



A Preventable Tragedy: Maternal and Newborn Deaths in West Africa

In 2001, maternal and perinatal conditions represented the single largest contributor to the global burden of disease, at nearly 6 percent of total Disability Adjusted Life Years (DALYs).¹ Globally, more than 529,000 women a year die as a result of pregnancy or childbirth, nearly all in developing countries. Little progress has been made over the past 20 years, although there is some evidence of decline in the maternal death rate in countries where maternal mortality ratios were already low (fewer than 100 maternal deaths per 100,000 live births).

Maternal and newborn deaths are considered sensitive indicators of the entire health system and can be used to monitor general health gains. However, these deaths also represent the most serious challenges to achieving the Millennium Development Goals (MDGs), particularly in sub-Saharan Africa. Two of the goals target the health of mothers and children. Experts agree that nearly all maternal deaths could be prevented with proper prenatal and postnatal care, along with skilled attendance at childbirth and emergency care for serious complications. But the interventions needed to avert much of the disease burden from maternal and perinatal deaths require broader improvements in health systems.

Maternal health is intricately linked with newborn health. Globally, 10,000 newborns die each day—an extremely high number of deaths given that the technology to save them exists and, in most cases, can be provided at a relatively low cost. Of the 4 million known newborn deaths each year, one-third occur in sub-Saharan Africa.²

This fact sheet focuses on the causes and management of conditions that arise during pregnancy and delivery resulting in the death or disability of the mother or newborn in West Africa. In this region, most women give birth at home and are not attended by skilled providers. In some areas, one-third of pregnant women are adolescents, who face a greater risk of death in pregnancy and childbirth and whose babies are particularly vulnerable. West Africa has weak health systems, shortage of skilled workers, and recent experience with armed

conflict and humanitarian emergencies. One study in West Africa showed that for each maternal death, 30 more women suffered long-lasting disabilities from a range of conditions, like chronic anemia, infertility, and obstetric fistula.³

Causes of Maternal and Newborn Deaths

Maternal conditions encompass events occurring from conception to 42 days postpartum. Perinatal conditions occur from 28 weeks of gestation to seven days postpartum. Within this period, women's health can be compromised by *direct obstetric conditions*, which arise specifically from pregnancy, or *indirect obstetric conditions* that are aggravated by or threaten pregnancy. Globally, direct causes account for 80 percent of all maternal deaths, and indirect causes account for the remainder. Of direct causes, hemorrhage is the most common. Indirect causes include diseases such as HIV/AIDS and malaria. In West Africa, a malaria-endemic region, malaria during pregnancy represents an important cause of death and disability. Recent World Health Organization (WHO) statistics on unsafe abortion—a major direct cause of maternal mortality—show an apparent decrease in incidence globally. However the risk of maternal death remains high in West Africa at 1,020 per 100,000 live births.⁴

About 1 million newborns (infants under the age of 28 days) annually die during their first day of life, another 2 million die during their first week, and 1 million more die before reaching one month of age. Another 3.3 million children are stillborn each year. When stillbirths are included among deaths, about half of all deaths of children under age five occur within the first 28 days of life.

International experts, writing in the comprehensive report, *Disease Control Priorities in Developing Countries*, 2nd edition (DCP2), focus on five major maternal conditions that account for an estimated 75 percent of maternal deaths—hemorrhage, sepsis, hypertensive disorders of pregnancy, obstructed labor, and unsafe abortion—and on three causes of newborn death that make up almost 90 percent—infection, preterm birth, and asphyxia. Low birthweight (LBW) is a major risk factor for newborn complications. An estimated 20 million LBW infants (weighing less than 2,500 grams) are born each year. Some 60 to 80 percent of newborn deaths occur in LBW infants.

In West Africa, the leading cause of death for women ages 15 to 49 years in 2002 was malaria. Pregnancy- and childbirth-related complications were the second leading cause of death and disability with an estimated 231,000 deaths. Malaria interacts with maternal and perinatal conditions to exacerbate illness and contribute to poor outcomes. Malaria is a major cause of maternal anemia, low birth weight, neonatal death, and a primary indirect cause of maternal death in the region. Together, these conditions are the centerpiece of West Africa’s preventable tragedy (see Figure).

Almost all maternal and perinatal deaths are avoidable with competent care, but interventions must address a broad set of issues. Risk factors for both serious maternal health problems and potential death can be social, economic, or cultural; and they can be related to the health system or to the health condition of the

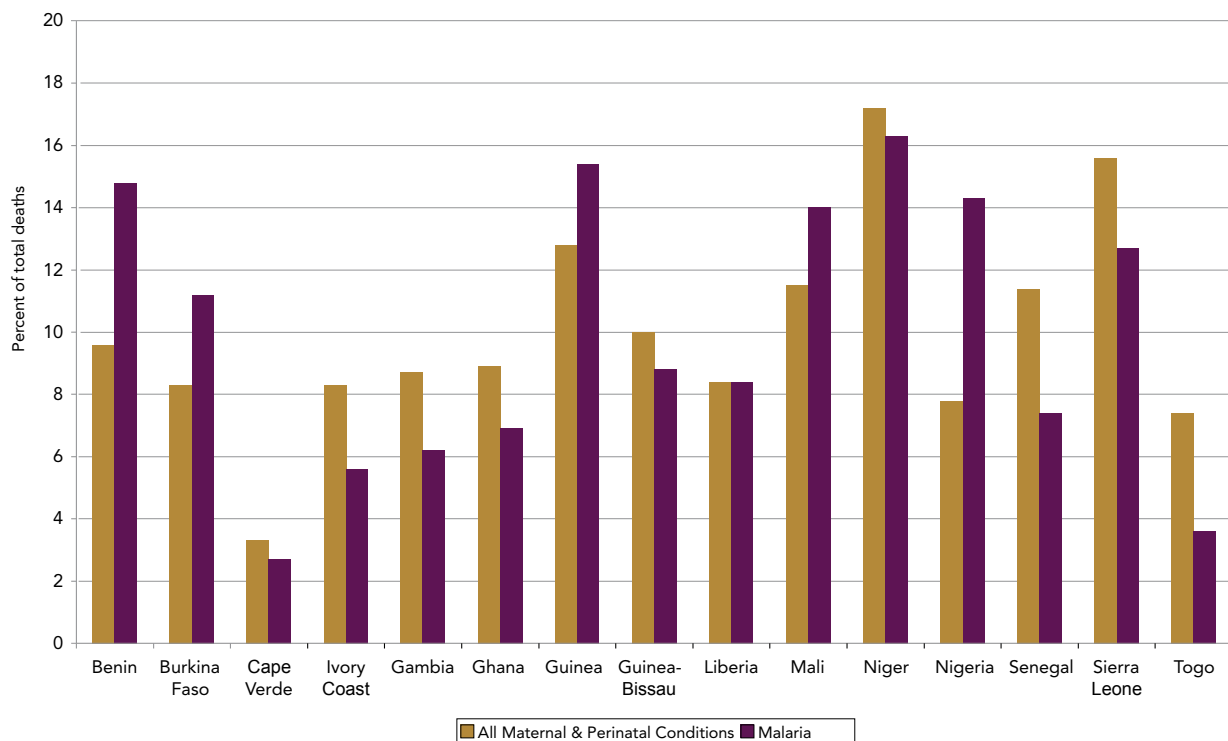
mother. To reduce the risk factors, health system improvements must be complemented by attention to wider social, economic, and cultural factors as well as to reproductive rights (generally defined as the right to control one’s reproductive functions, and to privacy, medical coverage, contraception, family planning and protection from discrimination and harassment).

Interventions

No single health intervention can by itself significantly reduce maternal and perinatal mortality. Addressing maternal and newborn health requires a continuum of care—that links services for women from adolescence through pregnancy, delivery, and beyond; and for newborns into childhood, young adulthood, and beyond. Building this continuum is a challenge for poor countries struggling with inadequate skilled care and unstable health care systems. The scope and nature of these conditions call for clusters, or packages, of interventions. Three main pathways can avert adverse outcomes along a continuum of care:

- Preventing pregnancy through family planning;
- Preventing complications; and
- Preventing death from complications of pregnancy and childbirth.

MATERNAL AND PERINATAL CAUSES OF DEATH IN WEST AFRICA, ALL AGES, 2001



Source: World Health Organization, Global Burden of Disease Project, 2001.

Planning Pregnancies

Research has shown that women face a greater risk of pregnancy-related death or disability depending on the frequency of pregnancies (number and spacing), mother's age, and desire for the child. Women can better plan their pregnancies if they are exposed to family planning information, education, and communication (IEC) programs, and client-friendly services to increase access to contraception. These interventions have been credited with significantly raising contraceptive use and promoting fertility decline in developing countries over the past 40 years. But a significant “unmet need” for contraceptives still persists. Experts estimate that preventing unintended pregnancies would reduce maternal deaths by 20 percent in developing countries.

Women are defined as having an “unmet need” for family planning if they say they prefer to avoid pregnancy but are not currently using a contraceptive method. Sub-Saharan Africa has the highest level of unmet need: About one-fifth of women there do not want to become pregnant, yet use no contraceptive method. Contraceptive use is low, practiced by only one-fifth of married women on average. In contrast, contraceptive use is much higher in other countries around the world. At least 75 percent of married women use contraception in Vietnam, Colombia, and Brazil, and only 6 percent to 7 percent of women in these countries report unmet need.

Investing in family planning is a cost-effective way to avert births and disease. The social and environmental benefits of family planning extend well beyond the health sector and beyond a single generation. Increasing contraceptive use among rural and traditional populations in much of sub-Saharan Africa is cost-effective way to avert unwanted births, costing only US\$131 for each birth averted, US\$1,367 for each newborn death averted, US\$10,231 for each maternal death averted, and only US\$34 for each disability-adjusted life year gained.

Preventing Complications through Primary Prevention

Preventing complications through primary prevention involves maintaining a normal pregnancy and managing mild complications—in essence, good quality of care—through routine prenatal care, family and community education, and postpartum care at the primary health care level. Primary-level care is widely regarded as the crucial entry point to maternity services, and to care before and after pregnancy. Primary-care health facilities should provide prenatal, delivery (including managing abortion complications), and postpartum care (including family planning and postabortion counseling), as well as care of the newborn.

ROUTINE PRENATAL CARE

Essential elements of routine prenatal care include: screening and treatment for syphilis, immunization with tetanus toxoid, prevention and treatment of anemia, and prevention and treatment of malaria with prophylaxis and bed nets. Strong evidence supports the cost effectiveness of a four-visit prenatal schedule that includes educating women and birth attendants about danger signs and the need for skilled attendants at delivery.

FAMILY AND COMMUNITY EDUCATION

Birth preparedness includes planning for the place of and the attendant at delivery, as well as arranging for rapid transport to a health center or hospital if needed, and sometimes identifying a compatible blood donor in case of hemorrhage. The expectant mother, relatives, and other community members, including traditional birth attendants (TBAs), should learn to recognize signs of dangerous complications and to take the appropriate steps.

Essential newborn care at the time of birth. WHO defines essential newborn care as the care of the newborn at birth, including cleaning, drying, and warming the infant; initiating exclusive breastfeeding early; and caring for the umbilical cord. Essential care of the newborn is necessary for all infants and is ideally provided by a trained birth attendant. However, in the absence of skilled care, such care can be carried out by others, including family and community members. These practices help reduce newborn illnesses, especially infection. When implemented at the family-community level, these practices could reduce newborn mortality by up to 40 percent.

Extra care for small babies. Given that a high proportion (60 percent to 80 percent) of newborn deaths occurs in LBW babies, targeting this group with additional care can help to improve their survival rates. A number of community-based studies have identified small babies and provided them with extra care at home, especially feeding, warming, and cleanliness. The reported newborn mortality reductions range from 25 percent to 42 percent. One low-cost, low-technology way to warm an infant is kangaroo mother care, which involves continuous skin-to-skin contact between mother and baby to keep the baby's temperature stable and promote breastfeeding. Although comprehensive data are lacking, a review of selected programs found that the number of serious illnesses among LBW babies was reduced by about 60 percent at the six-month follow-up visit.

POSTPARTUM CARE

Primary care services continue to neglect the postpartum period, despite significant problems during this time. Routine postnatal checks are not widespread, and most contacts with services after delivery focus on educational messages aimed at danger signs, breastfeeding, nutrition, and lifestyle, rather than physical examination of the postpartum woman and newborn. Because unsafe abortion accounts for a significant proportion of the burden of maternal conditions, management of complicated abortions should receive higher priority. Unfortunately this critical need is often neglected.

The postnatal period is also the most important time to address complications that affect the newborn. Effective interventions for the newborn exist and can be delivered at low cost. Up to 40 percent of neonatal deaths could be averted with home- and community-based solutions, such as keeping a newborn warm and clean, breastfeeding regularly, protecting against infection through proper hygiene, and treating infections with antibiotics in a timely manner. Access to skilled and emergency prenatal and postnatal care can save many more newborn lives.

Preventing Death from Complications

If complications occur, maternal and perinatal death can be avoided by effective, timely, and appropriate clinical interventions, often referred to as *emergency obstetric care*. Clinical management of complications usually occurs at two levels — basic emergency obstetric care (BEmOC) and comprehensive emergency obstetric care (CEmOC). CEmOC includes surgical interventions and blood transfusion. The capacity of health centers to provide BEmOC depends on the availability of supplies, drugs, infrastructure, and level of skilled providers.

In West Africa, there are not enough basic emergency obstetric care facilities and the use of basic or comprehensive services is far too low, creating a large need for EmOC that is not met. For example, in Côte d'Ivoire, only 43 percent of women who need emergency care receive it. In Cameroon, only 3 percent of women who develop complications receive emergency services. And throughout West Africa, the Caesarean delivery rate is well below the standard threshold of 4 percent, even in urban areas, indicating a lack of services for life-threatening complications.⁶

DELIVERY CARE

The risks of adverse outcomes for mother and baby are highest during childbirth. To reduce these risks, experts recommend that professionals with obstetric skills provide

delivery services, whether the delivery occurs at home or in a health facility. A major strategy for reducing the maternal health burden involves increasing the use of skilled providers for the vast majority of normal deliveries, and managing mild complications at the primary level with referral to CEmOC if necessary. Globally, there are wide variations in skilled attendance at childbirth, with the lowest being in sub-Saharan Africa at 48 percent of deliveries. In West Africa, just under 40 percent of women are attended by a skilled provider at birth. Variation also exists across socioeconomic groups within countries. The proportion of deliveries with a health professional (doctor, midwife, or nurse) present is an indicator used to assess progress in maternal health care.

Newborn resuscitation. Approximately 5 percent to 10 percent of newborns do not breathe on their own and require stimulation. Basic resuscitation using a self-inflating bag and air can save the lives of most of these newborns. Evidence is growing that most newborns can be successfully resuscitated without the use of oxygen. Low-cost versions of the self-inflating bags and masks are now available for less than US\$5 and are the recommended device for resuscitation. But with nearly half of the world's babies born at home, increasing the use of resuscitation is a challenge.

SECONDARY-LEVEL CARE FOR COMPLICATIONS

Hospital-based care, generally at the district level, includes CEmOC, and must include strong links to the primary level through an effective rapid referral communication chain. District hospitals must be able to provide surgical interventions with the requisite backup, such as blood banks. Obstetric experts agree that maternal mortality cannot be reduced without effective secondary care for complications. The United Nations has endorsed a minimum of one comprehensive emergency obstetric care facility per 500,000 people.

Emergency care for ill newborns. Emergencies, such as complications of preterm birth, asphyxia, and infections, are a significant cause of newborn death worldwide. Among these, infection is the most common and management of infection one of the most feasible interventions to scale-up. A 2003 analysis of community-based trials of management of newborn pneumonia in Africa and Asia showed a 27 percent reduction in newborn mortality. A 1999 study in rural India linked a 62 percent reduction in newborn death to a home-based package to fight newborn infection that included an injected antibiotic. The cost of this intervention was an estimated US\$5.30 per newborn treated and included the time of community health workers and the cost of equipment and drugs.

Best Buys for Moms and Babies

Cost-effectiveness analysis has focused on *prenatal care, delivery, or intrapartum care*, and *emergency obstetric care*. The most cost-effective intervention package relative to basic delivery services improves the quality of prenatal and intrapartum care by ensuring the availability of basic emergency obstetric care at the primary level and by increasing the adequacy of comprehensive emergency obstetric care at the secondary level. In sub-Saharan Africa, moving from a routine maternity service to this package of enhanced quality of care costs \$83 per additional DALY averted and \$2,729 per additional death averted. Small increases in prenatal care coverage, for even 20 percent more women, boost the number of women benefiting from the addition of obstetric first aid and CEmOC.

Not only are high-impact, low-cost, feasible interventions available, they could avert close to 70 percent of the world's newborn deaths. Studies in India and sub-Saharan Africa indicate that a newborn health package can be added to existing maternal and child health programs at an average cost of US\$0.50 per capita per year and would reduce newborn deaths by up to 15 percent at the family-community level and about US\$0.20 per capita for a 22 percent reduction in newborn deaths at the clinical care level.

In sub-Saharan Africa, nearly 4 percent of all maternal deaths annually are the result of malaria-associated anemia. Malaria also causes 75,000–200,000 infant deaths annually in the region. If left untreated in pregnant women, malaria causes low birthweight, which can lead to a range of impairments including cerebral palsy, mental retardation, and cognitive deficits. DCPD suggests three best buys for treatment of malaria, including:

- Provide universal access to insecticide-treated nets (ITNs) and spray indoor surfaces with long-lasting insecticides.
- Expand the use of intermittent preventive treatment (IPT) for pregnant women (two doses of antimalarial prophylaxis) to reduce severe maternal anemia and newborn deaths.
- Finance more effective drugs—especially artemisinin combination therapies (ACT)—to replace widely used ineffective drugs.

Reducing maternal mortality benefits households economically by allowing women to remain productive longer and by averting the costs associated with a health crisis. Because children's health and education usually suffer when mothers die, in a ripple effect, preventing maternal deaths also eliminates these extra

economic burdens. Thus, preventing maternal mortality can support broader efforts to reduce poverty. However, gains in maternal health depend on improvements in health systems and a supportive policy environment. **Basic prenatal and delivery coverage for 50 percent of women costs only \$0.60 per capita in sub-Saharan Africa, yet funding for prenatal and delivery care services falls short.** Progress depends on many factors, including solving human resource problems (the “brain drain”), effective referral systems, extending access to services to the poorest groups, improved surveillance, and additional research.

For More Information

For more information see the following chapters in Jamison, D. T., J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Jha, A. Mills, and P. Musgrove. 2006. *Disease Control Priorities in Developing Countries, 2nd ed.* New York: Oxford University Press.

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- 1 DALY (disability-adjusted life year) is a composite measure that combines the number of years lived with a disability and the number of years lost to premature death.
- 2 WHO/AFRO, *The Health of the People*.
- 3 WHO/AFRO, *The Health of the People*
- 4 WHO/AFRO, "Maternal mortality: the Situation in Africa," accessed online at http://www.afro.who.int/drh/safe-motherhood/safe_road.html on May 22, 2007.
- 5 WHO Regional Office for Africa (WHO/AFRO), *The Health of the People: The African Regional Health Report* (2006), accessed online at www.afro.who.int/regionaldirector/african_regional_health_report2006.pdf, on May 22, 2007.
- 6 Averting Maternal Death and Disability, "Making Safe Motherhood a Reality in West Africa: Using Indicators to Programme for Results," UNFPA, accessed online at: http://www.unfpa.org/upload/lib_pub_file/149_filename_safemwestfrica.pdf.
- 7 "Ethiopia: UNFPA Calls for More Midwives for Ethiopia," *The Reporter* (Addis Ababa), 6 May 2007, accessed online May 22, 2007 at <http://allafrica.com/stories/200705070853.html>.
- 8 "Malaria Prevention and Treatment." JHPIEGO, Johns Hopkins University. Accessed on May 31, 2007 at <http://www.jhpiego.org/centers/malaria.htm>.