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Study of the Most Significant Changes Contributing to Decreased Maternal Mortality in Select Ministry of Health Hospitals in the Dominican Republic



Painting from Hospital San Lorenzo de los Mina, Santo Domingo

Acknowledgements

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The names of all of those who shared their stories, successes, and challenges, appear in Annex 2. We are grateful to each one for all they taught us.

Study of the Most Significant Changes Contributing to Decreased Maternal Mortality in Select Ministry of Health Hospitals in the Dominican Republic

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DISCLAIMER: The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

EXECUTIVE SUMMARY

This report summarizes the findings of a study designed to answer the question: “Is it possible to significantly reduce maternal and neonatal morbidity-mortality if the major factors associated with these health problems are identified, and an action plan with the active participation of staff and community is developed and implemented.” The corollary question is: “In order to continue to decrease the number of deaths, what are the: 1) best practices that should continue; and 2) the challenges that must be addressed?” The current study uncovers the contributory factors to changes in health outcomes and best practices, as well as identifies factors contributing to continuing challenges. The current study builds upon insights gained from earlier research on maternal and neonatal mortality and morbidity at both the health facility and community levels in the Dominican Republic.

Context

The maternal mortality ratio of 159/100,000 live births in the Dominican Republic is higher than other countries in the region with comparable or lower rates of antenatal visits and institutional deliveries (e.g., Jamaica, Colombia, Brazil, Venezuela). In all the other Latin American countries, the maternal mortality ratio and the neonatal mortality rate are inversely proportional to the percentage of institutional deliveries. The contradiction between the nearly universal institutionalized birth and the high ratio of maternal mortality ratio is commonly referred to as the Dominican Paradox.

Beginning in 2010, the Ministry of Public Health, supported the adoption of a complex of evidence-based interventions and best practices in a number of public hospitals, including the four that are part of the current study. The hospitals were selected through an open and competitive selection process. The complex of interventions currently being implemented in the hospitals is based on a "diagonal approach" which combines health systems strengthening interventions with maternal and child health services quality improvements. The rationale behind selecting a group of hospitals was to create a cohort of "positive deviants" with the capacity to share best practices and lessons learned with other hospitals throughout the country. The cohort approach creates synergy among participating hospitals by encouraging exchange and competition while sharing a conceptual framework and a practical approaches developed by the hospital's teams with technical assistance provided by the project. Although most actions focus on the health facilities, they also support actions directed at strengthening social participation of the surrounding communities. These actions include: health promotion, increase in the demand for immunization services, improved access of users to health information, appropriate health seeking behavior, gender equality, community oversight, and accountability.

The notable decline in deaths in the country as a whole in 2011, and in particular in the intervention hospitals, raises the question of what has changed? Could this change signify the beginning of a downward trend and an undoing of the Dominican Paradox? To understand what had happened in the hospitals Cultural Practice undertook a rapid qualitative study to analyze the key factors driving change in outcomes at four hospitals to elucidate some of the operational and attitudinal changes that may have contributed to improved national outcomes.

Analytical Framework

The Pathway to Care and Survival provides the basis for assessing how well a national health system is prepared to respond to the most critical complications that contribute to maternal and neonatal death and disability. It provides the overarching framework for analyzing access to and quality of maternal and newborn care. The current study inquired into the most significant drivers that have contributed to improved maternal and neonatal outcomes with reference to the framework of the Pathway to Care and Survival

Methodology

Although this study is principally a qualitative analysis of the contributory factors to improved outcomes, it integrates qualitative findings with the quantitative data collected at the hospitals on key indicators of maternal and neonatal health and evidence-based clinical and administrative practices. Four hospitals were selected as study sites to reflect different types of hospitals and geographic diversity. The hospitals include a large urban teaching hospital (Hospital Los Mina), a regional hospital teaching hospital (Hospital San Vicente de Paul), and two large regional hospitals (Hospital Antonio Musa and Hospital Jaime Mota).

The primary data collection method for the diagnostic study was the Most Significant Change (MSC) Methodology (Davies and Dart 2011) which is a participatory qualitative approach designed to identify key drivers for success and to better understand how such successes can be accelerated and sustained. The MSC methodology engages key participants in providing narratives about the most significant changes they have perceived as a result of the actions of an important intervention or operational change.

The study team triangulated the qualitative data gathered from the interviews and focus groups with quantitative indicator data. Additionally, the team gathered existing information on near miss events during the six months prior to the study to understand how complications are being managed at the four hospitals. While the information proved inadequate to assess whether the complications had been managed correctly, the data collection provided insight into continuing challenges against a background of significant achievements and improvements in other areas.

Findings

The study uncovered a number of significant changes in attitudes and practices of hospital staff that appear to have contributed to the observed reductions in maternal mortality in the four hospitals. These observations are consistent with the data from the MOH's Epidemiological Surveillance System.¹

The most significant change is that health care providers, administrative and support staff, and management have put women at the center of care. Obstetric patients, and their babies, rather than staff are now the most important people in the hospital. Changes in staff attitudes and practices are manifested in a number of different ways. Most important has been a change in responses to patients' needs, especially when complications and emergencies arise. Not only have the hospitals instituted a number of evidence-based practices to prevent and manage

¹ The number of maternal deaths demonstrates a decline of 16.4% from 201 deaths in 2010 to 168 deaths in 2011. The 49.2% decrease in deaths at the intervention hospitals was even sharper, from 61 deaths in 2010 to 31 in 2011. Additionally, 30 of the 33 fewer deaths are attributable to decreased numbers of deaths at all hospitals that adopted the interventions.

complications, they also have reconfigured the organization of clinical and administrative services to facilitate rapid and competent response to life threatening events. These include, among others, 24 hour obstetric and pediatric care staffing, regular rounds, biosecurity to prevent infection, and application of preventive measures such as AMTSL, use of the partograph, immediate initiation of breastfeeding and Kangaroo Mother Care. Along with clinical changes, hospital staff emphasized the importance of changes in administrative support services, including patient records, appointment systems, a standing change committee, improvements to the management of pharmaceuticals and laboratory results, and involvement of the community through the hospital administration committee and other outreach activities.

This change in attitude is the result of the empowerment and increased technical and managerial capacity of staff. It is also the result of increased accountability made possible by changes in management and data collection and use, as well as improved clinical skills among healthcare providers. These qualitative findings are consistent with quantitative indicator data which demonstrates evidence of changes in practices and outcomes.

A sense of “healthy competition” was fostered among the hospitals vying for the Dominican Government’s prize for quality in government. At the hospitals that entered the competition there was high motivation to improve care and outcomes for mothers and newborns. The increased sense of empowerment along with the improvements in infrastructure, better organization and management of the services, and improved technical skills and knowledge using protocols and norms contributed to a notable shift in attitudes. One provider interviewed for this study noted: “Care became ‘women centered’ instead of ‘provider centered. Women were no longer seen as ‘numbers’ but as individuals who deserve quality care.” More and regular engagement in the community increased the recognition and understanding by providers and hospital staff regarding the problems and needs of women and their families.

The study found providers’ perceptions of changes are predominantly supported by quantitative data on evidence-based practices. For instance, active management of the third stage of labor (AMTSL) increased in the four hospitals on average from 58% at baseline in 2009 to 87.5% in March 2012. In contrast, the average percentage of episiotomies has not decreased appreciably between 2009 and 2012 in the four study hospitals, despite a perception on the part of the staff that they are no longer routine. The average rate of episiotomies is about 25%, although it has gone up and down at all hospitals during this same period. Biosecurity practices are consistent with the changes reported by hospital staff as evidenced by institutional biosecurity plans and zero tolerance for breaching biosecurity practices in delivery and operating rooms. In addition, changes in the organization and management of the pharmacies and laboratories also contributed to better practices, such as improved maintenance of the cold chain for oxytocin and more accurate and rapid laboratory test results. Team work among different types of providers was the most significant organizational change supporting enhanced individual responsibility and collective accountability for maternal and neonatal survival and health.

Finally, all four hospitals have embraced a change management approach to quality improvement. They are all in the process of developing or finalizing strategic plans and use the self-evaluation Common Assessment Framework (CAF) tool to assess progress and impact. There has also been a commitment in all four hospitals to strengthening outreach and engagement of the surrounding community. This has occurred both through externally financed

programs (see section 4.8.3 below on programs at San Vicente de Paul and Jaime Mota Hospitals), and through more internally driven initiatives at San Lorenzo de los Mina and Antonio Musa Hospitals. In all four cases, they have formed hospital administration committees composed of hospital and community representatives to engage diverse stakeholders in hospital planning and oversight.

One area of continuing concern is the increase in the cesarean section rates in all four hospitals over the last three years, which is part of a longer term trend in the Dominican Republic and Latin America as a whole. The average increase in c-section rates at the four hospitals has been 18.5% between September 2009 (38.25%) and March 2012 (45.25%).

Continuing Challenges and Suggested Directions for Change

The continuing challenges include:

- Deficits in data collection and analysis that make it difficult to monitor and analyze near miss events, necessary for continuing quality improvement
- High rates of c-sections and few concrete strategies for addressing the problem
- Only moderate efforts to engage communities in hospital planning and oversight
- Room for improving consideration of women's preferences, rights, and say in the organization and delivery of care.

Some of the possible directions for continuing change include:

- A. Continued efforts to strengthen hospital teams -The hospital teams will benefit from further strengthening in technical and managerial areas. It would be useful to conduct a SWOT of each hospital team's strengths, weaknesses, opportunities, and threats and develop a plan for strengthening each team. If all hospitals plan to participate in the Quality in Government Award competition, there is an opportunity to make the SWOT part of this process. A continued focus on a systems approach to strategic planning as well as on empowering teams, sub-teams, and individuals will help to support individual and groups to take initiative and innovate. This will require hospital management to creatively motivate existing staff and socialize new staff. There is also the opportunity for hospital staff to reach out, as some have already done, to secondary and primary health facilities within their health networks to build team capacity out from the third level hospitals to their partner facilities and the surrounding communities, and to improve the timeliness, quality, and effectiveness of referrals and counter referrals.
- B. Strengthening and systematizing recording and analysis of near misses - As the Cordero 2010 study demonstrated, there is still limited attention to documenting and learning from near misses. It is especially critical to focus attention on the regular and systematic review of near misses to improve care and outcomes as the number of maternal-neonatal deaths decreases in number. As the current study has indicated, the information recorded is inadequate to assess performance in relation to outcomes.
- C. To address high C-section rates, undertaking a more rigorous effort and resolute focus on collecting and tracking information on C-sections to better understand causes and potential solutions - Reducing the c-section rate is one of the major challenges facing the

Dominican Health System. There are a number of interventions recommended to reduce the high percentage of cesarean sections in the hospitals including:

- Setting measurable goals for reducing cesarean sections in first births.
- Collection and use information to hold hospital staff accountable for C-section rates. To this end, all c-section data should be disaggregated by parity and age, and reason c-sections were performed.
- Develop a cesarean section reduction plan for reaching specific goals (i.e. no more than 15% of all first births).
- Identify facilities in the Dominican Republic where the cesarean section rate is the lowest and analyze the factors that contribute to the lower rate ('positive deviants') to be used as "models" for replication.
- Increased focus on the needs of adolescents (26% of births at Los Mina) as critical to reducing cesarean sections.
- Finally, development of a Behavior Change Communication (BCC) campaign aimed at doctors (obstetricians, pediatricians, and general practitioners) on the evidence base for avoiding unnecessary c-sections and the benefits for mothers and babies of vaginal births.

- D. Strengthening Linkages and Engagement with Communities and Other Health Centers and Hospitals in the Network: This study highlights some of the successful interventions at the community level, especially the experiences in San Francisco de Macorís and Regions III and IV in the western region of the Dominican Republic. Both interventions reinforced ties between health facilities and their surrounding communities. Hospitals have the opportunity to work with communities and lower level health facilities on health surveillance of pregnant women, new mothers, and newborns: It may be possible to build upon existing programs such as:
- Doulas (San Francisco de Macorís) and breastfeeding support (Pastoral Materno Infantil)
 - Los Mina Outreach to the community on garbage and traffic management
 - Adolescent Programs (San Vicente de Paul and Hospital Musa)
- E. Strengthening administrative committees, especially the participation and voice of representative stakeholders, women's groups and women leaders: Although the current study did not examine the hospital administration committees, it did appear from some of the study team's conversations that communities were mostly represented by local officials rather than by a broader cross section of the population. Greater gender, ethnicity, and age diversity will enrich the value of the committee as a bridge between hospitals and surrounding communities.
- F. Strengthening women's voices in defining and monitoring quality of care: Positive changes in attitude and patient centered care can be enhanced by challenging providers and administrators to make organizational changes that give women, and their families, greater choice about their births. Hospitals are more likely to sustain the positive changes in patient focus if they receive regular feedback from routine client satisfaction surveys and other types of information gathering, such as in-hospital and community-based focus groups with new mothers and their partners or other family members.

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ACRONYMS

ADRA	Adventist Development and Relief Agency
AMTSL	Active Management of the Third Stage of Labor
AusAID	Australian Agency for International Development
BCC	Behavior Change Communication
CAF	Common Assessment Framework
DFID	Department for International Development (United Kingdom)
DIGEPI	General Directorate of Epidemiological Information
DR	Dominican Republic
EONC	Emergency Obstetric and Neonatal Care
GODR	Government of the Dominican Republic
HBB	Helping Babies Breathe
HIV	Human Immunodeficiency Virus
KMC	Kangaroo Mother Care
MCH	Maternal Child Health
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MIS	Management Information System
MM	Maternal Mortality
MMR	Maternal Mortality Ratio
MOH	Ministry of Health (see SESPAS below)
MNH	Maternal Neonatal Health
MSC	Most Significant Change Methodology
NM	Neonatal Mortality
NMR	Neonatal Mortality Rate
OB/Gyn	Obstetrician Gynecologist
PAHO	Pan American Health Organization
PPH	Post-partum Hemorrhage
SESPAS	Secretaria de Salud Pública y Asistencia Social (MOH)
SIDA	Swedish International Development Agency
SWOT	Strengths Weaknesses Opportunities Threats Methodology
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

Study of the Most Significant Factors Contributing to Decreased Maternal Mortality in Select Ministry of Health Hospitals in the Dominican Republic

1. BACKGROUND

1.1. Context

The Dominican Republic, the second largest nation in the Caribbean, has a population of around 10 million people, with an annual population growth rate of 3.5%. Maternal and neonatal health services in the Dominican Republic are provided by both the public and private sectors. The law 87-01 guarantees all Dominicans the right to health care. In 2001, the GODR passed two laws which reformed the health system, the General Health Law [42-01] and the Social Security Law [87-01]. Together, the two laws guaranteed all Dominicans the right to health care, decentralized service delivery, created a national insurance system, and established demand driven financing (USAID 2012). All Dominicans were supposed to be covered under the social security law by 2011, with about a third contributing to the cost of their health care, and the rest receiving subsidized healthcare. Currently about 58% of the eligible 3.4 million people have enrolled in the subsidized system. The Dominican health system is also in the process of decentralizing functions. So far, two of the nine regions have signed agreements with the Ministry of Public Health. The MOH allocates funds to each hospital based on demand. Once allocated, each hospital has the capacity to invest the resources according to local needs (USAID 2012).

The maternal mortality ratio of 159/100,000 live births in the Dominican Republic is higher than other countries in the region with comparable or lower rates of antenatal visits and institutional deliveries.² In all the other Latin American countries, the maternal mortality ratio and the neonatal mortality rate are inversely proportional to the percentage of institutional deliveries. In general, the maternal and neonatal mortality trends in the country show insufficient progress toward achieving Millennium Development Goals 4 (Improve Child Health) and 5 (Improve Maternal Health) agreed upon by heads of state at the United Nations in 2005. Recently a new target for Goal 5 was added to achieve universal access to reproductive health for the year 2015.

1.1.1. The Dominican Paradox

The contradiction between the nearly universal institutionalized birth and the high ratio of maternal mortality ratio is commonly referred to as the Dominican Paradox. According to national health statistics, in the last decade, more than 150 women died as a result of the incapacity of the health system to adequately respond to complications during pregnancy and childbirth. The General Directorate of Epidemiology (DIGEPI) considers that 72% of these deaths were avoidable. International standards predict that 90% of the deaths should have been avoidable, meaning that 135 women lost their lives unnecessarily each year.

Only 3.8% of newborns are breastfed exclusively and the c-section rate is approaching 50% or higher in public hospitals in many regions. The 2001 Population Council study found regional hospitals attend the majority of births; doctors worked few hours leaving untrained nurses to deliver a high percentage of births; protocols were not used to manage labor; lack of infection

² E.g., Jamaica, Colombia, Brazil, Venezuela, Costa Rica, Chile, Argentina, Panamá, México, and Ecuador.

prevention; medical students and residents attended a high percentage of deliveries in public hospitals but received little or no supervision even for high risk cases; there was no system to audit maternal deaths; the labor, delivery and birth process was over-medicalized (over and inappropriate use of technology); a high rate of cesarean sections; a high rate of episiotomies; there was no referral system using protocols for high-risk cases; women are often mistreated during labor and poor attitudes towards women by providers is common; newborns are separated from their mothers postpartum and few newborns breastfeed immediately after birth; newborns' temperature is not maintained and many newborns suffer hypothermia postpartum; there is a lack of follow-up and access to care during the critical postpartum and newborn periods; and the majority of maternal-newborn deaths could be prevented with existing resources because most deaths were due to poor quality of care.

Principal Challenges to Implementing a Safe Motherhood Policy

- Limited number of qualified health care providers, and inadequate funding and infrastructure;
- Providers have little knowledge of evidence-based maternal and neonatal practices, and those who do, have not sufficiently internalized and adopted the practice, which translates into a lack of quality Emergency Obstetric and Neonatal Care (EMONC);
- Limited effective integration of different activities necessary to ensure safe pregnancy and delivery, and few health care facilities follow or monitor implementation of standards, protocols, or evidence-based practices;
- Lack of coordination among cooperating agencies, which operate at different levels of the health system through their support to referral and counter-referral systems, supervision and maternal and neonatal audits, and audits of near misses.

1.1.2. Recent Changes in Maternal and Neonatal Outcomes

In 2005, the MOH launched a Zero Tolerance Mobilization Strategy to reduce avoidable maternal and child mortality. Based on information from the DIGEPI Weekly Epidemiological Bulletins, there were encouraging indications in 2011 of reductions in the number of maternal and neonatal deaths. Between 2010 and 2011 the number of maternal deaths nationwide decreased from 204 to 168, a reduction of 16%. Of these 33 fewer deaths, 30 of them were averted in hospitals that adopted a complex of evidence-based interventions, best practices, and organizational changes, including the four hospitals in the study. Along with demonstrating reductions in deaths, the indicators show increased application of quality of care practices. There also are indications of an increase in the average percentage of antenatal visits during which healthcare providers comprehensively measure women's weight, blood pressure and fundal height. In addition, the data indicated a decline in the percentage of episiotomies performed prior to delivery. An increase in the percentage of deliveries with the application of the active management of the third phase of labor (AMTSL) from an average of 58% in 2009 to 87.5% in

March 2012 at the four hospitals is probably the most significant indicator of how changed practices have averted maternal deaths. Another important advance is the increase in the percentage of maternal death audits from 15.75% in 2009 to 100% in March 2012 in the four study hospitals.³

Along with the successes, there continue to be challenges such as the high rates of cesarean sections, little attention to reviewing cases of near misses as a quality improvement strategy, and weak referral and counter referral networks. Changes in these areas depend on continuing improvements in the supervision system, along with changes in how human resources are managed, and greater integration of tertiary, secondary, and primary health facilities. The cesarean section rate is an average of 38.25% at baseline in September 2009, in the four hospitals, to 45.25% in September 2011. The most recent rates among the four hospitals, as measured in March 2012, vary from a low of 40% at Antonio Musa Hospital to a high of 54% at San Vicente de Paul Hospital.

2. STUDY FOCUS

2.1. Objectives of the Study

The main purpose of the study is to answer the question: “Is it possible to significantly reduce maternal and neonatal morbidity-mortality if the major factors associated with these health problems are identified, and an action plan with the active participation of staff and community is developed and implemented?” The corollary question is: “In order to continue to decrease the number of deaths, what are the: 1) best practices that should continue; and 2) the challenges that must be addressed?” The current study uncovers the contributory factors to changes in health outcomes and best practices, as well as identifies factors contributing to continuing challenges.

The traditional approach to addressing these factors has been to concentrate on improved clinical practices without paying much attention to structural, social, motivational, and interpersonal factors that impede sustainable changes in the operation of the health system. As noted by Margaret Kruk and Lynn Freedman (2008), health systems are “core social institutions,” and consequently require adequate interventions responding to clinical as well as social needs of women and newborns so as to offer services based on human rights and sociocultural, economic and gender equity (Freedman 2005; Freedman and Kruk 2008). According to these authors, the health system “functions at the interface between people and the structures of power that shape their broader society. Neglect, abuse and exclusion by the health system is part of the very experience of being poor” Conversely, health claims, legitimate claims of entitlement to the services and other conditions necessary to promote health, are assets of citizens in a democratic society” (Freedman 2005: 21 citing Makintosh 2001).

The study contributes to greater understanding of the complex interplay between the social dynamics of the health system and the evidence-based practices associated with reductions in maternal and neonatal morbidity and mortality. A greater understanding of these interactions will allow critical actors in the Dominican health system to develop strategies for maternal mortality reduction and to act on recommendations for quality improvement more effectively.

³ All quantitative information comes from the USAID Centers of Excellence Project’s indicator data unless otherwise noted.

2.2. Prior Research

The current study builds upon insights gained from earlier research on maternal and neonatal mortality and morbidity at both the health facility and community levels in the Dominican Republic. In particular, two studies in the last decade have been critical to elucidating the practices and attitudes that deny many women their right to a dignified and safe pregnancy and birth, or the expectation of receiving quality care and being treated equitably and respectfully. A third study investigated community perceptions of the quality of maternal-neonatal care in the communities served by one hospital.

In 2001, Suellen Miller and her colleagues Pamela Putney and Milton Cordero, among others, conducted a study by the Population Council to investigate the “paradox of the Dominican Republic” where despite the fact that 97 percent of women were giving birth in health facilities attended by medical professionals the maternal-neonatal mortality rate remained high.

The Population Council study concluded that not only were obstetric and neonatal emergencies not adequately managed in the hospitals, but also a number of poor practices such as lack of infection prevention measures were contributing to poor outcomes. Existing norms and protocols were not followed, 24-hour emergency care was not available even in referral hospitals, and there was no system for the detection, management and referral of life-threatening complications. In addition to the poor quality of technical care, the study identified many instances where women were treated with disrespect, or even abused by hospital staff.

In 2009, Dr. Milton Cordero conducted a study for SESPAS on “Near Misses” to identify ways to improve the quality of care during pregnancy, birth and postpartum (Cordero 2010) using PAHO criteria. PAHO defines “Near Misses” according to three criteria: 1) clinical signs and symptoms (e.g. hemorrhage or pregnancy-induced hypertension); 2) organ failure or problems with vital systems (e. g. hypovolemia, or respiratory complications); and 3) problems related to the management of a complication (e.g. blood transfusion, surgical practices).

Using the PAHO criteria, the study attempted to identify “Near Miss” cases through the clinical records in selected hospitals and clinics using the number of live births as the denominator. However, few cases were found by Dr. Cordero during the SESPAS study due to significant barriers to carrying out the investigation. During the 6 month investigation period (September 2009-February 2010), of the 9 hospitals participating in the study only 6 reported maternal deaths and of the 164 cases identified only 138 met the PAHO criteria. In the majority of cases eclampsia was the principal complication (23.9%), followed by “vascular failure” (13%), organ and system failure and transfusion. Of the 138 cases 7.08% resulted in maternal death.

The data reported in the SESPAS study showed a high percentage of complications in women between the ages of 20-24 years (56%). Women over the age of 30 represented only 22.4% of “Near Miss” cases. Women with the highest level of education (university) had the lowest rate of complications, while women with only a primary level education had 47% of complications. Women with secondary level education experienced 45% of “Near Miss” complications. Sixty two percent of complications occurred in women during their first or second births. An interval of at least 24 months since the previous pregnancy was associated with fewer complications.

Lack of prenatal care did not appear to be a contributing factor. The study did not measure the quality of prenatal care. The association of complications with the cesarean section rate was also not analyzed. However, according to hospital records one in five women with a “Near Miss” had surgery, one in four had a blood transfusion, and 22% were admitted to the Intensive Care Unit. All the hospitals participating in the study had the capacity to manage severe complications. No observations of clinical care were conducted to assess whether norms or protocols were followed during deliveries.

Dr. Cordero found that the quality of information in the clinical charts was generally poor and diagnosis and assessment of “Near Misses” was inconsistent and not standardized. He also concluded hospital personnel showed little interest in investigating obstetric and neonatal complications or their causes, resulting in insufficient participation in the study.

A 2005 study by Dr. Jennifer Foster investigated community perceptions of the quality of maternal-neonatal care in the communities served by San Vicente de Paul Hospital. Participants during the focus groups and interviews described long waits for care and lack of respect on the part of medical staff for women’s concerns, complaints and danger signs. For example, not responding to signs of pre-eclampsia or lack of fetal movement, unnecessary cesarean sections or lack of timely surgical intervention when complications were present resulting in neonatal death (Foster et al 2010a: 508).

Auxiliary nurses interviewed collaborated many of the opinions of the community members such as long waits for care during labor, birth and postpartum. Nurses cited shortage of staff, poor working conditions, and the lack of a system for monitoring women postpartum as reasons for poor care. The nurses also stated that the only time they checked to see if a woman was bleeding too much was when a woman or a family member told them something was wrong. According to the study, the nurses knew how to manage excessive bleeding once they were aware of the problem (Foster, Requiera and Heath 2006).

In addition to providing valuable information regarding the perspectives of women and their families about the quality of maternal-neonatal services, the study serves as a mechanism for community members and hospital staff to work together to identify and overcome the barriers to adequate care and good communication. Foster and Heath attribute poor care and practices to a lack of “women centered care.” (Foster and Heath 2007) Prior to the study the assumption of the nursing staff was that women were arriving at the hospital in poor condition due to delays without reason. However, during the course of the investigation the nurses recognized that women were afraid of the disrespectful care they might receive at the hospital (Foster et al 2010b).

2.3. Description of New Interventions at the Four Hospitals

Beginning in 2010, the Ministry of Public Health, with technical assistance from the USAID⁴, supported interventions in the four study hospitals as part of a wider effort to improve maternal

⁴ The project is implemented by Abt Associates in collaboration with its partners, INTEC and Cultural Practice, LLC. The project’s objective is to integrate improved quality of Maternal and Child services to enhance Health Systems at strategically selected MOH Maternal Health and Child Centers of Excellence. The project began in

and neonatal health outcomes in the country. The hospitals were selected through an open and competitive selection process. Selection was based on five technical criteria, one of which was evaluation of a proposal developed and submitted by individual hospitals.

The complex of interventions is based on a "diagonal approach" which combines health systems strengthening interventions with maternal and child health services quality improvements. The rationale behind selecting several hospitals simultaneously was to create a cohort of "positive deviants" with the capacity to share best practices and lessons learned with other hospitals throughout the country. The approach creates synergy among participating hospitals by encouraging exchange and competition while sharing a conceptual framework and practical approaches.

Key High Impact Technical and Managerial Inputs of the Model

1. Proper selection and preparation of management teams to recognize and act on their power to change their current reality into a different future
2. Use of the National MOH Common Assessment Framework (CAF) tool for Quality Management
3. Development of strategic thinking that contributes to forging a shared vision for building a new future
4. Strengthen Hospital Administration Councils to engage diverse stakeholders in community oversight and accountability
5. Emergency Obstetric and Neonatal Care (EONC) training to improve providers' evidence-based knowledge and clinical competencies in
6. Development of Customer Service Offices to improve hospital staff's capacity to provide users with better health care and service
7. Biosafety and Infection prevention to improve knowledge and skills to manage and control risks for patients, providers and the environment
8. Development and implementation of an executive information system to increase awareness and data-based decision-making

Although most actions supported by the interventions focus on the health facilities, they also support actions directed at strengthening social participation of the surrounding communities. These actions include: health promotion, increase in the demand for immunization services, improved access of users to health information, appropriate health seeking behavior, gender equality, community oversight, and accountability.

The initial application of the interventions appears to be having a significant impact on reducing maternal deaths. As stated above, based on the data from the MOH's Epidemiological Surveillance System, the number of maternal deaths demonstrates a decline of 16.4% from 201 deaths in 2010 to 168 deaths in 2011. The 45% decrease in deaths at the four study hospitals adopting the complex of interventions was even sharper, from 51 deaths in 2010 to 28 in 2011. In the first half of 2012, maternal deaths continued to decrease nationally, with only 51 deaths by

February 2009 and runs until February 2014 with a total of 15.5 million dollars. This section of the report is taken from a description of the project and its accomplishments written by Dr. Carlos Cuellar, the former project director, on January 17, 2012.

the end of May in all government hospitals, and only nine at the four study hospitals. Could this change signify the beginning of a downward trend and an undoing of the Dominican Paradox?

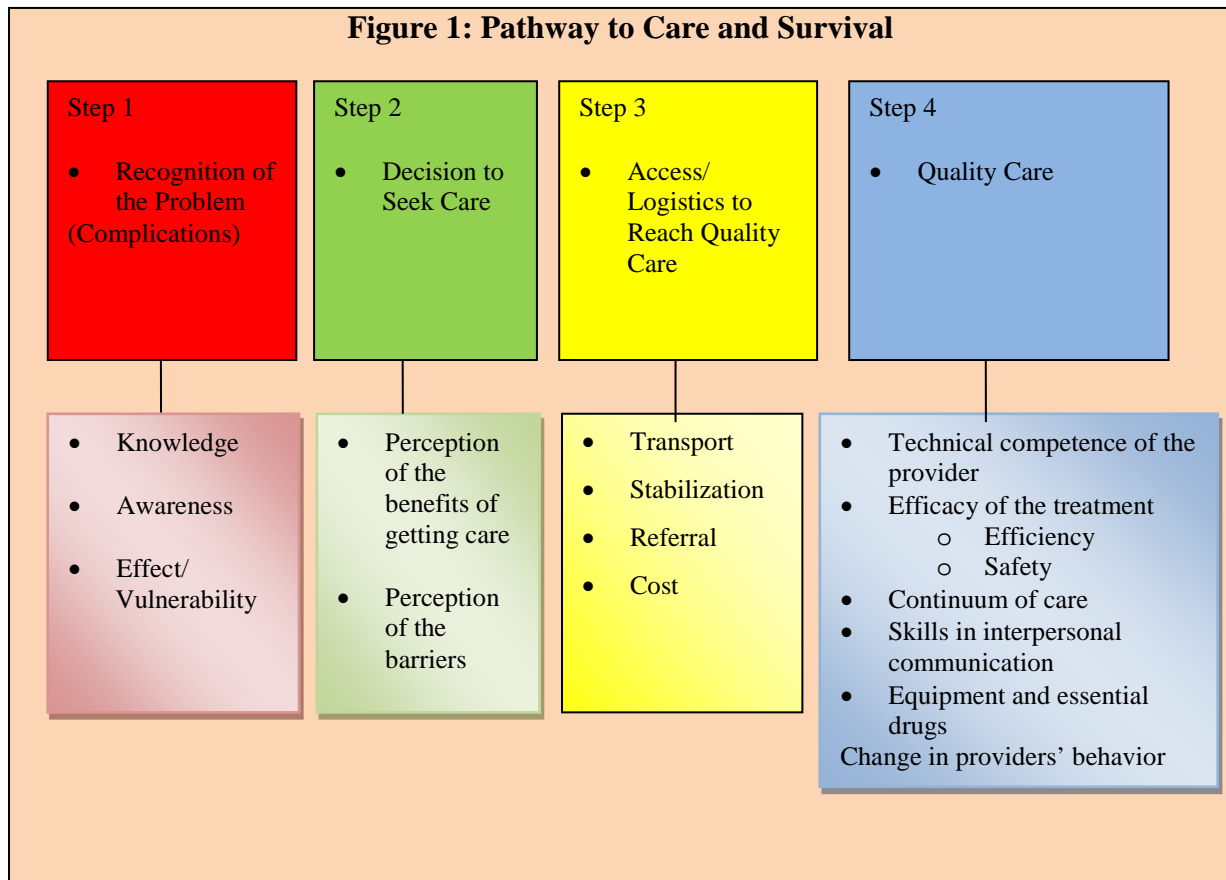
To understand what has happened to date to contribute to the positive change, the MOH and USAID requested that Cultural Practice undertake a rapid diagnostic study to analyze the key factors driving change in health outcomes at four hospitals to better understand what factors may have contributed to national impacts.

3. METHODOLOGY

3.1. Analytical Framework

3.1.1. Pathway to Care and Survival

The Pathway to Care and Survival provides the basis for assessing how well a national health system is prepared to respond to the most critical complications that contribute to maternal and neonatal death and disability. It provides the overarching framework for analyzing access to and quality of maternal and newborn care. The current study inquired into the most significant drivers that have contributed to improved maternal and neonatal outcomes with reference to the framework of the Pathway to Care and Survival.



The Pathway to Care and Survival is a framework for analyzing the causes of and developing practical solutions to maternal-neonatal mortality and morbidity at the community and health facility levels.⁵ It is modeled on the three delays concept, and is broken down into four steps: (1) recognition of health problems; (2) decision to seek care; (3) access to care and (4) quality of care. The framework provides a point of reference for identifying the critical components of behavior, decision-making and care to ensure maternal and neonatal survival. Step 1 is Recognition of the Problem: women and families often don't recognize life-threatening complications. The solutions include raising the awareness of danger signs and providing education to families about when and where to seek care. Step 2 is the Decision to Seek Care: Women and their families often delay deciding to seek care. The solutions include developing birth plans for obstetric emergencies and educating community members about the importance of seeking care swiftly. Step 3 is Access to Care: Women often don't receive prompt attention once they reach the facility. Step 4 is Quality Care: Providers often do not have the clinical skills, equipment and supplies necessary to manage complications. The solutions include upgrading the quality of the care at facilities through clinical management training, providing 24-hour obstetric and emergency care, protocols to treat complications, and to ensure adequate stocks of medical supplies and blood.

There is now international consensus on evidence-based practices that save women's and newborn lives. These include:

1. Every delivery is attended by a skilled provider⁶
2. Monitoring of labor with the partograph
3. Every delivery includes active management of the third stage of labor (AMTSL)
4. Every obstetric and neonatal complication receives timely and adequate management (EONC)⁷
5. Every woman of reproductive age has access to prevention of unwanted pregnancies and management of abortion complications

The key evidence-based interventions for newborn intra partum and postpartum care include tetanus toxoid immunization, skilled birth attendance and access to emergency obstetric care, management of skin and cord care, management of asphyxia, management of hypothermia (skin to skin contact), management of infections, and exclusive breastfeeding.

There is also broad consensus on common practices that are either harmful or have the potential to put women at risk. These include:

⁵ The framework was developed by the national USAID Egypt Healthy Mother/Healthy Child Project, which reduced the MMR by half within 5 years.

⁶ A skilled attendant as 'an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns' (WHO 2004).

⁷ Basic level EONC includes the ability to administer parenteral antibiotics, oxytocics, and anticonvulsants, and the ability to remove placenta manually, to remove retained products, and to perform assisted vaginal delivery. A Comprehensive EOC facility provides two additional signal functions – the ability to perform surgery (cesarean section) and to perform blood transfusion. The Centers of Excellence are all capable of being functioning Comprehensive EONC facilities.

1. Routine episiotomies
2. Non-emergency or high risk birth cesarean sections

In addition, all women have the right to decide about the conditions under which they give birth, including respectful treatment by healthcare providers, the position for delivery, persons who accompany her, not being forcibly separated from her newborn, and to information about any emergency measures needed to address complications. One of the major concerns that was identified in earlier research on maternal health care in the Dominican Republic was negligent and disrespectful treatment of women during labor and delivery.⁸

The interventions principally focus on Steps 3 and 4, with the greatest emphasis on Step 4 according to the Pathway to Care and Survival Framework facilitates an examination of whether operational and institutional changes in the hospitals are contributing to positive maternal-neonatal outcomes.

Pathway to Care and Survival Diagnostic Questions

1. Is the facility equipped, staffed and managed to provide skilled care to pregnant women and newborns?
2. Do providers provide skilled care during normal and complicated pregnancies, birth and postpartum?
3. Are community advocates and facilitates prepared and ready to take action when complications arise?
4. Are families supportive of pregnant women receiving adequate care during pregnancy, childbirth and postpartum?
5. Do women prepare for a safe birth, and seek skilled care during pregnancy, birth and postpartum.
6. Do women receive care that respects their rights and dignity?

3.1.2. Indicator Data

Although this study is principally a qualitative analysis of the contributory factors to improved outcomes, it integrates qualitative findings with the quantitative data collected at the hospitals on key indicators of maternal and neonatal health and evidence-based clinical and administrative practices. The clinical indicators used are:

- Number and percentage of women receiving AMTSL

⁸ A recent landscape analysis identified seven attributes of disrespectful care: 1) physical abuse; 2) non-consensual care; 3) non-confidential care; 4) non-dignified care; 5) discrimination based on specific patient attributes (e.g., race, ethnicity, age, gender, HIV status); 6) abandonment of care; and 7) detention in facilities for lack of economic resources to pay for services (Bower and Hill 2010).

- Percentage of pregnant women that had their weight, blood pressure, and fundal height measured during their last prenatal visit
- Percentage of episiotomies performed
- Percentage of cesarean sections performed

The institutional/administrative indicators used are:

- Number of people trained in maternal/newborn health through USG
- Number of individuals who successfully completed training in waste management, infection prevention and universal precautions.
- Number of institutions with improved Management Information Systems, as a result of USG Assistance
- Number of hospitals with functioning appointment system for MCH Services
- Number of hospitals with a functioning system to manage and dispose medical waste
- Number of hospitals with functioning bio-safety and infection control systems
- Number of institutions with improved Management Information Systems (MIS), as a result of USG Assistance

3.2. Selection and Description of Study Sites

The four hospitals were selected as study sites to reflect the different types of hospitals and geographic diversity. The hospitals include a large urban teaching hospital (Hospital Los Mina), a regional hospital teaching hospital (Hospital San Vicente de Paul), and two large regional hospitals regional hospitals (Hospital Antonio Musa and Hospital Jaime Mota). Other selection criteria included hospitals that had a high number of deliveries and at least one maternal death event in 2011. In addition, three of the four had no deaths in the first 4 months of 2012.

TABLE 1: STUDY SETTINGS	
Study Hospitals	Brief Description
Maternidad San Lorenzo de Los Mina, Santo Domingo Este	Los Mina Hospital is a large urban level 3 maternity center and teaching hospital located in Santo Domingo. It serves a population of over two million people. They have had obstetric and pediatric residency programs since 1980. They currently have 52 obstetric residents. Annually, they attend between 12,000 and 13,000 births.

<p>Hospital Dr. Antonio Musa, San Pedro de Macorís</p>	<p>Dr. Antonio Musa Hospital is a regional level 3 teaching facility in San Pedro de Macorís . It serves a mostly urban population of approximately 302,000 in its immediate surroundings and attends an average of about 350 births per month or 4200 births per year. The hospital is the principle referral hospital at the head of a health network composed of 152 primary care facilities, 9 municipal hospitals and 4 provincial hospitals, serving almost one million people. The hospital has 366 doctors, 268 nurses, and 403 administrative staff.</p>
<p>Hospital San Vicente de Paul, San Francisco de Macorís</p>	<p>Hospital San Vicente de Paul, in Francisco de Macorís, in the north central part of the Dominican Republic serves a population of close to a million. It is a level 3 teaching and referral hospital for the provinces of Duarte, María Trinidad Sanchez, Samaná, Hermanas Mirabal, and surrounding regions, and attends approximately 2300 births per year. It is a national center for Kangaroo Mother Care.</p>
<p>Hospital Jaime Mota, Barahona</p>	<p>Hospital Jaime Mota is a Level 3 regional hospital that attends a population of 500,000 in Barahona, Independencia, Bahoruco, and Pedernales in the western part of the Dominican Republic. It has 200 beds, of which 44 are for obstetric and gynecological patients, and 73 for pediatrics. They have 9 obstetric, 6 pediatric, and 5 anesthesiological attending physicians, and 43 residents. In 2011, the hospital attended more than 3,000 births.</p>

3.3. Data Collection Methods

The primary data collection method for the diagnostic study was the *Most Significant Change (MSC) Methodology* (Davies and Dart 2011) which is a participatory qualitative approach designed to identify key drivers for success and to better understand how such successes can be accelerated and sustained. The MSC methodology engages key participants in providing narratives about the most significant changes they have perceived as a result of the actions of an important intervention or operational change. The MSC provides a method for monitoring as it focuses on process, but it also contributes to evaluation because it provides data on impact and outcomes (Davies and Dart 2011: 8).⁹ The Team adapted the methodology for the diagnostic

⁹ The methodology was developed by Rick Davies as part of his doctoral dissertation and to monitor a complex rural development project in Bangladesh. It is based on a further iteration of the Appreciative Inquiry methodology in combination with a monitoring and evaluation lens. The methodology has been used and adapted by AusAID, Swedish SIDA, ADRA, CARE, Save the Children, DFID, and USAID, among others.

study, which had time constraints that did not allow for multiple opportunities to process the findings in groups with the hospital providers and administrators, or to use the methodology with patients and community members.

The diagnostic team asked participants to link these narratives to specific domains within in which these changes have occurred (*see prompts below*) and evidence of changes in health outcomes. The methodology is particularly helpful in understanding how changes in the organization of services interact with changes in clinical practice to produce better outcomes for mothers and newborns. The domains included but were not restricted to a list of research prompts including:

- Quality of care
- Access to services
- Providers' behavior
- Organization of Services
- Service conditions
- Referral and Counter Referral Systems
- Articulation with the Primary Level of Care
- Community Participation
- Gender-based constraints and opportunities
- Knowledge of risk factors and danger signs

The narratives and stories collected through individual and group interviews in each hospital allowed for both individual responses and group discussion by hospital staff. The group discussions provided the diagnostic team with narratives that reflected consensus on how the stories relate to changes in evidence-based practices.

Given the time available for the research, it was not possible to apply the MSC methodology at the community level. In lieu of primary data collection, the team reviewed two case studies of Maternal-child community Programs that interact with the public health system: 1) the maternal-Child community surveillance program of Health Region III and IV Barahona; and 2) the Doula and adolescent health programs in San Francisco de Macorís. We complemented these studies with a few purposive follow up interviews.

The team interviewed 65 people at the four hospitals during the two weeks they were in country. One team member also returned to all four hospitals twice to document near misses and collect background information on the community case studies. Copies of the interview guides can be found in Annex 3.

3.4. Analytical Process

The diagnostic study team used qualitative methods for the analysis of the interviews conducted in the four hospitals. The first level of analysis, which is part of the MSC technique consisted of group discussions with doctors and nurses about the most significant changes identified through several of the previous individual interviews. During the back and forth about the most significant changes, a few key issues emerged, such as putting women at the center of care, team work, empowerment of providers, and evidence-based practices.

As part of a secondary analysis, the team conducted a textual examination of the interview texts to identify patterns of consistencies and inconsistencies between statements by providers and rapid observations by diagnostic team members. The controlled comparison between the statements and observations allowed the team to develop formative theories about what categories of changes in behaviors and attitudes of health care providers and administrators. This process of discerning categories of change and the relationships among them and to the project's interventions provided the basis for understanding how and why changes in attitudes and practices had contributed to fewer deaths and better responses to severe maternal and neonatal morbidities.

In general qualitative data analysis consists of organizing data, in this case the statements gathered through interviews and rapid observations of the hospitals, according to specific criteria or categories (Bernard 1995; Ellsberg and Heise 2005; Schensul 1999). A second process involves reducing and displaying the information in a more manageable form so as to aid in the analysis and interpretation (Ellsberg and Heise 2005). The methodology consists of the following steps:

3.4.1. Data Immersion

The study team read, reread, and compared each set of notes to identify emergent issues and patterns of consistencies and incongruities among the responses. This step consisted of two cognitive processes, perceiving and comparing.

- **Perceiving** while listening to providers' and administrators' responses to the key question "what is the most significant change that contributed to the reduction in maternal and neonatal mortality?"
- **Comparing** responses from different types of healthcare providers, technicians, and administrators. The team also compared differences in tone, context, and types of opportunities and challenges across the four hospitals. The Study Team used the high impact technical and managerial inputs as reference for developing the elements used to group responses, but followed the wording and expression of the actual responses to develop the final categories. Therefore while there is some overlap in the inputs and the elements, they are not identical.

3.4.2. Data Coding

As a means of grouping answers, we used emergent themes as categories to label, sort, and contrast different responses. The phases of this step included:

- Contrasting what was said and what was omitted from the conversation. The team also contrasted information about different categories or topics that roughly correlated with the research prompts.
- Aggregating responses by category

3.4.3. Data Display and Reduction

The team put the information into matrices and also developed several graphic displays to show the relationships among the different categories of information. This allowed the team to select and focus on a smaller set of ranked meta-categories that demonstrated which changes are more significant than others according to the respondents' perceptions. The research team analyzed the narratives in relation to the indicator data collected by the project.

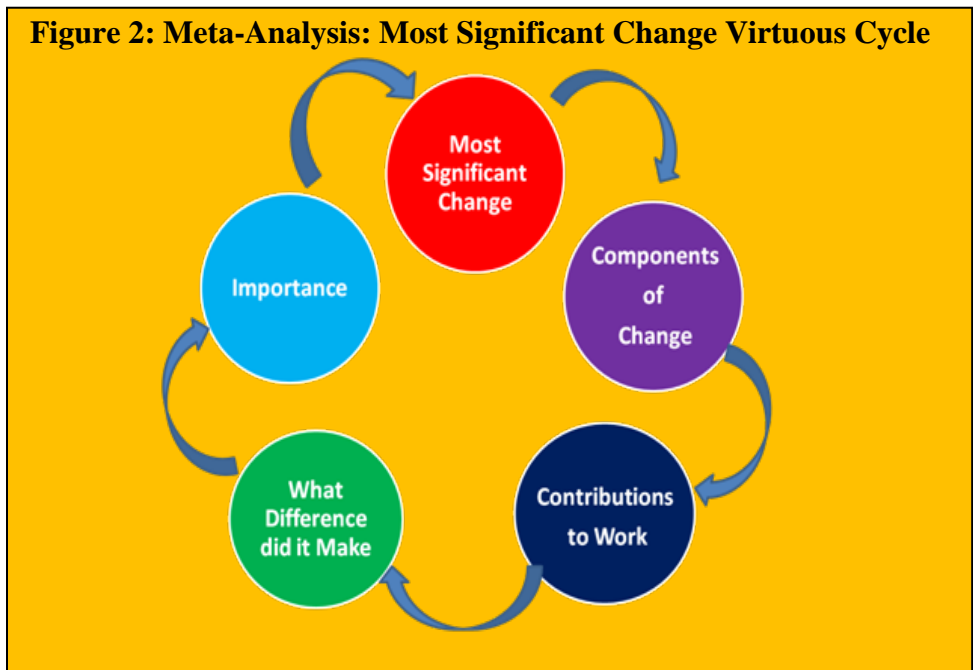
- Ordering the categories in relation of importance, according to how frequently they were mentioned and the degree of importance to them given by the respondents.
- Establishing linkages among the categories of responses in relationship to the quantitative indicator data and what the team knows about evidence-based practices in maternal and neonatal health.

3.4.4. Validation

The team shared and compared note of meetings to validate statements and then compared what was said to quantitative indicators on the same topics. For example, if several people mentioned universal application of Active Management of Stage Three of Labor (AMSTL), the team compared the statements to data aggregated by the project on what percent of women received AMSTL at the hospitals. The team triangulated both types of information with the critical variables laid out in the Pathway to Care and Survival. A less rigorous check, but a validation nonetheless as it was informed by the team’s extensive clinical and social science observational skills, included team observations during visits to the study hospitals. Finally, the team’s attempts to gather information on near misses (severe morbidities) at the hospitals, provided another test of statements about improvements in record keeping and management of complications that are most likely to result in maternal deaths.

3.4.5. Interpretation

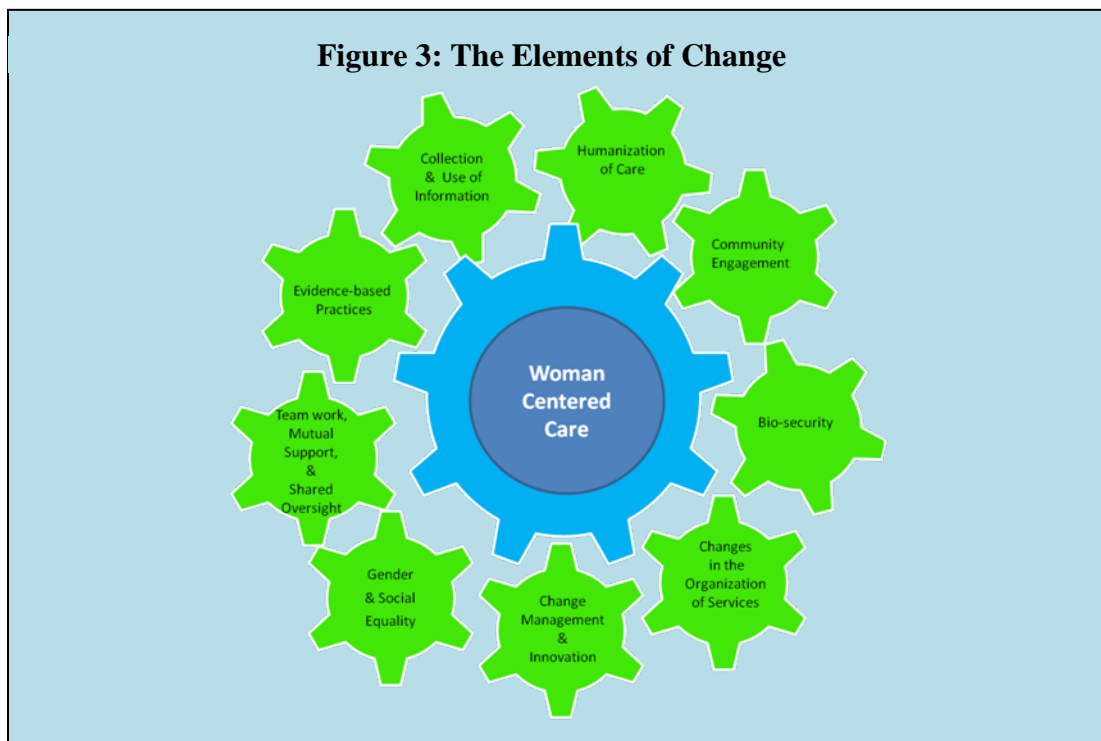
Displaying the meta-categories in order of importance permitted the team to draw a series of conclusions or findings about the process and impact of changes occurring in the four hospitals in relation to technical assistance and training they received.



4. FINDINGS AND RESULTS

4.1. Elements of Change

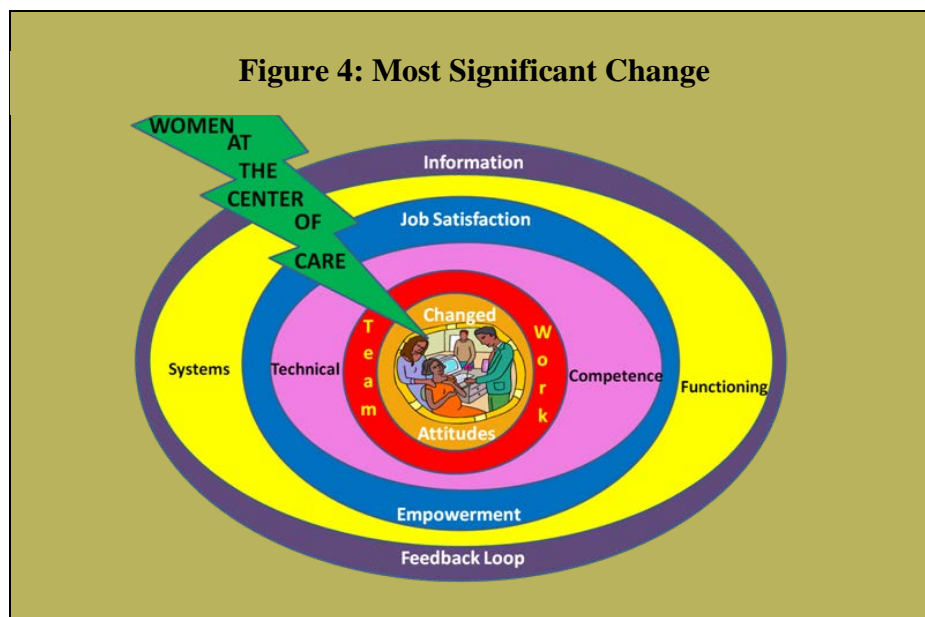
It was the effective implementation of a strategic combination of some key high impact technical and managerial inputs, as described in section II.3 above, that built upon one another to become the key drivers or elements of change that significantly improved the attitudes, knowledge and capacity and motivation of the hospital staff (managers and providers) to provide quality care resulting in fewer maternal-neonatal deaths and better outcomes.



These elements characterize the changes as discussed by hospital staff at the four hospitals interviewed by the study team. Not surprisingly many overlap with the high impact technical and managerial inputs. They also track with measurable outcomes, as demonstrated by changes in key quantitative indicators, which indicates that the elements signify changes in practice and confirms implementation of the model.

4.2. Most Significant Change: Humanization of Care

The most significant change is that doctors, nurses and other staff at the four study hospitals put women at the center of care. The change from provider-centered to women-centered care was the most pervasive and consistent finding across all four hospitals based on interviews with hospital staff in diverse positions and at different levels of management.



4.2.1. Humanized Care

For the first time doctors, nurses and other staff (bottom to the top) were not only working together as a team but they all felt they were valued and could make a difference to improve care and save lives. Hospital staff finally had the combination of knowledge, tools and “support” necessary to provide quality “humanized” care. A delivery room nurse at Hospital Los Mina said, “Everyone is empowered and feel they are owners of the hospital. We leave our personal issues aside for the good of the patient. Everyone on the team is important from the doorman and the cleaning staff to the Director.”

A sense of “healthy competition” was fostered between the hospitals due to the MOH prize for Quality Hospital. The healthy competition resulted in significantly higher motivation to improve care and outcomes for mothers and newborns. The increased sense of empowerment along with the improvements in infrastructure, better organization and management of the services, and improved technical skills and knowledge using protocols and norms resulted in a complete shift in attitudes. Care became “women centered” instead of “provider centered.” Women were no longer seen as “numbers” but as individuals who deserve quality care. More and regular engagement in the community increased the recognition and understanding by providers and hospital staff regarding the problems and needs of women and their families.

Table 2: Comparison of Maternal Deaths at Four Study Hospitals During Two Different Reference Periods

Hospital	Nov* 2010	Nov* 2011	% Decrease	June* 2011	June* 2012	% Decrease
San Lorenzo de los Mina	24	7	-71%	5	3	-40%
San Vicente de Paul	8	3	-63%	1	2	+100%
Jaime Mota	4	2	-50%	0	1	+100%
Antonio Musa	15	16	+7%	3	3	0%

- Data from Centers of Excellence Project Indicator data

The change in attitudes has been accompanied by a decrease in maternal deaths at all four hospitals since 2010, as demonstrated in Table 2. The most notable decrease has occurred at San Lorenzo de los Mina Hospital where there were 24 maternal deaths in 2010, 7 at the end of 2011. In June 2012, the 3 recorded deaths are already less than the 5 that were recorded by June 2011. Decreases in deaths at Jaime Mota (from 4 to 2) and at San Vicente de Paul (from 8 to 3). At Antonio Musa Hospital deaths increased from 15 in 2010 to 16 in 2011, although the number of deaths recorded in June 2012 was the same as the number recorded in June 2011, indicating that 2012 might not witness any further increases. There was a slight uptick in the number of deaths as measured from June 2011 to June 2012 at both San Vicente de Paul and Jaime Mota, however, as the numbers are so small, it is premature to draw any conclusions about a longer term trend.

4.2.2. Changes in Providers' Attitudes

At San Vicente de Paul Hospital the Chief of Obstetrics and Deputy mentioned “humane treatment” five separate times in an open-ended interview. “We worry about the mother and value her life. Humanized treatment of the patient is the most important.” No one wants to be left behind. At Los Mina Hospital staff at all levels talked with intense enthusiasm and emotion about the positive changes in attitude that had occurred due to the adopted approach during the interviews and focus groups and proudly cited multiple examples of the humane quality care they now provide clients. The Director stated, “Changes could be seen starting in 2010, especially the change in attitudes.”

A senior staff nurse who has worked at Los Mina over 18 years stated, “The level of commitment of the nurses is the most important change. The nurses are more affectionate and caring. The *different interventions* changed our behavior.” The Director of Neonatology said, “It personally gives me such satisfaction to give. My goal is to prevent any baby that leaves the hospital from dying.” Another senior staff physician who has been at Los Mina for many years stated, “The model has empowered all of the staff. They now think the hospital is theirs. Patients come first before me. We love and fight for the patients to solve their problems. There is no hierarchy.” The Hospital Director’s assistant said, “The change in attitudes is the most important.”

Two senior nurses at Los Mina stated, “The change in attitude is the most important among the nurses.” Two staff nurses and a staff physician said, “There is a positive attitude now. More attention is paid to the clients due to adherence to the *new practices*. Everyone knows they have to change their attitude and there is more general attention to patient care. My own role and the team’s have improved. The changes are very favorable, as much for the staff as for the patients.” The Director of Obstetrics stated, “There is a change in general in attitude and the management. The staff realizes that they have it within themselves the power to make a difference.”



We learned how to care to care
Nurse at Hospital Los Mina

The satisfaction of the mothers is more important than my salary.
Nurse at Hospital Antonio Musa

Administrators and providers noted that users had increased at all four hospitals, in part, in recognition of improved experiences for the users, including better and more organized care, cleaner and better marked infrastructure, and more affectionate and respectful treatment. Staff recounted anecdotal evidence that some women were now choosing their public hospitals over private facilities. At Hospital Jaime Mota, a member of the accounting staff and a pharmacist said, “The care here is like a private clinic now—it is a quality service.”

At La Musa Hospital the multiple staff members cited a change in attitudes directly attributable to the complex of interventions implemented at the hospital.¹⁰ A focus group with staff doctors revealed, “There has been a noticeable change in attitudes.” A focus group with senior maternity and neonatal nurses found, “This is an excellent *model* ---the best of all the *approaches* we have had. We promote immediate and exclusive breastfeeding. Episiotomies are rare now. We are nurses with a vocation. We love our job.”

4.2.3. Changes in Care

Along with changes in attitude, staff at some hospitals also recognize the importance of supporting women’s preferences and helping them to address the challenges they face during birth and postpartum. At Hospital La Musa, they have set aside rooms for mothers whose premature or sick babies have to remain in the hospital after they mothers have been released. They allow all adolescents to have their mothers accompany them for the entire time they are in the hospital, and allow most adult women to also have one person accompany them during labor and delivery, as long as they adhere to biosecure practices. Hospital San Vicente de Paul, Doulas supports women through labor and delivery, and then provides support and counseling on breastfeeding. They also provide support to families with premature babies in Kangaroo Mother Care (KMC) once the go home.

While key actors’ statements at all four facilities are very important, there is also measurable and tangible quantitative evidence of the changes they refer to. Deaths declined significantly (average decrease of 61%) in 3 of the 4 hospitals between 2010 and 2011, and by 71% at Los Mina, 63% at San Vicente de Paul, and by 50% at Jaime Mota. At Antonio Musa, there was an increase of one death in the same period, from 15 in 2010 to 16 (7% increase) in 2011. There were other important impacts as a result of the changes that were further accelerated by innovative programs and approaches evidence includes:

- When 2012 numbers are taken into consideration at Hospital Los Mina, there is evidence of a downward trend. They had 24 deaths in 2010, only 7 in 2011, and in 2012, just one as of the end of April.
- At Jaime Mota and all hospitals in its network, maternal deaths fell by 80 percent between 2010 and 2011. This was due both to the measures implemented, as well as to community health surveillance in some of the communities corresponding to lower level hospitals and health centers that refer patients to Hospital Jaime Mota.¹¹
- Hospital San Vicente de Paul won the silver medal for quality—they’re going for the gold next year.

¹⁰ Most staff used the ‘short-hand’ designation of “the project” when talking about training and approach.” We have taken the liberty to replace that with “the model” or “interventions” but when in quotes we have put it in italics to show that it was not part of the direct quote.

¹¹ The community health surveillance in health regions III and IV was supported by Italian Oxfam.

- Hospital Jaime Mota entered the competition, engaged all staff in the process, and while they did not win an award, did receive useful feedback, which they pledged to apply so as to do better next year.
- At Hospital Musa, strict bio-security has contributed to cutting neonatal deaths in half between 2006 and 2011.
- La Musa, San Vicente and Los Mina have KMC programs; Los Mina formed a team of doctors to evaluate and observe high-risk babies and hired an eye specialist to examine all premature babies. The Director of Neonatology at Los Mina stated, “We have saved 73 babies just since January that would have died without KMC.”
- At Jaime Mota the training center has been remodeled and equipped and now offers Continuous Education along with Distance Education by WHO.

Many of the hospitals also reported increased numbers of clients delivering in the hospitals. There appear to be increases in antenatal visits based on the indicator data, between February 2011 and March 2012 which would confirm the anecdotal reports.

TABLE 3: Percentage Increase in Antenatal Visits			
Hospital	February 2011	March 2012	Percent Increased
Los Mina	11,818	16,583	40.32%
San Vicente de Paul	1,138	2,065	81.46%
Antonio Musa	2,798	3,212	14.80%
Jaime Mota	1,891	2,464	30.30%

Antenatal visits increased by between approximately 15% (Dr. Antonio Musa Hospital) and 81% (San Vicente de Paul Hospital). All four hospitals expressed the belief that women who attended antenatal services were also prone to return to the hospital for their births, especially after noting changes in the quality of attention and care.

4.3. Supportive Work Environment

4.3.1. Teamwork and Mutual Support

Team work went hand in hand with mutual support and empowerment of hospital personnel at all levels of staffing. At San Vicente de Paul Hospital the Chief of Obstetrics and Deputy stated we work in a team, including with all the specialists who are a great help and support. Everyone is important here from the guards to the Director. The Director and Deputy Director of Hospital San Vicente concurred: “There has been a change in attitude and we practice transparency now.” The most significant change has been the step from group to team.” The staff member in charge of the storage area and pharmacy said, “There has been a change in attitude. More and more people have been integrated into the team. It was like a spark that changed the behavior of the people who were marginal. Everyone is involved now. We work with our hands and our hearts. The level of commitment has increased and there is healthy competition between departments. No one wants to be left behind. We won the Silver Prize for Quality Hospital.”

For the first time staff at all levels felt they were no longer “on their own” but were working in an environment that supported quality care. The supportive work environment and recognition

of the importance and impact of each staff person's role in improving outcomes led to greater pride and satisfaction in work. The changes created a supportive working environment and increased work satisfaction among most hospital staff.

At Jaime Mota Hospital the Director of the Resident's program said, "We work as a team now." The Director stated, "The staff realized that the doctor was not the center of attention-- the patient was. Before the complicated patients were managed by one person. Now a team manages them and many lives have been saved due to this. The participation of persons is key from the gardener to the top."

The Deputy Director said, "We support each other as a team now. Personally, the interventions have changed the way I work." I am now better able to motivate staff, care is more certain and patients are able to make appointments."

Shared Oversight - Doctors stated their skills have improved, along with motivation, and a new sense of humility. Teamwork and mutual reliance among staff has given everyone a greater sense of purpose, vigilance, and motivation. Secondarily, improved cleanliness and better organized infrastructure also increased pride and motivation to provide quality care. The improvements led to a new sense of ownership of hospital as well as a sense of responsibility *to pass the new knowledge and skills onto new employees.*

Pharmacists and lab technicians at all four hospitals said that for the first time they felt directly connected to the patients as a result of being part of a team responsible for women's and babies' care. As a consequence of their training and involvement in restructuring their labs and pharmacies to rapidly and accurately deliver lab results, medicines, and supplies, they say they are better organized and more confident. The pharmacists are also more aware of adverse effects of poorly stored or expired drugs. At three of the four hospitals the pharmacists said they will no longer accept drugs from suppliers that are about to expire and they are very careful about validating that the cold chain has not been broken prior to arrival.

4.4. Quality of Care: Putting Evidence-based Clinical Protocols into Practice

4.4.1. Adherence to Norms

The variables and norms for prevention and management of maternal and neonatal complications are interrelated. They include the provision of EONC, AMTSL, clean birth, partograph, postpartum care, rounds and labor management, biosecurity, and maintenance of the cold chain, among others. Staff at all four hospitals stated repeatedly during the interviews and focus groups that protocols and norms were now being used consistently by the nurses, doctors and other team members and they had not been used prior to the new interventions. Routine use of norms has resulted in more attention to continuous monitoring of pregnant women with complications who are admitted, as well as women in labor.

At La Musa Hospital during one of the focus groups the doctors stated, "Quality of care has been a main input of the *model*. EONC and biosecurity have improved a lot and the percent of infections has dropped." The Director of Neonatology said, "We are practicing evidence-based medicine now and the quality of attention has improved. Before we didn't use protocols and

now we use them as a team and we are using risk factors to follow patients from prenatal to postpartum care.”

- **Cold Chain Maintained:** At several hospitals, staff said that they now maintain a cold chain for drugs that require it. The person in charge of the storage unit at San Vicente stated, “Providers are now demanding that the laboratory staff follow the cold chain” for essential medications such as Pitocin. At Los Mina Hospital the Director stated “the staff now followed the cold chain for oxytocin” resulting in fewer deaths from postpartum hemorrhage and “clean birth norms have reduced infections.”
- **24-Hour Availability of EONC by Pediatricians and Ob/Gyns and Regular Rounds**
A doctor at San Vicente de Paul said “The residents are now constantly monitoring patients.” Another major and innovative change at Los Mina has been the implementation of a new system where the doctors conduct rounds routinely 4-5 times a day (instead of once) called “Prophylaxis Rounds” to monitor the treatment of high risk pregnant, laboring and postpartum women. The Director of the Residents at Los Mina stated, “Rounds 4-5 times a day, 24 hours a day has made a difference, following Clean Birth norms has prevented infections and complications have decreased. All the patients are evaluated and 24-hour rounds have enabled the detection of complications early. The Hospital Director of Jaime Mota said, “The changes in practices established 24 hour attention by doctors in obstetrics and pediatrics and now women are monitored continuously.

With reference to following protocols, an attending obstetrician at Hospital Lorenzo de Los Mina said, “Before everyone bragged, ‘In Spain we do it this way, in Mexico we do it that way, etc.’ Now we all do it one way, the Los Mina way.”

4.4.2. AMTSL and EONC

Active management of the Third Stage of labor (AMTSL) can decrease postpartum hemorrhage (PPH) by up to 60% (Prendiville et al. 1988). It also saves on costs by reducing the need for blood, c-sections, and extended stays in hospitals for women who develop (PPH). AMTSL involves administration of a uterotonic drug; 2. Controlled cord traction; and 3. Uterine massage after delivery of placenta. In addition, immediate skin to skin contact and breastfeeding as part of AMTSL provide benefits both the mother and the baby.

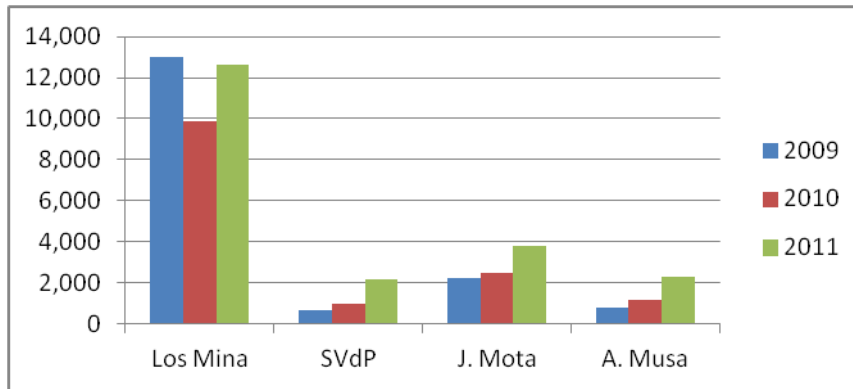
The value of AMTSL was widely recognized and highlighted in the interviews and group discussions in the four hospitals. The Director of Residents at Los Mina said that active management of labor by the team has made a difference and the results have been significant. The National Director of EONC who works at Los Mina stated, “AMTSL, use of the partograph and the cold chain for oxytocin are now followed. With improved monitoring of PPH and immediate postpartum care and 24 hour rounds there has been a drastic change.

At Jaime Mota, Helping Babies Breathe and ENOC have had a multiplying effect. The Director stated: “ENOC is very good practice and benefits providers and users and we now know how to offer quality services.” The Chief of Obstetrics said, “The project has shown us quality of care and there is professional care in the recovery room now.” The Director of Pediatrics stated,

“AMTSL has saved lives and pediatricians doing newborn exams before the mothers and babies are discharged due to the project and fewer babies are dying”

Indicator data confirms that the hospitals have implemented AMTSL almost universally, with the exception of Hospital Antonio Musa, the only hospital of the four that did not have a decrease in deaths between 2010 (15 maternal deaths) and 2011 (16 maternal deaths). In all but one hospital, there has been a steady trend in the increase in the use of AMTSL. At Los Mina Hospital there was an initial increase in the adoption of the practice and then a significant decrease in its application in 2010. However, renewed focus on implementing the practice in the middle of 2010 contributed to an increased application, similar to the trend in the other hospitals.

Figure 5: Use of AMTSL at Four Hospitals 2009-2011

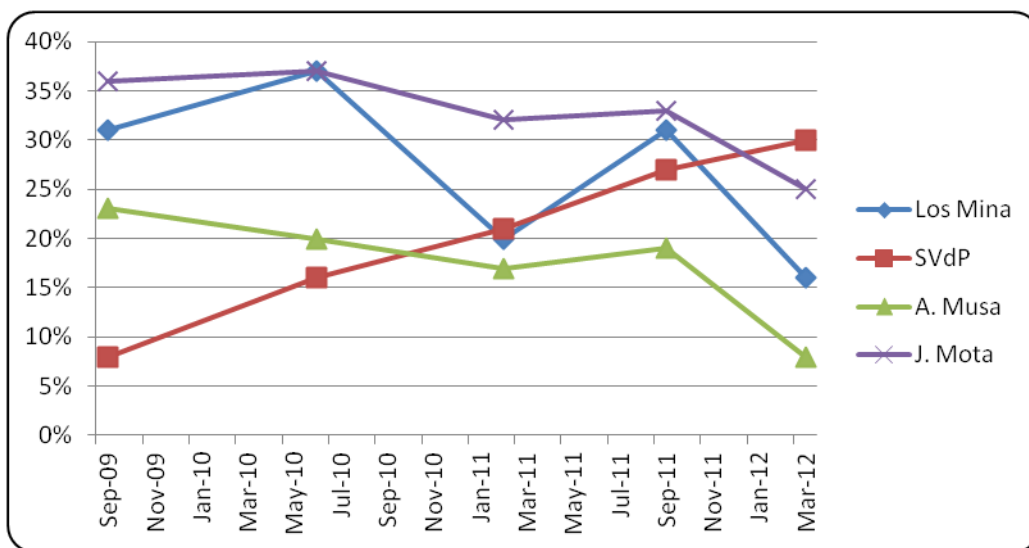


4.4.3. Use of Partograph and Episiotomies

Staff at Los Mina stated, “We have improved the quality of attention by using the partograph. While currently there is no formal monitoring of the use of the partograph, staff at all 4 hospitals mentioned that routine use of the partograph is now standard protocol. To assess adherence to the protocol would entail reviewing a sample of patient medical records, which was outside the scope of this study.

A practice that is being monitored is the percentage of episiotomies. At all 4 hospitals, the clinical staff stated that episiotomies are only selective now. The National Director of EONC at Los Mina stated that episiotomies are now restricted; IVs are not used routinely now; and adolescents are allowed to have a family member with them. Interventions, such as restricted episiotomy, also have saved blood and prevented infections.”

Figure 6: Percentage of Episiotomies at Four Hospitals 2009-2012



The data tell a slightly different story. When averaged together, there is little change in the rates across the 4 hospitals over the 3 years. When looked at individually, slightly different patterns are evident. Both Jaime Mota and Antonio Musa Hospitals significantly reduced their rates over the three years. The episiotomy rate at Jaime Mota Hospital fell by 30% from 36% in 2009 to 25% in March 2012. The rate at Antonio Musa Hospital fell most precipitously from 23% to 8% in March 2012. At Los Mina Hospital the rate fell from 31% in 2009 to an average of 25% in 2011. In March 2012 it went up again to slightly higher than 35%. The trend at San Vicente de Paul Hospital is contrary to the overall pattern at the other two regional hospitals. It was only 8% in 2009 and has increased steadily over the three years to over 30% in March 2012.

The evidence shows that routine episiotomies are unnecessary. Data on episiotomies presented in Figure 6 demonstrate a general downward trend in the percentage of episiotomies prior to normal deliveries in 2010 and 2011, with an increase in rates at Los Mina and San Vicente de Paul Hospitals in 2012. This is inconsistent with the statements of staff at the two hospitals. At San Vicente de Paul, the nurses also stated that when they attend births, they no longer practice routine episiotomies. At Hospital Los Mina, the day of the interviews, the staff said that out of 32 births the night before there were no episiotomies. It is not clear what has contributed to the recent increases in the percentages of episiotomies over time at the two hospitals.

4.4.4. Biosecurity

Infection control is very important for preventing postpartum infections in women and their babies. At the four hospitals, there has been particular attention to ensuring biosecurity in delivery rooms by insisting on and controlling the use of sterile garments and 100% hand washing among all providers and non-providers who enter. Most hospitals have assigned a nurse as the biosecure sentry. Nurses have also changed practices on the obstetric wards by making sure that all mothers wash hands after changing diapers. In addition, cleaning staff has been trained on their roles in preventing infection and all staff has been trained on how to appropriately handle and dispose of hospital waste.

The biosecurity program has been important, as evidenced by the Chief of Obstetrics at San Vicente de Paul Hospital who stated: “The biosecurity program has reduced infections.” Three senior staff nurses and a physician at Hospital Jaime Mota stated, “Biosecurity has improved due to the training. The Director of Neonatology at Hospital Antonio Musa said, “Biosecurity has improved along with hand washing and clean births. We advocated for using a more effective cleaning solution.”

All four hospitals have functioning biosafety and infection control systems. Hospital Lorenzo de Los Mina and Hospital Antonio Musa also have functioning systems to manage and dispose of medical waste.

A group of senior staff nurses at Hospital Antonio Musa stated, “We now follow protocols and norms in every area. Biosecurity has improved and we have added it to the Mother-Baby package. We use gowns and gloves and shoe covers for biosecurity now. Hand washing saves lives and is one of the most important changes. We insist everyone wash his or her hands before and after touching a baby. We practice Clean Births and use the partograph, EONC, MVA, and AMTSL and neonatal sepsis and deaths have decreased a lot.” The nurses also commented that there is strict control of hand washing and use of sterile clothing before entering the delivery room or touching any baby. They are extremely vigilant of mothers’ observation of hand washing after they change their babies’ diapers. They proudly averred: “We have reduced neonatal mortality and morbidity rates dramatically.”

4.4.5. Cesarean sections

The World Health Organization (WHO) recommends a cesarean section rate of 10-15 percent, however, cesarean section rates in both developed and developing countries are often much higher. While cesarean section can be a life-saving intervention for mothers and newborns when complications occur, unnecessary operative delivery is associated with increased risks. Population based studies conducted over the past 15 years in both the US and Latin America, which controlled for other associated risks related to pregnancy such as maternal age and hypertensive disorders, has demonstrated that elective cesarean section is associated with higher maternal and neonatal mortality and morbidity. In addition, the economic costs of operative versus vaginal delivery are significantly higher. These include: additional costs to the hospital related to surgery such as anesthesia, longer recovery time and use of materials; physicians and nurses time; and costs to the woman and her family related to increased time in the hospital, more need for assistance post-surgery and recovery from complications. The risks associated for mothers include:

- Increased maternal morbidity and longer recovery period after delivery
- Risks associated with anesthesia, including death
- Increased risks in future pregnancies including: uterine rupture, *placenta accreta*, and *placenta previa*.
- All risks to maternal health increase with each subsequent cesarean delivery

The risks to neonates include:

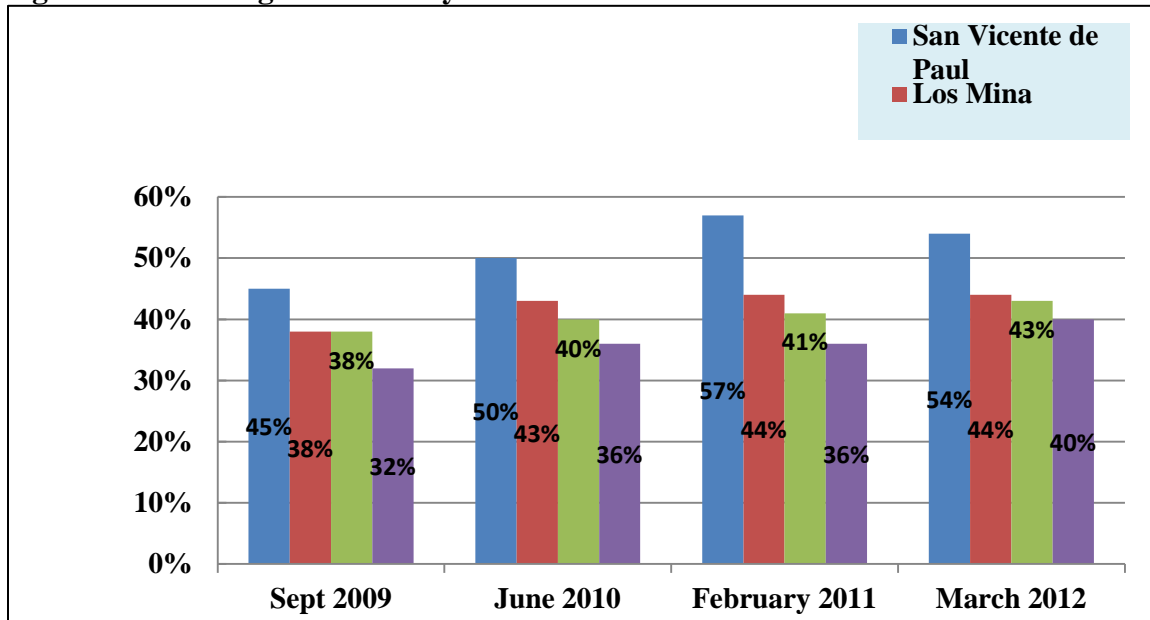
- Neonatal death
- Preterm delivery

- Increased risk for neonatal respiratory morbidity including respiratory distress syndrome and transient tachypnea. If the cesarean is elective and there is no trial of labor the risks for respiratory morbidity increase; with a trial of labor or a vaginal delivery the risk for respiratory morbidity decreases.

The cesarean section rate has been rising in the Dominican Republic steadily over the past 10 years, and has continued to rise in four hospitals over the last two years. The average increase in c-section rates at the four hospitals has been 18.5% between September 2009 (38.25%) and March 2012 (45.25%). As can be seen in Figure 7, with the exception of San Vicente de Paul Hospital, the c-sections rates are all around 40%, which is approximately 25% higher than the international standard of no more than 15%. At San Vicente de Paul Hospital, where the rate has averaged higher than 50% for the last three years, nurses attend almost all normal births, while doctors perform c-sections. At the other three hospitals, it is much less common for nurses to deliver babies on their own. It is not clear if the higher c-section rate at San Vicente de Paul Hospital has to do with the division of labor. In order to probe further into the possible association, it would be necessary to look at the timing of normal and c-section births, the reasons for conducting c-sections, and to examine decision-making processes about whether to proceed with a normal or c-section delivery, especially in the case of women who have not had a prior c-section.

There is a general cognizance among the staff at the four hospitals that the c-section rate is too high. Several people mentioned that they should do something about it, but unlike the concrete examples other changes that had taken place; nobody offered an example of steps taken to reduce the number of c-sections.

Figure 7: Percentage of Births by Cesarean Section



There are multiple clinical, economic and cultural factors for the rise in operative delivery including:

- Repeat cesareans due to high percentage of women with previous cesarean sections
- The misperception that operative delivery is safer and preferable to vaginal delivery for mothers and newborns
- The misperception that operative delivery is safer for pregnant adolescents than vaginal delivery
- The misperception on the part of women and their families that a cesarean is safer for mothers and newborns than vaginal birth and that it is less painful, has other benefits related to body image and the high percentage of “rich” women who go to private doctors have cesareans
- Hours of duty for physicians that make it less convenient to monitor labor when the hour of birth is unpredictable versus a cesarean section which can be scheduled
- Reimbursement for cesarean sections is higher than for vaginal births (economic incentives).

4.5. Collection and Use of Information

4.5.1. Patient Records

The Deputy Director at Hospital Antonio Musa said, “Before the charting system was a disaster. Each time a patient came in they had to start over with a new chart. Now the charts are electronic and the care of pregnant women has improved through better perinatal registers and good history taking.”

The Deputy Director at San Vicente de Paul made the same observation. “The MIS system has made a difference. We noted a problem with collecting and keeping information and the project helped us organize the charting system.” She said that the team organized and rearranged a million charts. At first, the archivist would order them all neatly, only to discover someone had left them disordered again after searching for one chart, making it impossible to make any progress. The hospital administration installed cameras to catch the culprits, which served as a deterrent, until the archivist could finish the job of reorganizing and systematizing the records. Step by step we have improved all the departments and integrated everyone into the team.” The storage unit staff said, “USAID training in best practices for organizing the storage area and medications (pharmacy) has been the best. The change has been total. We’ve achieved our goals. We have a new MIS system.”

4.5.2. Monitoring of Deaths and Severe Morbidities (Near Misses)

Because maternal mortality is a relatively rare event, the analysis of “Near Misses” (extreme complications) is an important method for improving emergency obstetric and neonatal care. The 2009 study by Milton Cordero discussed earlier in the report found that the greatest challenge to establishing a reliable database of near misses in the country was the lack of interest among clinicians in registering critical and accurate information. Furthermore, he found that there is no standard institutional diagnostic nomenclature for diagnosing and treating complications that lead to maternal Death and severe morbidity. In the process of trying to collect information on near misses that had occurred in the last six months at the four Hospitals of Excellence, the study team found a similar state of affairs. Despite our best efforts to

reconstruct what had occurred in eight cases through review of records and interviews, it was not possible to adequately reconstruct the events to assess whether the cases had been handled according to protocol. In contrast to what was encountered by Dr. Cordero in 2009, the study team did find evidence that there was some attention to filling in the information, but the information was inadequate.

All 10 intervention hospitals have the registers and software to record the information necessary to analyze near misses. They also have all formed teams to respond opportunely to emergencies when they occur. In most cases, these near miss or severe morbidity teams are ad hoc at the time the complications arise, disbanding when the problem is resolved. Therefore there is little incentive to come together for a post-event analysis. Of the four hospitals that are the subject of this study, only staff at Jaime Mota mentioned that the Committee for Near Misses has made a difference as a result of their review of information. The Director of Obstetrics stated, “We’ve had 3 cases in the past month that we’ve reviewed as a team, including a woman with PPH and a huge tear with uterine atony.”

4.5.3. Death Audits

There has been considerable progress on the performance of death audits by safe motherhood committees at the four hospitals visited. As can be seen in Table 3, in 2009 there was no regular auditing on maternal deaths. By February 2011, three of the four hospitals appeared to have institutionalized maternal death audits, and in 2012, all four hospitals reported auditing all deaths. As deaths become rarer events, however, it is even more important to extend this type of analysis to near misses, which will have to entail greater attention to the diagnostic protocols and record keeping. The study team did not review death audits or associated records to assess whether similar challenges to those encountered in the near miss review also pertain.

Intervention Hospitals	Sep 2009 Baseline	June 2010	Feb 2011	Sep 2011	Mar 2012
Hospital Maternidad San Lorenzo de Los Mina	0	25%	100%	100%	100%
Hospital Regional San Vicente de Paul	0	25%	100%	100%	100%
Hospital Regional Jaime Mota	0	0%	100%	N/A	100%
Hospital Regional Dr. Antonio Musa	0	13%	0%	0%	100%
Total	0	16%	75%	66.70%	100%

Source: Expediente de auditoría Muerte Materna

4.6. Gender and Social Equality

4.6.1. Empowerment

Increased knowledge and technical and management skills gave providers, technicians, administrators, and support staff a sense of empowerment, especially for nurses and support

staff. Nurses stated they now feel empowered to make decisions and take actions that previously they would have to wait to make until reaching a doctor. They now feel better equipped to respond immediately to critical situations within their area of competence, while seeking out help and advice from doctors when needed, without fear of repercussions or criticism.

The cleaning staff at Los Mina Hospital stated they are now able to make informed decisions about their work and have a greater awareness of why their work is important for patients' health outcomes. One of the Los Mina cleaners talked about how she takes pride in her work as she now knows that a clean environment means healthy mothers and babies. She also regularly pitches in to translate between Spanish and Haitian Creole for the nurse and patients. Another cleaner in the same hospital, according to an attending physician, realized that a woman whose bed he walked by was hemorrhaging. Realizing it was an emergency, he dropped what he was doing to run to the other side of the hospital to find the doctor. His participation in training at the hospital had made the difference in his being able to recognize a critical danger sign.

For the first time doctors, nurses and other staff (bottom to the top) were not only working together as a team but they all felt they were valued and could make a difference to improve care and save lives. Hospital staff finally had the combination of knowledge, tools and "support" necessary to provide quality "humanized" care. A delivery room nurse at Hospital Los Mina said, "Everyone is empowered and feel they are owners of the hospital. We leave our personal issues aside for the good of the patient. Everyone on the team is important from the doorman and the cleaning staff to the Director."

4.6.2. Gender Relations

Gender relations are important especially when nurses (who are mostly women) are reluctant to take actions to save the lives of patients for fear of over stepping their authority due to hierarchy and/or failure to value their role or capacity. There are many examples cited by staff to illustrate how the change in practices has empowered nurses and other female staff (such as cleaning personnel) to play a full and valued role in improving care and outcomes as part of a team.

At San Vicente de Paul Hospital the nurses have an exceptional degree of responsibility (they conduct a significant percentage of deliveries) and are highly respected by the physicians and hospital managers. The nurse in charge of community programs and the Director of Maternity stated, "The maternity staff have a good reputation and they keep an eye out for complications and problems and everyone thinks that is their responsibility." A labor and delivery nurse who has worked at the hospital for over 23 years said, "The nurses role has improved and they are more important now and are capable of assessing complications like placenta abruption. Nurses do most of the deliveries and are valued by the doctors who respect and depend on them." The Director and Deputy stated, "The nurses participate every Wednesday on the CAF Committee with the department chiefs and supervisors."

At Jaime Mota Hospital two senior nurses stated, "Nurses have participated in the development of the Operational Plan and CAF. Meetings between the nurses have helped and we have analyzed how things were before compared to now. Every nurse is supported now. Due to the project nurses are integrated into the team." The Director of Pediatrics said, "The pediatric nurses are more capable now." Two female staff members (from Accounting and the Pharmacy)

stated, “We are empowered now. Before we were spending not knowing on what and now we know.”

Some women in administration and the pharmacy at Mota said they were not able to take advantage of training opportunities offered by the project because their family situation did not permit them to travel to other cities where the courses were held. Nevertheless, more than twice the number of women (1087) than men (518) has been trained in maternal and newborn health between September 2009 and March 2012.¹² The indicator measuring the “number of people trained as trainers, coaches, and tutors able to replicate tools in other hospitals, DPS and SRS” (indicator # 13) is not disaggregated by sex.

At La Musa Hospital the Director of Neonatology said, “Nurses are very important and helpful in the team and collaborate.” The senior staff nurses from the Maternity and Neonatal Units stated, “Doctors and nurses work together here now. Nurses participate on the Near Miss Committee and we are giving technical assistance to other hospitals in the area now in biosecurity and neonatal resuscitation.”

4.6.3. Other Socio-Economic Inequalities

People at all four hospitals mentioned that serving the needs of the Haitian population presented different challenges. At Jaime Mota, the hospital closest to the border, about 45% of their deliveries are women who are not covered by the national health insurance plan. This creates an economic hardship for the hospital, even though, in theory, they receive a subsidy from the national government to cover the costs. In practice, payment is greatly delayed. For the 10 intervention hospitals, the number of people insured by the Social Security Health Insurance (SENASA) increased from 594,908 to 705,100 between September 2009 and September 2011.

At Los Mina, the main challenge appears to be being able to communicate with Creole and French speakers. One of the cleaning staff regularly steps in to translate. The indicator data is not disaggregated by age, ethnicity, or income, so it is difficult to validate any of the statements made about socioeconomic inequalities and how they may affect care at the hospitals. During the interviews, all statements about the challenges of dealing with poor and excluded populations were followed with statements about how everyone merits and receives the same quality of care.

There has been less improvement in reducing the number of maternal deaths at La Musa Hospital despite the evident improvements and project inputs. Many of the La Musa Hospital staff perceive referrals to be outside of the community they serve and do not consider the deaths and poor outcomes as part of their responsibility. They “blame” the deaths on the clients being referred too late instead of exploring ways to improve care and outcomes for women and newborns referred with life threatening complications.

4.7. Organization of Services

The improved organization of hospital services was one of the most frequent and important changes cited by hospital managers and staff during the interviews and focus groups. The hospitals also made a few basic infrastructural improvements in the hospitals to improve care.

¹² This information is from project indicator # 2 “Number of people (women/men) trained in maternal/newborn health through [United States Government] USG- supported programs.”

At San Vicente Hospital the laboratory was renovated and moved to a new infrastructure resulting in a significant increase in the number of lab tests (38,000 a month now). At San Vicente de Paul Hospital the Chief of Obstetrics and the Deputy Chief stated, “When women arrive with emergencies they don’t have to wait anymore. Doctors are now on duty 24 hours with a complete team available to manage emergencies.” The staff nurse in charge of the Maternity Unit stated, “Everyone depends upon one another and we do follow-up and supervision daily.” A labor and delivery nurse who has been on the staff for 23 years said, “CAF (Common Assessment Framework) has made a big difference.” The hospital Director and Deputy Director stated, “The Strategic Plan helped and the decision to compete for the prize for MOH Quality Hospital was the tipping point. Every Wednesday we have a CAF meeting with the nurses, department chiefs and supervisors.

At Jaime Mota Hospital improved organization of services has led to noticeable changes in care. The Director of Obstetrics at Jaime Mota stated, “Having 24 hour care has made all the difference and also the changes in the Recovery Room. We’ve been able to develop Ob/Gyn doctors and now manage emergencies better. We’ve realized we can do a lot with few resources.” The Chief of Pediatrics said, “The interventions have had an impact, especially on the organization of services. The charts have made a big difference. It is one of the most important innovations.” The Deputy Director said, “The patients can see the physical changes in the hospital.” Other staff nurses stated, “The minute the patient walks in they can see a total change.” The Director of the Residency Program stated, “We now have residents on duty 24 hours for obstetrics and anesthesia and the Committees to audit MM and Near Misses has made a difference. The organization of charts has improved things and patients are seen faster now. The residents are more oriented in management.”

At Los Mina, a large and busy national referral hospital, staff at all levels stated the improvement in the organization of services has made a significant difference in their ability to provide quality care. The Director stated, “CAF training has made all the difference. It is multi-disciplinary and very effective. The Committee for Near Misses and the use of indicators helped. The new chart system has been a big change and we now have tools to manage medications, equipment and supplies.” The National Director of EONC said, “The USAID project has been responsible for the dramatic change in this hospital down to the charting system. So many aspects have been changed. The hospital management is now excellent.” The Director of the Residents program cited the Near Miss Committee as an important change. Other senior staff said, “The project helped us organize what we already had much better. We reorganized all the departments.”

A pharmacist who has worked at Los Mina for over 6 years stated, “We have seen a big difference. The supply has improved for perinatal medications. The inventory system, information system and storage and supplies have improved. We have a technical committee and work in a team. I am now involved in meetings with committees and departments and we give each other feedback.” The laboratory staff cited, “The lab program has been strengthened through workshops on quality. We now have tools and the temperature in the lab and storage areas is controlled. We are able to do more lab tests now and more rapidly because they are automated and the flow of work has improved. Patients used to have to wait all day until we could get to the tests.”

4.7.1. Common Assessment Framework (CAF)

For the first time staff at all levels felt they were no longer “on their own” but were working in an environment that supported quality care. This was achieved through joint planning sessions such as CAF (Common Assessment Framework), team/peer case management and review, provision of essential equipment and supplies, recognition for improved performance, implementation of a common “language” (protocols and norms) and goals among other things, all supported by important changes in management processes and procedures

The Deputy Director of Jaime Mota stated, “There has been a significant change due to the *Model* inside and out. The Strategic Plan helped as well as the workshops. Patients now can make appointments. The project helped me personally with management and we are working on costing the services. The submission to the MOH for the Quality Hospital contest has a list of all the changes we have made.” Two senior staff nurses said, “We now have a Near Miss Committee and a Recovery Room Team and the heads of the departments participate. The charting system has improved. CAF has helped. Indicators have helped, as well as participating in the contest for MOH Quality Hospital.” Other senior nurses and a staff doctor stated, “The physical area is organized now and the minute the patient walks in there is a total change. The supply of medications has improved and we meet to decide how we are going to continue to improve. The 24 hour presence of doctors has saved lives.”

Members of the Accounting and Pharmacy staff stated, “There has been a total change due to the project including the organization of the pharmacy. We learned how to work better through workshops and the technical support helped a lot. Before we were getting expired or almost expired drugs usually and now we don’t. The equipment, the cleanliness-everything has improved. We’ve achieved a lot. Before, we were very disorganized.”

4.7.2. Change Management

The Antonio Musa Hospital Director said, “The hospital staff have formed a “team for change” then the project started a series of trainings and workshops to work on different areas of the hospital. The new practices prioritized maternal and neonatal mortality reduction. A Near Miss Committee has been formed. The project organized the pharmacy and storage area and now there is better control. Now we have a Strategic Plan and an Operational Plan and a good Perinatal Clinical Record and MIS system. We are now working on the “Management of Processes” and conducting a workshop on costing to determine the cost of providing each service. We had to do a CAF diagnostic and Improvement Plan which we used to participate in the contest for the MOH prize for Quality Hospital.” A neonatologist at La Musa Hospital stated, “The most important change was empowerment due to the Strategic Planning Process. We are using information from the project to improve care and synergy within the team. We now know the importance of follow-up and using statistics to improve. We are helping each other to resolve cases and problems and involving the family as well, especially with emotional problems.” Staff nurses from the Maternity and Neonatal Units said, “There has been an extraordinary change due to the *complex of interventions instituted over the last two and a half years*. We now use evidence to analyze the processes and achievements.”

4.7.3. Equipment and Resources

The hospitals also undertook a few basic infrastructural improvements to improve care. At San Vicente Hospital the laboratory was renovated and moved to a new infrastructure resulting in a significant increase in the number of lab tests (38,000 a month now). The nurse in charge of the Maternity Unit stated, “The hospital has improved its infrastructure.” One of the most notable observations made by the Diagnostic Study Team is that there was very little mention at any hospital of equipment and infrastructure needs or deficits. They were much more focused on changes in knowledge, practices, and attitudes. Aside from changes in the labs and pharmacies, only the Chief Pediatrician at Jaime Mota said in passing, “The new equipment such as ventilators will save lives.”

4.7.4. Referral and Counter Referral

At La Musa Hospital 60 percent of maternal mortality is from referred patients. The staff are disaggregating users to help improve the network. The senior staff nurses in the Maternity and Neonatal units stated, “Referrals have improved and we know how to use the equipment now.” Although, disaggregation also means maintaining separate databases of newborns born at the hospital and those born elsewhere and referred to the hospital with complications. This way, deaths among referred newborns are not counted in the hospital’s neonatal mortality rate. Laboratory and Pharmacy staff stated, “Services are better organized. We have signs now and the charting system has improved. The pharmacy has improved a lot. Doctors are working more hours.”

4.8. Engagement with the Community

Access to MNH services is complex and time-consuming to assess without specific baseline and monitoring for that indicator. However, during the diagnostic process evidence was found to indicate access to essential MNH services had improved due to the project. The quality of care, including more “humanized and client-oriented services” has improved to such an extent that community members are more likely to seek care at the hospitals now. Innovative programs such as KMC and Doula have also increased demand. All four hospitals have functioning appointment systems so that women no longer have to sit all day, only to find out that they didn’t get an appointment. The systems give women times and dates of appointments. In a couple of the hospitals, it is possible to schedule an appointment by phone.

At La Musa Hospital new pregnant patients are required to be screened by a special “Client Office” which coordinates their care and plans for follow-up. Now there is 24-hour coverage of services and an Ob is on duty in the ER at all times. A special entrance for women with emergencies was created by the project. All babies born receive birth certificates now. An Implementation Committee has been formed. Nosocomial infections are monitored now. A team now reportedly evaluates complicated cases.

There are some indications, based on the interviews that women with complications living within the immediate catchment areas of the four study hospitals are coming in earlier. The most recent near misses appear to be mostly referrals from further away. There are also indications that the communities surrounding the hospitals have begun noticing care has improved. Hospital outreach to the community through the hospital administrative committees, doctors and nurses from the hospitals volunteering at lower level facilities, and community-based programs have

reduced the sociocultural distance between the hospitals and the communities, thereby reducing sociocultural access barriers and stimulating higher and more time usage of services.

Doctors at San Vicente Hospital stated, “Primary care has improved so that patients with problems are coming in earlier in pregnancy. Primary Health Care centers are sending patients in earlier and we work in a team now and transfers are timelier. The breastfeeding and KMC programs are important here. The MMR continues to go down due to our new approach.” The Director and Deputy Director said, “The community values the hospital more now. Before, there were complaints of bad treatment.”

At Los Mina Hospital doctors are expanding access to care by providing care at local NGOs and the innovative KMC program is improving client satisfaction with the hospital. A senior staff nurse who has worked at the hospital for over 18 years stated, “Members of the community have noticed the changes.” Another staff nurse said, “The patients are so grateful for the better care. We see the appreciation of patients and the community.”

At Jaime Mota Hospital the Director of the Resident’s Program stated, “The care *now* is more client-oriented.” The Hospital Director said, “The demand for services has increased. We recently opened a new ER. Demand has doubled and we are working with the community to vaccinate for Hepatitis B. We have carried out a client satisfaction survey that will be ready soon.” The Deputy Director stated, “The Outpatient Department has improved and we have an Office for Client Satisfaction now with patient questionnaires and patients can see the changes. We invite the press and have a web page.” Two senior staff nurses stated, “The Outpatient Department has improved and we have had 3 vaccination campaigns. The Director of Obstetrics said, “We are bringing services closer to the people.” A member of the accounting department and pharmacy staff stated, “Patients appreciate and notice the difference.”

At La Musa Hospital, a group of senior staff nurses stated, “There has been such a decrease in neonatal deaths that even the community has noticed. Now mothers want to deliver here because our reputation has improved so much and the perception of the clients in the community has improved. There was a recent transfer from a private clinic because the father insisted they be treated here for a complication because it was better care. We now allow mothers who live far away to stay in the hospital when their babies are in the NICU. The staff gives orientation talks to patients in the waiting room.

4.8.1. Participation in prevention and service delivery, and knowledge of Danger Signs

The knowledge of risk factors and danger signs by mothers and their families so they seek care in a timely manner is key to the detection and management of life threatening complications during pregnancy, labor and postpartum for mothers and for newborns during the vulnerable period postpartum (first 72 hours, then first 7 days up to 28 days) as identified by WHO. The active engagement of the community with the hospital and community members’ participation in activities help assess, monitor and improve the quality of services and make them more responsive to client’s needs.

San Vicente de Paul Hospital has increased its engagement with the community by involving community members in committees and activities and by designating a longtime senior staff nurse as Director of Community Programs. The Chief of Obstetrics and the Deputy stated, “The project helped strengthen links with the community through courses. We have many more links with the community and work with community groups. We have formed a group in the community for KMC. We are learning about the community and the interaction of hospital staff. The nurse in Charge of Community Programs and the nurse in Charge of Maternity said, “About 2 years ago we formed a community group and they can detect problems in the community and we have a way to reach the right doctors and nurses to help the patients. We have a chain of communication with the community now.”

At La Musa Hospital the staff are involved in a number of activities to strengthen links with the community. The Director of Neonatology stated, “To involve the community more we now have an Administrative Committee. We give regular talks in the community on maternal-infant issues, breastfeeding and FP. The churches are helping. We are involving families to solve problems, especially emotional problems.” The staff nurses in the Maternity and Neonatal Units said, “Nurses now go out into the community, although we don’t have anyone fulltime to do that.”

At San Vicente de Paul, the Director and Deputy Director of the Hospital stated, “The community has become more involved with the hospital. Representatives of the community participate on the Management Committee. The USAID team made all the difference. Their training and support were extraordinary and we use all the tools they gave us. “

At Los Mina Hospital the Director stated, “We have a Community Committee with about 30 members that meets once a month with representatives from the police and fire departments and churches and there is a member of the community on the Vertical HIV/AIDs Transmission Committee.”

At Jaime Mota Hospital the Director said, “The project has been a blessing to this institution and to the community. We are working with the community, especially the Haitian community.” The Deputy Director stated, “We have involved the community to reduce the MMR and the social commitment has improved a lot. We are working with community groups.” The Chief of Pediatrics said, “Pediatricians are now doing newborn exams before mothers and babies are discharged due to the project and teaching the patients the danger signs. The project has made much more work for us but fewer babies are dying.”

4.8.2. Shared Oversight, Planning, and Monitoring

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4.8.3. Other Community Experiences

All 4 hospitals have made concerted efforts to improve relations with the communities the hospitals serve. Some of these efforts are fairly recent and short-term, while others are part of a longer term engagement with community groups. Both Antonio Musa and Los Mina hospitals engaged the community in cleaning up garbage and other threats to biosecurity around the hospital building. Doctors and nurses from Los Mina volunteer to provide primary care in nonprofit organizations in the neighborhoods close to the hospital. Nurses from Antonio Musa periodically conduct household visits in neighborhoods surrounding the hospital. While these activities contribute to building ties between the hospitals and their communities, they are not sufficiently institutionalized to provide the basis for effective community surveillance or sustained community engagement with the hospitals.

More formal programs in San Francisco de Macoris and Health Regions III and IV provide more effective models for sustainable interactions between hospitals and communities. The longest term and most in-depth experience is San Vicente de Paul Hospital’s series of community involvement programs that have provided outreach to a variety of different sectors and populations in the city of San Francisco de Macoris and its surrounding communities. These efforts began in 2003 when a delegation of nurse midwives from the United States visited the Dominican Republic at the request of nurses at San Vicente de Paul, who sought help in developing their professional midwifery skills. The Dominican nurses were particularly concerned about the delay in women seeking care when complications arise during pregnancy and labor. The Dominican and U.S. nurses decided to investigate the factors contributing to women’s delay in seeking care. They formed the nonprofit organization ADAMES to support both the training of nurses and the research. Based on a successful model used to research similar issues among the Latina immigrant population in the U.S., the ADAMES¹³ nurses developed a community-based participatory research methodology along with community partners to better

¹³ **Adelante Asegurando Madres E Infantes Sanos** (Onward! Assuring Healthy Mothers and Babies).

understand delays in seeking care (Foster et al 2010b). The ADAMES study, like many earlier studies, uncovered pervasive perceptions among community members of poor quality of care, disrespect, and fear of poor treatment and lack of decision making (Foster 2010a). Unlike previous studies, however, the ADAMES study, because of its participatory approach, provided a group of researchers from the community and the hospital that had forged working relationships that facilitated development of solutions as a result of having worked together on the research.

The training and research was the beginning of a long term relationship between San Vicente de Paul, its surrounding communities, and two U.S. universities, Emory University and the University of Puerto Rico. Over nearly a decade, ADAMES has developed a number of innovative approaches to community outreach and engagement, including the Committee for Monitoring and Support (Comite de Apoyo) which created the Doula Program and oversaw changes in quality of care in the hospital (Foster et al 2007). The Doulas, a group of community volunteers, provided a direct connection between the community and the hospital. The nurses depend on them to identify pregnant women in the community, to encourage them to seek antenatal care early in their pregnancy, to monitor any danger signs during their pregnancy, and then to accompany them through labor and delivery in the hospital. There is now a telephone tree that immediately provides pregnant women with access to a skilled provider to talk to in the event she experiences a complication. The Doulas also support mothers and fathers who use Kangaroo Mother Care for their premature babies. The Doulas provide advice and support on breastfeeding during post-partum visits to new mothers and their babies.

The Adolescent program was designed to provide integrated reproductive health for adolescents. The program offers gynecological and obstetric care, along with psychological and family planning counseling and sexually transmitted disease and HIV counseling and screening for adolescent boys and girls. The program includes peer counselors who provide outreach and support to other adolescents and their parents in the community. They are trained to help adolescents and their parents communicate more effectively.

The program at San Vicente de Paul has had a major impact on reducing the social distance between the hospital and the community. In addition, the presence of the community in the hospital, through the Doula program and the Monitoring and Support Committee, reminds providers of their commitment to quality women-centered care. The community in turn also understands some of the challenges faced by the limited staffing at the hospital and has responded to that by being the ears and eyes of health care providers in the community.

The experience of San Vicente de Paul's engagement of community groups provides a useful model for building on more incipient initiatives at the other three hospitals, particularly for Los Mina and Antonio Musa Hospitals that have mostly been limited to engaging the wider community through the hospital administrative committee.

A community monitoring project in Health Regions III and IV, which are catchment areas for Jaime Mota Hospital in Barahona, has also achieved considerable success in improving early identification of serious maternal and neonatal complications. The original project, supported by Oxfam Italy and the Region Toscana, developed a community-based health monitoring process beginning in 2004 (Amri, Bautista, and Diaz 2011). The objectives of the project were to: 1)

reduce maternal and neonatal mortality; 2) strengthen the regional health network (which has Jaime Mota as the apex referral hospital); 3) to facilitate and strengthen dialogue among health care personnel at different levels of the health network. The project resulted in a significant (more than doubling) increase in post-partum visits to mothers and their newborn babies. Another major focus was on initial and exclusive breastfeeding which reached a level as high as 90% in some communities, and an average of 75% in the region among newborns up to 4 months of age. At the conclusion of the project, the implementers recommended additional attention to monitoring pregnant and post-partum women. Their four concrete recommendations were to:

- Strengthen home visits throughout the region in order to identify pregnant women to get them into antenatal care earlier in their pregnancies.
- Strengthen post-partum visits to check on healing of episiotomies and c-sections, to catch any other complications (e.g., hemorrhage), and to provide advice and support to new mothers on the care of their newborns.
- Strengthen the capacity of antenatal services at primary and secondary health facilities to help women plan their births (including transportation, childcare for older children, and money and supplies), as well as strengthening the capacity of municipal hospitals to provide quality post-partum care and the health network to support effective referral and counter-referral services.
- Strengthen the capacity of community-based health promoters to identify and refer women and newborns with problems.

The catchment areas around Jaime Mota Hospital include more remote and dispersed communities than in other parts of the country. An outreach strategy is essential for ensuring that women and their babies receive the care they need in a timely fashion. While the model is particularly useful in dispersed areas, it is also useful in urban centers where women may be isolated for reasons other than geographical, such as social and economic isolation, especially among the poor and ethnic minorities.

1. CONCLUSIONS AND BEST PRACTICES

1.1. Conclusions

The combination of the indicator data and the qualitative information generated by the inquiry into the most significant changes and drivers of change bring us full circle to address the questions linked to the Pathway of Care and Survival Framework. These are the most important criteria for drawing conclusions about whether the measures implemented are plausibly associated with the measurable decreases in maternal mortality. Although the study does not have the validity of a randomized controlled research design, it is possible to make reasonable associations between concrete and verifiable actions and outcomes based on the coincidence among high impact technical and managerial impacts, discursive and observational information, and quantitative indicator data with reference to a well-established evidence base.

Overall, the study found:

- 1. Facilities to be equipped, staffed, and managed to provide skilled care to pregnant women and newborns.**

- Reorganization of services and work in teams has had a major impact on improving the quality of services.
 - The change process took place at all levels (from guards and cleaning staff to hospital managers) and led to staff feeling personally valued and invested in the change process. They felt important and that the actions they took personally as part of a team made a difference in saving the lives of mothers and babies.
 - The interventions focus on critical actions that are most effective in reducing maternal-neonatal mortality and morbidity, through genuine participatory processes to make changes, and these were adopted by all four hospitals.
 - A bottom-up and top-down approach was used consistently to foster an environment where “quality care and preventing maternal-deaths were everyone’s responsibility” that empowered the staff at all levels and increased motivation to change
 - All four hospitals improved the management systems (MIS, organization of units, strategic planning, team building through CAF, charting system)
2. **Providers to be knowledgeable and aware of how to provide skilled care during normal and complicated pregnancies, birth and postpartum.** This conclusion is supported by evidence showing that the hospitals now:
- Focus on critical actions that are most effective in reducing maternal and neonatal mortality and morbidity
 - Prioritize and focus on a set of critical actions that are most effective in reducing maternal-neonatal mortality and morbidity. These inputs involved a combination of technical, management, and community interventions such as: AMTSL, KMC, biosecurity, ENOC audits of deaths and near misses, clean births, improvements in the cold chain (e.g., the correct storage of oxytocin is now saving lives), promotion of immediate and exclusive breast feeding, HBB, MVA, and improving the availability of blood
3. **Community advocates and facilitates prepared and ready to take action when complications arise.** There are now stronger:
- Community linkages for shared responsibility (e.g., community members were also responsible for outcomes and improving the quality of care in the hospitals) were strengthened so that mothers and their families were included in the change process.
 - Links to community with exchanges, feedback mechanisms, and communication, including community members on select hospital committees, community education, working with churches, sending nurses into the community (San Vicente and La Musa), and having staff doctors provide care at local NGOs (Los Mina).

As the study did not interview clients or community members in the catchment areas of all four hospitals, it is not possible to draw general conclusions about whether:

4. **Women receive care that respects their rights and dignity.** Nonetheless there was considerable evidence that:

- Providers now see the extension of such care as their unequivocal obligation.
- Community members interviewed in San Francisco de Macorís confirmed they are satisfied with the care at Hospital San Vicente de Paul. It is still necessary to assess by client survey or focus group discussions, the degree to which clients feel respected and feel capable of exercising their rights to respectful, quality, and dignified care.

The two community outreach experiences and improvements in antenatal counseling and exams indicate that those interventions did increase:

5. **Families’ supportive of pregnant women receiving adequate care during pregnancy, childbirth and postpartum.**
6. **Women’s knowledge and capacity to prepare for a safe birth, and seek skilled care during pregnancy, birth and postpartum.**

There are continuing challenges that will likely be addressed with focused attention to addressing them in the four hospitals. These include:

- High rates of c-sections in the four hospitals
- Lack of complete data for conducting near miss audits, and the absence of routine review of severe morbidity cases
- Limited attention to improving referral and counter referral systems
- Need for greater attention to community involvement in development of the concept and practice of women-centered birth at all Hospitals.

1.2. Best Practices

During the interviews a number of best practices that contributed to improved care and outcomes in the hospitals were cited frequently. The most significant of these practices are presented in the Table 5 below. It is important to note that the changes are almost certainly due to the successful introduction and implementation of the combination of best practices, that reinforced one another, as well as the sequence in which they were introduced. For example, improvements in the reorganization of the hospital units and more efficient systems (e.g., charting) increased the motivation and morale of the hospital staff due to an improved working environment. Patients noticed and commented on the improved systems (e.g., less waiting time to be seen because they didn’t need to fill out a new chart, they were able to make appointments to be seen for the first time, etc.) and attitudes of the staff (e.g., care was perceived to be more humane), which was in turn recognized by hospital managers.

Strengthening of the teams and improved communication between the hospital units enabled staff to work together effectively and collaboratively for the first time. This was reinforced by the development of hospital Strategic and Operational Plans as a team and further enhanced by lower level staff feeling their role was valued (their hard work and increased efforts made a difference).

Continuous in-service training gave staff more confidence to manage complications more effectively and because of the newly strengthened team approach to care they no longer felt totally alone in handling the stress of life-threatening situations. This was reinforced by the use

of protocols and norms that facilitated care and established a common working framework. Outcomes improved (e.g., the staff noticed fewer infections and a significant decrease in newborn deaths) which further reinforced best practices. The more humane approach to births increased client satisfaction (both the women and their families), which improved the morale and work satisfaction of staff (e.g., they enjoyed their work much more).

The participation of community members on hospital committees led to better communication and understanding of the problems and issues between the community and the hospital staff including challenges to overcoming barriers to care (e.g. community members recognized the problems of the staff and vice versa for the first time and developed more of a common understanding and commitment to work together).

TABLE 5: Best Practices that Contributed to Improved Care and Outcomes According to Hospital Staff Interviewed April-June 2012

BEST PRACTICE	San Vicente de Paul	Jaime Mota	Antonio Musa	San Lorenzo de los Mina
Working as a Team at All Levels (every staff member's role valued)	x	x	x	x
Development of Strategic and Operations Plans with Team	x	x	x	x
Reorganization of Services (charting system)	x	x	x	x
On-going In-service Training	x	x	x	x
Humanized/Women-Centered Care (expressed by change in staff attitudes towards clients)	x	x	x	x
24-Hour Coverage of Obstetric-Neonatal Emergencies (doctors available in hospital 24/7)	x	x	x	x
Bio-Security and Infection Prevention in All Hospital Departments	x	x	x	x
Near-Miss Review Committee	x	x	x	x
EmNOC with Restricted Use of Episiotomy, Clean Birth, AMTSL, etc.	x	x	x	x
Community Member Participation on Hospital Committees	x	x	x	x

Consistent Use of Norms and Protocols Based on Evidence by All Departments	x	x	x	x
Prophylactic Rounds 3-4 Times a Day to Assess Status of High Risk Women Admitted (Prenatal, Labor, Delivery and Postpartum)				x
Consistent and Regular Monitoring of Women During the Immediate Postpartum Period (first 2-4 hours postpartum) in Special Post-Delivery Room		x		
Long term Hospital Staff Committed to Implementation of interventions	x	x	x	x

2. CONTINUING CHALLENGES AND DIRECTIONS FOR CHANGE

The continuing challenges include:

- Deficits in data collection and analysis that make it difficult to monitor and analyze near miss events, necessary for continuing quality improvement;
- High rates of c-sections and few concrete strategies for addressing the problem;
- Only moderate efforts to engage communities in hospital planning and oversight;
- Room for improving consideration of women’s preferences, rights, and say in the organization and delivery of care.

Some of the possible directions for continuing change include:

A. Continuing efforts to strengthen hospital teams

The hospital teams need further strengthening in technical and managerial areas. As different hospitals have different strengths and weaknesses it would be useful to conduct a SWOT of each hospital team’s strengths, weaknesses, opportunities, and threats and develop a plan for strengthening each team. If all hospitals plan to participate in the Quality in Government Award competition, there is an opportunity to make the SWOT part of this process.

As the hospitals have addressed many of the big issues (e.g., biosecurity, technical competence, transparency, etc) there is a danger that they will be overwhelmed with what appear to be issues at the margin. For that reason, it is recommended that strategic planning continue to take a systems approach, and continue to empower teams, sub-teams, and individuals to take initiative and innovate. This will probably require hospital management to think creatively about new ways to motivate staff, as well as socialize new staff to the evidence-based practices adopted by the hospitals. The teams might also become more problem focused. For instance, hospital management could challenge staff to solve specific problems, such as sloppy or incomplete

record keeping, client satisfaction, or even the high rate of c-sections, or increasing rates of teen pregnancy.

There is also the opportunity for hospital staff to reach out, as some have already done, to secondary and primary health facilities within their health networks to build team capacity out from the four hospitals to their partner facilities and the surrounding communities and to improve the timeliness, quality, and effectiveness of referrals and counter referrals.

B. Strengthening and systematizing recording and analysis of near misses

It is especially critical to focus attention on the regular and systematic review of near misses to improve care and outcomes as the number of maternal-neonatal deaths decreases in number. As the current study has indicated, the information recorded is inadequate to assess performance in relation to outcomes. Recommended activities include:

- Developing a protocol for the registration, review, and analysis of near misses (they are not being recorded presently in sufficient detail) that incorporates the Pathway to Care and Survival Framework.
- Immediate initiation of semi-annual audits of near misses, using an adapted death audit methodology to identify delays, assess response at different points in the referral and treatment process, examine adherence to norms and quality of information in order to make recommendations for improvements in quality.

C. Undertaking more rigorous efforts and resolute focus on reducing c-section rates

Reducing the c-section rate is one of the major challenges facing the Dominican Health System. There are a number of interventions recommended to reduce the high percentage of cesarean sections in the hospitals including:

- Hospital Directors should set a goal of reducing cesarean sections in first births. Using some of the techniques that have produced significant changes in other clinical practices, such as the routine application of AMTSL, adherence to strict biosecurity norms, and initiation of immediate breastfeeding, to name a few. The MOH, with USAID support might even stimulate friendly competition among hospitals to come up with and implement concrete plans for reducing c-sections in first births to levels established by international evidence-based norms.
- Have intervention hospitals collect and use information to hold themselves accountable. To this end, all c-section data should be disaggregated by parity and age, and the reason c-sections were performed. The data should be reported regularly and publically. To begin, the MOH, or its designee, should conduct a review of all cesarean section births at all four hospitals to analyze them for age, parity, and reason cesarean section was performed, and the time of day the cesarean was performed (in many settings they are performed for non-medical indications to allow doctors to leave the facility to attend to other work outside the hospital).

- Develop a cesarean section reduction plan for reaching specific goals (i.e. no more than 15% of all first births). This plan should be specific with information on methods, actors, indicators, budgets, and periodic reviews. The plans should also include methods to monitor health outcomes, at baseline and at regular intervals. WHO has an initiative that promotes the use of surgery checklists that include an indication for surgery that could be tried to ensure the rationale for operative delivery was sound.
- Identify facilities in the Dominican Republic where the cesarean section rate is the lowest and analyze the factors that contribute to the lower rate (‘positive deviants’) to be used as “models” for replication.
- Increased focus on the needs of adolescents (26% of births at Los Mina) is critical to reducing cesarean sections. Antenatal care offers opportunities to develop birth plans and to discuss the risks of unnecessary c-sections along with other topics such as immediate breastfeeding, rights, family planning, nutrition, and danger signs during pregnancy and birth. Design and carry out BCC campaigns with mothers and their families to inform them about the benefits of vaginal birth and the risks of cesarean sections, including handouts and counseling during prenatal visits.
- Finally, hospitals throughout the country would benefit from a BCC campaign aimed at doctors (obstetricians, pediatricians, and general practitioners) on the evidence base for avoiding unnecessary c-sections and the benefits for mothers and babies of vaginal births. This should include a summary of information from WHO and NIH on the topic, as well as other professional opportunities to learn about criteria for post c-section vaginal births.

D. Strengthening linkages and engagement with communities and other health centers and hospitals in the network

The current study highlighted some of the successful interventions at the community level, especially the experiences in San Francisco de Macoris and Regions III and IV in the western region of the Dominican Republic. Both interventions reinforced ties between health facilities and their surrounding communities. In San Francisco, community members now consider themselves part of the hospital and the hospital looks to them as their eyes and ears in the community. In Regions III and IV, community level health surveillance has decreased deaths and increased health seeking behavior by breaking down social barriers between communities and health facilities. These types of initiatives and their institutionalization are essential for identifying women and newborns with complications in a timely fashion and ensuring they get to the appropriate level of care opportunistically.

It is recommended that the four hospitals work with other facilities in their networks and communities to develop systems for community health surveillance of pregnant women, new mothers, and newborns. It may be possible to build upon existing programs such as:

- Doula (San Francisco de Macoris) and breastfeeding support
- Los Mina Outreach to the community on garbage and traffic management
- Adolescent Programs (San Vicente de Paul and Hosp. Musa)
- Strengthen Administrative Committees, especially the participation and voice of representative stakeholders, women’s groups and women leaders

E. Strengthening Administrative Committees, especially the participation and voice of representative stakeholders, women’s groups and women leaders.

Although the current study did not examine the hospital administration committees in depth, it did appear from some of the study team’s conversations that communities were mostly represented by local officials rather than by a broader cross section of the population. Greater gender, ethnicity, and age diversity will enrich the value of the committee as a bridge between hospitals and their surrounding communities.

F. Strengthening women’s voices in defining and monitoring quality of care

- Challenge providers and administrators to make organizational changes that give women and their families greater choice about their births (e.g., being accompanied during birth, more information about rights, accurate and full information on the risks associated with non-emergency c-sections)
- Establish more routine client satisfaction surveys, along with other types of information gathering, such as in-hospital and community-based focus groups with new mothers and their partners or other family members.
- Ensure that women as well as men have a seat on Hospital Administrative Committees, and that women’s groups are adequately represented.
- Consider offering men only pre-natal classes for fathers to be (especially for adolescents), as well as welcoming fathers into antenatal care, when women so desire. Also, where possible, work with parents, adolescents, and teachers to design pregnancy prevention programs (for teens in and out of school—especially for boys).

ANNEXES

ANNEX 1: BIBLIOGRAPHY

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ANNEX 2: PEOPLE INTERVIEWED

Hospital Antonio Musa April, 24 2012			
Name	Job	Telephone	Email
1. Ramón de Windt	Jefe de bioanálisis	809-529-2497	ramondewindt@laboo.com
2. Yajaira Parra	ginecobstetra	829-293-8818	kervinparra@hotmail.com
3. Santa Francis	farmacéutica	809-399-2788	santadifrancis@gmail.com
4. Amaira González	perinatologa	809-309-5438	Amaira-tony@yahoo.com
5. Ángel Lee	ginecobstetra	809-707-7728	waaguilera@hotmail.com
6. Mariagelip Jiménez	ginecobstetra	829-919-2092	maryjimenezvicente@hotmail.com
7. Álvaro E. Martínez	ginecobstetra	809-719-3924	
8. Silvio Thomas	ginecobstetra	809-697-5014	tsilvio@hotmail.com
9. Ramona Peña	enfermera	809-553-1285	Ramonapdc@hotmail.com
10. Magalis Vidal	enfermera	809-529-3803	Vidalgomez29@hotmail.com
11. Jackelin Arias	enfermera	809-749-3516	Yaquelin-aristy 1 @hotmai.com
12. Johana Fernández	enfermera	829-204-1610	Johana_0217@gotmail.com

Hospital Jaime Mota April 20, 2012

Name	Job	Telephone	Email
1. Ana Francisca Matos	contable	829-259-7277	Anamatosmatos@hotmail.com
2. Dennis Figuereo	enfermera	829-641-4159	dennisfiguereo@hotmail.com
3. María García	enfermera	829-855-7323	Maribelgarcia26@hotmail.com
4. Federico Matos	Jefe pediatría	809-871-0406	icoomatos@hotmail.com
5. Martina feliz	subdirectora	829-259-7835	martinavalerio@hotmail.com
6. Álvaro Méndez	ginecobstetra	809-543-5612	dralvaromh@hotmail.com
7. Ramia Matos	Enfermera sala de parto	829-280-0171	Ramia.matos@hotmail.com
8. Bertha Heredia	Enfermera sala de parto	809-697-2805	Mvirtuosa03@hotmail.com
9. Marcia Moreta	Enfermera sala de maternidad	809-5246546	marciamoreta@hotmail.com
10. Moraima Espinosa	Suministro farmacia	809-524-2586	
11. Kharen Rubio	Suministro de farmacia	809-313-8269	

Hospital San Lorenzo de los Mina April 19, 2012			
Name	Job	Telephone	Email
1. Zobeida Peralta	ginecobstetra	809-868-5832	Dra.zobeida_peralta@hotmail.com
2. Bartolina Santos	administradora	809-699-6666	Hospitalmaternoinfantilsanlorenzo delos mina@hotmail.com
3. Leonardo Ziur	ginecobstetra	809-763-0750	ziurlen @hotmail.com
4. Narda de oleo	perinatología	809-757-6385	nardadeoleo@hotmail.com
5. Paulino Díaz	director	809-878-3299	diazop@yahoo.com
6. Jose Sehucerer	epidemiólogo	809-224.8457	Jose Sehucerer@hotmail.com
7. Bienaventurado Melo	Coordinador de residencia	809-561-9756	meloubiera@hotmail.com
8. Víctor Martínez	Asistente administrativo.	809-993-349	avercido@hotmail.com
9. Caricia Pie	conserje	809-386-2466	
10. Octavia Balbuena	Enfermera sala de parto	829-509-2684	
11. Virginia Caro	bioanalista	809-699-66668(241)	Virgily2 @hotmail.com
12. Rosa Felipe	bioanalista	809-699-66668(241)	Rosaether.eclips@gmail.com
13. Francia Pie	Suministro de farmacia	809-756-1775	cientificap@hotmail.com
14. Jocelyn Sánchez	ginecobstetra	809-875-5506	Jocyss274@hotmail.com

Hospital San Vicente de Paul April 18, 2012			
Name	Job	Telephone	Email
1. Sor Angel Morillo Moya	Encargada de suministro farmacia.	829-420-5056	Smorillo01@hotmail.com
2. Margarita Herrera	Subdirectora de enfermería	829-222-1445	margaritaenfria@hotmail.com
3. Dilenia Altigracia Bido	Medico residente medicina familiar	829-629-8789	dra@hotmail.com
4. Cristian José Ortiz	Medico ginecobstetra	809-399-5258	drcristianortiz@hotmail.com
5. José Polanco	Jefe de Ginecobstetricia	809-588-2327	Jose_paulino@hotmail.com
6. Gloria Sánchez	Enfermera graduada.	829-252-7861	Roberluz082@hotmail.com
7. Joany Martínez	Enfermera graduada	829-744-3519	Joa_jlo@hotmail.com
8. Altigracia de Vargas	Jefa del voluntariado	809-309-3461	aicsanfrancisco@hotmail.com
9. Leovilgida Reyes. (Lucy)	Enfermera neonatología	829-222-1452	L_reyesgabriel@hotmail.com
10. Fe María Alvarado	Enfermera sala de parto y Canguro.	809-851-4024	Fe-alvarado@hotmail.com
11. Rosa Santana	Laboratorio.	809-484-9911	Katherinemartinez. @hotmail.com
12. Xiomara Almanzar	Medico residente medicina familiar	849-720-6656	xiomitm@hotmail.com
13. Hortensia Hernández	Administradora		Hortensia02@hotmail.com
14. Angel Rosario	Director.		

May 2, 2012 to June 6, 2012.	
Name	Job
Hospital Jaime Mota	Hospital Jaime Mota
Rosario Arboleda	Secretaria de la subdirección.
Federico Matos	Encargado de Pediatría
Álvaro Méndez	Encargado de ginecobtetricia
Martina feliz	Subdirectora
Mary Janet Díaz	Gerente de la región IV
Personal del archivo y estadística de hospital.	Responsable del manejo de la información.
Hospital San Vicente de Paul.	Hospital San Vicente de Paul.
Asela Tejeda	Líder comunitario
Lidia Joaquín	Líder comunitario
Lic. Carmen Tejeda	Enfermera de atención primaria
Lic. Carmen Yolanda	Enfermera de Epidemiologia
Lic. Gloria Sánchez	Enfermera de análisis de datos.
Personal del archivo y estadística de hospital	Responsable del manejo de la información
Hospital San Lorenzo de los Mina	Hospital San Lorenzo de los Mina
Lic. Faña	Enfermera de Maternidad
Lic. Víctor Martínez	Asistente administrativo.
Residentes de área de parto.	Médicos realizando especialidad en ginecoobtetricia.
Personal del archivo y estadística de hospital	Responsable del manejo de la información
Hospital Antonio Musa	Hospital Antonio Musa
Amaira González	Encargada de perinatología
Magaly Vidal	Enfermera sala de parto.
Marleni Villa	Secretaria del Dr. Silvio Thomas
Personal del archivo y estadística de hospital	Responsable del manejo de la información

Centros de Excelencia Materno Infantil Project Staff	
Name	Title
Rosa Maria Suarez	Director
Carlos Cuellar	Former Director
Elizabeth Conklin	Deputy Director
Salvador Samboy	Financial Administration Manager
Cecilia Villaman	Field Manager
Cecilia Corporan	M&E Manager
Dolores Rodriguez	Field Manager
Maria Teresa Marte	Field Manager
Ana Rafaelina Guererro	Field Manager
Gilena Alcantara	Field Manager
Farah Segura	Field Manager
Miledys Abreu	Administrative Assistant
Carolina Albuquerque	Financial Assistant
Heidy Nadal Ortiz	Administrative Reception Assistant
Sonia Brea	Administrative Assistant
Mario Mendez	Driver
Antonio Rodriguez	Driver
Edwin Santana	Driver
Luis Sanchez	Driver

ANNEX 3: DATA COLLECTION INSTRUMENTS

MOST SIGNIFICANT CHANGE

Nombre de institución-establecimiento de salud: _____

Nombre(s) de persona(s)
entrevistadas(a) _____ Título _____

Información de contacto: Teléfono _____

Correo electrónico: _____

Nombre de la persona que está grabando _____

Fecha: _____

Yo entiendo que mi participación en esta conversación es voluntaria y las respuestas son confidenciales. Doy mi permiso para que la conversación sea grabada.

Introducción: Durante el último año, se ha observado una disminución en el número de muertes maternas y neonatales al nivel de su establecimiento. Es de mucho interés del Proyecto entender desde su perspectiva cuales son los factores que han contribuido al éxito y como los logros podrían ser sostenidos.

Quisiéramos conversar con Usted para poder captar sus experiencias y opiniones sobre los cambios más significantes que se han generado en su establecimiento que han contribuido a la reducción de mortalidad materna y neonatal. Los testimonios son narrativos que personifique los cambios que han experimentado. Es posible que hayan ocurridos muchos cambios, grandes o pequeños. Le solicitamos que elija los cambios que cree que son los más significantes. Los cambios más significantes que elija pueden ocurrir en:

- Las conductas de sus colegas con quienes trabaja
- Un aspecto de la organización del trabajo dentro del hospital
- Las políticas y la administración del hospital
- Las conductas y vidas de las pacientes del hospital o la gente de la comunidad servida por el hospital

1) ¿Cuáles son los cambios más importantes que se han contribuido al descenso de las muertes maternas y neonatales?

(Cuéntanos de una historia que ilustra el cambio)

2) ¿Por qué son significantes para usted?

3) ¿Qué diferencia han hecho ahora y que diferencia harán en el futuro?

DATA COLLECTION INSTRUMENTS: NEAR MISS CASE HISTORY

Formulario de documentación Morbilidad extrema	No.	Hospital
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- 1. Nombre de la paciente**
- 2. Edad**
- 3. Fecha y hora de llegada al hospital**
- 4. Condición de la paciente al llegar al hospital y diagnostico**
- 5. Donde realizo sus visitas prenatales y especificar controles del embarazo**
- 6. Fecha y hora cuando comenzó el tratamiento.**
- 7. Tipo de tratamiento recibido. (Intervenciones realizadas)**
- 8. Evolución de signos vitales.**

ANNEX 4: NEAR MISS (SEVERE MORBIDITIES) SUMMARIES: From Four Hospitals

Paciente	Edad	Hospital	Condición	Historia obstétrica	Tipo de nacimiento	Nivel de información en el record
A	18 años	Jaime Mota	Pre eclampsia severa	Primer embarazo	Por cesárea	El record clínico no tenía la información sobre la paciente.
B	29 años	Jaime Mota	Pre eclampsia severa	Cuarto embarazo ,tres embarazo anteriores todos por cesárea	Por cesárea	El record clínico tenía la información sobre la paciente
C	20 años	Hospital San Lorenzo de los Mina	Pre eclampsia severa con hematoma en útero.	Tercer embarazo .los dos anteriores por parto vaginal.	Por cesárea	El record clínico tenía la información sobre la paciente
D	30 años	Hospital San Lorenzo de los Mina	Complicación de legrado hecho en una clínica privada	Quinto embarazo, los cuatros anteriores por parto vaginal	aborto	El record clínico no tenía toda la información de la paciente.
E	18 años	Hospital Antonio Musa	Pre eclampsia severa	Primer embarazo	cesárea	
F	16 años	Hospital Antonio Musa	Pre eclampsia severa	Primer embarazo		El record clínico no tenía toda la información de la paciente.
G	18 años	Hospital San Vicente de Paul	Pre eclampsia leve	Segundo embarazo, el primero fue por cesárea	Parto vaginal.	El record clínico tenía la información sobre la paciente
H	21 años	Hospital San Vicente de Paul	Atonía uterina.	Segundo embarazo, el primero fue por cesárea	Parto vaginal	El record clínico no tenía información sobre el evento ,fue reconstruido por el personal de salud que participo.