlin: *What is the highest level of technical skill that you think it would be appropriate for CHWs to provide? Could they assist with uncomplicated pregnancies, for example? Or is this firmly in the purview of more highly skilled healthcare providers?*

Dr. Gebrian: The government started training CHWs in 1982. And they were all there was out there. At the very least they were giving vaccines, iron, folic acid, referring women who were pregnant, etc. They didn't do prenatal care per se. Back then a lot of organizations had the government nurses officially train health agents as they did in the 80s and 90s. The Berggren's had lots of health agents and they were doing everything (based on their experience at Albert Schweitzer). We had our agents trained by Ministry of Health, which made it official. To really have the term "agent santé", you have to have a diploma signed by the government, trained by their nurses or their delegates. In 1989 health agents were at that point allowed to give vaccines, vitamin A to children and others postpartum – they did not take blood pressure, because they'd become charlatans and start acting like doctors – most of them have a 6th grade education. So vaccines, growth monitoring for children, and of course when you're weighing children you're seeing if the mother is pregnant again, referrals, etc. As time went on, health agents took on more and more responsibility. As international focus continued to be focused at maternal and child care, health agents had a lot added on – HBLSS, HBB, actually hosting prenatal clinics in the rural areas where they would bring in pregnant women. They were obliged to visit a pregnant woman within two days after delivery (2 days and 7 days after delivery to detect postpartum hemorrhage), death certification, etc.

Maternal and newborn care starts with adolescent girls. The government has a pregnancy card, to identify women who are pregnant. We made a woman's road to health card that started at age 14, tracking their menstruation, their BMI, their blood pressure, their anemia status (because of malaria). We also included lots of education. A lot of that was on the health agent. They had a list of 30 things they have to do. One way or another, most of what USAID funds in Haiti is MCH.

3 or 4 years ago the government decided to upgrade and train more village health workers, to standardize what they were doing. They both grandfathered in and trained polyvalent health agents. These polyvalent health agents had even more put on them, in terms of follow up on chronic diseases – in terms of chronic disease and hypertension – as well as disaster preparedness, and first aid. I think they've trained thousands of polyvalent health agents. They want people with a higher degree of education. Our health agents received government approval to treat pediatric pneumonia. They generally do not have chloroquine with them, because malaria is on the way out, doing a big malaria eradication right now. Family planning is something they do, and breastfeeding, for family planning with the spacing. Able to achieve a very high EBF for 6 months, for birth spacing and health of the mother and child (more birth spacing and healthier children).

Caitlin: The paper, Bottles to Breastfeeding, describes the presence of men's associations in Jérémie, discussing the health implications of breastfeeding. This is in contrast to a few of my other interviews, in which I heard about the challenges of engaging men in women's reproductive health issues. What strategies has HHF found successful to engage men in maternal health issues?

Dr. Gebrian: They [men's associations] had meetings once a month, they had a president, and they did roadwork so we could get out there [to the villages]. They became part of maternal evacuation committees. Since 1994 when we started we found that men who were caretakers had more kids who were malnourished. It wasn't that difficult to get them to sit together and talk about something that was of interest to them. Additionally, you can't be certified as a baby friendly village until the men are engaged. They saw that they had to buy less milk (mothers are breastfeeding), they received some healthcare (blood pressure screening, dental care). At the same time, when we couldn't get to the village because the road had washed out, we gave them tools to keep the roads passable. While women will get together just to learn stuff, men were focused on activities to be done. In addition to road work they built thatched roof sun barriers so vaccines could be given out of the sun. Fathers should be involved in family health, not just family planning. Need to involve their health. We did health clinics for boys. We got the boy scouts and we had a little card for boys, checked them for anemia (with Johns Hopkins nursing students), blood pressure, height and weight. They came in droves.

We had mothers clubs, and before we had mothers clubs we had health committees. Health committees are mostly men, they are the gatekeepers of the community. The committees started in 1987, they are the gatekeepers. Because we went to the villages to provide prenatal care and they saw that it was good, saw that it was an important thing to do. Going to the clinics happens when nurses aren't there. If there was a problem people would go to the clinic. There were two factors that might prevent her from going: (1) is the husband around or is he way out in the hinterlands, in the garden? Does she have someone to take care of the kids when she goes? (2) Is it open? Clinics aren't open on weekends. Getting the next level of care depends on many factors; the social as well as the financial costs. Even if the care is free, there are still social costs. Trying to get women in poor areas to deliver in the hospital, is a challenge everywhere in Haiti. It's far. It's not as friendly as delivering at home. In addition, let me add that 25% of TBAs are men.

Caitlin: Throughout my research I have become interested in the relationship between traditional birth attendants (TBAs) and community health workers (CHWs). This was something I noticed again in the KOMBIT materials you provided. How does HHF define the scope for each role? Where does the role of the CHW stop and the role of the TBA begin?

Dr. Gebrian: TBAs start usually in their 40s by a dream or apprenticeship by somebody else. They're men and women. Many of them are priests, herbalists etc. it's not like you're a midwife and that's all you are. You can be traditional healer as well. Or a priest. So they don't see their job as giving vaccines. They do not give prenatal care, they do delivery and postpartum. They don't do blood pressure, folic acid, assess for danger signs, or birth preparedness – village health workers are looked upon by traditional healers, of which TBAs are one, as their little brothers and sisters doing Western medicine. Plus for the TBAs, the mean age is 60. They get paid for the delivery and the postpartum care. CHWs are paid by the government or the organization. We did supervise some TBAs to get their reports of births and deaths. The health agent had to be there to corroborate. There are people in the family that deliver babies. Health agents don't deliver babies, it's not their job, and it's not what they do. There's a strong social construct around who does what. The health agent can be there. So there's collaboration, but not duplication. Remember they're 60 years old, they can't read and write for the most part. The intersection is the visit after delivery, the health agent has to assess the mother, do a whole physical assessment on the baby, because a lot of times babies (newborns) aren't the focus of attention. So that is a new thing in the past 7 years, that village health workers had to go to see a mother and would run into the TBA. But what they were doing was not seen as conflict at all.

Caitlin: I researched the training materials for the polyvalent health agents you had mentioned. Something I have been curious about is whether polyvalent health agents are always preferable to more specialized health agents. Do you think it would ever make sense to train health agents to focus entirely on one area, such as sexual and reproductive health? Or is polyvalence always preferable?

Dr. Gebrian: They are major players in disasters – plus they have to do home visits, education, pneumonia 7 days a week. Not all polyvalent health agents live in their villages or were selected by their communities. In the classic sense they're selected by their own people, trained by the government, report to the government, and live in the village. If you want to be a health agent that's what you do. If women die it's because they have not sought care. Women come home to deliver. Even if they live in Port-au-Prince. Or they're young and tie up their bellies and don't want people to know they're pregnant and they die of eclampsia.

Could they do more in perinatal care? Other than presumptive treatment of malaria? And now with Zika which is here – language we're hearing is to make sure that people, women, think hard about when Zika is around not getting pregnant. Haitians actually deal well with handicapped children.

There's one health agent who lives 14 hours away by foot. I gave him an electronic blood pressure monitor just for pregnant women. The supervisor nurse had to be sure he wasn't charging for blood pressure. But because one health agent gets paid and they have about 200 community volunteers that work by the side of this person. Hard for them to get away with

anything. Everything they do is publicized. Only 1 of 51 health agents could take blood pressure, and that was because he was so far away.

Caitlin: Anything you're concerned that I absolutely understand as I move forward?

Dr. Gebrian: Google the polyvalent health training modules – there are 5 modules. The public health program that I worked in predated the clinic. Often times CHWs are seen as an add-on to hospital work. So you can't just put someone out in a village and then not supervise them. Part of the issue is whether health agents can do more to prevent maternal death ... it has to be a standardized approach.

One of the things I want to mention is that nurse auxiliaries were trained to deliver babies. That program stopped. That was the intermediary between health agents and nurse midwives in hospitals. They don't exist anymore. They were the ones who went to the field and were around. Need to look at the whole gamut – HBLSS, emergency OB care, are they trained in that. One of the examples is pneumonia. What was the point of training health agents if there wasn't always medicine available to treat it? Now there's only one OB in all of Jérémie, for 200,000 people.

One is example is while HIV was rolling out in Haiti and all these organizations were bringing in baby formula. I refused to do that. We continued with exclusive breastfeeding and then weaning. Women take a can of infant formula, it's meant for 3 days and they spread it out for 2 weeks. They'll make white water rather than directly prepare infant formula. Babies would die of diarrhea long before they died of HIV.

MSH had a costing model that you can find online. It didn't make any sense for me. You'd have to cost everything that you did that had an impact on. The other thing you have to cost into it is NGOs and visiting OBs etc. What people are bringing into Haiti. If you're talking about what happens to women, it's all done through NGOs with collaboration with the government. All these people comes, bring stuff. If someone's bringing an oxygen concentrator, an ambulance, etc. you've got to cost all of that in too. Unless you're able to track it prospectively, in terms of what other things come in, because Haiti is so NGO-dense. You'll miss 50% of the inputs that you don't know about because it was donated.

Caitlin: Are there any NGOs that you would pinpoint as particularly effective?

Dr. Gebrian: Albert Schweitzer was effective at the time. GHESKIO is good. They have centers all over the country. That's an HIV/TB vertical, medical thing rather than a community development from the ground up. You can't give healthcare in Haiti without the whole family. It's not like America where one person goes to the doctor and another person goes to another doctor. PIH does have community health workers. But they were also in Cange when they started, which came about because of the work. People moved there. I'm not sure how one would do community health when the area is not stable, I think that's a different model. Pignon had a huge number of health agents. Albert Schweitzer was the model for Haiti in the 70s. They were census based and we were census based. We conducted a census of entire villages.

I'd recommend contacting Miriam LaBoc. She's at UNC. She was a UNICEF person. She's specifically an expert at breastfeeding.

6.5 INTERVIEW WITH MRS. RACHEL RICCIO – MARCH 11, 2016

This interview was conducted via the phone on March 11, 2016. The author was in Texas at the time. Mrs. Riccio was in New York. The call lasted approximately 30 minutes.

Background of the interviewee¹¹

Mrs. Rachel Riccio is an Operations Manager for Global Health Programs at Pfizer Inc. In her previous role at Pfizer Inc., in Global Health Institutions Sales Planning, Mrs. Riccio worked on the accounts for both Depo-Provera[®] and Sayana[®] Press medications. Prior to joining Pfizer Inc., Mrs. Riccio worked for Oxfam America. She holds a B.A. in Psychology from Boston University, a Certificate Degree in Management of Community Organizations from Tufts University and a MS in Global Affairs from New York University, where she concentrated on “the private sector’s role in development initiatives.” (Linkedin.com, 2016)

Transcript of the interview¹²

[Greetings. Confirmation that Mrs. Riccio was available to speak for 30 minutes. Overview of the thesis’ specific aims and the goal of the interview].

Caitlin: I’m interested in learning more about Depo-Provera[®] and Sayana[®] Press. Could you help me understand how they are distributed in the developing world, particularly at the community level?

Mrs. Riccio: In regards to how Depo-Provera[®] is distributed in the developing world – we manufacture the product in Belgium. We have organizations from New York and the EU who manage relationships with NGOs and procurement agents. They purchase the products from Pfizer Inc. and it depends on the organization how it then gets into the country. Once it gets in country it would then be distributed by a partner, such as PSI, rather than USAID themselves (they give it to implementing partners). In the case of Sayana[®] Press, PATH is one of the major NGOs that distributes it. There are several ways it can happen – it goes to hospitals, clinics, etc. You don’t really need a skilled nurse to deliver Sayana[®] Press because it’s so easy to administer. I’m not sure what the training looks like right now in Haiti.

Caitlin: Am I correct that Sayana[®] Press is supposed to be easy for women to inject into themselves?

Mrs. Riccio: Sayana[®] Press is the one that’s in the uniject device. It’s newer. Basically a next generation of Depo-Provera[®]. The formulations is a little different but it’s basically equivalent. It

¹¹ Note: The interviewee and the author are first cousins.

¹² Note: This transcript has been edited slightly.

has been approved for self-injection in the UK. Depending on each Ministry of Health (MoH) that approval for self-injection could cascade down.

The UK is a reference country. Belgium is the other big hub for cascading of registrations. Pfizer Inc. would have to work to get self-injection approval on the label. Registration is a very complicated piece of the business. It's different across MoHs. It's not a standardized process. It's not very streamlined. And also a lot of these countries, because they want to promote local manufacturing, they will often put a longer timeline on approval.

Caitlin: Are the medications ever distributed through health workers?

Mrs. Riccio: If health workers are administering Sayana[®] Press the implementing partner and MoH are responsible for overseeing them. In Gulu Uganda the partners who want to work in family planning have to get permission from the district. PATH is the main partner that is working in this region in family planning.

One suggestion ... based on what I've been seeing with some of the NGOs, they're trying to work on more integrated models. Especially around MCH. Thinking about once you're trained on pregnancy and prenatal, also implementing vaccines when the child is born. It's easier to implement family planning services, especially first year when you're having a kid, if you include vaccination services. Women have an easier time going to a clinic, if they can say that it's for vaccination purposes instead of for family planning. Men are sometimes resistant to family planning.

The development community is moving towards more integrated models, so that eventually you could train people on multiple things and integrate that knowledge rather than just focusing on one condition.

Culture plays so much into maternal healthcare. You can implement different changes and try to bring medicine to different countries but if people aren't culturally open to it – that education piece is key.

Caitlin: Out of curiosity – why would someone prefer Depo-Provera[®] to Sayana[®] Press

Mrs. Riccio: If people are on Depo-Provera[®] they're used to it, they're comfortable with it. They might be cautious about trying a new product. But we have been hearing that people are excited about Sayana[®] Press. We've had positive results.

You have to remember that whenever there's a new product brought into a country, it takes a long time to get out from the time the product is manufactured. It takes time to test, educate, etc. It's a chicken and egg problem. You want pharmaceutical companies to create products that are useful in the developing world but it takes a lot of investment upfront and takes a long time to see a return.

Caitlin: Is there anyone else you'd recommend I speak with?

Mrs. Riccio: Have you talked to anyone who works at a faith-based organization? They have been doing a lot of work trying to get faith leaders to talk about healthcare. I bet they'd have interesting insights from a different perspective.

[Closing Remarks. Thank you.]

6.6 INTERVIEW WITH DR. BETH MCCLURE AND DR. JENNIFER GRIFFIN – MARCH 16, 2016

This interview was conducted via the phone on March 16, 2016. Caitlin and the MANDATE team were located in North Carolina at the time. The call lasted approximately 30 minutes,

Background of the interviewees

Dr. Elizabeth McClure is a Co-Principal Investigator with the RTI MANDATE team. She has been with RTI since 2001, where she leads activities for the Global Research Network and studies of maternal and child healthcare, including trials of the ultrasound to impact maternal and newborn outcomes and trials of emergency maternal and neonatal care. Dr. McClure received a B.A. in Psychology from the University of North Carolina and a PhD from the Department of Epidemiology at the University of North Carolina at Chapel Hill. (MANDATE, 2016)

Dr. Jennifer Griffin is a Research Epidemiologist with the RTI MANDATE team. She has been with RTI since 2012 and has experience working on projects in Africa, Asia and the Middle East. Dr. Griffin holds a MPH in International Health from Hebrew University in Jerusalem and a PhD in from the Department of Epidemiology at the University of North Carolina at Chapel Hill. She is currently on faculty at the University of North Carolina at Chapel Hill, as an Adjunct Assistant Professor in the Public Health Leadership Program. (MANDATE, 2016)

Transcript of the interview¹³

[Greetings. Thank you and confirmation of time allotted to speak today. Overview of thesis question and goals of the conversation].

Caitlin: How does the MANDATE team decide which interventions to incorporate into the model? For example, I noticed that treatment of maternal anemia is not part of the model. This is one of the interventions I was considering for my thesis and wondered why it might have been left out.

MANDATE Team: Originally the model was based on looking at mortality, primarily neonatal stillbirth and maternal mortality. We didn't do a lot with morbidity initially because we didn't have a lot of information around morbidity. We were limited with our scope to start with. In the literature about maternal anemia, it's mainly related to morbidity. It's considered an indirect cause of mortality (e.g. hemorrhage).

¹³ Note: This transcript has been edited slightly.

Caitlin: Would the model ever consider human resources as a technology? For example, the impact that increasing the number of births overseen by skilled health workers would have on reducing maternal death?

MANDATE Team: It's a good question about access to care. When the Gates Foundation started the model they wanted to look at the impact of specific technology interventions, and they weren't as interested in looking at systems. So that was a scope decision from the start.

Caitlin: How are the results of the model incorporated into public health decision making? Does RTI recommend policy or program changes based on the result of the MANDATE model?

MANDATE Team: I'll provide some background for the model. The model itself was created about a year ago. When I think about health policy I think more about the WHO. The foundations and groups provide input – I don't think of Gates or RTI producing policy. In fact that really makes people unhappy when they think about us making policy.

They don't want to hear that. I think that one of the things this model is lacking, that I think would really make this an even better policy decision making tool, would be having some kind of cost-benefit analysis component. As you know, cost is a big equation in policy making decisions. What we're kind of hoping to see is people using this as a decision-making tool.

Caitlin: How is cost-benefit incorporated into the model?

MANDATE Team: Cost-benefit is not currently incorporated into the model. We have had a lot of discussion, and interest in the foundation around adding that, but it's beyond the scope of what we had resources to cover.

Caitlin: I thought it might make sense to focus my questions around a specific intervention in the model. One of the interventions I am exploring is intermittent presumptive treatment of malaria in pregnancy (IPTp), namely whether community health workers could deliver IPTp and how that might impact maternal outcomes. In the 'Diagnosis' tab, how would the model define Penetration and Utilization for recognition of maternal malaria?

MANDATE Team: Some of these interventions are a bit nebulous, to be perfectly honest. When you're talking about penetration, I think that would probably be people having the knowledge to diagnose something, people actually having the information. Utilization would be people doing it and then efficacy would be people doing it correctly. It's really difficult to get good numbers on these types of things. What we really ended up looking into are surveys, where we could get a good idea of how many people received each intervention.

Caitlin: With regards to 'Transfers and Settings,' how does the model calculate the impact of the 'Antenatal care setting' on the total number of lives saved? For example in the situation of IPTp, it seems possible that delivery of the medication at the hospital level would be equivalent to delivery of that same medication at the clinic or home level.

MANDATE Team: I would guess that when you're looking at a particular intervention, it's assumed that only people who are diagnosed receiving the intervention in any given setting. In home settings, not many people are actually being identified, so the intervention really doesn't have the opportunity to make contact. It's moderate to high in clinical settings vs. reasonably high in hospital settings. You're going to see a bigger impact in those settings because of the higher rate of diagnosis.

Caitlin: I am focusing specifically on Haiti. To-date I have been using sub-Saharan Africa as a proxy country, but I was wondering if you have performed analysis on Haiti previously and, if so, whether there is a particular country you would recommend I use as a reference.

MANDATE Team: The model focuses only on Africa and India, because those are the areas the Gates Foundation was interested in. If you could find a country that had a similar population or rates of care at different levels that would be the easiest way to use the model, but I don't know off the top of my head what country that would be.

Caitlin: Turning to your experience outside of the MANDATE model, I'd like to ask some questions about your experience with community level care. What barriers have you encountered to community level workers providing prenatal care?

MANDATE Team: Well I think you're probably aware of this but there's a really big push by the WHO and others to move out of home-based care. In some countries, for example in some countries in Africa, it's illegal to do home care. So where it is going on it is very much undercover or not openly being done. There are legal health systems issues to run into. Especially if the health provider starts to deliver at home and then runs into problems. They have problems accessing the more formal health system for support. And then, like you said, there are different beliefs about who people get care for and who they get it from.

There's actually a fairly recent community health worker and maternal child health and barriers to care publication. It was a Cochrane Review and I know it's from the past couple of years. I remember that it's something about different community health worker programs and improving maternal child health via community health workers and looking at what were the major barriers to using different types of programs.

Caitlin: In my thesis I am separating maternal healthcare from child healthcare, and yet I notice that often in the literature, and specifically in the MANDATE model, these two often go hand in hand. What is your reaction to separating out maternal healthcare?

MANDATE Team: I think there is a lot of overlap clearly, but I think the overlap is more on the neonatal side of things. If you're focusing on neonatal care you can't ignore maternal care. But neonatal care doesn't feed into maternal outcomes.

Caitlin: Are there any prenatal interventions that community health workers would be specifically in position to provide? Or that you would recommend for consideration?

MANDATE Team: I think another high impact intervention that has community potential would be looking at uterotonic delivery because hemorrhage is way on there in terms of the number of women who are dying. I feel like it dwarfs all of the other things and there are people looking at inhaled uterotonics and other things. I think the other one is infection. That's a huge killer and it has pretty straightforward treatments that could be addressed in some ways at the community level. Those are the two that I think might have the biggest impact with the smallest level of effort.

I agree with infection I think any kind of obstetric care gets beyond the need for home care. One of my NIH program offers would also recommend diabetes. But it's really tricky at the home level, with what you can do that's really impactful. I think one of our main consultants pretty much strongly believes that you need facility-based care to have a major impact.

Just as a background for this model – we had a grant to do this with the Gates Foundation and then what happened is they funded it, we developed it, and the grant period is now over. It's been sitting there and we're continuing to work from it but one of the limitations is the scope of work we are confined to, even though there is more we could have done to it.

[Thank you. Concluding remarks.]

6.7 INTERVIEW WITH MR. BEN STEPHENS – MARCH 31, 2016

The interview was conducted via the phone on March 31, 2016. The author was located in North Carolina at the time. Mr. Stephens was in Massachusetts. The call lasted approximately 30 minutes.

Background of the interviewee

Mr. Ben Stephens is a Senior Program Manager at Pathfinder International. Mr. Stephens works in Haiti, supporting implementation of HIV strategy and improving performance measurement processes. His past experience with Pathfinder includes work in the fields of health service delivery and medical screening. He has worked with a variety of donor organizations, including the CDC, the Department of State, PEPFAR and USAID. Mr. Stephens received his M.A. in International Development and Social Change from Clark University, and his B.A. in History from Connecticut College.

Transcript of the interview¹⁴

[Greetings. Thank you and confirmation of time allotted to speak today. Overview of thesis question and goals of the conversation].

Caitlin: Could you describe for me the work you are currently doing in Haiti?

Mr. Stephens: Services de Santé de Qualité pour Haïti (SSQH) [a USAID grant awarded to Pathfinder International] has played out much differently than was thought during the positioning

¹⁴ Note: This transcript has been edited slightly.

stage and the proposal stage. It's a 3 year project and it's a health service delivery project that focuses on improving the quality of services at the facility and clinical level and then working with departmental health authorities to reinforce their capacity to perform service delivery at the departmental level. A big piece the project focuses on ... people are very far away from clinics and even then the services at the clinics are not always the highest caliber. A focus of the project is to try to roll out service at the lowest possible level and then to reinforce the link between communities and the services themselves. We work with the departmental health authority to make sure that they have full grasp and capacity to manage the service delivery component ... to see how clinics are delivering the package of services outlined by MSPP but also making sure that they have the right resources, that they are receiving the right reinforcements and just the general management of facilities.

Caitlin: During the proposal stage¹⁵ there was talk of an app, built by Dimagi that would be incorporated in the program. How has that come to life since the award?

Mr. Stephens: Part of reinforcing the quality of services at the community level, but also strengthening the referral link between the community and the facility, was reinforced with a mobile health application which was designed by Dimagi under their CommCare program but was specifically contextualized for Haiti. The SSQH team, working with community health workers we've continued to train doing the project, is customizing this application. We've added maternal health elements to it, child health, family planning, water and sanitation, we've recently introduced some HIV aspects – we've renamed the tool mSante. It's modeled after the content of the MSPP curriculum.

We have in Haiti CHWs, which is a generic word, but there is a 5 module curriculum that is managed by MSPP and when a CHW goes through all 5 models they become a polyvalent health worker (ASPHW), a “super CHW.” We work with them to develop an application for mSante. They help us with the language and the appropriateness of the messaging. The application has a couple elements to it – (1) serves as a job aid, both for the community health worker and for the client. As the CHW is sitting down with the patient, the module can walk the CHW through a series of service components to ensure he/she covers all of the basics, there are also elements (messaging and imagery) that the CHW can share with the patient, (2) a huge element to it as well is the data collection piece. This has been challenging for the project. All CHWs work with a paper based system. They are filling out registries during their visit, taking notes etc. At some point if MSPP wanted to pursue this app on the national level it could supplant the paper record. It has the potential to bring that information to the national health information system. Recently MSPP has decided they want us to build a community module for PHI 2 so unfortunately we weren't able to go down that path with CommCare, (3) The referral piece. While the CHW is kind of the foot soldier of care at the community level and can provide that first level of care at the home visit or at the rally post, not everything can be addressed during those consultations and the CHW plays an important link for the patient to the facility to make sure for follow up care and additional services that the person knows to go to facility X to see a doctor about those issues. They can use CommCare to send the referral to the facility, and can follow up with the patient as well. We've had checkered success in [the app's] use because MSPP has not decided to use it for its data

¹⁵ The author was part of the proposal writing team for SSQH. At the time, she was working for Deloitte Consulting, a sub to Pathfinder International on the bid.

collection tool so there's an element of added burden for the CHW...not every CHW has been enthusiastic to use it over time.

Caitlin: Could you elaborate on the patient files and referral capacity of the app?

Mr. Stephens: Because we train both the CHW as well as the supervisor who's based at the facility in the use of CommCare, the supervisor can actually monitor the patient load and the services that are offered through the app. Once the referral is made the supervisor receives it and if the person comes to the clinic to receive services there is a counter referral element – make sure the regimen is being followed, the patient has received the medication etc. – the CHW will also get a message saying there is a counter referral (through the app or from the supervisor) that has been activated, follow up with this person for care. Often times it's more on the onus of the supervisor to follow up and make sure if a referral is activated.

Caitlin: What kinds of maternal healthcare services are included in the app?

Mr. Stephens: Everything that's in the application and also all of our training that we do with the polyvalent CHWs are based on the MSPP curriculum so there is an element of maternal health and child health that is involved there. I know there's a lot of prenatal visits, consultations, inviting women to then continue on to the clinic for further visits. I know there's a lot of postnatal visits to do the child health element as well. I'm not sure to what extent they're involved in ... it's very basic care. It might be some immunizations but they don't do more complex elements of maternal healthcare. Not designed to supplant care at the facility, it's really a complement.

Caitlin: I've learned from conversations with other NGOs in Haiti, such as the Haitian Health Foundation, that CHWs are sometimes trained by the MSPP but paid by the NGO. Is the SSQH project operating under a similar model?

Mr. Stephens: SSQH has 80 clinics in its network and the health system is fairly fragmented – 35 are run directly by MSPP and 45 are run by private NGOs, one of which is HHF. And so each of these clinics has assigned to it a network of community health workers and it varies, from a couple to 25 to 25+. In the case of HHF, what happens is the project gives a subcontract to HHF which would include both facility and community-based healthcare. Through that contract HHF pays salaries including CHWs. They're funded through SSQH and USAID. At the public facilities it's a slightly different model. Pathfinder actually hires the CHWs and the doctors and pays them directly. It's for the same service provision, it's for the same jobs. How we fund them varies a little bit depending on the type of facility but then all of these CHWs who are assigned to clinics within our network are trained by SSQH under Pathfinder's management in the MSPP curriculum so they can become polyvalent CHWs.

[Thank you and concluding remarks.]

6.8 INTERVIEW WITH MR. SHEEL SHAH – APRIL 13, 2016

The interview was conducted via Skype on April 13, 2016. The author was located in North Carolina at the time. Mr. Shah was in India. The call lasted approximately 30 minutes.

Background of the interviewee

Mr. Sheel Shah is a Senior Project Manager with Dimagi, an organization working to “develop technologies to improve service delivery in underserved communities” Dimagi develops last mile technologies, including a mobile application for the SSQH project in Haiti. Mr. Shah was part of the SSQH team, working with Dimagi’s CommCare platform to bring the MSPP training curriculum for CHWs to life via a mobile application. Prior to joining Dimagi, he worked with Microsoft and Doctors without Borders. Mr. Shah holds a degree in Systems Design Engineering from the University of Waterloo.

Transcript of the interview¹⁶

[Greetings. Thank you and confirmation of time allotted to speak today. Overview of thesis question and goals of the conversation].

Caitlin: Could you describe for me the work you did for the SSQH project in Haiti?

Mr. Shah: We built a comprehensive community health worker app. It covered all of the community health worker registers except one of them. We could have just built a system that let the CHWs reenter their data electronically. Instead we built an application that lets CHWs manage their patients, gives them guidance on the work they should be doing, the questions they should be asking.

Caitlin: Were CHWs involved in designing the app?

Mr. Shah: We did this with a number of different people. We got help from the Pathfinder technical staff (HIV expert, maternal health expert etc.) and we spent a number of months testing it and piloting it with users at a hospital in Port au Prince.

Caitlin: Has the response from the MSPP towards the app been favorable?

Mr. Shah: Initial reactions were favorable and depending on who you’re talking to, favorability changed. Different people were favorable because it included a referrals component between CHWs and facilities in our testing area. But eventually we realized the referral functionality – maybe it was a gap in usability, usefulness – it wasn’t used a lot. The one thing that we did add that was also beneficial was monthly progress reports that cover the activities they did that month. We had the app generate that and give that back to health workers to close the loop and make sure they don’t have to use paper registers any more. One of the biggest gaps in this is, yes it’s beneficial to MSPP, but it’s hard to accept that some external organization designed this and handed it off to them ...I don’t think having an app will completely replace those paper records – the app could fail, the phone breaks, or you’re in an area with poor coverage. I can’t blanket say the app can replace paper.

Caitlin: Who provided the phones for the CHWs?

¹⁶ Note: This transcript has been edited slightly.

Mr. Shah: Pathfinder bought the phones ... they initially bought tablets but found they weren't suitable to the CHW context. Batteries weren't large enough, were not robustly built for traveling around, they had a large failure rate. Midway through the project made the switch to phones.

Caitlin: *Were the CHWs trained on how to use the app?*

Mr. Shah: There's a one week training that we do with CHWs, their supervisors and other staff at the facility.

If you're running a hospital and someone gives you a specialized tool for one particular activity and it doesn't really cover your other activities ... there's not a lot of incentive to use it. So yeah I think there's some excitement at the facility level but the interesting thing about how SSQH was structured is that there's an idea that Pathfinder is funding different facilities and NGOs to do health activities and so SSQH can't necessarily enforce, doesn't have a lot of levers to enforce usage.

From an implementation perspective, our idealized implementation was that you would have health facilities first oriented on what it was, and get their buy in on whether they wanted to move in with this, and only if they met that – and did a set of trainings – to demonstrate that.

Caitlin: *What has been the patient feedback on the app?*

Mr. Shah: In Haiti the main piece of feedback we've gotten is that CHWs and patients really like audio-counseling multimedia on the phone. Feels like there's a doctor coming out of their phone, patients also appreciate that there is some voice of authority. Other than that there hasn't been, we haven't necessarily been in a place where we can talk to patients directly or interview them directly.

Caitlin: *Are outcomes reported within the app? So for example Pathfinder could see whether app usage impacts outcomes?*

Mr. Shah: Outcomes are not easy to capture within the application. We have done other surveys in other countries – called knowledge, attitude, practice surveys (KAP) to send staff out to interview CHWs and patients to see how their knowledge etc. has changed. In certain implementations we have shown that KAP changes for CHWS and patients. We only have one formal randomized control trial, we just released the studies from this year, proves that providing CHWs with a phone based tool improves health outcomes. Fully structured RCT. I'll send it to you.

Caitlin: *What are some factors specific to Haiti that make implementation a challenge? Or, to put it another way, what are some factors in other countries that enable implementation?*

Mr. Shah: I think there are some strong factors that go into how successful a technology implementation like this is going to be – a big factor for us is the strength of your CHW supervision. How closely are you monitoring and supervising your health workers? Second is how likely are you to use the data to make decisions? If you are doing both of those things well,

the likelihood of usage and impact will stay high. If you don't have supervision there is no incentive.

Caitlin: What is the level of CHW supervision in Haiti?

Mr. Shah: I think supervision depends on the org. Different NGOs respond differently.

Caitlin: I spoke with HHF – it seems like they have a structured CHW program in place.

Mr. Shah: HHF is the best in Haiti at this. It really is on a per site basis

Caitlin: How were you able to access the MSPP curriculum?

Mr. Shah: MSPP training curriculum – one of the technical leads at Pathfinder had it and shared it with us. It was in French and then we translated it into Creole and English.

Caitlin: What aspects of maternal healthcare are included in the app?

Mr. Shah: Maternal health work flow – we guide the health worker on certain topics that we should counsel the mother about, i.e. how to prepare for a birth, what materials you need. You should counsel the mother to deliver at a facility vs. at home. Some amount of counseling that we ask the CHW to do. Also have a danger signs assessment that is done during a visit. CHW is given a list of danger signs and checks with the mother to see if she has exhibited any of these. Decision support.

Caitlin: If a woman is identified to have danger signs, is the clinic notified? Is there a process to make sure the CHW checks up on her?

Mr. Shah: We trace referrals separately. We indicate to the CHW that these are your referred patients please make sure you check in on them. We allow referrals – but because we realize that facilities aren't actually closing out their referrals – there is this concept in the system where a CHW can go visit someone, check if a referral is done, and type in what happened at the clinic.

Caitlin: Has there been any pushback from the traditional system, such as TBAs?

Mr. Shah: We haven't gotten any pushback from TBAs or input from health workers – a lot of the mandate for CHWs in the past was they don't touch maternal health like they're mainly involved post birth. On the pregnancy side we have the CHW check in on the patient every 2-3 days.

Caitlin: Who manages and updates the app? Dimagi HQ or is there a team in Haiti?

Mr. Shah: Whenever we're in-country we have a process that we use to gather a list of changes that we want to make. And the in-country team has the ability to make changes. The ideal for this system – it's not actually designed by an engineer – we're using a website to build and design an application.

Caitlin: Have you encountered any problems with the literacy of the CHWs?

Mr. Shah: We've run into literacy problems, both in and outside of Haiti. In Haiti we were given the explicit guidance to assume literacy. In other countries we've been clear with the partner that most of them are not literate so we need more audio prompts and using more iconography.

For us there's always this tension of do we try to teach the CHW or do we assume that they have a base set of knowledge and build to support that? There are projects we're doing where we're building in basic health knowledge tools into the system so that CHWs can basically learn about a topic on their own, which they've expressed interest to us that they'd like to do and the other thing we're doing in certain projects is we're trying to give supervisors tools to evaluate CHWs so they can follow health workers around and do a quick assessment and trace their recommendations

Caitlin: In addition to counseling and referrals, I'm interested in whether CHWs can provide medications, such as IPTp ...

Mr. Shah: We have a project with the malaria consortium in Mozambique where they are using CHWs to provide malarial care. Was about a year ago, and now looking to scale what they testing to the rest of the country.

[Concluding remarks. Thank you.]

7 APPENDIX B – WHO RECOMMENDED CORE AND ADDITIONAL CHW INTERVENTIONS

The following is an abridged list of interventions, as released in the H4+ publication, *Strengthening the capacity of community health workers to deliver care for sexual, reproductive, maternal, newborn, child and adolescent health*. (H4+, 2015)

Sexual Health, Family Planning, and Pre-Pregnancy	Core / Additional
Educate women, men, families and community to:	
<ul style="list-style-type: none"> • Be aware of the benefits of safe sex, family planning and birth spacing starting from the pre-pregnancy period, during pregnancy and after childbirth 	Core
<ul style="list-style-type: none"> • Enable adolescents, women, men to access various reproductive health services through integrated and linked services 	Core
<ul style="list-style-type: none"> • Be aware of signs of domestic and sexual violence 	
<ul style="list-style-type: none"> • In case a woman discloses violence, provide basic support (it is critical to ensure a private setting, confidentiality, and to not disclose this information to anyone else) by listening carefully and empathetically (but not pressuring her to talk), being non-judgmental and supportive, and helping her access information about resources and services if these are available 	Additional
<ul style="list-style-type: none"> • Counsel on contraceptive methods including emergency contraception 	Core
<ul style="list-style-type: none"> • Refer for family planning methods not available at community level, such as longer-acting methods (injectables, implants, IUDs) and permanent methods (male and female sterilization) 	Core
<ul style="list-style-type: none"> • Distribute condoms and pills, including emergency contraception 	Core
<ul style="list-style-type: none"> • Initiate and maintain use of injective contraceptives using a standard syringe (to be considered with targeted monitoring and evaluation) 	Additional
<ul style="list-style-type: none"> • Detect pregnancy using pregnancy test and counsel on contraceptive or pregnancy options 	Additional
<ul style="list-style-type: none"> • Prevent and manage STIs, including support for Mother-to-Child Transmission of HIV and Syphilis 	Additional
<ul style="list-style-type: none"> • Distribute folic acid supplement to prevent neural tube defects 	Additional

Pregnancy Care	Core / Additional
Promote and support:	
<ul style="list-style-type: none"> • Appropriate care-seeking behavior and antenatal care during pregnancy, including the recommended minimum of four antenatal care visits • Self-care at home, healthy lifestyle including harmful effect of smoking and alcohol use • Companionship during labor • Sleeping under insecticide-treated nets during pregnancy • Birth and complication preparedness, including educate on signs of labor and on danger signs • Skilled care for childbirth • Adequate nutrition and iron and folate supplements during pregnancy • Safe sex and birth spacing 	<p>Core</p> <p>Core</p> <p>Core</p> <p>Core</p> <p>Core</p> <p>Core</p> <p>Core</p> <p>Core</p>
Educate women and families about danger signs and need for urgent referral to hospital	Core
Promote and support PMTCT and interventions to prevent and manage HIV and TB	
<ul style="list-style-type: none"> • PMTCT: discuss plans for childbirth, discuss ARVs (when to start, where to keep it), introduce information regarding infant feeding options • TB screening and testing during pregnancy as well as support for adherence throughout the necessary diagnostic processes and adherence for treatment or TB preventing therapy, as necessary 	<p>Core</p> <p>Core</p>
Promote exclusive breastfeeding in the first 6 months	Core
HIV testing and TB screening (regardless of HIV status) during pregnancy, as well as support for adherence throughout the necessary diagnostic processes and adherence to treatment or TB preventive therapy, as necessary	Core
Distribute the following oral supplements to pregnant women (to be considered with targeted monitoring and evaluation)	Core
<ul style="list-style-type: none"> • Calcium supplementation for women living in areas with known low levels of calcium intake • Routine iron and folic acid supplementation • Intermittent presumptive therapy for malaria for women living in endemic areas • Vitamin A supplementation for women living in areas where severe vitamin A deficiency is a serious public health problem 	<p>Core</p> <p>Core</p> <p>Core</p> <p>Core</p>
Promote and support interventions for smoking cessation during pregnancy for improving birth outcomes	Additional
Be aware of signs of domestic and sexual violence	
In case a woman discloses violence, provide basic support (it is critical to ensure a private setting, confidentiality, and to not disclose this information to	Additional

anyone else) by listening carefully and empathetically (but not pressuring her to talk), being non-judgmental and supportive, and helping her access information about resources and services if these are available

Childbirth Care	Core / Additional
Promote and support skilled care for birth/facility-based childbirth	Core
Support for transport to and from health facility	Core
Provide continuous support for the woman during labor, in the presence of a skilled birth attendant	Core
Administer misoprostol to prevent PPH, only where a well-functioning lay health worker program already exists, skilled birth attendants are not present and oxytocin is not available	Additional
Postpartum Care	Core / Additional
Promote postpartum care	Core
Provide information and counselling on self-care at home, nutrition, safer sex, breastfeeding, birth spacing and family planning, healthy lifestyle including harmful effects of smoking and alcohol use, malaria prevention and management of malaria, sleeping under insecticide-treated nets	Core
Recognize danger signs and refer urgently to hospital	Core
Support women living with HIV including ART and TB screening, prevention, and care regardless of HIV status	Core
Report birth and death (vital registration)	Core
Be aware of signs of domestic and sexual violence and refer as appropriate. In case a woman discloses violence, provide basic support (it is critical to ensure a private setting, confidentiality, and to not disclose this information to anyone else), by listening carefully and empathetically (but not pressuring her to talk), being nonjudgmental and supportive, and helping her access information about resources and services if these are available.	Additional

8 APPENDIX C – MATERNAL HEALTH SERVICES LISTED IN *LE PAQUET MINIMUM DE SERVICE (PMS)*

The following is a snapshot of the services are listed in *Le Paquet Minimum de Service (PMS)* as published by the Haitian MSPP. (Wright, 2015)

Community Level Interventions

Women of Reproductive Age

- Promoted to women of reproductive age
 - Use of health center to monitor pregnancy and childbirth, in case of danger signs during pregnancy, and in case of danger signs during abortion
 - Behaviors to prevent STIs / AIDS
 - Family planning
 - Screening pregnant women for HIV / AIDS
- Promoted to the general population
 - Use of health center to monitor pregnancy and childbirth, in case of danger signs during pregnancy, and in case of danger signs during abortion
 - Behaviors to prevent STIs / AIDS
 - Family planning
 - Promoting the tetanus vaccination
 - Using mosquito nets for pregnant women, and for children
 - Role of midwives, traditional birth attendants and health workers

Primary Level Interventions

Women of Reproductive Age

- Promotion
 - HIV/AIDS screening
 - Family planning
- Prevention
 - Tetanus vaccines
 - Family planning
- Healing
 - Support or refer cases of gynecological pathologies, STDS, violence and HIV/AIDS

Pregnant Women

- Promotion
 - HIV/AIDS screening
 - Seeking care from a health clinic in case of pregnancy complications
 - Appropriate infant care and feeding
- Prevention
 - Offer three prenatal consultations (prevention of tetanus, malaria, anemia)
- Healing
 - Support or refer cases of labor and childbirth, emergency obstetric care, diseases (such as tetanus, malaria, anemia)

9 BIBLIOGRAPHY

- Advancing Partners & Communities. *Country Profile: Haiti Community Health Programs*. Arlington, VA: USAID, 2014. Print.
- Alegria-Flores, Kei. *Introductions*. Message to the author. E-mail. Vol., January 18, 2016. Print.
- Alegria-Flores, Kei. Personal interview. 18 January 2016.
- Boncy, PJ, et al. "Malaria elimination in Haiti by the year 2020: an achievable goal?" 2015. Web. <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4464116/>>.
- Connolly, Caroline. Personal interview. 1 March 2016.
- Cuomo, Raphael E., and Jong-Deuk Baek. "The global association between maternal mortality and skilled health workers." August 2014 Web. <https://www.researchgate.net/publication/264543891_The_global_association_between_maternal_mortality_and_skilled_health_workers>.
- Deloron, P., et al. "Sulfadoxine/Pyrimethamine Intermittent Preventive Treatment for Malaria during Pregnancy." 2010. Web. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3294539/>>.
- Department of Maternal, Newborn, Child and Adolescent Health. "Haiti - Maternal and Perinatal Health Profile." 2011. Web. <http://www.who.int/maternal_child_adolescent/epidemiology/profiles/maternal/hti.pdf>.
- Gardella, Alexis. *Gender Assessment for USAID/Haiti Country Strategy Statement*. Ed. USAID., 2006. Web. <http://pdf.usaid.gov/pdf_docs/Pdach597.pdf>
- Gebrian, Bette, et al. *KOMBIT: Mobilizing the Community for Safe Motherhood and Healthy Newborns*. Haitian Health Foundation. USAID, 2010. Print.
- Gebrian, Bette. *Community Health Workers in Haiti*. Message to the author. E-mail. Vol. February 29, 2016. Print.
- Gebrian, Bette. Personal interview. 2 March 2016.
- Gillings School of Global Public Health. "*Alegria-Flores Receives Fogarty Global Health Fellowship*." March 12 2014. Web. <<http://global.unc.edu/news/alegria-flores-receives-fogarty-global-health-fellowship/>>.
- H4+. "Strengthening the capacity of community health workers to deliver care for sexual, reproductive, maternal, newborn, child and adolescent health ." Web. <http://www.who.int/workforcealliance/knowledge/resources/h4_chws/en/>.

Institute of Medicine (US) Committee on Improving Birth Outcomes. "Improving Birth Outcomes: Meeting the Challenge in the Developing World." Ed. Bale JR, Stoll BJ, Lucas AO, ed. 2003. Web. <<http://www.ncbi.nlm.nih.gov/books/NBK222105/>>.

IVCC. "WHO Malaria Fact Sheet." December 2011. Web. <<http://www.ivcc.com/who-malaria-fact-sheet>>.

Jerome G., Ivers L. C. "Community health workers in health systems strengthening: a qualitative evaluation from rural Haiti." 2010. Web. <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3169202/>>.

Kaplan, KC, et al. *Soccer and Sexual Health Education: A Promising Approach for Reducing Adolescent Births in Haiti*. Rev Panam Salud Publica, 2015. Print.

LinkedIn.com. "Bette Gebrian." 2016. Web. <<https://www.linkedin.com/in/bette-gebrian-4a81b119>>.

LinkedIn.com. "Ben Stephens." 2016. Web. <<https://ht.linkedin.com/in/ben-stephens-13652629>>.

LinkedIn.com. "Caroline Connolly." 2016. Web. <<https://www.linkedin.com/in/caroline-connolly-2b5aa38>>.

LinkedIn.com. "Kei Alegria-Flores." 2016. Web. <<https://www.linkedin.com/in/kei-alegria-flores-608025115>>.

LinkedIn.com. "Rachel Riccio." 2016. Web. <<https://www.linkedin.com/in/publicprofilerachelriccio87390>>.

LinkedIn.com. "Sheel Shah." 2016. Web. <<https://www.linkedin.com/in/shahsheel>>.

Lomotey, CJ, et al. *Maternal and Congenital Syphilis in Rural Haiti*. Rev Panam Salud Publica, 2009. Print.

MANDATE: Maternal and Neonatal Directed Assessment of Technology. "Jennifer B. Griffin." 2016. Web. <<http://mnhtech.org/who-we-are/team-members/jennifer-b-griffin>>.

MANDATE: Maternal and Neonatal Directed Assessment of Technology. "Elizabeth McClure." 2016. Web. <<http://mnhtech.org/who-we-are/team-members/elizabeth-mcclure>>.

Maternal Mortality Estimation Inter-Agency Group. "Maternal Mortality in 1990-2013." 2014. Web. <http://www.who.int/gho/maternal_health/countries/hti.pdf?ua=1>.

McClure, Beth and Griffin, Jennifer. Personal interview. 16 March 2016.

- Ministère de la Santé Publique et de la Population. "Plan Directeur de Santé 2012-2022." October 2013 Web. <<http://www.mspp.gouv.ht/site/downloads/Plan%20Directeur%20de%20Sant%C3%A9%2081%202012%202022%20version%20web.pdf>>.
- Ministry of Public Health and Population (MSPP), Haitian Childhood Institute (IHE) and ICF International. "2012 Haïti Mortality, Morbidity, and Service Utilization Survey: Key Findings." 2013. Web. <<http://dhsprogram.com/pubs/pdf/SR199/SR199.eng.pdf>>.
- Pallardy, Richard. "Haiti earthquake of 2010." January 29, 2016 Web. <<http://www.britannica.com/event/Haiti-earthquake-of-2010>>.
- Partners in Health. "Community Health Workers." Web. <<http://www.pih.org/priority-programs/community-health-workers>>.
- Pathfinder International. "Pathfinder Chosen by USAID to Lead New Services de Santé de Qualité pour Haiti Central and South Project." October 1 2013. Web. <<http://www.pathfinder.org/news/pathfinder-chosen-by-usaid-to-lead-haiti-project.html>>.
- Peterson, Herbert, Dr. Personal interview. 7 January 2016.
- Prins, A., et al. "USAID/Haiti Maternal and Child Health and Family Planning Portfolio Review and Assessment." September 2008 Web. <http://pdf.usaid.gov/pdf_docs/Pdacp887.pdf>.
- Ramachandran, V., and J. Walz. *Haiti: Where Has All the Money Gone?* Policy Paper 004 Vol. Washington, DC: Center for Global Development, 2012. <http://www.cgdev.org/files/1426185_file_Ramachandran_Walz_haiti_FINAL.pdf>.
- Rassas, B., et al. *Final Evaluation Report: The Haiti Title II Multi Year Assistance Programs (MYAP) Final Evaluation Report*. Ed. USAID Haiti. AID-RAN-I-00-09-00016, Order No. AID-521-TO-13-00001 Vol., 2014. Web. <http://pdf.usaid.gov/pdf_docs/PA00KC7K.pdf>.
- Riccio, Rachel. Personal interview. 11 March 2016.
- Rosales, Alfonso. *HHF/KOMBIT Project: Innovations in Maternal-Newborn and Child Health*. Final Evaluation Report ed. Haitian Health Foundation Haiti Program, June-July 2009. Print.
- Schantz-Dunn, J., and NM Nour. "Malaria and Pregnancy: A Global Health Perspective." 2009. Web. <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2760896/>>.
- Stephens, Ben. Personal interview. 31 March 2016.
- Transnational Development Clinic, Jerome N. Frank Legal Services Organization Yale Law School. *Peacekeeping without Accountability: The United Nations' Responsibility for the Haitian Cholera Epidemic*. Global Health Justice Partnership of the Yale Law School, the

Yale School of Public Health and Association Haitienne de Droit de L'Environnement., 2013. Web. <http://media.wix.com/ugd/148599_5a69247144504840a11d8b4b756736c9.pdf>

UConn Alumni Association. "UConn Instructor and Alumna Bette Gebrian Receives Humanitarian Award." June 28, 2011. Web. <<https://web2.uconn.edu/nursingtest/wp-content/uploads/partnerships/bgebrianpressrelease.pdf>>.

UNC Gillings School of Global Public Health. "Hebert Peterson, MD." 2015. Web. <<http://sph.unc.edu/profiles/mch-herbert-peterson-md-3/>>.

UNFPA, ICM, WHO. "The State of the World's Midwifery 2014 – A Universal Pathway. A Woman's Right to Health. 2014." Web. <http://www.unfpa.org/sites/default/files/pub-pdf/EN_SoWMy2014_complete.pdf>.

Urrutia, Rachel Peragallo et al. "Unmet Health Needs Identified by Haitian Women as Priorities for Attention: A Qualitative Study." *Reproductive health matters* 20.39 (2012): 93–103. *PMC*. Web. <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3697112/>>

USAID. "A Rapid Initial Assessment of the Distribution and Consumption of Iron-Folic Acid Tablets Through Antenatal Care in Haiti." September 2014. Web. <<https://www.spring-nutrition.org/publications/briefs/iron-folic-acid-assessment-haiti>>.

World Health Organization. "Haiti: WHO statistical profile " Global Health Observatory. January 2015 Web. <<http://www.who.int/gho/countries/hti.pdf?ua=1>>.

Wright, J. *Essential Package of Health Services Country Snapshot: Haiti*. . Bethesda, MD: Health Finance & Governance Project. Abt Associates Inc., 2015. Print.