JHPIEGO An Affiliate of Johns Hopkins University

A GLOBAL LEADER IN IMPROVING HEALTH CARE FOR WOMEN AND FAMILIES

measuring the effects of behavior change and service delivery interventions in Guatemala

with population-based survey results

Maternal & Neonatal Health

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UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT USAID

JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

Center for Communication Programs

Maternal & Neonatal Health

The Maternal and Neonatal Health (MNH) Program is committed to saving mothers' and newborns' lives by increasing the timely use of key maternal and neonatal health and nutrition practices. The MNH Program is jointly implemented by JHPIEGO, the Johns Hopkins Center for Communication Programs, the Centre for Development and Population Activities, and the Program for Appropriate Technology in Health.
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Published by:
JHPIEGO
Brown's Wharf
1615 Thames Street
Baltimore, Maryland 21231-3492, USA

Editor: Dana Lewison

Cover Design and Layout: Youngae Kim

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ACKNOWLEDGMENTS

Catherine Elkins, PhD, Director of Monitoring, Evaluation, and Research for the MNH Program, oversaw the preparation of this behavior change impact report and three others for the MNH Program. The authors also thank the following individuals and organizations for their valuable contributions to this study:

JOHNS HOPKINS UNIVERSITY CENTER FOR COMMUNICATION PROGRAMS:
Gwen Bergen, MPH
Robert Ainslie, MHS
Maria Borda, MPH
Brandon Howard
Kim Martin, MA
Rita Meyer

JHPIEGO:
Oscar Cordón, MD, MPH
Patricia de León Toledo
Maria Eugenia de Monroy
Demetrio Margos
Carol Tumaylle, MPH

GSD CONSULTORES, GUATEMALA:
Ricardo Valladares
Irene Monzón

This publication was made possible through support provided by the Maternal and Child Health Division, Office of Health, Infectious Diseases and Nutrition, Bureau for Global Health, U.S. Agency for International Development, under the terms of Award No. HRN-A-00-98-00043-00. The opinions expressed are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development.

ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
BCI	Behavior Change Intervention
CEP	Community Emergency Plan
CLAP	Centro Latinoamericano de Perinatología y Desarrollo Humano
DHS	Demographic and Health Survey
EMNC	Essential Maternal and Neonatal Care
EOC	Essential Obstetric Care
EP	Emergency Plan
FEP	Family Emergency Plan
ICPD	International Conference on Population and Development
IEC	Information, Education, and Communication
IMPAC	Integrated Management of Pregnancy and Childbirth
M&E	Monitoring and Evaluation
MMR	Maternal Mortality Ratio
MNH	Maternal and Neonatal Health Program
MOH	Ministry of Health and Public Assistance
NGO	Nongovernmental Organization
PAHO	Pan American Health Organization
PNSR	National Reproductive Health Program
PQI	Performance and Quality Improvement
TBA	Traditional Birth Attendant
TIMS©	Training Information Monitoring System
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Empowering individuals and communities to recognize and respond to obstetrical emergencies is a concrete goal of the Guatemalan Ministry of Health and Public Assistance (MOH) and of the Maternal and Neonatal Health (MNH) Program. The MNH Program promotes the use of skilled maternal and newborn care, family and community involvement in this care, and supportive government policies to sustain these efforts. This report presents the results of these Program efforts. The MNH Program in Guatemala employed research methods to formally evaluate the impact of the behavior change intervention (BCI) component. Routine health and management information systems were used to construct Safe Motherhood process indicators to monitor the essential maternal and neonatal care (EMNC) service delivery component. Program documents were used to monitor the policy component. The methods and results of each are presented in this impact report, adding to the evidence base on the effectiveness of strengthening community mobilization and service delivery efforts to improve maternal and neonatal survival in the developing world.

The maternal mortality ratio in Guatemala fell from an estimated 219 maternal deaths per 100,000 live births in 1989 to 153 in 2000, but it still remains one of the highest in Latin America. The major causes of maternal mortality in Guatemala are preventable: hemorrhage (53%), followed by infection (14%) and hypertension (12%). In the western part of the country, between 69% and 80% of women give birth at home, where complications can lead to death if the family and community are not prepared to act appropriately to respond to the emergency condition. The 2000 Reproductive Age Mortality Study (RAMOS) in Guatemala found that maternal deaths generally occurred within 24 hours of the resolution of the pregnancy.[1] More than half died at home, and four out of 10 died in a healthcare facility. Sixty percent of those mothers who died had been attended at the time of childbirth by a traditional birth attendant (TBA) or a family member or gave birth alone. Thirty percent of those women who died had been attended by a trained healthcare provider.

To address Guatemala's maternal survival problems, the Guatemalan MOH received technical assistance from the MNH Program to improve essential maternal services and mobilize individuals and communities to respond to obstetric emergencies in an appropriate and timely manner. The United States Agency for International Development (USAID) supports the MNH Program through its Guatemala-Central American Program. The timeframe for MNH Program implementation in Guatemala was 1999–2004.

The MNH Program's global strategic objective is to promote maternal and neonatal survival in low-resource settings by increasing the use of appropriate maternal and neonatal health and nutrition interventions. The goal of the MNH Program in Guatemala is to increase the adoption of practices and use of services that are key for maternal and neonatal survival by:

- Establishing a network of high-quality, accredited essential maternal and neonatal care (EMNC)
- Increasing appropriate use of accredited community and institutional services
- Strengthening policies and norms implemented to sustain an adequate provision of EMNC services

[1] Duarte MR et al. 2003. *Informe Final: Línea Basal de Mortalidad Materna para el Año 2000,* Ministerio de Salud Pública y Asistencia Social, Guatemala City, Guatemala.

All Program interventions are designed to lead to results in the above areas. All three components worked together synergistically in Guatemala, addressing both demand and supply. BCI created the demand for the services; the services received had been improved through the EMNC interventions; and the policy component helped to foment an enabling environment for improvements in maternal and neonatal health.

The goal of the behavior change and community mobilization component was to make sure that women, their families, and communities were aware of the improved services and knew when and how to obtain them. Results from formative research and a baseline population survey (1,008 women and 499 men), which was conducted in 2001 in the three MNH Program start-up departments (Quiché, San Marcos, and Sololá), were used to design the behavior change and community mobilization component of the Program. Program staff promoted communication interventions as well as family and community "emergency plans" (FEPs and CEPs) to prepare pregnant women, their families, and their communities to take action in the event of an obstetric emergency. According to Program monitoring data, by May 2004, seven Guatemalan states were part of the Program, 99 communities had started the mobilization process, 90 of these had formed a committee, 31 had developed a community emergency plan (CEP), and 33 pregnant women had been successfully transported to a healthcare facility because of CEPs.[2]

Working in close collaboration with the MOH, the Program developed a Performance and Quality Improvement (PQI) approach using an accreditation model. The approach ensured that there were facilities (hospitals, community maternities, health centers, and health posts) that had skilled personnel, as well as supplies and management systems, in place so that obstetric emergencies could be attended to. It should be noted that not only was the clinical aspect taken into account, but factors such as interpersonal communication, infection prevention, and issues such as who could accompany the woman during birth were also considered.

The Program developed the accreditation model based on a set of quality criteria/standards that focused on clinical and cultural elements of appropriateness, dynamic interaction between clients and providers, access issues, treatment at the facility, respect for clients and traditional practices, use of indigenous languages, competent personnel, cleanliness, equipment, transport, and free services. The criteria were divided into seven areas: 1) pregnancy care, 2) labor, childbirth, and postpartum care, 3) infection prevention, 4) human, physical, and material resources, 5) support services, 6) management systems, and 7) information, education, and communication (IEC). Number and scope of criteria varied slightly between hospitals, community maternities, health centers, and health posts to take into account differences in care offered in each type of facility.

The EMNC technical component also included group-based and modular courses to train providers on basic and comprehensive EMNC clinical skills, infection prevention, as well as interpersonal and intercultural communication. Through group-based clinical training skills courses, the MNH Program and MOH developed skilled clinical trainers, preservice faculty, and clinical preceptors to carry on the legacy by training future cohorts of skilled EMNC providers in Guatemala. Under the policy component, the MNH Program assisted the MOH to revise the EMNC portion of the preservice curriculum at the country's nursing schools, and assisted with the institutionalization of evidence-based norms and practices into Safe Motherhood programs throughout the country.

[2] It should be noted that these 99 communities make up less than 3% of the total 3,638 communities in the seven intervention departments, illustrating that to cover a large proportion of communities with this same intervention design would take considerably more programmatic resources.

Several methodological approaches were used to measure the impact of MNH Program components in Guatemala. In 2003, a cross-sectional household survey of women of childbearing age and their partners (1,098 women and 545 men) was carried out in the three Program start-up departments to measure the impact of the BCI component. A pre-post-test design allowed for comparison with measures obtained from the baseline survey of 2001. Data from the post-test were also used to measure differences between those exposed and not exposed to MNH Program activities. Additionally, researchers conducted in-depth interviews of community leaders, group interviews of health committee members, and case histories of women who experienced obstetrical complications in one of the communities with an active health committee. For the purpose of this report, researchers compared only those women who had had a child in the 12 months prior to the survey in both baseline (n=325) and followup (n=787).

Almost one-third (29%) of the women and men (31%) in the followup survey were exposed to the Program's activities and messages. Findings from the impact evaluation on improving maternal survival through behavior change communication, community mobilization, and improved maternal services show significant improvements in knowledge, attitudes, and practices among those exposed to Program activities. Selected findings include:

- Significantly more women and men in the followup knew that severe bleeding was a danger sign during pregnancy: 31% of women and 22% of the men in the baseline, compared to 66% and 51% respectively who were exposed to the Program's activities.
- The evaluation showed a significant ($p<.01$) increase in the percentage of men and women who knew that a woman should be taken to a healthcare facility if the placenta has not been delivered 30 minutes after birth: 11% at baseline vs. 22% at followup for women exposed and 12.6% for those not exposed; and 4.6% for men at baseline vs. 19% for those exposed in the followup and 7% among the non-exposed.
- Women in the baseline were significantly ($p<.01$) less likely to believe that a woman should receive care by a skilled attendant for antenatal care (65.5%) than women exposed in the followup (93%).
- A third (35%, $p<.01$) of the women exposed to the intervention at the followup reported having a plan for transportation in case of an obstetrical emergency. Twelve percent of the unexposed women in the followup and only 5% of all women in the baseline reported having made this type of arrangement.
- The percentage of women who reported having set aside money for an emergency was significantly higher ($p<.01$) for those exposed at the followup than at baseline: 7% of women in the baseline compared to 74% ($p<.01$) of those exposed in the followup and 26% among those not exposed.
- The percentage of women who believed a mother should receive skilled care for childbirth rose from 42% at baseline to 78% ($p<.01$) of those exposed at followup. A higher percentage also believed women should receive postpartum care: 62% at baseline to 82% ($p<.01$) at followup. The men in the study reported similar changes.

These impact results provide evidence that collaboration among public and private entities can lead to increased knowledge, improved attitudes, and behavior change that can subsequently contribute to improved maternal and neonatal survival. Continued efforts are needed to reinforce the community mobilization component of the MNH Program in Guatemala, as well as to ensure that more women and their partners continue learning how to prepare for an obstetric emergency.

The data sources for the EMNC component included training statistics and a PQI database maintained at the Guatemala/MNH office, and birth registers maintained at health facilities where births are attended.

Following are the key EMNC component results:

- From 2001 to 2003, the MNH Program taught basic EMNC skills to 66 healthcare providers and comprehensive EMNC to 60 service providers. In addition, MNH developed a core group of 28 Guatemalan clinical trainers.
- Guatemalan clinical trainers went on to develop an additional 29 clinical trainers and began to train additional providers in EMNC using a modular training approach. As of May 2004, 20 of these providers had completed all basic EMNC modules and an additional 44 had completed all comprehensive EMNC modules. Also, 422 providers were still enrolled in the basic EMNC course and 194 providers in the comprehensive EMNC course, and all of these providers had completed at least one module of their training.
- The MNH Program worked with the MOH in providing infection prevention training to 332 participants and interpersonal relations and intercultural communication training to 440 participants during the life of the Program.
- The PQI data presented below refer to the health facilities supported by the MNH Program; these rose in number from 69 in 2001 to 140 in 2003:
  - The first health center was accredited as a quality EMNC facility by the MOH through the PQI process in 2002, and by June of 2004, 18 health facilities had achieved accreditation. This list is composed of two hospitals, nine health centers, and seven health posts, or 12.8% of the 140 facilities that MNH supported in the PQI process during 2003.
  - Of the 18 accredited facilities, there are five in Suchitepéquez, four each in Quiché, and San Marcos, two each in Sololá and Quetzaltenango, and one in Retalhuleu.
  - The percentage of facilities that have a set of EMNC norms and protocols available onsite rose from 2.8% in 2001 to 16.9% in 2002 and 44% in 2003.
- The PQI data presented below refer to the hospitals supported by the MNH Program: seven in 2001, 10 in 2002 and eight in 2003:
  - The percentage of hospitals that perform adequate decontamination for instruments rose from 0 to 50% to 100% in 2001, 2002, and 2003. And all hospitals have seen an increase in their PQI scores in infection prevention each year they were assessed.
  - Up from 28.5% in 2001, 63% of hospitals have adequate supplies and equipment for EMNC in their labor and delivery rooms in 2003.
  - Sixty-three percent of hospitals have some form of linkage to a community health committee, up from 14% in 2001.
  - As of May 2004, three of eight hospitals had a blood bank that operates 24 hours per day.
- Data below are from birth registers at seven intervention hospitals, using 6-month totals from October 2003–March 2004:
  - The average percentage of births where the provider had used a partograph was 60%, with a range of 33–87%. The MOH goal is for universal use of the partograph to monitor progress of childbirth.
  - On average, 35% of primiparous women having a vaginal birth underwent an episiotomy at Program hospitals. The range was 11–72%. This compares to a recent Centro

Latinoamericano de Perinatología y Desarrollo Humano (CLAP)/Pan American Health Organization (PAHO) publication showing a range of 69–92% in the episiotomy rate for primiparous women in a study of Latin American hospitals. The World Health Organization (WHO) recommends that episiotomy **not** be performed routinely as a medical intervention, as it provides no benefit for the mother or infant and can increase the risk of complications.

- Sixty-eight percent of newborns were placed in immediate skin-to-skin contact with their mothers, with a range of 33–90%. The WHO recommendation is for universal use of this practice to protect against hypothermia and for emotional bonding.
- The average percentage of vaginal deliveries where the provider had performed active management of the third stage of labor was 79%, ranging from 17% to 100% at Program hospitals. Clinical protocols call for universal use of active management of the third stage in vaginal deliveries for the prevention of postpartum hemorrhage, one of the leading causes of maternal mortality in Guatemala.

The policy component had the following major achievements:

- The MNH Program worked with the MOH to incorporate evidence-based medicine into revised EMNC portions of the preservice curriculum in seven of the eight Guatemalan nursing schools. The new curricula were used with nursing students in all seven schools in the academic year 2003–2004.
- Several MNH Program technical products or methodologies were institutionalized by the MOH over the life of the Program: the *Managing Complications in Pregnancy and Childbirth* manual developed in collaboration with the WHO, the competency-based training methodology, the community and family emergency plans, and the interpersonal relations and interpersonal communication training.
- Six donor agencies, eight municipalities, nine nongovernmental organizations (NGOs), three professional associations, and five private entities adopted at least one technical product or service of the MNH Program for use in their own Safe Motherhood activities.

MEASURING THE EFFECTS OF BEHAVIOR CHANGE AND SERVICE DELIVERY INTERVENTIONS IN GUATEMALA

INTRODUCTION

Maternal Survival: The Global Perspective

Complications from pregnancy and childbirth are responsible for the death of more than 500,000 women around the world each year.[3] It is estimated that each year 10 million additional women suffer infection or injury related to pregnancy and childbirth. Most maternal mortality and morbidity related to pregnancy and childbirth happen in the developing world, and could be prevented if women and their families knew when to seek help and how to access the healthcare system and subsequently received care from skilled providers.[4] In 2000, leaders from 189 countries agreed, during the United Nations Millennium Meeting, to work toward a common goal of reducing maternal mortality by three-quarters by the year 2015.

Awareness of the toll that complications of pregnancy and childbirth have on populations came to the forefront in 1987 with the launch of the Safe Motherhood Initiative at an international conference held in Nairobi, Kenya. After 10 years of activities, at a global technical consultation meeting held in 1997 in Colombo, Sri Lanka, representatives of the international agencies co-sponsoring the Safe Motherhood Initiative reviewed lessons learned and identified the strategies that had demonstrated effectiveness in curbing maternal morbidity and mortality around the globe.[5] Improved access to high-quality maternal health services and an effective referral system starting at the level of the community were identified as two of the most important factors contributing to improved maternal survival. Other key factors included the presence of a skilled attendant at birth and accessibility to transport in case of complications. In 2000, the Making Pregnancy Safer initiative was launched to support the World Health Organization's (WHO's) Safe Motherhood efforts. This initiative emphasized the need not only to improve the quality of maternal health services but also to increase awareness and planning at the level of the community and family in order to enable and support women to access the care of skilled providers in case of need.[6]

Maternal Survival in Guatemala

Guatemala has among the poorest health outcomes in all of Latin America, due in part to its prolonged civil strife and widespread poverty. Its largely rural indigenous population lives in some of the most difficult conditions found in Central America. Less than half of the Guatemalan population has access to health services, and the combination of poor health indicators and underutilized public facilities suggests that the type, quantity, and quality of services being provided by the government

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[3] World Health Organization (WHO). 1999. *Making Pregnancy Safer*. Fact Sheet No. 276. WHO: Geneva.

[4] "The term 'skilled provider' refers exclusively to people with midwifery skills (for example midwives, doctors and nurses) who have been trained to proficiency in the skills necessary to manage normal deliveries, and manage or refer obstetric complications." *Source*: A joint World Health Organization (WHO)/UNFPA/UNICEF/World Bank Statement on Reduction of Maternal Mortality. 1999. WHO: Geneva.

[5] *The Safe Motherhood Action Agenda: Priorities for the Next Decade*. 1997. The Inter-Agency Group for Safe Motherhood.

[6] World Health Organization (WHO). 2003. *Working with Individuals, Families and Communities to Improve Maternal and Newborn Health*. WHO: Geneva.

do not meet the needs of the population.[7] While the maternal mortality ratio in Guatemala fell from an estimated 219 maternal deaths per 100,000 live births in 1989 to 153 in 2000,[8] it remains one of the highest in Latin America. The major causes of maternal mortality in Guatemala are preventable: hemorrhage (53%), followed by infection (14%) and hypertension (12%).[9] In the western part of the country, between 69% and 80% of women deliver at home where complications can lead to death if the family and community are not prepared to act. The 2000 RAMOS maternal mortality study in Guatemala found that "maternal deaths generally occurred within 24 hours of the resolution of the pregnancy. More than half died at home and 4 out of 10 died in a healthcare facility. Sixty percent of those mothers that died had been attended at the time of delivery by a traditional birth attendant (TBA), a family member or gave birth alone. Thirty percent of those who died had been attended by a trained healthcare provider."[10] Physical, social, gender, ethnic, and cultural aspects are considered by the Guatemalan Ministry of Health (MOH) as key factors that affect the access to skilled attendance at birth.

Stanton shows that the Demographic and Health Survey (DHS) and RAMOS data of the 1980s through 2000 revealed persistent inequity in trends in Safe Motherhood-related indicators among sub-populations of Guatemalan women. While the national skilled attendance rate was low in 1987 at 29%, fully 84% of births to women in the highest wealth quintile received skilled childbirth care, compared with 9% of births in the lowest wealth quintile.[11] Another way that Guatemala data can be meaningfully analyzed is by ethnicity, as the indigenous population is severely underserved vis-à-vis the Ladino population. Even in 1998, only 17% of indigenous women received childbirth care versus fully 60% of Ladino women. DHS data show that the Guatemala City metropolitan area had the best access to antenatal and skilled delivery care at health facilities, and one of the lowest neonatal mortality rates from 1995 to 1998. The Northwest and Southwest regions had high rates of home birth and neonatal mortality, and low use of skilled attendants at antenatal care (ANC) and childbirth. While the situation improved in every region for access to skilled ANC, the rates of home birth and birth with a skilled attendant have remained fairly constant nationally in recent years (see **Figure 1**). And in some regions, DHS data have shown neonatal mortality to be on the rise.

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[7] Maternal and Neonatal Health (MNH) Program. 2003b. *Shaping Policy for Maternal and Newborn Health: A Compendium of Case Studies*. JHPIEGO: Baltimore, MD.

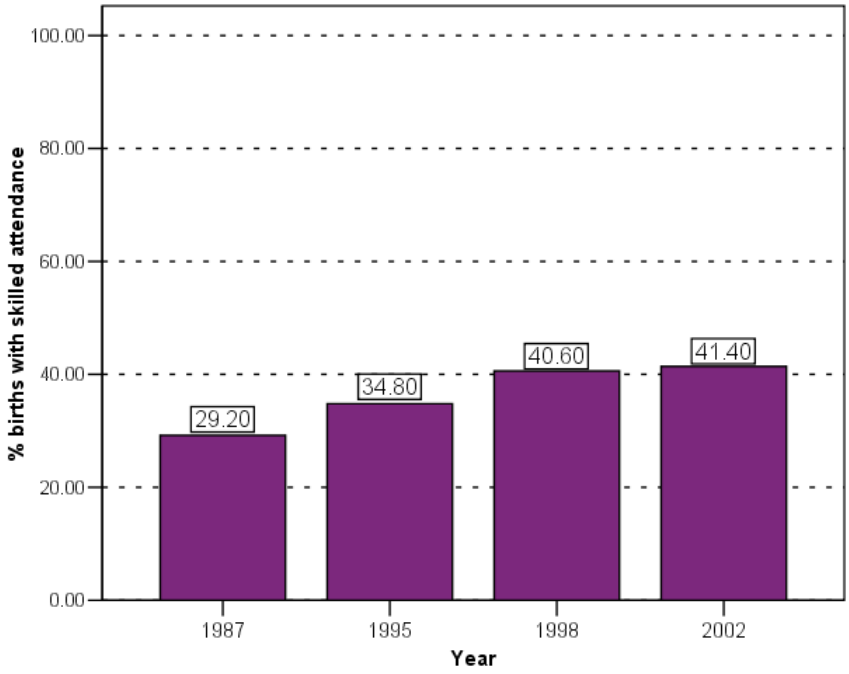
[8] Duarte MR et al. 2003. *Informe Final: Línea Basal de Mortalidad Materna para el Año 2000*. Ministerio de Salud Pública y Asistencia Social, Guatemala City, Guatemala.

[9] Guatemalan Ministry of Health. 2003. *Lineamientos Estratégicos para Reducir la Mortalidad Materna*. Ministerio de Salud Pública, República de Guatemala, March.

[10] *Lineamientos Estratégicos para Reducir la Mortalidad Materna*. Ministerio de Salud Pública, República de Guatemala, Marzo del 2003, p. 5.

[11] Stanton C. 2004a. *Effects of Social and Demographic Factors on Trends in Use of Maternal Health Care: A Comparison of Guatemala and Honduras*. Presentation at Population Association of America Annual Meeting, Boston, MA, 1–3 April.

Figure 1. Trend in Skilled Attendance at Birth, Guatemala, 1987–2002



Source: Guatemala Demographic and Health Surveys.

Brief Overview of the History of Safe Motherhood Initiatives in Guatemala

The Guatemalan government's official position vis-à-vis several national and international reproductive health and social policies varied the level of political and social support for improving women's health and increasing community involvement in Safe Motherhood within the country over the past 17 years. Shiffman and Garcés de Letona provide a comprehensive history of Safe Motherhood initiatives in Guatemala, using a case study methodology. They found that prior to 1987, few health programs in this largely indigenous Central American country addressed maternal mortality.[12] The 1987 international conference in Nairobi was the impulse for the start of attention to Safe Motherhood in Guatemala, with the Guatemalan national delegate signing the conference's declaration. The Pan American Health Organization (PAHO) followed up the Nairobi conference with a Safe Motherhood strategy for the Region of the Americas, placing Guatemala in a group of priority countries needing to address high maternal mortality.

One of the first actions initiated in Guatemala toward the Safe Motherhood goals declared in Nairobi was to document the current maternal mortality ratio (MMR) in order to support calls for government action. The maternal mortality study commissioned in 1989 revealed an MMR of 219 maternal deaths per 100,000 live births.[13] This led to the production of a national maternal mortality reduction plan for 1992–1996. However, political changes and other urgent health priorities, such as battling infectious disease and focusing on child survival goals (over two-thirds of indigenous

[12] Shiffman J and A Garcés de Letona. 2004. *An Institutional Analysis of Safe Motherhood in Guatemala*. Presentation at Population Association of America Annual Meeting, Boston, MA, 1–3 April.
[13] Duarte MR et al. 2003. *Informe Final: Línea Basal de Mortalidad Materna para el Año 2000,* Ministerio de Salud Pública y Asistencia Social, Guatemala City, Guatemala.

children in Guatemala have chronic malnutrition[14]) diverted attention in the health sector from Safe Motherhood, and this plan was never carried out as intended. Political support for Safe Motherhood waned throughout the 1990s due to a conservative political environment.[15]

The 1996 Peace Accords ended 30 years of civil conflict in Guatemala. They detail the importance of increased public spending and support for socio-economic needs, putting forth the recommendation to allocate a significant proportion of the national health budget for preventive health measures and reduction of maternal mortality in Guatemala. However, these were signed at a time when conservative policymakers at the national level, many tied to the Catholic Church, were less than receptive to reproductive health advocates who would push to put these policies into action.

Despite domestic policy-level setbacks, donor-led technical efforts carried the Safe Motherhood agenda forward. For example, MotherCare, a USAID-funded project, operated in Guatemala from 1994 to 1999. MotherCare trained TBAs concerning danger signs during pregnancy and childbirth and where to seek assistance, and increased the quality and coverage of essential obstetric care (EOC) at formal healthcare facilities, including making hospital care more "woman friendly" and culturally appropriate for the indigenous clientele through sensitization of providers[16] (Jessop 2000). The European Union supported scale-up of some of MotherCare's programs beyond their initial geographic target areas. However, the country as a whole still suffered from large-scale problems with access to and quality of care and persistently high maternal mortality.

In 1998, the Maternal and Neonatal Health (MNH) Program was established to continue the work started by the MotherCare Project to reduce maternal and newborn deaths in the developing world. The MNH Program promotes supportive policies, the importance of a continuum of care, the use of skilled maternal and newborn care, and community involvement. Recognizing obstetrical emergencies and taking appropriate action are the goals of the Guatemalan MOH and of the MNH Program in Guatemala, which was implemented by JHPIEGO, an affiliate of Johns Hopkins University, and the Johns Hopkins Bloomberg School of Public Health/Center for Communication Programs (CCP). The United States Agency for International Development supports the MNH Program through its Guatemala-Central American Program. The timeframe for this Program was 1999–2004.

In 2000, the government established a national health council and the National Reproductive Health Program (PNSR). Guatemala's National Policy for Promotion and Development of Guatemalan

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[14] Santiso-Galvez R and J Bertrand. 2004. The Delayed Contraceptive Revolution in Guatemala. *Human Organization* 63: 57–67.

[15] The Guatemala delegation to the 1994 International Conference on Population and Development (ICPD) in Cairo endorsed the ICPD's Plan of Action, "but formally declared its reservation on the whole of Chapter 7 relating to reproductive and sexual rights, reproductive and sexual health, fertility regulation, and related concepts. Five years later, the official Guatemala delegation to the Cairo +5 meetings at The Hague and in New York reiterated its disagreement to the Cairo Plan of Action on these points" (Santiso-Galvez and Bertrand 2004). This conservative policy stance also had effects on Safe Motherhood technical work being attempted incountry, for example when the Guatemalan government reduced funding for the maternal mortality module of a demographic and health survey in 1995, thus not allowing for an adequate sample size for a precise determination of the national maternal mortality rate (Shiffman and Garcés 2004). As Shiffman and Garcés further explain, this measurement issue had impacts down the line when the United Nations-monitored 1996 Peace Accords obligated the government to reduce maternal mortality by one-half by the year 2000, as this 1995 survey's likely underestimated MMR of 190 had to be used as the baseline figure for measurement of progress toward the maternal mortality reduction goals.

[16] Jessop SM et al. (eds). *MotherCare Initiatives: Actions and Results from 31 Projects, 1993–2000*. John Snow, Inc.: Arlington, VA.

Women and the Equal Opportunity Plan, decreed in January 2001, included the promotion of comprehensive women's health as a platform for development. In response to the release of the 2000 Maternal Mortality Baseline Report, which revealed an MMR of 153 maternal deaths per 100,000 live births, nowhere near the reduction by half from a 1995 MMR baseline of 190 that was targeted by the Guatemalan Peace Accords of 1996, the PNSR proposed strategic guidelines to facilitate an intersectoral and multifaceted effort to reduce maternal mortality. The guidelines recognize that interventions needed to be directed at improving women's access to essential obstetric care and integrated reproductive health services.[17] In October 2001, the Law on Social Development established decrees for reducing mortality rates, and emphasized the needs within the maternal and infant sub-populations.[18] In 2002, the government passed the Decentralization Law and the revisions to the Urban and Rural Development Councils Law and the Municipal Code that outlined efforts (e.g., programs, projects, and concrete actions), specifically calling upon municipal and departmental government, civil society, and communities to implement interventions aimed at reducing maternal mortality.[19]

MNH Program Components

Building on the advances USAID-funded MotherCare made in the maternal health arena during a difficult national political environment in Guatemala during the 1990s, the USAID-funded MNH Program, MNH/Guatemala, has provided technical assistance to the MOH from 1999 to 2004. The MNH Program's global strategic objective is to promote maternal and neonatal survival in low-resource settings by increasing the use of appropriate maternal and neonatal health and nutrition interventions. The goal of the MNH Program in Guatemala is to increase the adoption of practices and use of services that are key for maternal and neonatal survival by:

- Establishing a network of high-quality, accredited essential maternal and neonatal care (EMNC)
- Increasing appropriate use of accredited community and institutional services
- Strengthening policies and norms implemented to sustain an adequate provision of EMNC services

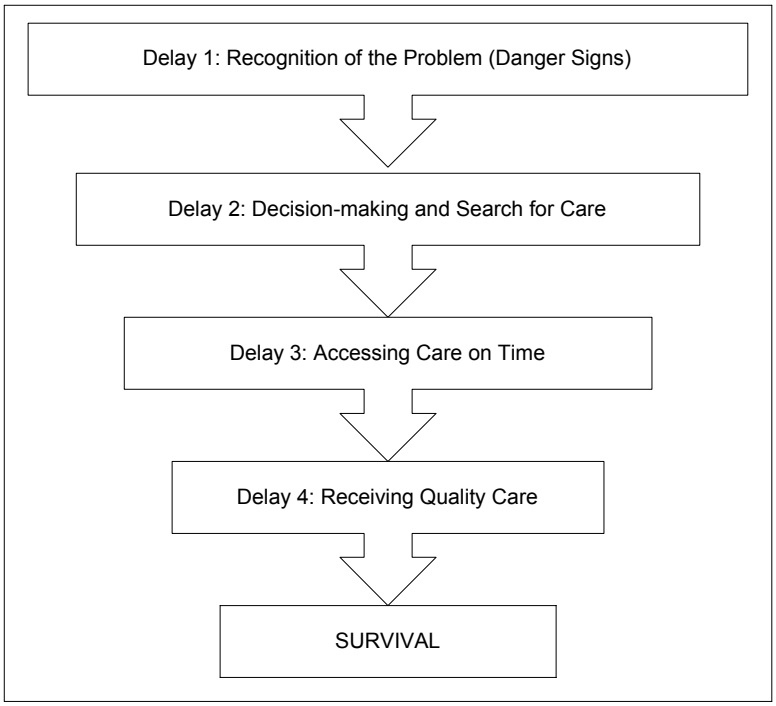
To meet these goals, the MNH Program in Guatemala carries out two principal technical initiatives: **EMNC** (improving maternal and neonatal care services) and **Behavior Change Interventions or BCI** (increasing the demand for high-quality maternal and neonatal services at all levels), and also contributes to a third initiative, **Policy** (improving the policy environment for maternal and neonatal survival). All Program interventions are designed to lead to results in the above areas.

The MNH Program has supported MOH efforts to sustain institutional and community changes, and has worked closely with MOH counterparts to assist in designing and implementing communication and quality of care strategies that have an impact on maternal mortality during pregnancy, birth, and the postpartum period. The PNSR strategic guidelines outline strategies for reducing the four delays that contribute to maternal mortality (see **Figure 2**). In general, the guidelines state, the delays can be overcome through the participation, commitment, and responsibilities/responsiveness of those who play a key role in a woman's day-to-day life: her

[17] Guatemala Ministry of Health. 2003. *Lineamientos Estratégicos para Reducir la Mortalidad Materna.* Ministerio de Salud Pública, Republic of Guatemala. (March)
[18] Ibid.
[19] Maternal and Neonatal Health (MNH) Program 2003b. *Shaping Policy for Maternal and Newborn Health: A Compendium of Case Studies.* JHPIEGO: Baltimore, MD.

midwife, her spouse, her community and surrounding actors, and health posts and health centers. [20] Therefore, the implementation of actions that are integral and responsive to a woman and her environment can prevent or significantly reduce the delays that contribute to maternal mortality.

Figure 2. Four Delays Model for Conceptualization of Maternal Survival



Source: Translated and redrawn from Guatemalan Ministry of Health 2003. *Lineamientos Estratégicos para Reducir la Mortalidad Materna.* Ministerio de Salud Pública, República de Guatemala. (March)

The Need for Evaluation of Safe Motherhood Program Interventions

In their article, "Where is the "E" in MCH? The need for an evidence-based approach in Safe Motherhood," Miller et al. call upon programs to evaluate their interventions:

> Measuring the impact of obstetric interventions on maternal mortality and/or morbidity is especially difficult in developing countries, where most maternal deaths occur. Therefore, program planning has been based on theory rather than proved effectiveness…. Adequate evaluation of intervention effectiveness under real-life conditions in developing countries is an efficient way to identify interventions for large-scale program replication and could speed progress in reducing maternal deaths.[21]

[20] Guatemalan Ministry of Health. 2003. *Lineamientos Estratégicos para Reducir la Mortalidad Materna.* Ministerio de Salud Pública, Republic of Guatemala. (March)
[21] Miller S et al. 2003. Where is the "E" in MCH? The need for an evidence-based approach in safe motherhood. *Journal of Midwifery and Women's Health* 48(1): 10–18.

Stanton cites a recent Koblinsky review report that found only seven evaluation studies in the peer-reviewed literature dealing with Safe Motherhood behavior change intervention programs that intended to increase use of health services. None of these studies had adequate study designs and sample sizes in order to serve as reliable evidence that any increase observed in skilled attendance at childbirth could be attributed to BCI program interventions.[22] On the service delivery side, Johanson, Newburn, and Macfarlane acknowledged that: "what is not yet clear is the relative contribution to birth outcomes of health professionals' attitudes, continuity of care, midwife managed or community based care, and implementation of specific practices"[23].

The MNH Program set out to monitor and evaluate the various components of the Program from the outset, but recent calls in the literature for more of this evidence further underscored the need for rigor and quality of the data gathered, which would ultimately serve to support or refute claims of Program effectiveness. This is especially important in an era of scarce resources when the most cost-effective interventions should be sought out for implementation in an evidence-based programmatic paradigm.

The MNH Program in Guatemala has a monitoring and evaluation (M&E) framework with lists of indicators to be measured under each strategic objective and intermediate result that was set out in the cooperative agreement with USAID/Guatemala for this program. The indicators related to the EMNC component are largely established Safe Motherhood process indicators based on the implementation of best practices. However, indicators related to the BCI component look at birth preparedness in a broad sense:

> Whereas the original set of process indicators for Safe Motherhood tended to reflect the availability of facility-based care and care seeking by the pregnant woman, birth preparedness broadens the scope of the processes conceptualized to be in the pathway to maternal death or survival. It does so by including knowledge of the danger signs of pregnancy and advance planning for a potential obstetric emergency, and by recognizing the birth preparedness is important not only for the pregnant woman, but also for husbands, family members, communities, healthcare providers, healthcare facilities, and policymakers.[24]

The MNH Program in Guatemala employed research methods to formally evaluate the impact of the BCI component. Routine health and management information systems were used to construct Safe Motherhood process indicators to
monitor the EMNC service delivery component. Program documents were used to monitor the policy component. The methods and results of each are presented in this impact report.

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[22] Stanton CK. 2004b. Methodological issues in the measurement of birth preparedness in support of safe motherhood. *Evaluation Review* 28(3): 179–200.
[23] Johanson R, M Newburn, and A Macfarlane. 2002. Has the medicalisation of childbirth gone too far? *British Medical Journal* 324: 892–895. (13 April)
[24] Stanton CK. 2004b. Methodological issues in the measurement of birth preparedness in support of safe motherhood. *Evaluation Review* 28(3): 179–200.

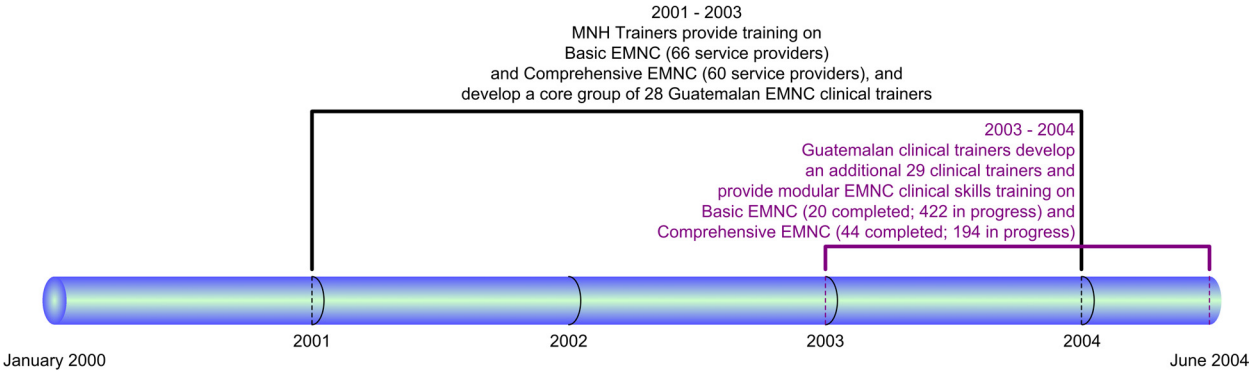
IMPROVING SUPPLY AND GENERATING DEMAND

Reinforcement of Healthcare Institutions

With MNH Program technical support under the EMNC technical component, the MOH developed a Performance and Quality Improvement (PQI) and accreditation model to improve the quality of maternal and newborn care at health facilities, trained providers on basic and comprehensive EMNC skills, and developed skilled trainers, preservice faculty, and clinical preceptors to carry on the legacy by training future cohorts of providers in Guatemala.

The EMNC inservice training provided through the MNH Program in Guatemala was based on the WHO's Integrated Management of Pregnancy and Childbirth (IMPAC) series, which sets the standard for international evidence-based care.[25] Specific references used in the inservice training as well as in updating the preservice curricula in Guatemalan nursing schools were the *Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors (MCPC)* and the manual *Managing Newborn Problems: A Guide for Doctors, Nurses and Midwives.* As shown in the timeline below, during 2001–2002, MNH trainers provided clinical skills training to service providers, and then further developed a core group of proficient clinicians to become clinical trainers. This group of 28 trainers was then able to go on in 2003–2004 to develop additional clinical trainers and to provide basic and comprehensive EMNC inservice training to service providers needing their knowledge and skills updated (See timeline in **Figure 3**).

Figure 3. Timeline for EMNC Inservice Training and Clinical Trainer Development



In addition to the EMNC courses, an infection prevention course was conducted for 332 service providers, and 440 participants attended interpersonal relations and intercultural communications courses, both intending to increase the quality of services for maternity patients.

The health facility accreditation model introduced by the MNH Program in Guatemala is now an MOH-endorsed national program geared toward improving maternal and neonatal healthcare services through the use of a PQI approach. The PQI process uses criteria derived from national norms and international, evidence-based standards to determine and remedy gaps between the recommended best practices and current practices. The MNH Program worked collaboratively with the MOH, using evidence-based medicine standards and protocols (including the *MCPC* mentioned above) as well as provider and community input, in a consensus building process, to establish the framework and tools to implement, measure, and evaluate improvements at facilities that deliver

[25] Robb-McCord J and W Voet. 2003. *Scaling Up Practices, Tools, and Approaches in the Maternal and Neonatal Health Program.* JHPIEGO: Baltimore, MD.

essential maternal and newborn healthcare services. There are separate PQI instruments for hospitals, level A health centers, level B health centers, and health posts. These criteria are now used to objectively measure clinical performance and overall service quality.

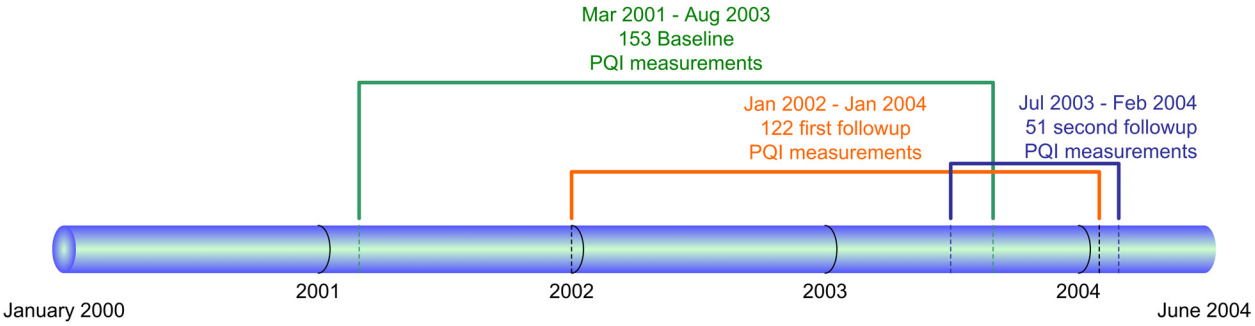
The following technical areas are represented in the PQI instruments:

1. Clinical: Pregnancy care
2. Clinical: Labor, delivery and postpartum care
3. Infection prevention
4. Human, physical, and material resources
5. Support services
6. Management systems
7. Information, education, and communication (IEC)

The number and content of criteria in each technical area vary by facility type. Gaps are identified by comparing the current status of lists of quality criteria (means of verification are provided to assessors as a reference during data collection) in facilities to the standard list of criteria that should be achieved. In the PQI process, when a facility achieves 85% or more of the established criteria for quality for that type of facility overall, and 100% of all clinical care criteria (technical areas 1 and 2 above), that facility may be officially accredited by the MOH as a quality site for essential maternal and neonatal care that year.

The timeline for MNH Program PQI interventions is shown below in **Figure 4**. **Figure 5** shows the departments in which the MNH Program implemented PQI and those in which the government, other cooperating agencies, and NGOs used the PQI materials for scale-up of this MNH Program component.

Figure 4. Timeline for PQI Intervention



The basis for improvements made through the PQI process is the creation of intervention plans composed of specific, action-oriented items based on the gaps identified in each PQI assessment. Funding the needed gap-reducing interventions has proven to be a challenge in the Program, but the MNH Program and the MOH have successfully partnered with NGOs, other donors, municipalities, and communities to raise funds for these local needs.[26] The MNH Program assisted the MOH in baseline and followup assessments, and also co-taught PQI workshops where local providers at PQI hospitals learned to use the instruments for self-assessments.

[26] Maternal and Neonatal Health (MNH) Program. 2003b. *Shaping Policy for Maternal and Newborn Health: A Compendium of Case Studies,* JHPIEGO: Baltimore, MD.

Figure 5. MNH Program PQI Component Intervention and Scale-Up, Guatemala, by Department

Resource Mobilization for PQI

In the PQI process, health posts, health centers, community maternity centers, and hospitals identify gaps in quality of service, which can be due to several factors including but not limited to the performance of clinical providers, lack of supplies, equipment and medicine, or the lack of management systems in place. For the PQI process to be beneficial, resources must be mobilized to remedy these gaps, within an intervention plan possible to be pushed forward by local actors. Several MOH facilities have experienced successes in using results of PQI interventions to educate and encourage stakeholders outside the health sector to contribute non-project material resources, manpower, and financial donations in support of the health service gaps.

The examples below represent concrete efforts undertaken by three municipal government entities in Guatemala to actively mobilize material, financial, and logistical resources for health facilities, contributing significantly to Safe Motherhood in Guatemala by carrying out the identified interventions needed as part of the PQI process.

Municipality of Santa Cruz Muluá, Retalhuleu
The Muluá Municipality provided financing for several improvements to the local health center. They covered the labor costs related to painting and repairing the drainage system, and painting the health center building. In addition, they funded training for district health providers in EMNC. Their contributions totaled GTQ 5,993.00 (USD 753) during 2003.

Municipality of San Felipe, Retalhuleu
In the case of the San Felipe Municipality, the municipal government supported the construction of a warehouse, purchase and installation of an overhead water tank, maintenance of the drainage system, painting of the health post, hiring of one person for janitorial work, and the installation of two sinks. The total San Felipe Municipality investment in the heath facility accounted for GTQ 14,990.00 (USD 1,884.23) in 2003.

Municipality of Coatepeque, Quetzaltenango
This municipality provided financial support to the Hospital of Coatepeque in the amount of GTQ19,000.00 (USD 2,388.28) during 2003. They covered the expenses related to the expansion of the laboratory and pharmacy, and painting and tile work in the labor and childbirth area. Additional examples of similar types of resource mobilization to carry out PQI intervention plans are presented in **Appendix A**.

Under its policy component, the MNH Program in Guatemala assisted the MOH in the revision of the EMNC portion of the preservice curriculum at seven of the country's eight nursing schools. **Figure 6** shows the timeline for this work and **Figure 7** shows the locations of institutions served in the preservice component. The MNH Program also assisted with the institutionalization of evidence-based norms and practices into Safe Motherhood programs throughout the country by sharing tools and approaches with other organizations carrying out similar work.

Figure 6. Timeline for EMNC Nursing Preservice Strengthening Intervention

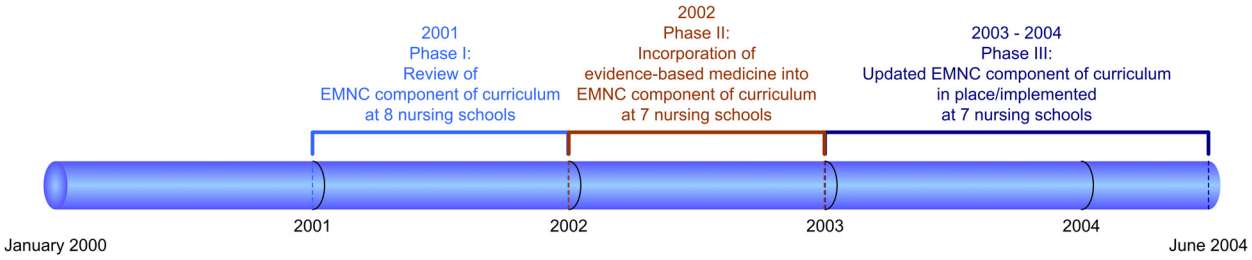


Figure 7. MNH Program Nursing Preservice Strengthening Intervention and Scale-up, Guatemala, by Department

Behavior Change and Community Mobilization

Whereas the service delivery improvement component ensured that health facilities were equipped to provide high-quality maternal services, the BCI component ensured that communities and women had access to skilled providers. Specifically it was designed to address access barriers to care that were identified through formative qualitative and quantitative research. In-depth interviews with community leaders and participatory approaches were used early in the Program to better understand the dynamics at the family and community levels regarding pregnancy, childbirth, and the postpartum periods. Based on the research and secondary analysis, the strategy used two specific approaches. The first worked to organize communities to effectively respond to obstetric emergencies. Communities prepared themselves to be able to transport women and their children in times of emergency so that they could receive timely care by a skilled attendant. The second approach concentrated on creating demand for the improved services through the use of radio and

printed materials that informed women and their families about being prepared in case a pregnancy-related emergency should arise. Other messages included the need to attend to antenatal visits and recognizing danger signs during pregnancy and labor, as well as in the neonate. Part of this approach was advocacy at the local, municipal, and national levels, which contributed to political buy-in, scaling-up of activities, and the institutionalization of new strategies. Together, these worked to support the individual and family in case of obstetric emergency, focusing on the development of emergency plans (EPs) at the family and community levels.

The BCI component was developed based on the findings of the formative research. In October 2000, the MNH Program began conducting formative research to inform the Program design. In May of the next year, the Program conducted a baseline survey to use for a future impact evaluation (see **Figure 8**). After the baseline, in July 2001, the Program began part of its community mobilization efforts by visiting communities. Approximately a year later, the MNH Program and the MOH began distributing printed IEC materials, such as the Family Emergency Plan (FEP) cards and the Safe Motherhood posters, which were for display in service delivery points. These activities lasted until June of 2004. During this time, in August 2003, the followup household survey, the community survey, and the case study research were conducted for the impact evaluation. Finally, the MNH Safe Motherhood messages were aired on the radio from March 2004 through June 2004. **Figure 9** shows the eventual geographic reach of the community mobilization and IEC components of the MNH Program.

Distance to health facilities and lack of money to pay for the transportation and other related expenses were two main factors found during the formative evaluation to explain why women and their families were not seeking timely care for emergencies. The MNH Program, together with the MOH counterparts, worked with participating communities to develop Community Emergency Plans (CEPs). The CEPs were designed by the communities and included identifying: 1) transportation, 2) economic assistance for the transportation, 3) who would accompany the woman, and 4) ways of taking care of families while the mother was gone.

The community participation component was developed based on the Community Action Cycle developed by Save the Children®. This was a five-step participatory cycle that helped to create community mobilization capacity: The five steps were: 1) Organizing for Community Action; 2) Promoting Community Dialogue; 3) Planning Together; 4) Collective Action, and 5) Participatory Evaluation. The communities developed their own EPs as they proceeded through each step.

In support of the community participation component and to provide information to women and their families, a set of materials and an interpersonal relations and intercultural communication training curriculum were developed. The client-provider counseling materials provided an easy way for providers to discuss the importance of safe maternity, the importance of families being prepared for emergencies, and the steps to take. A job aid was also produced for providers for the refocused antenatal visit and on the rights and responsibilities people have in relation to their maternal health care.

The cornerstone of the materials is the "Family Emergency Plan" (FEP) brochure that was developed to help women and their families take the steps necessary to be prepared in case of an emergency. A copy of this brochure is available in **Appendix B**. These materials were specifically developed for a low-literacy audience. One side of the plan (a two-sided brochure) showed six boxes representing critical steps to being prepared: 1) deciding where you will have your baby; 2) collecting some money to use in case of an emergency, 3) deciding who will accompany the woman to the

health facility; 4) identifying a form of transportation to get to the health facility in an emergency; 5) talking to a member of the health committee to get information on how it can help, and 6) talking to family and neighbors to ensure someone can take care of your children and complete the work (harvest, tending animals, etc.) while you are gone.

Figure 8. Timeline of MNH Program BCI, PQI, and EMNC Inservice Training Interventions with Impact Evaluation Measurements

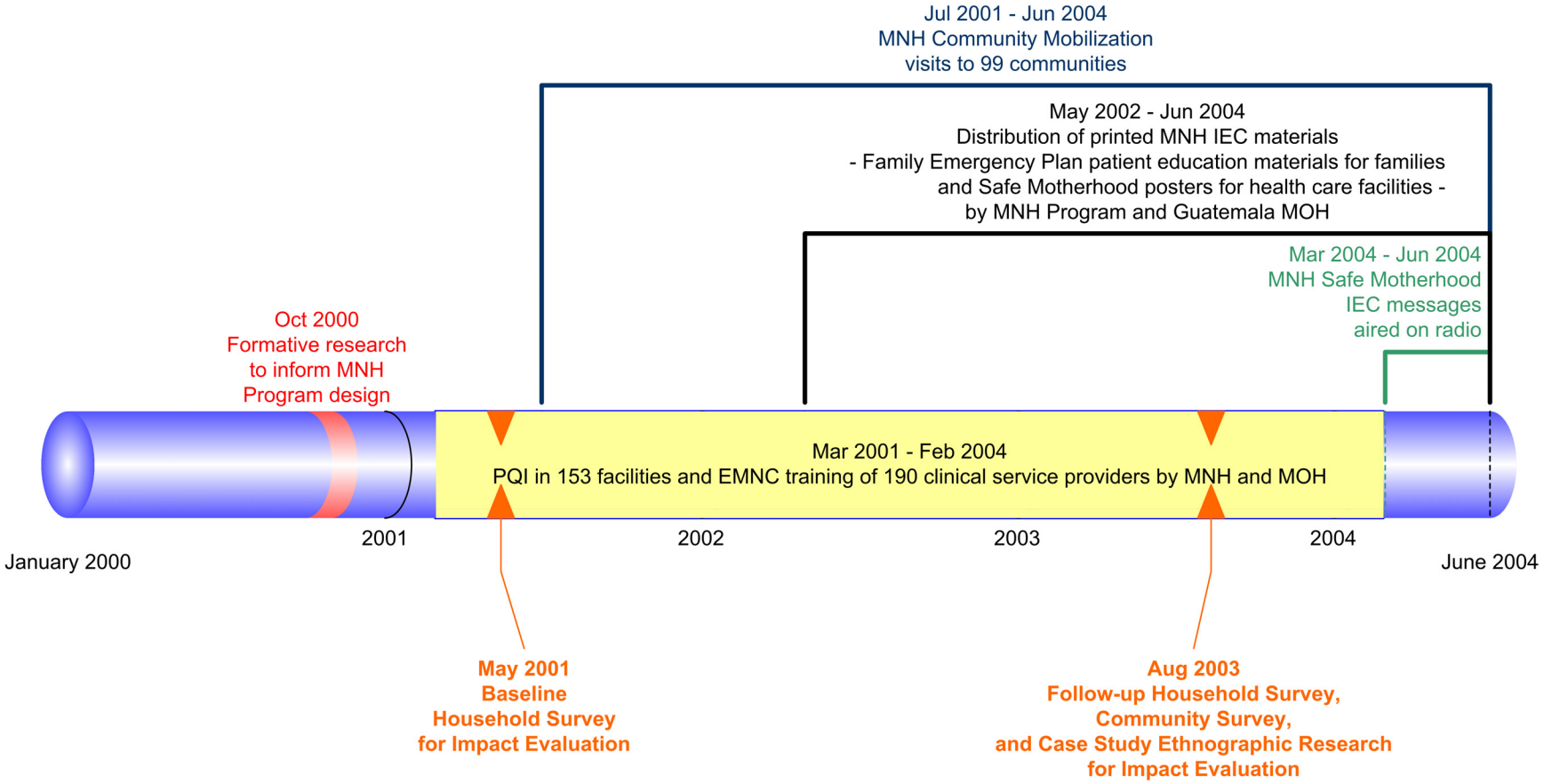
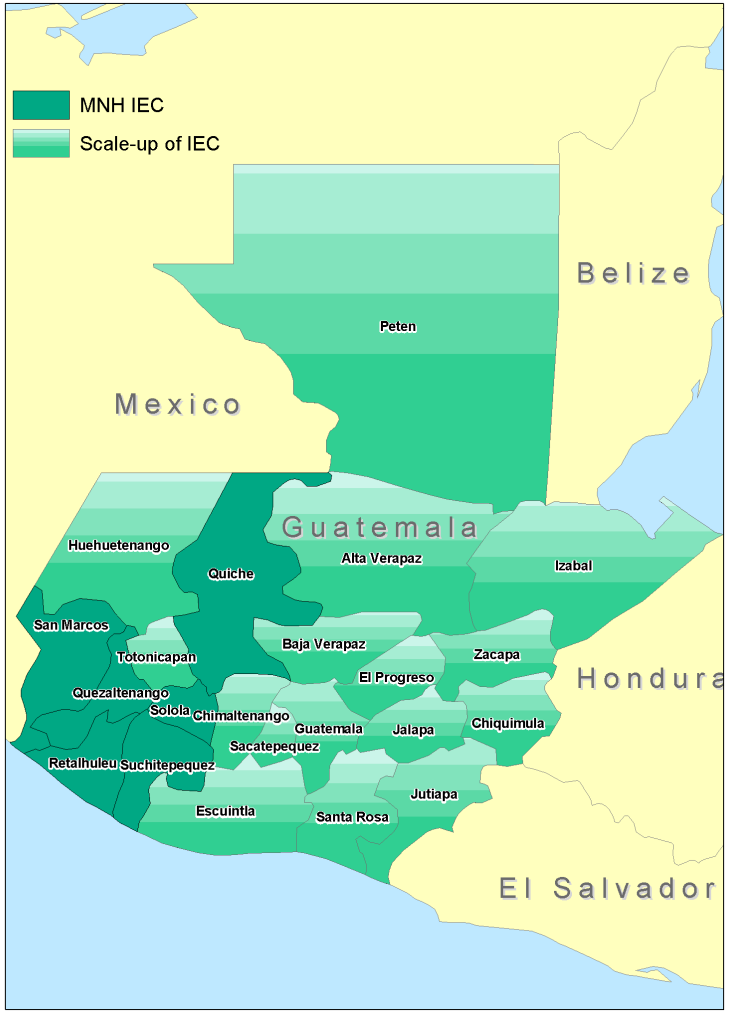


Figure 9. Departments Where MNH Community Mobilization and IEC Interventions Were Implemented



On the flip side of the family emergency plan were three rows of pictures representing the danger signs of pregnancy, danger signs for the newborn, and danger signs for the child in the first year of life. Originally, just the first two rows were to be included, but the third was added when the MNH Program integrated many of the materials with the national Integrated Management of Childhood Illness/Integrated Community Child Health Program (Atención Integral de la Niñez en la Comunidad) being implemented with MOH and the Calidad en Salud Project.

MOH providers give the FEP to every pregnant woman during her antenatal visits. The provider attending the woman will review the emergency plan with her and help her think of how to meet each step. Women are asked to discuss the plan with their spouses and family so that possible problems and emergencies are discussed and some decisions made before an obstetric complication arises. This way, when an emergency does occur, the decisions have already been made, and all that the woman and family have to do is to put the plan into action—forestalling the first two delays: recognizing the problem and then making the decision to seek care.

Additional materials were produced for use in health facilities and in community areas. All were intended to promote safe maternity, the need to be prepared for complications, and the rights and responsibilities of clients and providers. One handout showed six specific steps for a healthy maternity, including antenatal visits, eating well, tetanus vaccines, and discussion of family planning with partners. Another chart was used by providers as a job aid for antenatal visits. It was used to describe to the providers the seven steps for an antenatal visit and all the actions needed for each step.

Radio spots were developed that promoted the improved services, the need for antenatal visits, and community health committees, as well as the danger signs during pregnancy and childbirth. These were not aired until after the MNH Program completed the data collection for the post-intervention impact study, so their impact on health-seeking behavior among pregnant women could be assessed in this evaluation. Local staff reported that radio spots produced under MotherCare and by the Health Areas were being aired during the time of the MNH Program in limited geographic regions.

To address aspects of clinical care identified during formative research as deterrents to seeking formal medical care, a training curriculum was developed to: 1) strengthen interpersonal communication and counseling abilities of providers at health facilities, and 2) guide health facilities on dealing with intercultural relations. One of the barriers to care and attention was that a majority of the population in the MNH Program target area was indigenous, while the majority of providers are Ladino and do not speak the same language. The interpersonal relations and intercultural communication training program worked to help providers understand the fundamentals of good counseling and interpersonal skills as well as to start breaking down the intercultural barriers.

The BCI component worked in synergy with the other components of the Program to ensure that people were reached with the message to be prepared and to seek care; that they then received attention by trained and skilled attendants after arriving at health facilities was the result of the service delivery improvement process of the EMNC component.

METHODS

Community Mobilization and Behavior Change

Impact Evaluation Design

The main purpose of the impact evaluation was to measure changes in knowledge, attitudes, and behavior regarding pregnancy, and pregnancy-related complications. Also measured were perceptions about care in the health system among women of reproductive age and their partners in the first three MNH Program intervention areas shown in **Table 1**.

Table 1. Start-Up Geographic Areas for MNH Program Interventions, by Department and Municipality

Region	Department	Municipality
North-West	Quiché	Nebaj
		Chajul
		Cotzal
		Uspantán
		Cunén
		Chicamán
South-West	Sololá	Sololá
		San Antonio Palopó
		Santa Catarina Palopó
		San Andrés Semetabaj
		Santa Catarina Ixtahuacán
		San Lucas Tolimán
		Concepción
	San Marcos	Quetzal
		La Reforma
		Malacatán
		San Pablo
		San Rafael
		Catarina

To obtain the information for the impact evaluation design, several methodological approaches were used:

- Population-based study:
  - This was originally a quasi-experimental design with a comparison group. However, in October 2002, the design was changed to a pre-post-test cross-sectional study because the MOH adopted the MNH Program educational materials and disseminated them to health facilities serving mothers across the country.

- Community mobilization study with two components:
  - In-depth interviews with a qualitative and quantitative component with two community leaders per community.
  - Group interviews with members of the local Community Health Committee in those communities with an active Community Health Committee.
- Case studies:
  - Ethnographic study of the cases of two mothers whose lives were saved in a locality with an active Community Health Committee.

Sampling Methodology

A similar sampling methodology was used for both the pre- and post-test surveys. However, the composition of the sample populations differed. In the baseline, the team surveyed women 15–49 years of age who had had at least one child in the prior 5 years. In the followup, the team surveyed women 15–49 years of age who had at least one child in the 12 months before the survey and/or were pregnant at the time of the survey. The change in the composition of the sample population was necessary in order to measure any changes associated with exposure to MNH behavior change and community mobilization activities that began implementation in July 2001.

The baseline survey covered 40 out of the 100 communities originally selected in 13 districts of the three departments (Quiché, Sololá, and San Marcos) where the MNH Program was planning to implement their maternal and neonatal survival interventions. The followup survey covered the same 40 communities as in the baseline and an additional 15 communities (drawn from the same original universe of 100 communities) for a total of 53 communities. The increase in the number of communities included in the sample was necessary to meet the more restrictive selection criteria used to identify the sample for the followup. In both baseline and followup surveys, a sample of 1,000 women was selected using a stratified random sampling approach: [27,28]

- At the first stage, the research team determined the number of households to sample proportional to the population size of each department: Quiché (27%), San Marcos (38%), and Sololá (35%).
- At the second stage, communities (40 in the baseline and the same 40 plus 15 additional ones in the followup) were randomly selected from the 100 communities originally identified for Program intervention. The sampling design included stratification cut-off points to ensure that different size communities were accurately represented (see **Table 2**).
- At the third stage, households in each community were selected using Excel's random number generator function.

[27] Fonseca-Becker F et al. 2001. *Perspectiva Comunitaria sobre Embarazo, Parto y Post Parto en los Departamento de Quiché, Sololá y San Marcos*. Johns Hopkins Center for Communication Programs: Baltimore, MD.
[28] Fonseca-Becker F et al. 2004c. *Informe del Estudio de Población. Evaluación de Impacto: Cambio de Conducta y Mobilizacion Comunitaria. Componente Materno Neonatal. Ministerio de Salud Pública y Asistencia Social*. Johns Hopkins Center for Communication Programs: Baltimore, MD.

Table 2. Number of Communities and Households per Strata and Department

Department	Strata	Number of Communities	Number of Households
Quiché	i	5	20
	ii	5	40
	iii	3	60
	iv	4	150
Subtotal		**17**	**270**
San Marcos	i	6	40
	ii	9	200
	iii	2	140
Subtotal		**17**	**380**
Sololá	i	3	10
	ii	10	60
	iii	2	60
	iv	4	220
Subtotal		**19**	**350**
TOTAL		53	1,000

Parallel interviews of married men in half of the households surveyed were also conducted. In the baseline, men were selected according to the following characteristics: 15 years of age or older, in union, and living in the same household as the women interviewed, while in the followup, only the partners of the women interviewed were included in the study.

At the community level, the research team enumerated all households and randomly selected specific households (including replacement households) using a standard approach. At the household level, the team interviewed all women living in the selected household 15–49 years of age who had at least one birth in the 5 years prior to the baseline survey. For the followup, the team interviewed women who had at least one birth in the 12 months prior to the survey or who were pregnant at the time of the survey.

Interviewers used a standard household questionnaire to identify the respondents as well as to obtain data on the household characteristics. The women's questionnaire covered: 1) knowledge, attitudes/approval, intention, practices, and advocacy regarding birth and emergency preparedness, 2) knowledge, perception, and behavior regarding care of the mother and the neonate during and after childbirth at the level of the household and the healthcare system, 3) family and community preparedness with regard to birth and emergency plans for transportation, including funds to pay for it, 4) relationship between families and traditional birth attendants, 5) perceptions about family and community attitudes towards the health care system, and 6) use of mass media. The men's questionnaire covered similar areas as the women's questionnaire.

The community mobilization surveys were conducted in the same communities where the population survey was implemented. Two leaders (one of them a TBA) in each community were interviewed using a semi-qualitative survey: the first part of the survey collected qualitative information regarding the community's level of preparation to manage a maternal emergency; the second part of the survey consisted of a quantitative questionnaire similar to the men's questionnaire

in the population study. Additionally in communities with an active Community Health Committee, a group interview of the Committee's members was conducted using the same qualitative questions as in the first part of the leaders' interviews. A more detailed presentation of the community mobilization methods and descriptive results can be found in the "Community Study Report." [29]

Two case studies of women who survived pregnancy complications in a community with an active Community Health Committee were also conducted in Las Canoas in the Department of Sololá. Results are reported in a separate "Case Study Report."[30] All survey questionnaires were reviewed for relevance and cultural appropriateness by MOH officials, USAID Mission/Guatemala staff, other Guatemalan health experts, and the MNH Program staff. The research team field-tested the questionnaire and made necessary revisions in preparation for the fieldwork. Trained bilingual interviewers administered the questionnaires.

Data for the followup population survey were entered in CS-PRO®, a statistical software program that allowed easy linkage of survey data from households, women, and men. Data quality was assured by employing double data entry. Qualitative information was recorded whenever possible and only with previous approval by the interviewee. In-depth and group interview results were entered in a format ready for transfer into Nud*Ist® for analysis.

Data Analysis

Although the questionnaire included a birth history for the 5 years prior to the survey for each woman interviewed in the baseline, for the purpose of this study, we used only information from those women who gave birth in the 12 months prior to the survey to minimize recall bias. Data from this baseline sub-sample were used for comparison with the followup to identify possible changes in relevant indicators regarding pregnancy and childbirth. Analyses were based on the steps to behavior change model [31] The model denotes changes in knowledge, perception, and behavior resulting from exposure to new ideas via various media and interpersonal contact.

A first level of analysis was to establish the comparability of the two samples for both women and men; chi square tests were conducted to establish significance of differences. A second level of analysis was to compare baseline and followup measures for key indicators measuring knowledge, perceptions, and behavior regarding management of complications related to pregnancy and childbirth. A third level of analysis was to compare respondents by whether they had been exposed or not to the BCI activities. Results were adjusted for socio-economic characteristics and past use of antenatal care for key indicators: knowledge of bleeding as a complication that needs care in the health system; perceptions of women's use of the health care system when needed; and choice of place to give birth for last birth.

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[29] Fonseca-Becker F et al. 2004b. *Estudio de Población. Evaluación de Impacto, Cambio de Conducta y Movilización Comunitaria: Componente Materno Neonatal.* Ministerio de Salud Pública y Asistencia Social. JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD.

[30] Fonseca-Becker F et al. 2004a. *Estudio de Caso. Evaluación de Impacto, Cambio de Conducta y Movilización Comunitaria: Componente Materno Neonatal.* Ministerio de Salud Pública y Asistencia Social. JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD.

[31] Piotrow P et al. 1997. *Health Communication: Lessons from Family Planning and Reproductive Health.* Praeger Publishers: Wesport, CT.

Measuring Quality Improvement in the Healthcare System

Monitoring Plan

Training
As each group-based training event takes place, lists of participants are collected with the name, profession, and current health facility or organization, department, and municipality of the person's worksite. These lists are entered into Excel spreadsheets showing the time, date, and name of each course along with the list of course trainers. For modular training, lists are compiled over time to track which modules have been completed by which personnel, but the participants are not counted as trained until they are completely done with all course modules. Both basic and comprehensive EMNC courses are taught modularly. Data on courses conducted by MNH Program trainers were also entered into the Training Information Monitoring System (TIMS©). This relational database application tracks individual participants and trainers over time as they both attend and facilitate complementary courses, allowing for the production of individual transcripts in addition to aggregate training program statistics.

PQI
Each PQI instrument is composed of chapters by technical area (the list of technical areas is shown above in Reinforcement of Healthcare Institutions), each with a list of criteria and means of verification for each criterion to be assessed onsite at health facilities. At the end of an assessment, a summary sheet is completed that shows the total number of criteria achieved next to the number possible in each technical area. The assessor computes the percentage of criteria achieved in each technical area in addition to an overall score, and documents these findings on the summary sheet. Once these totals are calculated and the summary forms for each assessed facility are submitted to the MNH Program office, the date of the assessments, and the numbers of criteria achieved and possible are entered for each into a Microsoft Access database. This database also tracks which version of the PQI instrument was used for data collection. The PQI assessment data collection forms were modified midway through the Program, making comparisons of percentage of criteria achieved over time invalid. (A recoding assessment was carried out by the MNH Program in Baltimore, showing that scores consistently increased as an artifact of the changes made to the data collection instruments, making comparisons of scores calculated from data collection on different versions of the PQI tool invalid.) Trend reports are therefore produced showing only data from the same version of the instrument to avoid misinterpretation of the PQI data. Showing data from both versions of the instrument on one graph artificially inflates the perception of gains in quality over time, and hurts the overall PQI approach—to identify performance gaps in order to address them adequately.

Met Need
Met need for essential obstetric care has been measured by the MNH Program in Guatemala since its inception. The methodology is documented in an MNH Program/Guatemala reference document.[32] The completeness and quality of data collected on complication registers at hospitals greatly influences the construction of the indicator, as all other inputs into the calculation are demographic estimates following a standardized methodology. Ronsmans et al. document several

[32] Schenck-Yglesias C and ME de Monroy. 2004. *Guide for the Construction of Met Need.* MNH/Guatemala M&E CD-ROM.

concerns about the use of the Met Need indicator to evaluate programs, due to a few largely unfounded assumptions in the methodology itself.[33]

Birth Register

WHO stated in 2002 that "all the marker interventions listed (in **Figure 10** below) can currently be recorded in the majority of countries through the normal health facility information systems and are thus amenable to monitoring and to the establishment of systems of accountability."[34] In Guatemala, however, the health information systems at facilities were not initially capable of monitoring indicators to track compliance with the marker interventions below, even though this list of interventions is part of the National Reproductive Health Program's technical strategy.

Figure 10. Selected WHO "Marker Interventions" of Proven Effectiveness That Can Be Measured in a Country's Routine Health Information System

1. Women have social support during labor and birth
2. Exclusive breastfeeding is initiated one hour after birth
3. Every newborn is immediately dried and kept warm to protect against hypothermia
4 The WHO antenatal care package is used for all pregnant women
5. Magnesium sulfate is used to treat severe pre-eclampsia and eclampsia
6. A partograph is used to identify obstructed labor
7. Oxytocin is used for all women as part of the active management of third stage of labor
8. Antibiotic prophylaxis is used for women undergoing caesarean delivery
9. Manual vacuum aspiration is used for management of incomplete abortion
10. The kangaroo-mother-care of skin-to-skin contact is used for all low birth weight babies
11. Assisted delivery including caesarean section is performed in cases of prolonged and/or obstructed labor

Source: World Health Organization (WHO). 2002. *Global Action for Skilled Attendants for Pregnant Women.* WHO/RHR/02.17. WHO: Geneva, p. 22.

The MNH Program and MOH thus jointly designed a standard logbook for use at hospitals and health centers where women give birth in Guatemala, as delivery room logbooks or "birth registers" had been shown in a recent study to be very reliable sources of patient data at the time of childbirth.[35] The registers were now to be used for a new purpose—to track clinical performance measures. The methodology for data collection and construction of indicators is documented in an MNH Program/Guatemala reference document.[36]

Five programmatic indicators are measured using birth registers maintained at hospitals as a data source:

1. Percentage of births where a partograph was used
2. Percentage of vaginal births with active management of the third stage of labor
3. Percentage of newborns placed into immediate skin-to-skin contact with the mother
4. Cesarean index
5. Episiotomy rates in primiparous women

[33] Ronsmans C et al. 2001. Questioning the indicators of need for obstetric care. *Bulletin of the World Health Organization* 80(4): 317–324.

[34] World Health Organization (WHO). 2002. *Global Action for Skilled Attendants for Pregnant Women.* WHO/RHR/02.17. WHO: Geneva, p. 22.

[35] MEASURE *Evaluation*/GSD Consultores Asociados. 2001. *An Assessment of the Quality of Maternity Registers for Monitoring Maternal and Neonatal Health in Institutions in Guatemala.* (October)

[36] Schenck-Yglesias C et al. 2004. *Guide for the Construction of Birth Register Indicators,* MNH/Guatemala M&E CD-ROM.

Though the data elements captured in the birth register do not cover all of the WHO marker interventions, this tool provides a start at assessing clinical adherence to standards on a routine basis. While standard definitions for data collectors (service providers) are included in an instruction sheet attached to the birth register, the process to formally train MOH providers on the use of the birth register once the logbooks were distributed was slow. Consequently, the first several months of data from this source were not usable due to data quality problems. Even using the most recent 6-month time frame, some hospitals' records for certain months had to be disregarded for the calculation of indicators as they resulted in unusable values (e.g., over 100% active management of the third stage of labor).[37]

Data Analysis Plan

Training
Spreadsheets are used to compile total numbers of staff trained in the various types of courses. Data are disaggregated by profession and geographic location.

PQI
The MS Access database housing PQI results can generate several standard reports, including tables and graphs showing percentage of quality criteria achieved by technical area and overall, for all facilities, by facility type, or for one specific facility. Another standard report lists accredited facilities and their scores—both total score and score by technical area.

Indicators in the MNH Program M&E framework address not only the PQI scores that can be generated from the database, but also the achievement of specific quality criteria. To calculate these indicators, manual review of PQI instruments is necessary to extract the raw data and calculate the indicators. For example, to calculate the percentage of hospitals with adequate equipment and supplies for EMNC, staff must review all eight hospital PQI forms—criteria 11 and 14 on the Human, Physical and Material Resources technical area form—and calculate the percentage of these hospitals that achieved both criteria. The data resulting from this analysis are entered into the standard M&E framework document.

Met Need
Once data are collected from hospitals on standard complications registers, MNH Program staff gather the completed forms and enter the total number of complications into a spreadsheet. All demographic data inputs are obtained from the Guatemalan National Statistics Institute and entered into another spreadsheet. All data are then linked and analyzed using spreadsheet software, with the automatic equations configured according to the standard methodology.

[37] It must also be noted that birth register data are self-reported by clinicians. One might suspect over-reporting of "good behaviors" such as implementation of the evidence-based guidelines they had been taught, including restrictive episiotomy and use of the partograph to monitor labor progress. Anecdotal data from clinical trainers and supervisors have revealed that when "partograph used" is checked off, the completed partograph is not always found in the medical record. However, "partograph used" is not checked for all records, and thus the data may be revealing some true underlying practice patterns. Even if checked off and actually carried out, the completion of the partograph or active management of the third stage of labor may not have been technically correct. Only an observer would be able to apportion these types of data, and hospitals in general throughout the world do not have adequate staffing for oversight to occur and be documented on each patient by a third party to assure compliance with guidelines and protocols. Nevertheless, an evaluation of the data quality would be important in the future to justify continued use of the birth register for clinical performance indicator measurement.

Birth Register
According to the MNH Program guide on the topic, raw numbers are tallied from the birth registers at intervention hospitals on a monthly basis. These raw numbers each are required for calculation of one of the five birth register indicators. Tallied numbers are entered by hospital and month into an SPSS file, and then new variables are created by dividing the corresponding numerator and denominator variables. Trends are viewed by month and hospital using graphs and tables generated by SPSS.

RESULTS

The large scope and depth of the MNH Program impact evaluation allow us to present in this report only the key findings for the behavior change, community mobilization, and service delivery improvement components. Descriptive reports on the community mobilization and population studies, as well as the complete case study report, have been published elsewhere[38]. Service delivery component data are routinely reported in the MNH Program M&E framework and in quarterly program reports submitted to USAID, in addition to being presented at local Safe Motherhood meetings for the benefit of MOH and NGO staff in Guatemala.

Community mobilization results are presented first to set the stage for the results of the population and institutional components. A summary of the main findings from the case study will be used to illustrate how the emergency plans at the community and family levels, as well as the improved quality in the healthcare system, have been used to manage two maternal emergencies in a community with an active health committee.

Community Mobilization

Community leaders were interviewed in the 53 communities where the population survey was also conducted. Seventeen of the communities were situated in the Department of Quiché, 17 in San Marcos and 19 in Sololá, as per the sampling design described in Community Mobilization and Behavior Change above.

At least two community leaders were interviewed in each community. In most communities, one of the leaders interviewed was a TBA. In the community of Las Canoas, the interviews of community leaders were part of the case study and are reported elsewhere.[39] If the community had an active community health committee, a group interview with its members was conducted.

Aside from the formal community mobilization survey that was conducted, the MNH Program in Guatemala maintained routine monitoring data on the BCI component. The community mobilization data collection instrument consisted of a matrix, listing all planned intervention communities, by department, in rows and phase of intervention by column. The five phases were:

[38] See four reports by Fonseca-Becker F et al. 2004 in reference list. Electronic copies of these reports can be downloaded from www.jhuccp.org/pubs/
[39] Fonseca-Becker F. et al. 2004a. *Estudio de Caso. Evaluación de Impacto, Cambio de Conducta y Movilización Comunitaria: Componente Materno Neonatal.* Ministerio de Salud Pública y Asistencia Social. JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD.

1. Establishing contact with community
2. Recognizing the problem and finding solutions
   a. Initial meetings carried out
   b. Health committee formed
   c. Resource inventory for CEP completed
3. Defining the CEP
   a. CEP in progress
   b. CEP written
   c. Community emergency fund in place
   d. Amount in the community emergency fund
   e. Transport identified
4. Collective action—putting the CEP into action
   a. Referrals recorded due to CEP
   b. Number of referrals due to CEP
5. Participative evaluation—recognizing accomplishments and planning next steps
   a. Evaluation meeting carried out
   b. Sustainability plan in place

Health promoters and area supervisors would update the matrix as they carried out their community mobilization intervention activities, visiting the communities. Reports on whether a community had a community health committee differed in some cases between MNH Program monitoring data described above, and community leaders' survey responses (**Table 3**). According to community survey results, approximately 43% of the communities in the study had been mobilized at some point during the MNH Program period. Leaders from 23 communities (10 in Quiché, 4 in San Marcos, and 9 in Sololá) reported that their community had a community health committee to address maternal emergencies. Although some health committees, especially in San Marcos, had not met for over a year, those communities were classified as having a health committee for purposes of this study.

Table 3. Comparison of Community Leaders' Responses and MNH Program Monitoring Data on Whether or not a Community Has a Community Health Committee, Departments of Quiché, Sololá, and San Marcos

Community Leaders	MNH Monitoring Data		Total
	Yes	No	
Yes	18	5	23
No	11	19	30
Total	29	24	53

In Quiché, there was 70% agreement between the community leaders and the program monitoring data on whether the community had received the community mobilization intervention or not. We found a similar pattern in Sololá and San Marcos. In 11 of the communities, MNH Program monitoring data showed an intervention in the community when in actuality there was none, and in five communities (three in Quiché and two in Sololá) we found an active community health committee where the Program had reported none (see **Table 3**). These last five community health committees were in general closely associated with the "extensión de cobertura" (MOH's health services expansion). In this study, 11 communities had monitoring data showing intervention

activities, but had community leader interview data showing no evidence of intervention. These communities were coded as "not mobilized" for the analysis.
We also interviewed community health committee members in 10 out of the 23 communities. Most of the interviews were conducted in Sololá (six), three in Quiché and none in San Marcos. In San Marcos, the community health committees had not met for the past 9 to 12 months, and in one case the committee members were away doing seasonal work in other localities. Most of the community health committee presidents were men and only two committees had a TBA among its members.

In general, respondents agreed that the decision to form community health committees resulted from a visit from individuals coming from outside of their community who made them aware that maternal deaths could be prevented with the help of an organized community. In the majority of communities, the respondents described a process that took several months, during which there were frequent meetings and assemblies that resulted in the selection of the members of the community health committee. In most cases, once the health committee was formed it took responsibility for continuing the necessary organization to be prepared to deal with maternal complications. Community health committee members knew that an emergency plan was needed and members took responsibility for different aspects of the implementation. Most respondents identified lack of transport, and lack of funds to pay for the transport, as one of the most important obstacles that needed to be overcome. Some committees collected funds from the community, other committees raffled merchandise to provide emergency funds to women who needed to be transported to a hospital. Often firemen were called to transport a pregnant woman to the hospital because of complications. Respondents from 16 of the 23 communities with a health committee reported that their community had used the emergency plan to help pay for the cost of transporting women with a pregnancy-related complication to the hospital. Respondents from communities with no health committee were unanimous in their response that creating a plan to deal with maternal emergencies would be very beneficial to their communities.

All committee leaders and midwives interviewed reported knowing that pregnant women experiencing complications needed to go to the hospital to receive care. When asked if her community knew what to do in case of a maternal emergency, a TBA in the community of Ilom answered, "*Estamos organizados para conseguir un carro que saque a la mujer en peligro.*" (We are organized to find a car to transport a woman who is in danger.) Another TBA in the community of La Hacienda answered the same question by saying, "*Buscan carro para trasladar a la paciente a Uspantán y lo pagan.*" (They [referring to the committee] search for a car to take the patient to Uspantán and they pay for it.)

The President of the Community Health Care Committee in El Caracol answered the question by saying that, "*El apoyo todos aquí lo hemos planeado para cualquier emergencia; cuando es embarazada u otras enfermedades. Nosotros mandamos, si no hay energía para comunicarnos por teléfono, mandamos a uno o dos compañeros a traer la ambulancia, o los bomberos llevan al paciente al hospital.*" (We have planned the support for whatever the emergency, for a pregnant woman or any other sickness. We send, if there is no telephone, we send one or two people to bring an ambulance or the firemen to take the patient to the hospital.)

Community leaders and local health officials were also asked to name the hospital, health post, and health center that pregnant women use in their localities. There was a high level of agreement between the answers from the leaders and those of the local health officials. The leaders were also asked to estimate the time and distance from their community to the nearest hospital, health center, and health post. Results show that the hospitals in Nebaj and Uspantán are the two hospitals used by the population in the Department of Quiché. Communities using the Nebaj Hospital are more

remote, with a reported range of 1 to 5 hours to reach the hospital, while those using the Uspantán Hospital report between 30 minutes and 3 hours to reach the hospital. In the Department of San Marcos, most respondents agreed that the hospital used by their population is the Malacatan Regional Hospital. However, while the local health officer gave the name of the Malacatan Hospital, except for one community that used the Regional Hospital of San Marcos, the leaders of two communities mentioned the Montanita Hospital and two others the Coatepeque Hospital. The range of time estimated to reach the hospital was between 30 minutes and 4 hours. In the Department of Sololá, the leaders and the health officer all agreed that the two hospitals used were Mazatenango Hospital and the Regional Hospital of Sololá. The time to reach these two hospitals was between 30 minutes and 2 hours.

The health centers used by the communities in the three departments were often situated within 15 minutes to 3 hours from the communities in our study. The health posts were all accessible in a range of 5 to 30 minutes, making them the nearest healthcare facility for each community.

Population Survey: Knowledge, Perceptions, and Behavior Change

Results presented on this impact report are based on analysis of a sub-sample of women who had at least one birth in the 12 months prior to the surveys (n=325 for baseline and n=787 for the followup). All men surveyed were included in the analysis. Women in the baseline and followup survey had comparable socio-demographic characteristics: the majority were married or in a union, under 30 years of age, were of Mayan origin, not employed, and had a primary education or no education (see **Table 4**). However, a majority of women in the followup lived in an urban area, which was significantly different from the baseline with a majority of women in rural settings (**Table 4**).

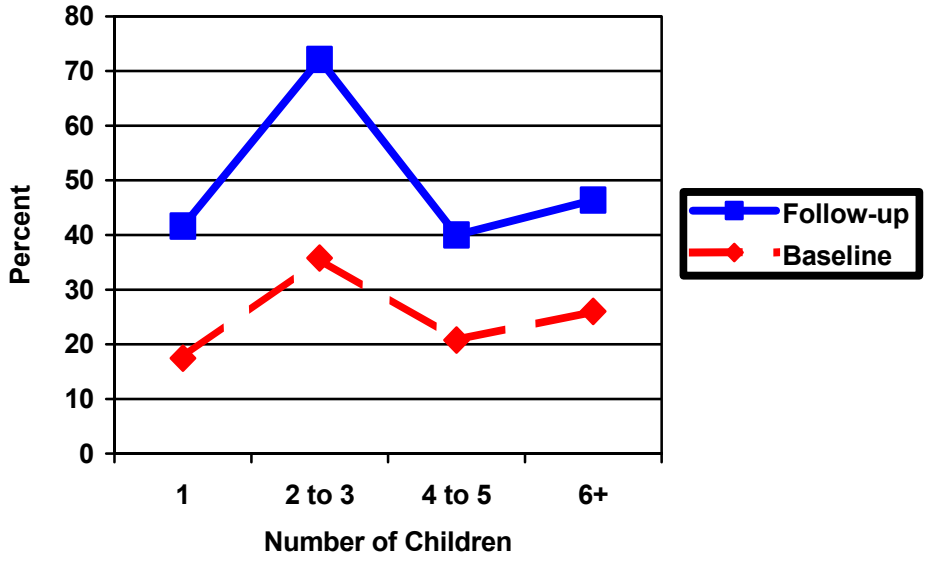
Table 4. Distribution of Selected Socio-Demographic Characteristics by Sex, for Baseline and Followup

Socio-Demographic Characteristics	Women		Men	
	Baseline	Followup	Baseline	Followup
	% (N=325)	% (N=787)	% (n=512)	% (n=546)
Age				
15-19	13.2	14.4	*2.1*	5.1**
20-24	31.1	31.0	*10.7*	22.7
25-29	23.4	24.5	*17.2*	25.8
35-39	10.8	10.7	*13.1*	13.5
40 and over	4.0	3.3	*37.9*	13.0
Marital Status				
Married/In union	93.8	94.0	100.0	100.0
Not Married/ Union	6.2	6.0	-	-
Parity				
1	17.0	23.1	-	-
2–3	36.3	35.3	-	-
4–5	20.3	20.5	-	-
> 5	26.4	21.1	-	-
Education				
No Education	40.9	36.3	31.0	20.3**
Primary	45.2	43.3	49.0	53.7
Secondary +	13.8	20.3	19.9	26.0
Ethnicity/Language				
Spanish	44.9	46.4	46.1	48.7
Mayan	55.1	53.6	53.9	51.3
Place of Residence				
Urban	34.5	53.7**	39.1	55.3**
Rural	65.5	46.2	60.9	44.7
Paid Employment				
Yes	24.6	21.5	85.2	92.3**
No	75.4	78.5	14.8	7.7

** <.01 for testing comparison between baseline and followup measures

Women had comparable parity in both surveys, but a significantly larger proportion of women in the followup had received antenatal care than in the baseline (see **Figure 11**). However, the general pattern remained similar for both groups, with the highest proportion of women receiving antenatal care for their last birth among those who had two or three children.

Figure 11. Percentage of Women Receiving Antenatal Care for the Last Pregnancy, at Baseline and Followup, by Parity



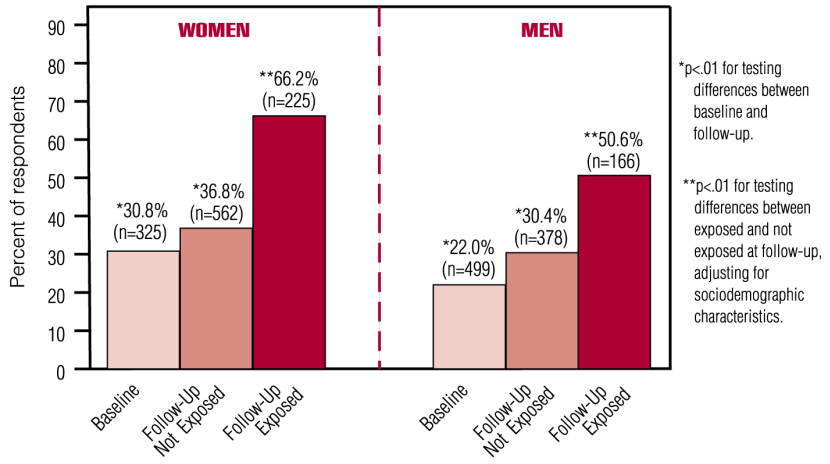
Almost a third of women (29%) and men (31%) in the followup were exposed to some aspect of the Program's activities and messages. Few women and men were exposed to television and radio messages, which was expected given the timeline of Program interventions. The majority of the exposed women reported that a healthcare provider recommended the importance of having a plan for what to do in case of an emergency related to pregnancy or childbirth.

Knowledge

Knowledge of danger signs increased significantly for both women and men in the followup when compared to the baseline after adjusting for socio-demographic characteristics and for receiving antenatal care during the last pregnancy. Among those women exposed to the Program interventions, 66% knew that severe bleeding during pregnancy and childbirth is a complication that should be managed in a hospital setting, compared to 31 % in the baseline (see **Figure 12**). A similar pattern was observed among men, with an increase from 22% in the baseline to 51% for those exposed in the followup.

Knowledge of bleeding during the postpartum period was also significantly higher among both men and women exposed to the Program (41% and 56% respectively) than among those in the baseline (18% for men and 28% for women) and for those not exposed (27% for men and 29% for women) to the Program.

Figure 12. Percentage of Respondents Knowing Severe Bleeding during Pregnancy/Childbirth Requires Health Service Care, by Baseline, by Exposure at Followup, and Sex



Source: CCP-MNH Guatemala Baseline (2001) and Follow-up (2003) Surveys.

Although knowledge of other danger signs during pregnancy still remained low, changes between women in the baseline and those exposed in the followup were significant. For example, a higher percentage of women exposed to the Program in the followup knew that severe headache, convulsions, swollen hands, and loss of consciousness were danger signs, compared to women in the baseline (see **Table 5**). On the other hand, knowledge for those not exposed did not change significantly between baseline and followup. Similar trends were measured among men between baseline and those exposed in the followup. Change in the knowledge that high fever is a danger sign was not significant after controlling for socio-demographic characteristic and for use of antenatal care for the last birth.

Table 5. Percentage of Respondents with Knowledge of Danger Signs Other Than Bleeding during Pregnancy, at Baseline and by Exposure at Followup

Danger Sign during Pregnancy	Women Who Recently Gave Birth			Husbands of Currently Pregnant Women and Women Who Recently Gave Birth		
	Baseline (n=325)	Followup (n=787)		Baseline (n=512)	Followup (n=546)	
		Exp. (n=225)	Unexp (n=562)		Exp. (n=166)	Unexp (n=380)
Severe Headache	7.4	20.9**	9.4	4.5	16.9**	8.9
Convulsions	1.2	3.1**	.5	1.4	1.2	.5
Swollen Hands	8.3	15.6**	6.8	5.5	10.8*	6.1
High Fever	6.1	14.2	8.4	8.0	12.6	8.2
Loss of Consciousness	3.1	7.6**	2.0	3.1	10.2**	3.2

* p< .05, ** p<.01 for testing differences between baseline and followup, and for testing differences between exposed and not exposed at followup adjusting for socio-demographic characteristics and for use of antenatal care for last pregnancy

Both women and men showed significant increases in knowledge of other danger signs during childbirth, including knowing that the mother should be taken to a health care facility if the placenta

has not been delivered 30 minutes after birth: 9% at baseline vs. 24% at followup for women exposed and 6% for those not exposed; and 5% for men at baseline vs. 19% for those exposed in the followup and 7% among the non-exposed (see **Table 6**). Similarly, both women and men who were exposed to the Program had significantly higher knowledge (22% and 19% respectively) than those in the baseline (11% for women and 8% for men) that labor lasting more than 12 hours is a danger sign that should be taken care of in a hospital.

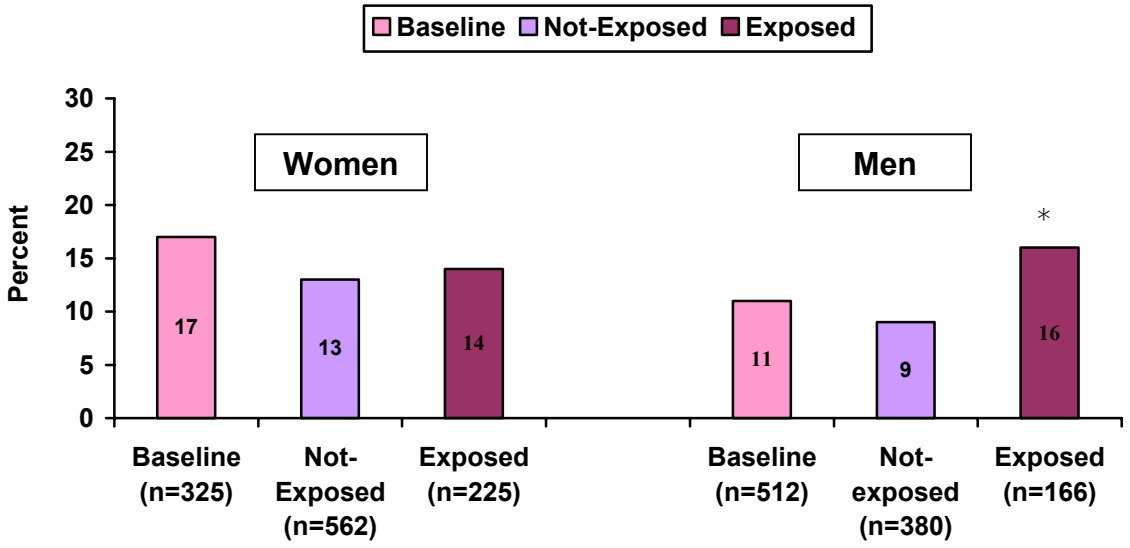
Table 6. Percentage of Respondents with Knowledge of Danger Signs during Childbirth, at Baseline and Followup

Danger Sign during Childbirth	Women Who Recently Gave Birth			Husbands of Currently Pregnant Women and Women Who Recently Gave Birth		
	Baseline (n=325)	Followup (n=787)		Baseline (n=512)	Followup (n=546)	
		Exp (n=225)	Unexp (n=562)		Exp (n=166)	Unexp (n=380)
Labor lasting >12 hours	11.4	22.2**	8.7	8.4	19.3**	7.6
Placenta not delivered 30 min. after the baby	8.6	23.6**	6.0	6.6	18.7**	6.6

** p<.01 for testing differences between baseline and exposed in the followup and those exposed and not-exposed in the followup after adjusting for socio-demographic characteristics and use of antenatal care at last pregnancy

Knowledge of danger signs other than severe bleeding during the postpartum period remains low, and although there were significant changes among men between the baseline (11%) and the followup for those exposed (16%), there was a decrease in knowledge among women in the followup as compared to the baseline (see **Figure 13**).

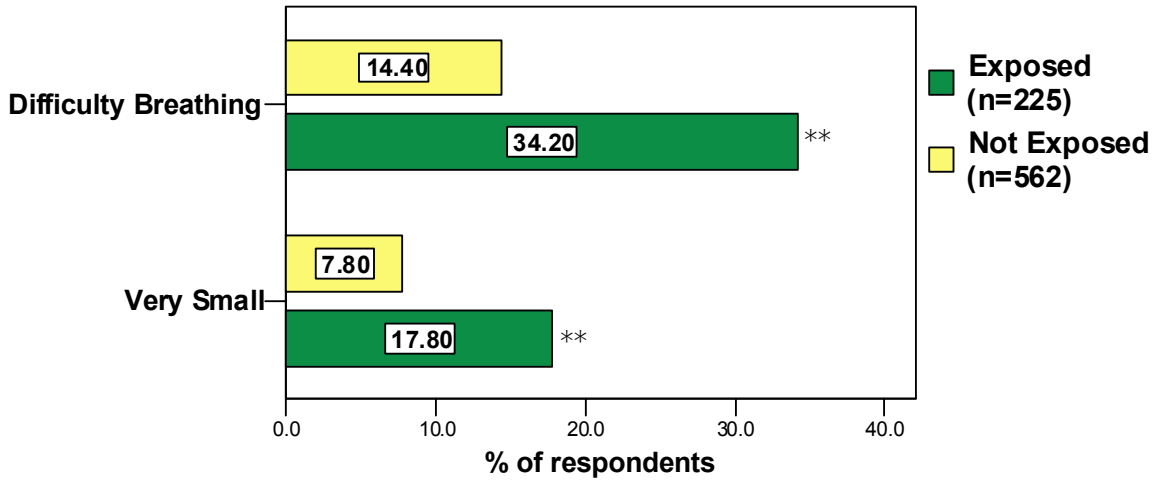
Figure 13. Percentage of Respondents Who Know That a High Fever after Childbirth Is a Danger Sign, by Sex and by Baseline, and by Exposure at Followup



* p<.05 for testing differences between not exposed and exposed at followup adjusting for socio-demographic differences

Questions on knowledge of danger signs for the newborn were asked of women, but only in the followup. Nevertheless, we did measure significant differences in knowledge that fast breathing or difficulty breathing are danger signs between exposed (34%) versus not exposed (14%) in the followup (**Figure 13**). The same pattern is true regarding knowledge that a very small newborn is at risk (8% for those not exposed vs. 18% for those exposed to the Program).

Figure 14. Percentage of Female Respondents Who Know That Fast Breathing or Breathing with Difficulty Is a Danger Sign in a Newborn, by Exposure at Followup



** p<.01 for testing differences between exposed and not-exposed adjusting for socio-demographic characteristics and for use of antenatal care at last birth

Although knowledge was low among both women and men regarding their community's plan for transport and funds to be used in case of a maternal emergency, there are significant differences in the level of knowledge for those exposed as compared to those not exposed to the Program (see **Table 7**). Among exposed women and men, knowledge was significantly higher about their community having a transportation scheme (11.6% and 13.9% respectively) for those exposed than for those not exposed to the Program (6.9% and 8.2%). The same pattern is true regarding knowledge that their community has organized funds for use in case of maternal emergency: 2% of women not exposed knew compared to 7% of those exposed, and 2% of men not exposed vs. 5% for those exposed.

Table 7. Percentage of Respondents Who Know That Their Community Has a Plan to Help Women and Newborns Reach Care, at Baseline and Followup

Community Scheme:	Women Who Recently Gave Birth				Husbands of Currently Pregnant Women and Women Who Recently Gave Birth			
	Baseline (n=325)	Followup (n=787)	Followup (n=787)		Baseline (n=512)	Followup (n=546)	Followup (n=546)	
			Exp (n=225)	Unexp (n=562)			Exp (n=166)	Unexp (n=380)
Transport	Not available	6.9	11.6**	5.0	Not available	8.2	13.9**	5.8
Funds		3.0	6.7**	1.6		2.7	5.4*	1.6

* p<.05, **p<.01 for testing differences between those exposed and not exposed at followup, adjusting for socio-demographic characteristics and use of antenatal care for last pregnancy

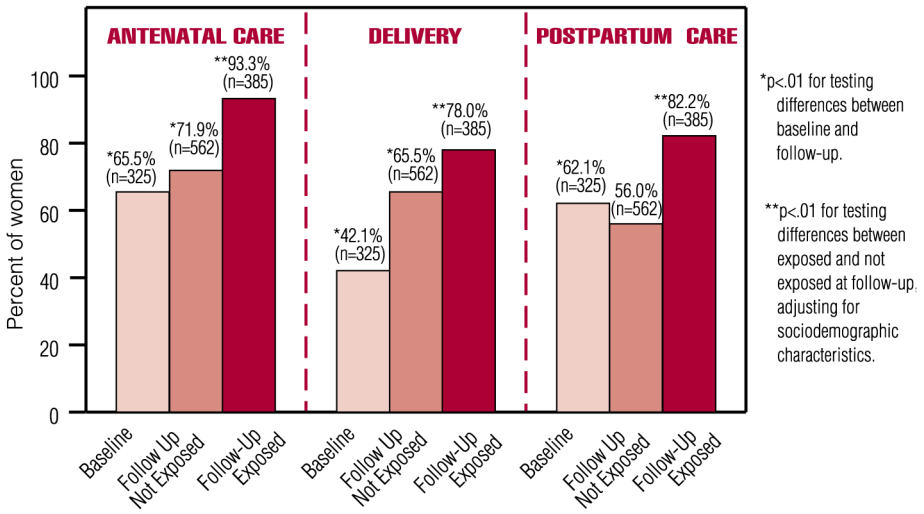
Beliefs

Significant changes were measured between baseline and followup regarding women's beliefs that mothers and newborns should receive services from a skilled provider (see **Figure 15**). The majority of women exposed to the Program (93%) believed that a woman should receive antenatal care services from a skilled provider, compared with 65% of women in the baseline. The same is true regarding childbirth and postpartum care from a skilled provider: 71% of women exposed to the Program in the followup believed that a woman should receive skilled care when giving birth, compared with 42% in the baseline. There were also changes among the non-exposed: 42% for skilled care for childbirth and 72% for antenatal care.

Behavior

Whereas at baseline only 5% of women reported having made a plan for transportation in case of obstetrical emergencies, 35% of women exposed to the Program made a plan—a sharp contrast to only 12% non-exposed (see **Table 8**). The percentage of women who reported setting aside money increased in both groups from a baseline of 7%, but to a far higher level among those exposed (62%) than among those not exposed (26%).

Figure 15. Percentage of Women Believing Mothers and Newborns Should Receive Services from a Skilled Provider, by Type of Service at Baseline and Exposure at Followup



Source: CCP-MNH Guatemala Baseline (2001) and Follow-up (2003) Surveys.

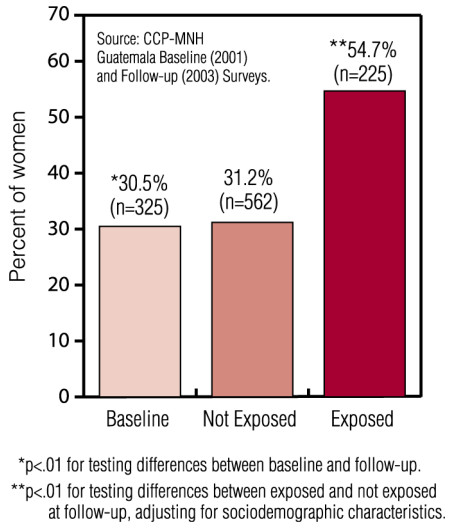
Table 8. Percentage of Women Who Made Planning Arrangements to Prepare for an Emergency for Their Last Pregnancy, by Baseline and Exposure at Followup

	Women		
	Baseline (n=325)	Followup (n=787)	
		Exp (n=225)	Unexp (n=562)
Arranged transport	5.2	35.1**	11.6
Arranged finances	7.1	62.2**	26.2

** p <.01 for testing differences between those exposed and not-exposed adjusting for socio-demographic characteristics and use of antenatal care for last pregnancy

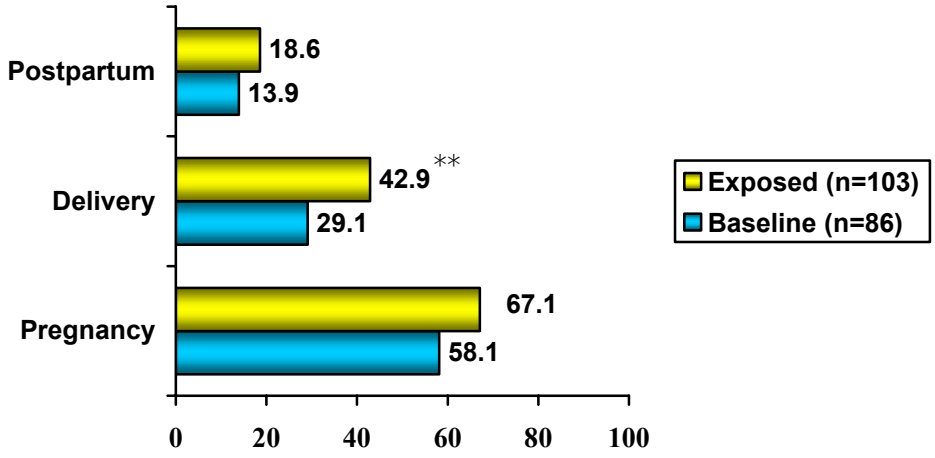
We also found a significant increase in the proportion of women giving birth in the healthcare system (**Figure 16**). More than half (55%) of the exposed women in the followup gave birth at a facility, compared to 30% at baseline and 31% for unexposed women at the followup.

Figure 16. Percentage of Women Giving Birth in the Health System



Women who experienced complications during pregnancy or childbirth were significantly more likely to seek care with a skilled care provider in the followup if they had been exposed to the Program than women in the baseline (see **Figure 17**). The highest proportion of women seeking care from a skilled healthcare provider were those who experienced complications during pregnancy (67% for those exposed at followup vs. 58% in the baseline). A similar pattern is seen for childbirth (43% for exposed and 29% for the baseline), and for postpartum complications (19% for those exposed vs. 14% for those in the baseline).

Figure 17. Percentage of Women Who Sought Services from a Skilled Provider for an Obstetric Complication, among Women Who Reported Complications by Pregnancy, Childbirth, and Postpartum



** p<.01 for testing differences between baseline and those exposed at followup, adjusting for socio-demographic characteristics and for use of antenatal care for last pregnancy

A higher proportion of women exposed to the Program in the followup received antenatal care than at the baseline. More women sought antenatal care earlier in their pregnancy among those exposed (45.1%) than women in the baseline, and a significantly higher proportion of women sought antenatal care during the second trimester of pregnancy among those exposed (34.4%) than women in the baseline (29.8%). There were no changes between women in the baseline and those who were not exposed in the followup.

Table 9. Percentage of Women Who Received Antenatal Care by Timing of the First Antenatal Care Visit at Baseline and by Exposure at Followup

	Women Who Recently Gave Birth		
	Baseline (n=325)	Followup (n=787)	
		Exp (n=225)	Unexp (n=562)
No ANC visit	17.8	13.5	17.8
1–3 months	43.7	45.1	43.7
4–6 months	29.8	34.4*	29.8
7–9 months	8.6	7.0	8.6

* p<.05 for testing differences between baseline and followup

Women in the followup who were exposed to the Program were significantly more likely to have received care from a doctor (43%) or nurse (6.2%), than those in the baseline (9.5% and 0.3% respectively in the baseline) or those not exposed (see **Table 10**).

Table 10. Percentage Distribution of Women Who Received Postpartum Care, by Type of Service Provider, at Baseline and Followup

Postpartum Care Provider	Women Who Recently Gave Birth		
	Baseline (n=325)	Followup (n=787)	
		Exp (n=225)	Unexp (n=562)**
No Postpartum Care	89.8	47.1**	68.3
Doctor	9.5	43.1**	20.6
Nurse	.3	6.2**	5.0
Traditional Birth Attendant	.3	.4	.4

** p< 01 for testing differences between baseline and followup, adjusting for socio-demographic characteristics

Healthcare System Improvement

Training

The following are the key EMNC component results:

- From 2001 to 2003, the MNH Program taught basic EMNC skills to 66 healthcare providers and comprehensive EMNC to 60 providers. In addition, the MNH Program developed a core group of 28 Guatemalan clinical trainers.
- Guatemalan clinical trainers went on to develop an additional 29 clinical trainers and began to train additional providers in EMNC using a modular training approach. As of May 2004, 20 of

these additional providers had completed all basic EMNC modules and an additional 44 had completed all comprehensive EMNC modules. There were 422 providers still enrolled in the basic EMNC course and 194 providers in the comprehensive EMNC course, and all of these providers had completed at least one module of their training.

- The MNH Program worked with the MOH in providing infection prevention training to 332 participants, and interpersonal relations and intercultural communication training to 440 participants during the life of the Program.

PQI

- Within the seven departments where the MNH Program worked, there are a total of 428 public sector health facilities. As of 2003, the MNH Program had worked with the MOH to initiate the PQI process in over one-third of these (153 facilities) over the life of the Program, enrolling 10 of 12 (83.3%) of the hospitals, 44 of 90 (48.8%) of health centers, 97 of 323 (30.0%) of health posts, and 2 of 3 (66.6%) of community maternities.
- The number of health facilities supported each year by the MNH Program rose from 69 in 2001 to 140 in 2003 (this matches the life of Program total, as support for some facilities by the MNH Program ended in 2002). The first health center was accredited through the PQI process in 2002, and by June of 2003, 18 health facilities had achieved accreditation. This list comprises two hospitals, nine health centers, and seven health posts located across six departments, or 12.8% of the 140 facilities that the MNH Program supported in the PQI process during 2003. Of the 18 accredited facilities, there are five in Suchitepéquez, four each in Quiché, and San Marcos, two each in Sololá and Quetzaltenango, and one in Retalhuleu. The percentage of facilities that have a set of EMNC norms and protocols available onsite rose from 2.8% in 2001 to 16.9% in 2002 and 44% in 2003.
- The number of hospitals supported by the MNH Program varied from seven in 2001, to 10 in 2002, and eight in 2003. The percentage of hospitals that perform adequate decontamination for instruments rose from 0 to 50% to 100% in 2001, 2002 and 2003. And all hospitals have seen an increase in their infection prevention PQI scores each year they were assessed. Up from 28.5% in 2001, in 2003, 63% of hospitals had adequate supplies and equipment for EMNC in their labor and delivery rooms. Sixty-three percent of hospitals had some form of linkage to a community health committee, up from 14% in 2001. On the challenging side, only three of eight hospitals in 2003 had a blood bank that operated 24 hours a day.

Although the above findings are more clinically and programmatically meaningful than the overall numeric PQI scores, score findings are presented below as summary measures of trends in achievement over time at intervention facilities. Average score increases at facilities assessed at baseline and followup with Version 1 of the PQI instrument were from 18% to 55% in hospitals, 18% to 50% in Level B health centers, and 16% to 64% in health posts. Average score increases at facilities assessed in more than one followup with Version 2 of the PQI instrument were from 52% to 76% in hospitals, 57% to 69% in Level B health centers, and from 55% to 65% in health posts. The latter scores are higher because of changes in PQI data collection forms documented earlier and because they represent data later in the Program. Independent of the version of the instrument used, rises in scores achieved are observed across facility types.

Figures 18 and 19 below show the change in percentage of quality criteria achieved in hospitals in the PQI process, using Versions 1 and 2 of the data collection instrument, respectively. While there are consistent gains over time, the clinical areas of comprehensive care *(Manejo Integral)* and labor and

delivery *(Parto)* lagged behind the remaining components in the first part of the Program. The results with Version 2 may appear more promising but the higher overall scores in these technical areas relative to pattern seen in Version 1 are artifacts of the design change as well.

Figure 18. Trend in PQI Score (Percentage of Quality Criteria Achieved) by Technical Area, Hospital, Version 1

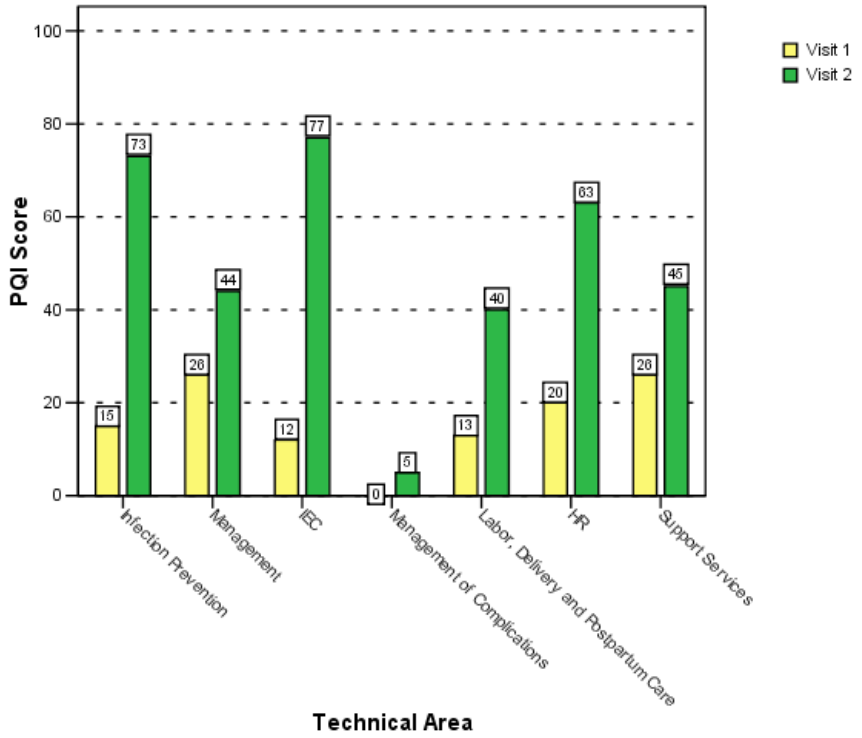
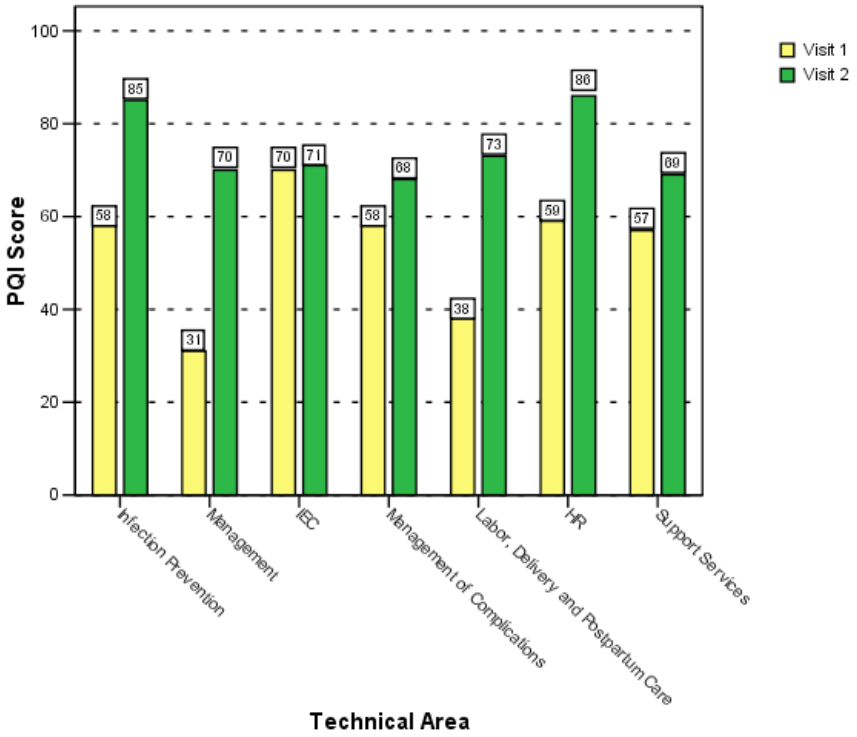


Figure 19. Trend in PQI Score (Percentage of Quality Criteria Achieved), by Technical Area, Hospital, Version 2



Met Need

Met need for essential obstetric care has fluctuated over the life of the MNH Program, most recently decreasing over a 3-year period. The many methodological limitations to this indicator are cited in the literature,[40] yet the indicator is often analyzed and interpreted as though it were meaningful. **Table 11** below documents the recent trend in met need; however, due to the MNH Program's agreement with the weaknesses in the methodology and specific data quality issues with its measure in Guatemala program hospitals, documented elsewhere,[41] we will not interpret these findings in light of the overall Program evaluation.

Table 11. Met Need, Six Departments, Guatemala, 1999–2003

Department	1999	2000	2001	2002	2003
Quetzaltenango	92.8%	79.5%	99.2%	115.5%	105.8%
Retalhuleu	94.8%	85.3%	117.7%	117.9%	81.2%
Suchitepéquez	80.8%	45.9%	43.9%	56.1%	58.4%
Sololá	51.4%	31.6%	37.1%	47.1%	43.4%
San Marcos	61.9%	50.1%	76.4%	54.4%	36.0%
Totonicapán	38.3%	58.0%	51.6%	32.9%	14.0%
TOTAL	70.3%	58.0%	72.5%	70.4%	57.8%

Birth Register

The selection of indicators to be monitored using the birth register in Guatemala was made by looking at the important evidence-based practices in the field of Safe Motherhood. The WHO lists active management of the third stage of labor as a beneficial form of care, as it decreases blood loss after birth.[42] Cesarean index, immediate skin-to-skin contact, and partograph use all measure aspects of care delineated as marker interventions by WHO (see **Figure 10** above). The indicator on restrictive episiotomy is used because the WHO has noted, "a policy of routine episiotomy to prevent perineal/vaginal tears [is likely to be harmful] compared to restricted use of episiotomy because of the incidence of post procedural complications and increased incidence of trauma to the maternal genital tract."[43] The results are thus intended to tell the MNH Program and MOH whether the practices are being carried out as intended on a regular basis in busy hospital labor and delivery wards.

Indicators were calculated representing all cases seen in the 6-month period October 2003 through March 2004 at the following intervention hospitals: Coatepeque, Malacatán, Quetzaltenango, Retalhuleu, San Marcos, Sololá, and Suchitepéquez. Cesarean indices in intervention hospitals ranged from 20–33% with an average of 26%. The internationally expected range is 5–15%; more than 15% may indicate over-utilization of the procedure. Under 5% would indicate lack of accessibility to

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[40] See: Ronsmans C et al. 2001. Questioning the indicators of need for obstetric care. *Bulletin of the World Health Organization* 80(4): 317–324, and UNICEF. 1997. *Guidelines for Monitoring the Availability and Use of Obstetric Services.* UNICEF: New York. (October)

[41] Schenck-Yglesias C and ME de Monroy. 2004. *Guide for the Construction of Met Need,* MNH/Guatemala M&E CD-ROM.

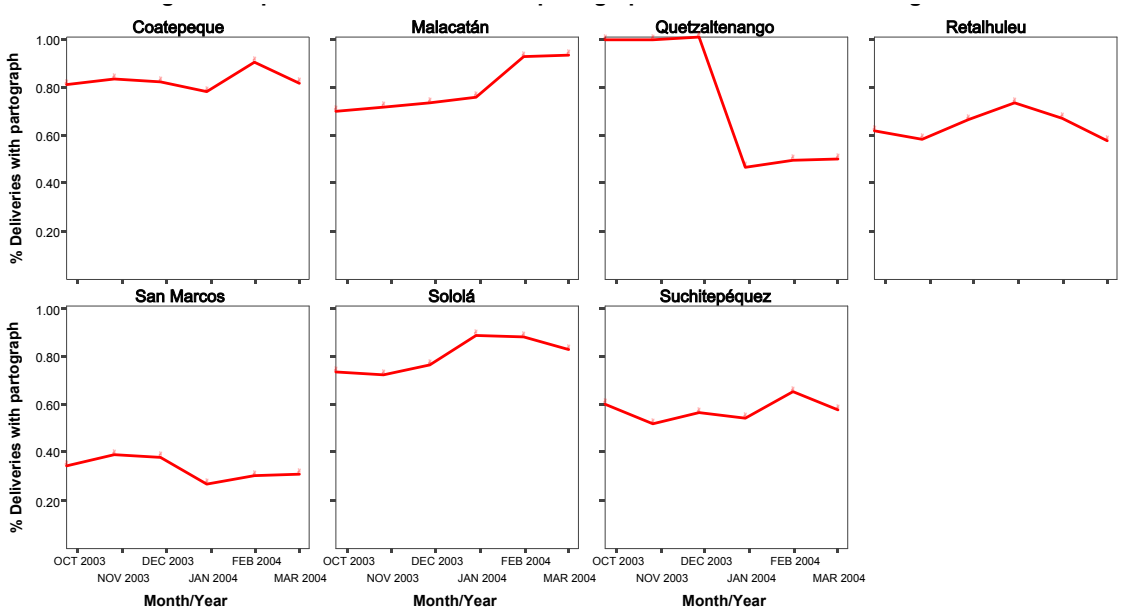
[42] World Health Organization (WHO). 2002. *Global Action for Skilled Attendants for Pregnant Women.* WHO/RHR/02.17. WHO: Geneva.

[43] Ibid., p. 19.

cesareans that are medically necessary.[44] The average percentage of deliveries where the provider had used a partograph was 60%, with a range of 33–87%. The MOH goal is for universal use of the partograph to monitor delivery progress. On average, 35% of primiparous women having a vaginal birth underwent an episiotomy at Program hospitals. The range was 11–72%. This compares to a recent CLAP/PAHO publication showing a 69–92% episiotomy rate range in primiparous women in a study of Latin American hospitals.[45] The WHO recommends that episiotomy **not** be performed routinely as a medical intervention, as it provides no benefit for the mother or infant and can increase the risk of complications. Sixty-eight percent of newborns were placed in immediate skin-to-skin contact with their mothers, with a range of 33–90%. The WHO recommendation is for universal use of this practice to protect against hypothermia and to promote emotional bonding. The average percentage of vaginal deliveries in which the provider had performed active management of the third stage of labor was 79%, ranging from 17% to 100% at Program hospitals. Clinical protocols call for universal use of active management of the third stage in vaginal deliveries for the prevention of postpartum hemorrhage, one of the leading causes of maternal mortality in Guatemala.

Figures 20–24 show monthly trends for each indicator by hospital, with the exception of **Figure 20** for active management, which is shown for only three hospitals due to data quality issues for this indicator in various months' data for the remaining hospitals.

Figure 20. Percentage of Hospital Births in Which a Partograph Was Used for Monitoring Progress, October 2003–March 2004



[44] UNICEF. 1997. *Guidelines for Monitoring the Availability and Use of Obstetric Services*. UNICEF: New York. (October)
[45] Althabe F, JM Belizán, and E Bergel. 2002. Episiotomy rates in primiparous women in Latin America: Hospital based descriptive study. *British Medical Journal* 324: 945–946. (20 April)

Figure 21. Episiotomy Rates in Primiparous Women with Hospital Births, Oct. 2003–March 2004

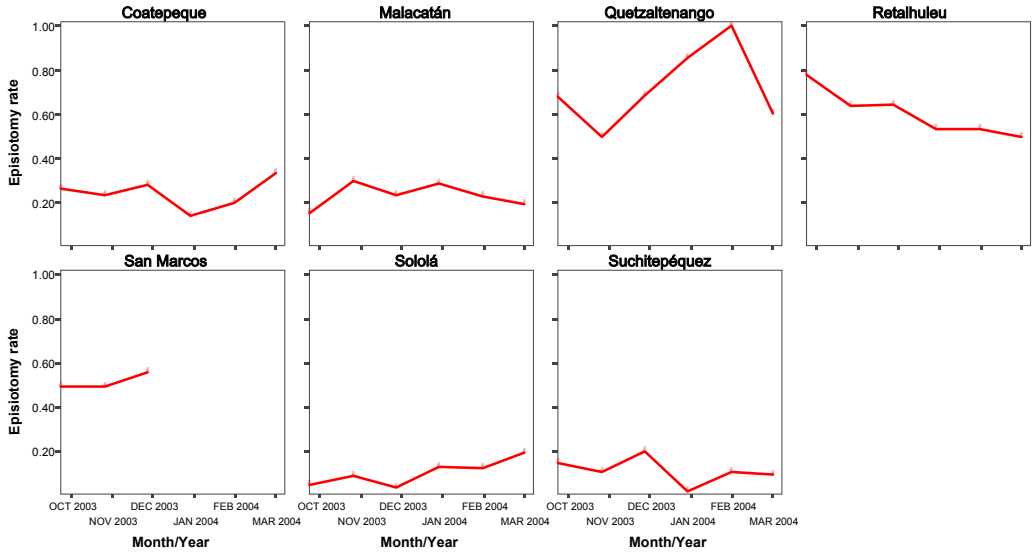


Figure 22. Percentage of Hospital Vaginal Births with Active Management of the Third Stage of Labor, October 2003–March 2004

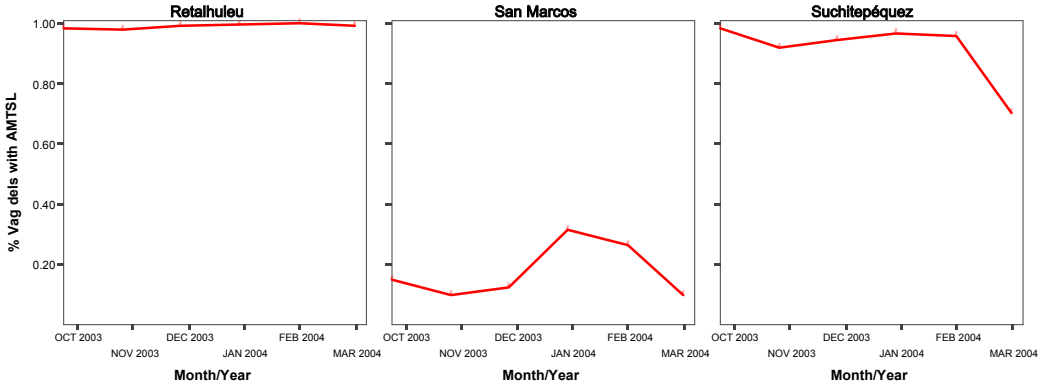


Figure 23. Percentage of Hospital Births That Are Cesarean, October 2003–March 2004

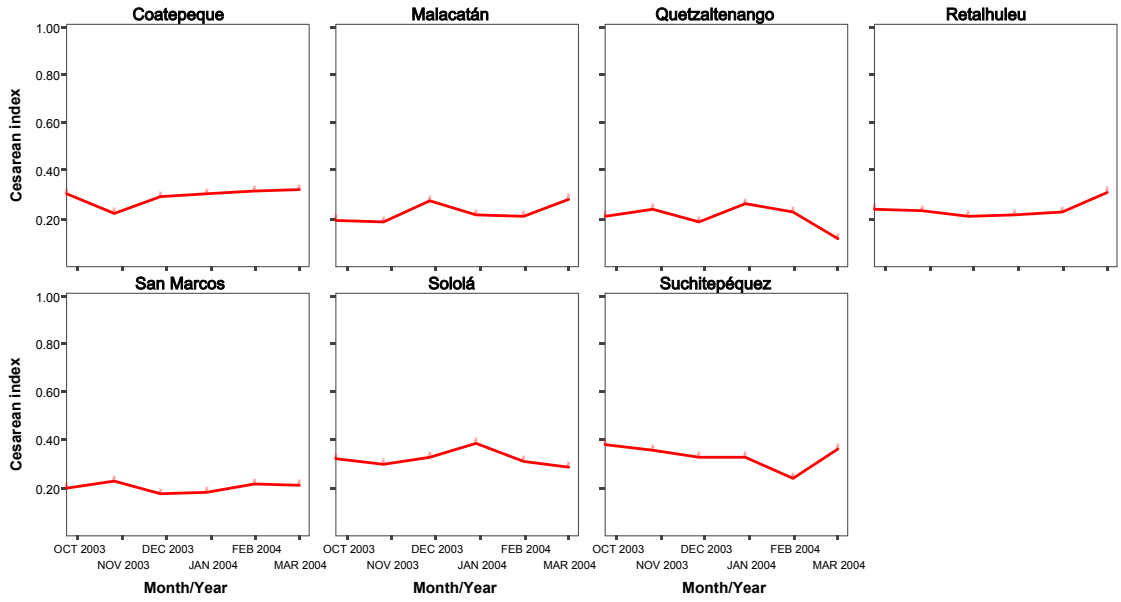
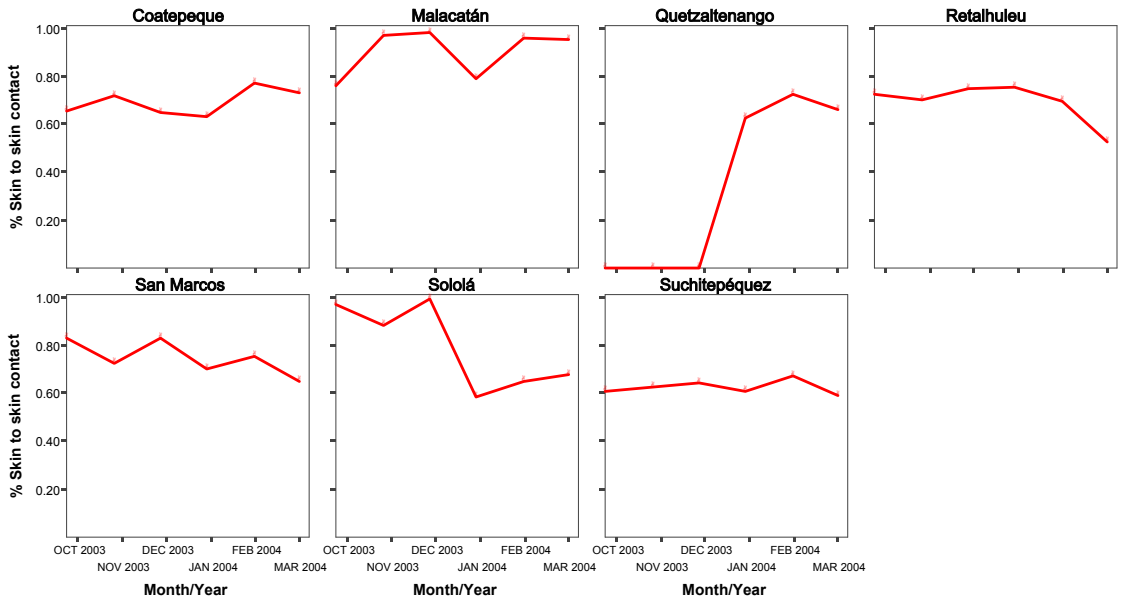


Figure 24. Percentage of Hospital Newborns Placed in Immediate Skin-to-Skin Contact with the Mother, October 2003–March 2004



Although there are no monitoring data on this practice in birth registers, service providers at Program hospitals are increasingly aware of the importance of better communication with their indigenous patients and their families. This new awareness resulted in part from the inservice training and PQI initiative. At Sololá Hospital, TBAs are allowed to accompany women during childbirth, providing social support in a culturally sensitive manner. Anecdotal data suggest that nearly all women giving birth at Sololá opt in for this practice, as they often do not speak the same language as the formal medical providers and it is not part of their usual practice to have their husbands join them in the delivery room.

The policy component of the MNH Program had several major achievements. Preservice strengthening was initiated in all eight nursing schools in Guatemala, with the evidence-based medicine revisions incorporated into the EMNC portions of the curricula of seven out of the eight Guatemalan nursing schools. The new curricula were used with nursing students in all seven schools in the academic year 2003–2004. Several MNH Program technical products and methodologies were institutionalized by the MOH over the life of the Program: the *Managing Complications in Pregnancy and Childbirth* manual, the competency-based training methodology, the community and family emergency plans, and the training in interpersonal relations and intercultural communications. Six donor agencies, eight municipalities, nine NGOs, three professional associations, and five private entities adopted at least one of these technical products or services for use in their own Safe Motherhood activities.

Case Study

Case studies were carried out on two women who had obstetrical complications during pregnancy or childbirth, gave birth at an official healthcare facility after being referred at the community level, and survived childbirth. Both women lived in the village of Las Canoas in the municipality of San Andres Semetabaj, which is in the department of Sololá in southwestern Guatemala. Las Canoas organized a committee in 2001 to help women who had emergencies during pregnancy, childbirth, and the postpartum period.

The subject of the first case study, Maria, had a normal birth at home attended by a TBA, who is a member of the Health Committee. Thirty minutes after the birth, the placenta had not been delivered, so the TBA told Maria and her husband that she needed to go to the hospital to receive care. The mother-in-law disagreed but the woman's husband and his brother, a member of the health committee, convinced the mother-in-law that Maria should go to the hospital. At the hospital, despite poor treatment from one of the doctors, the placenta was delivered, and Maria returned home. Her transportation to the hospital, by ambulance, was paid for by the Health Committee. In this case, the TBA and the Health Committee's support were key to Maria's survival.

Juana, the subject of the second case study, experienced swelling during the last week of her ninth pregnancy. Berta, her TBA, recommended that Juana go to the hospital to give birth, and told Juana and her husband that she would not attend Juana during a home birth because of the danger signs. The husband did not want Juana to go to the hospital, but, after Berta and a second TBA who was part of the Community Health Committee talked to him, he agreed to let Juana go. Juana was hospitalized for 3 days before giving birth. The childbirth was normal and attended by a doctor. Juana spent a couple more days in the hospital and was treated well. As in the first case, the TBA and Health Committee were key in ensuring a good outcome to the childbirth.

CONCLUSIONS AND RECOMMENDATIONS

Findings from the impact evaluation on improving maternal survival through behavior change communication and community mobilization showed significant improvements in knowledge, attitudes, and behavior among those exposed to Program activities. Specifically:

- Women exposed to the Program were significantly more likely to give birth in a healthcare facility.

- Almost a third of the women and men in the followup survey were exposed to the Program's activities and messages.
- Knowledge of danger signs such as severe bleeding improved significantly among both men and women.
- Women exposed to the Program were significantly more likely to believe in the value of using a skilled provider at childbirth.
- Women exposed to the Program were significantly more likely to have a plan for transportation in the event of an obstetrical emergency.
- Knowledge that a woman should be taken to a healthcare facility if the placenta has not be delivered 30 minutes after birth improved significantly among women and men.
- Women exposed to the Program were also significantly more likely to set aside money for an obstetrical emergency.
- Individuals from outside the community initiated community mobilization in the three departments. Most committee members were men and only two committees had a TBA among its members. The case studies demonstrate that TBAs are central to identifying danger signs and to putting into action the community emergency plan to transport women with complications to the health system.
- These impact results provide evidence that collaboration among public and private entities can lead to increased knowledge, improved attitudes, and behavior change that can subsequently contribute to improved maternal and neonatal survival. Continued efforts are needed to reinforce the community mobilization component of the MNH Program in Guatemala as well as to ensure that more women and their partners continue learning how to prepare for an obstetric emergency. Future programs should consider including TBAs in community health committees because of the key role they play in identifying and referring obstetrical complications.
- The clinical training and PQI interventions worked hand in hand to mobilize human and material resources to effect better quality of essential obstetric care in health facilities once the women arrived. These interventions were an indispensable complement to the BCI work that was encouraging women to seek medical care if they noticed danger signs and to have skilled attendance at childbirth.

Salient Program results related to service delivery improvement include the following:

- Active management of the third stage of labor was introduced in the EMNC inservice training and is being implemented at Program hospitals on a regular basis, thereby addressing postpartum hemorrhage, one of the most important preventable causes of maternal mortality.
- Infection prevention practices are improving at every level of health facility where PQI has been initiated. This improvement addresses sepsis, another important cause of maternal mortality.
- Restrictive episiotomy is being implemented as a routine practice. Fewer episiotomies are performed on primiparous women at Program hospitals than in other Latin American countries, and this practice has the promise of decreasing complication rates among obstetric cases.
- Healthcare providers are increasingly adopting practices that show cultural sensitivity toward indigenous patients and their families. Sololá Hospital is an example of this change. TBAs there are encouraged to accompany women during childbirth, providing a social and emotional support function that *dulas* increasingly carry out in the US.

- Immediate skin-to-skin contact with the mother is being practiced, not only for medical reasons to prevent hypothermia, but also for the emotional bonding that can be achieved between mother and child at this early stage.

With regard to sustainability of these achievements, both the inservice training and preservice education systems have been strengthened, allowing for future generations of providers to receive high-quality training in evidence-based medicine. Fifty-seven Guatemalan clinical trainers were developed, and seven of eight nursing schools implemented revised curricula on EMNC. In addition, the Guatemalan government formally institutionalized the PQI process as the methodology that will be used to establish and maintain high-quality services at its health facilities on a national basis.

The strength of the MNH Program in Guatemala was that it addressed essential aspects of supply, demand, and policy. Together, they were able to improve the processes and outcomes intended for Safe Motherhood. Individual and community attitudes, knowledge, and practices changed, leading to greater access to services that themselves are now of better quality. Many of the components are now institutionalized even though the MNH Program is ending. Nonetheless, great strides in reducing maternal and neonatal morbidity and mortality in Guatemala are still needed in the future.

Inequity remains a great challenge, and too many women and newborns are still not able to access the essential obstetric care that they require, at the time it is needed. Because resources are limited to scale up even evidence-based interventions, further research, monitoring, and evaluation of both BCI and service delivery interventions here and in other parts of Latin America and the world are needed. Through these efforts, effective practices can be shared and ineffective practices discarded in order to channel needed resources for the greatest benefit of women and their children globally.

APPENDIX A. RESOURCE MOBILIZATION FOR PQI AT THE MUNICIPALITY LEVEL

Municipality of San Bernardino, Suchitepéquez
The Municipality of San Bernardino in the department of Suchitepéquez provided support for training district providers in EMNC skills, for painting the health post, and for hiring one person to support with janitorial work; this municipality's investment accounts for GTQ 12,580 (USD 1,581.30) during 2003.

Municipality of Santo Tomás la Unión, Suchitepéquez
This municipality financed the training of medical and nursing staff in EMNC skills, painting the health facility, and labor costs for repairing sinks and toilets. Santo Tomás la Unión municipality contributed a total of GTQ 5,000.00 (USD 628.50) in 2003.

Municipality of Champerico, Retalhuleu
This municipality supported the inter-institutional visit conducted by the staff of Champerico's Health Center to the San Pablo Health Center in San Marcos with the purpose of sharing experiences and lessons learned in the implementation of the Performance Improvement process. They also supported the purchase and installation of two sinks in two clinics, the painting of the list of services offered at the clinic, and the purchase of a water pump. The total investment is GTQ 10,993.00 (USD 1,381.81).

Municipality of San Gabriel, Suchitepéquez
During the years 2002 and 2003, this municipality provided significant support (GTQ 70,000 or USD 8,798.94) to the Performance Improvement process in EMNC. Specifically, they funded the expansion of the health post, construction of bathrooms and a warehouse, replacement of the floor and roof, furniture for the files and records office, and the salary of one person to provide janitorial services.

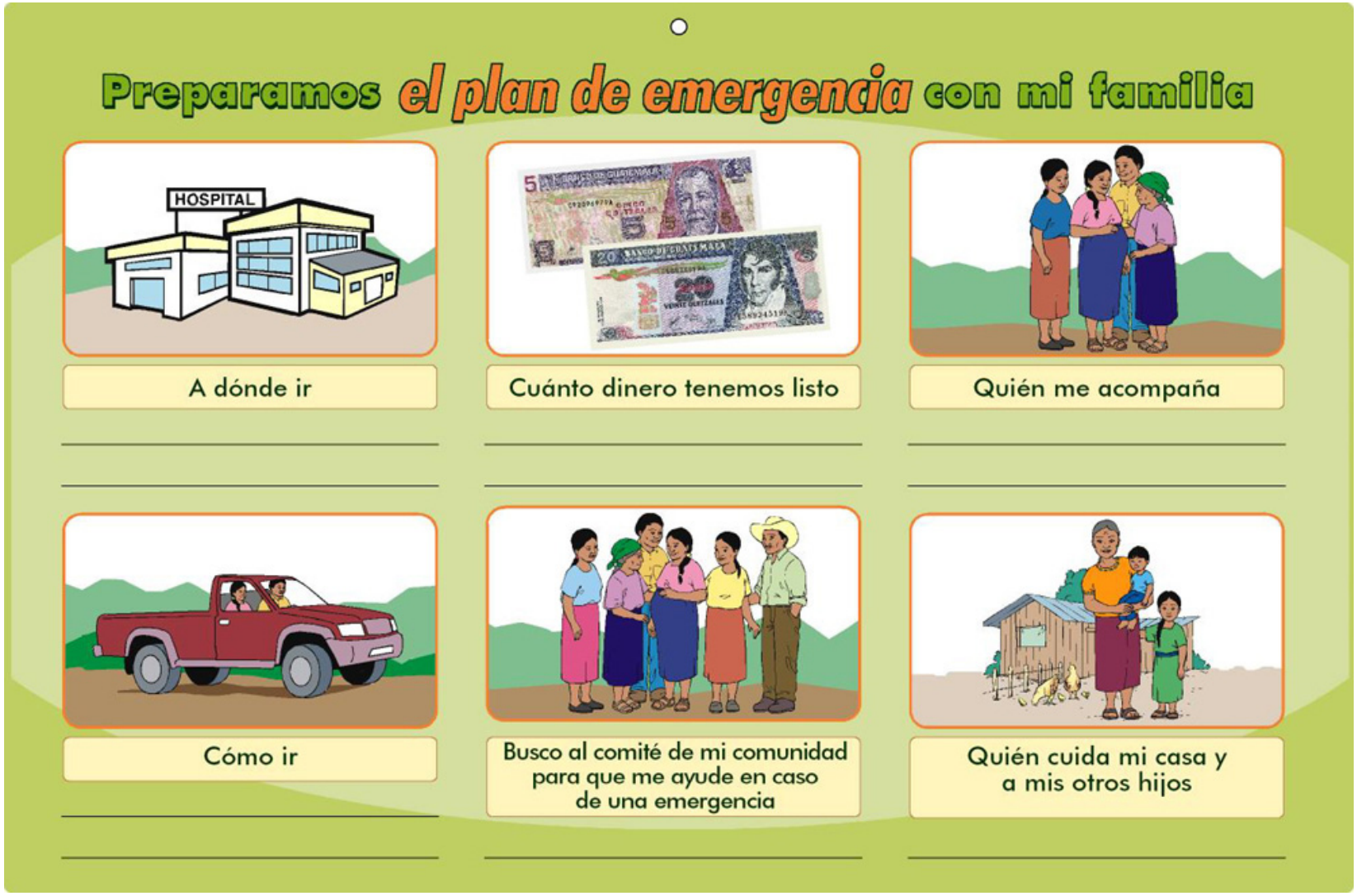
Municipality of Nuevo San Carlos, Retalhuleu
During this fiscal year, this municipality provided support to the Performance Improvement process in EMNC through the purchase of a water pump, purchase and installation of two sinks in the clinics, financing for the training of providers in EMNC, construction of a pit for solid waste, and repair of the drainage system. Nuevo San Carlos's donations total GTQ 5,500.00 (USD 691.35).

Municipality of San Lorenzo, Suchitepéquez
With GTQ 4,190.00 (USD 530.37), this municipality supported the labor costs for painting the health post, containers for soap, a water source for clients, bathroom maintenance, and hiring of one person for janitorial work.

As part of the Performance and Quality Improvement (PQI) process in Maternal and Newborn Health, under Agreement No. SP-M-1109-2001 with the Ministry of Health, for the period 2002 to 2003, and as provided by Article No. 5 of the Health Code, Article No. 36 of the Municipal Code, and Article 17 of the General Decentralization Law, the mobilization of GTQ 147,673 (USD 18,562.38) was possible in some municipalities of the Departments of Suchitepéquez, Retalhuleu, and Quetzaltenango, with the assistance from JHPIEGO's MNH Program with funds donated by USAID. These funds were used to improve the processes that support EMNC, which in turn

improve the linkages between health services and municipalities with the communities. This reflects the interest and level of commitment that local authorities within a decentralized context can provide for issues such as maternal and newborn health. Recent national policies and accords promote increased social sector participation, decentralization and democratization in Guatemala. In response, the MOH, with support from JHPIEGO's USAID-funded MNH Program, has increased non-traditional public and private participation and contributions to health interventions. Interventions geared toward the creation of alliances with communities, private-sector actors, non-health government offices, NGOs, and international organizations have resulted in the collection of approximately GTQ 500,000 (USD 62,849.60) in the past 2 years (2002, 2003).

APPENDIX B. FAMILY EMERGENCY PLAN BROCHURE



Mi familia y yo sabemos que estoy en peligro si:
Tengo hemorragia vaginal
Tengo dolor de cabeza
Tengo fiebre
Tengo dolor fuerte en la boca del estómago
Tengo hemorragia después del parto
Nuestro recién nacido está en peligro si:
Le cuesta respirar
Es muy chiquito
Está muy frío
Está morado
No quiere mamar
Nuestro niño o niña está en peligro si:
No puede mamar o tomar líquidos
Vomita todo
Tiene ataques
Se desmaya
Ministerio de Salud Pública
República de Guatemala
Maternidad apoyada, familia feliz
USAID
Salud Materno Neonatal
Calidad en Salud
(GTI-IEC)

REFERENCES

Acevedo D and E Hurtado. 1995. *El papel de las comadronas y proveedores formales en la atención del embarazo, parto y postparto en cuatro comunidades rurales de Guatemala: ¿complementación o conflicto?* Presentation at Seminario Internacional sobre la Población del Istmus Centroamericano, 19–21 October.

Althabe F, JM Belizán, and E Bergel. 2002. Episiotomy rates in primiparous women in Latin America: Hospital based descriptive study. *British Medical Journal* 324: 945–946. (20 April)

Bailey PE and A Paxton. 2002. Program note: Using UN process indicators to assess needs in emergency obstetric services. *International Journal of Gynecology & Obstetrics* 76: 299–305.

Barillas E et al. 2001. *Evaluación de la Calidad de Registros de Nacimientos en Establecimientos de Salud en Guatemala,* MEASURE/Evaluation, Guatemala. (October)

Bartlett A III, MEP de Bocaletti, and MA Bocaletti. 1993. Reducing perinatal mortality in developing countries: High risk or improved labour management? *Health Policy and Planning* 8(4): 360–368.

Belizán J et al. 1999. Rates and implications of caesarean sections in Latin America: Ecological study. *British Medical Journal* 319: 1397–1402. (27 November)

Bocaletti E. 1999. *Mortalidad Perinatal en Guatemala: Estudio Comunitario, Guatemala.* MotherCare. (August)

Bocaletti E et al. 1998. *Comparative costs of normal delivery in hospital and in a community maternity center in Guatemala MotherCare Project, Guatemala.* Unpublished. (September)

Brea JA. 2003. Population dynamics in Latin America. *Population Bulletin* 58(1). Population Reference Bureau: Washington, DC.

Buekens P. 2001. Is estimating maternal mortality useful? *Bulletin of the World Health Organization* 79(3): 179.

Buekens P. 2001. Over-medicalisation of maternal care in developing countries. *Studies in Health Services Organisation and Policy* 17: 191–202.

Carroli G and J Belizan. 2004. Episiotomy for vaginal birth. *The Cochrane Library,* Issue 1. John Wiley & Sons, Ltd.: Chichester, England.

Carter M. 2002. Husbands and maternal health matters in rural Guatemala: wives' reports on their spouses' involvement in pregnancy and birth. *Social Science and Medicine* 55: 437–450.

Castillo-Salgado C (ed). 1999. *Manual sobre el enfoque de riesgo en la atención maternoinfantil,* Pan American Health Organization: Washington, DC.

Champet Gámez AC. 2002. *Episiotomía Restrictiv.* Doctoral thesis, Universidad de San Carlos de Guatemala. (September)

Duarte MR et al. 2003. *Informe Final: Línea Basal de Mortalidad Materna para el Año 2000*. Ministerio de Salud Pública y Asistencia Social: Guatemala City, Guatemala.

Fonseca-Becker et al. 2004a. *Estudio de Caso. Evaluación de Impacto, Cambio de Conducta y Movilización Comunitaria: Componente Materno Neonatal.* Ministerio de Salud Pública y Asistencia Social. JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD. (Also available in English)

Fonseca-Becker F et al. 2004b. *Estudio de Población. Evaluación de Impacto, Cambio de Conducta y Movilización Comunitaria: Componente Materno Neonatal.* Ministerio de Salud Pública y Asistencia Social. JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD.

Fonseca-Becker F et al. 2004c. *Informe del Estudio de Mobilización Comunitaria: Evaluación de Impacto, Cambio de Conducta y Movilización Comunitaria: Componente Materno Neonatal,* Ministerio de Salud Pública y Asistencia Social. JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD.

Fonseca-Becker F et al. 2004d. *Mobilizing for Impact: Engaging Guatemalan Communities to Save Mothers.* JHPIEGO and Johns Hopkins Bloomberg Center for Communication Programs: Baltimore, MD.

Fonseca-Becker F et al. 2001. *Perspectiva Comunitaria sobre Embarazo, Parto y Post Parto en los Departamento de Quiché, Sololá y San Marcos*. Johns Hopkins Center for Communication Programs: Baltimore, MD.

Fort A. 2002. Measuring provider performance: Challenges and definitions. *PRIME II Better Practices,* Number 1. (November)

Frankenberg E and D Thomas. 2001. Women's health and pregnancy outcomes: Do services make a difference? *Demography* 38(2): 253–265.

Geyoushi BE, Z Matthews, and RW Stones. 2003. Pathways to evidence-based reproductive healthcare in developing countries. *BJOG: An International Journal of Obstetrics and Gynaecology* 110: 500–507.

Glei DA. 2002. *Utilization of Care during Pregnancy in Rural Guatemala: Does Obstetrical Need Matter?* Working Paper No. 2002-01. Office of Population Research, Princeton University: Princeton, NJ.

Glei DA, N Goldman, and G Rodríguez. 2003. Utilization of care during pregnancy in rural Guatemala: Does obstetrical need matter? *Social Science & Medicine* 57: 2447–2463.

(Guatemalan) Instituto Nacional de Estadística. 1999. *Salud Materno Infantil en los Departamentos del Altiplano*. Guatemala. (December)

Guatemalan Ministry of Health. 2003. *Lineamientos Estratégicos para Reducir la Mortalidad Materna.* Ministerio de Salud Pública, República de Guatemala. (March)

Jessop SM et al (eds). 2000. *MotherCare Initiatives: Actions and Results from 31 Projects, 1993-2000*. John Snow, Inc.: Arlington, VA.

Johanson R, M Newburn, and A Macfarlane. 2002. Has the medicalisation of childbirth gone too far? *British Medical Journal* 324: 892–895. (13 April)

Johnson R. 1997. *Accelerating the Reduction of Maternal Mortality in Developing Countries.* Strategy Paper #6. JHPIEGO: Baltimore, MD. (April)

Kwast BE. 1995. Building a community-based maternity program. *International Journal of Gynecology & Obstetrics* 48 (Suppl.): S67–S82.

McCormick ML et al. 2002 Preventing postpartum hemorrhage in low-resource settings. *International Journal of Gynecology & Obstetrics* 77: 267–275.

McGinn T. 1997. Monitoring and evaluation of PMM efforts: What have we learned. *International Journal of Gynecology and Obstetrics* 59 (Suppl. 2): S245–S251.

MEASURE Evaluation/GSD Consultores Asociados. 2001. *An Assessment of the Quality of Maternity Registers for Monitoring Maternal and Neonatal Health in Institutions in Guatemala.* (October 2001)

Miller S et al. 2003. Where is the "E" in MCH? The need for an evidence-based approach in safe motherhood. *Journal of Midwifery and Women's Health* 48(1): 10–18.

Maternal and Neonatal Health (MNH) Program. 2004. *Guidelines for Assessment of Skilled Providers after Training in Maternal and Newborn Healthcare.* JHPIEGO: Baltimore, MD.

Maternal and Neonatal Health (MNH) Program. 2003a. *Improving Safe Motherhood through Shared Responsibility and Collective Action: MNH Program Accomplishments and Results, 2002-2003.* JHPIEGO: Baltimore, MD.

Maternal and Neonatal Health (MNH) Program. 2003b. *Shaping Policy for Maternal and Newborn Health: A Compendium of Case Studies,* JHPIEGO: Baltimore, MD.

Maternal and Neonatal Health (MNH) Program. 2003c. *Using Performance and Quality Improvement to Strengthen Skilled Attendance.* JHPIEGO: Baltimore, MD.

Maternal and Neonatal Health (MNH) Program. 2002. *A Summary of Findings from Baseline Surveys in Three Maternal and Neonatal Health Program Countries.* JHPIEGO: Baltimore, MD.

O'Rourke K. 1995. The effect of hospital staff training on management of obstetrical patients referred by traditional birth attendants. *International Journal of Gynecology & Obstetrics* 48 (Suppl.) S95–S102.

Pan American Health Organization (PAHO). 2003. *Monitoring the Reduction of Maternal Morbidity and Mortality.* 132nd Session of the Executive Committee, Washington, DC, 23–27 June.

Pan American Health Organization (PAHO). 2002. *Regional Strategy for Maternal Mortality and Morbidity Reduction.* 26th Pan American Sanitary Conference, 54th Session of the Regional Committee, Washington, DC.

Piotrow P et al. 1997. *Health Communication: Lessons from Family Planning and Reproductive Health.* Praeger Publishers: Westport, CT.

Post M. 1997. *Preventing Maternal Mortality through Emergency Obstetric Care.* SARA Issues Paper. (April)

Program for the Appropriate Technology in Health (PATH). 2001.Preventing postpartum hemorrhage: Managing the third stage of labor. *Outlook* 19(3): 1–8.

Ransom EI and N Yinger. 2002. *Making Motherhood Safer: Overcoming Obstacles on the Pathway to Care,* Population Reference Bureau: Washington, DC. (February)

Robb-McCord J and W Voet. 2003. *Scaling up Practices, Tools, and Approaches in the Maternal and Neonatal Health Program.* JHPIEGO: Baltimore, MD.

Ronsmans C. 2001. How can we monitor progress towards improved maternal health? *Studies in Health Services Organisation and Policy* 17: 313–338.

Ronsmans C et al. 2001. Questioning the indicators of need for obstetric care. *Bulletin of the World Health Organization* 80(4): 317–324.

Roth DM and MT Mbizvo. 2001. Promoting Safe Motherhood in the community: The case for strategies that include men. *African Journal of Reproductive Health* 5(2): 10–21.

Salmon JW et al. 2003. *The Impact of Accreditation on the Quality of Hospital Care: KaZulu-Natal Province, Republic of South Africa.* Quality Assurance Project: Bethesda, MD. (October)

Schenck-Yglesias C and ME de Monroy. 2004. *Guide for the Construction of Met Need.* MNH Program/Guatemala, M&E CD-ROM.

Schieber B and C Stanton. 2000. *Estimates of Maternal Mortality in Guatemala 1996–1998.* MEASURE/ Evaluation, Guatemala. (March)

Shiffman J and A Garcés de Letona. 2004. *An Institutional Analysis of Safe Motherhood in Guatemala.* Presentation at Population Association of America Annual Meeting, Boston, MA, 1–3 April.

Stanton C. 2004. *Effects of Social and Demographic Factors on Trends in Use of Maternal Health Care: A Comparison of Guatemala and Honduras.* Presentation at Population Association of America Annual Meeting, Boston, MA, 1-3 April.

Stanton CK. 2004. Methodological issues in the measurement of birth preparedness in support of safe motherhood. *Evaluation Review* 28(3): 179–200.

UNICEF. 1997. *Guidelines for Monitoring the Availability and Use of Obstetric Services.* UNICEF: New York. (October)

World Health Organization (WHO). 2002. *Global Action for Skilled Attendants for Pregnant Women.* WHO/RHR/02.17. WHO: Geneva.

World Health Organization (WHO). 2003. *Working with Individuals, Families and Communities to Improve Maternal and Newborn Health.* WHO/FCH/RHR/03.11. WHO: Geneva.