Traditional Birth Attendant Education in Fondwa, Haiti

by

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Thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in the Department of Global Health in the Graduate School of Duke University

2012
ABSTRACT

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Abstract

**Objective:** Approximately 85% of rural Haitian births happen at home, attended by family members or traditional birth attendants (TBAs). Our primary research question is: Are the TBAs in this study willing and/able to learn and retain the material in the education program, and integrate this material into their practice? Secondarily, we are interested in obtaining information toward answering the following two questions: 1. Are these TBAs interested in going on to become skilled birth attendants or working in conjunction with healthcare service providers at a future Fondwa health center, even if they do not become skilled birth attendants? 2. Does the education model that is utilized in this research allow us to measure short and long term changes in the TBA’s abilities, as demonstrated by TBA feedback, test scores and observations of TBAs at deliveries?

**Methods:** This study implemented and assessed a pilot four-week TBA education program. Each TBA took a pre-test before beginning the program and a post-test after completing the program, as well as post-tests at six weeks and six months. Results for learning and retention between the four tests were analyzed in STATA using a Paired t-test. Effects of age, training method, literacy, numeracy and sex on learning and retention were analyzed in STATA using One-way ANOVA. The study also used group interviews and surveys with TBAs and community members to examine birth practices and to begin compiling baseline data for evaluation of the impact of the program. Associations between variables on the community surveys were analyzed using Chi-squared and Fisher’s exact tests.

**Results:** Out of a total of 493 questions asked on the four tests (29 questions on each of 17 tests), 12.4% were answered correctly on the pretest, 65.1% on the first post test, 58.6% on the 6-week test, and 59.4% on the 6-month post-test. Analysis showed
statistical significance for the learning increase between the pretest and the initial post-test (p = 0.0000) and for retention between the initial post-test and the 6-week post-test (p = 0.0086), but statistical insignificance between the 6-week post-test and the 6-month post-test (p = 0.6864). The influences of age, training method, literacy, numeracy and sex on learning and retention were not statistically significant. The influence of these variables on total (all four combined) test scores was significant for number literacy only (p=0.0214). The program design received unanimously positive feedback from the TBAs. The TBAs are interested in becoming skilled birth attendants (SBAs) or collaborating with SBAs.

**Conclusion:** The TBAs were willing and able to learn and retain the material in the education program, as demonstrated in a classroom setting. However, the critical question of how well they integrate this into their practice remains unanswered. The education model allows us to measure changes in abilities as measured by test scores, but the model does not successfully measure abilities as measured by observations at deliveries. We attended births (one) by invitation only. The education program would benefit from a preceptor component.
Dedication

Dedicated to the TBAs (matrons) of Fondwa, with love.

And to Family Health Ministries, conceived by David and Kathy Walmer and consistently delivering love and support to a myriad of women, children and families.
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1. Introduction

Approximately 358,000 mothers (WHO 2010) and over 3 million newborns (UNICEF 2011) die each year. Ninety-nine percent of those deaths occur in developing countries, with most maternal deaths occurring in sub-Saharan Africa, followed by Haiti in 6th place¹ among non-sub-Saharan African countries (WHO 2010)(Singh 2009).

According to the World Health Organization, the leading causes of maternal death in the developing world are hemorrhage, obstructed labor, infection, complications from abortion and preeclampsia (WHO 2010). These are all conditions with well-known preventions or treatments. Over forty percent of deaths in children under five happen during the neonatal period (UNICEF 2011). Again, these are from preventable causes, primarily asphyxia, preterm birth and infection (Singh 2009). Haiti’s maternal and infant mortality rates are the highest in the western hemisphere² at 300/100,000 and 64/1000 respectively³,⁴ (WHO 2011).

However, the true number of mothers and babies who are dying in Haiti, and their exact causes of death, is unknown because of a lack of vital statistic registries. It is estimated that only 5% of the deaths in Haiti are recorded on death certificates, and out of that 5% one third do not list definitive reasons for death (PAHO 2010).

Approximately 26% of births in Haiti are attended by a skilled birth attendant (SBA) (WHO 2011), defined by the World Health Organization as a midwife, doctor or nurse

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¹ Outside of sub-Saharan Africa, the countries in first through fifth place are: Afghanistan (1400), the Lao People’s Democratic Republic (580), Nepal (380), Timor-Leste (370) and Bangladesh (340).
² i.e. The Americas
³ The maternal mortality ratio reported by Haitian national authorities for 2006-2010 was 630/100,000. Periodically, UNICEF, WHO and UNFPA evaluate these data and make adjustments to account for the well-documented problems of underreporting and misclassification of maternal deaths and to develop estimates for countries with no data. The adjusted estimate of 300/100,000 reflects the most recent of these reviews (UNICEF 2010), although the WHO qualifies this number with a range of 180–520 (WHO 2011).
who has received training in the specialty of childbirth (WHO 2010). In rural areas (where this study was conducted), the percentage goes down to 15% with the remaining 85% of births occurring at home, attended by family members or traditional birth attendants (TBAs) (UNICEF 2010).

Severe poverty and a lack of health care personnel and health care infrastructure have created a situation where the dearth of skilled care at births is only one aspect of a crisis in which 47% of the population of Haiti lacks access to health care (PAHO 2007). Only 63% of Haitians have access to safe drinking water and 83% do not have access to adequate sanitation (UNICEF 2010). In rural area 88% live in poverty and 62% live in extreme poverty (IFAD 2010). Fifty-five percent of Haitians live below the international poverty line of US $1.25 per day (UNICEF 2010).

In response to this health care crisis Family Health Ministries, a non-profit based in Durham, NC that has been working on women’s health issues in Haiti for 18 years, held focus groups with community members and TBAs in Leogane, Haiti, to discuss their needs and ideas for improving maternal and infant health. A Safe Motherhood program was initiated with the following two goals: 1. To reduce maternal and infant mortality and morbidity in the Leogane Commune by building a research and medical center in Leogane and by improving outcomes in home deliveries. FHM is working toward a goal of 80% of deliveries in the Leogane Commune being attended by a skilled professional. As a step toward this goal, FHM plans to educate TBAs in safe delivery practices and appropriate referral to first or second tier health facilities and to develop a birth registry in Fondwa, an out-lying community in the Leogane Commune.

5 Traditional birth attendants in Haiti are known as ‘matrons’. However, in order to maintain continuity with the global designation of TBA I have chosen to refer to them as such throughout this paper.

6 In French, ‘Fond Droit’
This study implemented and assessed a pilot four-week TBA education program in Fondwa. Each TBA took a pre-test before beginning the program and a post-test after completing the program, as well as post-tests at six weeks and six months. The study also used group interviews with TBAs and community members to evaluate the impact of the program, and utilized two surveys that examined birth practices in Fondwa, with an emphasis on the use of TBAs. The first survey assessed the use of health services by pregnant women in Fondwa, and collected information about women’s birth experiences. The second survey explored the TBA’s training and early experiences with birth and how they participate in the community, particularly looking at TBA religious practices and cultural impact. Results from these surveys will contribute to the compilation of baseline data against which we can assess the impact of the safe motherhood program in Fondwa.

The primary question this research asks is: Are the TBAs in this study willing and/able to learn and retain the material in the education program, and integrate this material into their practice? Secondarily, we are interested in obtaining information toward answering the following two questions: 1. Are these TBAs interested in going on to become skilled birth attendants or working in conjunction with healthcare service providers at a future Fondwa health center, even if they do not become skilled birth attendants? 2. Does the education model that is utilized in this research allow us to measure short and long term changes in the TBA’s abilities, as demonstrated by TBA feedback, test scores and observations of TBAs at deliveries?

At a future date, with the assistance of information gathered during this pilot education program, additional educational programs and a birth center may be developed.
2. Background information

The role of TBAs in the reduction of maternal and infant morbidity and mortality is controversial, and has been an issue of controversy for decades. Even though there is consensus that if TBAs are the only care providers in a community they ought to be having a positive impact, controversy exists around whether TBAs should be trained in emergency obstetric skills, simply be taught to recognize complications and refer them to appropriate health facilities, or not be trained at all. In order to place this controversy in historical perspective, it is helpful to understand the progression of international concerns and actions that concern TBAs.

In 1972 the World Health Organization (WHO) sponsored an international survey on the TBA and their involvement in maternal and child health and family planning. They concluded that TBAs “have a substantial influence and role to play in the health practices and life habits of rural populations” and that they were a critical component of effective maternal and child health programs (Verderese 1975). The WHO used information gained from the survey to develop guidelines for the planning, implementation and evaluation of programs for training and supervision of traditional birth attendants. Survey results had revealed that although 43% of the 49 countries studied already had some form of supervision of traditional birth attendants, this supervision was severely limited due to lack of human resources and transportation and often amounted to an inspection of the TBA’s birth kit when she came for renewal of supplies. The guidelines were published under the title The traditional birth attendant in maternal and child health and family planning: A guide to her training and utilization. Chapters included nutritional consultation, prenatal care including assessing fetal heart tones, management of normal labor and delivery, recognition and management of complications (including prolapsed card, breech birth, hemorrhage and
asphyxia), post partum care, family planning and infant care, and recognition of and appropriate referral for community health needs (communicable diseases, sanitation and accidents). Sections were also included on methods for training TBAs, evaluation of training, TBA peer supervision, and community support of the TBA. And finally, the guidelines contained recommendations for registries of practicing TBAs and the enactment of positive laws that guide and improve the TBA’s practice, rather than restrict her. The WHO stressed the need for community involvement in program development. “It seems dubious that any program – be it for midwifery training or anything else – can be effective if it is planned by remote control, for broadside applications. It will have better chance of success if it is designed and tailored to measure, zone by zone. In the case of midwifery, a major point of departure should be the social position of the Traditional Birth Attendant in the local community. Furthermore, the programs should be painstakingly planned so as to interdigitate – with the minimum conflict and maximum exploitation – with local customs and practices related to pregnancy, birth, and post-natal care” (Verdenese 1975 5.1.3)

By the mid-1980s, 52 countries had TBA training programs in place (Kruske 2004). Maternal mortality rates at the time were known to be very high. However, research showed that this knowledge was not reflected in the development priorities of governments and funding agencies. Maternal and child health programs were almost exclusively for the benefit of the child and rarely addressed the factors behind the reported 500,000 annual maternal deaths (Rosenfeld and Maine 1985). In 1985 the Interregional Meeting on Preventing Maternal Mortality, in Geneva, Switzerland, presented research on the underlying causes of maternal mortality in developing countries: poor accessibility to maternal health services, non-referral for appropriate antenatal and delivery care, and inadequacies in the quality of care (WHO 1994).
Largely in response to the reporting of this research, in 1987 three UN agencies—UNFPA, the World Bank, and WHO—sponsored the Nairobi Safe Motherhood Conference, which launched the global Safe Motherhood Initiative. The goal of the Initiative was to reduce maternal mortality by 50% by the year 2000 (FCI 2007). At the time, the public health community was emphasizing community-based health interventions. “Donors, UN agencies, and governments therefore seized on two elements of the safe motherhood strategy discussed at the Nairobi conference — antenatal care, with a focus on screening women to identify those at risk of complications, and training of traditional birth attendants to improve delivery care at the community level—and poured their funding and support into these strategies” (Starrs 2006 p1130).

In the years following the formation of the Safe Motherhood initiative a series of national and regional conferences reinforced safe motherhood in the public-health realm and TBA programs continued to flourish. By 1994 every region of the world had held a safe motherhood conference (Starrs 2006). However, in 1997 participants at The Technical Consultation on Safe Motherhood in Colombo, Sri Lanka, cited evidence from several studies, most notably one from Ghana, that showed the benefits of TBA training to be “modest at best”. The participants concluded that “there is no documented case of a society relying heavily on TBAs – trained or untrained – to attend deliveries that has succeeded in lowering its maternal mortality” (Starrs 1998). As a result of these conclusions, the conference endorsed two action messages on safe motherhood that would become a catalyst for change in the safe motherhood strategy:

1. Every pregnancy faces risks emphasized that any pregnant woman can develop life-threatening complications with little or no advance warning, so all women need
access to quality maternal health services that can detect and manage life-threatening complications.

2. **Ensure skilled attendance at delivery** emphasized the importance of having a skilled birth attendant (SBA) present at every birth, backed up by transport for cases of emergency referral. “Traditional birth attendants, trained or untrained, were excluded from the definition of skilled attendants because they lacked the clinical skills, drugs and equipment, or infrastructure to manage complications such as hemorrhage, eclampsia, or severe infection” (Starrs 2006 p1130).

In addition, in 1996 the WHO and UNICEF published revised global estimates of maternal mortality that showed that 585,000 women died from pregnancy-related causes in 1990, 80,000 more than previously estimated. This was important information because it changed the scale of the goal to reduce the 1990 estimates by half by the year 2000. This goal had been declared not only at the Nairobi Safe Motherhood Conference in 1987, but at many conferences since that time, including the World Summit for Children (WSC) in 1990, the International Conference on Population and Development (ICPD) in 1994, and the Fourth World Conference on Women (FWCW) in 1995 (WHO 1996).

In response to the Sri Lanka action messages, the new mortality estimates, and the WHO statement on SBAs vs TBAs, donors and governments began de-emphasizing large-scale training programs for traditional birth attendants (Starrs 2006). Since that time, the World Health Organization has sustained its recommendation for the exclusive use of skilled birth attendants. In fact, in 2006 “proportion of births attended by a skilled health personnel” was accepted as the primary indicator to track changes in maternal mortality levels, due to a 2001 study by Graham et al showing a correlation between skilled birth attendance and declining mortality rates (WHO 2006).
While The Technical Consultation on Safe Motherhood of 1997 reasoned that a lack of data correlating TBAs with reduced maternal mortality was sufficient reason to justify their recommendation that an SBA attend every birth, the data is insufficient to establish a direct correlation between TBAs and the non-lowering of maternal mortality. Poverty, low levels of literacy, lack of transportation and the poor economic and social status of women may all play a role in high mortality rates (Walsh 2006). The policy statements did not delineate an understanding of the influence of these and other social factors in the success or failure of TBA training programs. In addition, there was, at least in some countries, little quality control in the design or content of the TBA training programs. Evaluations and assessments of the programs were not compiled (Kruske 2004).

The WHO did recognize that there were ancillary factors that complicated the issue of TBA training. In 2004 the World Health Organization released the following statement: “It is now generally accepted that one of the main reasons why many TBA-based maternity care programmes of the past did not work, or were unsustainable, was that the programmes failed to link TBAs to a functioning health care system. Hence, in many instances, the TBAs did not work within an “enabling environment”—one in which health care providers at primary, secondary and tertiary levels of the health system function as a team, and in which drugs and equipment are available and effective supervision and systems of referral are in place” (WHO 2004).

To complicate things further, at the same time that TBA use was falling out of favor among policy makers, studies were being published which indicated that TBA training resulted in reductions in infant mortality and possibly maternal mortality as well (Sibley 2004). In addition, more studies have come out in the ensuing years: A randomized controlled trial in Pakistan showed that TBA training, combined with
existing healthcare services, resulted in a significant reduction of about 30% in neonatal mortality, significantly lowered rates of puerperal infection and hemorrhage, and higher rates of referral (Jokhio 2005); A meta-analysis in 2006 found small but significant decreases in perinatal and neonatal death due to pneumonia and birth asphyxia among trained TBAs, and small but significant increases in women’s use of prenatal care and emergency obstetric care. (Sibley 2006); A 2011 meta-analysis of randomized and non-randomized controlled studies that investigated strategies incorporating training and support of traditional birth attendants showed significant reductions in perinatal and neonatal mortality and a non-significant reduction in maternal mortality (Wilson 2011).

Criticisms of TBA training include the following: Practical difficulties, such as low literacy rates and a lack of scientific knowledge, make it difficult for TBAs to work effectively (Kruske 2004); TBAs are not capable of acquiring the skills needed for managing life-threatening complications (FIGO 2006); TBA Training programs may be ineffective substitutes for experience. TBAs often attend few deliveries per year, resulting in limited experience with complications. This may make it difficult for them to perceive their limits when confronted with an obstetrical emergency that requires higher-level care than they can provide (Eades 1993); Training does not substantially alter the belief systems of TBAs and will therefore have little impact on practices that are rooted in these beliefs (Goodburn 1995); TBAs may be reluctant to transfer complications to health facilities because they are afraid to look like they cannot handle the births they are entrusted with, which may in turn cause them to lose their standing in the community (Roost 2004); TBAs may be reluctant to transfer a woman with complications because of previous experiences with a health care system in which they were devalued because of their ethnicity, their lack of education, or their gender. They may have been blamed previously for poor outcomes or even used as a scapegoat for a country’s high
mortality rate (Walsh 2006); Training TBAs drains funding and attention from the more important tasks of bolstering health systems and training skilled midwives (Bergstrom 2001) (Harrison 2011).

Unlike the comprehensive training that was developed in the 1970’s, today a trained TBA is defined simply as a TBA who has received a short course of formal training through the modern health sector to upgrade her skills (WHO 1992). The WHO does not delineate the content of a program that would result in a TBA being trained. However, most training programs teach hygienic deliveries, cord care, recognition of danger signs, use of appropriate techniques for delivery of the placenta to prevent immediate postpartum hemorrhage, and appropriate referral. Usually TBAs are not trained to provide initial management for major maternal and neonatal complications such as birth asphyxia or sepsis (Sibley 2006). However, in a study in Zambia, TBAs were cluster randomized to receive an intervention that consisted of a modified version of the neonatal resuscitation protocol and a supply of amoxicillin. Out of 3497 babies delivered by the intervention TBAs there was a 45% decrease in infant mortality within the first four weeks of life. Deaths due to birth asphyxia were reduced by 63% (Gill 2011).

The position of Family Health Ministries is that there is enough evidence to support educating TBAs in Fondwa. FHM agrees with the WHO that every woman deserves to have a skilled attendant at her birth, and every woman deserves to have adequate access to emergency care. However, this is not a present possibility for the women in Fondwa. While FHM acknowledges that time and resources should be spent on establishing an adequate health care system in Fondwa, we do not believe that this supersedes our obligation to help mothers and babies now to have the best chance possible for survival and well-being.
3. Population Description

Fondwa is a rural community of approximately 8000 people in the mountains of southwestern Haiti (APF 2012). Fondwa is part of the commune of Leogane, which is a 45-minute drive down the mountains. There is only one road that enters the town, and this road is reliably passable by car/truck for only a short distance after entering the community. From this point the road is often too rutted for vehicles other than motorbikes, and branches off into footpaths that lead to individual homes, sometimes a half-mile apart, and clusters of homes that are nestled among the hillsides. Most of the traveling within Fondwa is done on foot. The language spoken is Creole, which has its roots in French and West African dialects. Very few people speak English and everyone is poor, living in very sparse and rudimentary buildings with no electricity or running water. The 2010 earthquake brought down many of these dwellings.

While Fondwa is typical of many rural Haitian communities it is also atypical due to the presence of the Association of the Peasants of Fondwa (APF). APF was started in 1988 as a mechanism to help community members solve their own problems with their own resources. Residents were helped to name the problems in the area, to organize, to set their priorities, and to identify the ones they might solve themselves (APF 2012). With the help of friends and donors, APF was instrumental in the creation of a micro-finance bank (FONKOZE), an orphanage, a school and the University of Fondwa (UNIF). The University offers degree programs in agronomy, veterinary medicine, and business as well as non-degree intensive language courses in English and Haitian Creole and a Cultural Immersion program (UNIF 2012). The university, the school and the orphanage were all destroyed in the 2010 earthquake and are now operating out of temporary shelters.

There is no permanent healthcare facility in Fondwa. Since the earthquake, an NGO (Heart to Heart) has set up a trailer that houses a basic healthcare clinic that is staffed by a nurse Monday through Thursday mornings, and by a visiting physician on
Fridays. They do not do obstetrics at the clinic. People in need of urgent care must travel 45 minutes by bus to get to the nearest hospital, although it takes much longer than that if one first needs to walk or be carried over the mountain paths to get to the road that leads out of Fondwa. Ownership of a vehicle of any kind is a rarity in Fondwa, which further complicates access to health care. Births in Fondwa occur at home and are attended by TBAs and/or family members. Families who want to acquire a birth certificate register the birth in Leogane through a regional branch of the Ministry of Health.
4. Methods

4.1 Preparatory trips to Fondwa

In July 2009, Family Health Ministries in Durham, NC facilitated focus groups with women in Leogane to discuss their general health needs. The women in these focus groups identified maternal and child health as top priorities. As a follow up to this, FHM helped the women to organize a women’s group and initiated a Safe Motherhood program. The Safe Motherhood program has two goals: 1. To reduce maternal and infant mortality and morbidity in the Leogane Commune by building a medical center in Leogane. 2. To improve outcomes in home deliveries in the surrounding communities. FHM is working toward a goal of 80% of deliveries in the Leogane Commune being attended by a skilled professional. As a step toward this goal, FHM plans to assist TBAs in safe delivery practices and appropriate referral to first or second tier health facilities. FHM is also exploring the possibility of developing a birth registry in Fondwa in order to compile more complete data than is collected through the Leogane registry, which does not include data on morbidity or management during either pregnancy or birth.

Before the education program began I took two trips to Fondwa to meet with the TBAs to assess their needs and to talk with them about the components of a possible education program -- one that would be culturally relevant, useful and a true reflection of their needs. I used a bilingual translator that FHM had trained for previous research studies. During those trips I also met with a nurse in Fondwa who sometimes attends deliveries and who knows most of the TBAs, and with a local women’s group. The first trip was in July of 2010. During this trip I met with 13 TBAs that had been recruited by the nurse. The agenda for this first meeting was to begin a relationship, gain an initial understanding of their beliefs, cultural practices and training, learn about their concerns and needs, and assess their interest in forming a partnership with Family Health
Ministries. The TBAs agreed that maternal and child health is a priority, and they expressed a desire for education and supplies for their work. Their response to the suggestion of partnership with FHM was universally positive. The nurse also emphasized the need for education focused on maternal and child health. She said that the TBAs needed supplies and training and that she would like to see a midwifery school in Fondwa some day. The women’s group expressed similar concerns and desires and said that they would like to help by helping to educate the community.

In March of 2011 I made a second trip, with the purpose of planning the specifics of the education program. I again met with the TBAs, the nurse, and the women’s group. Four additional TBAs had joined the group, for a total of 17 (nine men and eight women). I asked the TBAs as a group about their current skills and knowledge, their perceived educational needs, and their desires for the program.

At the end of the meetings the TBAs requested education on: hygiene, preeclampsia, blood pressure, urine testing, hemorrhage, breech, fetal position, fetal heart tones, shoulder dystocia, post partum infection, newborn resuscitation, cord care, newborn health, breastfeeding and creating a birth registry. They asked for supplies such as gloves, soap, razor blades, cord-tying string and gauze. Each of the 17 TBAs registered for the education program by giving their name, address and telephone number if they owned a phone. We agreed that the TBAs would not receive any payment for attending the program, but the program was being offered for free.

The nurse agreed to be a co-leader of the program. Our plan was to teach her the education materials during the week before the program began and then have her co-teach the entire program. Our desire was that this experience would be the first step towards the goal of her becoming competent to lead future educational programs, with the help of other community members (preferably TBAs) who she and we would identify as potential leaders. Once this is in place Family Health Ministries would then function as a resource for continuing education and support.
The women’s group meeting was designed to build on their desire to help with community education. A nutritionist from Leogane came to the meeting to talk about the importance of nutrition and breastfeeding, and the women were given materials to share with others.

### 4.2 The curriculum

The education program curriculum (Appendix A) for the Fondwa TBAs was developed in accordance with the International Confederation of Midwives Essential Competencies for Basic Midwifery Practice (ICM 2010), which establish the essential knowledge, clinical skills and critical thinking necessary for entry-level midwifery practice. The education program curriculum does not cover all of the competencies. Rather, it focuses on the identified needs of this community. The curriculum is also in accordance with statistical data supporting UN Millennium Development Goals 4 and 5, which were established in 2000 (UN 2000) -- to reduce by two thirds the mortality rate among children under five, and to reduce by three quarters the maternal mortality ratio, by the year 2015. The statistical data supporting this resolution states that the leading causes of maternal death in the developing world are hemorrhage, obstructed labor, infection, complications from abortion, and preeclampsia (WHO 2010) and over 40% of the deaths in children under five happen during the neonatal period, with asphyxia and tetanus as two of the primary causes (UNICEF 2011). Each component of the education program curriculum addresses one or more of these causes of death (figure 1). Our goal is that upon completion of the education program TBAs will be able to:

1. Demonstrate proper hand washing and glove use
2. Identify signs of preeclampsia, including measuring blood pressure and proteinuria
3. Measure fetal heart rate
4. Demonstrate key steps in managing prolapsed umbilical cord
5. Demonstrate key steps in managing shoulder dystocia
6. Identify fetal position and demonstrate managing breech birth
7. Demonstrate key steps in neonatal resuscitation
8. Demonstrate knowledge of key steps in assessing and treating post partum hemorrhage
9. Demonstrate cutting and care of umbilical cord
10. Demonstrate knowledge of key steps in assessing and treating post partum infection
11. Demonstrate ability to identify location of facility offering tetanus vaccinations
12. Demonstrate ability to record birth registry data (called in)

<table>
<thead>
<tr>
<th>Curriculum Component</th>
<th>Causes of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetal Position</td>
<td>Obstructed Labor</td>
</tr>
<tr>
<td>Fetal Heart Rate</td>
<td>Newborn Apnea</td>
</tr>
<tr>
<td>Proteinuria</td>
<td>Eclampsia</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>Eclampsia</td>
</tr>
<tr>
<td>Hand Washing</td>
<td>Post Partum Infection</td>
</tr>
<tr>
<td>Glove Use</td>
<td>Post Partum Infection</td>
</tr>
<tr>
<td>Breech Birth</td>
<td>Obstructed Labor</td>
</tr>
<tr>
<td>Shoulder Dystocia</td>
<td>Obstructed Labor</td>
</tr>
<tr>
<td>Prolapsed Cord</td>
<td>Newborn Apnea</td>
</tr>
<tr>
<td>Neonatal Resuscitation</td>
<td>Newborn Apnea</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>Hemorrhage</td>
</tr>
<tr>
<td>Umbilical Cord Care</td>
<td>Tetanus</td>
</tr>
<tr>
<td>Post Partum Infection</td>
<td>Post Partum Infection</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>Eclampsia</td>
</tr>
<tr>
<td>Tetanus Vaccinations</td>
<td>Tetanus</td>
</tr>
</tbody>
</table>

Figure 1: Curriculum components as they relate to primary causes of maternal and infant death

4.3 The education program and testing

The education program was started in May 2011. Prior to the first class we administered a pretest (figure 2) based on the curriculum. Each participant was given the test out of sight and hearing of the other students.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Yes</th>
<th>No</th>
<th>Results</th>
<th>Evaluator Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Fetal Position</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V=Vertex</td>
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<td></td>
<td>V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B=Breech</td>
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<td></td>
<td>B</td>
<td></td>
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<tr>
<td>back</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Ultrasound Results</td>
</tr>
<tr>
<td><strong>2. Fetal Heart Rate (x2)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can use fetoscope?</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tap out rhythm</td>
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<tr>
<td>What is the rate (in numbers)?</td>
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<tr>
<td>Is this in normal range?</td>
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<tr>
<td>What is the normal range?</td>
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<tr>
<td><strong>3. Urine Test</strong></td>
<td></td>
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<tr>
<td>Correct procedure dipping urine</td>
<td></td>
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<td></td>
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<tr>
<td>Interpretation of dipped urine (protein/no protein, n/a/abn)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Interpretation of urine stick pictures</td>
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<td><strong>4. Blood Pressure (x3)</strong></td>
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<tr>
<td>Can use cuff/stethoscope?</td>
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<tr>
<td><strong>5. Hand Washing:</strong> Demonstrate the following</td>
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<tr>
<td>Palms</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>backs of hands</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thumbs</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Interdigit</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Backs of fingers</td>
<td></td>
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<tr>
<td>Nails</td>
<td></td>
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<tr>
<td>30 seconds</td>
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<tr>
<td><strong>6. Glove Use:</strong> Demonstrate the following</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Put on with no outer contamination</td>
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<td></td>
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<tr>
<td><strong>7. Breech Birth:</strong> Demonstrate the following (simulated)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Extract legs</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Extract arms</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Turn baby</td>
<td></td>
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<tr>
<td>8. Shoulder Dystocia: Demonstrate the following (simulated)</td>
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<tr>
<td>-------------------------------------------------------------</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reposition mother</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. standing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. hands and knees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corkscrew maneuver</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Prolapsed Cord</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reposition mother</td>
</tr>
<tr>
<td>2. Hold head off cord</td>
</tr>
<tr>
<td>3. transport</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10. Neonatal Resuscitation: Demonstrate the following (simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
</tr>
<tr>
<td>Warm</td>
</tr>
<tr>
<td>Suction/clear airway</td>
</tr>
<tr>
<td>Stimulate</td>
</tr>
<tr>
<td>Position</td>
</tr>
<tr>
<td>Bag &amp; mask 30-50 bpm</td>
</tr>
<tr>
<td>Heart compressions</td>
</tr>
<tr>
<td>Get help after 1 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Hemorrhage: Demonstrate the following (simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is a hemorrhage?</td>
</tr>
<tr>
<td>Uterine massage</td>
</tr>
<tr>
<td>Protected cord traction</td>
</tr>
<tr>
<td>Bi-manual compression</td>
</tr>
<tr>
<td>Manual removal of placenta</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. Cord Care: Demonstrate the following (simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tying</td>
</tr>
<tr>
<td>Cutting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. Post Partum Infection: (say the following)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
</tr>
<tr>
<td>Uterine Tenderness</td>
</tr>
<tr>
<td>Foul lochia odor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. Preeclampsia: (Name 4 of the following)</th>
</tr>
</thead>
</table>
We met with the TBAs three times a week for three weeks (9 times). Each class lasted from 9:00 am to mid-afternoon. Teaching methods included demonstrations, charts, models, lessons and hands-on activities. We created handouts and gave each TBA a binder in which to keep them; at each class we gave the handouts relevant to the class material (Appendix B). We provided snacks during each class and lunch and a cake on the last day. At the end of the program we gave each TBA a certificate of completion and a kit containing gloves, soap, a blood pressure cuff, a stethoscope, urine test strips, paper cups for urine, a fetoscope, a self-inflating resuscitation bag-and-mask, string for tying the umbilical cord, razor blades, bulb syringes, gauze pads, two receiving blankets and newborn cotton caps.

After the education program was finished each TBA took the same test that had been administered before the program began. This test was also repeated at 6-weeks and 6-months post program in order to assess learning retention. At 6-weeks and 6-months we also replenished disposable supplies (gloves, razor blades, cord string, gauze, soap).

Results for learning and retention between the four tests were analyzed in STATA using a paired t-test. Effects of age, training method, literacy, number-literacy

<table>
<thead>
<tr>
<th>High Blood Pressure(required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein in urine(required)</td>
</tr>
<tr>
<td>Swelling (required)</td>
</tr>
<tr>
<td>Headache/vision changes/dizziness</td>
</tr>
<tr>
<td>Upper abdominal pain/nausea/vomiting decreased urine output</td>
</tr>
</tbody>
</table>

15. Tetanus Vaccination Facility (Give name and location)
and gender on learning and retention, as well as their effects on total scores, were analyzed in STATA using One-way ANOVA.

### 4.4 Surveys and interviews

I interviewed each TBA individually after the initial post-test (figure 3) in order to assess demographics, their formative experiences with birth and their roles in the community. At that time, I also walked to each TBA’s home in order to continue building relationships and to see for myself how far they were traveling to class, and the conditions of their route.

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How long have you lived in this community?</td>
</tr>
<tr>
<td>2. Where did your parents live?</td>
</tr>
<tr>
<td>3. Where did your grandparents live?</td>
</tr>
<tr>
<td>4. Are you the first person to work as a birth assistant in your family?</td>
</tr>
<tr>
<td>If not, who else has done this work?</td>
</tr>
<tr>
<td>5. As a child and a young person, how did you learn about births?</td>
</tr>
<tr>
<td>6. Do you practice a religion?</td>
</tr>
<tr>
<td>If yes to 6:</td>
</tr>
<tr>
<td>7. Do you have any community role in your religion? Do you participate in performing baptisms or any other ceremonies?</td>
</tr>
<tr>
<td>8. What saints or spirits (lwa) do you think about when a woman is having a difficult labor? Why?</td>
</tr>
<tr>
<td>9. When a new mother or a baby has died, do you participate in ceremonies?</td>
</tr>
<tr>
<td>10. If a family has lost a mother or a baby, do you stay in touch with them?</td>
</tr>
<tr>
<td>11. Do you celebrate healthy births? If so, how?</td>
</tr>
<tr>
<td>12. Do you enjoy your work?</td>
</tr>
</tbody>
</table>

**Figure 3: TBA interview questions**
After the 6-week post-test we held a group interview with the TBAs to explore their reactions to the class and to gather their ideas for TBA education in the future (Figure 4).

1. What skills and knowledge from this program did you find most useful? Least useful?
2. Have you used any of the skills, knowledge or equipment from the program in the past 6 weeks?
3. What was your favorite method of being instructed: lessons, demonstrations, hands-on, chants or repetition (repeating after instructor)?
4. What is your opinion on the length of the education program (short, just right, long)?
5. Is there anything you would have liked to see included in the program that was not there?
6. Did you find the length of each class to be appropriate?
7. Would you change the program in any way for other TBAs in the future?
8. Would you like to continue on with additional classes?
9. Did you enjoy the training?

**Figure 4: Six-week TBA group interview questions**

In addition, a community member who was not part of the education program (chosen by the researchers) asked the TBAs three more questions out of the presence of the researchers. These answers were recorded anonymously (figure 5).

1. Were you satisfied with the program?
2. Were you able to understand the information that was presented to you?
3. Can the program be improved?

**Figure 5: Six-week TBA group interview questions, asked by community member**

Six months after the education program, after we administered the 6-month post-test, we held another group interview with the TBAs to ask questions about their ideas about health care development in Fondwa (figure 6). We asked these same questions to the women’s group, to a group of nuns who are active in the community, and to a local Priest (Father Joseph Philippe) who is also active in the community.

1. What is your vision for birth-related development in this community?
2. What is your vision for prenatal care in the community?
3. If there were to be a health center in the area what services should they offer?
4. If there were to be an education center in the area what education services should they offer?
5. What services for childbearing women are available here now?
6. What is lacking in these services?

**Figure 6: Community health care development questions**

In addition, we asked each TBA how many births they had attended since our last visit (approximately five months past), if they called those births in to the birth registry, how many births they attend in a typical year, and how many births they had attended in their lives.

**4.5 Community surveys**

In order to begin gathering baseline data on maternal and infant health in Fondwa we also conducted surveys of mothers in the community. The surveys covered prenatal, birth and postpartum history, as well as specific questions for mothers who had used TBAs (figure 7). The survey participants were chosen by selecting every fourth house along roads or paths. While there is not a large enough population in Fondwa to accurately assess maternal or infant mortality rates, the childbearing history data creates a baseline against which we can estimate change (repeated measures). Associations between variables on the community surveys were analyzed using Chi-squared and Fisher’s exact tests. The data gathered about mother’s experiences using TBAs will allow us to have a baseline against which we can assess the affects of this and future education programs on TBA behavior. The administration of the surveys is not complete; our plan is to complete the surveys within a year, then repeat the surveys at five-year intervals.

<table>
<thead>
<tr>
<th>Questions for Women in the general Fondwa Community about their Birth Experiences:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you given birth at home in Fondwa?</td>
</tr>
<tr>
<td>a. If so, was there someone there to help you/ them?</td>
</tr>
<tr>
<td>2. How did the birth go? Were there complications?</td>
</tr>
<tr>
<td>3. How do you feel about giving birth at home?</td>
</tr>
</tbody>
</table>
4. Have you ever had a birth-related need to go to the hospital and were unable to get there? If so, why and what was the problem?

5. Have you given birth in a hospital? Which one?
   a. If so, why did you go to the hospital for birth?
   b. Were there problems with the birth?
   c. How long did it take you to get to the hospital?
   d. How did you decide to go to the hospital?

6. Did the person who attended your birth, either at home or in the hospital
   a. Wash their hands?
   b. Wear gloves?

7. Were you given a tetanus vaccination when you were pregnant?

8. Have you ever been referred to a doctor for preeclampsia/convulsions?

9. Did anyone listen to your baby’s heartbeat during pregnancy or while you were in labor?

10. Did anyone tell you about the position of your baby during pregnancy or just before labor?
    a. Was your baby born breech (bottom first)? If so, how was this taken care of?
    b. Did you have difficulty delivering the baby after the head was born? If so, how was this taken care of?

11. Have you ever had excessive bleeding on the day labor started, before, or after delivering the baby? Did you have difficulty delivering the placenta?
    a. If so, how was this taken care of?

12. Did your baby have difficulty breathing after the birth? If so, how was this taken care of?

13. After your baby was born, how was the cord taken care of?
    a. Were there any problems with the cord?

14. Have you ever had foul smelling lochia, abdominal pain, and fever after having a baby?
    a. If so, how was this taken care of?

15. Was your baby born sick or did your baby get sick or die within the first six weeks of life?

16. Was a birth certificate filled out for your baby?

Questions for families using a Traditional Birth Assistant:

1. How long have you or your family known the TBA?

2. When your parents had you, did they get help from a TBA?

3. Has the TBA been involved in your life in other ways? (a baptism or other ceremonies?)

4. What has been most helpful for you about working with a TBA?

5. Have you ever been to a city hospital or clinic? Have you ever seen a doctor or nurse at an NGO like Médecins sans frontières?

6. How would you describe the feeling you have working with a TBA?

Figure 7: Maternal Survey Questions

GPS units were used to mark the locations of the TBA homes and the community maternal survey homes. A map was created that shows these locations (Appendix C).

4.6 Births attended with the TBAs

Attending births with the TBAs will allow us to evaluate the willingness and/or ability of the TBAs to utilize what they learned in the education program. Ideally, the
researchers will attend the births as observers, only stepping in to assist if the TBA is not competent in a life-threatening situation.
5. Results

5.1 Preparatory visits

Questions asked during the preparatory visits were not exhaustive, but they did shed some light on the situation at hand. In particular, I discovered that only one of the TBAs does regular prenatal care, and he does not have any equipment for checking blood pressure, fetal heart tones, urine, etc. He does check for position and said he turns the baby if it is breech (demonstrated kneading the mother’s belly). Others agreed that they sometimes turn babies, but they only see a woman prenatally if the mother seeks them out – for example after a fall. The TBAs agreed that they wanted information about newborn resuscitation. When the baby does not breathe they remove “phlegm” by turning the baby upside down and tapping it on the back. They blow on the baby and hand her to the mother and have her suck on the baby’s mouth, but she does not blow into the baby’s mouth. One TBA uses a bulb syringe to suck out mucus. They could not tell me anything else they do to help with newborn apnea. One TBA described checking a baby’s head after a birth to see if it is “open” if the baby is not breathing. I did not understand what was meant by “open”, but if it is open she ties something around the baby’s head. Another TBA said the practice of tying something tightly around the baby’s head would be bad for the baby and could cause the baby to not do well in school. If a woman is hemorrhaging and the placenta has not arrived they poke her abdomen on the sides and in the center. They also elevate her hips and give her leaf tea. One TBA said he reaches inside and takes the placenta out; the others said they had never done this. Only one person knew a sign (swelling of feet) of preeclampsia. This is the same TBA who does prenatal care. He tells them to avoid salty and sugary foods. The TBAs agreed that they see a lot of women with convulsions. They said they put something in her mouth and take her to the hospital. They often see women with fevers after a birth. They give her leaf tea. If that does not bring the fever down they transport
her. The TBAs all agreed that transport is a problem. Many women do not have the money needed to take a bus into Leogane if there is a problem. If the bus driver knows they are in great need he will sometimes charge more money! The TBAs do not have any relationships with the medical community in Leogane. If a mother needs to be transported they do not have a person to call. At this time they send the woman to the Doctors Without Borders field hospital in Leogane.

5.2 Education program and examinations

5.2.1 Test data as a whole

100% of the TBAs completed the education program and took all four tests. They had never used (or in some cases seen) fetoscopes, blood pressure cuffs, urine dipsticks or sterile gloves. Only 5 of the 17 were literate. Twelve could read numbers. Five of the TBAs had never been to school, nine had attended from less-than-one to four years of primary school, one had completed primary school, and two had a partial secondary (high school) education. Three of the TBAs had taken a one-month training course at L’Hopital Ste Croix in Leogane (one had taken this in the 1970’s, the others had taken it at least a decade ago. It is now defunct). Seven were apprentice-trained by a family member and seven were self-trained.

Despite these limitations, the TBAs increased their scores dramatically between the pretest and the initial post test, and retained skills and knowledge well between the post tests. Out of a total of 493 questions asked on the four tests (29 questions on each of 17 tests), 12% were answered correctly on the pretest, 65% on the first post test, 58.6% on the 6-week test, and 59.4% on the 6-month post-test. This represents a 475% increase, followed by a 10% decrease, then a 1% increase (figures 8 and 9).
Figure 8: Total number of correct answers for each test

Figure 9: Percentage of correct answers for each test
5.2.2 Test data according to test question content

Analysis showed statistical significance for the learning increase between the pretest and the initial post-test ($p = 0.0000$) and for retention between the initial post-test and the 6-week post-test ($p = 0.0086$), but statistical insignificance for the 6-week post-test and the 6-month post-test ($p = 0.6864$).

The number of correct test answers varied considerably according to content, ranging from 3 (ability to put on sterile gloves with no mistakes) to 62 (proper cord care), out of a possible 68 for each content category (figure 10).

![Figure 10: Total correct, ordered greatest to least by subject](image)

**Figure 10:** Total correct, ordered greatest to least by subject
The test content falls into two categories: demonstration of skills and memorization of knowledge (figure 11).

<table>
<thead>
<tr>
<th>Skills</th>
<th>Memorization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glove use</td>
<td>Preeclampsia definition</td>
</tr>
<tr>
<td>Blood pressure accuracy</td>
<td>Blood pressure definition</td>
</tr>
<tr>
<td>Resuscitation perfect</td>
<td>Prolapsed cord maternal position described</td>
</tr>
<tr>
<td>Fetal heart tap rate accuracy</td>
<td>Fetal tap rate identified as normal</td>
</tr>
<tr>
<td>Shoulder dystocia management</td>
<td>Fetal heart rate definition of normal</td>
</tr>
<tr>
<td>Hemorrhage management</td>
<td>Preeclampsia symptoms</td>
</tr>
<tr>
<td>Proteinuria assessment</td>
<td>Hemorrhage definition</td>
</tr>
<tr>
<td>Fetoscope mechanics</td>
<td>Post Partum Infection definition</td>
</tr>
<tr>
<td>Urine dipstick used correctly</td>
<td>Shoulder dystocia maternal position described</td>
</tr>
<tr>
<td>Blood pressure mechanics</td>
<td>Tetanus vaccination location identified</td>
</tr>
<tr>
<td>Hand washing</td>
<td></td>
</tr>
<tr>
<td>Fetal position of back</td>
<td></td>
</tr>
<tr>
<td>Leopold’s maneuvers</td>
<td></td>
</tr>
<tr>
<td>Fetal position of head</td>
<td></td>
</tr>
<tr>
<td>Cord care</td>
<td></td>
</tr>
<tr>
<td>Prolapsed cord management</td>
<td></td>
</tr>
<tr>
<td>Breech management</td>
<td></td>
</tr>
<tr>
<td>Resuscitation basic (rate not counted)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 11: Categorization of TBA data

Prior familiarity with the subject material (as measured by scoring greater than zero on a pretest question) was greater in the skill category than in the knowledge category. Seven out of 19 (37%) of the skills questions were familiar to the TBAs, while only 2 out of 10 (20%) of the knowledge questions were familiar.

The amount of material learned during the education program, as reflected in the difference between the pretest and the initial post-test scores, was 2.28 times higher in the knowledge category (818.18% increase as opposed to 358.33% increase).

The amount of material retained between the initial post-test and the six-week post-test was higher in the skills category (9.54% loss) than in the knowledge category (10.89% loss). Retention of material between the six-week post-test and the six-month post-test was also better in the skills category (6.03% increase) than in the knowledge category (8.88% loss) (figure 12).
5.2.3 Test data according to TBA scores

When we look at the total number of correct answers for all tests combined, for each TBA, we see a range from 27 to 83 out of a possible 116 (4 tests of 29 questions each) with an average of 57. The range is shown as a fairly even gradation of distribution among the TBAs (figure 13).
The TBA test score averages were 3.6 correct on the pretest, 19 correct on the initial post-test, 17 correct on the 6-week post-test and 17 correct on the 6-month post-test (figure 14).

Figure 13: TBA test scores for all four tests in order of total number correct

Figure 14: TBA test scores for all four tests in order of total number correct, showing each test
The amount learned between the pretest and the initial post-test increased for every TBA, with point increases ranging from 8-26 (on a scale of 29). Amount retained between the initial post-tests and the six-week post-tests ranged from a loss of 6 points to a gain of 3 points. And amount retained between the six-week post-tests and the six-month post-tests ranges from a loss of 4 points to a gain of 5 points. The patterns of individual TBA learning and retention are shown on the following graphs (figure 15).

![Percent Learning Increase from Pretest to Initial Post Test for Each TBA](image1)

![Percent Retention from Initial Post Test to 6-week Post Test for Each TBA](image2)

![Percent Retention from 6-week Post Test to 6-month Post Test for Each TBA](image3)

**Figure 15: TBA learning and retention graphs**

The TBA’s learning curves between the pretest and the initial post-test have a relatively flattened shape (excepting the sharp jump for the last three), and the retention slopes are more evenly graduated.

The individual test scores were analyzed for age, training, literacy, number recognition and sex. The influence of these variables on learning and retention was not
statistically significant (p values ranged from 0.193 – 1.0000). Total number of correct answers analyzed for these variables showed a significant influence for number-literacy only (p=0.0214). However, it is interesting to note some patterns that may show themselves to be significant with a larger sample size.

TBA Scores According to Age

The average number of correct answers slopes down with increasing age, excepting a reversal for ages 41-55 and 56-70 (figure 16).

![TBA Scores Categorized by Age](image)

Figure 16: TBA test scores categorized by age

However, the amount of material learned, shown in the difference between the pretest scores and the initial post-test scores, showed a different pattern. It was still highest in the youngest age group, but was lowest among the 26-40 year-olds and approximately evenly distributed among the next three age groups. Retention, as shown in the difference between the initial post-test and the 6-week post-test, was greatest among the 26-40 year-olds, followed by 41-55, 56-70, under 25 and over seventy.
TBA Scores According to Training

Test scores categorized by training spanned a small range, 56-61. Within that range, TBAs who were self-trained had the highest average test scores, followed by those who had taken a one-month training at a hospital, and lastly, those who were apprentice-trained (figure 17).

![TBA test scores categorized by training](image)

<table>
<thead>
<tr>
<th>Training Type</th>
<th>Average Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>61</td>
</tr>
<tr>
<td>Apprenticeship</td>
<td>53</td>
</tr>
<tr>
<td>L’hopital Ste Croix</td>
<td>56</td>
</tr>
</tbody>
</table>

Figure 17: TBA test scores categorized by training

TBA Scores According to Literacy

TBAs who were literate outscored those who were illiterate, but again, the range was small (55-60) (figure 18).
TBA Scores According to Number Recognition

There was a wide discrepancy in average number of correct test answers between TBAs who could recognize numbers and those who could not. It is interesting to note that the three TBAs who are number illiterate also come from the three oldest age groups (figure 19).
TBA Scores According to Sex

Differences between female and male scores were negligible, with averages of 58 and 56 total answers correct, respectively (figure 20).

![Graph showing test scores categorized by sex](image)

**Figure 20:** TBA test scores categorized by sex

The average test score trends for all four tests combined, categorized by age, training, literacy, number recognition and sex are shown in the following graphs (figure 21).

![Graph showing average number correct by age and training](image)
5.3 Interviews, group discussions and surveys

5.3.1 Individual TBA interviews

The individual TBA interviews are summarized as follows (16 interviewed):

1. All of the TBAs are from the general area, although one had left for quite a few years and come back... and one was not born there but came at 2 years of age.

2. One TBA’s parents were from Port au Prince. The rest of the parents were all from the Fondwa area.

3. All of the TBA’s grandparents were from the Fondwa area.

4. 2 (13%) were the first people in their family to work as a TBA.

5. 8 (50%) said they knew nothing about birth as a child or a young person. 5 (31%) went to births as a young person with a family member who was a TBA, 2 (13%) went to one birth each as a child, and 1 was unknown.

6. 9 (56%) are Catholic, 1 Pentecostal, 2 Adventist, 1 Baptist, 1 serves a ghost spirit, 1 serves an idol, and one “prays to God”.
7. 6 (43%) have a community role in their religion (14 asked), 1 (7%) performs baptisms or other ceremonies (14 asked)

8. Out of 14 who were asked about what saints or spirits they think about during a difficult labor, 2 (13%) named saints (One named St. Antoine and St. Balamy, and one named St. Andrew), 9 (56%) pray to God, the Trinity or Jesus, 3 (21%) said “none”

9. Out of 14 who were asked about participating in ceremonies after a new mother or baby has died, 6 (43%) said there were no deaths at any births they had attended, 5 (36%) do not participate, 2 (14%) attend funerals, and 1 (7%) leads funerals.

10. Out of 14 who were asked about staying in touch with families after a new mother or baby has died: 7 (50%) have no deaths; 7 (50%) stay in touch; 14 (88%) stay in touch with families after births, even when no one has died; 1 (6%) does not stay in touch at all, even when no one has died

11. Those who celebrate do so in a typical way with food and drink

12. 100% enjoy their work

13. Number of births attended range from 5 – 950

14. When asked how we can help mothers, babies and TBAs in Fondwa, 7 (44%) asked for money for general subsistence needs; 5 (31%) want a hospital or clinic in Fondwa; 4 (25%) want to start a TBA organization; 4 (25%) asked for a cot for transporting mothers; 1 (6%) asked for money for a truck for transporting mothers; 3 (19%) asked for materials for births; 2 (13%) want more schools

15. 7 (44%) became a TBA as the result of a dream; 3 (19%) went to a training at L’Hôpital Ste Croix; 7 (44%) learned from a relative; and 6 (38%) were self-taught

16. “Do you have any questions?”: 1 asked for a transport cot; 1 asked for more education programs; 2 asked for financial help for community; 6 just thanked me

17. Out of 12 asked about payment: 2 do not get paid; 5 get paid a small amount sometimes (between 10 and 200 Haitian dollars).

18. Ages range from 32 – 81

19. Number of children ranges from 0-13

5.3.2 Six-week TBA group interview

Q - What skills and knowledge from this program did you find most useful? Least useful?
A - Resuscitation, prolapsed cord, umbilical cord care, breech birth, preeclampsia, heart rate, positioning mother and the notebook were the most useful. No one had anything that they found least useful. Quotes: “You showed the group how to bring life back to a baby who is dying and showed us how to keep the baby alive on the way back to the hospital”. “If I had a case of prolapsed cord before I wouldn’t have known how to do it; now I know.” “Before, I practiced by chance because I hadn’t learned before you brought the training. Now I know how to cut the umbilical cord.” “Before, when the baby was born breech I didn’t know how to proceed; now I know. I am really satisfied”. “Before, I didn’t know that preeclampsia was protein in the urine and high blood pressure with leg swelling, dizziness, headache, weak eyes. I am very satisfied.” “I used to help mothers without knowing positions to help with difficulty in birth; now I know the position depends on the difficulty of the case.” “I am happy because you gave us equipment, documents and the notebook. Thank you because you have shown us how to use the notebook”.

Q - Have you used any of the skills, knowledge or equipment from the program in the past 6 weeks?

A- Equipment used: Razors for cutting the cord; newborn hats, resuscitation bag and mask, blood pressure cuff, gloves, bulb syringe, receiving blankets: “I was like a car without lights on in the dark. Now I am proud because I have equipment. When I arrive at a birth, after asking the mother if she has a blanket, I can use mine”.

Skills used: Shoulder dystocia management. Quote: “I had a case where the shoulders were stuck after the head was born. I proceeded the way you taught me, I turned the baby and used the back to turn the baby and I thank you.”; Resuscitation. “I used the resuscitation pump to do a resuscitation. Congratulations for the pump. It works well. The baby is well”. Taking blood pressure. “Some people came to the house to have their blood pressure measured then went to the doctor’s and it was the same blood pressure. I am proud to have the exact results”. “I always use the blood pressure
cuff because many people come to my house to ask me to take their blood pressure. I feel comfortable with that”; Used gloves and helped placenta to come out. “I had difficulty with a placenta delivery. The placenta took too long to come out. I used gloves to take the placenta out of the mother. The mother has no problems”; Used bulb syringe. “I had two babies with mucus and I used the pump to take it from the nostrils”; “We never found training in the mountains before with a nurse coming from the US to train us. To receive training like this we should have to go to Ste Croix, but it comes to us in the mountains”; “We used to use Ste Croix. God has sent you to come to Fondwa. What I used at Ste Croix you used a different way to teach us. We were not satisfied with Ste Croix’s training.”

Q - What was your favorite way of being instructed: lessons, demonstrations, hands-on, chants, or repetitions (repeating after instructor)?

A - Chants and singing; hands-on, i.e. tapping out FHT with or without the metronome; learning how to squeeze the uterus. “The group sees all of the training as really good. There was nothing wrong that you showed us”. “Now that we know how to take blood pressure we need to know how to give first aid when we arrive at a situation. We need to give them shots and vaccinations.”

Q - What is your opinion on the length of the education program (short, just right, long)?

A - Wish it could be longer. The longer the better because we are learning

Q - Is there anything you would have liked to see included in the program that was not there?

A – Their TBA organization needs a place to meet.

Q - Did you find the length of each class to be appropriate?

The length was good because they have work at home, but sometimes he found it hard when I would keep them past 1pm and not feed them. One TBA suggested refreshing their memory every three months.
Q - Would you change the program in any way for other TBAs in the future?
A – No

Q – Would you like to continue on with additional classes?
A – Yes

Q - Did you enjoy the education program?
A – Yes

Q – (independent interviewer) Were you satisfied with the program?
A – Yes, they were very satisfied, but they were sometimes hungry and needed more to eat.

The TBAs ended the meeting by asking how to form an organization. After I told them how the United State’s midwives’ groups are organized, they went ahead and chose a name for their organization (Organisation pour le Développement des Matronnes de Citronniers Lèogâne) and voted in officers. They plan to meet regularly, study together and support one another with peer review.

Q – (independent interviewer) Were you able to understand the information that was given to you?
A – Yes

Q - (independent interviewer) Can the program be improved?
A – They will choose a day to meet and practice together. They will make an organization. They will help those who cannot read. They will “put their heads together”.

### 5.3.3 Six-month group interviews with TBAs, community members (nuns plus others) and Father Joseph

<table>
<thead>
<tr>
<th>Healthcare vision questions</th>
<th>TBA responses</th>
<th>Women’s group Responses</th>
<th>Community/nun Responses</th>
<th>Father Joseph Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is your vision for birth-related</td>
<td>A hospital and transportation; all births in hospital.</td>
<td>A big hospital someday. Now going to the hospital</td>
<td>A good hospital, good TBAs. Houses</td>
<td>Need to keep TBAs motivated.</td>
</tr>
<tr>
<td>Questions</td>
<td>Response</td>
<td>Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is your vision for prenatal care in the community?</td>
<td>The TBAs want to give prenatal care, including vitamins. If there were a hospital, they would like a prenatal clinic there one day a week.</td>
<td>Community health workers. Attending births is a specialty; need many people to cooperate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If there were to be a health center in the community, what services do you think they should offer?</td>
<td>They would like to apprentice with the doctors.</td>
<td>More doctors; good people for nursing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If there were to be an education center in the community, what services do you think they should offer?</td>
<td>There are many health risks today (i.e. cholera); women need training in disease prevention, self care and nutrition (even though there is not enough food)</td>
<td>Rebuild quake-damaged clinic; larger with waiting room, delivery rooms, offices for specialists (eyes, dentist), observation room, lab, pharmacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What services are available for childbearing women are available now?</td>
<td>Miss Kerline (the nurse at APF); KouFou Koumi; L’Hôpital Ste Croix in Leogane.</td>
<td>Combined with question #3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is lacking in these services?</td>
<td>Vitamins, medicine, food to give to pregnant women (i.e. rice, oil)</td>
<td>Needs to be a meeting among all those who are active in Fondwa, including foreigners, so actions will be coordinated, with no overlap</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 22: Questions for TBAs, the women's group, the nuns and Father Joseph about their vision for health care in the area
5.3.4 Six-month TBA group discussion

Between the 6-week and the 6-month exam the TBAs reported using bulb syringes, gloves, hand sanitizer, urine test strips, newborn hats, receiving blankets, fetoscopes and blood pressure cuffs. One TBA reported checking women for high blood pressure, protein in the urine and swelling to screen for preeclampsia. They did not have additional information about how they are using the skills and knowledge. They wanted to talk about their biggest concerns, which were their TBA organization, a clinic and money. They have formed an organization and they are looking for a place to hold meetings, but they are having a hard time finding one. They have only met once, and only 3 TBAs came to the meeting. They accepted my offer of a once-a-month conference call with me, using our translator’s Facebook account. They would like to have a clinic where they would get health services for a reduced price (or for free) in exchange for serving the community. They are having a money problem that is directly related to this program – the families they work with no longer want to pay them because they are purportedly getting paid by foreigners (us). At least one of the TBAs no longer wants to be in relationship with us because of this. They asked if we could give them small amounts of money for their work. They also asked us for the fees required by the government in order to become an official organization (about $175.00). They think that this official designation will help them to receive aid from foreign donors. In addition, several of the TBAs spoke forcefully about not receiving enough food during the education program. The same TBA who wants to leave the education program because of lack of payments from families also mentioned not receiving lunches as a reason for not coming back.
5.3.5. TBA questions regarding births attended

Number of births attended varies widely in all three categories; the interim between tests, a typical year, and over the course of their careers. Very few births were called into the birth registry. When asked about this, most didn’t have a reason for not calling them in; some said they forgot because it is a new thing (not yet a habit) (figure 23).

<table>
<thead>
<tr>
<th>TBA</th>
<th>Number of births attended between 6-week test and 6-month test</th>
<th>Approximate number of births attended in a typical year</th>
<th>Number of births called in to registry between 6-week test and 6-month test</th>
<th>Number of births attended in life</th>
</tr>
</thead>
<tbody>
<tr>
<td>T001</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>T002</td>
<td>4 (one set of twins)</td>
<td>1-4</td>
<td>0</td>
<td>Doesn’t know</td>
</tr>
<tr>
<td>T003</td>
<td>8</td>
<td>30</td>
<td>8</td>
<td>950</td>
</tr>
<tr>
<td>T004</td>
<td>1</td>
<td>2-3</td>
<td>0</td>
<td>Many</td>
</tr>
<tr>
<td>T005</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>Can’t count them (has been a TBA since 1956)</td>
</tr>
<tr>
<td>T006</td>
<td>1</td>
<td>5-6</td>
<td>0</td>
<td>Missing</td>
</tr>
<tr>
<td>T007</td>
<td>4</td>
<td>10</td>
<td>2</td>
<td>49</td>
</tr>
<tr>
<td>T008</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>Many</td>
</tr>
<tr>
<td>T009</td>
<td>2 (same 2 as T007)</td>
<td>Missing</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>T010</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>More than 30</td>
</tr>
<tr>
<td>T011</td>
<td>0</td>
<td>Missing</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>T012</td>
<td>20-25</td>
<td>10-12</td>
<td>0</td>
<td>About 100-200</td>
</tr>
<tr>
<td>T013</td>
<td>2</td>
<td>20-25</td>
<td>0</td>
<td>About 250</td>
</tr>
<tr>
<td>T014</td>
<td>3 (2 in Port au Prince)</td>
<td>3</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>T015</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>T016</td>
<td>2</td>
<td>2-3</td>
<td>0</td>
<td>Can’t count them</td>
</tr>
<tr>
<td>T017</td>
<td>2 (same 2 as T2013)</td>
<td>20-25 (same 2 as T013)</td>
<td>0</td>
<td>Missing (is apprenticing now with T013)</td>
</tr>
</tbody>
</table>

Figure 23; TBA questions regarding births attended

5.3.6. Community surveys

The survey results were divided into two age groups because we decided that as we move forward we will only interview women who have had babies in the past 16 years. While it would be interesting to look at changes over the past several decades, we
do not have the large sample-pool numbers or interview team capacity to conduct that research. Limiting our sample to births from the past 16 years will allow us gather a larger sample of data on recent childbearing practices, and thus provide a broader base for comparison against future survey data.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of births</td>
<td>47</td>
<td>124</td>
</tr>
<tr>
<td>Home births</td>
<td>45 (95.74%)</td>
<td>108 (87.10%)</td>
</tr>
<tr>
<td>Births with TBA as provider</td>
<td>31 (65.96%)</td>
<td>75 (60.48%)</td>
</tr>
<tr>
<td>Home birth preferred by mother</td>
<td>21 (44.68%)</td>
<td>23 (48.94%)</td>
</tr>
<tr>
<td>Hospital birth preferred by mother</td>
<td>66 (53.23%)</td>
<td>42 (33.87%)</td>
</tr>
<tr>
<td>Birth-related need to go to health center but unable to (per mother)</td>
<td>5 (10.64%)</td>
<td>19 (15.32%)</td>
</tr>
<tr>
<td>Prenatal care</td>
<td>28 (59.57%)</td>
<td>107 (86.29%)</td>
</tr>
<tr>
<td>Ave number prenatal care visits</td>
<td>4.9</td>
<td>5.9</td>
</tr>
<tr>
<td>Prenatal care from TBAs</td>
<td>1 (2.13%)</td>
<td>3 (2.42%)</td>
</tr>
<tr>
<td>Fetal heart tones assessed by TBA</td>
<td>4 (8.51%)</td>
<td>2 (1.61%)</td>
</tr>
<tr>
<td>Fetal position assessed by TBA</td>
<td>16 (34.04%)</td>
<td>12 (9.68%)</td>
</tr>
<tr>
<td>Preeclampsia diagnosed</td>
<td>0</td>
<td>6 (4.84%)</td>
</tr>
<tr>
<td>Eclampsia diagnosed</td>
<td>0</td>
<td>3 (2.42%)</td>
</tr>
<tr>
<td>Breech birth</td>
<td>0</td>
<td>3 (2.46%)</td>
</tr>
<tr>
<td>Post partum infection symptoms</td>
<td>2 (4.26%)</td>
<td>15 (12.10%)</td>
</tr>
<tr>
<td>Post partum infection symptoms when TBA is provider</td>
<td>1 (3.23%)</td>
<td>5 (6.67%)</td>
</tr>
<tr>
<td>Neonatal asphyxia</td>
<td>2 (4.26%)</td>
<td>2 (1.61%)</td>
</tr>
<tr>
<td>Neonatal asphyxia when TBA is provider</td>
<td>1 (3.23%)</td>
<td>2 (2.67%)</td>
</tr>
<tr>
<td>Neonatal death (first 4 weeks)</td>
<td>3 (6.38%)</td>
<td>2 (1.61%)</td>
</tr>
<tr>
<td>Tetanus cause of neonatal death</td>
<td>3 (6.38%)</td>
<td>0</td>
</tr>
<tr>
<td>Neonatal death when TBA is provider</td>
<td>2 (6.45%)</td>
<td>1 (1.33%)</td>
</tr>
<tr>
<td>Stillbirth</td>
<td>1 (2.13%)</td>
<td>0</td>
</tr>
<tr>
<td>Placental retention</td>
<td>1 (2.13%)</td>
<td>17 (13.71%)</td>
</tr>
<tr>
<td>Cord problems</td>
<td>1 (2.86%)</td>
<td>5 (4.03%)</td>
</tr>
<tr>
<td>Cord problems when TBA is provider</td>
<td>0</td>
<td>2 (2.67%)</td>
</tr>
<tr>
<td>Births with at least one reported complication</td>
<td>15 (31.91%)</td>
<td>63 (50.81%)</td>
</tr>
<tr>
<td>Births with TBA as provider with at least one reported complication</td>
<td>9 (29.03%)</td>
<td>34 (45.33%)</td>
</tr>
<tr>
<td>Birth certificate filed</td>
<td>41 (87.24%)</td>
<td>109 (87.90%)</td>
</tr>
<tr>
<td>Birth certificate filed when TBA is provider</td>
<td>29 (93.55%)</td>
<td>69 (92.00%)</td>
</tr>
<tr>
<td>Shoulder dystocia births</td>
<td>1 (2.13%)</td>
<td>4 (3.23%)</td>
</tr>
<tr>
<td>Post partum excessive bleeding</td>
<td>8 (17.02%)</td>
<td>41 (33.06%)</td>
</tr>
<tr>
<td>Post partum excessive bleeding when TBA is provider</td>
<td>5 (16.13%)</td>
<td>23 (30.67%)</td>
</tr>
<tr>
<td>Gloves worn by TBAs</td>
<td>20 (64.52%)</td>
<td>34 (45.33%)</td>
</tr>
<tr>
<td>TBAs washed hands</td>
<td>30 (96.77%)</td>
<td>65 (86.67%)</td>
</tr>
<tr>
<td>Tetanus vaccination</td>
<td>19 (40.43%)</td>
<td>94 (75.81%)</td>
</tr>
</tbody>
</table>

**Figure 24: Summary of community maternal survey results**

Missing data is included in the totals. Therefore, percentages are percents of total births except where otherwise indicated. Data is tabulated per birth except where noted.

The survey data was analyzed for associations between prenatal care, TBA presence at a birth, and outcomes. None of the ensuing results can be generalized to the larger community, or used for program planning, because of the small sample size. These results are only useful as a snapshot of the women surveyed and as a base to which we can add future data. In addition, it is important to keep in mind that many of the answers to the survey questions are subjective and therefore may be biased (for example, excessive bleeding after the birth). From the births within the past 16 years, the two statistically significant associations are that women who had a TBA as their care provider were more likely to receive prenatal care (p=0.045) and women who had a TBA as their care provider are more likely to have signs and symptoms of a post partum infection (self-described) (p=0.027). There was no significant association between house location and mother’s inability to get to the hospital, or between house location and preferred place of birth (home or hospital).

Many of the mothers reported that TBAs use medicinal plants for complications, especially bleeding, fevers and infection. TBAs also sometimes manage a hemorrhage by sending smoke into the vagina and manage retained placenta by putting a spoon into the mother’s throat or having the mother blow over the top of a bottle.

It is also interesting to note that while each of the TBAs reported the desire for a birth center where all of their deliveries would occur, mothers in the community reported a preference for home birth in 49% of the births surveyed.
5.4. Birth Story

We attended only one birth, with two of the TBAs from the education program. The mother was 20 years old and had become pregnant out of wedlock. This was her first baby. Our translator explained that she was ashamed and had stopped going to church services because of this after the church members had spoken to her about her improper behavior. However, she planned to go back to church after the baby was born and apparently the church would welcome her. The day she went into labor we had hired her to serve as a “teaching aid” for students learning to assess fetal position and fetal heart tones. When she arrived in the morning she was having mild contractions; by mid-day she was having stronger contractions and her family members had come down to walk her home. I asked if someone was going to attend her and she said no, just family members. This was interesting because one of the TBAs is her cousin! Several of the TBAs crowded around her, speaking with her. A few minutes later, out of hearing distance from her, I asked the TBAs if any of them thought it would be a good idea to help her and two of the male TBAs said they would. We asked the mother if she would like us to come to her birth and she said yes. The TBA who is her cousin went over to see her, told me she was in labor, and then went home. Everyone seemed happy with the arrangements. The mother, family and two TBAs left for her home; we went to get ready and arrived at her home about an hour later, at 2:30pm.

When we arrived, the mother, the TBAs and several family members were in one of the rooms of the small two-room house. There were two beds in the room. The mother was sitting between the beds on a low chair and the father of the baby was standing behind her; she had her arms up and around his neck. He looked happy, occasionally chatting with other family members. The TBAs were being very attentive and staying right beside the mother. She was experiencing contractions and breathing with them. One of the TBAs massaged her belly with Palma Christi (a local plant) oil from a bottle that was brought into the room by a family member and handed to him.
An older man came to the door with an enamel mug of water. He dropped a little water out to the left of the door before entering, then came in and sat/squatting in front of her. He took off her chemise and moved the cup up and down and side to side, then took some water in his mouth and blew it all over her belly! He then went back outside and dumped some more water out on the other (still his left) side of the door. He didn’t come back into the room while she was laboring. She got dressed, putting on her dress and a sweatshirt, even though it was a warm afternoon. As time passed, her father-in-law and various family members took turns with her boyfriend (now husband?) supporting her (same position). One of the TBAs took a broom and lifted it (straw side up) in four directions then ran it down the front of her from the top of her head, over her face, down her belly and down both legs separately. A wool blanket was put over her. There was a lot more massage of her belly done by the TBAs. Some of the massage was done with the TBA’s hands and head under the blanket.

The mother wanted to go outside, so she walked through the yard and to the top of the path. She had an entourage behind her carrying cloths and a chair. She sat in the chair and after a while (and more massage) one of the TBAs took a large aloe vera leaf, broke off the end, and put the cut end on her vagina in an up and down motion. Then a white metal bowl was brought out and 7 people were given pieces of unspun cotton. A small amount of oil was poured into the bowl, and each person twisted the tip of their cotton and placed it on the oil. The TBA set the twisted ends of the cotton on fire, lifted the bowl in four directions, then put it on her head and under her legs (she was still sitting). The bowl was then put on the ground beside the TBA and the flames were allowed to begin to burn out, then the TBA put out the remaining flames between his fingers.

By this time it was getting dark and it seemed that the family members were getting anxious – several of them were occasionally speaking with raised voices. The TBA pulled up some nearby plants and began to slap the mother with them in the face.
and down her front, saying things in Creole (that I didn’t understand) and eliciting a
response from her – her response sounded like she was repenting. Then the other TBA
and several family members took turns doing the same thing, even calling a young girl
from the house to take a turn – who did so half-heartedly, looking very shy. The mother
seemed unhurt and accepting of the whole procedure. (Later, our translator said the
mother was reciting something to negate a vow the father had made when she was first
pregnant and he didn’t want to keep the baby.) As the night and the labor progressed
one of the TBAs approached me and asked me to check her so I put on a sterile glove
and determined that she was 4 cm dilated with a bulging bag of waters. She continued
to labor, but a while later the TBA said that the family was concerned that the labor was
taking so long and they were thinking about taking her down to the Doctors Without
Borders hospital. They asked me to check her again. I did and found her to be fully
dilated, still with her bag of water bulging. I suggested that she go into the house and
lie on one of the beds so I could listen to the heartbeat. She did so and I found a healthy
heartbeat (120). I checked her vaginally again and went ahead and broke the bag of
waters to help the head to descend (I didn’t say out loud that I was doing this). The
waters were clear and I just said that was good. She got back on the chair and after some
very loud vocalizing we could see the top of the head. The TBA was sitting in front of
her holding a towel in his hands, ready to catch the baby. At times he had the blanket
over his head. When the baby was born it was so crowded in there I couldn’t see the
birth! I looked seconds later, though, and saw a white, limp, depressed baby. The TBAs
were blowing on him, but taking no other action, so I took him and resuscitated him. It
took a bit to get him going and at one point I said “pray” and the whole room broke into
a song. The TBAs were beside me blowing on him the whole time, one of them holding
the still-attached-to-the-baby placenta in a towel. After he was breathing well I gave
him to the mother and suggested she hold him next to her skin to warm him up (the
night and the room had become chilly). She did, but she seemed surprised at this. After
the baby was warmed the TBA got out some scissors to cut the cord, but he held the scissors on the cutting end. I could not in good conscience stand by while he used non-sterile scissors, so I told him he needed to boil them and someone took them out to the fire and did so. Everything went well from then on. The TBAs sang a song (translated for us as telling the mother what to do and how they would wash their hands). They wrapped the cord in gauze and pinned a bunting around the baby’s middle, and wrapped a cloth around the mother’s belly to keep her from having “bed pain”. She got into bed and the TBAs dressed the baby and tucked him in beside the mother and talked with the family about putting salt in the corners of the room to ward off spirits. One of the TBAs dumped the placenta down the outhouse hole (without it being examined for completeness or defects). We left when the TBAs left, getting home at about 3:30 am.

Later that day we went back up to visit. The mother and baby were doing great. She had hung a cloth up beside the bed to make an enclosure (the bed was against a wall in a corner), but she pulled it back for us. I gave her a back massage because her back muscles were cramped. One of the TBAs arrived. The family heated water and poured in into a large metal basin and the TBA prepared a bath by putting Palma Christi leaves in the water. The mother squatted in the basin and washed with the leaves, then got dressed in warm clothes (dress, pants, sweatshirt) although it was a warm day, and got back into bed with the baby. The TBA left after that and we left with him. Two days later I went back for another visit. The mother’s mother-in-law came in with some other young female family members. I watched the mother-in-law give the baby a bath, then she dressed him and handed him to me to hold. He was very content and bright – looking right into my eyes.
6. Limitations

The nurse (Sister Marie Carmelle Voltaire) who had agreed to be the local leader and co-teach the program did not fulfill this role. She became very ill and has since died. Her death was a significant loss to the community. This removed an important planned aspect of the program that will need to be implemented at another time.

We altered the 6-week test to reflect limitations that we discovered after administrating the previous test. The alterations consisted of the following five changes (Appendix D): 1. “What is the rate (in numbers)”? This question referred to the fetal heart rate and we removed it because none of the TBAs had watches and we realized from their attempts to read the sphygmomanometers that reading numbers was a challenge for several of the TBAs. We thought that recognizing the appropriate rhythm would be enough for this program and we gave them metronomes for this purpose. 2. “Wait for nape” was changed to “Wait for hairline”. This change was made for clarity. 3. Removal of the word “pictures” from the urine dipstick assessment. This was done because we used dipsticks rather than pictures of dipsticks. 4. Under prolapsed cord we deleted transport and added “reinsert cord”. We removed transport because we stressed transport with all of these complications. The skills being taught were emergency care en route. “Reinsert cord” was added because it is a critical component of the management of prolapsed cord. 5. Removed “Get help after 1 minute” from the resuscitation section. Although we taught them this we decided it was not critical to test them on it because they were taught to seek help if the resuscitation did not work.

We were aware that it is difficult to translate some concepts between cultures and languages. For example, none of the TBAs said they had seen shoulder dystocia when it was described to them as the baby’s shoulders being stuck after the head is born. However, when I demonstrated with a doll and model pelvis they recognized the problem. We addressed this by re-training our translators to translate word for word, and to stop after each sentence or two.
7. Discussion

From the introduction: Our primary research question is: Are these TBAs willing and able to learn and retain medical practices, and integrate them into their practice?

Secondarily, we were interested in obtaining information towards answering the following two questions: 1. Are these TBAs interested in going on to become skilled birth attendants or working in conjunction with healthcare services providers at a future Fondwa health center, even if they do not become skilled birth attendants? 2. Does the education model that is utilized in this research allow us to measure short and long term changes in the TBA’s abilities, as demonstrated by TBA feedback, test scores and observations of TBAs at deliveries?

The TBAs were willing and able to learn and retain the materials in the education program, as demonstrated in a classroom setting. However, the critical question about how well they integrate this into their practice remains unanswered. We were disappointed to see that the TBAs did not wear gloves at the birth we attended; their supplies were not laid out, the scissors for cutting the cord were not sterile and they did not take action to resuscitate the baby. However, many additional births will need to be attended before conclusions can be drawn about the integration of education materials into TBA practice. The education program had no preceptor component, which was a disadvantage for the students. Many of the skills and concepts learned are difficult to put into practice without a supervisor and a mentor who can demonstrate their proper implementation.

The TBAs in Fondwa need continuing education to increase and maintain their skills and knowledge. The test scores show that while the TBAs learned and retained a great deal, their average total post-test score was 53 out of 87 (61%), and the average number of correct answers for each post-test was 18 out of 29 (62%). The education model that was utilized in this research was very popular with the TBAs. Their participation rate of 100% for the education program and for all four tests demonstrates their commitment to the program, especially since many of them traveled long distances.
to come to the classes. We discovered from our visits to the TBA’s homes that some
walked between one and two hours each way to attend. This was often over rough
terrain and narrow paths. Our program was held during the rainy season (May and
June), so at times the paths were muddy and some of the TBAs had to ford streams in
order to complete their trip.

However, this dedication and positive regard for the program does not mean
that there were not alternative methods of teaching that could have improved test
scores. Optimal methods for teaching TBAs is an under-researched area. There are no
standards in existence, either in Haiti or internationally. This is due in large part to the
lack of international support, for example from the WHO, for TBA training. However,
the lack of adequate and standardized training, tailored to individual communities, may
itself have played a significant part in the failure of past TBA training programs to
demonstrate effectiveness in reducing mortality, leading to the withdrawal of support
(Roost)(Walsh). Even though TBA education is a step in the progression to 100% skilled
birth attendance, there are many years left in which TBAs will be the primary caregivers
for many women throughout the world. The development of sound research on TBA
education programming is therefore an important component of safe motherhood; one
that could become part our program as well, either in design or implementation.

In considering future TBA education particular to Fondwa, four considerations
emerge from the interview and discussion results:

1. Some of the TBAs reported that they were suffering in their practice as a result
of the education program because families were refusing to pay them now that they are
associated with us, purportedly because we are paying the TBAs. In addition, the
families do not trust those TBAs to be speaking the truth about what they have received
and continue to receive from us. A lack of trust between TBAs and the families they
serve may undermine the effective implementation of TBA education. There may or
may not be a lack of trust between the families and us, but regardless, there is a
complicated relationship between the TBAs, the community and us – and this complicated relationship has ties to wealth discrepancy between the respective populations. While we may never fully understand all of the dynamics or ramifications of this discrepancy, I think it behooves us to address them as we move forward with the Safe Motherhood program. One way to do this is by prioritizing the role of a local leader in future TBA education. This leader should ideally be a trusted member of the community; in this way, we step down from the primary role and take our place as a support and a resource. The local leader could have many functions (i.e. educator, medical community liaison, organizer) and the specific roles should be determined with input from potential local leaders, the community, the TBAs and us. Concurrent with finding this leader is finding funding to pay her a salary for her work, with the goal being that she could eventually be paid by an in-country source, possibly the Ministry of Health.

2. These TBAs were very satisfied with the program, and were hungry for more, but they also said they were just plain hungry and asked for food. Again, this is related to the wealth discrepancy between us. While our greater wealth is not an indictment against us, and is part of all aid work in the developing world, one way we can address this directly with them is to feed them lunch on days that they are part of a program or a meeting.

3. The test results suggest that literacy and number recognition may be instrumental in helping the TBAs to acquire the skills and knowledge required for attaining a higher level of competency. This suggests that an important component of a TBA education program is literacy education. This support of literacy education should ideally be for the entire community, rather than for TBAs only. There is already an English literacy program in Fondwa. It is possible that we could support the expansion of that program to include Creole.
4. Some of the TBAs reported in the six-week TBA group interview that they were taking blood pressures for pregnant women and community members. After the classes and after each post-test we had stressed that they should be practicing their skills, such as taking blood pressures and assessing fetal heart tones, but should not be giving results to people until we had seen consistent accuracy in their test results and had told them they were ready to incorporate the given skill into their work. This had not yet happened. This is a concern that relates to the issue of false confidence brought up by critics of TBA training.

Each of the TBAs and the community member interviewees agreed that they would like to see a birth center in Fondwa. In fact, the TBAs said they would like all of the births to occur at a health facility, effectively putting themselves out of business. Their vision, however, is that they could apprentice with practitioners at the birth center, and then go on to work in conjunction with those practitioners. We are not sure that they fully understand the requirements for working at a health facility. We discussed the Haitian requirements for nursing and midwifery training in general terms, but it seems that the TBAs could benefit from a visit from a Health Ministry representative who could explain things fully and answer questions.

For now, the TBAs want to continue attending home births. They are amenable to referring patients who are beyond their scope of care (which is self-determined) to practitioners working in existing health facilities, but they need help establishing these relationships. A visiting physician comes to the Heart-to-Heart clinic in Fondwa once a week and a local nurse staffs the clinic four weekday mornings. My recommendation is that the physician and the nurse request a meeting with the TBAs in order to help them to understand the optimal way to make referrals. It would be ideal if the physician could function as a liaison between the TBAs and the hospital in either Leogane or Jacmel (another city equidistant to Fondwa, on the other side of the mountains), helping both parties to begin communication. However, there are two initial barriers to
overcome: 1. The TBAs are not part of the healthcare system and we do not know how people operating within the system view them. 2. Transportation is a problem; many women and families cannot afford to take a bus, and there are very few private vehicles available. At this time the L'Hôpital Ste Croix in Leogane is not doing deliveries and the only other facility in Leogane that is accepting obstetrical patients, Doctors Without Borders, is limiting services in preparation for leaving the area. Jacmel has a hospital and a birth center, both providing obstetrical services with midwives on staff, so it makes sense to explore relationships between the TBAs and practitioners in Jacmel. As a small first step toward the alleviation of the transportation problem, we presented the TBAs with an emergency evacuation cot after the six-month group interview.

The community survey results are helping us to begin to see a picture of maternal and child health in Fondwa. Of course we can draw no conclusions since our sample size is so small. However, it is interesting to see that some of the percentages that we found from the community survey are very close to estimates for Haiti as a country. For instance, 87.10% of the respondents to this survey had their babies at home; the Pan American Health Organization (PAHO) gives Haiti an 85% home birth rate. Tetanus is recognized as one of the top three causes of neonatal death; three of the five neonatal deaths in our sample were caused by tetanus. It is estimated that 15% of pregnant Haitian women receive no prenatal care (UNICEF 2010); our sample shows that 14% of the women with children 16 and under received no prenatal care. Although these numbers for prenatal care are in accordance with estimates for Haiti as a whole, we were still surprised to find these results in Fondwa where there is no immediate access to a health care facility; although we do need to bear in mind that some of this prenatal care was received from the TBAs (2.4%) and therefore it is likely that this care was not comprehensive. We were also surprised to discover that 87% of that same group of respondents reported that they filled out birth certificates for their babies. We thought these numbers might be lower since there is no birth registry in Fondwa itself.
It will be interesting to see if these percentages remain steady as our sample size of survey respondents grows. Even though the number of registered births is relatively high, this does not diminish the need for a birth registry in Fondwa, given the additional morbidity data that would be obtained.

The birth registry will probably take many years to establish, but eventually the registry data will be an important addition to the information we are collecting through surveys and interviews. As we move forward from this point, FHM would like to complete the ongoing base-line survey within the next several months. Approximately 381 surveys need to be completed for Fondwa’s population of 8000 people (at 50% variability, 95% confidence interval, and +/− 5% margin of error) (Watson 2001).

Through repeated surveys, we are interested in looking at maternal and infant health trends that may be associated with TBA education and/or health center services in Fondwa. These trends include amount of prenatal care, birth complications, birth outcomes, neonatal death, maternal death, number of referrals and number of tetanus vaccinations.

In addition to the community surveys, we will conduct in-depth interviews with each TBA, and with samples of community members, regarding cultural birth practices. The importance of these interviews is brought into focus by our experience at the birth, where we were exposed to local customs as well as an apparent disregard for some of the education program content. Although this was just one birth, we realize that there is much to be learned. The apparent failure to integrate knowledge into practice may not reflect a lack of learning or understanding, but rather it may be an indication that the “information fails to fit into an already existing social system of understanding birth and birth-related knowledge” (Berry 2005).

An interesting example of an existing social system of understanding in Fondwa is found in the fact that 44% of the TBAs said they began their work as the result of a dream (Individual TBA Interviews, section 5.3.1). This mode of entry is found in other
cultures as well. In a study of TBAs (comadromas) in Guatemala 100% of the participants became TBAs after a dream, a vision or a communication from God. In the Guatemalan culture this experience is embedded in a belief that the work of a TBA is a sacred calling (Walsh 2006). The Yucatec Maya TBAs (parteras) of Mexico also speak of spiritual mentoring through dreams as a route of learning, and are regarded as having spiritual power associated with their work (Anderson 2004). While 43% of the TBAs in this study take a community role in their religion, the TBAs primarily identify as Catholic. However, Christian religion in Haiti is commonly intertwined with the rites and beliefs of Voodoo (Brown 1991)(Miller 2000). In-depth interviews will help us to understand the TBA’s relationship to dreams, spirituality and sacredness. In addition, the interviews will increase our overarching cultural awareness regarding childbearing, and therefore help us in our ongoing quest for program content that is useful and meaningful.

Concurrent to gathering survey and interview data, we plan to work toward: 1. Continuation and expansion of the TBA education program and 2. Helping the community to establish a health center that has the capacity for basic obstetrical services. First steps towards these goals include working with the community to identify a community leader who would be trained as an educator/facilitator, and helping the community to seek and acquire funding for a building to house the health center. Ideally, the health center and the TBA education program would dovetail in three key ways. First, health center personnel would serve as preceptors for the TBAs as they learn clinical skills. Second, the TBA would refer people to the health center for prenatal care and deliveries. Third, the health center would serve to educate the community on the importance of prenatal care, newborn care, signs and symptoms of complications, and having an assistant present if they are planning to give birth at home; preferably an assistant who has received training and is able to facilitate referrals to the health center when necessary.
Appendix A

Traditional Birth Attendant Education Curriculum

1. Cleanliness, hand washing and glove use
   Instructor will:
   Use verbal instruction, chart and demonstration to teach:
   1. Basic information on germ theory of disease
   2. Cleanliness during labor, birth and postpartum
      • Hand washing
      • Putting a clean surface under mother at time of birth
      • Importance of nothing unclean being introduced into the vagina
      • Maternal hygiene
      3. Use of gloves
      • When to use gloves
      • How to put gloves on
      4. Definition of sterility and when it is important
      5. How to take care of equipment in birth kit
      • Cleaning
      • Storage
      • Who to contact for restocking of supplies
   Student will:
   1. Demonstrate proper hand washing and glove use
   2. Explain (verbally) basic germ theory of disease, importance of maternal hygiene, clean birth surface, protection of vagina and care of equipment

2. Preeclampsia
   Instructor will:
   Use verbal instruction and charts to teach:
   1. Definition of preeclampsia
      • High blood pressure
      • Proteinuria
      2. Possible signs of preeclampsia:
      • Swelling (edema), particularly in face and hands
      • Severe headaches
      • Changes in vision
      • Upper abdominal pain
      • Nausea or vomiting
      • Dizziness
      • Decreased urine output
      • Sudden weight gain
   3. Possible consequences of untreated preeclampsia:
      • Seizures
      • Death
      4. What to do if preeclampsia is suspected:
      • Instruct woman to seek care at a medical facility
      • Accompany woman to medical facility if possible
   Student will:
1. Explain (verbally) definition of preeclampsia, at least 3 consequences of preeclampsia, and what to do if preeclampsia is suspected.

3. Blood pressure
   Instructor will:
   Use verbal instruction, charts and demonstrations to teach:
   1. What a blood pressure reading represents
      (Definition of diastolic and systolic, simple schematic of circulatory system and heart function)
   2. Definition of high blood pressure (140mm Hg systolic or 90mm Hg diastolic, or a rise of 15mm Hg, documented on two occasions, at least six hours apart)
   3. Function and use of blood pressure cuff and sphygmomanometer
   4. What to do if high blood pressure is found
      • Instruct woman to seek care at a medical facility
      • Accompany woman to medical facility if possible
   Student will:
   1. Explain (verbally) what a blood pressure reading represents and the definition of high blood pressure
   2. Demonstrate ability to take blood pressure and ability to obtain reading within 4 mm Hg of the instructor’s readings
   3. Explain (verbally) when to refer a woman to a health care facility for high blood pressure

4. Proteinuria
   Instructor will:
   Use verbal instruction and demonstrations to teach:
   1. Significance of protein in the urine
      • Above trace with no signs of high blood pressure
      • Any amount with high blood pressure
   2. The importance of cleanliness before a urine test
   3. What to do if a trace of protein is found (clean catch, lots of fluids, recheck)
   4. How to use a urine test strip to test urine and check color against chart
   5. What to do if protein in urine is above trace with normal BP, or with high BP
      • Instruct woman to seek care at a medical facility
      • Accompany woman to medical facility if possible
   Student will:
   1. Demonstrate using urine test strip and checking the results against the color chart
   2. Demonstrate ability to obtain protein level readings that match the readings that the instructor obtains
   3. Explain (verbally) what to do if protein is found

5. Fetal heart rate
   Instructor will:
   Use verbal instruction and demonstration to teach:
   1. Range of normal fetal heart rate (120-160 beats per minute)
   2. Use of fetoscope
   3. What to do if fetal heart rate is abnormal
      • Help mother to change position
      • Instruct woman to seek care at a medical facility
      • Accompany woman to a medical facility if possible
   Student will:
   1. Identify the normal range of fetal heart tones
   2. Demonstrate optimal placement of fetoscope (over fetal back)
3. Demonstrate mechanics of how to use the fetoscope
4. Explain (verbally) what to do if the fetal heart rate is abnormal

6. Fetal position, breech birth and shoulder dystocia
   **Instructor will:**
   Use verbal instruction, charts, demonstrations and models to teach:
   1. Anatomy (chart) of vertex, breech, transverse and posterior presentations
   2. Mechanisms (chart and model) of normal labor and birth: Descent, flexion, internal rotation, extension and external rotation
   3. Leopold’s maneuvers to determine position of baby
   4. Demonstrate managing shoulder dystocia
      • Position mother to hands-and-knees or
      • Position mother to supported squat
      • Demonstrate corkscrew maneuver
   5. Demonstrate managing breech birth
      • Extract arms
      • Extract legs
      • Turn SA
      • Wait for hairline
      • Lift
   **Student will:**
   1. Demonstrate Leopold’s maneuvers and ability to accurately assess position of baby as compared with ultrasound assessment
   3. Demonstrate managing breech birth
   4. Demonstrate managing shoulder dystocia

7. Prolapsed cord
   **Instructor will:**
   Use verbal instruction, charts, demonstrations and models to teach:
   1. Identification of cord prolapse
   2. Danger of cord prolapse (lack of oxygen to baby)
   3. Maternal knee-chest position
   4. Reinsertion of cord
   5. Holding baby’s head off cord
   6. Anatomical reasons for pressure on cord and knee-chest positioning
   7. When to transport
   **Student will:**
   1. Demonstrate managing prolapsed cord
      • Mother in knee-chest position
      • Reinsert cord
      • Hold head off cord
   2. Describe when to transport for prolapsed cord

8. Neonatal resuscitation
   **Instructor will:**
   Use verbal instruction, charts and demonstration to teach:
   1. Initial assessment of baby
      A. Color of amniotic fluid
      B. Breathing/crying
   2. If breathing absent/poor
      A. Dry
      B. Position
C. Stimulate  
D. Clear airway  
E. Ventilate for one minute  

3. Reevaluate respirations  
   A. If absent/poor: suction, reposition, re-ventilate and call for help  

4. Reevaluate respirations plus heart rate after second minute  
   A. If absent/poor continue to ventilate and initiate transfer of care  
   B. If heart rate < 60 bpm initiate heart compressions  

Student will:  
1. Explain (verbally) and demonstrate initial assessment of baby  
2. Explain (verbally) and demonstrate appropriate drying, clearing airway, stimulating and positioning of baby  
3. Explain (verbally) and demonstrate evaluating baby for respirations  
4. Explain (verbally) and demonstrate appropriate use of ventilation  
5. Explain (verbally) and demonstrate reevaluation and when to seek medical care  

9. Post partum hemorrhage  
Instructor will:  
   Use instruction and charts to teach:  
   1. Anatomy and physiology of the third stage of labor  
   2. Signs of placental separation  
      A. Lengthening of cord  
      B. Trickle bleeding  
      C. Uterus hard, round and rises in abdomen  
   3. Encouraging mother to push out placenta  
   4. Importance of suckling of baby/nipple stimulation  
   5. Recognizing excessive bleeding  
   6. Managing excessive bleeding  
      A. Proper use of cord traction  
      B. Massaging uterus  
      C. Manual removal of placenta  
      D. Bi-manual compression  
   7. When to seek medical help  
Student will:  
1. Explain (verbally) how to help mother deliver the placenta  
2. Demonstrate proper cord traction  
3. Demonstrate uterine massage  
4. Demonstrate bi-manual compression  
5. Demonstrate manual removal of placenta  
6. Explain (verbally) when to take mother to medical facility  

10. Umbilical cord  
Instructor will:  
   Use verbal instruction, charts and demonstration to teach:  
   1. Importance of cleanliness and the umbilical cord  
   2. What to use to cut cord  
   3. How to measure distance for tying or clamping cord  
   4. How to cut the cord  
   5. How to care for cord stump  
   6. How to recognize signs of umbilical infection  
      • Redness  
      • Pus
7. What to do if signs of infection are persistent
   • Instruct woman to seek infant care at a medical facility
   • Accompany woman and baby to medical facility if possible

Student will:
1. Explain (verbally) the importance of cleanliness and the umbilical cord
2. Demonstrate how to tie and cut the cord
3. Identify signs of umbilical infection and explain (verbally) what to do if signs persist

11. Newborn/infant assessment
Instructor will:
Use verbal instruction and charts and to teach:
1. Key signs of sick newborn/infant
   1. Listlessness
   2. Poor muscle tone
   3. Breathing too fast or too slow
   4. Refusal to nurse
   5. Too warm, too cold
   6. Difficulty breathing
   7. Poor color
   8. Baby jittery or shaky
   9. Jaundice early or extensive
2. Newborn exam
   1. Measurement of length and head circumference
   2. Weight
   3. Estimate of gestational age
3. When to seek medical help
Student will:
1. Identify key signs of sick newborn/infant
2. Demonstrate measurement of length, weight and estimated gestational age
3. Explain (verbally) when to seek medical help

12. Post partum infection
Instructor will:
Use instruction and chart to teach:
1. Signs of post partum infection
   A. Elevated temperature
   B. Foul odor
   C. Uterine tenderness
2. Necessity of taking woman to health center if she has these symptoms
Student will:
1. List (verbally) the three signs of post partum infection
2. Explain the importance of taking woman to health center if she has these symptoms

13. Maternal tetanus vaccination
Instructor will:
Use verbal instruction and chart to teach:
1. Purpose and importance of tetanus vaccination
2. Where to go to get vaccinated
Student will:
1. Explain (verbally) the purpose and importance of tetanus vaccination
2. Explain (verbally) location of facility offering tetanus vaccinations

14. Birth registry data
Instructor will:
Use verbal instruction and demonstration to teach:

1. Instructions for calling birth registry data into data collector: Name of parents, date of birth, name of baby, sex, live or stillborn, complications, management of complications

Student will:

2. Demonstrate ability to call birth registry data into data collector: Name of parents, date of birth, name of baby, sex, live or stillborn, complications, management of complications
Appendix B
Handouts

Hand Washing

Kouman pou yo lave men

0 Mouye men ak dlo
1 Aplike savon ase kouvrì tout sifas men
2 Fwote men palmis palmis

3 Dwa palmis sou do la kite men ak dwèt antrelase. Repete avèk lòt men.
4 Palm palmis ak dwèt antrelase
5 Do a dwèt opoze pla ak dwèt anklanche

6 Do a dwèt opoze wotasyon fwotman nan gwo pou kite sera nan rejyon
Palm dwat epi vise vèsa
7 Wotasyon fwotman, bak epi avan ak dwèt sera nan men dwat nan rejyon Palm kite ak vise vèsa
8 Rense men ou avèk dlo

9 Seche men byen avèk yon sèvyèt sèvi ak sèl
10 Sévi ak sèvyèt fèmen tiyo
11 Men ou yo an sekirite kounye a

World Health Organization
Sterile Glove Donning

Pwosedì pou mete gan esteril

1. Ranmase yon gan ak gwo pous ak dwèt

2. Rale sou men gan

3. Glise pasyèlman gante men anba
   manchèt nan gan dezyèm

4. Rale dezyèm gan sou men ak lòt rale
   gan moute nan ponyèt gowned

5. Dwèt nap nan men konplètman gante
   anba manchèt nan men premye.
   Rale gan ponyèt

6. Pwosedì fin ranpli
Leopold's Maneuvers (assessing fetal position)

Pozisyon nan Tibebe a
Fetal Heart Rate

Batman Kè Nan Fetis la

Yon batman kè nòmal se 120 – 160 chak minit
Checking Urine

Tcheke pipi

[Images of urine testing and smiley faces indicating results]
Blood Pressure

Kouman pou pran tansyon

Pran tansyon manman an, premye wotè l’sa ou pral fè, kidonk li pa pral pè.

Tansyon manchèt

Stethoscope

Tache manchèt a toutotou fè bra siperyè a

Fèmen valv la sou anpoul la kawotchou a vire vis a dwat la. Valv la pral resevwa pi kout.

Santi pou yon batman kè jis anba a koud la, sou andedan an bra an. Mete stethoscope a sou.

Ponp manchèt la moute nan peze anpoul la.

Kòm ou ponp, zegwui a ap deplase. Lè li rive nan 200 sispann ponpe.

Lè sa a, lage valv la yon ti kras pou fwit lè yo soti dousman.

Zegwi a ap kòmanse tounen desann. (Si se valv la fèmen li pral rete nan 200).

Koute pou lè ou premye tande yon batman kè. Di oswa ekri ki nimewo. Eske se sou 140?

Koute pou lè ou sispann tande batman kè lan. Di oswa ekri ki nimewo. Eske li plis pase 90?

Si kantite anwo a pi wo pase 140 oswa nimewo anba a pi wo pase 90 manman an ta dwe wè yon doktè.
Preeclampsia

Tcheke pou preeklanspsi

1. Pran tansyon fanm lan. Tansyon wo se toujou yon siy risk. Si se konbine avèk nenpòt siy risk lòt site la a, risk lan se menm pi gran.

2. Tcheke pipi li pou pwoteyin. Si pipi a se pozitif pou pwoteyin, ak presyon nan san an ki wo, yo ta dwe fanm lan dwe tcheke avèk yon doktè.

3. Tcheke pou anfle. Kèk anflamasyon nan gwosès nòmal. Si fanm nan gen je pye anfle nan apremidi a oswa nan cho, sa a se OK. je pye anfle se siy danje si yo deja anfle lè manman an reveye nan maten a, si anfle a se grav oswa vini sou toudenkou, si gen èdèm opozan (gade anba a), oswa si gen siy tou risk lòt.

4. Mande manman an si li te gen têt fè mal, vètij, oswa pwoblèm wè. Li se OK gen yon maltèt oswa yon vètij ti detanzantan. Men, si bagay sa yo rive anpil fwa, oswa si yo grav, oswa si li gen plis pase youn nan pwoblèm sa yo, li se yon siy risk. Si li gen nenpòt nan pwoblèm sa yo konbine avèk presyon anfle oswa segondè san, risk la se menm pi gran. Si dwèt ou kite yon twou oswa Dent ki rete pou yon tan. li se "opozan èdèm" oswa grav anfle.
Prolapsed cord

Lonbrik vini anvan tèt la

Mete manman agenou avec le stomak ak tèt a te.

Eseye pouse kòd la onbîlikal tounen anndan vant manman an.

Si sa nesesè, itilize dwèt ou yo kenbe tèt la lwen kòd la onbîlikal.

Transpòte li, nan pozisyon sa a, nan lopital la.
Shoulder Dystocia

Zepòl Distosi

Tèt la se deyò epi zepòl la pa vini

Kanpe fanm lan monte oswa Ede li jwenn sou men li ak jenou

Corkscrew maneuver: Mete de dwèt dëyè zepòl la ak virebe a, premye yon fason lè sa a, lôt la.
Breech Birth

Fès nesans

Pote manman nan kwen an kabann lan.
Di manman an kònen le santi l tankou pouse, jouk le li santi li dwe pouse.

Ede janm yo soti

Ede bra yo soti

Vire do a monte

Kite tibebe a kwoke desann jouk le ou wè felur a

Leve. Mete dwèt ou nan bouch la si w bezwen pote manton nan direksyon lestomak la.
Ede têt la soti Dousman.
Cord Traction

Lonbrik Traction
Hemorrhage

Emoraji

Yon emoraji se de tas oswa plis nan san.

Gen manman an bay tete tibebe a

Bay remèd féy medsin si ou genyen yo.

Kenbe matris la retounen lakay yo epi rale kod la onbilikal yon kantite ti sa yo wè si plasenta a ap vini.

Peze matris la

Ijans! Sèlman fé sa si manman an se senyen lanmò ak plasenta a toujou andedan!

Lave men yo epi mete yo sou gan nouvo

Mete men gante ou yo nan matris la ak plasenta a kale koupe

Apre plasenna a soti, ranmase moute matris la, piye li voye yo ak boulon ant de men ou
Newborn Resuscitation

Tibebe Ki Fenk Fèt Reanimasyon

Klè bouch ak nen
Pozisyon
Aplike mask byen
Karant souf chak minit
Care of the Umbilical Cord

Lonbrik Swen

Adapte soti nan konséy kat la USAID/BASICS and Ministry of Health, Louga, Senegal
Postpartum Infection

Apre Akouchman Enfeksyon

Doulè nan vant
Moch egzeyat
lafyèv

Lòt Sentòm nan yon Manman

Adaptè soli nan konsèy lat la USAID/BASICS and Ministry of Health, Louga, Senegal
Newborn Illness

Malad Ki Fenk Fèt

Adapté soti nan konbô jat la USAID/BASICS and Ministry of Health, Louga, Senegal
Appendix C

Interview and Survey Locations in Fondwa

Key:
Yellow.........TBA homes
Pink............Community maternal survey homes
Blue............Local landmarks (from left): Am Batonelle, APF, St. Antoine Catholic Church, School
## Appendix D

### TBA 6-Week Post Test

<table>
<thead>
<tr>
<th>Name_________________________</th>
<th>Date_________________________</th>
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</table>

<table>
<thead>
<tr>
<th>Skill</th>
<th>Yes</th>
<th>No</th>
<th>Results</th>
<th>Evaluator Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Fetal Position</strong></td>
<td></td>
<td></td>
<td>V</td>
<td>B</td>
<td></td>
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<tr>
<td>V=Vertex</td>
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<td>R=Breach</td>
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<td>back</td>
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<tr>
<td><strong>2. Fetal Heart Rate (x2)</strong></td>
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<tr>
<td>Uses fetoscope correctly</td>
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<tr>
<td>Earpieces in ears, horn side down</td>
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<tr>
<td>Tap out rhythm</td>
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<tr>
<td><strong>What is the rate (in numbers)?</strong></td>
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<tr>
<td><strong>Is this in normal range?</strong></td>
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<tr>
<td><strong>What is the normal range?</strong></td>
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<tr>
<td><strong>3. Urine Test</strong></td>
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<tr>
<td>Correct procedure dipping urine</td>
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<tr>
<td>Interpretation of dipped urine (protein/no protein, nl/abnl)</td>
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<tr>
<td>Interpretation of simulated urine stick pictures</td>
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<td><strong>4. Blood Pressure (x3)</strong></td>
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<tr>
<td>Can use cuff/stethoscope?</td>
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<tr>
<td>Applies cuff, stethoscope in ears, correct side, on proper place on arm</td>
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<tr>
<td>Correct BP within +/- 4 of instructor</td>
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</tbody>
</table>
## 5. Hand Washing:
Demonstrate the following

- Palms
- Backs of hands
- Thumbs
- Interdigit
- Backs of fingers
- Nails in palm

30 seconds/ count to 10 for each

## 6. Glove Use: Demonstrate the following
Put on with no outer contamination

## 7. Breech Birth:
Demonstrate the following (simulated)

- Extract legs
- Extract arms
- Turn baby

Wait for *hairline

Lift

## 8. Shoulder Dystocia:
Demonstrate the following (simulated)

Reposition mother (position 1,2 or both)

1. standing
2. hands and knees

Corkscrew maneuver

## 9. Prolapsed Cord
1. Reposition mother to knee-crotch

2. *Reinsert cord
3. *Hold head off cord
4. transport
<table>
<thead>
<tr>
<th>10. Neonatal Resuscitation: Demonstrate the following (simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
</tr>
<tr>
<td>Suction/clear airway</td>
</tr>
<tr>
<td>Stimulate</td>
</tr>
<tr>
<td>Position</td>
</tr>
<tr>
<td>Bag &amp; mask 30-50 bpm</td>
</tr>
<tr>
<td>Get help after 1 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. Hemorrhage: Demonstrate the following (simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is a hemorrhage?</td>
</tr>
<tr>
<td>Demonstrate Uterine massage</td>
</tr>
<tr>
<td>Demonstrate Protected cord traction</td>
</tr>
<tr>
<td>Demonstrate External bi-manual compression</td>
</tr>
<tr>
<td>Demonstrate manual removal of placenta</td>
</tr>
<tr>
<td>Breastfeeding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. Cord Care: Demonstrate the following (simulated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tying</td>
</tr>
<tr>
<td>Cutting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13. Post Partum Infection: (say the following)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
</tr>
<tr>
<td>Uterine Tenderness</td>
</tr>
<tr>
<td>Foul lochia odor</td>
</tr>
<tr>
<td>14. Preeclampsia: (Name 4 of the following)</td>
</tr>
<tr>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>High Blood Pressure (required)</strong></td>
</tr>
<tr>
<td><strong>Protein in urine (required)</strong></td>
</tr>
<tr>
<td><strong>Swelling (required)</strong></td>
</tr>
<tr>
<td><strong>Headache/vision changes/dizziness</strong></td>
</tr>
<tr>
<td><strong>Upper abdominal pain/nausea/vomiting/ decreased urine output (one of above required)</strong></td>
</tr>
</tbody>
</table>

| 15. Tetanus Vaccination Facility (Give name and location) |
References


