

Making

Motherhood Safer

**Overcoming Obstacles
on the Pathway to Care**

by Elizabeth I. Ransom and Nancy V. Yinger



Population Reference Bureau

Acknowledgments

Elizabeth I. Ransom and Nancy V. Yinger of the Population Reference Bureau (PRB) prepared this booklet in collaboration with Justine Sass. Vijay Rao prepared the three figures in the text. Susan Adamchak, Lori Ashford, Liz Creel, David Ransom, and Marjorie Ransom reviewed and commented on drafts of the document. Margaret Blabey assisted with fact-checking. This booklet would not have been possible without the advice and generous contributions from maternal health experts and program managers around the world, whose names are too numerous to list.

Special thanks are due to the following reviewers:

Oona Campbell, Senior Lecturer, Maternal Health Program, Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine

Jerker Liljestrand, Lead Health Specialist, Health, Population and Nutrition Unit of The World Bank

Florence Mirembe, Associate Professor, Department of Obstetrics and Gynecology, Faculty of Medicine, Makerere University

Ellen Mitchell, Research Associate, IPAS

Fred Sai, Professor, University of Ghana Medical School

Theresa Shaver, Safe Motherhood/Child Survival Advisor, NGO Networks for Health

Mary Ellen Stanton, Senior Reproductive Health Advisor, USAID Center for Population, Health, and Nutrition

Ellen Starbird, Chief, Policy and Evaluation Division, USAID Center for Population, Health, and Nutrition

Ann Starrs, Vice-President, Family Care International

Sereen Thaddeus, Director, Behavior Change Communication, The Maternal and Neonatal Health Program, Johns Hopkins University Center for Communication Programs

PRB gratefully acknowledges the United States Agency for International Development for supporting this project. This booklet was funded by USAID's Center for Population, Health, and Nutrition through the MEASURE *Communication* project (HRN-A-98-000001-00).

Design: Heather Lilley, PRB

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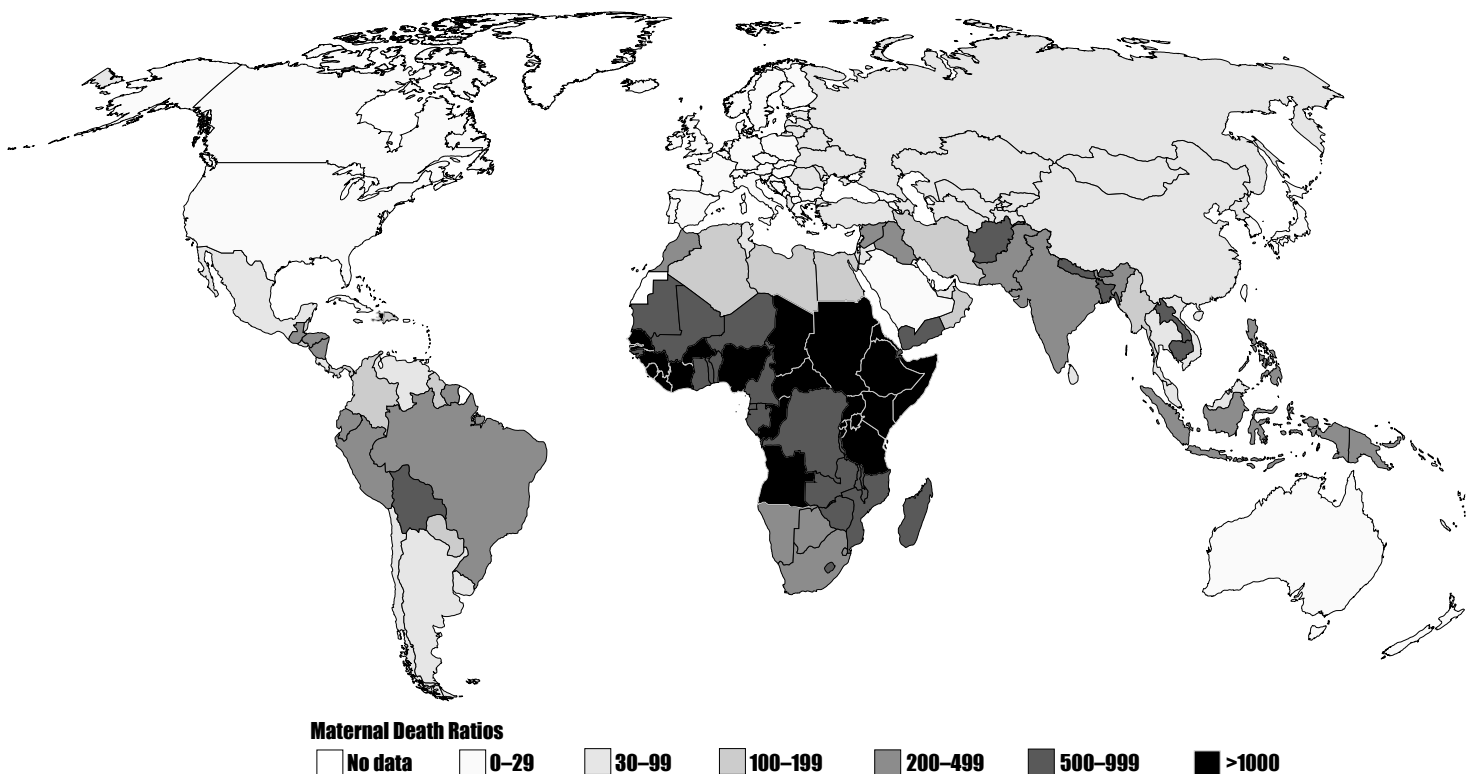
Executive Summary

Around the world, people celebrate the birth of a new baby. Societies expect women to bear children, and honor women for their role as mothers. Yet in most of the world, pregnancy and childbirth is a perilous journey. In less developed countries, more than half a million mothers die each year from causes related to this life-giving event. These deaths are only part of this tragic picture: For every woman who dies, about 30 suffer from devastating health problems such as infertility and damage to their reproductive organs. Ninety-nine percent of these deaths occur in less developed regions, and most are due to inadequate medical care at the time of childbirth. This tragedy need not continue.

Evidence shows that motherhood can be safer for all women. Over the past decade, experts have largely come to agree on a set of lifesaving strategies that can work even in low-resource settings. What remains is for governments to commit to making safe motherhood a priority.

Research shows that women's lives can be saved and their suffering reduced if health systems could address serious and life-threatening com-

Figure 1. Maternal Deaths per 100,000 Live Births, 1995



Source: WHO, UNICEF, and UNFPA, *Maternal Mortality in 1995: Estimates Developed by WHO, UNICEF, and UNFPA* (Geneva: WHO, 2001).

plications of pregnancy and childbirth when they occur. One of the best ways to do this is to make sure that women receive skilled care at delivery. Only about half of deliveries in less developed countries take place with the assistance of skilled health personnel. Providing skilled care means ensuring that health professionals such as doctors, nurses, or midwives can manage normal deliveries and treat the life-threatening complications of pregnancy and childbirth. With support from functioning health and transportation systems, these professionals can treat or stabilize women and refer them for appropriate care.

Ensuring that women receive skilled care at delivery is an essential part of safe motherhood programs. Skilled care, however, can only be effective in the context of health systems that address women's health needs and the obstacles women face en route to emergency care.

Effective health systems make obstetric care available to all women, including surgical and technical interventions required to treat life-threatening conditions during pregnancy, delivery, and after childbirth. Antenatal care, among other services, can play a role in detecting and treating some complications of pregnancy. Contraceptives prevent maternal deaths by reducing women's exposure to the risks of pregnancy and childbirth. Preventing unintended pregnancies protects women, since unsafe abortions cause about a quarter of all maternal deaths. Contraceptives also allow women to delay motherhood, space births, and protect themselves from sexually transmitted infections—including HIV/AIDS.

The existence of skilled care, however, does not guarantee its use. Women face multiple delays in seeking and receiving lifesaving care when they need it. Women miss the opportunity to receive lifesaving care when they do not recognize the signs of life-threatening complications (**Delay One**); when they postpone deciding to seek care (**Delay Two**); when it takes too long to reach appropriate care (**Delay Three**); and when they receive substandard or slow care at health facilities (**Delay Four**).

Diminishing these delays requires policy commitment and actions at the local and national levels, but is feasible even in low-income settings. Reducing maternal deaths requires well-coordinated and sustained efforts. Governments and communities can work to make motherhood safer by assessing local conditions and building on existing resources and health care networks, by monitoring progress, and by helping women overcome the obstacles to receiving lifesaving care. A large body of research and program experiences demonstrates that pregnancy and childbirth need not put most women at significant health risk. What remains is to build support and commitment to make the process of bringing new lives into the world safer for mothers.

To make motherhood safer, maternal health experts recommend the following policy options. Decisionmakers should choose options relevant to their countries.

Delay One. Help women and their families recognize danger signs by

- Raising awareness in communities about the signs of life-threatening complications; and
- Educating women, their partners, and their families about when and where to seek care for complications.

Delay Two. Help women and their families decide to seek care by

- Encouraging families and communities to develop plans of action in case of obstetric emergencies;
- Raising women's status so that they are empowered to make critical health decisions;
- Enhancing links between communities and health care providers;
- Improving relationships between traditional healers and skilled health care providers;
- Improving the interpersonal skills of health care providers by using information about how the community defines quality of care;
- Educating women and their families about where to seek care for complications;
- Encouraging communities to create insurance schemes to pool the costs associated with emergency care; and
- Encouraging the use of health care facilities by adolescents, single or unmarried women, and ethnic and linguistic groups who are reluctant to use services because of sociocultural barriers.

Delay Three. Help women reach appropriate care by

- Encouraging communities to create emergency transportation plans;
- Upgrading roads and other transportation systems;
- Enhancing referral systems between communities and health care providers; and
- Establishing maternity waiting homes.

Delay Four. Make sure women receive care at health facilities by

- Upgrading the quality of care at health facilities, including improving providers' technical and interpersonal skills, motivation, and performance;
- Establishing national protocols for treating obstetric complications;
- Training health facility staff to recognize and admit patients with life-threatening complications;
- Ensuring adequate and sustainable supplies of emergency medicines, essential equipment, blood, and staffing levels at health facilities;
- Providing 24-hour service at facilities that provide emergency obstetric care;
- Enhancing referral systems between communities and health facilities;
- Improving communication between the units that provide care in order to generate more referrals; and
- Ensuring that the national curricula for health providers include practical components about treating obstetrical emergencies.

Introduction

“No country sends its soldiers to war to protect their country without seeing to it that they will return safely, and yet mankind for centuries has been sending women to battle to renew the human resource without protecting them.”

—Fred Sai, former president of the International Planned Parenthood Federation¹

Around the world, people celebrate the birth of a new baby. Societies expect women to bear children, and honor women for their role as mothers. Yet in most of the world, pregnancy and childbirth is a perilous journey. In less developed countries, more than half a million mothers die from causes related to this life-giving event each year. For many women, motherhood spans decades. The period when mothers are most at risk of death, however, is during pregnancy, delivery, and the 42-day period following childbirth.

Evidence shows that motherhood can be safer for all women.² Over the past decade, experts have largely come to agree on a set of lifesaving strategies that can work even in low-resource settings.³ Governments around the globe have signed international conventions that advocate significant reductions in maternal mortality.⁴ In 2000, however, the United Nations General Assembly acknowledged that “despite progress in some countries, rates of maternal mortality and morbidity remain unacceptably high in most countries.”⁵ What remains is for governments to commit to making safe motherhood a priority.

This booklet describes the current status of maternal health; gives an overview of efforts to address maternal morbidity (injuries sustained during pregnancy and childbirth) and mortality at the international level; suggests ways that governments can reduce maternal mortality; and highlights individual programs that are working to overcome the obstacles to maternal survival. The focus is on success, as illustrated by stories of women whose lives were saved by innovative programs.

Table 1. Women's Lifetime Risk of Death From Pregnancy, 1995

Region	Lifetime Risk of Death
Sub-Saharan Africa	1 in 13
South Asia	1 in 54
Middle East and North Africa	1 in 55
Latin America and the Caribbean	1 in 157
East Asia/Pacific	1 in 283
Central East Europe/Commonwealth of Independent States and Baltic States	1 in 797
Industrialized countries	1 in 4,085

Source: World Health Organization (WHO), United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA), *Maternal Mortality in 1995: Estimates developed by WHO, UNICEF and UNFPA* (Geneva: WHO, 2001).

Extent of the Problem

The most recent figures from the World Health Organization, which releases revised global maternal mortality estimates about every five years, estimate that 515,000 women die annually from maternal causes.⁶ Ninety-nine percent of these deaths occur in the less developed world, making maternal mortality the health indicator that reveals the largest disparity between developing and developed countries.⁷ The situation is most dire for women in sub-Saharan Africa, where one of every 13 women dies of pregnancy-related causes during her lifetime, compared with only one in 4,085 women in industrialized countries (see Table 1).

Tragically, these deaths are just part of the picture. For every woman who dies, approximately 30 more women suffer injuries, infection, and disabilities during pregnancy or childbirth—at least 15 million women a year. The cumulative total of those affected has been estimated at 300 million, or more than a quarter of adult women in the developing world.⁸ These pregnancy-related health problems include severe anemia, infertility, and damage to the uterus and reproductive tract sustained during childbirth.⁹ Obstetric fistula (tears between the vagina and the urinary tract or rectum that cause permanent incontinence if not treated) are especially devastating.¹⁰ Many women are too ashamed to speak about these and other conditions or to seek treatment for them.¹¹ This “culture of silence” is exacerbated in settings where women are not empowered to make choices and act freely to take care of their health.¹²

Causes of Maternal Death

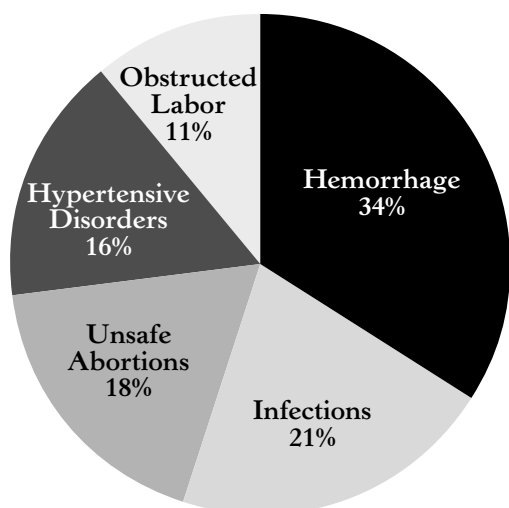
The majority of maternal deaths occur after childbirth—most within 24 hours. About a quarter take place during pregnancy, and about 15 percent happen at the time of delivery.¹³ The most common medical cause is hemorrhage, a swift and severe loss of blood before, during, or after delivery.

Hemorrhage is considered a “direct” cause of death, because it is directly associated with pregnancy and childbirth. Four-fifths of maternal deaths are due to direct causes: hemorrhage, infection, complications related to unsafe abortion, and hypertensive disorders. (For more on the relation of unsafe abortion to maternal mortality, see Box 1, page 8.) Figure 2 shows how much each of these direct causes contributes to maternal mortality.¹⁴

The remaining 20 percent of maternal deaths have indirect causes, conditions that are aggravated by pregnancy, such as malaria, anemia, or diabetes.¹⁵

Most of the deaths from the direct causes could be prevented if women received skilled care at critical moments during pregnancy and childbirth. Unfortunately, many women deliver without the assistance of a skilled attendant—a health professional such as a doctor, nurse, or a midwife who can manage normal deliveries and treat the life-threatening complications of pregnancy and childbirth or stabilize and refer women for appropriate care.¹⁶ Experts estimate that

Figure 2. Direct Causes of Maternal Deaths



Source: World Health Organization, *Reduction of Maternal Mortality: A Joint WHO/UNFPA/UNICEF/ World Bank Statement* (Geneva: WHO, 1999).

about 15 percent of deliveries have complications that require skilled medical intervention. Yet only about half of deliveries in less developed countries currently take place with a skilled attendant present.¹⁷

Maternal mortality is influenced by the social, economic, and political context of the health care system and the cultural and biological realities of women seeking care. This complex interaction means that even when skilled care is available, women may not seek it out or receive it.¹⁸ At several stages of the journey through pregnancy and childbirth, women face delays in receiving skilled care. These delays pose barriers to safe motherhood.¹⁹ Women and their families or caregivers may not recognize the warning signs of life-threatening complications. Women may have diffi-

Box 1. Abortion, Family Planning, and Maternal Mortality

About 13 percent of maternal deaths worldwide are due to complications related to unsafe abortion,¹ although in some areas the figure is as high as one-third. Many of these deaths occur in countries where abortion is legally restricted, leading to procedures performed under unsafe conditions. The World Health Organization estimates that 19 out of every 20 unsafe abortions take place in the less developed regions of the world.² These statistics may be underestimates, because unsafe abortion is probably responsible for many deaths that are attributed to nonmaternal causes.

Contraceptives prevent maternal deaths by reducing the number of times women go through pregnancy and childbirth.³ They also provide significant protection for women by preventing unintended pregnancies, which often end in unsafe abortions. These in turn can threaten the life of the mother or lead to infertility and related social stigma, such as the threat of abandonment. Contraceptives also allow women to delay motherhood, space births, and protect themselves from sexually transmitted diseases—including HIV/AIDS (with condoms).

Regardless of the legal status of abortion, high-quality postabortion services for treating and managing the complications of abortion can save many lives.⁴ Women who undergo unsafe abortions may need medical care for complications such as sepsis, hemorrhage, and

trauma. Long-term health problems include pelvic inflammatory disease and infertility.⁵ Postabortion care reduces maternal mortality and morbidity by providing emergency treatment of abortion complications, family planning counseling and services, nondiscriminatory treatment, and links to reproductive health services.

In Egypt, a project improved postabortion medical care and increased the use of family planning by postabortion patients in the obstetrics and gynecology wards of two hospitals.⁶ The project encouraged the use of manual vacuum aspiration under local anesthesia, which has been shown to be the most cost-effective and medically sound treatment for incomplete abortion. The project also increased providers' and patients' knowledge about the danger signs of complications associated with incomplete abortion and improved counseling of patients by hospital staff about obtaining contraceptive methods. While few patients were counseled about family planning options before the study intervention, more than half of the patients discussed contraception with their providers afterward. The project also had a strong positive impact on infection control procedures. For example, while the preintervention survey found that only 60 percent of physicians performed surgical procedures using sterile gloves, the practice of using them became nearly universal after the study.

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culty reaching a decision to seek medical care; they also may fear rude treatment, high fees, or substandard care at health facilities. Women may also face delays in reaching health facilities in time. Even deliveries in health facilities may be needlessly risky because of poor-quality obstetric care and the lack of medical supplies or blood. These delays are interrelated and reflect a country's level of socioeconomic development.

Consequences of Maternal Morbidity and Death

Because the vast majority of women who die from or are seriously injured by maternity-related causes are in the prime of life, their illnesses and deaths have dire social and economic consequences for both families and communities. Families forgo a woman's crucial role in household management and care for children and other family members. Consequently, families that lose mothers are likely to suffer declining nutritional status.²⁰ Surviving children may have lower rates of school enrollment. Maternal disabilities related to pregnancy and childbirth, such as anemia and malnutrition, also influence child health. Babies born to malnourished mothers are more likely to have low birth weights, which are associated with developmental delays, disabilities, and early death.

Research has shown that newborns whose mothers die are less likely to survive.²¹ Insufficient maternal care during pregnancy and delivery is largely responsible for the estimated 8 million stillbirths and newborn deaths that occur around the world each year. These deaths occur just before or during delivery or within the first week of life.²²

Older children's survival is also affected by the loss of their mothers. A study in Bangladesh, for example, showed that children under age 10 were up to 10 times more likely to die following the death of their mothers than those whose mothers were alive.²³ When a maternal death occurs, the woman's community loses a productive member and her paid or unpaid labor. Her country loses its investments in the woman's health and education, and forgoes her contributions to the economy.

Finally, the complications of pregnancy and childbirth place a significant burden on health systems. Deaths and injuries sustained during pregnancy and childbirth contribute significantly to the total burden of reproductive ill-health. According to a study on the global burden of disease, maternal causes constitute 50 percent of the burden of poor reproductive health.²⁴ Reproductive health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and to its functions and processes.²⁵

International Support for Safe Motherhood Policies

“Motherhood and childhood are entitled to special care and assistance.”

— Article 25, 1948 Universal Declaration of Human Rights

Since the 1948 Universal Declaration of Human Rights, at least 14 international conventions and conferences have affirmed and reaffirmed safe motherhood as a right and identified the central role of safe motherhood interventions in women’s health. By adopting these conventions, governments have pledged to improve maternal health and can be held accountable for putting these plans into action.

One of the strongest voices advocating for reduced maternal mortality is the Safe Motherhood Initiative (SMI).²⁶ This alliance of international and nongovernmental organizations, founded in 1987, works to raise awareness, set priorities, stimulate research, mobilize resources, provide technical assistance, and share information. SMI cooperates with governments and nongovernmental partners from more than 100 countries. During the initiative’s first decade, the partners developed model programs, tested new technologies, and conducted research in a wide range of countries and settings.

The initiative’s initial goal was to cut maternal mortality in half by the year 2000. During the 1990s, several international agreements set similar or more demanding aims for reducing maternal mortality.²⁷ Beyond these statistical goals, the 1994 Programme of Action of the International Conference on Population and Development called more broadly for “the right of access to appropriate health care services that will enable women to go safely through pregnancy and childbirth.”²⁸ If governments made the right of access to maternity care a priority, far fewer women would die in childbirth.

In the 1980s and early 1990s, policymakers focused on interventions they hoped would save women’s lives: antenatal risk screening and training unskilled traditional birth attendants (TBAs). Experts now recognize, however, that while antenatal care can provide a good setting in which to

detect and treat certain conditions that pose risk to women,²⁹ most women who die are not from categories classified as “high-risk.” Because every woman is at risk of complications that are impossible to predict, the “risk approach” is no longer recommended.³⁰ The new model for antenatal care features visits focused on actions known to save women’s lives, including providing links to the health system and counseling about what to do if life-threatening complications develop³¹ (see Box 2, page 12). Researchers are also currently reassessing the effectiveness of training unskilled TBAs. Without medical education, supplies, and equipment, these members of the community can assist at normal deliveries but often cannot handle life-threatening complications.³² In settings where women commonly give birth at home with TBAs, researchers now recommend training the TBAs to recognize life-threatening complications and to refer women in need of emergency care to skilled providers. In some countries, experts recommend phasing out the role of the TBA in favor of more highly skilled health care workers.

What Governments Can Do

There is a common perception among governments and donors that safe motherhood programs are expensive.³³ According to World Health Organization cost estimates, however, a Mother-Baby package, or a comprehensive safe motherhood program developed using existing resources, would cost just US\$3 per person per year for a low-income country.³⁴ Furthermore, a recent report shows that even in low-resource settings, maternal deaths can be decreased if there is strong political commitment. A comparison of 64 countries showed that declining maternal death rates were closely associated with factors such as the proportion of births attended by trained health personnel, rather than with measures of wealth. The study concluded that “... ultimately, the critical need may be one of generating sufficient political and social will at international and national levels to overcome this avoidable tragedy.”³⁵

Honduras provides an example of a country that achieved improved maternal health by making a concerted commitment to safe motherhood. When a 1990 study of maternal mortality revealed a shockingly high level of maternal deaths, the government made reducing maternal mortality a public health priority. To implement this new policy, the Ministry of Health

- Made emergency obstetric care available in more rural health centers and in district hospitals;
- Increased the number of health personnel allocated to remote areas, set up birthing centers in remote areas, and improved referral of women with obstetric complications to these facilities;

Box 2. A New Role for Antenatal Care

During the past decade, experts realized that access to and use of antenatal care are not effective means of predicting which women are likely to develop life-threatening complications during pregnancy and childbirth.¹ Risk screening incorrectly identifies many women who do not develop complications as “high-risk,” while it misses many women who subsequently develop complications.² While it may be possible to detect and treat chronic conditions such as anemia, diabetes, and high blood pressure during pregnancy, even a trained provider cannot predict most obstetric emergencies. Risk screening also creates a false sense of security for women in the low-risk group, who health workers assume will have normal deliveries.

Antenatal care can, however, provide an essential link between women and the health system and can provide other essential health services.³ Researchers now recommend four antenatal care visits focused on the following interventions that are known to be effective:

- Counseling about the danger signs of pregnancy and delivery complications and where to seek care in case of emergency;
- Where iron deficiency and anemia are high, supplying iron and folate supplements;⁴
- In countries where vitamin A deficiency is prevalent, supplying low-dose supplements of vitamin A;⁵
- Providing advice on proper nutrition during pregnancy;⁶
- In certain settings, providing treatment for conditions

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- Trained TBAs to recognize obstetric emergencies, and promoted their integration into the health system by allowing them to stay with the women they had accompanied to the hospital;
- Worked with communities to increase acceptance of and demand for hospital deliveries. Several communities now maintain maternity waiting homes attached to hospitals for women who live in distant communities and either have been referred for, or requested, a hospital delivery; and
- Upgraded emergency transportation, roads, and communication systems.

Honduras nearly halved its maternal mortality ratio between 1990 and 1997, according to a report published in 2000.³⁶ These improvements could not have happened without the commitment of policymakers and a coordinated effort to strengthen the ability of the entire health system to improve maternal survival. In 2001, the Honduran government has allocated more than 7 percent of the gross domestic product to health and social services, which is a greater percentage than most countries in Latin America.

that affect women's pregnancies, such as malaria, tuberculosis, hookworm infection, iodine deficiency, and sexually transmitted infections, including HIV/AIDS;⁷

- Providing tetanus toxoid immunizations, which protect infants;
- Screening women for domestic violence and providing appropriate counseling and referral;⁸
- Providing voluntary HIV testing and counseling;⁹ and
- Providing information about breastfeeding and contraceptives.

For a woman to obtain antenatal care, she must be able to leave her ordinary duties, which include childcare, housework, and other tasks. Some programs have attempted to

build support for women's temporary absences from household and professional chores and to inform women, their families, and communities about the importance of seeking antenatal care. An evaluation of a safe motherhood information, education, and communication program in Pakistan, for example, found that there was a marked improvement in knowledge regarding preventive measures that women should take during pregnancy.¹⁰

Because of the high prevalence of pregnancy-related domestic violence, some experts contend that all women attending antenatal care should also be screened for domestic violence.¹¹

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Governments can save mothers' lives by assessing local conditions, monitoring how maternal health care programs are working, strengthening existing facilities and resources, and addressing the obstacles that women face in receiving lifesaving care. None of this can be done without significant political commitment and a coordinated strategy that involves citizens at all levels of society and the health system.

Assess Local Conditions

Because every country faces unique challenges in improving the health of its mothers, maternal health officials must rely on needs assessments to guide their program designs. An intervention that works in one setting may not be effective in another.³⁷ In some countries, for example, most women deliver their babies at home with unskilled attendants. Programs in these countries might need to focus on helping families and traditional birth attendants to recognize life-threatening complications and to refer

these cases to health centers equipped to handle obstetric emergencies. In other countries, women deliver in health facilities equipped to handle complicated cases, yet maternal mortality ratios remain high. In this case, policymakers might consider developing and strengthening programs to upgrade the quality of care and the skills of practitioners who handle emergency cases.

Government-supported efforts to assess the causes of maternal death and to formulate national policies to address them can lead to widespread reforms in obstetric care. In Mexico, the National Safe Motherhood Committee responded to a study that analyzed causes of maternal deaths in three states and indicated that maternal death ratios had increased during the 1990s. The study classified deaths according to several factors, including socioeconomic conditions and cultural factors, health-related factors, and reasons that women did not seek care in a timely manner. The results indicated that most deaths occurred among poor, less-educated women with limited decisionmaking power and autonomy. The study showed that these women were less likely to seek out and receive adequate care. The researchers identified a list of interventions to address the factors associated with the deaths. The results were presented to local and national stakeholders, who then incorporated the recommendations into agendas for addressing maternal mortality at the state level.³⁸

Strengthen Existing Facilities and Resources

Effective safe motherhood interventions need to be implemented at all levels of a country's health system.³⁹ Research shows, however, that in many settings, improving services that already exist, investing in upgrading the skills and competence of health care providers, and enhancing referral systems can have significant impact.⁴⁰ The most successful programs are enacted as part of a coordinated effort and with commitment at both the community and government levels.

Experts recommend that for every 500,000 people, there should be four facilities offering basic emergency obstetric care (BEOC) and one facility offering comprehensive emergency obstetric care (CEOOC).⁴¹ Basic emergency obstetric care, normally provided in health centers and small maternity homes, includes administering special drugs and performing lifesaving procedures.⁴² Providing comprehensive emergency obstetric care, usually delivered in district hospitals, means being able to provide Caesarean section deliveries and blood transfusions, in addition to the BEOC functions.

In order to manage obstetric complications, a facility must have trained staff and a functional operating theater, and must be able to administer blood transfusions and anesthesia. District hospitals and health centers can often become capable of providing emergency obstetric care (EOC)

by making just a few changes to their existing resources: renovating an existing operating theater or equipping a new one; repairing or purchasing surgical and sterilization equipment; converting unused facilities within hospitals or health centers into a basic or comprehensive EOC facility; training doctors and nurses in lifesaving interventions; and making better use of existing resources. To tend to complicated deliveries, staff must be available to manage obstetric emergencies around the clock.

Sri Lanka provides an example of a country that has made significant improvements in maternal health in the past 50 years despite low levels of resources. In the 1920s, when the maternal and child health program began in Sri Lanka, the maternal mortality ratio was very high. For every 100,000 live births, there were an estimated 2,200 maternal deaths.

A nationwide expansion of the health care and transportation systems, high female literacy, and the relatively high status of women are credited with a decline in maternal mortality. Eighty-eight percent of adult women are literate, and girls have access to free education up to the university level. The age of marriage and proportion of women using contraceptives are also higher than the regional norm. Furthermore, most deliveries take place in health facilities that participate in a system to refer women who need special care. Finally, more than 96 percent of deliveries in Sri Lanka are overseen by skilled attendants.⁴³

Today, although a third of the population is estimated to live below the poverty line and the annual income per capita is only about US\$700,⁴⁴ Sri Lanka has a maternal mortality ratio that is lower than most in the region. There are now an estimated 60 maternal deaths per 100,000 live births.⁴⁵

Monitor Progress

While maternal mortality levels are difficult to measure,⁴⁶ countries benefit from making efforts to assess the extent of maternal mortality and morbidity. Statistics revealing the extent of maternal mortality can inspire those who make decisions about maternal health to act. Estimates of maternal death such as the maternal mortality ratio (MMR) are not useful tools for assessing progress in the short term or for making comparisons between

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Effective safe motherhood interventions need to be implemented at all levels of a country's health system. For example, this regional maternity center in the district of Zaghouan, Tunisia, is part of a system that also provides maternity care to women in remote regions through mobile health clinics.

countries.⁴⁷ Program managers can assess how maternity care programs perform, however, by investigating the underlying causes of maternal mortality, and by monitoring progress with a variety of process indicators.

Reducing maternal deaths requires political commitment—from policy-makers, from professionals in both public and private health services, and from communities. Sometimes this commitment is won when a shocking report about maternal deaths is published. In the United States, for example, public outcry in the early 1930s following media reports about a study of maternal deaths in New York City galvanized the medical community to address the high number of deaths.⁴⁸ The study reported that nearly 66 percent of deaths could have been prevented if “the care of the woman had been proper in all respects.” Some experts have suggested that this report may have been an important factor in the decline in maternal mortality after 1933.⁴⁹ At that time, there were more than 600 maternal deaths per 100,000 live births in the United States,⁵⁰ a level of maternal mortality similar to that of Bangladesh today.⁵¹ Within five years of the study’s publication, maternal mortality committees were formed all over the United States to investigate maternal deaths and to analyze how they could be prevented.

Nonetheless, measuring maternal mortality accurately is a challenge. Most experts believe that global and country estimates of maternal deaths are too low. In fact, some studies estimate that the actual number of maternal deaths is double or triple what is reported.⁵² A large part of the problem is that national-level data are hard to obtain. Population-based surveys of maternal deaths are expensive since very large populations must be surveyed in order to get accurate estimates. Furthermore, in some less-developed countries, official records do not list maternal causes as a reason for death. In addition, many women die outside the health system, which means that their deaths may either go unrecorded or are misclassified.⁵³ Deaths that take place after delivery, for example, are not always recorded as linked with childbirth. Shame and embarrassment compound these problems. As a result, many maternal deaths go unrecorded—especially deaths from illegal abortions (see Box 1, page 8).

Analysts and advocates often use the maternal mortality ratio—the number of maternal deaths per 100,000 live births—to describe the magnitude of maternal deaths in a country. Experts warn, however, that there are large margins of uncertainty associated with calculating MMRs, and thus they should not be used to monitor trends in the short term. Comparisons of MMRs across countries or over time may also be misleading because different methodologies may have been used to derive the estimates. (To learn more about monitoring progress, see the Appendix on Technical Resources, page 33.)

Making information about maternal deaths available to policymakers has been shown to fuel high-level commitment. Clinical audit, or a systematic and critical analysis of the quality of medical care,⁵⁴ can provide information on why maternal deaths occur and how to prevent them.⁵⁵ One type of audit investigates circumstances surrounding individual maternal deaths.⁵⁶ These audits carefully explore the “road to death” that individual women take—including the accounts of family members and health care providers—to try to lower the likelihood that other women do not share their fate. These investigations can be done on a confidential basis to ensure that no individuals are blamed.⁵⁷ Another type of audit investi-

Box 3. Many Obstacles to Receiving Care: Tahera's Story

The story below was told by Ms. Khukumoni Adhikari, a field trainer-nurse who is part of a project in Bangladesh that provides education about the importance of emergency obstetric care. Tahera's story illustrates the interrelated nature of all four Delays.

Tahera Khatun Bulbuli, age 14 when interviewed, was a housewife from a poor family living in the village of Patuakol in Bangladesh. Tahera became pregnant within two years of her marriage to Mehedi. When she was nine months pregnant, she experienced labor pain and a severe headache.

When Tahera informed her husband Mehedi, he reported the symptoms to his mother, who advised him to go to a spiritual healer for a talisman and holy water. The healer was not at home, and when Mehedi returned, he found Tahera having convulsions. Mehedi's uncle Moksed arrived and advised him to call in Samad Munshi, a homeopathy practitioner. The homeopath gave Tahera medicine, but after taking it, her pain increased. Amena Khatun, a *dai* (traditional birth attendant) was called. The *dai* tried to help Tahera until 11 p.m., but it was in vain.

Tahera's convulsions worsened. Mehedi went to his cousin Anwar Hossain for help. Anwar Hossain summoned a village healer called Dabirul, who was also a pathology technician. Dabirul came at midnight to see Tahera, who was convulsing. She was alone, because everyone thought a spirit had possessed her. The pathologist gave her an injection and promised to come back the following day to treat her with saline if her condition remained unchanged. But Tahera's condition worsened during the night.

Dabirul was called in again and treated her with another injection of saline. When Tahera fell unconscious, Mehedi wanted to carry her to the hospital. But neighbors argued that the baby had already died in the mother's womb, and thus it was not necessary to take her to a hospital. They said the family should try to deliver the dead baby at home.

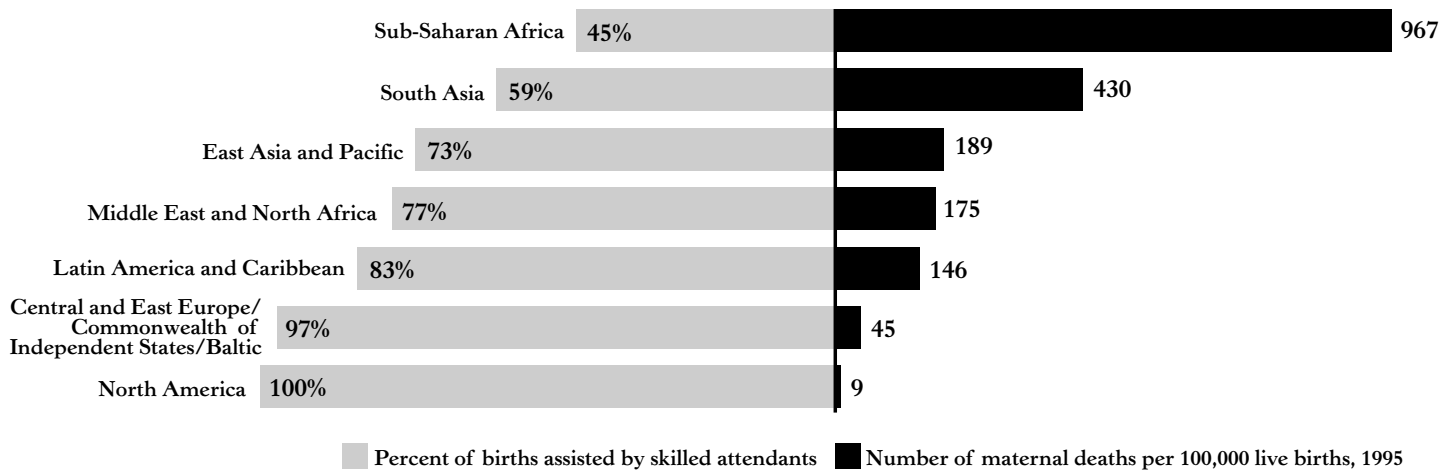
Finally, Mehedi hired a van to take Tahera to the hospital. But Abul Hossain, a village elder, intervened, arguing that Mehedi should get Tahera's parents' permission, and cautioning him about the expense of hospitalization. Mehedi was intimidated, so another night passed without any real intervention.

Early the next morning, Tahera had convulsions again and began foaming at the mouth. Her husband remembered seeing a person with similar untreated symptoms die, so he summoned the traditional birth attendant (TBA), and a van. The TBA, who had received training in how to recognize danger signs and where to send women when complications develop, urged Mehedi to take Tahera to the hospital. But the van driver they recruited said, “My van is open, I cannot carry this woman.” The desperate husband offered him more money. When Tahera was lifted into the van, some members of the community tried to intervene, but this time the TBA and Anwar Hossain refuted their argument. After they had traveled for 30 minutes, they met an acquaintance driving a microbus and transferred Tahera to the swifter form of transportation. At the hospital, the doctor on duty examined Tahera immediately, admitted her, and prescribed the necessary medicines. An hour after her admission, Tahera safely delivered a healthy baby daughter.

gates whether the care that patients received at a health facility matched established standards of care.⁵⁸ Researchers are also developing a new approach, the “near-miss audit,” which investigates how women with nearly fatal obstetric complications survived (see Box 3, page 17).⁵⁹

Program managers can monitor progress using “process indicators,” which measure how well the health system is providing maternity care.⁶⁰ These indicators are less expensive and simpler to collect on a regular basis than maternal mortality ratios. Thus, they are useful for short-term and regular monitoring. The most widely adopted process indicator is “skilled care at delivery,” whether a pregnant woman is provided with professional care during labor, birth, and the postpartum period.⁶¹ In 1999, the United Nations General Assembly recommended that countries use this indicator as a benchmark indicator to measure progress toward reducing maternal mortality. As Figure 3 shows, there is a strong association between skilled care at delivery and lower levels of maternal mortality. Of course, this care is complete only if the skilled attendant is supported by adequate supplies, equipment, and infrastructure, as well as an efficient and effective system of communication, transport, and referral.⁶²

Figure 3. Skilled Care at Delivery and Maternal Deaths, Regional Comparisons



Source: Population Reference Bureau calculation, using data from WHO, UNICEF, and UNFPA, *Maternal Mortality in 1995: Estimates developed by WHO, UNICEF, and UNFPA* (Geneva: WHO, 2001).

Programs That Promote Maternal Health and Survival

“Not simply because these are women in the prime of their lives ... not simply because a maternal death is one of the most terrible ways to die ... but above all because almost every maternal death is an event that could have been avoided, and should never have been allowed to happen.”⁶³

—Mahmoud Fathalla, past president, the International Federation of Obstetrics and Gynecology

An increasing array of programs help women overcome the obstacles they face in obtaining skilled delivery care when life-threatening emergencies arise. The programs described below address the barriers that delay women from seeking or receiving lifesaving care, and offer strategies to lower the risks that women face.⁶⁴ Each of these programs exists in a specific context, but may provide lessons that can be adapted to other nations or health systems. While standards for measuring maternity care programs are still being developed, the programs highlighted below all had positive evaluations.

Delay One. Recognizing Danger Signs

Many women fail to seek care because they and their families or caregivers do not recognize the signs of life-threatening complications of pregnancy and childbirth. Furthermore, some conditions pose serious threats only in their most extreme form. It is especially hard to recognize when excessive bleeding and prolonged labor become life-threatening. Even when a condition is recognized as serious, women, their spouses, and family members are not always certain what to do.

In Guatemala, a community-based information, education, and communication project aimed to improve indigenous women’s abilities to recognize danger signs and to act appropriately in emergencies. The project used radio education and participatory group meetings to convey information. A radio soap opera described the severe complications that women should know about, and the project mobilized groups of Mayan women to talk about how to recognize danger signs and what to do about

them. A project evaluation demonstrated that the women who participated in the group meetings had increased knowledge of how to recognize many of the major complications of pregnancy and childbirth, including hemorrhage, obstructed labor, and hypertensive disorders.⁶⁵

In many communities, there are established norms about the childbirth pain and bleeding that women are expected to experience.⁶⁶ In Bolivia, for example, women of the Aymara and Quechua indigenous groups see bleeding as a cleansing process. Because of this perception, excessive bleeding may be allowed to continue far too long.⁶⁷ Researchers identified this belief during formative research for a community-based safe motherhood intervention, and the information was used to develop a health communication plan for those communities.⁶⁸ The project then developed posters, pamphlets, and radio soap operas to help health care providers educate women and their families about danger signs and what to do when complications develop.

Excessive bleeding due to retained placenta is the leading cause of maternal mortality in Nicaragua. The story below is about a woman who ar-

rived at the health center in El Cua, a district in Jinotega, Nicaragua, in November 2000.⁶⁹ She survived because the woman who assisted at her delivery recognized that she was in danger. The story was told by a visitor to a project that worked to improve quality of delivery care in several health centers in Nicaragua. (For more information about the project, see Delay Four, page 29.)

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The goal for every mother is to see her baby resting comfortably, like this newborn in Matagalpa, Nicaragua; yet sometimes delays in recognizing complications put mothers and newborns at risk.

When Leonor Zelaya gave birth to her first child at her home in the small village of Arenal, the traditional birth attendant (TBA) who assisted at the delivery realized there was a problem. The TBA knew that when a woman's placenta does not emerge within 30 minutes of her baby's birth, she is at risk of a life-threatening hemorrhage. The TBA sent the woman's brother to the health center in El Cua to request help. Mrs. Zelaya's brother walked to a highway, flagged down a passing vehicle, and went to the health center

to report the problem. The health center sent an ambulance to evacuate the mother. Within an hour and a half of her delivery, the woman arrived at the health center, where a physician treated her immediately according to the protocols established by the project. By the time that the visitors left the clinic, Mrs. Zelaya was resting comfortably, breastfeeding her new baby son.

Part of problem recognition includes knowing what to do when complications arise. In Karachi, Pakistan, an information, education, and communication campaign raised awareness in the community about danger signs and the importance of swift referral to a health facility equipped to handle obstetric emergencies. The program, which trained providers in counseling skills, also established a referral system to link the community to a nearby hospital. An evaluation of the counseling for pregnant women and their spouses, which included the need to have an emergency plan, revealed an improvement in people's knowledge of preventive measures during pregnancy; for example, the importance of discussing and receiving permission from family elders or husbands, or both, for referral to a hospital in the event of an obstetric emergency.⁷⁰

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Members of the White Ribbon Alliance for Safe Motherhood in Nepal developed an education campaign to raise awareness about signs of complications that can occur before, during, and after childbirth.

Policy solutions. Successful programs address Delay One by

- Raising awareness in communities about signs of life-threatening complications; and
- Educating women, their partners, and their families about when and where to seek care for complications.

Delay Two. Deciding to Seek Care

Even when women recognize life-threatening complications, they may fail to seek care quickly enough. Often, women do not make these decisions alone; other family members, members of the community, or traditional birth attendants may also fail to make timely decisions about the need to seek care. This hesitation to act may result from mistrust of health providers—fear of receiving poor quality or dehumanizing care—or worries about the cost of services. In some countries, women are reluctant to seek care because they prefer to see female health care workers. In settings like rural Pakistan, where there are few female practitioners, women's modesty may prevent them from seeking potentially lifesaving care.⁷¹

The story of Tahera (see Box 3, page 17), a young woman in Bangladesh, illustrates how many factors can contribute to poor decisionmaking:

- Inability to recognize danger signs of life-threatening complications;
- Poor knowledge of where to receive care for complications;
- Inability of the husband to decide what to do because of his lack of knowledge;
- Inefficient decisionmaking process due to community power structure;

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- Initial reliance on ineffective local remedies;
- Fears about the potential costs involved in emergency maternity care;
- Community opposition; and
- Transportation problems.

Yet the story had a happy ending, in part because the traditional birth attendant who helped get the young woman to the hospital had received education about the importance of emergency obstetric care. The project that provided this training educates TBAs, service providers, and other community members to identify barriers; provides information; and creates an environment that enables women and their families to access emergency obstetric care at the Thana (district) level. Promoting the rights of women is also an integral part of improving women's access to essential obstetric care in Bangladesh.

Programs that educate communities how to seek care for complications of pregnancy and childbirth in a timely way can save many lives. In Bangladesh, a project is working with TBAs and others to respond more quickly to emergencies.

Tahera's story also illustrates that men may be offered poor advice when their wives develop complications.⁷² In many settings, male partners and relatives of women make the crucial decisions about whether or not to seek care, a dangerous situation when they are ignorant of danger signs and how to go about seeking care (see Box 4).⁷³

Cost can be a significant barrier to the decision to seek lifesaving care. In many settings, there are unexpected costs associated with obstetric emergencies.⁷⁴ A study of household health expenditures in Morocco, for example, found that a significant percentage of people who used public services incurred substantial costs even though the user fees are supposed to be low in public facilities.⁷⁵ Women had to dip into personal and family savings to pay for drugs, exams, surgical and x-ray fees, as well as other expenses associated with the hospital stay.

Some countries have developed community insurance systems to ensure that cost is not a deterrent to seeking care. In Indonesia, for example, the Ministry of Health Safe Motherhood Project introduced a system of vouchers (Target-based Performance Contracts) to encourage the use of midwives' services by low-income villagers in 10 districts in Central Java. The project provided eligible households with books of coupons for health care services from these government-trained midwives. The coupons were vouchers for maternal health care services such as antenatal care, delivery care, and postpartum and newborn care, as well as for other health care services for the whole community. Village midwives received compensation for each coupon and were also entitled to receive payment

Box 4. Gender Roles and Safe Motherhood

“No one told me. I didn’t know it was possible for my wife to die in childbirth. Men would do more if they knew the risks.”¹

— Indonesian man whose wife died in childbirth

Gender roles influence maternity care. When complications of pregnancy and childbirth develop, women are often not able to make decisions about their care. This places male family members and community members in decisionmaking roles. However, men often make poor decisions about seeking care during pregnancy and childbirth, in part because they do not understand the dangers involved. Results of a survey of men’s involvement in reproductive health programs in India, Pakistan, and Bangladesh highlighted that men base decisions on conventional ways of managing health matters, such as an economic assessment of the situation.²

Research suggests that if men were better educated about danger signs and what to do about them, they could play a lifesaving role during pregnancy and childbirth.³ In Nigeria, for exam-

ple, a study found that women in Osun State were not receiving necessary care during obstetric emergencies. Part of the reason was that men were making the major decisions about their wives’ use of health care. Subsequently, the Centre for Research, Evaluation Resources and Development designed a project to educate members of the communities about danger signs, what can be done to address them, and what role husbands should play.⁴ The project disseminated information through radio, television, newspapers, local “cooperative societies,” handbills, town criers, churches and mosques, and posters. An evaluation found the communication effort successful, especially because it sparked significant discussion in the community. The majority of men reported that they were “persuading friends and relatives to take proper care of their wives in pregnancy.”

Women are often not empowered to make decisions about seeking maternity care. But seeking care is just one aspect of safe motherhood. In many countries, women have little education, poor nutrition, limited decision-

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Men can play a lifesaving role during pregnancy and childbirth.

making power, few resources, and inadequate access to social services.⁵ As Shireen Jejeebhoy explained at the 1997 Safe Motherhood Technical Consultation in Colombo, Sri Lanka, “empowerment is critical to women’s health because it enables women to: articulate health needs and concerns; access services with confidence and without delay; and seek accountability from service providers and program managers.”⁶

Programs and policies that support educational, economic, and political opportunities for women all contribute to making motherhood safer.⁷

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The government of Bolivia established a national Mother-Child Insurance Program to encourage use of health services.

for each mother they referred to a higher level of care. The midwives received payment if they accompanied mothers to referral centers. Evidence from an evaluation in 2000 suggests that the program stimulated the use of village midwives' services by those who received coupons.⁷⁶ In addition, the client contact promoted by the coupons seems to have helped many village midwives establish their practices more quickly.

Bolivia has also made efforts to address the issue of maternity care costs. In 1996, a study found that only 60 percent of all births were attended by a skilled provider, and more than half of the population was not using formal health services, mainly because services were perceived as too costly. For women, cost was a major barrier to obtaining appropriate medical care; those giv-

Box 5. Adolescent Mothers: A Group With Special Needs

When a young woman between ages 15 and 19 becomes a mother, her health and that of her child are often threatened. The numbers reveal the heightened risk: Women under age 17 are more likely to experience premature labor, miscarriage, and stillbirth, and they are up to four times as likely as women older than 20 to die from pregnancy-related causes.¹ Because adolescent women have not yet completed their growth (in particular, their height and pelvic size), their bodies are often not developed adequately enough to carry a pregnancy. This puts them at greater risk of obstructed delivery and prolonged labor, which can lead to permanent injury or death for both the mother and infant. Studies indicate that adolescents are much more likely than older women to suffer from obstetric fistula (tears between the vagina and the urinary tract or rectum that cause fecal and urinary incontinence). One study in Niger found that 80 percent of all cases of fistula occur in women between the ages of 15 and 19.² The first two years after first menstruation are an especially vulnerable age for adolescents.³

The story below illustrates one Southeast Asian adolescent girl's need for access to reproductive health services including family planning, and antenatal, delivery, and postpartum care.

A few months after Aziza turned 15 years of age, she married and moved into her husband's home. Her mother had prayed fervently before she departed that, *insha-Allah*—Arabic for "God-willing"—Aziza would present her husband with a son soon to make her position secure in the household. When, a few months later, Aziza began to feel sick in the mornings, there was much joy in both families.

As Aziza's pregnancy progressed, her husband noted she looked pale and was constantly tired. The doctor confirmed that Aziza was severely anemic and was not gaining enough weight. She was too young to be having a baby, the doctor said. The doctor warned the family about possible complications during the pregnancy and delivery, as Aziza was scarcely more than a child herself and her body had not yet developed sufficiently.

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ing birth in a public facility had to pay medical fees, anesthetic and antibiotic costs, and the cost of surgical supplies such as gloves and surgical drapes. In an effort to improve the quality of maternal and child health care in the country, the government of Bolivia developed and implemented the Law on Popular Participation, which among other things established the national Mother-Child Insurance for Maternity and Childhood Program to provide free services to pregnant women and children under 5 in over 300 municipalities.⁷⁷ Under the insurance program, coverage for pregnant women includes four antenatal visits, hospital delivery, treatment of obstetric complications, and one postnatal consultation. The program was advertised through public announcements on radio and television, and in community *charlas*, or informal discussions. One year following implementation of the Popular Participation law, antenatal visits had increased by 80 percent, deliveries at public health facilities by almost 50 percent, and hospital treatment of emergency cases by 90 percent.⁷⁸ An evaluation

During antenatal checkups, the doctor warned against a home delivery, but when Aziza's contractions began some three weeks early, Aziza's mother-in-law did not heed the warning. Babies had always been born at home. When 14 hours had passed, Aziza was put into a cycle-rickshaw and wheeled to the hospital.

The labor was complicated because by this time 20 hours had passed and Aziza's water had burst hours before reaching the hospital. Aziza was exhausted and weak. To save her life, the doctor performed a Caesarean section. Aziza suffered life-threatening hemorrhage, but she and her newborn baby girl survived.

The doctor counseled Aziza's husband against the hazard of another pregnancy too soon. The health worker explained contraceptive options for preventing another pregnancy. Aziza's husband realized just how fortunate they had been.

"I have made a mistake which must never be repeated in our family," he announced to his mother upon returning home. "Our little Husaina will be breastfed and strong.

She will not have another brother or sister for at least three years. She will go to school and not be married off before she is at least 20."⁴

While Aziza wanted to have a baby, many adolescents get pregnant unintentionally. The health risks of pregnancy for young women are complicated by their lack of access to information about contraceptives. Because adolescent pregnancies are often unintended or mistimed, many young women choose to terminate the pregnancy. Where legal abortion services are available, access is often restricted for teenage girls because of economic, geographic, or cultural barriers. Regardless of the law, young women are more likely to seek abortions from untrained providers and to attempt dangerous, late, and often self-induced abortions. As a result, young women often account for a disproportionate share of both complications and deaths due to abortions.⁵

Policies and programs that encourage later marriage and delayed childbearing and expanded economic and educational opportunities for girls and women have been shown to reduce adolescent maternal deaths.⁶

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of the insurance program as it completed its second year of operation found that it had stimulated use of maternity care. Use of the program was also found to be strongest among the poor and relatively high for adolescents, groups that were not previously using formal health services (see Box 5, page 24).⁷⁹

Policy solutions. Successful programs address Delay Two by

- Encouraging families and communities to develop plans of action in case of obstetric emergencies;
- Raising women's status so that they are empowered to make critical health decisions;
- Enhancing links between communities and health care providers;
- Improving relationships between traditional healers and skilled health care providers;
- Improving the interpersonal skills of health care providers using information about how the community defines quality of care;
- Educating women and their families about where to seek care for complications;
- Encouraging communities to create insurance schemes to pool the costs associated with emergency care; and
- Encouraging the use of health care facilities by adolescents, single or unmarried women, and ethnic and linguistic groups who are reluctant to use services because of sociocultural barriers.

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A health care worker in India teaches community members about the importance of recognizing heavy bleeding as a danger sign. Hemorrhage is a major cause of maternal death.

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Delay Three. Reaching Appropriate Care

Physical, financial, and sociocultural barriers often prevent women and their families from getting to care in time. Transportation is a major barrier in countries where the geography poses challenges or where road systems are not comprehensive or well-maintained. In remote areas, vehicles are often scarce and in poor condition. The costs of arranging emergency transportation can be daunting.⁸⁰ These costs include the price of hiring a private vehicle and fuel expenses. The opportunity cost, or

Community members participate in an emergency transport scheme in an area of Nepal that has few other modes of transportation.

loss of productive time of the person accompanying the sick woman, can also pose an obstacle. In addition, private drivers are sometimes reluctant to transport severely ill women because of the risk that they will bleed in their vehicles or die en route.⁸¹ Some women die because of inadequate referral systems, and others die en route to care because the facility or provider is too far away.

A range of programs around the world are addressing these structural barriers. In some countries, pregnant women from remote areas travel to facilities near hospitals where they plan to deliver. Maternity waiting homes, which are typically built near hospitals, provide a place where women can go near the time of delivery to have easy access to hospital deliveries.⁸² In most settings around the world, however, women in need of care are transported in ambulances or vehicles such as buses, pickup trucks, motorcycles, tricycles, and even bicycles and boats.⁸³ Often the community gets involved in organizing this effort. For example, in Tanzania, a community-based reproductive health project identified transportation as one of the barriers to maternal survival in two districts in the Mwanza region in 1998. A qualitative assessment in May 2000 revealed that during obstetric emergencies the most important barrier women faced was ready access to inexpensive transportation.⁸⁴ The project managers developed a strategy to work with communities in about 40 villages to identify transportation options, develop their own action plans to create functional systems from the community's own vision, share innovations from other communities, and provide assistance and support for problem solving. During a 14-month period, 35 communities developed transportation plans. Each transportation plan was different. Some plans involved purchasing and managing reconditioned vehicles, tractors, and motorboats. In one case, the community relied on a locally manufactured tricycle. In other villages along Lake Victoria, the communities strengthened existing response systems by making canoes available for emergency transportation. Others set up emergency funds. Plans varied according to the economic status of the community, access to roads and waterways, and previous experience working together on development activities.

In the primarily rural northwestern state of Kebbi in Nigeria, a safe motherhood network enlisted the support of a local bus drivers union, the Nigerian Union of Road Transport Workers.⁸⁵ Focus group discussions

Photo removed for copyright reasons.

A project in the Mwandubi district of Tanzania designed this bicycle to transport women to emergency obstetric care services.

Photo removed for copyright reasons.

Local taxis participated in an emergency transport scheme in India.

and a village case study had found that shortages of vehicles and fuel meant that women in need of emergency obstetric services could not get to care. In many cases, the search for transportation at affordable rates was time-consuming and required continuous negotiation. After a series of community mobilization meetings organized by the safe motherhood network with bus drivers and village heads, the union members agreed to provide transportation for women with obstetrical emergencies during market-day hours. The members, who received training from the network in

how to transport emergency cases to care as well as certificates and special stickers for their buses, could be reimbursed for the fuel costs by a safe motherhood fund created by community members and the network. A 1995 survey found that 13 percent of women who required transportation for obstetrical care relied on the new system, whereas three years earlier most women had to pay commercial rates for that service.⁸⁶

Ministry of health officials who usually deal with safe motherhood issues have no authority over the transportation system. Upgrading roads to make sure women have access to emergency obstetric care therefore often depends on the support from other officials. In Enugu State in southeastern Nigeria, the governor is an obstetrician and gynecologist with special interest in maternal and fetal medicine. Dr. Chimaroke Nnamani worked to improve access to health centers by rehabilitating and constructing new roads in the various communities and urban areas of the state.⁸⁷

When communities and providers do not collaborate well, women do not receive emergency obstetric care promptly. In 1994, an interpersonal communication and counseling project in Bolivia worked to improve communication and trust between the community and health care providers in the state of Cochabamba, so that the two groups would coordinate in times of emergency. The project worked with teams of providers and tried to mesh medical and community perceptions of high-quality pregnancy, delivery, and postpartum care.⁸⁸ An evaluation found some improvement in the orientation of the providers toward the clients.⁸⁹ Providers became more sensitive to the cultural needs of the clients. They were more likely, for example, to inquire about whether the clients wanted to have family members present at the delivery and what delivery position the clients desired. These improvements meant that the community referred women to care more promptly.

Policy solutions. Successful programs address Delay Three by

- Encouraging communities to create emergency transportation plans;
- Upgrading roads and other transportation systems;

- Enhancing referral systems between communities and health care providers; and
- Establishing maternity waiting homes.

Delay Four. Receiving Care at Health Facilities

Even when women with complications arrive at a health care facility, they may not receive the care they need quickly enough to save their lives. Sometimes the health care facility does not have an efficient system to make sure that emergency cases are seen promptly. This is often due to the inability of facility staff to recognize obstetric emergencies. Shortages of skilled attendants at health care facilities mean that women receive substandard care at the moment when they most need high-quality care. Unfortunately, racial and other sociocultural barriers may also prevent women from being seen promptly. In Ecuador, for example, a study found that indigenous women encountered significant barriers in obtaining emergency obstetric care at national health centers from doctors who were members of the dominant ethnic group. The study's author concluded that cultural prejudice was the main barrier.⁹⁰

In addition, health facilities in many less-developed countries are often not equipped with sufficient supplies, emergency medicines, essential equipment, and blood required to ensure a safe delivery.⁹¹ Lack of medical protocols to guide health care providers and effective supervision also affect quality of care.

Several recent studies shed light on why women receive substandard care. A study in Mexico, for example, found that 50 percent of the maternal deaths reviewed occurred in facilities where adequate care was not available.⁹² In many cases, the facilities were not equipped to handle the complications, but in other cases, the women were kept waiting so long that their complications became fatal. (For more on how the government of Mexico addressed these findings, see "Assess Local Conditions," page 13.)

In Egypt, a national-level study of maternal mortality found that 64 percent of maternal deaths occurred in health facilities.⁹³ The study acknowledged that many of these deaths occurred because the women arrived too late for their conditions to be treated adequately. But the study also found that 47 percent of the "avoidable factors" associated with women's deaths were due to substandard delivery care. In many cases, no standard referral system was in place, or no protocols were available for obstetric emergencies.⁹⁴ As a result of these study findings, the Egyptian Ministry of Health worked to define a set of health facility and community-based interventions to address the avoidable factors

Photo removed for copyright reasons.

High-quality maternal health care should serve the needs of all women, such as this new Ecuadorian mother.

Photo removed for
copyright reasons.

Most maternal and newborn deaths occur within 24 hours of delivery. Timely care can save the lives of many women and their infants.

identified. Among the interventions were protocols for delivery care, standards of quality of care, and special training courses for maternity care providers.

A quality assurance project in Nicaragua tried to address physical and psychological barriers that prevented women from wanting to visit health care centers. A study found that only 58 percent of women visiting health centers in the districts of Jinotega and Matagalpa, Nicaragua, for antenatal and delivery care were satisfied with the way health providers treated them.⁹⁵ The waiting and consultation rooms were not conducive to the comfort and privacy desired by the clients. In addition, the study found that the staff of the health centers were unmotivated and lacked knowledge

about what to do in case of obstetric emergencies. Standard protocols to guide the staff's work did not exist. The project introduced modern quality assurance techniques to make better use of the health centers' limited resources. The physicians running the program focused on improving client satisfaction and strengthening compliance with national standards for antenatal and delivery care. They redesigned the health center to ensure shorter waiting times, trained health workers in how to care for women with obstetric complications, and introduced new technologies to help health workers monitor women's labor and identify danger signals. Less than a year after the program began, the number of recorded maternal deaths dropped significantly in the two districts in Jinotega where the project operated. The health center teams increased compliance with obstetric standards from under 3 percent in March 2000 to between 70 percent and 90 percent in November 2000. Finally, exit interviews conducted in November 2000 by the health unit confirmed that patient satisfaction had increased to almost 90 percent.

A pilot project at the Regional Hospital Center of Fada Ngourma in Burkina Faso paid special attention to increasing access to emergency surgery. Prior research had found that patients' families had to obtain prescriptions for necessary drugs and supplies, raise money, and then purchase drugs and supplies prior to surgery. These factors contributed to the delay in obtaining emergency obstetric care (EOC). To prevent such delays, the project developed kits containing the necessary drugs and supplies for obstetrical surgery for sale at a reduced price to consumers. The project also upgraded the operating theater, trained hospital personnel in EOC, and improved the referral system for EOC with communications

equipment. It also funded supervision, monitoring, and evaluation. An assessment found that the project was effective in reducing the delay in obtaining EOC because it improved the capacity of the hospital to provide Caesarean sections.⁹⁶ Maternal deaths declined from an average of 21 in 1995 and 1996 to seven in 1997. Only 1 percent of deliveries in Burkina Faso are done by Caesarean section, a rate that is considered too low. Global standards suggest that a rate of less than 5 percent indicates that women are not receiving adequate emergency obstetric care.

In Ghana, the Ministry of Health has integrated postabortion care into its National Safe Motherhood Program and identified midwives as potential providers for safe and effective services to women needing care for abortion complications. Research found that care provided by trained midwives can save lives. In the past, midwives could only refer women to the nearest hospital, adding travel time and delaying care. In addition to providing services to women experiencing incomplete abortions, midwives provide family planning counseling and services to enable women to prevent future unwanted pregnancies (see Box 1, page 8).⁹⁷

Policy solutions. Successful programs address Delay Four by

- Upgrading quality of care at health facilities, including improving providers' technical and interpersonal skills, motivation, and performance;
- Establishing national protocols about how to treat obstetric complications;
- Training health facility staff to recognize and admit patients with life-threatening complications;
- Ensuring adequate and sustainable supplies of emergency medicines, essential equipment, blood, and staffing levels at health facilities;
- Providing 24-hour service at facilities that provide emergency obstetric care;
- Enhancing referral systems between communities and health facilities;
- Improving communication between the units providing care in order to generate more referrals; and
- Ensuring that the national curricula for health providers include practical components on how to treat obstetrical emergencies.

Photo removed for copyright reasons.

Health systems need to ensure that health workers have the skills and supplies to provide high-quality maternity care.

Conclusion

Maternal mortality is preventable.

Research shows that women's lives can be saved and their suffering reduced if health systems address serious and life-threatening complications when they occur. One of the best ways to do this is to make sure that women receive skilled care at delivery. Yet, women face multiple delays in seeking and receiving lifesaving care when they need it:

- They may not recognize the signs of life-threatening complications (**Delay One**).
- They may postpone deciding to seek care (**Delay Two**).
- It may take too long to reach appropriate care (**Delay Three**).
- Women may receive substandard or slow care at health facilities (**Delay Four**).

Women will stop dying in childbirth when they are able to plan their pregnancies, give birth under the supervision of a skilled attendant, and have access to high-quality treatment if pregnancy complications occur. These improvements are feasible even in low-income settings, but require continuous and focused improvement of health systems.

Making motherhood a safer time in women's lives requires commitment at all levels: in the home, in the community, in the clinic, in the country, and at the international level. This is a commitment to reducing inequities, improving women's autonomy, and ensuring that motherhood is a safe, joyful, and rewarding experience.

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Making motherhood a safer time in women's lives requires commitment at all levels.

Appendix: Technical Resources

Several manuals provide guidance for program managers on assessing the needs of their particular context for maternity care.

The websites listed here provide information about conducting needs assessments and about maternal survival programs around the world.

Manuals

Assessing Safe Motherhood in the Community: A Guide for Formative Research. Washington, DC: MotherCare, September 1998.

Awareness, Mobilization, and Action for Safe Motherhood: A Field Guide. Washington, DC: White Ribbon Alliance for Safe Motherhood, 2000.

The Design and Evaluation of Maternal Mortality Programs. New York: Columbia University Center for Population and Family Health, School of Public Health, 1997.

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

Integrating Reproductive Health Into NGO Programs, Vol. 2: "Safer Motherhood for Communities." Boston: Family Planning Service Expansion and Technical Support (SEATS) Project and Initiatives, Inc., 1999.

Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors. Geneva: World Health Organization, 2001.

Manual for Policy Makers and Trainers: A Life Saving Skills Training Program Process. Washington, DC: American College of Nurse-Midwives, 1998.

Maternal and Newborn Care: A Reference Manual for Program Managers. Atlanta: CARE, 1999.

Safe Motherhood Needs Assessment. Geneva: World Health Organization, 1998.

Web Resources

American College of Nurse-Midwives
www.acnm.org

Centers for Disease Control and Prevention
www.cdc.gov/nccdphp/drh/mh.htm

Family Care International
www.familycareintl.org/

International Federation of Gynecology and Obstetrics
www.igo.org/

Maternal & Neonatal Health (MNH) Program at the JHPIEGO Corporation
www.mnh.jhpiego.org

MotherCare project of John Snow, Inc.
www.jsi.com/intl/mothercare/home.htm

Population Reference Bureau
www.prb.org

RPMM Network
www.rpmm.org

Reproductive Health Outlook, annotated bibliography on safe motherhood
http://rho.org/html/safe_motherhood.htm

Safe Motherhood Inter-Agency Group (IAG)
www.safemotherhood.org

United Nations Population Fund
www.unfpa.org/tpd/mmupdate/
www.ammd.hs.columbia.edu

The Unmet Need for Major Obstetric Interventions Network
www.uonn.org

White Ribbon Alliance
www.whiteribbonalliance.org

World Bank: Reproductive Health at a Glance
www.worldbank.org/hnp

World Health Organization
www.who.int

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3. Jeremy Shiffman, "Can Poor Countries Surmount High Maternal Mortality?" *Studies in Family Planning* 31, no. 4 (December 2000).
4. Most recently, at the 1999 United Nations Special Session of the General Assembly at which 180 countries met to review implementation of the 1994 Programme of Action of the International Conference on Population and Development (ICPD+5).
5. United Nations (UN), *Report of the Ad Hoc Committee of the Whole of the Twenty-third Special Session of the General Assembly* (2000), Supplement No. 3 (A/S-23/10/Rev. 1), accessed online at www.un.org/womenwatch/confer/beijing5, on Oct. 3, 2001.
6. World Health Organization (WHO), United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA), *Maternal Mortality in 1995: Estimates Developed by WHO, UNICEF and UNFPA* (Geneva: WHO, 2001).
7. Irvine Loudon, "The Transformation of Maternal Mortality," *British Medical Journal* 305 (1992): 1557-60.
8. UNICEF, "Maternal Care: End Decade Databases," accessed online at www.childinfo.org/eddb/mat_mortal/index.htm, on Oct. 3, 2001.
9. UNICEF, *Progress of Nations* (New York: UNICEF, 1996).
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11. Peter Adamson, "A Failure of the Imagination," *Progress of Nations* (New York: UNICEF, 1996): 2-7.
12. Hind A.S. Khattab, *The Silent Endurance: Social Conditions of Women's Reproductive Health in Rural Egypt* (Amman, Jordan: UNICEF Regional Office of the Middle East and North Africa; and Cairo: Population Council Regional Office of the West Asia and North Africa, 1992).
13. Ann Starrs, *The Safe Motherhood Action Agenda: Priorities for the Next Decade*, report on the Safe Motherhood Technical Consultation (New York: Family Care International, 1998): 37.
14. Ann Tinker and Marge Koblinsky, with contributions from Patricia Daly et al., "Making Motherhood Safe," *World Bank Discussion Paper* 202 (Washington, DC: World Bank, 1993).
15. Indirect causes of maternal deaths include malaria, diabetes, viral hepatitis, rheumatic heart disease, and anemia, all conditions aggravated by pregnancy. Other indirect causes include ectopic pregnancy, embolism, and anesthesia-related deaths.
16. Safe Motherhood Inter-Agency Group, *Skilled Care During Childbirth: A Review of the Evidence* (New York: Family Care International, forthcoming). See also World Health Organization, *Reduction of Maternal Mortality: A Joint WHO/UNFPA/UNICEF/ World Bank Statement* (Geneva: WHO, 1999).
17. UNICEF, "Maternal Care: End Decade Databases"; and WHO, *Coverage of Maternity Care: A Listing of Available Information*, 4th ed. (Geneva: WHO, 1997).
18. Farid Medhet, Stan Becker, and Heinz W. Berendes, "Contextual Determinants of Maternal Mortality in Rural Pakistan," *Social Science and Medicine* 46, no. 12 (1998): 1587-98.
19. Sreen Thaddeus and Deborah Maine developed the concept of three "delays" that prevent women from seeking or obtaining care. This booklet builds on that idea by dividing the first "delay" (at the household level) into two "delays" elaborated by researchers such as Marge Koblinsky and Susan Rae Ross. These two delays are: (1) the failure to recognize life-threatening complications when they occur, and (2) postponing the decision to seek care. See Sreen Thaddeus and Deborah Maine, *Too Far to Walk: Maternal Mortality in Context, Findings from a Multi-Disciplinary Literature Review* (New York: Columbia University School of Public Health, Center for Population and Family Health, 1990); Susan Rae Ross, *Promoting Quality Maternal and Newborn Care: A Reference Manual for Program Managers* (Atlanta: CARE, 1998); and Nancy Nachbar, Carol Baume, and Anjou Parekh, *Assessing Safe Motherhood in the Community: A Guide to Formative Research* (Arlington, VA: John Snow, Inc., 1998).
20. Marge Koblinsky, Colleen Conroy, Nazo Kureshy, Mary Ellen Stanton, and Suzanne Jessop, *Issues in Programming for Safe Motherhood* (Arlington, VA: MotherCare/John Snow, Inc., 2000).
21. Starrs, *Safe Motherhood Action Agenda*: 16.
22. UNICEF, "Maternal Care: End Decade Databases."
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24. Christopher J.L. Murray and Alan D. Lopez, "Quantifying the Health Risks of Sex and Reproduction: Implications of Alternative Definitions," in *Health Dimensions of Sex and Reproduction*, ed. Christopher J.L. Murray and Alan D. Lopez (Cambridge, MA: Harvard School of Public Health, World Health Organization, and World Bank, 1998).
25. Poor reproductive health conditions include penis and testes cancers, uterine cancer, ovarian cancer, prostate cancer, breast cancer, cervical cancer, sexually transmitted diseases, and maternal causes.
26. The Safe Motherhood Initiative is sponsored by the Safe Motherhood Inter-Agency Group (IAG), currently comprised of the United Nations Population Fund, the United Nations Children's Fund, the International Confederation of Midwives, the International Federation of Gynecology and Obstetrics, the International Planned Parenthood Federation, the Population Council, the Regional Prevention of Maternal Mortality Network (Africa), the Safe Motherhood Network of Nepal, the World Bank, and the World Health Organization. Family Care International serves as the secretariat.
27. 1990 World Summit for Children; Programme of Action (POA) of the 1994 International Conference on Population and Development (ICPD), which was adopted by all 179 of the participating countries and reaffirmed in 1999; Fourth World Conference on Women, held in Beijing in 1995; and five-year review meetings of ICPD+5 and Beijing+5.
28. *Programme of Action of the United Nations International Conference on Population and Development* (New York: UN, 1994): Section 7.2. The ICPD was held in Cairo, Egypt, Sept. 5-13, 1994.
29. Guillermo Carroli, Cleone Rooney, and José Villar, "How Effective is Antenatal Care in Preventing Maternal Mortality and Morbidity: An Overview of the Evidence," *Paediatric and Perinatal Epidemiology* 15 (Supplement 1, 2001): 1-42.

30. Theresa Shaver and Barbara Kinzie, "Antenatal Care: Old Myths, New Realities," presentation at MAQ Mini-University, Washington, DC, April 20, 2001, available online at www.maqweb.org.
31. José Villar et al., "WHO Antenatal Care Randomized Trial for the Evaluation of a New Model of Routine Antenatal Care," *The Lancet* 357 (May 19, 2001); and Mona K. Moore, "Safer Motherhood 2000: Toward a Framework for Behavior Change to Reduce Maternal Deaths," accessed online at www.comminit.com/downloads/word_docs/SM20001_v2.doc, on Oct. 4, 2001.
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40. Varuni Dayaratna et al., *Reproductive Health Interventions: Which Ones Work and What Do They Cost?* (Washington, DC: Policy Project, March 2000).
41. Jozef Sioncke and Donnay France, *Maternal Mortality Update 1998-1999: A Report on UNFPA Support for Maternal Mortality Prevention* (New York: UNFPA, 2001).
42. BEOC includes administration of antibiotics, oxytocics, anticonvulsants, manual removal of the placenta, removal of retained products, and assisted vaginal delivery with forceps or vacuum extractor.
43. Starrs, *Safe Motherhood Action Agenda*: 8.
44. Sioncke and France, *Maternal Mortality Update 1998-1999*.
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52. Sioncke and France, *Maternal Mortality Update 1998-1999*.
53. UNICEF/WHO/UNFPA, *Guidelines for Monitoring the Availability and Use of Obstetric Services* (New York: UNICEF, October 1997).
54. Iain K. Crombie et al. *The Audit Handbook: Improving Health Care Through Clinical Audit* (New York: John Wiley & Sons, 1993).
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58. Criterion-based clinical audit is the systematic critical analysis of the quality of care provided to patients at a health facility with the primary aim of improving clinical practice. The audit compares care received against explicit standards and aggregates the data across patients to derive proportions of cases managed optimally (see *WHO Guidelines for Investigating Maternal Deaths*, in draft).
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60. Starrs, *Safe Motherhood Action Agenda*: 67.
61. Safe Motherhood Inter-Agency Group, *Skilled Care During Childbirth*. See also WHO, *Reduction of Maternal Mortality: A Joint WHO/UNFPA/UNICEF/World Bank Statement*.
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