CHAPTER 58

Improving Global Maternal Health: Challenges and Opportunities*

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KEY POINTS

- Every day, 800 women die as a result of pregnancy or childbirth, and an additional 16,000 develop severe and long-lasting complications.
- Every day, 8000 newborn infants die and 7000 are stillborn, and more than half of these deaths are from maternal complications.
- Adolescent pregnancies account for 11% of all births worldwide, and these young girls and their infants are at far higher risk of death and complications than other mothers.
- Of all the maternal and neonatal deaths worldwide, 99% take place in developing countries.
- The leading obstetric causes of maternal death in developing countries are hemorrhage, puerperal sepsis, preeclampsia, unsafe abortion, obstructed labor, and embolism. HIV causes a growing number of deaths in countries where it is endemic.
- If all pregnant women and their babies could access the maternity care recommended by the WHO, the annual number of maternal deaths would fall by two- thirds—from 290,000 to 96,000—and newborn deaths would fall by more than three- quarters to 660,000 each year.
- If all women had control over their fertility and could access effective contraception, unintended pregnancies would drop by 70%, and unsafe abortions would drop by 74%.
- Apart from a lack of skilled health care and other resources, the quality of the care provided also varies widely. The clinical guidelines and protocols set forth by the WHO and professional organizations need to be urgently implemented, and their uptake audited, in developed as well as in developing countries.
- Safe motherhood for all women is enshrined as a basic human right by the UN, yet many societies have yet to recognize and address this, and they fail to provide the necessary resources to provide adequate reproductive health, maternity, and newborn care or to enact and enforce laws to support equality for women in all aspects of their life, which includes abolition of child marriage and other harmful traditional practices.
- A woman's life is always worth saving.

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Maternal and Reproductive Health

MATERNAL HEALTH AND THE BURDEN OF DEATH AND DISABILITY

- Maternal deaths are merely the tip of the iceberg. Globally it is estimated that over 300 million women are living with short- or long-term pregnancy-related complications with around 20 million new cases occurring each year.[1,2]

A Place Between Life and Death

- Overall, this burden of maternal and neonatal mortality, including stillbirths, accounts for around 15,800 deaths each day, or 10 lives lost every minute.

Where Mothers Die

- The latest United Nations (UN) estimates for 2013 are that the overall global maternal mortality rate (MMR) is 210 deaths per 100,000 live births, with an even higher figure (230) for developing regions (low- and middle-income countries) compared with 12 for developed regions.

Adolescent Girls and Lifetime Risk of Maternal Death

- In developing countries, a 15-year-old girl faces a 1:160 risk of dying from a pregnancy-related complication during her lifetime, and this rises to an average risk of 1:38 for those who live in sub-Saharan Africa.

United States

- The WHO estimated the overall MMR for the United States to be 28 per 100,000 live births in 2013, which is threefold greater than in Western Europe and Australasia.[3]
- The United States is one of the few countries whose MMR has increased rather than decreased in recent years. This may be due to a steady rise in the number of women with advanced maternal age, chronic medical conditions, and obesity coupled with an increasing number of medical interventions, not all of which may be necessary.

Mothers Who Survive: Severe Maternal Morbidity

- It is estimated that 1.1 million of the annual total of 136 million births are complicated by a severe maternal "near-miss" event, after which the mother survived either by chance or following high-quality medical care. Direct maternal deaths are those resulting from obstetric complications of the pregnancy state (pregnancy, labor and the puerperium); from interventions, omissions, incorrect treatment; or from a chain of events resulting from any of the above. Indirect obstetric deaths are those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy.
- Coincidental maternal deaths are those from unrelated causes that happen to occur in pregnancy or the puerperium.
- Late maternal deaths are those of a woman from direct or indirect obstetric causes, more than 42 days, but less than 1 year after termination of pregnancy.

Infants Who Die

- Around half of the annual 2.6 million stillbirths and 2.9 million deaths in the neonatal period, the first month of life, occur as a result of maternal complications during pregnancy or delivery.[4]

- Most neonatal deaths (73%) occur during the first week of life, with around 36% in the first 24 hours. The major causes are complications that arise from preterm birth (36%), intrapartum asphyxia (23%), and neonatal infections such as sepsis, meningitis, and pneumonia, which together contribute 23%.[5]
- Labor and the 24 hours surrounding birth are the riskiest times for mother and baby, with 46% of maternal and 40% of neonatal deaths and stillbirths occurring during this period.[6]

Why Mothers Die

Clinical Causes

- Deaths from illnesses related to HIV and AIDS, regarded as indirect deaths, make a major contribution to maternal mortality globally and in some sub-Saharan countries cause more than half of all indirect deaths.

Health System Factors

- A lack of health system planning and resources is one of the largest contributors to the continuing pandemic of maternal ill health and mortality.
- A recent World Health Organization (WHO) study showed 54 countries that had cesarean delivery (CD) rates lower than 10%, the minimum standard for safe motherhood services, and 69 had rates higher than 15%, all unacceptably high.

Vulnerability and Underlying Social Determinants

- Without understanding the wider "causes of the causes," the barriers to safe maternity care cannot be identified and overcome. To help quantify these, it is common for those who work in the field of international women's health to use the "three delays" model as a checklist to help identify the barriers pregnant women face.[7,8]

"Causes of the Causes"

- It estimates that health care services contribute only one- third to improvements in life expectancy and that improving life chances and removing inequalities contribute the remaining two- thirds.

Women's Rights

- As the father of the Safe Motherhood Movement, Professor Mahmoud Fathalla, famously said, "Women are not dying of diseases we cannot treat…they are dying because societies have yet to decide that their lives are worth saving."[9]
- The right to health is a human right, and the health of a nation is determined by the health of its girls and women.
- Advocacy for women is an obligation for everyone engaged in reproductive health care. This means that all health care professionals need to know how to embed human rights principles into every aspect of their delivery of care.

Sexual and Reproductive Health

- If all women wanting to avoid pregnancy used an effective method of contraception, the number of unintended pregnancies would drop by 70%, and unsafe abortions would drop by 74%.[10] If these women's contraceptive needs were met, the number of maternal deaths would fall by two- thirds, and newborn deaths would decline by more than three- quarters.

UNINTENDED PREGNANCY

- An *unintended pregnancy* is one that is mistimed, unplanned, or unwanted at the time of conception.[11,12]

CONTRACEPTION

- Voluntary access to family planning—especially modern, effective contraceptive methods for women and men—is crucial to directly improving health outcomes and is positively associated with improvements in educational and economic status.[13–16]
- In recent decades, general increases in contraceptive prevalence rates have been seen in most areas of the world, and globally, they increased from 53% in 1990 to 57% to 64% in 2011 through 2012.[17–21,70]
- The postpartum period is crucially important for contraceptive intervention because rapid repeat pregnancies are associated with poor maternal and infant outcomes.

INDUCED ABORTION

- Even though deaths from unsafe abortion worldwide dropped from 69,000 in 1990 to 47,000 in 2008, the consequences of unsafe abortion remain one of the five leading causes of maternal mortality.[26]
- In high-resource regions of the world where safe and legal abortion services are provided, deaths are extremely rare.[27]

IMPROVING REPRODUCTIVE HEALTH AND WELL-BEING OF ALL MOTHERS

- Despite intense efforts at many levels, improving the accessibly and quality of care for all of the world's mothers and infants remains a monumental task. Progress has been made, however, in that maternal deaths rates fell 45% between 1990 and 2013 globally. In many pockets of the world, rates continue to stagnate or rise, such as in the United States.[3]
- A recent report estimated that increased coverage and improvement in the quality of maternity services by 2025 could avert 71% of neonatal deaths, 33% of stillbirths, and 54% of maternal deaths at a cost of $1928 for each life saved.[28]
- National and local professional associations and individual health care workers can improve the quality of care they provide through the use of evidence-based practice and the development of situationally appropriate clinical guidelines and technologies.

Major Obstetric Complications: Prevention and Management in Resource-Poor Countries

POSTPARTUM HEMORRHAGE

- The most common cause of postpartum hemorrhage is uterine atony (see Chapter 18).
- For many pregnant women already suffering from severe chronic anemia due to malnutrition, micronutrient deficiency, sickle cell disease, malaria, or helminthic infections, even a blood loss of 500 mL at delivery can compromise their already challenged hemodynamic state and can result in hypovolemic shock.
- The prevention or early detection of bleeding and the aggressive use of methods to reduce blood loss are essential.
- Misoprostol, a synthetic prostaglandin E_1 analogue, plays a key role in the management of miscarriage and postpartum hemorrhage.[29] Unlike oxytocin, it is low cost, stable at high temperatures, is not degraded by ultraviolet light, and can be used orally or rectally, which makes it particularly useful in areas where skilled healthcare providers and resources are less available.

PREECLAMPSIA/ECLAMPSIA

- Hypertensive disorders of pregnancy account for 14% of global maternal deaths[30] and are the leading cause of death in some urban areas in low-income countries.[31]
- Magnesium sulfate is the drug of choice but is not available in many developing countries. A recent systematic review of the use of magnesium sulfate in low- and middle-income countries found that the majority of women receive less than optimal dosages, usually due to concerns about maternal safety and toxicity, cost, or available resources.[32]

SEPSIS

- In the 19th and early 20th century puerperal sepsis was the major cause of maternal death in industrialized countries, but improvements in hygiene and sanitation, together with the introduction of antibiotics after the Second World War, resulted in its rapid decline.[33]
- Perinatal infection still underlies 11% of maternal deaths and 33% of neonatal deaths globally.[30,34]
- WHO guidelines on "the five cleans" needed during delivery[35] have led to the introduction of clean birth kits that contain soap, plastic sheeting, gloves, sterile gauze, a razor, and cord ties for use at home births.[36]

HUMAN IMMUNODEFICIENCY VIRUS AND MALARIA

- Pregnant women infected with HIV and/or *Plasmodium falciparum* malaria suffer higher complication rates. The MMR for HIV-infected women increases tenfold[37] since their immunodeficiency places them at greater risk of dying from pregnancy-related sepsis.
- A recent review estimated the excess mortality attributable to HIV among pregnant and postpartum women to be 994 per 100,000 pregnant women.[38]
- The fetal and perinatal loss may be as high as 60% to 70% in nonimmune women who contract malaria, and a further 100,000 infant deaths in Africa result from malaria-induced low-birthweight infants.[39]

OBSTRUCTED LABOR AND OBSTETRIC FISTULA

- Worldwide, obstructed labor occurs in an estimated 5% of live births and accounts for 8% of maternal deaths.[40]
- Obstetric fistulae can occur at any age or parity but are most common in first births, particularly in young girls with a poorly developed pelvis. They are a direct consequence of prolonged obstructed labor where the pressure of the impacted fetus leads to the destruction of the vesicovaginal/rectovaginal septum with subsequent loss of urinary and/or fecal control.[41,42] They can also be due to trauma at the time of pelvic surgery or as a result of rape in parts of Africa. Some 15% of cases are caused by harmful genital cutting before or during labor by unskilled birth attendants.[43]
- Obstetric fistulae are highly stigmatizing, and affected women who constantly leak urine and fecal matter frequently become social outcasts.

CESAREAN DELIVERY

- CD rates in many resource-poor countries remain much lower than the 10% to 15% cited by the WHO as their target in 1985.[44] The CD rates is only 0.7% for Burkina Faso, whereas it is 45.9% for Brazil and 30.3% for the United States. In 2008, this equated to 3.18 million CDs that should have been performed, and 6.20 million performed unnecessarily.[45]

- A mother can die from hypovolemic shock after a technically successful CD with average blood loss if she is dehydrated, severely anemic, and unable to cope with an operative insult.

Practical Advice on Volunteering to Work Overseas

- Well-organized trips conducted sensitively with respect for the mothers, health care workers, and local cultures can be life-enriching experiences for all concerned and yield lifelong benefits.
- Key personal qualities include:
  - Compassion and respect
  - Humility and honesty
  - High ethical and moral standards
  - Accepting the community and its values
  - Committing to promote the welfare of the community you serve first
  - Practicing and teaching the highest quality evidence-based medicine using sustainable drugs and equipment appropriate for the local circumstances
  - An openness and willingness to learn from local staff who will have much to teach and share
  - Ensuring sustainability
  - Not being critical of the lack of resources and poor infrastructure or saying how much better things are at home
- For research it is crucial to follow the same ethical principles you would adhere to in your own institute or country.

RESPECT

- The health staff you will work with and the mothers, infants, and communities you will care for are no different than anywhere else. Even though they may be poor beyond imagination, perhaps have inexplicable customs, and cannot speak your language, each deserves as much respect as you would give all your patients or colleagues at home.

REALISM

- In most countries, it takes far longer to organize things and wheels moves very slowly. There is often a lot of bureaucratic red tape and delay both before leaving and in-country.

HEALTH CARE STAFF

- Midwives are the backbone of most maternity services around the world and are widely respected and generally highly competent. Do not underestimate their abilities.
- To meet the crisis in human resources all across the developing world, low- and mid-level workers are expanding their skills and taking on new roles according to the competencies in which they have been trained and are able to master.

RESEARCH

- Visitors planning research activities must only undertake these having first obtained national and local ethic committee approval. This can take months and the process will vary according to local laws.
- Research projects should also focus only on interventions that could benefit the women, infants, or communities under consideration.

PREDEPARTURE PREPARATION

- Apart from general background, read any WHO, UN, World Bank, and other institutions' in-country fact sheets on the general health of the population as well as in your specific area. Talk with ex-volunteers and find out their practical tips.

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