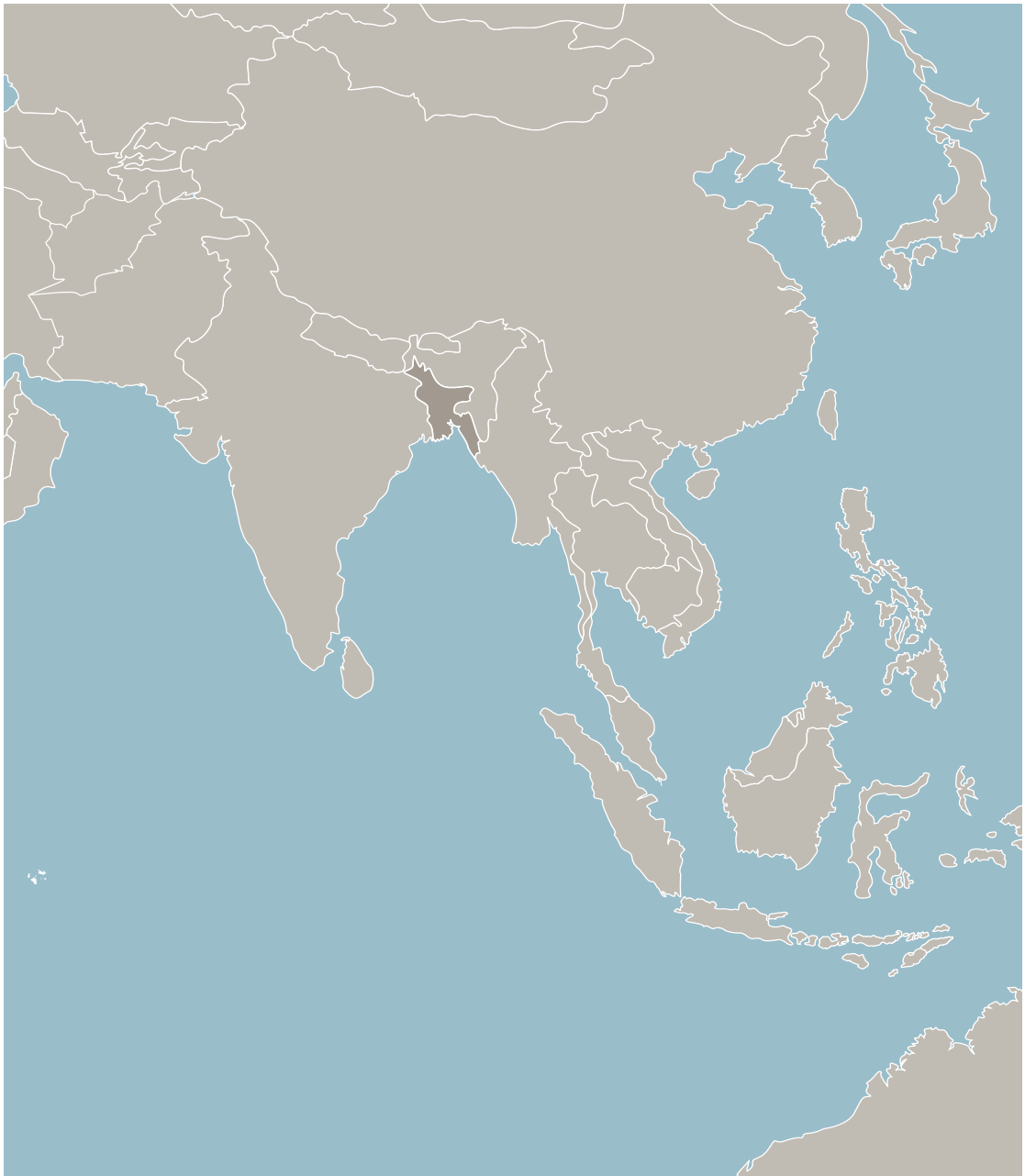
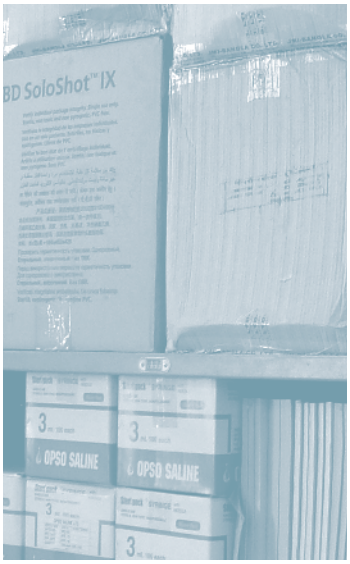
# Maternal Health Supplies in Bangladesh

by Jennifer Bergeson-Lockwood, Elizabeth Leahy Madsen and Jessica Bernstein






Population Action
INTERNATIONAL
HEALTHY FAMILIES HEALTHY PLANET

Population Action
INTERNATIONAL
HEALTHY FAMILIES HEALTHY PLANET

Population Action International uses research and advocacy to improve access to family planning and reproductive health care across the world so women and families can prosper and live in balance with the earth. By ensuring couples are able to determine the size of their families, poverty and the depletion of natural resources are reduced, improving the lives of millions across the world.

# TABLE OF CONTENTS

# ACKNOWLEDGMENTS

This project was supported by the Maternal Health Task Force and the Partnership for Maternal, Newborn & Child Health. The authors are very grateful for the help of Dr. Ziaul Abedin, a local consultant in Bangladesh who assisted with organizing in-country research. Many colleagues granted extensive and helpful background interviews on maternal health and supplies issues, including Marian Abernathy (Ipas), Frances Ganges (White Ribbon Alliance), Andrea Gay (United Nations Foundation), Patricia Gomez (Jhpiego), Deborah Gordis (CARE), Suzanne Hill (WHO), Joseph Johnson (Save the Children USA), Marge Koblinksy (John Snow, Inc.), Nahed Matta (USAID), Winnie Mwebesa (Save the Children USA), Leslie Patykewich (John Snow, Inc.), Theresa Shaver (White Ribbon Alliance), Mary Ellen Stanton (USAID), Catharine Taylor (PATH), and Elizabeth Westley (Family Care International). Thanks are extended to Lubana Ahmed, Moazzem Hossain, Shabnam Shahnaz, and Kadi Toure, who reviewed a draft of the report, and to Jennifer Johnson, who edited the report. At Population Action International, Suzanne Ehlers, Karen Hardee, Caitlin Horrigan, Mercedes Mas de Xaxás, Wendy Turnbull and Carolyn Vogel provided guidance and useful input on the research and report. Michael Khoo and Roberto Hinojosa oversaw communications strategy and Bryn Farrar designed the report.

# LIST OF ACRONYMS

| | |
|---|---|
| **AMTSL** | Active Management of Third Stage Labor |
| **ANC** | Antenatal care |
| **BBS** | Bangladesh Bureau of Statistics |
| **BMMS** | Bangladesh Maternal Mortality Survey |
| **CIDA** | Canadian International Development Agency |
| **CMSD** | Central Medical Stores Depot |
| **CoC** | Continuum of care |
| **CSBA** | Community-based skilled birth attendant |
| **DDA** | Directorate of Drug Administration |
| **DFID** | Department for International Development |
| **DG** | Directorate General |
| **DGFP** | Directorate General of Family Planning |
| **DGHS** | Directorate General of Health Services |
| **EDL** | Essential Drug List |
| **EmOC** | Emergency obstetric care |
| **EPI** | Expanded Program on Immunization |
| **FPAB** | Family Planning Association of Bangladesh |
| **FWA** | Family Welfare Assistant |
| **FWV** | Family Welfare Visitor |
| **GoB** | Government of Bangladesh |
| **HA** | Health Assistant |
| **HNPSP** | Health, Nutrition and Population Sector Program |
| **HPSP** | Health and Population Sector Program |
| **IMCI** | Integrated Management of Childhood Illnesses |
| **MCHIP** | Maternal and Child Health Integrated Program |
| **MCWC** | Maternal and Child Welfare Center |
| **MDG** | Millennium Development Goal |
| **MMR** | Maternal mortality ratio |
| **MNH** | Maternal and newborn health |
| **MOHFW** | Ministry of Health and Family Welfare |
| **MR** | Menstrual regulation |
| **MSB** | Marie Stopes Bangladesh |
| **MVA** | Manual vacuum aspirator |
| **MWCA** | Ministry of Women and Children Affairs |
| **NGO** | Non-governmental organization |
| **NIPORT** | National Institute of Population Research and Training |
| **OGSB** | Obstetrical and Gynaecological Society of Bangladesh |
| **PNC** | Postnatal care |
| **PPH** | Postpartum hemorrhage |
| **PRSP** | Poverty Reduction Strategy Paper |
| **SACMO** | Sub-Assistant Community Medical Officer |
| **SBA** | Skilled birth attendant |
| **SIDA** | Swedish International Development Cooperation Agency |
| **SNL** | Saving Newborn Lives |
| **SPS** | Strengthening Pharmaceutical Systems |
| **SSFP** | Smiling Sun Franchise Program |
| **TBA** | Traditional birth attendant |
| **UHFWC** | Union Health and Family Welfare Center |
| **SWAp** | Sector Wide Approach |
| **UHC** | Upazila Health Center |
| **UNFPA** | United Nations Population Fund |
| **UNICEF** | United Nations Children's Fund |
| **UPHCP** | Urban Primary Health Care Project |
| **USAID** | United States Agency for International Development |
| **WHO** | World Health Organization |

# 1 EXECUTIVE SUMMARY

In Bangladesh, maternal mortality appears to be declining; however, with at least 322 maternal deaths per 100,000 births, the country still has one of the highest maternal mortality ratios (MMR) in the world, and the highest in South Asia. Bangladesh is unlikely to achieve domestic and international targets on the reduction of maternal mortality.

Improving access to supplies (medicines and equipment) is an essential component of strengthening maternal health programs and outcomes. Maternal health challenges cross the entire health system, with deeply embedded issues of human resources, infrastructure, competing priorities and community engagement. Shortages of supplies are identified by stakeholders in Bangladesh as a direct barrier to utilization and positive outcomes at health facilities. These shortages are consequences of constraints on the country's health system, including underfunding, inefficiencies and a weak infrastructure. Supplies are a tangible and visible entry point to raise awareness and commitment to maternal and reproductive health.

This report tracks four maternal health supplies: oxytocin, misoprostol, magnesium sulfate and manual vacuum aspirators (MVAs). These supplies address three of the most common direct causes of maternal mortality in Asia. This study assesses the factors that inhibit access to maternal health supplies in Bangladesh and the importance of overcoming shortages of these supplies to achieve improved maternal, reproductive, newborn and child health.

The government of Bangladesh is widely described as consistently supportive of maternal health, despite several recent changes in power. The government has enacted policies in support of maternal and newborn health, with several more in development. However, many stakeholders feel that the policy commitment of the government has not translated into additional capacity or funding on the ground. Additionally, though a few health policies in Bangladesh recognize the supply challenges that weaken health service delivery, none of the policies considered in this report identify specific strategies or quantifiable targets for improving the supply chain for maternal health supplies.

The Ministry of Health and Family Welfare (MOHFW) in Bangladesh is divided into the Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP), both of which have responsibility for aspects of maternal health care. Each provides maternal health interventions at its respective facilities and procures maternal health supplies. The government's primary maternal and child health program, including menstrual regulation, family planning, antenatal care, postnatal care, and delivery, is under the purview of the DGFP, while much of the emergency obstetric care (EmOC) in the public system occurs at DGHS facilities. As such, the supplies considered in this report have varied availability, with MVA kits only available through DGFP, misoprostol only available through DGHS, and oxytocin and magnesium sulfate available through both. Nearly all health workers, down to the community level, are permitted and trained in the use of oxytocin. Due in part to easier administration, misoprostol has been rolled out by the government for use at the community level and seems to be more widely

Increasing access to supplies is essential for strengthening maternal health programs and improving outcomes.

## Community-based provision of health care is an important component of the health services system in Bangladesh.

available and preferred to oxytocin. Despite protocol and regulations in place, availability of supplies at public sector facilities is limited, with facilities at all levels reporting stockouts of essential medicines and supplies. This contributes to higher costs for patients who must purchase supplies at private pharmacies.

The private sector is a major player in health service delivery in Bangladesh, handling over half of all facility-based deliveries. Private sector facilities are generally believed to offer higher quality of care than the public sector. This is in part due to more consistent availability of supplies and equipment. Patients are usually required to pay fees for services at private sector facilities; stakeholders report that fees are all-inclusive for staff, supplies, and equipment.

The major challenges for improving maternal health in Bangladesh are the low rates of facility delivery (15 percent) and skilled attendance at birth (18 percent). Despite attempts over the past decade to improve facilities for emergency obstetric care, most women still deliver at home. To address this, officials and stakeholders have begun emphasizing simple, evidence-based interventions at the community level, including revitalization of Community Clinics, village level facilities that provide family planning, antenatal care, postnatal care, and monitor pregnancies.

Community-based provision of health care is an important component of the health services system in Bangladesh. In addition to Community Clinics, the government is working train Community-based Skilled Birth Attendants (CSBAs), who are able to handle normal vaginal deliveries and are knowledgeable about complications that require referral. CSBAs are trained in use of oxytocin and misoprostol and given an initial supply on completion of training. However, mechanisms for resupply have yet to be implemented.

Though family planning in Bangladesh has been traditionally supported by donor funds, supplies for maternal health are not generally directly provided or funded by development partners. Instead, maternal health supplies are generally paid for by the government of Bangladesh's internally-generated funds or through general health sector support from donors. However, budget allocations for maternal and reproductive health—including supplies in the Health, Nutrition, and Population Sector Program (HNPSP)—are underspent, despite supply shortages at facilities. Government spending on maternal health supplies is difficult to parse out, both because of the dual Directorates General under MOHFW and because maternal health supplies are not disaggregated from other supply costs in the budget.

Challenges for maternal health supplies are present at all levels of the supply chain. Requests for supplies are generated at the union (local) level and then are passed up the health system through the upazila (the lowest administrative unit of government) and district levels to

Kumudini Hospital, a private, faith-based facility in Mirzapur, provides services for approximately 200 deliveries each month. (Elizabeth Leahy Madsen/PAI photo)

the MOHFW, which receives an aggregate supply request. Informants suggest that the MOHFW sometimes reduces orders because of a perception that the request is too large. The timing of procurement has also been a major factor in supply shortages. The government has one procurement cycle per year, leaving many facilities low on supplies at various points during the year. Procurement policies by the World Bank and other development partners are also an occasional cause of supply shortages.

Local manufacturers of many maternal health supplies, including the three tracer medicines, exist in Bangladesh. MVAs, however, are not produced in Bangladesh but can be procured from India and other international sources. All four tracer commodities are widely available in the private market. Of the four, shortages appear to be the biggest concern for MVAs. Stakeholders reported shortages and stockouts of MVAs provided by the government over the past two to four years.

The "continuum of care" approach to health services includes integrated maternal, newborn and child health care from the period before pregnancy through childhood. Recently, the government began to explore policies and strategies to implement the continuum of care approach, especially between maternal and newborn health, but also through immunization and maternal and childhood nutrition. The new National Neonatal Health Strategy and Guidelines, approved in May 2009, incorporates many maternal health interventions and indicators and recognizes the need to train health workers in both maternal and neonatal health. Some stakeholders feel that the main challenge for implementing the continuum of care in Bangladesh is efficiency. In many cases, the quality and coverage of interventions across the continuum of care lose effectiveness as they are scaled up. This has contributed to slow declines in maternal and neonatal mortality rates, especially relative to child mortality. Many projects and programs driven by development partners and NGOs are effective complements to government services, but are implemented in

small geographic regions and have little impact on health indicators for the nation as a whole.

Given these challenges, actions by advocates, development partners, and the government of Bangladesh can have a substantial impact on maternal health. Like family planning, maternal health programs also face challenges related to gender inequities and cultural context, compounded by failures in the supply chain, which inhibit access to services and positive maternal health outcomes. Expanding access to supplies is a critical entry point for improvements in the overall health system.

The following recommendations were identified by stakeholders in Bangladesh as priority areas and entry points for future advocacy on maternal health supplies:

- Monitor the national budget for maternal health and ensure funding for public sector facilities
- Implement and fund policies already in place
- Monitor and enforce regulations calling for free health care in public sector facilities, ensuring the necessary supplies and equipment are available
- Support and encourage policymakers and potential champions
- Continue to support and expand family planning
- Scale up community-based health care and supply distribution
- Ensure advocates and civil society are included in policy development
- Strengthen logistics management for maternal health supplies and enhance the supply chain
- Effectively use donor resources
- Strengthen the continuum of care:
  - Integrate programming and streamline services
  - Continue to build support and advocate for the continuum of care in programming at high levels of government
  - Use supplies as an indicator to monitor implementation of successful continuum of care policies

Expanding access to supplies is a critical entry point for improvements in the overall health system.

# 2 INTRODUCTION

This study assesses the factors that inhibit access to maternal health supplies in Bangladesh and stresses the importance of overcoming shortages of these supplies to achieve improved maternal, reproductive, newborn, and child health.
The study builds on a decade of research and advocacy at the global, regional, and national levels aimed at increasing availability of certain reproductive health supplies. While shortages and stockouts of contraceptives and condoms are now widely addressed through a variety of means—national contraceptive security plans, country coordination committees, budget line items, shipment monitoring and logistics management tools, inclusion in development plans, and a global coalition of partners—to date there has not been a similar sustained focus on other reproductive health supplies, including those for maternal health.

In Bangladesh, as in other countries, maternal health and other elements of sexual and reproductive health are inextricably linked. Bangladesh is widely understood to be a family planning success story: Contraceptive prevalence has steadily risen over the past three decades due to sustained commitment from the government and development partners. Though the maternal mortality ratio has declined over the same time period, Bangladesh is still off track to achieve national and international targets. Shortages and stockouts of contraceptives and condoms as well as supplies to treat the leading causes of maternal mortality and morbidity are an ongoing challenge. Yet maternal and reproductive health are sometimes treated independently from each other and from newborn and child health.

This report is intended to complement the knowledge gained among the reproductive health supplies community by outlining the challenges and opportunities related to maternal health supplies in Bangladesh and to provide an evidence base, informed by local expertise, for future advocacy around ensuring access to supplies for reproductive, maternal, newborn and child health. While findings of the study may be most valuable for advocates and stakeholders in Bangladesh, as they are directly tied to the specific environment and situation in that country, advocates in the region and globally should find that the study addresses many of the barriers and entry points for maternal health supplies that are applicable in other settings. The case study should also inform donors and partner organizations as programs are implemented and funding decisions are made.

The case study describes the health system structure, including the policy environment, in both the public and private sectors; financing of maternal health supplies; forecasting, procurement and logistics; and development partners and civil society active on maternal health. The study also includes a section on the continuum of care, outlining the ways in which family planning, maternal, newborn and child health supplies are and are not linked at the policy level and in service delivery. The report concludes by offering entry points for advocacy around maternal health supplies and the continuum of care, all of which are derived from the insights of stakeholders working on maternal health and the continuum of care in Bangladesh. An appendix provides summaries of government policies that influence and guide maternal health programs and in turn, access to maternal health supplies.

This report tracks four maternal health supplies: oxytocin and misoprostol (used for the prevention and treatment of postpartum hemorrhage), magnesium sulfate (used for the treatment of pre-eclampsia and eclampsia) and manual vacuum aspirators (MVAs, used for early abortion or the treatment of incomplete abortion). Although these are just a few of the wide array of supplies needed for high-quality maternal health care, they were selected due to their direct impact on

some of the most common causes of maternal mortality. In Asia, the leading direct causes of maternal death include: hemorrhage (30 percent of all maternal deaths in the region), anemia (13 percent), sepsis (12 percent), obstructed labor (9 percent), hypertensive disorders including eclampsia (9 percent), and abortion (6 percent).[1] Supplies for treating some of these causes, such as antibiotics and iron supplements, are not included in this study due to their wide application for non-maternal health conditions. In the context of this study, "supplies" refers to medicines and medical equipment that promote improved health outcomes. The terms "commodities" and "products" are sometimes used interchangeably.

## Maternal Health

Across health and other areas of development, maternal health displays particularly strong inequities in outcomes: "The difference in level of risk [for maternal death] between developed and developing countries shows the widest disparity in all human development indicators."[2] Research by the World Health Organization (WHO) and others found that women in developing countries face a one in 75 lifetime risk of maternal death compared to a one in 7,300 chance in developed countries. Two-thirds of all maternal deaths occur in 13 countries: Afghanistan, Angola, Bangladesh, China, Democratic Republic of the Congo, Ethiopia, India, Indonesia, Kenya, Nigeria, Pakistan, Tanzania and Uganda (some, but not all, of these countries have a much lower rate of maternal death on a per capita basis).[3]

Progress in reducing maternal mortality and morbidity is possible—but not happening quickly enough to reach global goals. Although the direct causes of maternal mortality are treatable, three delays in addressing complications have been identified: a delay in deciding to seek care, a delay in reaching a facility or service delivery point, and a delay in care being provided.[4]

Contributors to the 2006 Lancet series on maternal health reported that "In terms of the maternal mortality ratio, evidence suggests that a reduction of 75 percent is achievable within a 25 year timeframe."[5] In 2007, global estimates indicated that maternal mortality would have to decline by 5.5 percent annually to achieve the fifth Millennium Development Goal, to Improve Maternal Health, but rates have only dropped by an average of one percent per year globally. Sub-Saharan Africa and South Asia together account for 86 percent of global maternal deaths.[6]

In 2010, newly published research suggests that maternal mortality ratios have been significantly declining across much of the developing world, in contrast to a "widespread perception that progress in maternal mortality has been slow, and in many places non-existent."[7] The authors estimate the annual number of deaths from maternal causes at 342,900 in 2008, a decrease from more than half a million annual deaths in 1980. This progress is attributed to lower fertility rates, higher incomes (which can improve access to health care), higher educational attainment for girls and women, and improved coverage of skilled attendance at birth. Still, despite this dramatic estimated improvement in maternal health, only a small share of countries are on track to achieve the fifth Millennium Development Goal.

## A Focus on Supplies

Though maternal health has been widely studied, less attention has been devoted to the access, financing and distribution—the "security"—of maternal health supplies, especially at the global level. A recent exception is a series of six country case studies conducted jointly by the United Nations Population Fund (UNFPA) and WHO that considered access to lifesaving maternal and reproductive health supplies, including ergometrine, oxytocin, magnesium sulfate and three antibiotics, in Ethiopia, Laos, Mongolia, Nepal, North Korea and the Philippines.[8] The

case studies provide detailed information on need and demand, treatment guidelines, procurement, stock levels, storage, finances and coordination related to the three maternal health supplies in each country. In the six countries studied, in addition to some positive developments, the reports found occurrences of stockouts, supplies missing from key policies, insufficient information among service providers, supply chain breakdowns, over-reliance on donor funding and poor coordination across sectors.

This case study and the parallel report on Uganda are intended to complement the existing literature by evaluating issues that affect access to maternal health supplies through an advocacy lens. The challenges span the entire health system, with deeply embedded issues of human resources, funding shortfalls, infrastructure, competing priorities and community engagement, among others. The United Kingdom's Department for International Development (DFID) enumerates how health system capacity requirements for maternal health are different from family planning:

> *Unlike immunisation and family planning, [maternal health] cannot be addressed in poor policy environments through vertical projects outside the health system. An important reason for lack of progress in maternal health is lack of attention to upgrading the wide range of components of the health system that need to be in place.*[9]

Supplies shortages are both an outcome of weaknesses in the health system, such as low levels of funding and insufficient provider training, and a contributing factor in poor health outcomes, by inhibiting utilization of the health system. Programs and funding will not succeed without incorporating and addressing the entire range of barriers. However, as the decade of advocacy on reproductive health supplies has shown, supplies are a tangible and visible entry point to raise awareness and commitment.

While supplies for reproductive and maternal health remain inaccessible for many people, research documenting these shortfalls and their causes can inform advocacy efforts to improve access to supplies and also build a case for increased commitments to maternal health more broadly. With advocacy for maternal health supplies in a nascent stage, an evidence base contributes to understand the scope and depth of challenges. It is important to know not only what is and is not on the shelves of clinics and hospitals, but why. For civil society and others working on the issue, this range of knowledge informs targeted advocacy efforts to address the array of financial, policy and logistics issues that affect the availability of supplies.

## Methodology

This report builds on a decade of research and advocacy on reproductive health supplies, primarily contraceptives and condoms, including Population Action International's 2009 case studies of reproductive health supplies in six countries (among them Bangladesh and Uganda). This case study is based on interviews conducted in Bangladesh in January and February 2010 (see Appendix 2 for a complete list of in-country contacts), and background interviews with stakeholders and experts on maternal, newborn and child health in other regions. Information was also collected through a review of relevant policy and programmatic documents and research literature (see Appendix 3 for a complete list of references).

**TABLE 1. DEMOGRAPHIC AND REPRODUCTIVE HEALTH INDICATORS FOR BANGLADESH**

| | |
|---|---|
| Total population, 2005* | 153.1 million |
| Total population, 2025 (medium-fertility variant)* | 195.0 million |
| Total population, 2050 (medium-fertility variant)* | 222.5 million |
| Population of women ages 15-49, 2005* | 41.1 million |
| Population of women ages 15-49, 2025 (medium-fertility variant)* | 53.7 million |
| Population of women ages 15-49, 2050 (medium-fertility variant)* | 51.2 million |
| Total fertility rate (births per woman), 2007† | 2.7 |
| Contraceptive prevalence rate (modern methods), currently married women ages 15 – 49, 2007† | 47.5 percent |
| Unmet need for family planning, 2007 (increase from 11 percent in 2004)† | 17.1 percent |
| Maternal mortality ratio, deaths per 100,000 live births, 2001‡ | 322 |
| Maternal mortality ratio, deaths per 100,000 live births, 2005§ | 570 |
| Maternal mortality ratio, deaths per 100,000 live births, 2008** | 338 |
| Antenatal coverage from trained provider, 2007† | 52 percent |
| Skilled attendance at birth (medically trained provider), 2007† | 18 percent |
| Delivery in a health facility, 2007† | 15 percent (7.1 public, 7.6 private) |
| Neonatal mortality rate (age less than 28 days) per 1,000 live births, 2007† | 37 |
| Infant mortality rate (ages 0-1), deaths per 1,000 live births, 2007† | 52 |
| Child mortality rate (ages 1-4), deaths per 1,000 live births, 2007† | 14 |

Sources:

* United Nations Population Division 2009

† NIPORT, Mitra Associates and Macro International 2008

‡ NIPORT, ORC Macro, Johns Hopkins University ICDDR,B 2003

§ World Health Organization, UNICEF, UNFPA and The World Bank 2007

** Hogan, Foreman, Naghavi, Ahn, Wang, Makela, Lopez, Lozano and Murray 2010

# 3 COUNTRY CONTEXT

Bangladesh is often described as a family planning success story: The contraceptive prevalence rate for modern methods among married women has increased from five percent in the 1970s to 48 percent in 2007.[10] Since independence in 1971, the government has prioritized community-based education and distribution of family planning. However, the contraceptive prevalence rate seems to have stabilized recently and unmet need for family planning has increased.[11]

Despite family planning successes, Bangladesh has a very high maternal mortality ratio, among the highest in the world and the highest in South Asia.[12] Maternal mortality is one of the main factors that cause women in Bangladesh to have a shorter life expectancy than men, a situation experienced by few countries worldwide.[13] Annually, 21,000 women die from maternal-related causes, with strong variation by geographic region, education of the woman, and rural or urban location. A 2001 household survey found a maternal mortality ratio of 320 deaths per 100,000 live births.[14] Other estimates vary widely, including the 2005 World Health Organization (WHO) calculation of 570 deaths per 100,000 births in 2005 and the 2008 Bangladesh Bureau of Statistics (BBS) ratio of 348.[15] A set of revised global estimates has calculated the 2008 MMR in Bangladesh to be 338, very similar to the BBS finding.[16] A household survey is underway to determine current MMR; many stakeholders are cautiously optimistic that modest improvement will be demonstrated.

Despite family planning successes, Bangladesh has a very high maternal mortality ratio, among the highest in the world.

Though high, the 2001 estimate represents a 22 percent decrease in maternal mortality over the previous decade. Experts point to success in family planning and the subsequent decrease in fertility rates as the main contributor to this decline. Still, success in reducing the MMR has been much less significant than the corresponding declines in infant and under-five child mortality.

The high rate of maternal deaths in Bangladesh has been attributed both to direct causes (the most common are postpartum hemorrhage, eclampsia, unsafe abortion, obstructed labor, and sepsis)[17] and to indirect issues, ranging from systemic barriers in access to health services (such as shortages of trained providers and poor quality of care) to the disempowerment of women, violence against women, and the low social prioritization placed on their well-being.[18,19]

The most striking aspects of maternal health in Bangladesh are the low rates of facility delivery and skilled attendance at birth. The vast majority of births—85 percent—occur at home; 82 percent of all births are in the presence of unskilled providers or traditional birth attendants who do not receive formal training.[20] Skilled birth attendance rates are lowest among poor, uneducated, and rural women.[21] This has changed little over the past few decades; in 1993-94, 96 percent of deliveries occurred at home.[22] Rates of antenatal care (ANC) are also low in Bangladesh, though modest progress has been seen over the past decade.[23] In 2007, just over half of pregnant women had at least one ANC visit from a skilled provider. Only 20 percent of women, however, received the

A Maternal and Child Welfare Center in Manikgonj maintains supplies of misoprostol, oxytocin and MVAs. (Jennifer Bergeson-Lockwood/PAI photo)

WHO-recommended minimum of four ANC visits.[24] A review of the 2001 Bangladesh Maternal Mortality Survey (BMMS) found that two-thirds of women who perceived themselves to have a life threatening complication did not receive treatment from a skilled provider.[25]

Stakeholders report that the low quality and high cost of services, especially at public sector facilities where care is supposed to be free, are major deterrents to seeking care. Patients are often required to pay for services and supplies at public sector facilities. Aside from costs, reasons for the low facility delivery rate include the poor condition and lack of privacy at facilities. Additionally, stakeholders report that pregnancy and delivery are seen as normal, not needing specialized care.[26] The 2001 BMMS found that in addition to perceived cost of specialized care, women or their families often did not recognize that a life-threatening complication required medical care.[27]

Until recently, the government's priority for improving maternal health in Bangladesh had been to improve and expand the number of public sector facilities that provide emergency obstetric services. Beginning in 1993, the Ministry of Health and Family Welfare (MOHFW) worked with UNFPA to expand emergency obstetric care within reproductive health service delivery points at the district-level Maternal and Child Welfare Centers (MCWCs). Facilities and staffing levels were improved to expand services to include caesarean sections and care for basic obstetric complications. These efforts demonstrated increases in utilization of services at each facility over the first several years of the program and MCWCs are important and essential facilities in Bangladesh's overall maternal health endeavors.[28]

The vast majority of births—85 percent—occur at home; 82 percent of all births are in the presence of unskilled providers or traditional birth attendants who do not receive formal training.

However, most deliveries continue to occur away from facilities capable of handling an emergency during delivery. To address quality of care for the 85 percent of women who deliver outside of facilities, officials and stakeholders in Bangladesh are strengthening efforts to improve community-based provision of maternal health.

Stakeholders agree that supplies for maternal health are often not adequate for the demand. In addition to the four commodities tracked in this report, other related medicines and equipment, such as blood, antibiotics, antimalarials, gloves and safe delivery kits, are often not available. As the growing population of women of reproductive age and efforts to motivate delivery at health facilities increase the demand for these supplies, it is critical for the government of Bangladesh, donors and civil society to address shortages and stockouts.

### Note about Abortion and Menstrual Regulation

Though abortion is illegal in Bangladesh, except to save the life of the mother, a procedure called menstrual regulation (MR) is permitted and widely available throughout the country in both public and private sector facilities. According to experts, menstrual regulation "involves evacuation of the uterus by vacuum aspiration within 6–10 weeks of a missed menstrual period."[29] Therefore, MR is usually done without a pregnancy test, and is not considered to be abortion.[30] The most recent Demographic and Health Survey finds that knowledge of MR by married women is high (80 percent) and that roughly six percent have ever had an MR procedure.[31] A study from the mid-1990s estimates that more that 250,000 illegal abortions occur in Bangladesh annually and unsafe or unregulated MR procedures contribute over 50,000 hospitalizations from complications.[32] MVAs, commonly called MR kits in Bangladesh, are the primary supply required for this procedure. Throughout this report, the term 'MR' will be used for the procedure and 'MVA' will be used to refer to the equipment.

## MILLENNIUM DEVELOPMENT GOALS

Supplies are recognized in the Millennium Development Goals (MDGs) as important to improving health in developing countries. Two of the MDGs are especially relevant to this case study.

Under Millennium Development Goal 5 - Improve Maternal Health, Bangladesh must demonstrate consistent and substantial progress to achieve the target of reducing MMR by 75 percent by 2015. With a baseline MMR of 574 in 1990, the 2015 target is 143 maternal deaths per 100,000 live births. Most stakeholders feel it is unlikely that Bangladesh will achieve this goal, as recent estimates of maternal mortality signal that previous declines have stalled.[33] An intermediate target with an earlier deadline is to increase skilled attendance at birth to 50 percent by 2010. This is especially off-track, given that only 18 percent of births in Bangladesh are with a skilled provider.[34]

Progress on indicators for MDG Target 5B has been mixed. Bangladesh fares well on contraceptive prevalence rate: Though progress has recently stalled, the 2015 goal of 70 percent is possible if improvement resumes. However, unmet need for family planning has recently increased. Without additional efforts, Bangladesh is unlikely to achieve the target reductions. The adolescent birth rate has declined slowly from the 1991 baseline of 77 births per 1,000 women to the 2007 rate of 59. Though the number of women receiving at least one ANC visit is steadily increasing, few women receive the recommended minimum of four visits.

The eighth MDG, Create a Global Partnership for Development, includes a target to increase the share of the population with access to affordable essential medicines. Recognizing that access to affordable medicines in the developing world is low and must increase, this target is measured by a variety of surveys that include pricing, continuous availability, and access, as well as indicators on public sector expenditure for essential medicines and the existence of a recent Essential Drug List in each country. Unfortunately, none of the tracer supplies considered in this report appear to be included on the select list under this target.

**MDG 5 – Improve Maternal Health**

| Target | Indicator |
|---|---|
| **5.A:** Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio. | **5.1** Maternal mortality ratio<br>**5.2** Proportion of births attended by skilled health personnel |
| **5.B:** Achieve, by 2015, universal access to reproductive health. | **5.3** Contraceptive prevalence rate<br>**5.4** Adolescent birth rate<br>**5.5a** Antenatal care coverage (at least one visit)<br>**5.5b** Antenatal care coverage (at least four visits)<br>**5.6** Unmet need for family planning |

# 4 THE HEALTH SYSTEM STRUCTURE

### The Policy Environment for Maternal Health Supplies

The government of Bangladesh is widely described as highly committed to maternal health, especially since the return to elected leadership in late 2008. Recognizing that declines in maternal mortality have been gradual and achievement of the MDG 5 targets may be unlikely, awareness of maternal health challenges is high. Several stakeholders are pleased that despite political change and upheaval over the past decades, the government has remained committed to mother's lives, children's lives and is now demonstrating commitment to newborn lives. Government commitment has been bolstered by support from development partners, whose cooperation and assistance for maternal, newborn, and child health has been consistent, both financially and technically.[35]

However, several stakeholders feel that the government's stated commitment to maternal health has not translated to increased financial commitment or implementation capacity on the ground. Others cite the difficulty of implementing effective maternal health programs, due to the necessity of a multi-sectoral approach.[36]

Over the past decade, several new policies intended to improve maternal health in Bangladesh have been developed. Supplies are mentioned in several existing policies, yet many do not explicitly address supply issues. Even when supply challenges are recognized, few quantified targets or strategies to address shortages and stockouts exist in the policies (see Appendix 1 for details of relevant policies).

The government of Bangladesh is widely described as committed to maternal health.

### Maternal Health in the Public Sector

All public sector health services fall under the Ministry of Health and Family Welfare (MOHFW), which includes two parallel agencies: the Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP). Other relevant agencies include the National Institute of Population Research and Training (NIPORT), a government agency under MOHFW, which is leading the current maternal mortality survey, and the Directorate of Drug Administration (DDA), which approves all drugs for use in Bangladesh. The parallel structure of the DGFP and DGHS has historically been fraught with tension between staff of the two directorates and resistance to integration. One major attempt to formally integrate the two directorates, during the first health sector program, was withdrawn. Stakeholders report that during the integration attempt, all cooperation and partnership between the two directorates came to a standstill. The government elected in late 2008 reportedly had plans to attempt another formal integration, but, after a year in office, has retreated after realizing the political difficulties involved. Currently, a better working relationship between the two directorates is reported, relative to recent years.

Many stakeholders believe that the functions of the two DGs are duplicative, yet are hesitant to recommend integration due to past difficulties. Stakeholders are divided, however, about the effect of this duplication. Some feel that the current structure, with shared and overlapping duties, has unclear responsibilities and has

contributed to certain functions being overlooked and some health issues "falling through the gap." Others believe that the parallel structure and established territories make it more productive to retain the current system in order to avoid further conflict. One stakeholder reported that though the two DGs may seem duplicative, "in practice it's not, because there are so many people."[37]

In theory, staff and facilities in each DG are supposed to work collaboratively, with seamless care between the lower level facilities, often operated by DGFP, and the higher level DGHS facilities. In practice, however, the parallel structure seems to adversely affect health services. For example, some facilities may reserve a certain number of hospital beds for DGFP and another number for DGHS, with no flexibility for changing patient needs. One stakeholder reported that clients seeking treatment at a DGHS facility for complications from a procedure conducted at a DGFP facility are sometimes refused treatment, being told to instead to return to the DGFP facility for care. Other stakeholders report that cooperation is more common: "everyone chips in" to meet health needs.[38]

The impact of the parallel DG structure is particularly notable for maternal health, where services are provided by both directorates. Each

**TABLE 2. THE PUBLIC SECTOR HEALTH SYSTEM FOR MATERNAL HEALTH IN BANGLADESH**

| | DGHS | DGFP | Personnel Structure |
|---|---|---|---|
| **National level** | Teaching hospitals | Maternal and Child Health Training Institute | |
| **District level** | District hospitals | Maternal and Child Welfare Center | Physicians, midwives, nurses |
| **Upazila level** | Upazila Health Complex | Maternal and Child Welfare Center | Graduate medical officers; junior gynecological consultants; senior staff nurses (nursing and midwifery); Family Welfare Assistants (FWAs) for family planning |
| **Union level** | Family Welfare Centers, Union Sub-centers | Union Health and Family Welfare Center | Paramedics: Family Welfare Visitors (FWVs), Sub-Assistant Community Medical Officers (SACMO), or medical assistants |
| **Community level** | Community Health Clinics | | FWAs, FWVs, and Health Assistants (HAs), Community-based Skilled Birth Attendants (CSBAs) |

provides maternal health interventions at their respective facilities and procures maternal health supplies. The government's primary maternal and child health program, including menstrual regulation, family planning, ANC, postnatal care (PNC), and delivery, is under the purview of the DGFP, while much of the emergency obstetric care in the public system occurs at DGHS facilities. At the field level, stakeholders report that MCWCs under DGFP are very popular for normal delivery and simple caesarean sections, while the DGHS district hospitals handle more complicated cases and referrals. "The MCWCs, established mainly at the district level, provide the only maternal and child health services under the direct control of the Directorate General of Family Planning."[39]

Although the government made a concerted push to establish EmOC centers at the upazila level, stakeholders report that emergency care is rarely available around the clock due primarily to a shortage of health workers.[40] More than 80 percent of upazila health centers are unable to provide EmOC services. A recent survey of all levels of facilities found that, even though 75 percent of facilities provide delivery care, only a small share, two percent, are prepared for obstetric first aid, which requires three injections: magnesium sulfate, oxytocin, and an antibiotic.[41] Research has indicated that "upgrading the quality and coverage of safe motherhood services at formal facilities to ensure 24-hour EmOC may have the largest payoff in averting deaths and reducing disability in women and children in Bangladesh."[42]

Stakeholders report that emergency care is rarely available around the clock due to a shortage of health workers.

Like the family planning program, maternal health services within the government of Bangladesh have been inhibited by frequent staff turnover at administrative levels, restrictions on administration of maternal health medicines to higher-level providers, and aging out of community-based workers. Doctor absenteeism is also described as a major problem. The draft National Health Policy acknowledges the human resource shortages in the sector. Stakeholders also describe a relatively strong infrastructure for health that is left untapped due to shortages in the quantity of available health workers and inadequacies in their training.

Senior staff in both DGFP and DGHS are rarely in their positions for long. The current head of DGFP, who had been in place for over a year as of January 2010, is expected to be shifted to a different ministry by the middle of the year. The frequent reassignment of high-level civil servants, typically across rather than within ministries, limits technical knowledge in program management. However, with the return of an elected political leadership at the end of 2008 after two years of a military caretaker government, some seasoned staff are returning to high-level technical positions.

Although a government-funded cadre of community-based workers for maternal health (CSBAs) is fairly new, family planning workers have been in place for decades. Community mobilization and intervention is a major component of the country's initiatives to improve maternal health. In addition to strengthening the capacity of existing health workers, this effort aims to reduce reliance on traditional birth attendants, who lack training. CSBAs were initiated under a previous government and are often retrained FWAs and

Bangladesh is a good example of strong collaboration between the private sector, development partners and donors, and government.

HAs. By the end of 2007, 3,000 CSBAs had been trained; the government hopes to train an additional 1,000 per year.[43] Several key respondents expressed concern that the training is not comprehensive or long enough for CSBAs to be competent in home deliveries. After some questions about the rigor of the initial six-month CSBA training program, it has been extended to 18 months. CSBAs are intended to carry a range of delivery supplies including oxytocin and misoprostol, but stakeholders interviewed—including trainers of CSBAs—were unaware of a process to resupply CSBAs in the community.

Stakeholders feel that an emphasis on simple, evidence-based interventions at the community level in the public sector, a shift away from prioritizing development of EmOC centers, has been an important cause of reductions in maternal mortality. The recently elected government has also begun the process of revitalizing 10,723 Community Clinics at the sub-union level, which have been dormant for several years. The eventual goal is to operate 18,000 Community Clinics.[44] Each clinic will serve a population of approximately 6,000, providing primary care for maternal and newborn health, including antenatal care and family planning, but excluding deliveries. The process of renovating existing clinics, training staff and ordering supplies is being administered by the DGHS. To staff Community Clinics, the government is recruiting 18,000 community paramedics who will have a level of training similar to FWVs. Government supplies are reportedly first directed to the clinics, rather than to CSBAs.

### Maternal Health in the Private Sector

The private sector in health is a strong counterpart and partner to government. Though oversight and proper regulation of private sector is a concern, stakeholders generally agree that NGOs are a positive and necessary alternative to the government. A World Bank study of 50 facilities found that the higher quality of care in private sector facilities, including those operated by NGOs, is a significant draw for communities, with relative accessibility of facilities less important.[45]

According to several stakeholders, the private sector in Bangladesh has grown immensely over the past decade and has expanded to provide delivery and higher level services. The private-public partnership in Bangladesh is reported to be exemplary. Stakeholders feel that Bangladesh is a very good example of strong collaboration between private sector, development partners and donors, and government.[46] For instance, NGOs were actively involved in the design of the recently completed National Neonatal Strategy and the Maternal Health Strategy currently in revision.

Stakeholders also report that cooperation between NGOs is good. Though there is some duplication between organizations, several networks and forums exist to conduct joint planning between NGOs. Often, NGOs will operate similar programs, but in different geographic regions. Many stakeholders report a project emphasis on community outreach and awareness-raising, directed at both local leaders and the husbands and other family members who often make

Many women, whether delivering at home or in a facility, must purchase supplies in the private market.

decisions about seeking care during delivery. Several organizations have built community mobilization and demand creation activities into maternal health initiatives.

Private sector and NGO hospitals and facilities account for 53 percent of antenatal care services (not including home visits) and roughly 52 percent of facility deliveries.[47] Such facilities are typically more expensive than government facilities (although in some cases, the unofficial fees charged by government facilities may negate the cost difference). Patients may choose to seek care at a private sector facility because of higher perceived quality of care and customer service, as well as more consistent availability of staff due to lower absenteeism. Stakeholders report that stocks of supplies are more consistent in private sector facilities.

Private pharmacies also play an important role in maternal health in Bangladesh. Many women and families, whether receiving care at home or in a public or private facility, are required to purchase needed supplies in the private market. In places where trained health care providers are short, pharmacists often serve as providers and recommend appropriate treatment. Although there are over 200,000 private pharmacies in Bangladesh, fewer than half are legally registered; in such outlets, the education of pharmacy staff is questionable.[48]

## HUMAN RESOURCES FOR HEALTH

Any discussion of supplies for maternal health must include consideration of the health care providers available in a country. In comparison to family planning, maternal health supplies often require a more highly trained health care provider who is available at all times. Although family planning supplies can be distributed at predetermined times and on a regular schedule, deliveries occur day or night, workdays or weekends. In Bangladesh, shortages of skilled providers are a major problem for maternal health. Stakeholders in both the public and private sectors report that staffing shortages, training, and retention are strongly linked to the supply challenges. Providers must be trained in the use of commodities and receive frequent refresher trainings to ensure continued quality of care as standards and treatment evolve.

Over the past five years, the government of Bangladesh has sought to address shortages of skilled birth attendants by expanding training of CSBAs, as discussed above. The goal is to develop 18,000 CSBAs, in order to have one per every 6,000 population.[49] The impact of CSBAs has yet to be seen: There has been little increase in rates of skilled attendance at birth over the past decade, "especially among poor, uneducated rural women."[50]

At MCWCs, official staffing guidelines call for one doctor and several FWVs. Though FWVs are capable of handling normal deliveries, the doctor must be present for any complications. At facilities that provide large numbers of deliveries, staff are frequently overwhelmed, with little or no time off. For example, at the Manikgonj MCWC in 2009, there were 561 normal deliveries, 410 caesarean sections, and an additional 17 referrals to a higher facility, in addition to 11,805 ANC visits and 2,065 PNC visits. All of these services were provided by a staff consisting of one doctor, one anesthesiologist, and five FWVs, with the support of one female medical attendant and one assistant nursing attendant.[51]

Due to the high number of deliveries that take place without skilled attendants, stakeholders recommend that FWAs—the frontline trained providers at the community level—become trained in basic delivery, and administer prenatal visits and postpartum visits.[52] Some stakeholders have also recommended that traditional birth attendants (TBAs) receive training and education about how to recognize complications and when to refer women to facilities for essential services and accompanying medicines and supplies.[53] However, with increased training of community and home-level providers, access to supplies is likely to be limited without concrete plans for regular re-supply of community-based workers.

Only 38 percent of UHCs, and just 55 percent of district hospitals, report having oxytocin available.

## Availability and Use of Tracer Commodities

**Oxytocin**

Oxytocin, an injection used to prevent and treat postpartum hemorrhage, is permitted and expected to be in public facilities through the upazila level. National guidelines recommend regular use of oxytocin in all deliveries as part of Active Management of the Third Stage of Labor (AMTSL). Nearly all stakeholders agree that cold chain storage of oxytocin is not maintained beyond district level hospitals or in many private sector facilities. Many stakeholders are unaware of cold chain recommendations for oxytocin (which is "relatively stable" at temperatures below 30°C[54]) or report that refrigeration is only necessary in the summer; in the winter, oxytocin can be kept on the shelf.

Nearly all health workers are permitted to use oxytocin at the community level. CSBAs are trained in the use of oxytocin, but stakeholders are unsure how CSBAs are resupplied with the injection after training and are skeptical that it is being kept in cold chain.[55] Despite supposedly widespread use of oxytocin for AMTSL, a recent study by of health care facilities in Bangladesh found that "only 55% of District Hospitals and 38% of Upazila Health Centers reported having oxytocin."[56]

**Misoprostol**

Misoprostol is another option for prevention and treatment of postpartum hemorrhage (PPH). It can also be used to induce labor, treat incomplete abortion or miscarriage, and in some cases induce early abortion.[57,58] Though not recommended for PPH when oxytocin is available, the WHO, health practitioners, and international advocates have encouraged use of misoprostol for PPH in resource-poor settings, when oxytocin or ergometrine (an alternative injection) are not available.[59] Misoprostol has several advantages over oxytocin in these settings: It is a tablet rather than an injection and is more shelf-stable, without a requirement of cold storage. Several studies have demonstrated positive findings with community distribution of misoprostol through both community-based health workers and volunteers, or distribution directly to pregnant women.[60,61] However, due to conflicting evidence and concerns that oxytocin is a more effective treatment for PPH, the WHO Model List of Essential Medicines includes misoprostol only for treatment of incomplete abortion and miscarriage.

Bangladesh, like many countries, has opted to expand distribution and use of misoprostol for PPH. Misoprostol was added to the Bangladesh Essential Drug List (EDL) in 2008 and as of early 2010, use of the drug for PPH had moved beyond the pilot stage but not yet fully scaled-up. It is still unclear to some stakeholders which level of provider can administer misoprostol. For example, though government officials state that CSBAs and community health volunteers may distribute misoprostol, several respondents believe that the government only allows distribution in facilities. Though the government is reportedly working to procure misoprostol, as of early 2010 the only financing for distribution of misoprostol in the public sector had been supported by Venture Strategies Innovations, an American NGO, which contracts with a local pharmaceutical company to manufacture misoprostol and distribute it to the district level.

Many NGOs have also embraced the use of misoprostol for PPH, especially at the community level. Throughout the country, NGO-supported community health volunteers are beginning to distribute misoprostol at deliveries and to pregnant women for self-use. NGOs in Bangladesh led the initiative to update packaging to include instructions and use for treatment of PPH. Though misoprostol is currently free to NGOs from Venture Strategies Innovations (via the government in most cases), several NGOs report that they expect to be able to pay for additional supplies as projects are implemented.

In line with government protocol, misoprostol is not used for early abortion in facilities, but clandestine use does occur through individual purchases of the drug on the open market. Several NGO health providers report that improper use of misoprostol for early abortion and MR is a frequent cause of incomplete or unsafe abortion. A pilot study is currently underway in Bangladesh to assess the use of misoprostol for MR. Some stakeholders express strong support for increasing availability and use of misoprostol for MR, but all noted that training activities must increase to ensure proper use.

Bangladesh has opted to expand distribution and use of misoprostol for postpartum hemorrhage, especially at lower level facilities.

## Lack of access to safe menstrual regulation services is a leading contributor to maternal mortality in Bangladesh.

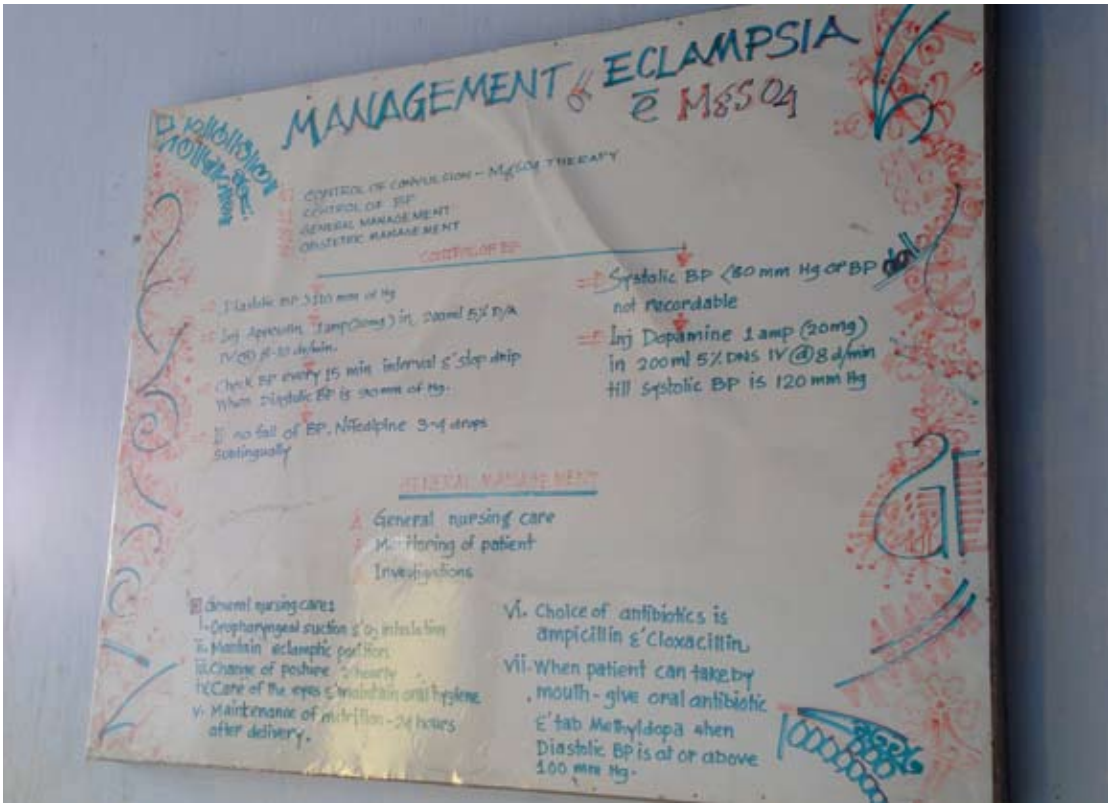
**Magnesium Sulfate**
Magnesium sulfate, administered by injection or intravenously to treat severe pre-eclampsia and eclampsia, is intended to be used at facilities, including lower union level health centers. Many lower level facilities are capable of giving a loading dose of magnesium sulfate, then referring to higher level facilities. As of early 2010, CSBAs were not provided magnesium sulfate. However, some NGO programs are testing distribution and training of community health workers and volunteers to give a loading dose in the case of severe pre-eclampsia and eclampsia. Women are then intended to be referred to a facility for complete treatment.

However, even at higher level facilities, availability is rare. At public sector facilities, magnesium sulfate is found to be "the most constraining obstetric first aid item; only 42% of DHs [District Hospitals], 23% of UHCs [Upazila Health Complexes] and 10% of MCWCs reported having the injection in the facility for use."[62]

**Manual Vacuum Aspirators (Menstrual Regulation Kits)**
Menstrual regulation plays a delicate role in health care in Bangladesh. As discussed earlier in this report, abortion is illegal, but menstrual regulation is legal. Increased availability and access to MR in Bangladesh is often cited as a factor in declining maternal mortality rates. However, stakeholders express concerns about the safety and quality of MR, as the procedure is frequently and cheaply available through unskilled and untrained providers. Current regulations allow FWVs and other lower level trained providers to offer MR up to eight weeks after a woman's last menstrual period, and a doctor or midwife can provide MR up to ten weeks. Advocates are currently working to allow lower level providers to offer MR up to ten weeks as well. Stakeholders report that government facilities often have MVAs available, but do not have capable providers.

Though MR is legal, and generally available, stigma against the procedure often prevents women—especially young women—from seeking care from a skilled provider in a safe facility. Several stakeholders report that some facilities refuse to offer MR to unmarried women. Government regulations require that facilities attain consent from the husband or guardian of a woman seeking MR, and although signatures are usually collected, this requirement is not routinely enforced. Stakeholders report that lack of access to safe MR services is a leading contributor to maternal mortality in Bangladesh. Because of barriers and stigma in seeking MR, women will resort to herbs, unskilled providers, and self-treatment, with unfortunate results.

MR is typically available at UHCs and higher-level facilities, but is also offered at lower levels of the health system through the outlets of NGOs. At the union level, female paramedics including FWVs and medical assistants, and their private sector equivalents, are the sole providers of MR.




A poster at Kumudini Hospital in Mirzapur displays instructions for administration of magnesium sulfate. (Jennifer Bergeson-Lockwood/PAI photo)

According to one provider, MR services are inadequate for those women who can't afford to travel to the district level. In such cases, they may resort to herbal or folk methods of inducing abortion or seek treatment from official or unofficial health care workers who illicitly provide MR without training.

The provision of MR is hampered by cultural wariness of the issue and low budgets. Although the national health sector strategy mandates that MR services be available, NGOs report that government commitment is not matched by drive. The government reportedly relies on an NGO publication as its training manual for MR and faces less accountability than NGOs. A traditional environment also means that women may be unlikely to know that MR is an option, because it is very rarely publicized.

**Maternal Health Supplies in Public Sector Facilities**

A large training hospital in Dhaka provides training for providers and maternal health care, including family planning, antenatal care, normal and complicated deliveries, postnatal care, and infant care. A high volume center, the hospital provides services for over 8,000 deliveries per year and over 40,000 ANC treatments per year. As a DGFP facility, the hospital orders all supplies from the government's Central Medical Stores Depot (CMSD), as often as supplies are needed. MVAs are reported to be in good supply and always available. However, officials report that the three medicines considered in this report are not always available from the government, causing shortages for at least two or three months each year. In these cases, patients must purchase supplies from local pharmacies.

A representative DGHS District Hospital in Manikgonj visited during research for this case study offers maternal health care and can provide comprehensive EmOC. The District Hospital does not provide MR, so MVAs are not supplied. Oxytocin and magnesium sulfate are supplied from the government's Central Medical Stores Depot, with forecasting based on data of previous

use. When needed, patients must purchase misoprostol from a local pharmacy because it is not yet supplied by DGHS. Though officials report that shortages of oxytocin or magnesium sulfate are rare, patients are commonly required to purchase other supplies including antibiotics, IV fluids, and anesthetics because the facility does not receive a sufficient quantity from the central level.

A representative DGFP Maternal and Child Welfare Center in Manikgonj provides family planning; treatment and prevention of reproductive tract infections; maternal care, including MR, ANC, PNC, normal delivery and caesarean section; and child care, including treatment for infant and child diseases, immunization, and growth monitoring. The MCWC receives referrals from lower level facilities and can handle basic delivery complications, but refers many complicated deliveries requiring higher level treatment to the nearby District Hospital. The MCWC receives MVAs directly from DGFP and purchases oxytocin and misoprostol through a procurement process with funds from DGFP. Magnesium sulfate is not routinely stocked, as pre-eclampsia cases are referred to a higher level facility. Shortages of supplies are reportedly rare.

**Maternal Health Supplies in Private Sector Facilities**

A private, faith-based not for profit hospital in Mirzapur district provides delivery services for an average of 100 normal deliveries and 100 caesarean sections each month, with many deliveries facing complications. Though the hospital encourages all women to deliver in the hospital, many women come for family planning and ANC and do not return for delivery. The hospital previously provided free care for all patients; in 1994, the hospital began charging nominal fees of 100 taka ($1.40 USD) for a normal delivery and 4,000 taka ($56 USD) for caesarean section, but offers concessions or free care for poor women. As a private entity, the hospital orders supplies, including oxytocin, misoprostol and magnesium sulfate, directly from the lowest price manufacturer or from local private sector distributors. The hospital is reported to rarely face stockouts or shortages of key supplies. In the facility, supplies are kept in a locked store room, with supplies for daily use kept in the labor wards. Because of its faith-based orientation, the hospital does not provide MR services or stock MVAs.

Officials report that maternal health medicines are not always available at public sector facilities. In these cases patients must purchase supplies from local pharmacies.

# 5 FINANCING OF MATERNAL HEALTH SUPPLIES

Bangladesh relies on donor-generated funds, including direct procurements of contraceptives, to support the national family planning program. This has created a relatively unusual situation in which stakeholders largely agree that funding of family planning commodities is adequate. However, the financing for maternal health supplies is quite different, and earmarked donor funds for supplies are much less common. One of the largest single donors of contraceptives in Bangladesh, the United States Agency for International Development (USAID), does not provide funding for direct provision of maternal health supplies with a few limited exceptions, such as for training purposes. One notable exception is a UNICEF-administered fund of the Canadian International Development Agency (CIDA) for essential medicines and supplies, including maternal health supplies such as magnesium sulfate, that will end in 2010. NGO and multilateral stakeholders expect the government will need to fill the gap when this funding ends.

Government spending on health is fairly low, at roughly eight percent of the total budget, which amounts to an average of $5 per capita.[63] By comparison, many developing country governments have committed to devote 15 percent of budgets to health. Government spending is roughly 37 percent of total health expenditures, with external assistance and private funds supporting the rest.[64] Funding for maternal health is drawn from two sources: the majority from the development budget, to which donors contribute approximately one-third, and a smaller portion from the revenue budget, comprised solely of internally-generated funds. One official reports that the Directorate General of Family Planning maintains an annual budget line item for maternal, child and reproductive health supplies (not including family planning), which also covers some operating costs. With child health supplies provided mainly by DGHS, approximately 75 percent of this DGFP budget line is allocated to maternal health supplies.[65]

Under the Health, Nutrition and Population Sector Programme (HNPSP), the health sector approach agreed upon by the government and donors, financing for reproductive, maternal, and child health supplies is generated through both the government's internally generated funds and donations from development partners. At the World Bank, which manages the HNPSP pooled fund, the Financial Monitoring and Auditing Unit prepares quarterly statements that report funds spent out of HNPSP. This is usually done at the level of the entire health sector, but specific budget reports for maternal and reproductive health could feasibly be prepared.[66]

## Government Financing of Maternal Health Supplies

Due to the division of maternal health services and supplies between DGHS and DGFP, as well as the combination of internally generated and donor funds, it is difficult to track spending on maternal health supplies. In both DGs, there is no specific budget line item for maternal health supplies, only a general maternal, child, and reproductive health supplies line, which is supported by internally-generated funds through the HNPSP.

Government spending on health is low, roughly eight percent of the total budget.

## All maternal health care is supposed to be free of charge in the public sector; however, unofficial user fees are common.

The HNPSP includes a large unspent budget for reproductive health and maternal health, including supplies. Despite reports of supply shortages in the public sector, only 45 percent of the supply line over the course of the HNPSP is reported to have been spent, with only one year remaining in the extended timeframe. In the face of donors, such as CIDA, ending support for supplies, some respondents believe that the government should be able to make up the gap through the unspent budget in the HNPSP. However, one government official claims that there is not enough money to purchase supplies for 100 percent of need, even if the budget line was fully disbursed.[67]

There are several reasons for these discrepancies. First, requests for supplies are generated at the union level and then are passed up the health system through the upazila and district levels to the MOHFW, which receives an aggregate supply request. Stakeholders suggest that the MOHFW sometimes reduces orders because of a perception that the request is too large.[68] Second, the timing of procurement has been a major factor in supply shortages. The government has one procurement cycle per year, leaving many facilities low on supplies at various points during the year. Third, World Bank procurement policies are also an occasional cause of supply shortages. For example, a distributor or pharmaceutical company may experience difficulties with licensing or bidding that cause shipment delays.[69] Finally, several stakeholders report that even if supplies are available at the central level, distribution problems often create supply challenges at the periphery.[70]

All maternal health care is supposed to be free of charge in the public sector. However, as in other countries, unofficial user fees are common. Some stakeholders claim that user fees and private purchase are actually the largest financing mechanisms for supplies. In addition to fees for supplies, patients are also sometimes expected to make under-the-table payments to health care workers, such as aides who guide them between wards. These costs are aggravated by the expenses of transport, food and lost wages for the woman and any family members who accompany her. A study into hidden costs at public facilities discovered that unofficial costs for normal deliveries range from 800 to 1600 taka (approximately $11 to $22) including transportation, food, corruption and unofficial fees to the hospital, as well as to purchase supplies. Fees for a complicated delivery were found to be as high as 20,000 taka ($280).[71] This is prohibitively high in a country where over 80 percent of the population lives on less than $2 per day and the per capita annual income is $393.[72]


A public sector district hospital in Manikgonj provides oxytocin and magnesium sulfate. (Jennifer Bergeson-Lockwood/ PAI photo)

As supply shortages are common, facilities often provide a list of necessary supplies to families who must locate and purchase commodities at an external, private sector store, an additional financial burden. Because these costs are a leading reason for the low share of facility-based births, they have been a prime target of the government and its partners through a demand-side financing program. Despite care that is intended to be free, patients are often presented with a list of supplies when they arrive at a facility and dispatched to a pharmacy to procure them. This list commonly includes essential medicines such as oxytocin or antibiotics and expendables such as sutures and gauze. In many cases, facilities are not provided with enough supplies to meet demands. Hospital officials report that supplies are allocated based on the official number of beds in a facility, but in reality many facilities treat more patients than they have available beds. Other times, logistical difficulties prevent timely ordering and distribution of supplies. In addition, corruption was commonly cited: Public sector supplies are reported to leak onto the black market.

Beginning in 2007, the government of Bangladesh began a demand-side financing program through DGHS in 33 upazilas and some districts. It provides pregnant women identified by community health workers during ANC visits with a booklet of coupons for various maternal health services at home or at a facility, including antenatal and postnatal care, regular delivery, caesarean section if needed, and some supplies.[73] Reportedly, the vouchers also cover some transportation and food expenses. Women can redeem each coupon at no charge from participating government facilities. Providers also receive a financial incentive for participating in the program.[74] Funding for the program comes from the World Bank, out of the HNPSP pooled fund. Though the findings are preliminary, early results indicate that the voucher scheme has been successful at increasing facility delivery rates.[75]

### Private Sector Financing of Maternal Health Supplies

In private sector, there are several models in place to address cost-effectiveness and sustainability. For instance, the Smiling Sun Franchise Program (SSFP) follows a cost-recovery model, in which an increasing percentage of costs are expected to be covered by service revenues each year. At SSFP franchises, free care is reserved only for the poorest of the poor. However, other NGO stakeholders express concern that cost recovery models do not work for maternal, newborn, or child health, because it "causes people to negotiate" and make unreasonable sacrifices.[76]

For the most part, the three tracer medicines in this study, oxytocin, misoprostol, and magnesium sulfate, are low-cost and widely available on the private market. Stakeholders report that oxytocin costs 6 to 10 taka ($0.09 to $0.14), and misoprostol and magnesium sulfate are slightly more expensive, up to 60 taka for a full dose ($0.84).

At private sector facilities, costs for services vary widely. Additionally, fees for delivery are often all-inclusive, making it difficult to split supply costs from general fees. The charge for normal deliveries ranges between 500 to 10,000 taka ($7 to $140); caesarean section charges range from 6,000 to 20,000 taka ($85 to $280). Many poor women are unable to pay for private sector services. Several organizations, however, report positive developments with corporate social responsibility programs to finance maternal health in Bangladesh. For example, GrameenPhone, a large telecommunications corporation, recently began funding delivery fees to facilities for poor women in several areas, in collaboration with NGOs. This form of private sector partnership demonstrates promise for improving maternal health by subsidizing the costs of care.

In 2007, the government of Bangladesh began a voucher scheme in selected upazilas and districts to provide maternal health services and supplies. Early results indicate the program has successfully increased facility delivery rates.

# 6 MATERNAL HEALTH SUPPLIES FORECASTING, PROCUREMENT AND LOGISTICS

With its strong historical emphasis on family planning, it is no surprise that the procurement system for contraceptives is well established in Bangladesh. With assistance from the USAID | DELIVER project, Bangladesh has a relatively well-functioning procurement and logistics system, though shortages and stock-outs are reportedly still a problem, especially for long-acting methods of contraception. Unfortunately, there is not a similar Logistics Management Information System for other supplies and essential medicines, though the new USAID-funded Strengthening Pharmaceutical Systems (SPS) project is meant to expand on DELIVER's work and could be used to strengthen other supply chains.

The central government only procures medicines and supplies that are on the Essential Drug and Equipment lists. Below the central Essential Drug List, each DG reportedly has a separate procurement list, with some overlap on each. Stakeholders report that the CMSD, the central public sector supplies warehouse, distributes supplies to the district level, where the drugs get "stuck," and do not pass beyond to the upazila or union level.[77] In the public sector, the central government is responsible for procuring all supplies and pushing to facilities. There is very little procurement at the facility level. However, under DGFP, MCWCs at the district level receive small funds to purchase supplies for caesarean sections and delivery, including the three tracer medicines in this study. A select group of commodities related to sexually transmitted infections is pushed directly to facilities from the central level.

Under government protocol, facilities must provide a tender to purchase supplies. Each facility usually procures a group of supplies together, which is more cost effective than to procure each drug individually. Facilities procure once or twice per year, following the release of funds from government. National-level facilities under DGFP receive some maternal health supplies directly from the government, without having to use their own budget. For supplies that are not provided by the government, such higher-level facilities use other budget funds to purchase commodities on the open market or ask patients to purchase them out-of-pocket.

Under DGHS, facilities receive supplies based on the number of beds, not the number of patients treated at each facility. In general, facilities treat more people than they have beds, creating a supply deficit. Facilities do not often hold their own budgets, although civil surgeons at the district level can purchase supplies up to 5,000 taka ($70). Therefore, patients frequently are expected to purchase supplies in private sector pharmacies.

> The government generally pushes all supplies to public facilities; there is very little procurement by facilities.

### Procurement of Maternal Health Supplies

The supply chain for maternal health supplies is co-mingled with other medicines, just as services are integrated at the facility level. Because of the overlap between DGFP and DGHS, procurement and distribution of maternal health supplies in the public sector is complicated and can be problematic.


Supplies are stored at the Maternal and Child Health Training Institute in Dhaka. (Jennifer Bergeson-Lockwood/ PAI photo)

Some international organizations report contributing funding directly to district level facilities to purchase essential medicines.[78] In addition to DGHS and DGFP, a small handful of donors have historically procured maternal health commodities, including the four tracer commodities. Currently, UNICEF does not directly procure any maternal health commodities. However, funding provided by UNICEF to the central and district level has been used for maternal health supplies, following government procurement procedures. Though free to public and private sector facilities, UNICEF-provided supplies go through the government distribution system, either to CMSD at the national level, or more recently, directly to the district reserve stores. When NGOs request supplies from UNICEF, UNICEF asks the government to release supplies. In the past, UNFPA has provided maternal health supplies, including emergency kits and oxytocin, during emergency situations, most recently in 2008 following Cyclone Sidr. According to one official, it is possible that UNFPA could step in again in the case of emergency or shortages in the future.[79]

UNFPA and other stakeholders report that they hope to begin a new initiative using contraceptive forecasting methods to better forecast maternal health supplies. Currently, DGFP and DGHS conduct an annual forecast for maternal health supply needs. UNFPA hopes to forecast for ten to 15 years in order to allow for longer term planning.

### Distribution of Tracer Supplies

Local manufacturers of maternal health supplies exist in Bangladesh, and the four tracer commodities are available in the private market. Multiple local pharmaceutical companies produce misoprostol, oxytocin and magnesium sulfate. These manufacturers also handle distribution for many of the NGOs that purchase their supplies. MVAs are not produced in Bangladesh but can be procured from India and other international sources.

## The government distribution system also supplies many NGOs.

Oxytocin and magnesium sulfate are procured under both DGFP and DGHS. Though there is little coordination between the DGs to ensure supply levels are balanced, one stakeholder familiar with logistics reported that as supplies near expiry dates, DGFP and DGHS stores at the upazila level have been known to share.[80] A joint UNFPA, UNICEF, and WHO project, the Maternal Newborn Health (MNH) Project, also procures oxytocin and magnesium sulfate.[81] After the initial donated supplies from Venture Strategies Innovations are exhausted, misoprostol will only be procured by DGHS, though that is likely to change as government policy around use is finalized.

As with family planning, many NGOs receive most of their supplies from the government. Although the government distributes supplies equally among its own facilities and those of NGOs, general procurement delays within the government affect NGOs as well. Though stockouts of oxytocin and magnesium sulfate are reported to be infrequent, several stakeholders report that at public sector facilities, women and their families are often required to purchase supplies including oxytocin, antibiotics, and anesthetics from a local pharmacy. A recent public sector facility review demonstrated that stockouts and shortages are more common than some stakeholders believe.[82]

Of the four tracer commodities, shortages appear to be the biggest concern for MVAs. In general, NGOs order and receive MVAs from the government at no charge. However, stakeholders reported shortages and stockouts of MVAs provided by the government over the past two to four years. One NGO was asked to place an extremely large order for MVAs from the government in 2006 because the government had a large quantity of stock on hand that was about to expire.

MVAs fall solely under the purview of DGFP; DGHS has no role in their procurement or distribution. A high-level official in the DGFP who opposes the practice of MR is reported to have resisted procurement of the equipment and intentionally ordered fewer kits than requested. Because each kit can be used 50 or more times, the question of re-supply is less urgent than for single-use medicines, but shortages are still described as a concern. However, NGOs that provide large numbers of MR services could face crises in availability within a short time frame. Some NGOs are confident that MVAs will be available from the government when they are next needed; however, many expressed concern that stocks will only be adequate for the public sector, causing continuing shortages in the private sector. Despite these concerns, one official states that the government hopes to continue supplying MVAs to NGOs because of NGOs' important role in MR provision. This stakeholder reports that shortages in the past were due to procurement delays that are now resolved.

Some NGOs have purchased or received donations of MVAs from foreign organizations such as Ipas, an American NGO, or grants from private donors to purchase from private sector distributors and pharmaceutical companies. Unfortunately, the high cost of each unit makes it difficult for NGOs to purchase them in the

private sector without additional support or funding.[83]

A coordination committee for MR exists, but meets very irregularly. It is chaired at the DGFP and members include NGO and facility-based providers of MR services. The committee is meant to ensure a smooth supply of MVAs and to discuss and promote policy changes, such as expanding provision of MR by paramedics and FWVs up to ten weeks and introducing new products. However, the committee is reported to have last met in 2006 or 2007.

Depending on the size of their organization and facility network, private sector actors rely on a variety of procurement and distribution methods for maternal health supplies. The majority of stakeholders interviewed report that each health facility procures directly from local pharmacies or distributors and is able to successfully arrange for constant stock of needed supplies. Larger NGO networks may have a central procurement system and warehouse; however, nearly universally, private sector facilities pull supplies as needed from the central level.

A recent public sector facility review found that stockouts and shortages of supplies are common and widespread.

# 7 DEVELOPMENT PARTNERS AND CIVIL SOCIETY

Unlike family planning, which continues to suffer from supply shortages and stockouts, donors have not provided dedicated, sustained and large-scale funding for maternal health supplies in Bangladesh or most other countries. Many bilateral donors now provide support through sector or direct budget modalities, and vertical funding for commodities is typically directed to contraceptives, vaccines, antiretrovirals for HIV/AIDS treatment, and other medicines covered through global initiatives. Despite the small amount of dedicated funding for maternal health supplies, donors remain active and committed to maternal health and other reproductive health issues through various programs. Donors meet regularly through fora such as a donors consortium on health chaired by the World Bank and through technical committees charged with developing policies and strategy guidelines.

Bangladesh also has a robust civil society, including both national and international organizations, working to improve maternal health. Many of these organizations provide direct service delivery of maternal health, including provision of maternal health supplies. Civil society organizations also provide technical guidance to the government and serve as advocates for maternal and reproductive health, often in partnership with other health care providers and donors. However, some civil society organizations, as service providers, have the potential to develop a stronger advocacy voice, given their respected positions in the country. The organizations below include some of the major actors in the maternal health field, but as maternal health is often integrated into other health issues, this list is not comprehensive.

## Multilateral Donors

**The United Nations Children's Fund** (UNICEF) has a strong presence addressing maternal health issues in Bangladesh. Maternal health, nutrition and child survival are the three clusters of UNICEF's health program in Bangladesh. Working to improve EmOC, UNICEF provides funding for supplies - predominately equipment - to 191 facilities at the district and upazila level, but the last direct procurement of maternal health medicines by UNICEF was in 2008. UNICEF also provides technical and financial assistance for capacity development of service providers including monitoring and supervision. UNICEF is the lead partner with DGHS to update the Maternal Health Strategy. To improve newborn health, UNICEF works to develop the skills of community-based workers from DGFP, DGHS, and NGO health volunteers. At times, UNICEF provides equipment to improve newborn care, such as thermometers, scales, and neonatal respirators. UNICEF also supplies all essential drugs for children under age five to upazilas across Bangladesh through a fund supported by CIDA that will end in 2010.

UNICEF also works on several collaborative projects to improve maternal and newborn health in Bangladesh. One such initiative, the MNH Project (described below), is conducted jointly with the government of Bangladesh, UNFPA and WHO. UNICEF provides funds for local level planning by districts that can be used for supplies, including oxytocin and magnesium sulfate, and for minor renovations and maintenance of equipment.

UNICEF jointly operates the Maternal Neo-Natal and Child Health (MNCH) project with the government of Bangladesh and BRAC. Supported by the DFID, the European Commission, Australia (AusAid), and the Netherlands, the total project budget is roughly $48 million over five years. While BRAC focuses on the community level (described below), UNICEF provides technical and financial support to strengthen facilities through capacity building and procurement of equipment and supplies. This project began in four districts, but is currently being expanded to ten districts.

The **United Nations Population Fund** (UNFPA) has been active on maternal health in Bangladesh for several decades, often working in partnership with the government of Bangladesh and other donors. In the past, UNFPA regularly supplied MVAs and has also provided maternal health commodities during emergency situations, most recently following Cyclone Sidr in 2008. UNFPA no longer procures supplies for maternal health, instead providing funds for the government to purchase supplies directly. UNFPA also provides training to FWVs and to CSBAs.

*MNH Project*. With support from DFID and the European Commission, and in collaboration with UNICEF and WHO, UNFPA began the MNH project in 2007 to work with the government to address MDGs 4 and 5 in Bangladesh. The first phase of the MNH Project operates in four districts and conducted a mid-project review in December 2009. MNH Project has many objectives, including improving training and building capacity at local levels, improving human resource management, community mobilization for maternal health, and demand-side financing.

The *World Bank* is active in Bangladesh as the manager of the health SWAp, the HNPSP. In this role, the World Bank sets standards for procurement of supplies, monitors use of funds, releases funds as necessary, and reports on funding and sector-wide progress. The World Bank convenes a donor consortium, comprised of the seven donors to HNPSP and nine additional development partners that are active in the health sector in Bangladesh. This consortium works with the government of Bangladesh to decide health priorities in the country.

### Bilateral Donors

The United States Agency for International Development (**USAID**) works with a number of NGO partners in Bangladesh on a range of health issues. USAID has long been supportive of family planning and reproductive health programs in Bangladesh, reportedly providing 40 percent of the modern contraceptives currently used in the country.[84] The recently closed USAID-funded DELIVER project worked for nearly a decade to improve contraceptive security through improved supply chain, procurement, distribution, and logistics systems.

A consortium of sixteen donors works with the government to detect complications during pregnancy.

Bangladesh was a focus country for the Prevention of Postpartum Hemorrhage Initiative (POPPHI), which closed in 2009. Led by EngenderHealth in Bangladesh, the POPPHI project sought to increase access and use of misoprostol for PPH among community health workers. The project also initiated a public-private sector National Task Force on the Prevention of PPH to coordinate efforts in the country.

USAID attempts to work closely with the government, but predominately collaborates with private sector organizations. USAID often supports NGO partners to influence policy change, as was the case with the POPPHI initiative. Though not a contributor to the HNPSP pooled fund, USAID is a major contributor to the health sector and is active in discussions to develop the next health SWAp.

USAID is currently evaluating maternal health programs and interventions in order to decide the best mechanism to improve maternal health in Bangladesh. USAID recently began funding the MaMoni project, led by Save the Children under the Maternal and Child Health Integrated Program (MCHIP) global project. Through the MaMoni project, USAID hopes to improve the neonatal mortality rate, which has seen little improvement in Bangladesh. USAID also funds the Smiling Sun Franchise Program.

### Bangladeshi NGOs and Associations

Started in 1972, **BRAC** is the largest Bangladeshi NGO, with many development programs and activities in sectors including poverty alleviation, education and health. Within its health sector, BRAC has numerous programs to address maternal health. BRAC trains and supports a large cadre of community health volunteers and workers to work in communities to address basic health care needs. BRAC's first level of worker is Shasthya Shebika. These volunteers each cover 150 families and have basic health skills but very little formal training. Under BRAC's training system, Shasthya Shebikas also attend deliveries and provide drugs including misoprostol for PPH. Shasthya Kolmis are more educated and capable of handling higher level health concerns. Throughout the country, there are 85,000 Shasthya Shebikas and 8,000 Shasthya Kolmis working with BRAC.

BRAC partners with UNICEF on the MNCH Project in 10 districts, with BRAC's efforts focusing on demand generation and community outreach and UNICEF's focus on facilities. BRAC received the majority of the project's five years of funding. Shasthya Shebikas work in communities to distribute family planning and identify pregnant women, while Shasthya Kolmis provide antenatal care and work with women to prepare a birth plan, including arrangements for referral if needed. BRAC also trains its community-based skilled birth attendants to detect complications, distribute misoprostol and provide newborn and postnatal care. BRAC reports that in Nilphamari district in northern Bangladesh, where activities have been underway for four years, the maternal mortality ratio dropped to 162 in 2009.[85]

BRAC trains community-based health workers to distribute misoprostol and detect complications during delivery.

A national-level NGO, the **Bangladesh Women's Health Coalition** (BWHC) provides reproductive health services, including safe motherhood, MR, and HIV/AIDS prevention programs in eight centers throughout the country, primarily in rural and urban slums. BWHC does not offer delivery services, so the three medicines in this study are not offered or procured.

BWHC also conducts advocacy for MR in the country and has participated in several coalitions and collaborative bodies in Bangladesh to increase access and availability of MR. BWHC previously offered MR training for FWVs and other health care providers in government facilities. The BWHC manual on MR is used in training public sector providers.

Another large NGO network, **Gonoshasthya Kendra,** provides reproductive, maternal and child health care in 11 districts through community outreach and a range of facilities, including hospitals. With a focus on providing care to the poor, the network has brought the maternal mortality ratio down to 186 deaths per 100,000 live births in its coverage area, and has significantly reduced child mortality as well.[86]

The **Obstetrical and Gynaecological Society of Bangladesh** (OGSB) is the association for obstetricians and gynaecologists in Bangladesh. In addition to providing professional guidelines, training, and support to its members, OGSB is relied upon by MOHFW to provide policy planning guidance and technical support. In 2003, OGSB worked with WHO to develop a training curriculum for CSBAs and subsequently piloted a study to test the implementation of CSBAs in Bangladesh. OGSB also provides technical support to NGOs active in maternal health in Bangladesh and operates a private

hospital that offers comprehensive EmOC, newborn and child health, immunization, and other primary health care services.

**Shimantik** provides primary health care, including reproductive and maternal health, in two urban centers in Bangladesh. A participant in the Urban Primary Health Care Project (UPHCP) funded by Asian Development Bank, DFID, UNFPA, and the Swedish International Development Cooperation Agency (SIDA), Shimantik has 172 staff who offer reproductive health care, pregnancy and delivery services, EmOC, and other primary health care services. Shimantik is also an SSFP franchisee.

### International Member Associations and NGOs

**CARE** operates a Safe Motherhood Promotion Project (SMPP), funded by the Japan International Cooperation Agency (JICA) in one district in Bangladesh. The project is intended to address the underlying causes of maternal mortality by raising awareness and mobilizing communities to demand quality maternal health services. The project works with community figures to general local resources for complicated deliveries and to support access to maternal health care.

CARE is also involved in the UNICEF-supported MNH project, undertaking similar activities as in SMPP, but focused on facilities. In two districts, CARE works to build community groups that oversee government community clinics and hold providers and the government accountable.

**Chemonics** is the implementing agency for the USAID-supported Smiling Sun Franchise Program (2007-2011), which follows USAID's NGO Service Delivery Program. SSFP supports 28 NGO partners to operate 320 clinics in 61 districts in Bangladesh. Of these clinics, 34 provide EmOC, though SSFP hopes to increase the number of advanced clinics over the next year. In addition to delivery facilities, at least 65 clinics have some capacity to support home delivery.

> By negotiating prices and delivery schedules at the central level, SSFP has made procurement efficient and more affordable to franchisees.

SSFP works with two of the supplies included in this review, magnesium sulfate and oxytocin. Misoprostol may be implemented in the future, as government policy and protocol are formalized. Because SSFP is a USAID-funded program and therefore subject to legislative restrictions on funding for abortion, MR is not provided. As a franchise program, SSFP has been able to negotiate prices and terms with potential suppliers for all NGO partners. However, forecasting and procurement occur individually by each NGO.

Cost-recovery is a major objective for SSFP. By 2011, the final year of the program, service revenues should defray 70 percent of costs, with the remaining 30 percent provided to poor clients. To aid cost-recovery efforts, SSFP has partnered with GrameenPhone, a Bangladesh corporation, to cover at least 30 percent of total deliveries.

SSFP has worked to make the procurement process for franchisees more efficient and affordable. The central SSFP office negotiates prices, delivery schedules, and general quantities with select manufacturers, allowing franchise NGOs the opportunity to receive preferential prices from these listed suppliers. Each franchise orders supplies according to its own need, but as a member of SSFP, pays lower costs for supplies due to the large overall quantity ordered through the program.

## Pathfinder distributes safe delivery kits, including misoprostol, directly to pregnant women.

**EngenderHealth** works on both maternal mortality and maternal morbidity in Bangladesh. Its maternal mortality activities are focused on prevention of PPH. EngenderHealth works to train providers in AMTSL and as of early 2010 had reached half of the providers in the country. EngenderHealth is a respected advocate for reproductive and maternal health in Bangladesh and has successfully championed the use of misoprostol for PPH. Following a successful study that demonstrated that misoprostol can be used by community workers, EngenderHealth worked with the government to develop new guidelines for use of misoprostol by CSBAs. EngenderHealth also works extensively on prevention and treatment of obstetric fistula.

Established in 1953, the **Family Planning Association of Bangladesh** (FPAB) is the oldest family planning NGO in Bangladesh and is a member association of the International Planned Parenthood Federation. FPAB provides family planning and MR services in all of its clinics, numbering more than 40, in Bangladesh.

Recently, in cooperation with the European Commission, FPAB began a dedicated safe motherhood project, with six safe motherhood clinics in three rural and three urban upazilas. All six facilities are equipped to provide normal deliveries; three of the clinics are equipped to provide emergency obstetric care. In each upazila, FPAB works with union-level community development centers to provide ANC, promote institutional delivery, and refer complicated deliveries to safe motherhood and/or EmOC facilities.

Like many NGOs in Bangladesh, FPAB previously received MVAs from government supplies. Due to the government shortages, FPAB now procures MVAs from Interhealth and Devices, Ltd, the Bangladeshi distributor for Ipas. Each FPAB clinic procures the three remaining tracer supplies from local pharmacies.

**Marie Stopes Bangladesh** (MSB) is a large reproductive health service delivery organization. With 143 facilities in 62 out of 64 districts in Bangladesh, MSB has a wide reach in the country. Marie Stopes operates several clinic models that emphasize safe delivery services. The first, under the Urban Primary Health Clinic scheme, targets low-income women and families. These clinics offer affordable or free services to Bangladesh's urban poor. The second is a "Premium" clinic model. In these clinics, patients pay for services, but receive specialized attention. The goal is to help offset costs for poor women in other clinics by offering boutique delivery care at higher rates.

**Management Sciences for Health** (MSH) operates the USAID-funded Strengthening Pharmaceutical Systems (SPS) project in Bangladesh. Awarded in 2009, the project was getting underway at the start of 2010 and will run until June 2012. The SPS project is designed to provide technical assistance to MOHFW on logistics management, forecasting, and procurement. Though the project is building from the DELIVER project focused on contraceptive supplies that ended in 2010, SPS will assist DGFP and DGHS in management systems for all health supplies, including those for maternal health.

In Bangladesh, **Pathfinder International** is working with GrameenPhone on the largest corporate social responsibility initiative that links health and poverty. In a two-year project currently underway, Pathfinder works with SSFP providers to locate pregnant women and to support before and after delivery. Pathfinder has provided ambulances,


Marie Stopes Bangladesh offers higher-cost maternal and reproductive health services at its "Premium" clinics. (Elizabeth Leahy Madsen/PAI photo)

medicines, and staff dedicated to maternal health in order to treat the "poorest of the poor" in SSFP clinic areas.

Pathfinder is also working to distribute a safe delivery kit that includes misoprostol tablets and a blood mat to assess PPH, in addition to clean delivery supplies such as plastic sheeting, thread, and a razor. As one of the few kits that include provision of misoprostol directly to women, this initiative is a major step toward community-based distribution of maternal health supplies. Careful reviews and monitoring will be useful to demonstrate the impact and influence future policies, both in Bangladesh and elsewhere.

**Save the Children** is active in several areas of maternal, newborn and child health in Bangladesh. Recently, Save the Children began the MaMoni project, which is funded by USAID under the MCHIP project. The project runs from 2009 to 2013, and will be implemented in two districts in Bangladesh that have high neonatal and maternal mortality, low contraceptive prevalence and low ANC. In Sylhet district, Save the Children is partnering with other NGOs; in Hobiganj, Save the Children partners with the government. In each district, NGO volunteers go door to door to track pregnancies, provide at least two ANC visits, identify danger signs and to help prepare a birth plan. Volunteers also provide a clean delivery kit and provide two PNC visits. Family planning is built in, and volunteer workers are trained to conduct newborn assessments and refer to more specialized care. Currently, workers carry pills and condoms and will soon carry misoprostol to give to all women for home-based AMTSL. Through the community volunteers and existing clinics, MaMoni is working to mobilize communities to create demand for maternal and newborn health services, awareness of the need for greater services, and pool resources from community donation to pay for treatment of complications.

Save the Children also initiated the Saving Newborn Lives (SNL) program in Bangladesh in 2000, beginning with a demand creation project for newborn health services. In partnership with other NGOs, SNL works to address the problem of high neonatal mortality through six program areas: "community intervention, behavior change, essential newborn care training, monitoring and evaluation, advocacy and research."[87]

# 8 CONTINUUM OF CARE: FAMILY PLANNING, MATERNAL, NEWBORN AND CHILD HEALTH

The "continuum of care" approach to health services includes integrated maternal, newborn and child health care from the period before pregnancy through childhood.[88] There are two dimensions to the continuum of care: time and place. "Time" refers to pre-pregnancy, pregnancy, and care for babies from delivery through the early years of their childhood, while "place" refers to linking home-based and community care and health facilities.[89] Research has shown that this integrated approach has the potential to maximize efficiency and effectiveness of health service delivery and is more cost effective than vertical systems.

Health outcomes for women and their children are dependent and interrelated. When a mother dies in childbirth, her baby is also significantly more likely to die in infancy and early childhood.[90,91] If a mother has access to family planning to time her pregnancies, she is more likely to survive the birth of her children, who are also more likely to survive birth and thrive in childhood. If children in turn receive good health care, they may be more likely to repeat the cycle of good health as they reach their reproductive years. Throughout this circle of care, medicines and supplies are a common thread, essential at all levels. If supplies are missing in any one particular place when and where they are needed, the circle is of care is broken.

Health indicators across the continuum of care show that further progress is needed. In the area of child health, Bangladesh has achieved remarkable progress, with a 72 percent decline in child mortality in less than 15 years.[92] The government has identified the major contributing factors to improved child health as "immunization, vitamin A supplementation, oral [r]ehydration therapy, improved education (especially of mothers), as well as safe water provision."[93] If current trends continue, Bangladesh is likely to meet Millennium Development Goal 4 to reduce under-five mortality by two-thirds.

Supplies are a common thread, essential at all levels of the continuum of care.

However, child malnutrition is still a serious problem, neonatal mortality has declined slowly, and maternal mortality remains high, with achievement of Millennium Development Goal 5 unlikely given recent trends. Bangladesh's neonatal mortality rate is nearly four percent and accounts for more than half of all deaths among children under five.[94] Infections, asphyxia and low birth weight are the main direct causes of neonatal death.[95] Nearly 60 percent of children younger than age five are chronically or severely malnourished, as measured by their height for their age. Two-fifths of children are underweight, indicating short-term nutritional deficiencies.[96] Malnutrition patterns are often formed during pregnancy and the first months of a child's life, and are closely tied to maternal health.[97] Maternal malnutrition is described by stakeholders as a major problem in Bangladesh, hampered by frequent stockouts of iron and folate supplements.[98]

There is a strong correlation between the education level and income of women and positive outcomes along the continuum of care in Bangladesh. Women who have reached or completed secondary school and those in the highest wealth quintile are much more likely to deliver in a health facility.[99] In addition, women who have at least a secondary education are much more likely and able to seek and access necessary health services to ensure the survival of their children. Under-five mortality rates among women who complete a secondary education are less than half those of children born to women

with no education.[100] Social developments and health indicators along the continuum of care are closely related. If girls' education rates increase and fertility rates fall, the rate of malnutrition among Bangladeshi children could drop from 46 to 33 percent by 2015.[101]

### Policies and the Continuum of Care

Although there are many policies and programs that address its individual components, integration of the complete continuum of care is nascent in Bangladesh, with an emerging interest among advocates and some government officials. Recently, the government began to explore policies and strategies to implement the continuum of care approach, especially between maternal and newborn health, but also through immunization and maternal and childhood nutrition.[102] The new National Neonatal Health Strategy and Guidelines, approved by MOHFW in May 2009 and published in October 2009, incorporates many maternal health interventions and indicators and recognizes the need to train health workers in both maternal and neonatal health. Reportedly, the maternal health strategy currently under revision will be in line with the Neonatal Health Strategy in order to create a more comprehensive approach along the continuum of care.[103]

Key stakeholders endorsing the National Neonatal Health Strategy reiterated the importance of ensuring that neonatal care interventions are delivered within the continuum of care, and that maternal and neonatal health are linked. A State Minister within the MOHFW wrote that "Newborn health is inextricably linked to maternal health condition, thus any intervention for improving neonatal health should be designed along the continuum of care approach of addressing equally the healthcare & well being of pregnant women, mother, newborn and child."[104]

There has been strong integration within the child health sector for more than a decade, since the Integrated Management of Childhood Illness (IMCI) strategy was introduced by the government in 1998. The IMCI approach integrates efforts to prevent malnutrition together with common childhood illnesses, such as diarrhea, malaria and pneumonia. A randomized trial in the Matlab subdistrict found that while IMCI did not significantly affect mortality rates, the strategy improved child health outcomes by promoting healthier behaviors, such as exclusive breastfeeding, that resulted in rapid declines in malnutrition.[105] IMCI is reportedly being expanded to cover formerly separate programs, such as those addressing respiratory infections and diarrheal diseases, as well as the emerging newborn health program.[106] The relationship between maternal, newborn and child health is acknowledged in the National Plan of Action for Children published and approved by the Ministry of Women and Children Affairs (MWCA), which sets targets for increased rates of skilled attendance at birth, met need of EmOC, and coverage of antenatal and postnatal care.[107]

> Newborn health is closely tied to maternal health and wellbeing.

There are also various public–private sector committees to address health issues along the continuum of care, some that take an integrated approach (Task Force for MDGs 4 and 5) and others that focus on more vertical concerns (Working Team for IMCI and Newborn Health, Expanded Program of Immunization (EPI) National Steering Committee, and National Core Committee for Neonatal Health).[108] However, the structure of the MOHFW, with health functions split between DGHS and DGFP, creates difficulties for integrating maternal, newborn and child health programs in Bangladesh. Each DG is responsible for certain types of care, with some overlap.

## Interventions lose effectiveness as they are scaled up, causing slow improvement across the continuum.

DGFP takes primary responsibility for family planning services and supplies, the first stage in the continuum, and shares responsibility for maternity care and delivery services with DGHS. DGHS is the primary provider of higher-level services and child health, the later stages of the continuum of care, but does operate some programs to address family planning.

Other branches in the government of Bangladesh also have a role in health care. MWCA works to address maternal and child health, typically through poverty alleviation programs. For example, the MWCA implements the Maternity Allowance Scheme that provides a stipend to poor women during and after pregnancy. Without concerted efforts to collaborate and cooperate, the division in government creates barriers to implementing an integrated approach.

### Continuum of Care Services and Supplies in Bangladesh's Health System

Although most elements of the continuum of care may be available in public and private facilities, the vast majority of women in Bangladesh do not deliver their babies in facilities; for them, the continuum of care may be more piecemeal. A woman might access family planning from a community-based worker, be assisted at birth by an untrained traditional birth attendant, and have to walk to a health center when she or her child is sick.

Several integrated projects are underway, most of which strive to integrate newborn care into either maternal health or child health projects. Most projects focus on fitting together two or three components of the continuum of care; few programs take an explicit approach of integration across the continuum of care, from family planning through child health. One exception is the Urban Primary Health Care Project, which operates in selected city corporations and municipalities and is supported by the Asian Development Bank, DFID, ORBIS International, SIDA and UNFPA, together with the government. UPHCP offers integrated care along the continuum, from family planning services to delivery to child health care and immunization. The clinics are operated by NGOs such as Shimantik and Marie Stopes Bangladesh.[109]

Some stakeholders feel that the main challenge for implementing the continuum of care in Bangladesh is efficiency. In many cases, the quality and coverage of interventions across the continuum of care lose effectiveness as they are scaled up. This has contributed to slow declines in maternal and neonatal mortality rates, especially relative to child mortality. Many projects and programs driven by development partners and NGOs are effective complements to government services, but are implemented in small geographic regions and have little impact on health indicators for the nation as a whole.

Some components of a continuum of care approach to health services delivery in Bangladesh happen at the household and community levels. At the community level, ANC, safe delivery, PNC, newborn and breast feeding referral services, child health services, and nutrition promotion are provided by CSBAs, FWVs, FWAs, and Community Nutrition Promoters. Some of these services happen at home while others happen at satellite and community-based clinics.[110] Shortages of community-based workers limit the coverage and availability of these services.

Generally, as the level of care increases from the community level through the district level, so does the range of continuum of care services, although many facilities are unable to meet their

mandates for a variety of reasons. To ameliorate potential confusion among those seeking care, the HNPSP recommends displaying lists of available services at each service center to both hold staff accountable and to increase client awareness.[111] To address shortages and potential long distances between facilities, the HNPSP recommends upgrading Union Health and Family Welfare Centers (UHFWCs), UHCs, District Hospitals, Paramedic Institutes and Medical Colleges, all district MCWCs, and in some cases constructing new facilities.[112]

Union level health facilities provide basic services, including family planning, normal delivery and basic primary care. However, UHFWCs frequently lack the supplies necessary to provide higher level services, including basic emergency obstetric care. According to a survey on the availability of 29 essential drugs in various facilities in Bangladesh, no facilities at the union level had more than 75 percent of the drugs available. The union level facilities were more likely to have in stock an abbreviated package of ten available essential drugs. The survey found that "the drugs that are available in more than 70 percent of UHFWCs were: antacid tablets, paracetamol tablets, paracetamol syrup, amoxicillin, iron tablet, albendazole and cotrimoxazole tablets." This list excludes many medicines that are necessary to provide a continuum of care, from oral rehydration salts to iron tablets.[113]

At the upazila level, Maternal and Child Welfare Centers under DGFP specialize in reproductive health care, including emergency obstetric care services, antenatal care, safe delivery, postnatal care and other related services, family planning services, and syndromic management and counseling of sexually transmitted infections, in addition to newborn and child health services.[114] The HNPSP outlines plans to further improve the quantity and quality of services in MCWCs throughout the country by expanding their bed capacity, making services more "friendly" to men, women, adolescents and babies, providing safe drinking water in the facilities, and other efforts.[115]

Upazila Health Complexes, administered by DGHS, are the first level referral centers in Bangladesh and provide a range of services in the continuum of care, including family planning, normal delivery and minor complications, ANC and PNC, basic infant and child care, and immunization. The government has committed to substantially improving the quality and number of services provided in UHCs and Family Welfare Centers and is currently in the process of upgrading over 3,000 facilities.[116] The HNPSP articulates the need and commitment for these facilities to be upgraded, furnished and equipped to provide woman, children and adolescent friendly safe delivery services, to provide obstetric first aid where possible, and to provide essential newborn and adolescent health care services.[117] In the 2009 Bangladesh Health Facility Survey, only ten percent of district hospitals had 75 percent or greater of essential drugs available. However, 81 percent had the ten basic medicines included in the union-level drug kit. Most district level hospitals offer comprehensive emergency obstetric services.[118] However, despite the capacity to provide such services, high occupancy at District Hospitals makes it challenging to respond to need.[119] One area along the continuum in which the district hospitals need strengthening is neonatal care. Bangladesh's Neonatal Strategy recommends instituting "special neonatal care units at district hospitals; with an adequate backup support through neonatal and maternal intensive care units."[120]
Despite many impressive accomplishments related to community-based distribution and increased local manufacturing of medicines, the logistical and technical challenges to procurement and distribution of supplies within the continuum of care are multilayered. In general,

public health facilities in Bangladesh have been found to lack essential medicines, supplies and instruments.[121] The 2009 health systems survey found that lack of readiness to provide basic health services in public health facilities is "mainly due to lack of instruments, equipment and supplies."[122]

Only five percent of drugs across the health sector are imported, and Bangladesh has also become a drug-exporting country. Bangladesh's National Drug Policy claims that local production of essential drugs has increased the affordability and accessibility of supplies for the people of Bangladesh, improved the quality of drugs, and saved the government $600 million every year by reducing dependency on imports and prioritization of drugs.[123] However, because the domestic pharmaceutical industry faces little competition and is poorly regulated, "the quality of pharmaceuticals on the local market is highly variable."[124] This can affect supplies for the continuum of care: UNICEF found two of eleven locally-manufactured drugs to fall short of quality standards, and despite two rounds of international testing, the manufacturer of one of those drugs refused to address the problem.[125]

Supplies that do reach their destination are not always used effectively. In 2007, a survey was conducted of medical equipment procured by MOHFW, including numerous supplies for maternal health: scales, delivery tables, incubators, and resuscitation kits, among others. In visits to 50 sites in three regions, half of existing medical equipment was not effectively used: 17 percent were not regularly used, 16 percent remained uninstalled and 17 percent were in disrepair.[126]

The HNPSP reflects a commitment to increasing access to supplies throughout the continuum of care by increasing the efficiency of logistical systems, minimizing distribution times and system losses, "establishing management control and greater accountability," and "generating regular and reliable inventory transaction data."[127] The outcomes of these and other efforts are intended to lead to a more coordinated procurement system, distribution systems that "improve service quality, minimize stock outs, motivate employees and improve client confidence in facility care" in addition to generating better data.[128] In addition, according to the Neonatal Health Strategy, "maternal and neonatal supplies will be integrated into this improved logistics supply system, which will also have a focus to increase availability at the community level."[129]

Donors play a key role in securing supplies for the continuum of care outside of the HNPSP. UNICEF provides supplies to the government and directly to NGOs using its own resources and a basic health commodity project fund established by CIDA, which has only $1 million of $16 million remaining and is expected to be diminished within 2010. UNICEF also provides all essential drugs for children under five in Bangladesh through the CIDA fund. Following a request from DGHS, UNICEF now supplies directly to district stores. Currently, the government does not fund any essential medicines for young children, but will be required to do so soon, as the CIDA fund is nearly exhausted. The government procures its own supplies for EPI, a program widely acknowledged as very successful.

Bangladesh's Neonatal Health Strategy notes that services for neonates cannot be improved without increasing access to supplies and medicines. There is a need for "detailed procurement lists" and equipment, assessing resource needs, improving coordination within the public and non-public sectors, and "strengthening overall logistics supply systems for community and facility service delivery to ensure continuous availability of critical supplies."[130] Human resources are also recognized as a barrier for


Used supplies are stored at a private hospital. (Elizabeth Leahy Madsen/PAI photo)

improved newborn health. "Lack of trained staff and support facilities" is cited as the main reason that many district hospitals do not provide 24-hour emergency obstetric services, including newborn care. A 2003 evaluation by MOHFW and UNFPA found that in facilities that did have incubators and neonatal resuscitators, knowledge of use among providers was low.[131]

The most recent Demographic and Health Survey reports that 76 percent of children in Bangladesh had received the complete regimen of vaccines recommended by the World Health Organization by the age of 12 months. The share of young children who receive no vaccines has declined to two percent.[132] Vaccine programming tends to be more vertical; like family planning, vaccine programs are heavily based on commodities that can be administered even in failing health systems with well-orchestrated campaigns.

One successful component within the continuum of care in Bangladesh is the government's long-standing commitment to provide family planning services and commodities at the community level. The government has trained and mobilized thousands of full-time Family Welfare Assistants and Family Welfare Visitors to promote family planning and distribute supplies throughout the country since the 1970s, and these community workers now supply 20 percent of all modern contraceptive methods in the country.[133] The institutionalization of family planning and subsequent distribution of supplies at the community level has undoubtedly improved health outcomes for mothers, newborns and children throughout Bangladesh. Nearly half of married women used a modern method of family planning in 2007, compared to five percent in 1975.[134]

The strength of Bangladesh's community-based health care programs has made family planning supplies widely available at the community level. Despite this, there remain frequent stockouts in facilities and supplies are often unavailable, in part due to long-term planning and procurement delays at the central level. For example, the 2007 Demographic and Health Survey noted a decline in the use of injectable contraceptives, "possibly reflecting recent problems in procurement of injectables that resulted in stock outs."[135] A recent study of contraceptives revealed that, among other challenges, lack of technical capacity, staff turnover, long review processes, and bureaucratic delays all contribute to procurement problems.[136]

# 9 ADVOCACY ENTRY POINTS

Improvement on key maternal health indicators in Bangladesh has been slow. The rates of facility delivery and skilled attendance at birth have shown little progress over the past two decades. Improvement on key factors that prevent maternal mortality and morbidity, namely contraceptive prevalence, unmet need for contraception, and total fertility rate, has also stalled or even worsened in recent years. Given these challenges, actions by advocates, development partners, and the government of Bangladesh can have a substantial impact on maternal health.

Like family planning, maternal health programs face challenges related to gender inequities and cultural context, compounded by failures in the supply chain, limited human resources, and weak infrastructure that inhibit access to services and positive maternal health outcomes. Expanding access to supplies is a critical entry point for improvements in the overall health system.

The following recommendations were identified by stakeholders in Bangladesh and elsewhere as priority areas and entry points for advocacy on maternal health supplies. These recommendations apply most directly to in-country advocates, but could be applicable to advocates in other countries as well.

**Monitor the national budget for maternal health and ensure funding for public sector facilities.** The government of Bangladesh is slow to spend allocated budgets, often underspending the budget line for reproductive, maternal, and child health supplies. The government should be encouraged to fully spend and increase specific budget lines for maternal health supplies. Health sector spending specifically on maternal and reproductive health is not currently reported. Detailed reporting on HNPSP spending on maternal and reproductive health would be helpful to advocates to hold the government accountable to spend allocated funds. Development partners can encourage the government to ensure internally generated funds are spent as intended.

**Implement and fund policies already in place.** Bangladesh has enacted several strong policies around maternal health, with seemingly little change in implementation or funding. One stakeholder suggests that advocates need to "translate policies into action" on the ground.[137] Changes and improvements from enacted policies are slow to trickle down to implementation or improved service delivery. Advocates may be able to use strong policies to call attention to shortcomings on the ground and hold government accountable for implementation.

**Monitor and enforce regulations calling for free health care in public sector facilities, ensuring the necessary supplies and equipment are available.** User fees and associated costs are a main driver of the low facility delivery rate in Bangladesh. According to providers, the lack of supplies and the low compensation for providers and staff are the primary causes of unofficial user fees and the need to purchase supplies and medicines in the private sector. By increasing the capacity of government to enforce regulations and improving the quality of care and availability of supplies at public sector facilities, women and their families may be more likely to seek treatment and delivery services.

**Support and encourage policymakers and potential champions.** The potential and actual champions of maternal health supplies are numerous. From national and international NGOs, professional associations, and provider networks, these well-respected voices can be powerful advocates for maternal health. Those

## Advocates can work with policymakers to translate commitment into increased funding.

with influence in communities, such as religious leaders, can encourage women to deliver at health facilities or to ensure the presence of an SBA.

Policymakers and government officials also have potential to be champions for maternal health. By connecting senior officials in Bangladesh with international experts, policymakers, and through exchange at high-level meetings, advocates can build knowledge, awareness and accountability and help translate statements of commitment to maternal health into actual increased funding and program success. One official encouraged advocates, policymakers, and others to reach out and learn from successes and challenges in other countries.[138] Working with parliamentarians is an effective strategy to ensure that laws and policies supportive of maternal health are implemented and funded.

**Continue to support and expand family planning.** Though family planning has historically been a priority for Bangladesh, contributing to significant improvements in maternal health and general wellbeing, contraceptive use rates have stagnated and unmet need for family planning has increased. This is a reminder that family planning programs still require attention, support, and funding. Strengthening access to the full range of contraceptive methods is key to increasing prevalence and reducing death and injury from pregnancy-related causes. Family planning should re-emerge as a national priority and be integrated with other health programs, including maternal and child health.

**Scale up community-based health care and supply distribution.** Stakeholders report that simple evidence-based interventions at the community level, including household-level distribution of supplies and training of community health workers have had an immense impact on improving maternal health. Where possible, efforts should be made to expand and scale up these programs, especially into new geographic areas that are not otherwise well-served, and attend to supply chain issues to ensure community health workers have continuous access to needed supplies.

For example, distribution of misoprostol for PPH by community health workers has been piloted in Bangladesh, as a way to reach women who are unlikely to receive skilled care at birth. Initial results from the USAID Prevention of Postpartum Hemorrhage Initiative demonstrated correct use, with no severe side effects. This successful program should be expanded, and stakeholders should consider other interventions that could be managed and documented by community-level workers.

**Ensure advocates and civil society are included in policy development.** Civil society in Bangladesh is well-developed and an active participant with the government on health planning and service delivery. The government and development partners should ensure that civil society is included and given a strong voice in all plans and policy development in the country. As the next health sector SWAp is developed and a new maternal


A sign at a hospital in Moulvibazar highlights the importance of maternal and newborn health. (Jennifer Bergeson-Lockwood/PAI photo)

health strategy is adopted, civil society should be involved and given the opportunity to influence plans.

**Strengthen logistics management for maternal health supplies and enhance the supply chain.** Though donor support for health seems consistent, stakeholders emphasize that the government needs to be more proactive to ensure that development projects, including those focused on logistics management, have a systems strengthening component. By ensuring that public sector systems benefit from development assistance, donors can foster long term sustainability. One stakeholder suggests that donors should incorporate phase out plans that detail and itemize transition to public sector systems into the design phase of health system projects so that the government of Bangladesh will develop greater capacity for forecasting, procurement and distribution.

Bangladesh could improve the public sector supply chain for maternal health supplies by applying lessons learned and adopting best practices learned from the long term investments made in the contraceptive supply chain. Maternal health supplies suffer similar challenges such as proper forecasting, timely procuring, and efficient distribution throughout the country. Though contraceptive shortages and stockouts are still a concern, Bangladesh has greatly improved contraceptive forecasting, procurement and logistics. Long-term forecasting of need for maternal health supplies, as has been conducted for family planning commodities, could improve the planning process, especially if such data supported a more timely provision of funds to the MOHFW.

The quality of the many domestically supplied products has been a concern. A World Bank pharmaceutical study recommends improving the quality of locally-manufactured drugs that remain on the domestic market, improving regulations and monitoring their enforcement, and strengthening the role of the private sector in production.[139]

**Effectively use donor resources.** As the number of development partners contributing to Bangladesh's health sector shrinks, donors must work with the government to ensure that the full range of services and supplies are supported through their joint investments. Supplies should be a focus of the health sector donor consortium, and should be specifically addressed in the next health sector plan.

Additionally, donors must ensure that vertical programs in health reinforce each other and do not overtax overburdened health systems or emphasize competing objectives. For example, indicators and priorities required by donors for family planning, maternal health, and newborn health projects can be streamlined or better coordinated so that programs have shared goals.

**Strengthen the continuum of care.** Ensuring access to a variety of affordable, quality, basic life-saving supplies and medicines within the continuum of care is essential, whether a woman is seeking contraception to time and space her pregnancies, an antibiotic to stem an infection in her infant, or oral rehydration salts to save the life of her young child. Despite the need for these medicines, they are frequently unavailable to those who need them most. The following entry points could strengthen the continuum of care model for family planning, maternal, newborn and child health supplies in Bangladesh:

**Integrate programming and streamline services.** Integrated programming can save resources by allowing for greater efficiency in training, monitoring and supervision and also increase access to the services at the same time.[140] With limited resources available to address the myriad significant challenges faced by health systems in Bangladesh, conservation of resources and cost efficiency is a must. The total cost for medicines and supplies across the continuum is unknown and will require a significant investment. The continuum of care approach has the ability to streamline services and logistics when it is efficient to do so.

Availability of supplies can be used as an indicator to monitor successful implementation of programs across the continuum of care.

**Continue to build support and advocate for the continuum of care in programming at high levels of government.** The DGFP and the DGHS each hold critical components of the continuum of care within their mandates, and coordination at high levels of government is necessary to ensure that all essential medicines and supplies are available.

**Use supplies as an indicator to monitor implementation of successful continuum of care policies.** Bangladesh is developing positive policies, such as the Neonatal Health Strategy, that strive to implement the continuum of care. The availability of supplies and essential medicines throughout the continuum can be used as an indicator to monitor and evaluate successful implementation. In addition, the availability of maternal, newborn and child health supplies can used to monitor progress towards achieving MDGs 4 and 5.

# APPENDIX 1
# POLICIES RELATED TO MATERNAL HEALTH SUPPLIES

The following policies are among those that most directly address and inform maternal health programs in Bangladesh and should ostensibly include references to maternal health supplies. Several of the policies outlined do mention supplies, yet the majority of the policies do not explicitly address commodity issues. Even when supply challenges are recognized, few quantified targets or strategies to address shortages and stockouts exist in the policies. This review does not include the policies of global partnerships or development partners, which can also affect the environment for maternal health supplies in Bangladesh and other countries.

### National Strategy for Maternal Health (2001)

In recognition that "maternal mortality [is] an indicator of the overall situation of women in a nation," the government of Bangladesh developed the Bangladesh National Strategy for Maternal Health with relevant stakeholders to be in line with the first health sector plan, the Health and Population Sector Program. The document establishes a comprehensive, ten-year approach that incorporates all sectors of social development. The strategy outlines the needs for a maternal health strategy, the guidelines for quality of care, and the financial costs to achieve the strategy. The strategy is intended to serve as a basis for program development and annual operating plans. The policy notes the effect of maternal mortality in Bangladesh:

> *The same women who contribute to 42 percent of the labor force of the country face death and disability in the very process that brings forth life.*[141]

The strategy focuses heavily on increasing access to emergency obstetric care through community mobilization, expanding EmOC to the community level, and strengthening human resources, supply chains, and infrastructure at facilities.

A series of objectives with a 2010 target were set, including increasing met need of EmOC to 70 percent and increasing skilled attendance at birth to 50 percent. The strategy acknowledges that "a lack of synchrony between placement of skilled service providers and the supply of critical drugs and equipment has resulted in absence of critical live saving services," and estimates that over ten years, the total cost of equipment and drugs for maternal health at district hospitals, MCWCs, and Upazila Health Complexes will be 36,000,000 taka ($510,000). It is unclear, however, if the cost of supplies for community skilled birth attendants is included. Though understood to be a factor that reduces availability of life saving services, increasing funding and strengthening supply and distribution is not a priority action in the maternal health strategy.

Discussions are underway to develop a new national maternal health policy, with UNICEF serving as a lead partner with DGHS. In an attempt to secure wide buy-in, the government is involving NGOs and other experts in subgroups on technical issues. Though the process was still in a very early stage as of early 2010, some stakeholders felt that a new maternal health policy would include a greater emphasis on the continuum of care, including ensuring safe delivery at lower levels in the health system. Many stakeholders feel strongly that the next strategy must expand and give greater priority to community-based programs. Several people involved in the development of a new strategy mentioned that the Lancet maternal survival series will serve as guidance.[142]

### Health Nutrition and Population Sector Programme (HNPSP), 2003-2011

The HNPSP is the current health Sector-Wide Approach (SWAp) in Bangladesh. Originally set from 2003 to 2006, the program has been extended twice and has a current completion date of June 2011. "The goal of the Health, Nutrition

and Population Sector Programme is to achieve sustainable improvement in health, nutrition and reproductive health, including family planning, status of the people, particularly of vulnerable groups, including women, children, the elderly, and the poor."[143] It is designed to contribute to completion of the health-related MDGs: Priority objectives, by which success will be measured in mid-2011, include reducing the MMR (to 240 per 100,000 live births) and increasing skilled attendance at birth (to 43 percent), reducing the total fertility rate (to 2.2 children per woman), and reducing infant (to 37 deaths per 1,000 live births) and under-five mortality (to 52 deaths per 1,000 live births). If achieved, these targets are in line with the pace of progress required to meet the MDGs.

Two thirds of the HNPSP funding is provided through internally-generated funds by the government of Bangladesh, with the rest contributed by multilateral donors (The World Bank and UNFPA) and bilateral donors (CIDA, DFID, the European Union, the German Development Bank (KfW), the Netherlands, and SIDA). The priorities for the HNPSP are determined in consultation with development partners, including the contributors to the pooled fund listed above, as well as other multi- and bilateral donors who operate in the health sector, NGO stakeholders, and the government.

Supplies and commodities for maternal health are not broken out into a separate budget line, making it difficult to track expenditures. Instead, there is one line for all reproductive, maternal, and child health supplies. However, one government official stated that the line item is not enough to cover all supplies for 100 percent of need.[144]

Some stakeholders suggest that the extension of the HNPSP to 2011 is due to government failure to spend funds in the current plan at an acceptable rate; however, key officials report that funding is not enough to cover the entire extension period at full program spending. The government and development partners are reportedly working to curtail health spending in non-essential areas to ensure funds continue for essential health expenses.[145] It seems, rather, that the current extension was implemented to ensure that a new sector plan could be completed before the current HNPSP ends, allowing for continuity of funds. This is based on recent experience, as there was a lengthy and disruptive gap in funding during the transition between the first health SWAp, the Health and Population Sector Program (HPSP), and HNPSP in 2003.

The process of developing a new health sector strategy is already underway and will be led, as previous versions have been, by the World Bank with extensive input and involvement from government and development partners. After a consultation between development partners and the government about future priorities for the health sector, KfW is charged with drafting an initial concept note that will provide the basis for discussions between relevant stakeholders. Stakeholders are optimistic that the process for developing the next health sector strategy will be smooth because partners have a clear understanding and agreement of the issues that need to be addressed, including maternal health, primary health, urban health, and nutrition.[146]

### Bangladesh Population Policy (2004)

The Population Policy was created and implemented in order to address the growing population of Bangladesh and to speed attainment of population stabilization. The policy recognizes both the difficulties created by the leveling off of fertility rates after decades of decline, as well as the pressure that an increasing population places on "basic needs including food, cloth, education, shelter, health and communication." The Population Policy is intended to provide a

cross-cutting and multi-sectoral guide, as well as build consensus among the public sector, private sector and NGOs, and civil society.[147]

One major objective of the Bangladesh Population Policy is to "improve the status of family planning, maternal and child health including reproductive health services." Among the strategies to achieve this objective, the Population Policy seeks "improved quality of care and increased utilization of services will be needed for reducing fertility, maternal mortality and morbidity, infant and child mortality." The policy emphasizes the importance of "a comprehensive, client centered approach…provided along with health services at Upazila and Union levels, through a one-stop service and home delivery system."[148] However, supply needs to ensure the improved quality of care are not recognized or addressed in this policy.

### National Drug Policy (2005)

The National Drug Policy was developed over the course of several years and is designed to update the Drug Policy and Drug Ordinance of 1982. The policy is intended to support technological advancements in pharmaceuticals and to encourage and assist the Bangladeshi pharmaceutical sector to produce and export drugs for the world market. To accomplish these goals, the Drug Policy strives "to ensure that the common people have easy access to … essential and other drugs at affordable prices."

The Drug Policy establishes the Directorate of Drug Administration (DDA) as the licensing and regulatory body of drugs and drug manufacturers in Bangladesh. The Drug Policy also sets policy on drug purchase and import by the government, requiring an open tender for all public sector procurement. The DDA is also permitted and expected to periodically update the Bangladesh Essential Drug List, "in line with the current list of Essential Drugs of the World Health Organization."[149]

### National Plan of Action for Children, 2005 – 2010

Devised by the Ministry of Women and Children Affairs with support from UNICEF and civil society, the National Plan of Action for Children addresses significant areas of concern for children in Bangladesh: "food and nutrition, health, education and empowerment of the girl child, protection from abuse, exploitation and violence, and physical environment."[150]

Related to health, the action plan recognizes and emphasizes the utmost importance of maternal health to infant and child health and wellbeing. It builds from other policy documents, including HNPSP and the National Maternal Health Strategy. Included in the plan are objectives to increase met need of emergency obstetric care and skilled attendance at birth, to increase ANC visits, and to increase postnatal care visits. To achieve this objective, the plan seeks to make all "district hospitals and Maternal and Child Welfare Centers women, baby, and adolescent friendly facilities" (emphasis original).[151] Supplies are not specifically referenced in this policy.

Bangladesh Essential Drug List (2008)
Magnesium sulfate, misoprostol (added in 2008), and oxytocin are on the Bangladesh Essential Drug List (EDL). The Directorate of Drug Administration is responsible, with other MOHFW officials, for updating the EDL as WHO Model Lists of Essential Medicines are released. As equipment, MVAs are not listed on the EDL. In addition to the EDL, which determines which drugs can be legally procured in the country, the two directorates within the MOHFW each have a separate procurement list.

### National Neonatal Health Strategy and Guidelines for Bangladesh (2009)

The National Neonatal Health Strategy was created by Saving Newborn Lives, Save the Children and other key stakeholders in close partnership with the government as a response to assessments that revealed increased emphasis needed to be placed on maternal and neonatal health in Bangladesh to improve health outcomes and meet the MDGs. The strategy recommends that "special attention be given to informing mothers and ensuring availability of skilled workers during pregnancy, childbirth and postnatal period, with special emphasis on neonatal outcomes."[152] It contains both strategy and guidelines, describing specific interventions and recommendations to address these issues.

The strategy clearly articulates that services for neonates cannot be improved without increasing access to supplies and medicines. There is a need for "detailed procurement lists" and equipment, assessing resource needs, improving coordination within the public and private sectors, and "strengthening overall logistics supply systems for community and facility service delivery to ensure continuous availability of critical supplies."[153] Key stakeholders endorsing the report expressed the importance of ensuring that neonatal care interventions are delivered within the continuum of care, and that maternal and neonatal health are linked.

Poverty Reduction Strategy Paper 2009-2011

Bangladesh's second Poverty Reduction Strategy Paper (PRSP), "Steps Towards Change: National Strategy for Accelerated Poverty Reduction Strategy II (Revised) FY2009-2011," was released in revised form in 2009 after a new political party came to power. The PRSP is coordinated and devised by the General Economics Division at the Planning Commission of Bangladesh, and was approved by Prime Minister Sheikh Hasina.

The PRSP II is a medium to long-term plan to advance the economic status of Bangladesh, to reduce poverty, especially among marginalized groups, and to promote the MDGs. Unlike the previous PRSP, this strategy does not specifically identify maternal health as a key strategy. However, the general goal of improving the health and nutrition status of the people of Bangladesh does include an acknowledgment of maternal and reproductive health by expanding comprehensive EmOC, training CSBAs, and creating demand for ANC and PNC services. The strategy also asserts that "Ongoing demand side financing through providing maternity health vouchers will be expanded based on lessons learnt." Availability of supplies is implicit in comprehensive EmOC, but there is no explicit strategy to ensure that essential maternal health supplies are available as needed.

### National Health Policy (2009 draft)

A draft National Health Policy was circulated for comment in 2009, but has not been passed. The main goal of the National Health Policy is to improve the "health, nutrition, and family welfare status of the people, particularly of the poor and vulnerable groups, including women, children, and elderly people."[154] Among other health goals, the policy seeks to increase primary health care at the community level, reduce child and maternal mortality, improve delivery services "in every village," and ensure "the supply… of all required equipment and medicine in every Upazila Health Complex and Union Health and Family Welfare Centre." As a strategy, the National Health Policy seeks to increase the supply of emergency medicines at affordable prices, as well as improve capacity of Central Medical Stores Depot to "achieve greater timeliness in procurement of supplies."[155]

A new National Health Policy draft was being circulated for comment in early 2010, but was not available in English.

# APPENDIX 2
## CASE STUDY INTERVIEW SUBJECTS

**Positions listed are those held at the time of interview.**

**Md. Abdullah,**
*SPA-Logistician, SPS Project,*
Management Sciences for Health

**Dr. Deel Afroze**
*Director RSH-Clinical Services*
Bangladesh Women's Health Coalition

**Dr. Kaosar Afsana**
*Associate Director Health Program*
BRAC

**Dr. Lubana Ahmed**
*Health Specialist (Maternal Health/HIV)*
UNICEF Bangladesh

**Karar Zunaid Ahsan**
*Research Analyst, South Asia Human Development Sector*
World Bank

**Dr. Sayeba Akhter**
*President*
OGSB

**Dr. Md. Khairul Alam**
*Technical Coordinator, Joint GoB-UN MNH Initiative*
CARE Bangladesh

**Dr. Farzana Amin**
*Manager Services*
Marie Stopes Bangladesh

**Dr. Shamraj Arefin**
*Project Coordinator, Joint GoB-UN MNH Initiative*
CARE Bangladesh

**Dr. Sk. Asirudden**
*Program Manager, Saving Newborn Lives*
Save the Children

**Dr. Magfera Begum**
*Director and Focal Point*
Family Planning Association of Bangladesh

**Chinmoy K. Das**
*Assistant Coordinator, Training & Research*
Maternal and Child Health Technical Institute

**Jawher Lal Das**
*Supply & Procurement Officer*
UNFPA Bangladesh

**Dr. Abu Jamil Faisel**
*Project Director Mayer Hashi & Country Representative*
EngenderHealth Bangladesh

**Dr. Abu Taher M. Faruq**
*Project Manager, Global Comprehensive Abortion Care Project*
Family Planning Association of Bangladesh

**Oliver Francis**
*Director Program Operations*
Pathfinder International

**Dr. Jafar Ahmad Hakim,**
*Director (MCH-Services) & Line Director (MCRH), Directorate General of Family Planning*
Government of Bangladesh

**Md. Masudul Haque**
*Director, Community Based Programme*
Bangladesh Women's Health Coalition

**Md. Moazzem Hossain**
*Focal Point (Adolescent)*
Family Planning Association of Bangladesh

**Zubayer Hussain**
*Country Director, SPS Project*
Management Sciences for Health

**Dr. Shirajul Islam**
*Superintendent*
Maternal and Child Health Training Institute

**Dr. Rokshana Ivy**
*Senior Consultant &*
Head of Dept. of Ob-Gyn
Maternal and Child Health Training Institute

**Md. Osman Kabir**
*Program Officer (Youth)*
Family Planning Association of Bangladesh

**Dr. Dilder Ahmed Khan**
*Secretary General, Bangladesh Neonatal Forum*
Maternal and Child Health Training Institute

**Mahmuda Rahman Khan**
*Senior Program Development Specialist – Gender & Donor Coordination Program Office*
USAID

**Dr. Mahfuza Khotu**
*Junior Consultant, Department of Ob-Gyn*
Maternal and Child Health Training Institute

**Dr. Atef Hussein El Maghraby**
*MNH Programme Coordinator*
UNFPA Bangladesh

**Dr. Siddfarwar Magumdar**
*Civil Surgeon*
Manikgonj

**Dr. Ishtiaq Mannan**
*Chief of Party (MCHIP), MaMoni—Integrated Safe Motherhood, Newborn Care, Family Planning Project*
Save the Children

**Dr. Md. Ziaul Matin**
*Health Officer (Neonatal Health)*
UNICEF Bangladesh

**Juan Carlos Negrette**
*Chief of Party*
Smiling Sun Franchise Program

**Dr. Shamima Parveen**
*Program Officer*
EngenderHealth Bangladesh

**Dr. Dulal Chandra Podder**
*Director*
Kumudini Hospital

**Bazlur Rahim**
*Managing Director*
Interhealth & Devices Ltd.

**Dr. Md. Mizanur Rahman**
*Project Manager, UPHCP-II*
Shimantik

**Dr. Setara Rahman**
*Health Specialist*
Smiling Sun Franchise Program

**Dr. Pradip Kumar Roy**
Kumudini Hospital

**Dr. Nur-E-Akther Thamina Quader**
*Medical Officer (Clinic)*
MCWC, Manikgonj

**Dr. Sukumar Sarker**
*Senior Clinical Officer, Population, Health, and Nutrition Team*
USAID

**Midori Sato**
*Health Manager (Child Survival)*
UNICEF Bangladesh

**Dr. Shabnam Shahnaz**
*Country Representative*
Pathfinder International

**Beatrice Bina Shaw**
*Principal, Nursing College*
Kumudini Hospital

**Anil Tambay**
*Country Management Consultant*
Marie Stopes Bangladesh

**Md. Gias Uddin**
*Unit Head, Project Resource Mobilization Awareness*
Family Planning Association of Bangladesh

# APPENDIX 3
# REFERENCES


Afsana, K. 2004. "The Tremendous Cost of Seeking Hospital Obstetric Care in Bangladesh." *Reproductive Health Matters.* 12(24).

Ahmed, K U and H Moller. 2009. "UNFPA-WHO Collaborative Initiative to Review the Current Status of Access to a Core Set of Critical, Life-Saving Maternal/Reproductive Health Medicines in Selected Countries." Presented at International Conference on Family Planning: Research and Best Practices, Kampala, 18 November.

Arifeen, S E, D M Hoque, T Akter, M Rahman, M E Hoque, K Begum, E K Chowdhury, R Khan, L S Blum, S Ahmed, M A Hossain, A Siddik, N Begum, Q Sadeq-ur Rahman, T M Haque, S M Billah, M Islam, R A Rumi, E Law, Z A Al-Helal, A H Baqui, J Schellenberg, T Adam, L H Moulton, J P Habicht, R W Scherpbier, C G Victoria, J Bryce and R E Black. 2009. "Effect of the Integrated Management of Childhood Illness Strategy on Childhood Mortality and Nutrition in a Rural Area in Bangladesh: A Cluster Randomised Trial." *The Lancet.* 374(9867): 393-403.

Bangladesh Bureau of Statistics (BBS). 2008. *Report on Sample Vital Registration System 2007*. Dhaka: BBS.

Chowdhury, S N M, and D Moni. 2004. "A Situation Analysis of the Menstrual Regulation Programme in Bangladesh." *Reproductive Health Matters*. 12(24 Supplement):95–104.

DELIVER. 2007. *Bangladesh: Final Country Report.* Arlington, VA.: DELIVER, for USAID.

Department for International Development (DFID). 2004. *Reducing Maternal Deaths: Evidence and Action. A Strategy for DFID.* London: DFID.

Dickens, T. 2008. *Bangladesh: Government of Bangladesh Contraceptive Procurement Bottleneck Study.* Arlington, VA: USAID | DELIVER Project.

General Economics Division Planning Commission. 2009. *Steps Towards the Future: National Strategy for Accelerated Poverty Reduction II (Revised) FY2009-11.* Dhaka: Government of Bangladesh.

General Economics Division Planning Commission. 2008. *Millennium Development Goals: Bangladesh Progress Report 2008.* Dhaka: Government of Bangladesh.

General Economics Division, Planning Commission and United Nations Development Programme Bangladesh. ND. *A Situation Analysis Report on Health (MDG 4, 5, and 6) Bangladesh.*

Gill, Z and J U Ahmed. 2004. "Experience from Bangladesh: Implementing Emergency Obstetric Care as Part of the Reproductive Health Agenda." *International Journal of Obstetrics and Gynecology*. 85:213–220.

Government of People's Republic of Bangladesh. 2008. *Health, Nutrition, and Population Sector Program: Program Implementation Plan (2nd Revised: 2003 -2011).*

Hogan, M C, K J Foreman, M Naghavi, S Y Ahn, M Wang, S M Makela, A D Lopez, R Lozano and C J L Murray. 2010. "Maternal Mortality for 181 Countries, 1980-2008: A Systematic Analysis of Progress Towards Millennium Development Goal 5." *The Lancet*.

Horton, R. 2010. "Maternal Mortality: Surprise, Hope and Urgent Action." *The Lancet*.

Katz, J, K P West Jr, S K Khatry, P Christian, S C LeClerq, E Kimbrough Pradhan and S Ram

Shrestha. 2003. "Risk Factors for Early Infant Mortality in Sarlahi District, Nepal." *Bulletin of the World Health Organization.* 81:717-725.

Khan, M. 2009. *Bangladesh Health Facility Survey.* Dhaka: The World Bank.

Koblinsky, M, I Anwar, M K Mridha, M E Chowdhury, and R Botlero. 2008. "Reducing Maternal Mortality and Improving Maternal Health: Bangladesh and MDG 5." *Journal of Health, Population and Nutrition.* 26(3):280-294.

Koenig, M A, K Jamil, P K Streatfield, T Saha, A Al-Sabir, S El Arifeen, K Hill, and Y Haque. 2007. "Maternal Health and Care-Seeking Behavior In Bangladesh: Findings from a National Survey." *International Family Planning Perspectives.* 33(2):75-82.

Mathai, M, A Metin Gülmezoglu and S Hill. 2007. "Saving Women's Lives: Evidence-Based Recommendations for the Prevention of Postpartum Haemorrhage." *Bulletin of the World Health Organization.* 85(4):322-323.

McCormick M L, H C G Sanghvi, B Kinzie, and N McIntosh. 2002. "Preventing postpartum hemorrhage in low-resource settings." *International Journal of Obstetrics and Gynecology.* 77(3):267–275.

Ministry of Health and Family Welfare. 2009a. *National Health Policy 2009 (Draft).* Dhaka: Government of Bangladesh.

Ministry of Health and Family Welfare. 2009b. *National Neonatal Health Strategy and Guidelines for Bangladesh.* Dhaka: Government of Bangladesh.

Ministry of Health & Family Welfare. 2008. *List of Essential Drugs. http*://www.searo.who.int/LinkFiles/Essential_Drugs_and_Medicines_BAN1.pdf. Accessed 6 May 2010.

Ministry of Health and Family Welfare. 2005. *National Drug Policy 2005.* Dhaka: Government of Bangladesh.

Ministry of Health and Family Welfare. 2004. *Bangladesh Population Policy.* Dhaka: Government of Bangladesh.

Ministry of Health and Family Welfare. 2001. *Bangladesh National Strategy for Maternal Health.* Dhaka: Government of Bangladesh.

Ministry of Health and Family Welfare and United Nations Population Fund (UNFPA). 2004. *Thematic Review of Safe Motherhood in Bangladesh.*

Ministry of Women and Children Affairs. ND. *National Plan of Action for Children 2005-2010.* Dhaka: Government of Bangladesh.

Mitra, S N, M N Ali, S Islam, A R Cross, and T Saha. 1994. *Bangladesh Demographic and Health Survey 1993-1994.* Calverton, Maryland: National Institute of Population Research and Training (NIPORT), Mitra and Associates, and Macro International Inc.

Nasreen, H, S M Ahmed, H A Begum, and K Afsana. 2007. *Maternal, Neonatal and Child Health Programmes in Bangladesh: Review of Good Practices and Lessons Learned*. Dhaka: BRAC Research and Evaluation Division.

National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International. 2009. *Bangladesh Demographic and Health Survey 2007.* Dhaka and Calverton, MD: NIPORT, Mitra and Associates and Macro International.

National Institute of Population Research and Training (NIPORT), ORC Macro, Johns Hopkins University, and ICDDR,B. 2003. *Bangladesh Maternal Health Services and Maternal Mortality Survey 2001.* Dhaka, Bangladesh and Calverton, Maryland: NIPORT, ORC Macro, Johns Hopkins University, and ICDDR,B.

The Partnership for Maternal, Newborn & Child Health. ND. "Continuum of Care." http://www.who.int/pmnch/about/continuum_of_care/en/. Accessed 1 April 2010.

Patykewich, L and E Leahy. 2009. *A Case Study of Reproductive Health Supplies in Bangladesh.* Washington, DC: Population Action International.

Prata, N. 2009. "Community-Based Availability of Misoprostol: Is It Safe?" *African Journal of Reproductive Health. 13(2):117-128*

Rahim, S A, J O Parkhurst, and C Normand. 2003. *Maternal Health Review Bangladesh*. Heath Systems Development Programme, Policy Research Unit.

Ronsmans, C and W Graham. 2006. "Maternal Mortality: Who, When, Where, and Why." *Lancet* 368:1189-1200.

Saving Newborn Lives. 2004. *Bangladesh Field Office Program Evaluation*. Dhaka: Save the Children.

Schmidt, J O, T Ensor, A Hossain, and S Khan. 2010 (in press). "Vouchers as Demand Side Financing Instruments for Health Care: A Review of the Bangladesh Maternal Voucher Scheme." *Health Policy.*

Simed International. 2008. *Bangladesh Medical Equipment Survey.* Dhaka: Simed International.

Sines, E, A Tinker, and J Ruben. 2006. *The Maternal –Newborn-Child Health Continuum of Care: A Collective Effort to Save Lives.* Washington, DC: Save the Children and Population Reference Bureau.

Singh, S, J V Cabigon, A Hossain, H Kamal, and A E Perez. 1997. "Estimating the Level of Abortion in the Philippines and Bangladesh." *International Family Planning Perspectives.* 1997, 23(3):100–107.

South Asia Human Development Sector Unit and HD Network Health, Nutrition and Population Team. 2003. *Bangladesh Private Sector Assessment for Health, Nutrition and Population (HNP) in Bangladesh.* The World Bank.

Talukder, K. 2008. "Letter to the Editor: Maternal Mortality Ratio in Bangladesh." *The Lancet.* 371(811).

United Nations Children's Fund (UNICEF). 2008. *State of the World's Children.* New York: UNICEF.

United States Agency for International Development. Bangladesh Program website. Program Successes: Population and Health. http://www.usaid.gov/bd/programs/pop_successes.html. Accessed 26 April, 2010.

Von Hertzen, H, G Piaggio, N T Huong, K Arustamyan, E Cabezas, M Gomez, A Khomassuridze, R Shah, S Mittal, R Nair, R Erdenetungalag, T M Huong, N D Vy, N T Phuong, H T Tuyet and A Peregoudov; WHO Research Group on Postovulatory Methods of Fertility Regulation. 2007. "Efficacy of Two Intervals and Two Routes of Administration of Misoprostol for Termination of Early Pregnancy: a Randomised Controlled Equivalence Trial." *The Lancet*. 369(9577):1936-1947.

The World Bank. 2008. *Poverty Data: A Supplement to World Development Indicators 2008.* Washington, DC: The World Bank.

The World Bank. 2007a. *Public and Private Sector Approaches to Improving Pharmaceutical Quality in Bangladesh.* Dhaka: The World Bank.

The World Bank. 2007b. *To the MDGs and Beyond: Accountability and Institutional Innovation in Bangladesh.* Dhaka: The World Bank.

The World Bank. 2005. *Comparative Advantages of Public and Private Health Care Providers in Bangladesh.* Dhaka: The World Bank.

World Health Organization (WHO). 2010. *Model List of Essential Medicines, 16th List (Updated).* Geneva: WHO.

World Health Organization (WHO). 2009. *WHO Statement Regarding the Use of Misoprostol for Postpartum Haemorrhage Prevention and Treatment.* Geneva: WHO.

World Health Organization Global Health Observatory. http://apps.who.int/ghodata/. Accessed 6 May 2010.

World Health Organization (WHO), UNICEF, UNFPA and the World Bank. 2007. *Maternal Mortality in 2005: Estimates Developed by WHO, UNICEF, UNFPA, and the World Bank.* Geneva: WHO.

World Health Organization (WHO), South East Asia Regional Office (SEARO). 2005. *Improving Maternal, Newborn and Child Health in the South-East Asia Region, Bangladesh Country Profile.*

# ENDNOTES


1 Khan, Wojdyla, Say, Metin Gülmezoglu and Van Look 2006

2 Department for International Development 2004, p 7

3 World Health Organization, UNICEF, UNFPA and The World Bank 2007

4 Thaddeus and Maine 1994

5 Ronsmans and Graham 2006, p 1191

6 World Health Organization, UNICEF, UNFPA and The World Bank 2007

7 Hogan, Foreman, Naghavi, Ahn, Wang, Makela, Lopez, Lozano and Murray 2010, p 1

8 9 Department for International Development 2004

10 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

11 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

12 United Nations Children's Fund 2008

13 Ministry of Health and Family Welfare 2001

14 National Institute of Population Research and Training, ORC Macro, JHU and ICDDR, B: Bangladesh Maternal Health Services and Maternal Mortality Survey 2001

15 Bangladesh Bureau of Statistics 2008

16 Hogan, Foreman, Naghavi, Ahn, Wang, Makela, Lopez, Lozano and Murray 2010, p 6

17 WHO/SEARO Country Profile, attributed to MOHFW 2004

18 Rahim, Parkhurst and Normand 2003

19 Ministry of Health and Family Welfare 2001

20 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

21 Koblinsky, Anwar, Mridha, Chowdhury, and Botlero 2008

22 Mitra, Ali, Islam, Cross and Saha 1994

23 Ministry of Health and Family Welfare and UNFPA 2004

24 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

25 Koenig, Jamil, Streatfield, Saha, Al-Sabir, El Arifeen, Hill, and Haque 2007

26 Interview, 1 February 2010

27 Koenig, Jamil, Streatfield, Saha, Al-Sabir, El Arifeen, Hill, and Haque 2007

28 Gill and Ahmed 2004

29 Chowdhury 2004

30 Chowdhury 2004

31 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

32 Singh, Cabigon, Hossain, Kamal, and Perez 1997

33 General Economics Division Planning Commission 2008

34 General Economics Division Planning Commission (ND)

35 Interview, 1 February 2010

36 Interview, 27 January 2010

37 Interview 27 January 2010

38 Interview 27 January 2010

39 World Health Organization South East Asia Regional Office 2005, p 10

40 World Health Organization South East Asia Regional Office 2005

41 Khan 2009

42 Nasreen, Ahmed, Begum, and Afsana 2007

43 Koblinsky, Anwar, Mridha, Chowdhury, and Botlero 2008

44 General Economics Division Planning Commission 2009, p 58

45 The World Bank 2005

46 Interview, 1 February 2010

47 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

48 The World Bank 2007a

49 Interview, 3 February 2010

50 Koblinsky, Anwar, Mridha, Chowdhury, and Botlero 2008

51 Interview, 2 February 2010

52 Nasreen, Ahmed, Begum, and Afsana 2007, p 95

53 Nasreen, Ahmed, Begum, and Afsana 2007, p 95

54 Mathai, Metin, Gülmezoglu and Hill 2007

55 Interview, 27 January 2010

56 Khan 2009, p 117

57 World Health Organization 2010

58 Von Hertzen, Piaggio, Huong, Arustamyan, Cabezas, Gomez, Khomassuridze, Shah, Mittal, Nair, Erdenetungalag, Huong, Vy, Phuong, Tuyet and Peregoudov; WHO Research Group on Postovulatory Methods of Fertility Regulation 2007

59 World Health Organization 2009

60 Prata 2009

61 McCormick, Sanghvi, Kinzie, and McIntosh 2002

62 Khan 2009, p 117

63 WHO Global Health Observatory ND

64 WHO Global Health Observatory ND

65 Interview, 31 January 2010

66 Interview, 3 February 2010

67 Interview, 31 January 2010

68 Interview, 3 February 2010

69 Interview, 3 February 2010

70 Interview, 13 January 2010

71 Afsana, 2004

72 World Bank 2008

73 Schmidt, Ensor, Hossain, and Khan 2010

74 Koblinsky, Anwar, Mridha, Chowdhury, and Botlero 2008

75 Schmidt, Ensor, Hossain, and Khan 2010

76 Interview, 27 January 2010

77 Interview, 27 January 2010

78 Interview, 27 January 2010

79 Interview, 26 January 2010

80 Interview, 28 January 2010

81 Interview, 27 January 2010

82 Khan 2009

83 Interview, 3 February 2010

84 United States Agency for International Development ND

85 Interview, 27 January 2010

86 The World Bank 2007b

87 Saving Newborn Lives 2004

88 The Partnership for Maternal, Newborn & Child Health

89 Sines, Tinker and Ruben 2006

90 United Nations Children's Fund 2008

91 Katz, West, Khatry, Christian, LeClerq, Kimbrough Pradhan and Ram Shrestha 2003

92 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

93 Ministry of Women and Children Affairs ND

94 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

95 Ministry of Health and Family Welfare 2009

96 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

97 The World Bank 2007b

98 Interview, 1 February 2010

99 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

100 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

101 The World Bank 2007b

102 Ministry of Health and Family Welfare 2009

103 Interview, 1 February 2010

104 Ministry of Health and Family Welfare 2009

105 Arifeen, Hoque, Akter, Rahman, Hoque, Begum, Chowdhury, Khan, Blum, Ahmed, Hossain, Siddik, Begum, Sadeq-ur Rahman, Haque, Billah, Islam, Rumi, Law, Al-Helal, Baqui, Schellenberg, Adam, Moulton, Habicht, Scherpbier, Victoria, Bryce and Black 2009

106 Ministry of Women and Children Affairs ND

107 Ministry of Women and Children Affairs ND

108 Interview, 1 February 2010

109 Interviews, 26 January and 28 January 2010

110 Ministry of Health and Family Welfare 2009b, p 24

111 Government of People's Republic of Bangladesh 2008, p 208

112 Government of People's Republic of Bangladesh 2008, p 263

113 Khan 2009

114 Government of People's Republic of Bangladesh 2008, pp 205 – 6

115 Government of People's Republic of Bangladesh 2008, p 206

116 Government of People's Republic of Bangladesh 2008, p 205

117 Government of People's Republic of Bangladesh 2008, p 203

118 Ministry of Health and Family Welfare 2009b, p 23

119 Khan 2009, p 24

120 Ministry of Health and Family Welfare 2009b, p 64

121 Khan 2009, p 28

122 Khan 2009, p 12

123 Ministry of Health and Family Welfare 2005

124 The World Bank 2007a, p 1

125 The World Bank 2007a

126 Simed International 2008

127 Ministry of Health and Family Welfare 2009b, p 39-41

128 Ministry of Health and Family Welfare 2009b, p 41

129 Ministry of Health and Family Welfare 2009b, p 41

130 Ministry of Health and Family Welfare 2009b

131 Ministry of Health and Family Welfare and UNFPA 2004

132 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

133 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

134 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009

135 National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International 2009, p xxvi

136 Dickens 2008

137 Interview, 28 January 2010

138 Interview, 3 February 2010

139 The World Bank 2007

140 Sines, Tinker and Ruben 2006

141 Ministry of Health and Family Welfare 2001, p 2

142 Interview, 27 January 2010

143 Ministry of Health and Family Welfare 2009a, p i

144 Interview, 31 January 2010

145 Interview, 3 February 2010

146 Interview, 3 February 2010

147 Ministry of Health and Family Welfare 2004, p 5

148 Ministry of Health and Family Welfare 2004, p 7

149 Ministry of Health and Family Welfare 2005

150 Ministry of Women and Children Affairs ND, p 15

151 Ministry of Women and Children Affairs ND, p 52

152 Ministry of Health and Family Welfare 2009b, p 13

153 Ministry of Health and Family Welfare 2009b, p 29

154 Ministry of Health and Family Welfare 2009a, p 8

155 Ministry of Health and Family Welfare 2009a, p 23

Population Action
INTERNATIONAL
HEALTHY FAMILIES HEALTHY PLANET

1300 19th Street, NW, Second Floor
Washington, DC 20036 USA

Tel: 202.557.3400
Fax: 202.728.4177
www.populationaction.org

Email: pai@popact.org

Order publication online at
www.populationaction.org/order
View report online
www.populationaction.org