MNPI 2002

A Tool for Maternal Health Advocates

Maternal and Neonatal Program Effort Index

Senegal

Results from the 2002 Survey

Worldwide, over 500,000 women and girls die of complications related to pregnancy and childbirth each year. Over 99 percent of those deaths occur in developing countries such as Senegal. But maternal deaths only tell part of the story. For every woman or girl who dies as a result of pregnancy-related causes, between 20 and 30 more will develop short- and long-term disabilities, such as obstetric fistula, a ruptured uterus, or pelvic inflammatory disease (see box on page 2).

Senegal's maternal mortality rate continues at an unacceptably high level. Although maternal mortality figures vary widely by source and are highly controversial, the best estimates for Senegal suggest that around 2,500[1] women and girls die each year due to pregnancy-related complications. Additionally, approximately another 50,000[2] Senegalese women and girls will suffer from injuries or disabilities caused by complications during pregnancy and childbirth each year.

The tragedy—and opportunity—is that most of these deaths can be prevented with cost-effective health care services. Reducing maternal mortality and disability will depend on identifying and improving those services that are critical to the health of Senegalese women and girls, including antenatal care, emergency obstetric care, adequate postpartum care for mothers and babies, and services for family planning and sexually transmitted infections (STIs), including HIV/AIDS. With this goal in mind, the Maternal and Neonatal Program Effort Index (MNPI) is a tool that reproductive health care advocates, providers, and program planners can use to

- assess current health care services
- identify program strengths and weaknesses
- plan strategies to address deficiencies
- encourage political and popular support for appropriate action
- track progress over time

Health care programs to improve maternal health must be supported by strong policies, adequate training of health care providers, and logistical services that facilitate the provision of those programs. Once maternal and neonatal programs and policies are in place, all women and girls must be ensured equal access to the full range of services.

At-a-Glance: Senegal

Population, mid-2004	10,600,000
Average age at first marriage, all women	18 years
Births attended by skilled personnel	47%
Total fertility rate (average number of children born to a woman during her lifetime)	5.2
Females giving birth by age 20	43%
Children who are exclusively breastfed at ages less than 6 months	13%
Contraceptive use among married women, ages 15-49, modern methods	8%

Sources: Population Reference Bureau – *2002 Women of Our World; 2004 World Population Data Sheet; The World's Youth, 2000*; and *1999 Breastfeeding Patterns in the Developing World* (see *www.prb.org/datafinder*).

USAID
FROM THE AMERICAN PEOPLE

Published June 2005

This publication was produced for review by the United States Agency for International Development. It was prepared by the POLICY Project.

Understanding the Causes of Maternal Mortality and Morbidity

Maternal mortality refers to those deaths that are caused by complications due to pregnancy or childbirth. These complications may be experienced during pregnancy or delivery itself, or may occur up to 42 days following childbirth. For each woman who succumbs to maternal death, many more will suffer injuries, infections, and disabilities brought about by pregnancy or childbirth complications, such as obstetric fistula.[3] In most cases, however, maternal mortality and disability can be prevented with appropriate health interventions.[4]

Some of the direct medical causes of maternal mortality include hemorrhage or bleeding, infection, complications from abortion, hypertensive disorders, and obstructed labor. Other causes include ectopic pregnancy, embolism, and anesthesia-related risks.[5] Conditions such as anemia, diabetes, malaria, STIs, and others can also increase a woman's risk for complications during pregnancy and childbirth, and, thus, are indirect causes of maternal mortality and morbidity. Because most maternal deaths occur during delivery and during the postpartum period, emergency obstetric care, skilled birth attendants, postpartum care, and transportation to medical facilities if complications arise are all necessary components of strategies to reduce maternal mortality.[6] These services are often particularly limited in rural areas, so special steps must be taken to increase the availability of services in those areas.

Efforts to reduce maternal mortality and morbidity must also address societal and cultural factors that affect women's health and their access to services. Women's low status in society, lack of access to and control over resources, limited educational opportunities, poor nutrition, and lack of decisionmaking power contribute significantly to adverse pregnancy outcomes. Laws and policies, such as those that require a woman to first obtain permission from her husband or parents, may also discourage women and girls from seeking needed health care services—particularly if they are of a sensitive nature, such as family planning, complications from abortion, or treatment of STIs.

Traditional practices that affect maternal health outcomes include early marriage and female genital cutting. In some countries, many women marry before the age of 20, and pregnancies in adolescent girls, whose bodies are still growing and developing, put both the mothers and their babies at risk for negative health consequences.

Female genital cutting, also known as female circumcision or genital mutilation, is a practice that involves removing all or part of the external genitalia and/or stitching and narrowing the vaginal opening (which is called *infibulation*). The practice is common in some parts of Africa and the Middle East. Social, cultural, religious, and personal reasons support the persistence of this practice. Some of these reasons include maintaining tradition and custom, promoting hygiene or aesthetics, upholding family honor, controlling women's sexuality and emotions, and protecting women's virginity until marriage.[7] Many women and girls who undergo female genital cutting, particularly those who undergo Type III cutting or infibulation, experience health problems including hemorrhage, pain, infection, perineal tears, and trauma during childbirth. They often also experience psychological and sexual problems.

The consequences of maternal mortality and morbidity are felt not only by women, but also by their families and communities. Children who lose their mothers are at an increased risk for such problems as malnutrition or even death. Loss of women during their most productive years also means a loss of resources for the entire society.

Ensuring safe motherhood requires recognizing and supporting the rights of women and girls to lead healthy lives in which they have control over the resources and decisions that affect their health and safety. It requires raising awareness of complications associated with pregnancy and childbirth, providing access to high-quality health services (antenatal, delivery, postpartum, family planning, etc.), and eliminating harmful practices.

The Maternal and Neonatal Program Effort Index

IIn 2002–2003, around 900 reproductive health experts evaluated and rated maternal and neonatal health services as part of an assessment in 55 developing countries.[8] The results of this study constitute the MNPI, which produced both international and country-specific ratings of relevant services. Using a tested methodology for rating programs and services,[9] 10 to 25 experts in each country—who were familiar with but not directly responsible for the country's maternal health programs—rated 81 individual aspects of maternal and neonatal health services on a scale from 0–5. For convenience, each score was then multiplied by 20 to obtain an index that runs from 0–100, with 0 indicating a low score and 100 indicating a high score.

The 81 items are drawn from 13 major components:

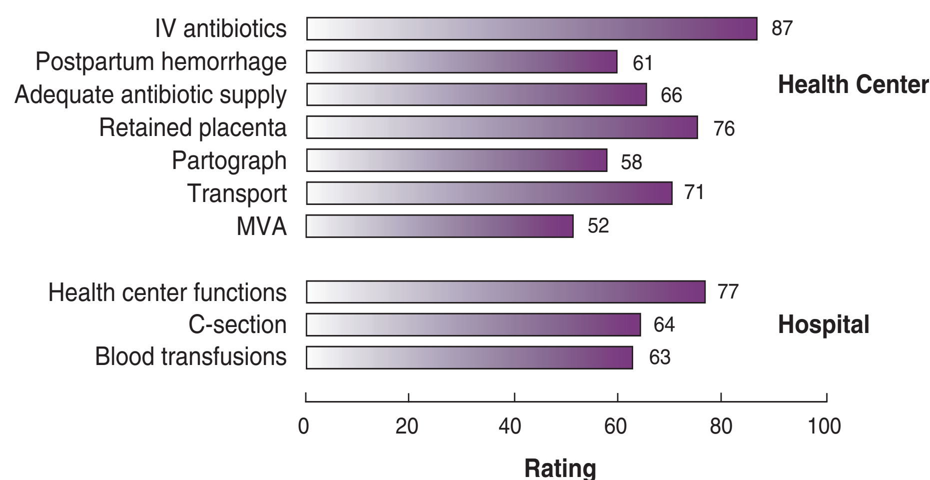
- Health center capacity
- District hospital capacity
- Access to services
- Antenatal care
- Delivery care
- Newborn care
- Family planning services at health centers
- Family planning services at district hospitals
- Policies toward safe pregnancy and delivery
- Adequacy of resources
- Health promotion
- Staff training
- Monitoring and research

Items from these categories can be further classified into five types of program effort: service capacity, access, care received, family planning, and support services. The following five figures, organized by type of program effort, present the significant indicators from the 2003 Senegal study.

Service Capacity

Overall, Senegal's capacity to provide emergency obstetric care received a rating of 68 out of 100. Figure 1 shows ratings of the capacity of health centers and district hospitals to provide specific services. The ability to administer antibiotics intravenously (87) is the most commonly available service at health centers in Senegal, whereas providing manual vacuum aspiration of the uterus (MVA) for postabortion care (52) is the least available service. District hospitals received moderately high ratings for providing the basic set of health center functions (77). The ability of district hospitals to provide both blood transfusions (63) and Cesarean-sections (64) received moderate scores, but still show a need to improve the access of Senegalese women to these life-saving interventions.

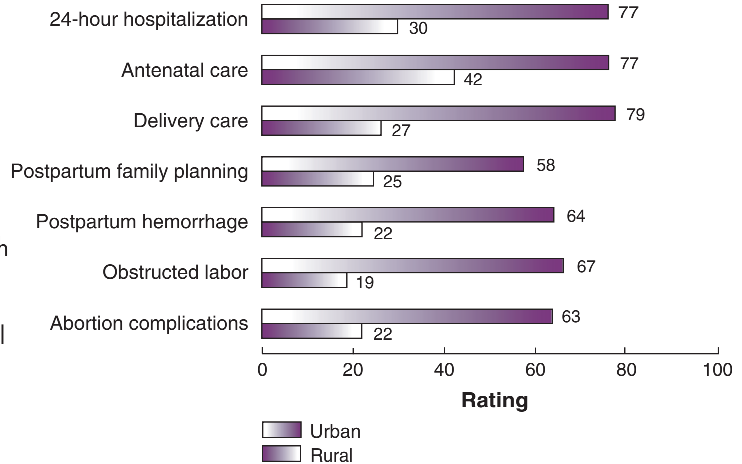
Figure 1. Service capacity of health centers and district hospitals in Senegal



Access

In most developing countries, access to safe motherhood services in rural areas is more limited than in urban areas. This issue is of particular significance for Senegal because half (50%)[10] of its population lives in rural areas. Overall, Senegal received a rating of 44 for access, with an average of 26 for rural access and 67 for urban access. Figure 2 presents the rural and urban access ratings for seven services. For all of the service areas, there are large gaps in the ratings for rural and urban access. Rural access scores ranged from a low of 19 for obstructed labor services to a high of 42 for antenatal care—suggesting an urgent need to increase access to all health center services. Urban access, although receiving scores much higher than rural access, also leaves definite room for improvement.

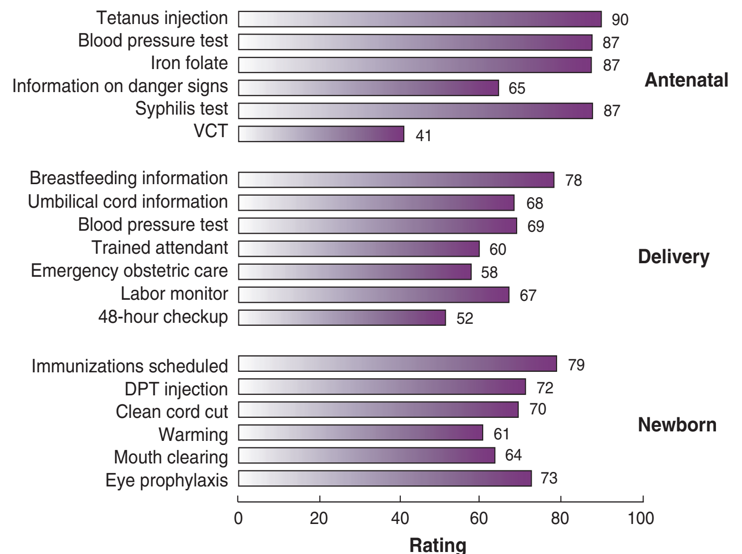
Figure 2. Comparisons of access to services for rural and urban areas in Senegal



Care Received

In most countries, newborn services are rated higher than delivery care or antenatal care, but this was not the case for Senegal. Antenatal care rated higher than both delivery and newborn services. Overall, care received was given a rating of 70, with antenatal care receiving an average rating of 76 compared with 65 for delivery care and 70 for newborn care. Figure 3 presents key indicators for each type of care. One of the more important indicators of maternal mortality is the presence of a trained attendant at birth,[11] which received a rating of 60. Other crucial elements that reduce maternal mortality are emergency obstetric care and the 48-hour postpartum checkup, which are rated 58 and 52, respectively. Voluntary counseling and testing for HIV (VCT) received the lowest rating (41), whereas providing tetanus injections for pregnant women received the highest rating (90). Distribution of iron folate and screening and treatment for both hypertension and syphilis tied for second place, with all three receiving an 87.

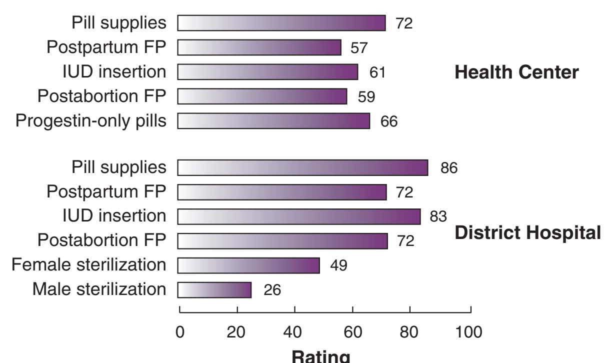
Figure 3. Antenatal, delivery, and newborn care received in Senegal



Family Planning

Senegal's family planning services provided by health centers and district hospitals together received a rating of 64. Figure 4 presents the ratings for individual family planning services provided by health centers and district hospitals. These ratings consider facility capacity, access, and care received. Both health centers and district hospitals received relatively high ratings for pill supplies (72 and 86, respectively). Postpartum family planning was the lowest-rated service for health centers (57), whereas access to male sterilization was the lowest for district hospitals (26).

Figure 4. Provision of family planning services at health centers and district hospitals in Senegal



Policy and Support Functions

Policy and support functions in Senegal received an overall rating of 58. Ratings for support functions, shown in Figure 5, are divided into the following categories: policy, resources, monitoring and research, health promotion, and training. In relation to the other support functions, policy received the highest average ratings. Both Senegal's ministry-level policy on maternal health and statements of support from government officials received relatively high ratings of 75 and 82, respectively. Commitment to this policy and safe motherhood, however, needs to be reinforced through improvement in resource allocation and training, which scored relatively low.

Policies, even when they have been adopted, do not automatically translate into high-quality services at the local level. Many of the support functions in Senegal, including resources, training, health promotion, and monitoring, are in need of further development. The average rating of the availability of resources (39) scored the lowest of all policy and support services in Senegal, indicating that the availability of services, especially to low-income women, is still a problem in the country.

The education and training of health professionals is an integral part of providing good-quality care and preventing maternal death and disability. Although ratings suggest that curricula (74) have been developed for the most part, actual training in Senegal received only moderate scores (51), scoring second-lowest after resources. Training of new doctors and midwives (32 and 34, respectively) received the lowest scores.

Finally, health promotion and education of the public are important adjuncts to the provision of health services. Topics such as harmful home practices (52), information on pregnancy complications (53), and safe places to deliver (58) all require attention in Senegal. Mass media should be used to educate the public about safe pregnancy and delivery, and community-based organizations should assist these efforts through systematic programs.

Figure 5. Policy and support services in Senegal

Global Comparisons

All ratings in the study are also organized under 13 major components (see page 3), which overlap the five types of program effort above. The 13 components capture not only facility capacities, as in the first two items, but also the percentage of the whole population that has reasonable access to those facilities, in the third item. The next three items measure effort for antenatal, delivery, and newborn care. The next two concern the provision of family planning in health centers and district hospitals, because the prevention of unwanted pregnancies considerably reduces the numbers and rates of maternal mortality. The last set of items concerns support and back-up functions: policies and resources from the central level, then health promotion and training, and finally monitoring and research.

Table 1 compares Senegal's scores with the global averages for nine major components, two of which are broken down further, and the overall total of the MNPI. For Senegal, the highest ratings occurred for immunizations (80), which includes maternal tetanus, neonatal DPT, and other scheduled neonatal immunizations; encouragement to begin immediate breastfeeding (78); and maternal health policy (75). Senegal's lowest scores were for rural access to safe motherhood services (26); VCT (41); and adequate budget and postpartum checkup, both of which received a score of 52.

When comparing the two profiles (for Senegal and all countries), the overall scores only differ by 5 points. However, Senegal scored higher in all but 4 categories; rural and urban access to services, neonatal DPT immunization, and scheduling other neonatal immunizations. Senegal was 17 points behind the global average in rural access to services, 6 points behind in providing neonatal DPT immunization, 2 points behind in urban access to services, and one point behind the global averages in scheduling other neonatal immunizations. However, Senegal was 10 points above the global average in maternal tetanus, 11 points above in postabortion family planning, and 8 points above in providing postpartum checkups within 48 hours. Interestingly, Senegal's score was equal to the global average in accessing emergency obstetric care. This gives a good indication where Senegal needs to focus efforts to improve maternal health.

Table 1. Component Scores for Senegal and All 55 Countries in the International Study for 2002

Selected MNPI Indicators	Senegal	All Countries
Access to safe motherhood services by pregnant women*	42	56
Rural access	26	43
Urban access	67	69
Able to receive emergency obstetric care	58	58
Provided with appointment for postpartum checkup within 48 hours	52	44
Immunizations**	80	79
Maternal tetanus	90	80
Neonatal DPT	72	78
Other neonatal immunizations scheduled	70	80
Encouraged to begin immediate breastfeeding	78	76
Offered VCT	41	38
Postabortion family planning***	66	55
Adequate maternal health policy	75	72
Adequate budget resources	52	49
Overall MNPI Rating		
Total (average score for all 13 main categories of maternal and neonatal health)	**64**	**59**

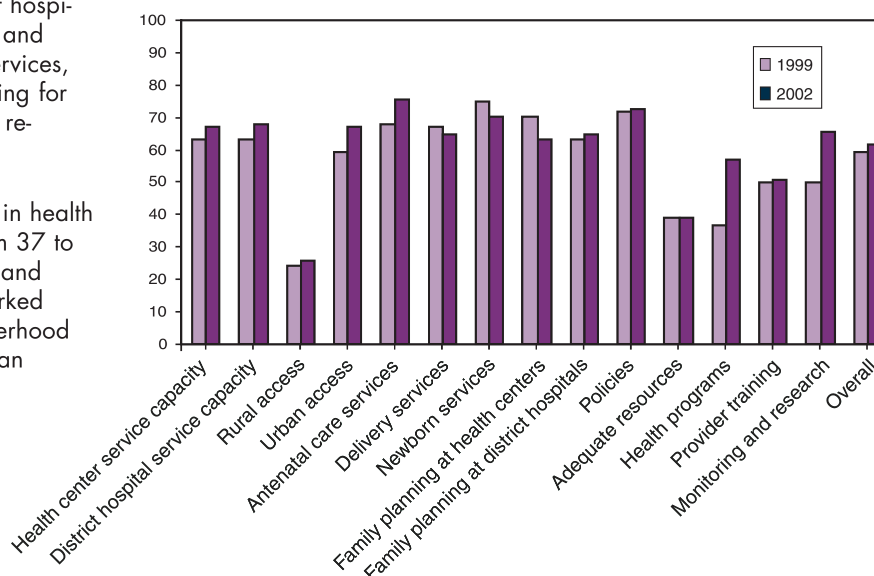
*Composite scores for all rural and urban access items
**Composite scores for maternal and neonatal immunizations
***Composite scores for health centers and district hospitals

Comparison Over Time

Between 1999, when the first MNPI was conducted in Senegal, and 2002, improvements can be seen in the effort put into maternal and neonatal services. Figure 6 illustrates how Senegal rated in 1999 and 2002, in 13 main areas, including staff trained in obstetric care in both health centers and district hospitals, percent of pregnant women who have access to care in both rural and urban areas, services provided at antenatal clinics and during delivery, neonatal services, provision of family planning at both health centers and district hospitals, policies that promote safe pregnancy and delivery, adequate resources to support services, health promotion programs, obstetric training for health care providers, and monitoring and research.

Senegal showed the greatest improvement in health promotion programs (a score increase from 37 to 57) followed by an increase in monitoring and research by 16 points. There was also marked improvement in urban access to safe motherhood services and antenatal care services (with an increase in both of 8 points). There was, however, a notable decline in both family planning provision at the health center level (a decrease of 7 points) and newborn services (a decrease of 5 points). Overall, Senegal's score increased 3 points—from 59 in 1999 to 62 in 2002.

Figure 6. Comparison of selected items for Senegal MNPI scores in 1999 and 2002



Summary

The MNPI ratings indicate that Senegal's program efforts for maternal and neonatal health have come a long way but still have far to go. In all respects, there are large disparities in access to services between rural and urban populations. Improvements needs to continue to be made in the area of VCT, providing postpartum checkups within 48 hours, training nurses, midwives, and doctors in obstetric care, and developing the budget and other resources.

Favorable policies are common in the developing world, but implementation typically lags behind. Senegal needs to ensure that wise intentions are translated into high-quality, accessible services and programs at the local level.

Priority Action Areas

The following interventions have been shown to improve maternal and neonatal health and should be considered in Senegal's effort to strengthen maternal and neonatal health policies and programs.

- ***Increase access to reproductive health, sexual health, and family planning services, especially in rural areas.*** Due to the lack of access to care in rural areas, maternal death rates are higher in rural areas than in urban areas. In addition, many men and women in rural and urban areas lack access to information and services related to HIV/AIDS and other STIs.
- ***Strengthen reproductive health and family planning policies and improve planning and resource allocation.*** Although the MNPI scores demonstrate that many countries have strong maternal health policies, implementation of the policies may be inadequate. In some cases, advocacy can strengthen policies and increase the amount of resources devoted to reproductive health and family planning. In other cases, operational policy barriers—barriers to implementation and full financing of reproductive health and family planning policies—must be removed.
- ***Increase access to and education about family planning.*** Another feature that relates closely to preventing maternal mortality is the provision of family planning. Family planning helps women prevent unintended pregnancies and space the births of their children. It thus reduces their exposure to risks of pregnancy, abortion, and childbirth. Improved provision of a range of contraceptive methods can prevent maternal deaths associated with unwanted pregnancies.
- ***Increase access to good-quality antenatal care.*** High-quality antenatal care includes screening and treatment for STIs, anemia, and detection and treatment of hypertension. Antenatal visits also serve as an opportunity to give women essential information about planning for a safe delivery, where to seek care for pregnancy complications, and appropriate diet and other healthy practices. The World Health Organization's recommended package of antenatal services can be conducted in four antenatal visits throughout the pregnancy.
- ***Increase access to skilled delivery care.*** Delivery is a critical time in which decisions about unexpected, serious complications must be made. Skilled attendants—health professionals such as doctors or midwives—can recognize these complications, and either treat them or refer women to health centers or hospitals immediately if more advanced care is needed. Some women in rural areas lack easy access to high-quality obstetric care, so improvements depend greatly on early recognition of complications, better provisions for emergency treatment, and improved logistics for rapid movement of complicated cases to district hospitals. Reliable supply lines and staff retraining programs also are critical.
- ***Provide prompt postpartum care, counseling, and access to family planning.*** It is important to detect and immediately manage problems that may occur after delivery, such as hemorrhage, which is responsible for about 25 percent of maternal deaths worldwide. Postpartum care and counseling will help ensure the proper care and health of the newborn. Counseling should include information on breastfeeding, immunization, and family planning.
- ***Improve postabortion care.*** About 13 percent of maternal deaths worldwide are due to abortion complications. Women who have complications resulting from abortion need access to prompt and high-quality treatment for infection, hemorrhage, and injuries to the cervix and uterus.
- ***Strengthen health promotion activities.*** Mass media should be used to educate the public about pregnancy and delivery, and community-level organizations should assist this through systematic programs. An important step for health promotion, in order to prevent negative maternal health outcomes, is to have the Ministry of Health supply adequate educational materials regarding safe practices.

References

[1] AbouZahr, Carla and Tessa Wardlaw. 2004. *Maternal Mortality in 2000: Estimates Developed by WHO, UNICEF and UNFPA*. Geneva: WHO.

[2] *www.unfpa.org/mothers/index.htm*

[3] Obstetric fistula occurs as a result of a prolonged and obstructed labor, which in turn is further complicated by the presence of female genital cutting. The pressure caused by the obstructed labor damages the tissues of the internal passages of the bladder and/or the rectum and, with no access to surgical intervention, the woman can be left permanently incontinent, unable to hold urine or feces, which leak out through her vagina. (UNFPA Press Release, July 2001)

[4] MEASURE Communication. 2000. *Making Pregnancy and Childbirth Safer*. (Policy Brief) Washington, D.C.: Population Reference Bureau. Available: *www.prb.org/Template.cfm?Section=PRB&template=/ContentManagement/ContentDisplay.cfm&ContentID=2824*

[5] World Health Organization. 2001. Advancing Safe Motherhood Through Human Rights. Available: *www.who.int/reproductive-health/publications/RHR_01_5_advancing_safe_motherhood/RHR_01_05_table_of_contents_en.html*

[6] Dayaratna, V., W. Winfrey, K. Hardee, J. Smith, E. Mumford, W. McGreevey, J. Sine, and R. Berg. 2000. *Reproductive Health Interventions: Which Ones Work and What Do They Cost?* (Occasional Paper No. 5) Washington, D.C.: POLICY Project. Available: *www.policyproject.com/pubs/occasional/op-05.pdf*

[7] Population Reference Bureau. 2001. *Abandoning Female Genital Cutting: Prevalence, Attitudes, and Efforts to End the Practice*. Washington, D.C.: Population Reference Bureau. Available: *www.prb.org/pdf/AbandoningFGC_Eng.pdf*

[8] The MNPI was conducted by the Futures Group International and funded by the U.S. Agency for International Development (USAID) through the MEASURE Evaluation Project. For more information on the MNPI, see Bulatao, Rodolfo, A., and John A. Ross. 2002. "Rating Maternal and Neonatal Health Services in Developing Countries." *Bulletin of the World Health Organization* 80: 721–727. Also see Ross, John A., Oona Campbell, and Rodolfo Bulatao. 2001. "The Maternal and Neonatal Programme Effort Index (MNPI)." *Tropical Medicine and International Health* 6(10): 787–798.

[9] This methodology for rating policies and programs was originally developed for family planning and has also been used for HIV/AIDS. See Ross, John A., and W. Parker Mauldin. 1996. "Family Planning Programs: Efforts and Results, 1972–1994." *Studies in Family Planning* 27(3): 137–147. Also see Stover, John, Joel Rehnstrom, and Bernhard Schwartlander. 2000. *Measuring the Level of Effort in the National and International Response to HIV/AIDS: The AIDS Program Effort Index (API)*. Geneva: UNAIDS.

[10] United Nations Department of Economic and Social Affairs, Population Division. 2002. "Urban and Rural Areas 2002." Retrieved from *www.un.org/esa/population/publications/wup2003/2003UrbanRural2003_Web.xls*.

[11] In the MNPI survey instrument, the term *trained* was used (as opposed to the term *skilled*) because it is empirically concrete for the respondent. Asking respondents about skill levels would require them to judge the probable quality of the original training and the deterioration of skills over time. Although knowing about skills is really more critical, it throws more subjectivity into the data, and as a factual matter, skills weren't measured.

For More Information

A complete set of results, including more detailed data and information, has already been sent to each of the participating countries. For more information, contact:

POLICY Project
One Thomas Circle, NW, Suite 200
Washington, DC 20005 USA
Email: policyinfo@policyproject.com
Internet: www.policyproject.com
www.futuresgroup.com

The POLICY Project is funded by the U.S. Agency for International Development (USAID) under Contract No. HRN-C-00-00-00006-00. The project is implemented by Futures Group, in collaboration with The Centre for Development and Population Activities (CEDPA) and Research Triangle Institute (RTI).
The views expressed in this publication do not necessarily reflect those of USAID or the U.S. Government.