

Reproductive Health Part 1: Introduction to Reproductive Health & Safe Motherhood

Laurel A. Spielberg, MPH, Dr.PH

Dartmouth Medical School

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Learning Objectives

1. Identify the leading indicators and program components of reproductive health
2. Describe disparities in reproductive health outcomes between countries and regions of the world
3. Discuss major challenges to improving reproductive health
4. Describe effective interventions to improve reproductive health

Major Topics in this Module

- What is Reproductive Health?
- Global Indicators of Reproductive Health
- Program Components of Reproductive Health
- Safe Motherhood
- Effective Strategies and Interventions to Achieve Safe Motherhood

What Is Reproductive Health ?

Reproductive health is.....

“ 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 its functions and processes.”

International Conference on Population and Development,
Programme of Action, 1994.

Notes on: What is Reproductive Health? (1)

There are many and varying definitions of reproductive health, some focused predominantly on the physiological and fertility aspects, and others more holistic in their view.

The WHO International Conference on Population and Development, held in Cairo in 1994, arrived at a consensus view of reproductive health that was endorsed by 165 countries. We have adapted their definition for use in this education module. The rather broad definition was made more explicit by spelling out specific implications and components of reproductive health, shown on another slide. The definition suggests that reproductive health encompasses:

- the ability to reproduce
- freedom to control reproduction
- the ability to go through pregnancy and childbirth safely, with successful maternal and infant survival and outcomes
- the ability to obtain information about and access to safe, effective and affordable methods of family planning
- the ability to have a satisfying, safe sex life, free from fear of pregnancy and disease
- the ability to minimize gynecologic disease and risk throughout all stages of life

Notes on: What is Reproductive Health? (2)

Reproductive health, then, is concerned with people's ability to have a responsible, satisfying and safe sex life, their capability to reproduce, and their having the freedom to decide if, when and how often to do so. Embedded in this set of concerns are certain implicit **rights** of both men and women:

- to **be informed of** safe, effective, affordable and acceptable methods of fertility regulation;
- to **have access to** safe, effective, affordable and acceptable methods of fertility regulation of their choice;
- to **have access to** appropriate health care services that will enable women to go through pregnancy and childbirth safely, and provide couples with the best chance of having a healthy infant.

This definition of reproductive health encompasses some key characteristics that make reproductive and sexual health unique compared to other fields of health. Reproductive health extends into the years before and beyond the years of reproduction, not just the time of reproduction. It also acknowledges gender roles, and the respect and protection of human rights. Along with the consensus on a definition the conference recognized that access to reproductive health care needs to be assured for people around the world.

Source: Global Policy Committee of the World Health Organization, 2 May 1994; and the WHO Position paper on Health, Population and Development, Cairo 5-13 September 1994. Available at http://www.who.int/topics/reproductive_health/en/

Reproductive health includes:

- Satisfying, safe sex life
- Ability to reproduce
- Successful maternal and infant survival and outcomes
- Freedom to control reproduction
- Information about and access to safe, effective, affordable methods of family planning
- Ability to minimize gynecologic disease throughout life

Notes on: Concepts Included in Reproductive Health. Ideally, a comprehensive and lifetime view of reproductive health should include the principles listed in Slide 6. A satisfying and safe sex life means being free from fear of unwanted pregnancy and of the risk of contracting disease. A satisfying and safe sex life enhances life and personal relations. The capability to reproduce should be coupled with successful outcomes. Pregnancy and childbirth should result in survival of both the mother and the infant. Couples should be afforded the opportunity and freedom to decide if, when and how often to reproduce; in other words, they should be able to control their reproduction. This means that men and women have a right to both information about and access to methods of family planning and regulation of fertility that are of their choice and not against the law. Methods of family planning available in a society should be safe, effective and affordable. Reproductive health should be a lifetime goal, beyond the childbearing years. A focus on minimizing the risk of gynecologic disease throughout life is a goal of reproductive health.

The reproductive years are usually thought of as the years spanning from menarche, with onset usually between ages 12 to 14, to menopause at around age 50. For demographic purposes, reproductive age is usually defined as 15 through 49. While we often focus our concerns about reproductive health on this age span in the population, the use of the phrase “all stages of life” in the World Health Organization definition should remind us about reproductive tract-related morbidity and mortality, often occurring beyond the reproductive years, such conditions as cervical, ovarian or uterine cancer or other conditions affecting these organs. Reproductive health should refer to events experienced by both men and women. The attention to pregnancy and childbirth in a global context usually tends to focus most attention on women’s reproductive health issues.

Importance of Reproductive Health

- Reproductive health is a human right stated in international law.
- Reproductive health plays an important role in morbidity, mortality and life expectancy.
- Reproductive health problems are the leading cause of women's ill health and mortality worldwide.

There is a long history of recognizing reproductive health among the essential human rights. Acknowledgements of reproductive health from a human rights perspective are embedded in: the Universal Declaration of Human Rights, 1948; the Convention on the Elimination of All Forms of Discrimination Against Women, 1979; the Programme of Action, from the International Conference on Population and Development, Cairo 1994; and the Platform for Action at the Fourth World Conference on Women, Beijing 1995.

These varying statements on reproductive health as a right usually incorporate the following concepts:

- the right to health in general
- the right to reproductive choice
- the right to receive reproductive health services
- the right of men and women to marry and found a family
- the right of individuals to make reproductive decisions free of discrimination, coercion and violence
- the right of the family to special protection
- and sometimes, concepts of special rights in relation to motherhood and childhood (pre- and post-natal care)

Other essential human rights are those that permit women to realize their dignity economically, socially, and culturally. The ICPD Programme of Action states.... "The empowerment and autonomy of women is a highly important end in itself. In addition, it is essential for the achievement of sustainable development. Evidence shows that population and development programmes are most effective when... steps are taken to improve the status of women, including their access to secure livelihoods and economic resources, and full participation in public life."

Several United Nations Millennium Development Goals (MDGs) address reproductive health concerns:

- Goal 3. Promote gender equality & empower women
- Goal 4. Reduce child mortality
- Goal 5. Improve maternal health
- Goal 6. Combat HIV/AIDS, malaria & other diseases

The United Nations Millennium Development Goals (MDG's), which grew out of the United Nations Millennium Declaration adopted by 189 member states in 2000, provide an international framework for measuring progress towards sustaining development and eliminating poverty. Of the eight Goals, four are directly related to reproductive health:

- Goal 3 Promote gender equality and empower women
- Goal 4 Reduce child mortality
- Goal 5 Improve maternal health, and
- Goal 6 Combat HIV/AIDS, malaria & other disease

Four other articulated goals bear an indisputably close relationship to reproductive health and health overall:

- Goal 1 Eradicate extreme poverty and hunger
- Goal 2 Achieve universal primary education, and
- Goal 7 Ensure environmental sustainability.

Source: United Nations. The Millenium Development Goals, 2000.

Program Components of Reproductive Health

- Safe Motherhood
- Family Planning
- Sexually Transmitted Infections, HIV and AIDS
- Gender-Based Violence

The 1994 International Conference on Population and Development's Programmed of Action called upon all countries to strive to make reproductive health accessible to their populations by 2015. The essential aspects of reproductive health care were described as: education and services for prenatal care, safe delivery and post-natal care, especially breast-feeding and infant and women's health care; prevention and treatment of infertility; abortion, as specified in a section which reads.... *"In no case should abortion be promoted as a method of family planning. All governments and relevant intergovernmental and non-governmental organizations are urged to strengthen their commitment to women's health, to deal with the health impact of unsafe abortion as a major public health concern and to reduce the recourse to abortion through expanded and improved family planning services. Prevention of unwanted pregnancies must always be given the highest priority and all attempts should be made to eliminate the need for abortion. In circumstances in which abortion is not against the law, such abortion should be safe. In all cases, women should have access to quality services for the management of complications arising from abortion. Post-abortion counseling, education and family planning services should be offered promptly, which will also help to avoid repeat abortions;"* and family planning counseling, information, education, communication and services; treatment of reproductive tract infections, sexually transmitted diseases (STD's) and other reproductive health conditions; information education and counseling on human sexuality, reproductive health and responsible parenthood.

The family planning, sexually transmitted infections, HIV/AIDS, and gender-based violence components of reproductive health are covered in the companion module: Reproductive Health, Pt 2.

Global Indicators of Reproductive Health

- Fertility
- Life Expectancy
- Perinatal Mortality
- Low birth weight
- Maternal Mortality

Fertility

Fertility

- Fertility is a measure of the average number of births women in a society have.
- Fertility influences the rate of natural growth of a population. It is impacted by couples' ability to control reproduction and by infant survival.
- To replace itself, a population must have a fertility rate of 2.1 children per woman.

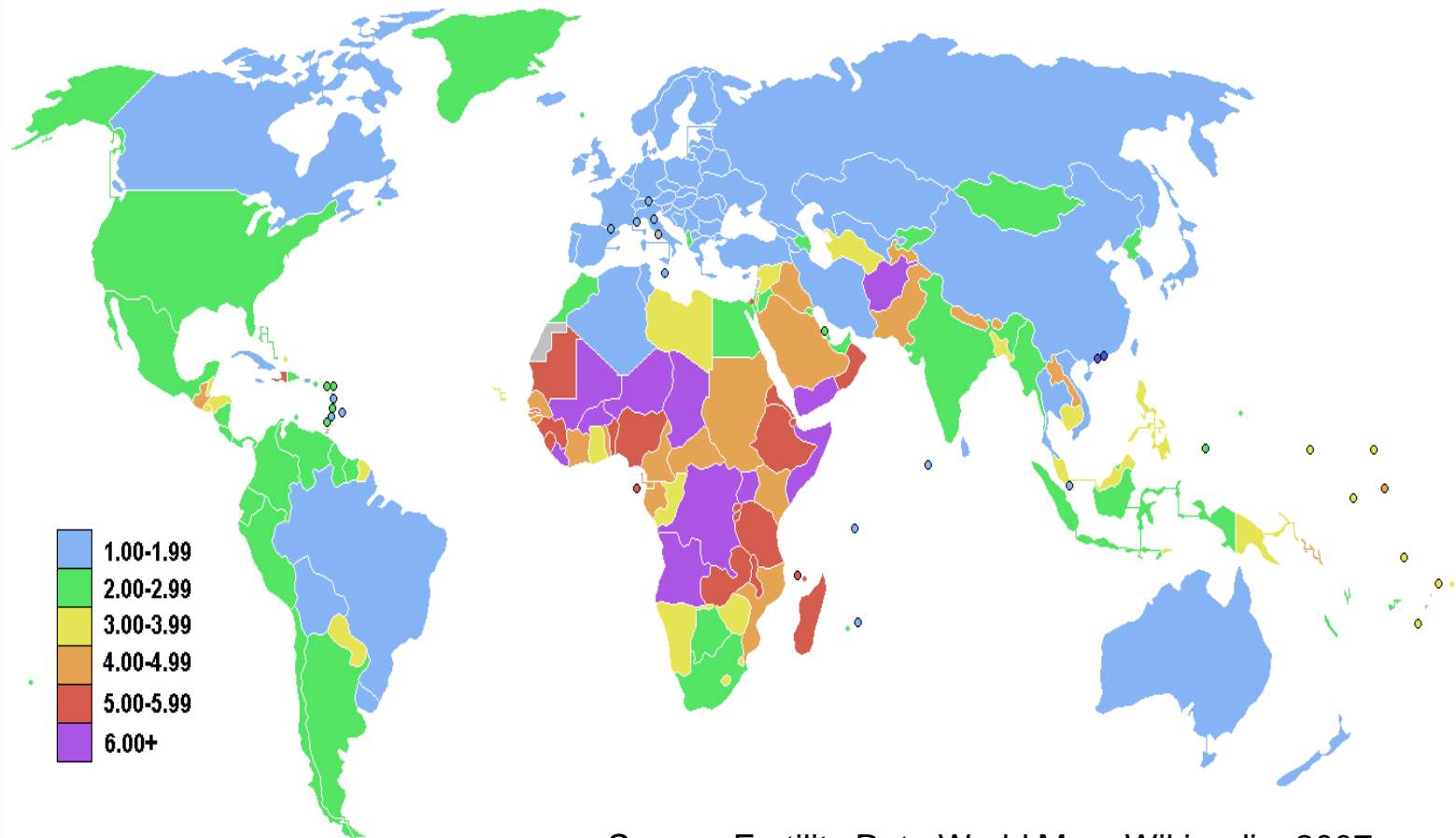
Notes on: Fertility

An understanding of fertility rates is important for understanding many of a society's economic and resource needs, as they significantly influence the composition of the population. In general, high fertility rates in a society can create large populations of young people who are dependent and need sufficient resources for nutrition, child care, health care and education. Low fertility rates, if sustained over time in a society, can create an aging population with fewer young people, and an increase in dependency as the younger working age population diminishes. Under these circumstances there are fewer younger people to care for the aging.

Fertility is commonly represented by a total fertility rate. This is the average number of children a woman may be expected to bear over her lifetime. Today, fertility rates vary worldwide from approximately 1.0 child per woman in Canada, Australia and much of northern Europe to over 6.0 children per woman in parts of Africa and Asia. Historically, fertility rates have been higher in less developed parts of the world.

A fertility rate of 2.1 is considered replacement rate for a population, the average number of births per women required for a population to replace itself in the next generation. Fertility along with mortality, are the two major determinants of natural increase in a population. In societies where fertility rates are below 2.1, the population can be expected to diminish over time unless in-migration adds to the population. This is the phenomenon seen currently in parts of Northern and Western Europe. Where fertility rates are high population increases can be expected, unless moderated by the forces of high mortality, which is often an accompanying factor, such as in parts of Africa and Asia.

Fertility Rates Worldwide



Source: Fertility Rate World Map, Wikipedia, 2007.

Fertility Rates

- There has been a marked decline in fertility and increase in life expectancy in developed countries of the world.
- Fertility rates continue at high levels in many less developed countries, particularly in Africa and Asia.

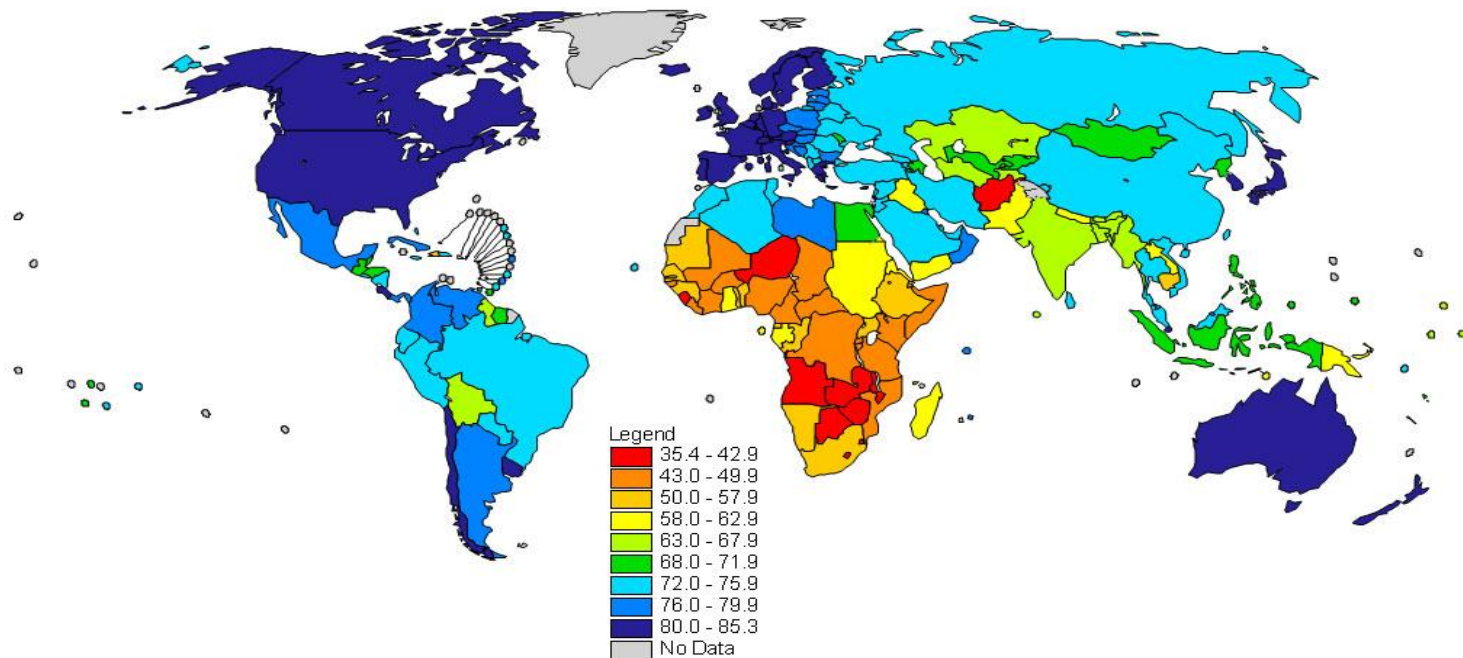
Life Expectancy

- Life expectancy is the number of years a newborn baby can expect to live if current mortality trends continue.
- It is a common indicator of the overall health and socio-economic wellbeing of a society.
- Life expectancy is heavily influenced by infant and maternal mortality.
- There remain marked disparities in life expectancy between genders, countries and regions of the world, as shown on the following map.

Life expectancy is a measure commonly used, in a summary way, to reflect the overall health of a society. Measured in years, it is an expectation of the length of life, calculated most typically from the time of birth. Life expectancy has lengthened markedly over the 20th century, in large part due to improvements in health care, preventive measures, sanitation and nutrition. Still, there are considerable variations in life expectancy between the sexes and between countries of the world. Life expectancy is typically shorter for males than for females in many developed parts of the world, with women outliving men. This gender gap has narrowed in recent years.

Other factors that noticeably affect life expectancy are poverty, environmental and occupational exposures, individual risk factors such as smoking, obesity, access to health care, and disease spread, such as AIDS. The markedly lower life expectancy in the countries of Sub-Saharan Africa (seen on the global life expectancy map on the next slide) is largely the result of mortality among young adults due to AIDS.

Life Expectancy Worldwide



Source: UN World Population Prospects, 2006.

Variation in Life Expectancy

Swaziland	32.6	Russia	67.1
Botswana	33.7	China	72.5
Angola	38.6	USA	77.8
Zimbabwe	39.3	UK	78.5
South Africa	42.7	Canada	80.2
Afghanistan	43.3	Japan	81.2
Haiti	49.2	Singapore	81.7
Bangladesh	62.5	Macau	82.2
Brazil	62.9	Andorra	83.5

Source: CIA. The World Factbook. Rank Order-Life Expectancy at Birth, 2006.

Perinatal Mortality

- Perinatal mortality is a significant indicator of the health status of pregnant women and their newborns.
- Perinatal deaths are infant deaths that occur within the first week of life and stillbirths.
- Perinatal mortality is directly impacted by:
 - maternal health
 - maternal nutritional status or deficiencies
 - quality of obstetric care received.

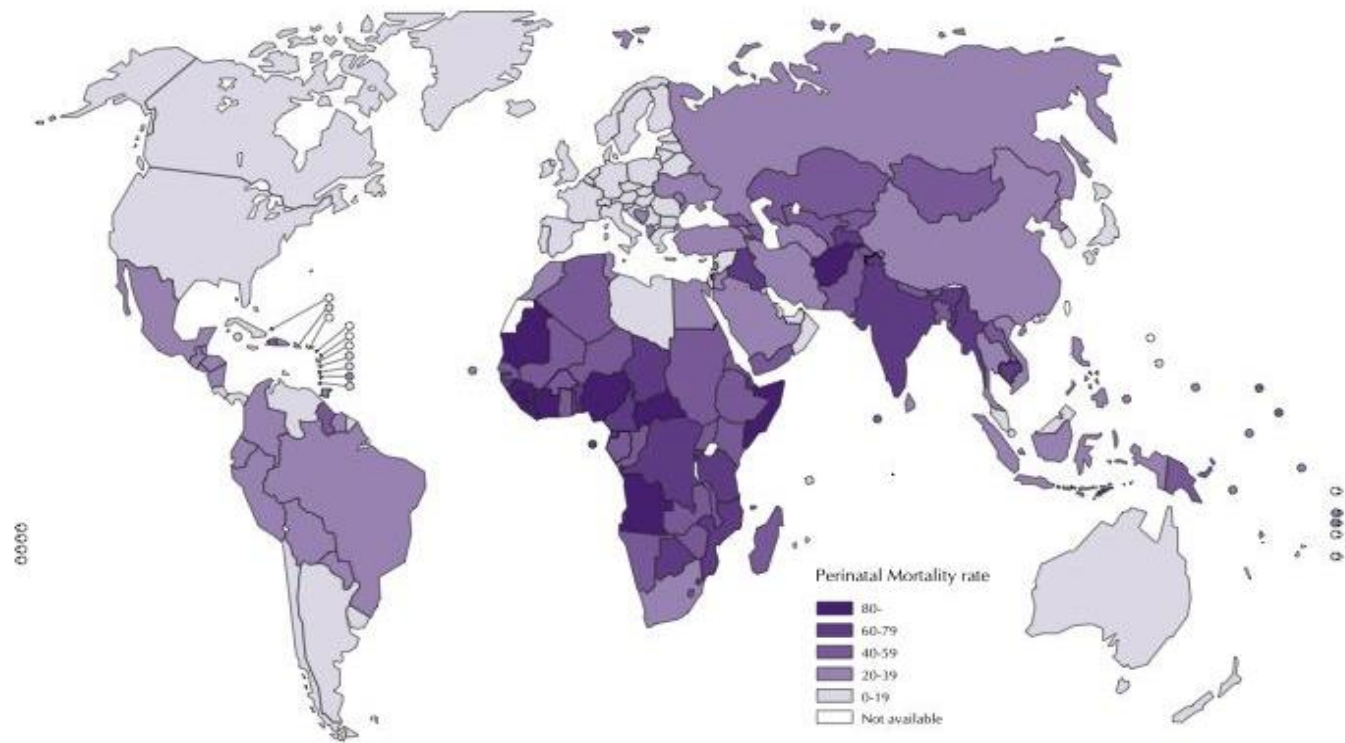
Perinatal mortality refers to the deaths of infants in the period of life closest to birth or while still in utero (stillbirths). Of the 4 million babies that die each year during the first month of life, 3 million of them will die in the last trimester of pregnancy or during the first week of life, considered the perinatal period. Ninety-eight percent of early childhood deaths occur in the developing regions of the world. On the whole, mortality to children under the age of five has been decreasing in most countries, with the exception of those most affected by the HIV/AIDS epidemic.

- 6.3 million perinatal deaths occur worldwide each year, of which 3.3 million are stillbirths.
- 1/3 of stillbirths occur during delivery. Deaths during delivery are closely related to place of delivery and care at delivery.
- In developing countries, approximately 40% of deliveries take place in a health facility; 57% or less occur under the care of a skilled birth attendant.

Region	PNMR/1,000 Live Births
WORLDWIDE	47
Africa	62
Asia	50
Europe	13
Latin America/Caribbean	21
North America	7
Oceania	42
More developed countries	10
Less developed countries	50
Least developed countries	61

Source: WHO, Neonatal and Perinatal Mortality, 2006.

Perinatal Mortality Rates Worldwide 2000



Source: WHO, Neonatal and Perinatal Mortality, 2006

Causes of Perinatal Mortality

- poor maternal health or nutritional status
- inadequate care during pregnancy
- poor management of complications during pregnancy or delivery
- preterm birth
- unsanitary delivery
- maternal infections, such as malaria or syphilis
- neonatal tetanus

Low birth weight

Low birth weight

- Low birth weight is infant weight of less than 2500 grams (5 lbs. 8 oz.) at birth.
- 20 million low birth weight infants are born each year around the world.
- 96% of low birth weight infants are born in developing countries.

Notes on: Low Birth weight

Reducing the incidence of infants born with low birth weight is an important factor in achieving the Millennium Development Goal 4: Reducing child mortality. Globally, more than 20 million low birth weight infants are born each year. The burden of low birth weight falls most heavily in developing countries of the world. Asia, with 77 million annual births, has the greatest number of births of any region in the world. There the incidence of low birth weight is also the highest in the world; 18.3% of infants born in Asia are low birth weight. More than half of the low birth weight infants in the region are born in India.. The incidence of low birth weight in Africa, ranging from approximately 12% to 16%, varies relatively little across the continent. However, these rates are higher than most other regions of the world except south-central Asia. As can be seen from the causes of infant low birth weight (Slide 29), many of the known contributing factors are directly related to maternal health, nutrition, disease and other conditions during pregnancy.

A cautionary note in considering worldwide incidence of low birth weight - an estimated half of all infants in the developing world are not weighed at birth, so that worldwide figures on low birth weight are estimates.

More comprehensive information on low birth weight and infant outcomes can be found in Part I module on Child Health.

Number and Percent of Births that are Low Birth weight

WORLDWIDE	20,629,000	15.5 %
Africa	4,320,000	14.3 %
Asia	14,195,000	18.3 %
Europe	460,000	6.4 %
Latin Am./Carribean	1,171,000	10.0 %
North America	343,000	7.7 %
Oceania	27,000	10.5 %
More developed countries	916,000	7.0 %
Less developed countries	19,713,000	16.5 %
Least developed countries	4,968,000	18.6 %

Source: UNICEF and WHO. Low birth weight.
Country, Regional and Global Estimates, 2004.

- Low birth weight is a leading contributor to infant mortality.
- Low birth weight infants are 20 times more likely to die in infancy and early childhood than are heavier weight babies.
- Reducing the occurrence of low birth weight is important to achieving the Millennium Development Goal of reducing child mortality.

Causes of Low birth weight

- preterm delivery (<37 weeks)
- restricted fetal growth
- poor socioeconomic conditions
- maternal malnutrition, toxic exposures
- maternal malaria, HIV, syphilis

Maternal Mortality

Maternal Mortality

- Maternal mortality refers to the death of a woman that is directly related to the reproductive process.
- The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Source: Tenth International Classification of Diseases

Maternal Mortality (continued)

- Maternal mortality is the leading cause of death among women in the childbearing years.
- There were an estimated 529,000 maternal deaths worldwide in 2000.
- Maternal mortality reflects disparities in access to reproductive health care between wealthy and poor, and inequities within countries suffered by vulnerable populations and minorities.

Notes on Maternal Mortality. There are three main ways in which maternal mortality is measured:

1. A **maternal mortality ratio** (MMR) = the number of maternal deaths per 100,000 live births during a given time period

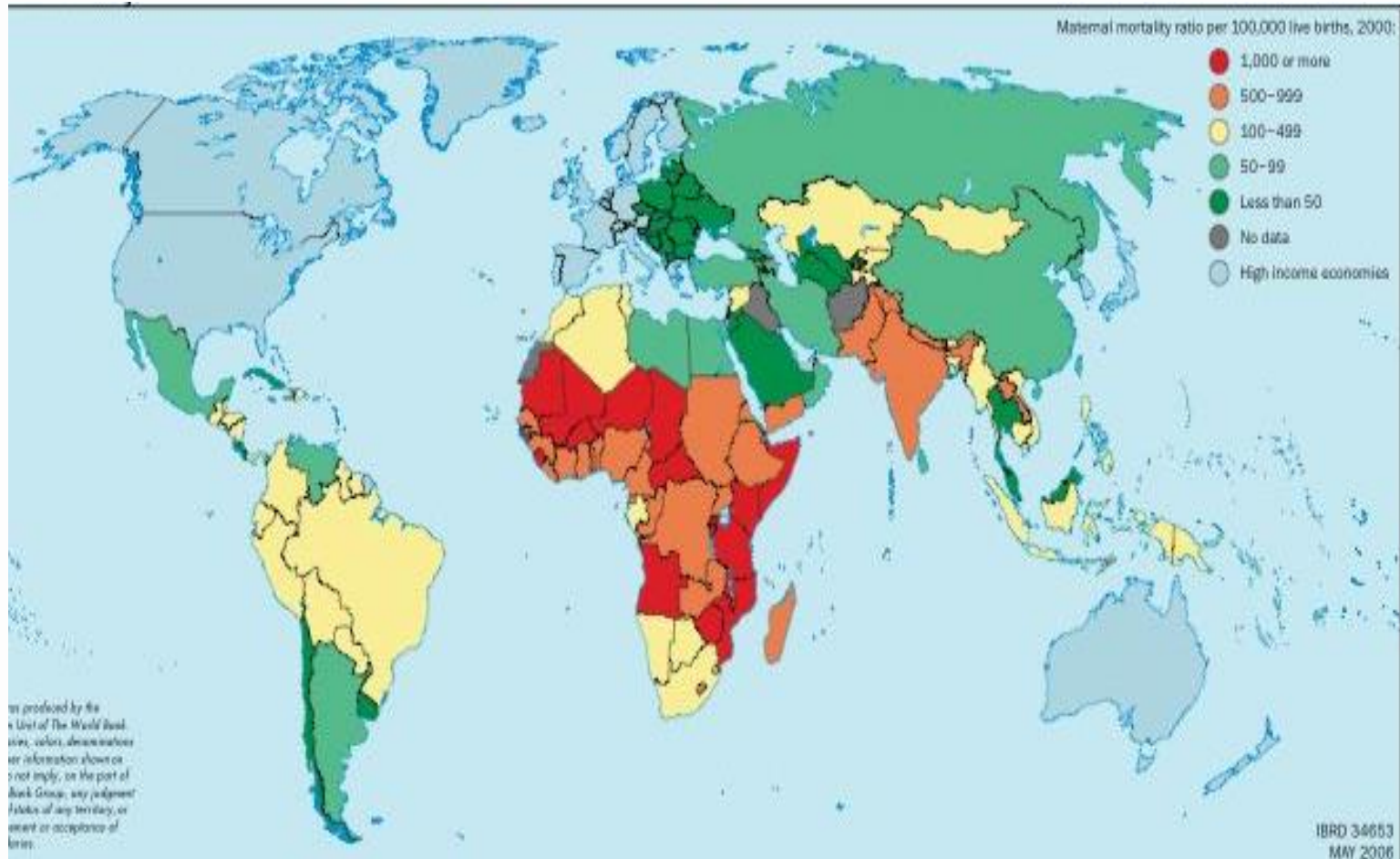
This is a measure of the risk of death once a woman has become pregnant. The global comparisons presented on the map in Slide 33 and in Slide 37 are based on maternal mortality ratios.

2. A **maternal mortality rate** = the number of maternal deaths per 100,000 women of reproductive age in a given time period. This measure reflects the frequency with which women are exposed to risk through pregnancy.

3. The **lifetime risk of maternal death**

This measure, expressed as a risk of 'one in ____' takes into account both the probability of becoming pregnant and the probability of dying as a result of that pregnancy cumulated across a woman's reproductive years. There are startling differences in the lifetime risk of maternal death among women throughout the world, with glaring differences between more developed and less developed countries. These differences are highlighted in this module, as well, along with factors that could contribute significantly to reductions

Maternal Mortality Ratios Worldwide, 2000

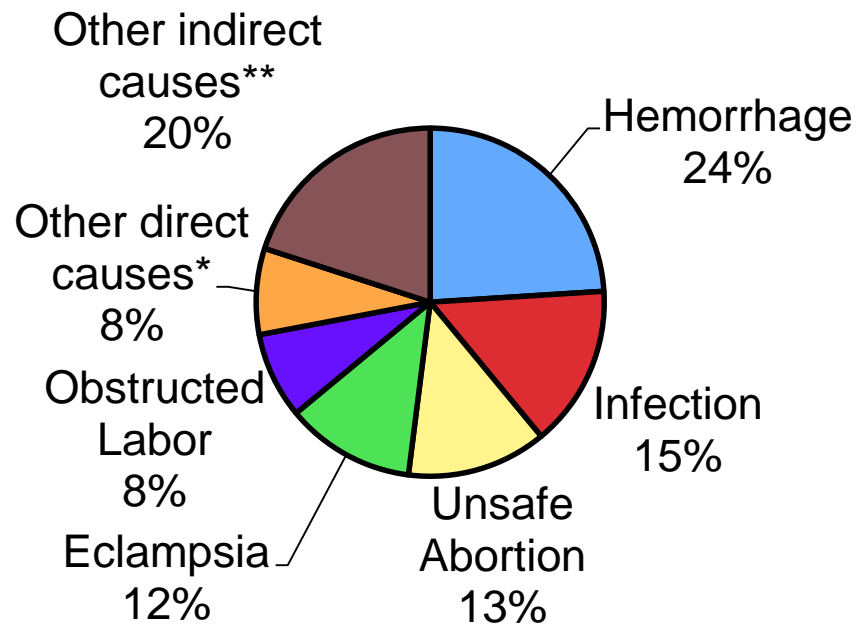


Source: World Bank, 2006

Maternal Mortality

- 99% of maternal deaths occur in developing countries.
- Africa and Asia together account for 95% of maternal deaths worldwide.
- Less than 1% of all maternal deaths occur in developed countries.

Causes of Maternal Mortality



The most common fatal complication of pregnancy is hemorrhage, which can occur during pregnancy (ante-partum) or immediately after delivery (post-partum). Infections, complications of unsafe abortion, hypertensive disorders of pregnancy (eclampsia), prolonged or obstructed labor are other leading causes. These are complications that can occur at any time during pregnancy and childbirth. Successful and lifesaving management of these conditions requires prompt access to obstetric care that can provide antibiotics, other medications and transfusions, and the ability to safely perform caesarean sections and other surgical interventions for management of obstructed labor, eclampsia or hemorrhage. If the leading causes of maternal mortality could be prevented, we might ask how much we could we reduce the risk of maternal death. The following are estimates of the overall risk of maternal death that could be eliminated by preventing each of the following pregnancy complications:

Causes of Maternal Mortality	% of Maternal Mortality Risk that Could Be Eliminated
Antepartum hemorrhage	14.2
Postpartum hemorrhage	4.8-11.7
Infection	8.0
Unsafe abortion	14.0
Eclampsia	3.1-8.0
Obstructed Labor	19.0
All Leading Causes	63.1-74.9

These data suggest that if we could prevent the top six leading causes of maternal mortality, we could potentially eliminate between 63% and nearly 75% of maternal deaths worldwide.

The methods to eliminating these causes of maternal mortality, as explored later in this module and in the companion module Reproductive Health, Part 2, include: availability of prenatal care and monitoring; clean, safe delivery assisted by a skilled birth attendant; availability of services to manage complications and emergencies that minimize delays in receipt of care, and access to Family Planning services.

Maternal morbidity, or complications experienced by women who survive childbirth, are also of great concern. For every woman who dies as a result of pregnancy, some 30 women live but experience lasting morbidities as a result. An estimated 20 million women suffer from nonfatal complications of pregnancy, including anemia, infertility, pelvic pain, incontinence and obstetric fistula. As the pie chart on Slide 35 suggests, nearly three-quarters (72%) of maternal deaths worldwide are due to five direct causes: hemorrhage, infection (sepsis), obstructed labor, eclampsia (pregnancy-induced hypertension), and unsafe abortion. The remaining causes of maternal death are indirect causes, or existing medical conditions that are worsened by pregnancy or delivery (such as malaria, anemia, hepatitis, or increasingly, AIDS). About 15 per cent of all pregnancies will result in complications. If untreated, many complications can be fatal.

What makes maternal mortality such a challenge is that knowing which women will experience complications and at what point during pregnancy remains extremely difficult to predict. While the general health status of pregnant women is important for a positive outcome of delivery, unexpected and potentially fatal complications can occur in any woman. Historically, in trying to predict complications in pregnancy we have depended on trying to identify women who are “high-risk.” In reality, the overwhelming majority of pregnancies and births take place among women who are considered low risk. Consequently, while the percentage of deaths may be higher among high-risk women, the greatest numbers of deaths take place among women considered to be low-risk. For this reason, the international focus for addressing maternal mortality has shifted from predicting complications during pregnancy to preparing for efficient emergency interventions to handle complications if and when they arise. In general, emergency obstetric interventions are inexpensive and can easily be carried out by specially trained health professionals.

Maternal Mortality: Global Goals

UN Benchmarks goal: To reduce by three-quarters the Maternal Morality Ratio worldwide between 1990 and 2015.

MMR in 1990: 850 maternal deaths/100,000 live births

MMR in 2000: 400 maternal deaths/100,000 live births

Target by 2015: 213 maternal deaths/100,000 live births

Source: United Nations Millennium Development Goals

Region	MMR	Lifetime Risk of Maternal Death 1 in
Sub-Saharan Africa	1000	16
South Asia	560	43
Middle East & North Africa	220	100
Latin America & Caribbean	190	160
East Asia & Pacific	110	360
East. Europe & Baltic States	64	770
Europe & North America	13	4,000
WORLDWIDE	400	47

Source: UNICEF. Unicef Statistics, Maternal Mortality, 2006.

- Risk of maternal death is highest for youngest women. Compared to women in their twenties:
 - risk is doubled for women 15-19
 - risk is five times higher for girls younger than 15
- Maternal mortality is an important cause of mortality among children.
- Maternal death carries high psychosocial toll on families and individuals.

Source: WHO. Mother-Baby Package: Implementing Safe Motherhood in Countries, 1994.

Maternal Mortality Contribution to Life Expectancy

Complications of pregnancy and childbirth, including HIV/AIDS, are the leading cause of death and disability among reproductive age women in developing countries, impacting life expectancy.

Preventing Maternal Mortality

99% of maternal deaths are preventable through:

- family planning to reduce unintended pregnancies
- skilled attendance at deliveries
- timely emergency care when obstetric complications arise

A Primary Component of Reproductive Health: Safe Motherhood

Notes on: Concept of Safe Motherhood. In 1987, the World Bank, in collaboration with the World Health Organization (WHO) and the United Nations Population Fund (UNFPA), sponsored the Safe Motherhood Conference in Nairobi. The Safe Motherhood Initiative resulting from the conference was a major effort aimed at reducing maternal mortality throughout the world, and particularly in developing regions. The Safe Motherhood Initiative set as its aim to reduce maternal mortality and morbidity by one half by the year 2000. The initiative recognized the need for national governments, funding agencies, and non-governmental organizations (NGOs) to make maternal health an urgent health priority and to ensure that necessary political and financial support was dedicated to this effort. The Safe Motherhood Initiative outlined strategies and specific interventions, referred to as the Pillars of Safe Motherhood, for the reduction of maternal morbidity and mortality.

1. Family Planning -- to ensure that individuals and couples have the information and services to plan the timing, number and spacing of pregnancies;
2. Antenatal Care -- to prevent complications where possible and ensure that complications of pregnancy are detected early and treated appropriately;
3. Clean/Safe Delivery -- to ensure that all birth attendants have the knowledge, skills and equipment to perform a clean and safe delivery and provide postpartum care to mother and baby;
4. Essential Obstetric Care -- to ensure that essential care for high-risk pregnancies and complications is made available to all women who need it.

Safe motherhood programs emphasize addressing all of these issues as well as other reproductive health issues: sexually transmitted infections, unplanned pregnancy, obstetric fistula, and female genital cutting (FGC). These latter aspects of reproductive health are covered in the companion module: Reproductive Health, Part 2.

Source: World Health Organization. Mother-Baby Package: Implementing safe motherhood in countries

Safe Motherhood: Action On Three Fronts

Making motherhood safe requires action on three fronts:

1. Reducing the numbers of high-risk and unwanted pregnancies
2. Reducing the numbers of obstetric complications
3. Reducing the case fatality rate in women with complications

Source: WHO. Mother Baby Package, 1996

Requirements for Safe Motherhood

Achieving safe motherhood and reducing maternal mortality requires a three-pronged strategy:

1. All women have access to contraception to avoid unintended pregnancies
2. All pregnant women have access to skilled care at the time of birth
3. All women with complications have timely access to quality emergency obstetric care

Effective Strategies to Achieve Safe Motherhood

Focused Antenatal Care

Minimizing Delays

Skilled Attendant at Birth

Pregnancy Spacing

Focused Antenatal Care

The World Health Organization has proposed a model of antenatal care that is aimed at providing quality care to women in an efficient, cost-effective way. Called focused, or goal-directed, antenatal care, this model proposes 4 to 5 focused antenatal visits (fewer than previously recommended) for women not having problems or complications at the outset. The specific elements of care are designed to prevent, detect early and/or manage conditions that impact pregnancy outcome for the mother and newborn. The care package recommends routine blood pressure measurement, testing of urine for bacteriuria and proteinuria, blood tests for anemia, and screening and treatment for existing conditions that may impact pregnancy outcome such as tuberculosis, HIV, malaria, sexually transmitted infections, hookworm and nutritional deficiencies. Routine weight and height measurement at each visit is considered optional. This model does not emphasize a risk approach, as this has often failed to accurately predict which women will have complications during pregnancy, labor and delivery.

Goals of Antenatal Care

- Antenatal care helps women maintain normal pregnancies through focused assistance and individualized care.
- Antenatal care aims to:
 - Detect and treat existing conditions or complications
 - Prevent complications and disease
 - Prepare for the birth and be ready for complications
 - Include health promotion education

Rationale for Antenatal Care

- Often the only contact women have with the health care system
- Increases the likelihood of skilled attendant at birth
- Affords opportunity for micronutrient supplementation: vitamin A, iron, folate, iodine
- Opportunity for prevention of disease transmission: tetanus, HIV, malaria

The WHO model of antenatal care recommends 4-5 focused antenatal care visits for women not having problems or complications.

Use of Antenatal Care

- 70% of women worldwide have **at least one** antenatal visit with a skilled attendant.
- Use of antenatal care varies by:
 - region of the world
 - level of income
 - level of education
 - urban vs.. rural residence
- Women with higher income, higher education and urban residence are more likely to use antenatal care.

Cost-Effective Components of Antenatal Care

- Tetanus immunization
- Syphilis screening
- Tuberculosis screening
- Early detection of maternal HIV
- Prevention of maternal-child transmission of HIV
- Malaria prevention in endemic areas

Cost-Effective Components of Antenatal Care - continued

- Early detection & treatment of anemia
- Detection & treatment of hookworm
- Iron and folate supplementation
- Vitamin A and iodine supplementation
in areas of deficiency

Source: WHO, What is the effectiveness of antenatal care? 2005

Tetanus

- Vaccine-preventable, non-communicable disease acquired through environmental exposure to the spores of the bacterium *Clostridium tetani* which produce a neurotoxin.
- Caused by non-sterile delivery, contamination of umbilical cord by cutting with non-sterile instrument or treating cord stump with dirt or animal dung.

Notes on: Tetanus

Today, neonatal tetanus is a significant problem in 57 countries of the world. While eliminated in developed countries by the 1950's, 90% of all cases of neonatal tetanus come from 25 countries, 18 of which are in Africa. Effective immunization and safe deliveries provided by a skilled birth attendant are the major interventions to prevent maternal and neonatal tetanus. Unlike a disease like smallpox, it is not possible to completely eradicate tetanus since the spores of *Clostridium tetani* exist in the environment and can survive long periods of time outside the human body.

In 1999, the Maternal and Neonatal Tetanus Elimination Initiative was launched by WHO, UNICEF, and the United Nations Population Fund, with a target date for the elimination of maternal and neonatal tetanus extended to 2005. Strategies to achieve maternal and neonatal tetanus elimination included strengthening routine immunization services, promotion of clean deliveries, and the use of immunization campaigns to provide 3 doses of Tetanus Toxoid (TT) to all women of childbearing age. Between 1999 and 2005, an estimated 64 million women received at least 2 doses of TT. However, by the end of 2005, 49 of the 57 priority countries had not yet eliminated maternal and neonatal tetanus as a significant problem. Many of these countries are in Sub-Saharan Africa and Asia. These are countries also experiencing high rates of malaria and HIV. There is some evidence that tetanus antibody levels are reduced in the cord blood of HIV-infected mothers and mothers with malaria. Thus, malaria and HIV infection may contribute to difficulties in eliminating maternal and neonatal tetanus in some regions.

Source: United Nations Children's Fund. Eliminating Maternal and Neonatal Tetanus. June 2004

Tetanus

- Maternal tetanus is responsible for ~30,000 deaths annually, or 5% of all maternal deaths.
- 180,000 neonatal tetanus deaths annually, 8% of all neonatal deaths.
- 90% of cases occur in 25 countries, mostly in Africa and Southeast Asia.

Tetanus

- Effective prevention through vaccination programs aimed at children and reproductive aged women, and clean, safe delivery practices.
- Tetanus toxoid immunization of the mother affords antibodies to the fetus to protect against neonatal tetanus.
- 69% of pregnant women worldwide are protected against tetanus.

Syphilis in Pregnancy

- 12 million people infected globally.
- Infection early in pregnancy can result in miscarriage or stillbirth; infection later in pregnancy results in infant infected with syphilis.
- Two-thirds of babies born to mothers with untreated syphilis are infected.

Syphilis in Pregnancy

- 500,000 cases of congenital syphilis occur each year worldwide.
- Effective prevention through testing as part of antenatal care and treatment (penicillin) before 16 weeks gestation.

Tuberculosis in Pregnancy

- Estimated one-third of the world's population is infected with tuberculosis
- 750,000 reproductive age women die of tuberculosis each year.
- Tb is the leading infectious disease cause of mortality for women.

Tuberculosis in Pregnancy

- Maternal Tb increases the risk of morbidity and mortality for the infant.
- Effective management and prevention through testing as part of antenatal care and treatment based on strain and resistance patterns in community.

HIV in Pregnancy

- 1% of pregnant women worldwide are HIV positive.
- 95% of HIV positive pregnant women live in developing countries.
- Impacts of maternal HIV:
 - Increased maternal mortality
 - Reduced fertility
 - HIV transmission to infant
 - Orphaning in childhood due to maternal death

Mother-to-Child Transmission of HIV

- If an HIV positive woman becomes pregnant, the chance of transmitting the infection to her infant is 35% if she remains untreated.
- Worldwide, 420,000 children in 2007 became HIV positive, > 90% through mother-to-child transmission:
 - 15-20% during pregnancy
 - 50% during delivery
 - 33% through breast feeding

Source: UNAIDS, AIDS Epidemic Update, Dec. 2007.

- 90% of mother-to-child HIV infections (approximately 380,000/year) occur in Sub-Saharan Africa.
- By comparison, 100 to 200 mother-to-child infections occur each year in the US.
- Treatment during pregnancy halves the risk of HIV transmission to the infant.

In addition, this module has not addressed the use of microbicides in transmission of HIV/AIDS and STI's. Microbicides are being developed in the form of gels, creams, films and suppositories and are intended to decrease the risk of HIV/AIDS and/or sexually transmitted infections. They work by killing or inactivating pathogens or inhibiting their absorption in the reproductive tract. A number of microbicides are in clinical trials now. They have raised issues both of effectiveness and of ethics in their use, given that one partner in a sexual relationship may use them and remain unknown to the other partner. Information on microbicides can be found in another module in this educational series.

Options to Prevent Mother-to-Child HIV Transmission

- One month course of AZT during last weeks of pregnancy
Most commonly used in developed countries
- Single dose of nevirapine during delivery + single dose to infant within 72 hours of birth
Most commonly used in less developed countries.
Treatment cost. \$10

The Dilemma: Breast or Bottle Feeding?

- Breast feeding by an HIV positive mother poses 10-20% risk of HIV infection to the baby.
- In many parts of the world, bottle feeding greatly increases infants' risk of diarrheal, respiratory and other diseases from unclean water used to mix formula and other unsanitary feeding conditions.

The Dilemma: Breast or Bottle Feeding?

- Reducing duration of breast feeding from 2 years to 6 months can decrease risk of HIV transmission by two-thirds.
- Prevention recommendation:
Exclusive breast feeding for at least 3 months
Cease breast feeding when other safe feeding options are available; preferable duration no longer than 6 months.

Note: Mixed feeding (breast milk + other foods) carries higher risk of transmission and is not recommended.

Malaria in Pregnancy

- Malaria increases risk of maternal anemia, low birth weight, premature delivery and fetal death, and compounds HIV risk to greatly increase risk of infant death.
- Effective treatment and prevention in endemic areas:
 - Intermittent preventive treatment with anti-malarial drugs
 - Insecticide-treated bed nets
 - Febrile malaria case management

Anemia in Pregnancy

- Anemia in pregnancy = Hemoglobin < 11.0 g/dL
- Caused by: micronutrient deficiencies in diet (folate, iron); chronic infections (malaria, HIV); parasitic diseases (hookworm, schistosomiasis); hemoglobinopathies.
- Anemia increases risk of: hemorrhage, sepsis, stillbirth, low birth weight, infant and maternal mortality.
- Chance of a favorable pregnancy outcome is reduced by 30-45% for anemic mothers.
- Prevention of anemia in pregnancy:
 - Food fortification
 - Iron supplementation

Minimizing Delays

Complications During Pregnancy

- An estimated 15% of women have life-threatening complications during pregnancy
- It is difficult to predict which women will have complications and to prevent all complications.

Source: Thaddeu, S. and Maine, D. Too Far to Walk: Maternal Mortality in Context, 1994.

Onset of Complication to Death: Implications of Delays in Care

Estimated average interval from onset of obstetric complication to death, without medical intervention:

Antepartum hemorrhage	12 hours
Postpartum hemorrhage	2 hours
Ruptured uterus	1 day
Eclampsia	2 days
Obstructed labor	3 days
Infection	6 days

Source: Maine, Deborah. Safe Motherhood Programs: Options and Issues, 1991.

Three Delays Model

- Delays leading to maternal death are often multi-factorial.
- Deaths can be prevented by reducing delays at three points:
 - in the decision to seek care
 - in reaching the health care facility
 - in receiving treatment at the facility

Three Delays Model

Delay in decision to seek care can be influenced by:

- Failure to recognize complications
- Societal acceptance of pregnancy risk/maternal death
- Low status of women
- Socio-cultural barriers to seeking care

Delay in reaching care can be influenced by:

- Physical conditions such as poor roads, mountains, islands, rivers
- Poor referral organization and lack of transport

Delay in obtaining care at a facility can be influenced by:

- Inadequate facilities, supplies, personnel
- Poor training/ lack of motivation of personnel
- Lack of finances

The Three Delays Model, proposed by Deborah Maine, identifies potential points at which delays can occur in managing obstetric complications. It points the way for development of strategies and programs to address these delays at local and regional levels. The model suggests that women who die in childbirth experience at least one of the following three delays:

- **The First Delay** is in deciding to seek care for an obstetric complication. This may occur for several reasons, including late recognition that there is a problem, fear of the hospital or of the costs that will be incurred, or the lack of an available and appropriate decision maker to seek care.
- **The Second Delay** (in reaching the health care facility) occurs after the decision to seek care has been made. The delay in actually reaching the care facility is usually caused by difficulty in transport. Many communities, towns or villages have very limited transportation options and poor roads. Some communities have developed innovative ways to address this problem, including prepayment schemes, community transportation funds and a strengthening of links between community practitioners and the health system.
- **The Third Delay** is a delay in receiving treatment once at a health facility. Women may wait for hours at a health facility because of poor staffing, prepayment policies, or difficulties in obtaining blood supplies, equipment or an operating room. Once a woman has actually reached a facility that can provide emergency obstetric care, many economic and sociocultural barriers have already been overcome. Focusing on improving services in existing health facilities is a major component in promoting access to emergency obstetric care.

In most of Europe and North America essentially universal access to skilled attendants at birth and to emergency obstetric care has reduced maternal mortality rates to almost zero. Some developing countries have been highly successful in reducing maternal mortality: Cuba, Malaysia and Sri Lanka are good examples. In these countries, their governments have committed to strengthening the health care system overall. Other common initiatives have been a shift to skilled, professional attendants at births, referral systems for complicated deliveries, and higher proportions of births occurring in health care facilities. - Source: Thaddeus, S. and Maine, D. Too far to walk: maternal mortality in context. *Social Science*

Skilled Attendant at Birth

Skilled Attendant at Birth

The presence of a skilled attendant at delivery is a leading predictor of a safe delivery.

Notes on: A Skilled Attendant at Birth. A skilled attendant at delivery has become an important global measure of efforts to reduce maternal mortality. Reduction of maternal deaths by three-quarters between 1990 and 2015 was set as a target for achieving the Millennium Development Goal No. 5 – improvement of maternal health. The goal was to reduce the maternal mortality ratio from 850 to 213 per 100,000 live births in the twenty-five year time span. In order to monitor progress towards the goal, two indicators were defined for tracking:

1. The first is the maternal mortality ratio (the number of maternal deaths per 100,000 live births). However, limited availability of accurate and timely data, particularly from countries where maternal mortality is a major public health problem, often makes it difficult to monitor short-term changes in this indicator. Therefore, a second health-care indicator was selected as a proxy to monitor the process of reducing maternal mortality.
2. The second indicator is the proportion of births attended by skilled health personnel. The selection of this as a monitoring indicator was based on historical and observational evidence that having a skilled health worker at delivery bore a strong and direct relationship to the reduction of maternal mortality.

At the five-year follow-up to the International Conference on Population and Development, a special session of the UN General Assembly agreed on the following goals: globally, 80%, 85% and 90% of all deliveries should be assisted by skilled health personnel by 2005, 2010 and 2015, respectively. (United Nations, 1999)

What is a Skilled Birth Attendant ?

“A *skilled attendant* is an accredited health professional – such as a midwife, doctor, or a nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth, and the immediate postnatal period, and in the identification, management, and referral of complications in women and newborns.”

WHO, ICM and FIGO Joint Statement, 2004.

Traditional Birth Attendants

A traditional birth attendant is traditional to the culture of the society, independent of the health system, non-formally trained and functions as a community-based provider of care during pregnancy, childbirth and the postnatal period.

Traditional birth attendants, trained or not, are not considered skilled birth attendants.

WHO, ICM and FIGO Joint Statement, 2004.

Percent of Births Attended by a Skilled Birth Attendant

WORLDWIDE	61.5%
Africa	46.7%
Asia	58.3%
Europe	99.1%
Latin Am./Caribbean	83.2%
North America	98.9%
Oceania	83.9%

More developed countries	99.1 %
Less developed countries	57.4%
Least developed countries	33.7%

Skilled Attendant at Birth - cont'd

- Nearly all births (99%) in developed countries are attended by skilled health care personnel.
- 57% of births in the developing world are attended by a skilled birth attendant.
- Presence of a skilled birth attendant is less likely in rural than urban areas and among poorer women than wealthier women.

Pregnancy Spacing

Pregnancy Spacing

- Timing of pregnancy and intervals between pregnancies are strongly related to personal preference and social custom.
- Age, family desires, family supports, economic and social circumstances, and access to health care may all play a role in birth spacing.

Notes on: Pregnancy Spacing. The length of time between a woman's pregnancies can have significant impact on health outcomes for both the woman and her baby. The accepted way to measure the interval between pregnancies is to count the period of time from a live birth, stillbirth, miscarriage or induced abortion to the conception of the next pregnancy. The World Health Organization and other international agencies long held the view that birth spacing of 2 to 3 years, particularly following a live birth, was the recommended interval. Other organizations, such as USAID, advocated an even longer interval of 3 to 5 years. In 2005, in an attempt to resolve this rather significant difference of opinion, WHO convened a conference of technical experts to review existing world literature on birth spacing and health outcomes, and to make recommendations that would be acceptable to all agencies working in the field of global reproductive health. This posed a significant challenge, given that available studies vary in methods, the populations they studied and their conclusions. The consensus arrived at through this detailed technical review process proposed the recommended birth spacing presented in this module, that is:

- At least 2 years after a live birth
- At least 6 month after a miscarriage or induced abortion
- Furthermore, the weight of the evidence seems to suggest that intervals less than 6 months pose an increased risk of maternal mortality, and intervals greater than five years increase the risk of pre-eclampsia in the mother, preterm birth, low birth weight and small for gestational age growth problems in the infant.

Source: WHO. Report of a WHO Technical Consultation on Birth Spacing. Geneva. 13-15 June 2005. Geneva: WHO, 2006.

Recommended Pregnancy Intervals

At least 2 years after a live birth

At least 6 months after a
miscarriage or induced abortion

Source: WHO. Report of a WHO Technical Consultation on Birth Spacing., 2006.

- Intervals less < 6 months pose increased risk of maternal mortality.
- Intervals less <18 months or > 5 years may increase risk of pre-eclampsia, preterm birth, low birth weight and small for gestational age infants.
- Short intervals may lead to higher occurrence of induced abortion. In areas where unsafe abortion is prevalent, this is a risk for the mother.

A particular concern about inter-pregnancy intervals is that short intervals between pregnancies may increase the desire of women to seek an abortion, particularly if the pregnancy is unintended or family resources are strained. In areas where many abortions are performed under unsafe conditions, this poses a risk to a woman's health and survival. More information about the prevalence and risk of unsafe abortions is provided in the companion module, Reproductive Health: Part 2.

New Initiatives in Global Reproductive Health

- The 1987 Safe Motherhood initiative has not reached the objectives set in MDGs 4 (Reduce child mortality) and 5 (Improve maternal health), largely due to increasing maternal and perinatal mortality in Sub-Saharan Africa.
- Problems have been:
 - Lack of resources
 - Lack of commitment
 - Poorly functioning health systems

- World Health Organization's first global strategy on reproductive health adopted by 57th World Health Assembly, May 2004.
- Five priority areas:
 - improving antenatal, delivery, postpartum and newborn care
 - providing high-quality services for family planning
 - eliminating unsafe abortion
 - combating STI's, including HIV, reproductive tract infections, cervical cancer and other gynecological morbidities,
 - promoting sexual health

Source: WHO. Reproductive health strategy, 2004.

New Initiatives in Global Reproductive Health

- Newest initiative is multi-agency partnerships aimed at improving reproductive health in Africa:

“The Road Map for Maternal and Newborn Health”

- All partners agree that keys to reducing maternal and newborn mortality are:
 - Provision of skilled attendants during pregnancy, childbirth, post-neonatal period
 - Strengthened capacity of individuals, families, communities

Source: UNFPA. The Road Map for Maternal and Newborn Health, Feb. 2006.

Notes on: New Initiatives in Global Reproductive Health.

In the decade between 1990 and 2000, measures of infant and maternal health worsened in Sub-Saharan Africa. The region's neonatal mortality rate in 2000 was 45/1,000 live births, the highest in the world. The maternal mortality ratio (maternal deaths during pregnancy and delivery) was 1,000/100,000 live births, up from 870 in 1990. These disappointing human statistics provided the impetus for an intensified effort to impact maternal and child health in the African region: The Road Map for Maternal and Newborn Health.

The Road Map, which depends on strengthened multi-agency partnerships, defines a minimum package of services aimed at every level within a country's health system. These include:

- family planning
- revision of national policies' standards and protocols for maternal and newborn health and for family planning
- using international evidence-based standards of care, upgrading health services to ensure greater accessibility, acceptance and quality of care.
- implementing standards of emergency obstetric care
- updating training curricula in training schools
- establishing radio communication systems linked to a transport system
- strengthening health information
- promoting male involvement in establishing community committees for maternal and neonatal

Source: World Health Organization. Accelerating progress towards the attainment of international reproductive health goals. A framework for implementing the WHO Reproductive Health Strategy. 2006.

Quiz Introduction

- Now we invite you to take the module quiz and test your recent learning. This quiz includes 10 questions with multiple choice or true/false response choices
- Write down your letter answers (A,B,C..) on a piece of paper and then check your answers on the slides that follow question #10.

1. Family Planning provides which of the following advantages:

- A Longer intervals between births
- B Ability to achieve desired family size
- C Reduced likelihood of maternal mortality
- D A and B
- E All of the above

2. Worldwide, an estimated 80% of married or in union women use contraception.

- A True
- B False

3. What is the relationship between contraceptive use and fertility rates around the world?

- A Where contraceptive use is high, the fertility rate is high
- B Where contraceptive use is high, the fertility rate is low
- C Where contraceptive use is low, the fertility rate is low

4. Which contraceptive method is most commonly used in developing countries?

- A Oral contraceptives
- B Diaphragm
- C Condoms
- D Female sterilization
- E Rhythm and other traditional methods

5. The primary reason underlying abortion is unintended pregnancy.

- A True
- B False

6. Unsafe abortion may cause injury, but is not proven to cause mortality.

- A True
- B False

7. Wealthier and more educated women are more likely to use family planning.

- A True
- B False

8. Sexually transmitted infections (STI's) can have the following risks in pregnancy:

- A Ectopic pregnancy
- B Low birth weight baby
- C An infant born infected with the mother's STI
- D Stillbirth
- E All of the above

9. If abortion laws are liberalized in a country, what would you expect to happen to the rate of unsafe abortions?

- A The rate will go up
- B The rate will go down
- C The rate will remain the same

10. What is the most effective way of preventing unsafe abortions?

- A Require parental notification for teenagers seeking abortion
- B Maintain restrictive abortion laws
- C Make effective methods of contraception available and affordable
- D Require stringent training for medical personnel and licensing of abortion facilities

And now, check your answers with those on the slides that follow

1. Family Planning provides which of the following advantages:

- A Longer intervals between births
- B Ability to achieve desired family size
- C Reduced likelihood of maternal mortality
- D A and B
- E All of the above is correct**

2. Worldwide, an estimated 80% of married or in union women use contraception.

- A True
- B False is correct. It is estimated that 62% of married or in union women worldwide use contraception.**

3. What is the relationship between contraceptive use and fertility rates around the world?

A Where contraceptive use is high, the fertility rate is high

B Where contraceptive use is high, the fertility rate is low is correct. Correct. In general, contraceptive use and fertility rates are inversely related. In the least developed regions of the world contraceptive use is 32% and the fertility rate is 5.4. In the most developed regions contraceptive use is 70% and the fertility rate

C Where contraceptive use is low, the fertility rate is low

4. Which contraceptive method is most commonly used in developing countries?

A Oral contraceptives

B Diaphragm

C Condoms

D Female sterilization is correct. Correct. The most commonly used methods of contraception in developing countries are (1) female sterilization; (2) IUD's; (3) pills, in that order.

E Rhythm and other traditional methods

5. The primary reason underlying abortion is unintended pregnancy.

A True

B False is correct. Unintended pregnancies comprise 38% of all pregnancies. Six out of 10 unintended pregnancies will end in an induced abortion.

6. Unsafe abortion may cause injury, but is not proven to cause mortality.

A True

B False is correct. Unsafe abortion is a significant contributor to maternal mortality, causing 13% of maternal deaths (approximately 70,000) worldwide each year.

7. Wealthier and more educated women are more likely to use family planning.

A True is correct. The world's poorest and least educated women are 4 times less likely to use family planning than are wealthier and more educated women.

8. Sexually transmitted infections (STI's) can have the following risks in pregnancy:

- A Ectopic pregnancy
- B Low birth weight baby
- C An infant born infected with the mother's STI
- D Stillbirth
- E All of the above is correct**

9. If abortion laws are liberalized in a country, what would you expect to happen to the rate of unsafe abortions?

A The rate will go up

B The rate will go down is correct. Historical evidence has shown that when legal abortions are more easily available, rates of unsafe abortion drop.

C The rate will remain the same

10. What is the most effective way of preventing unsafe abortions?

A Require parental notification for teenagers seeking abortion

B Maintain restrictive abortion laws

C Make effective methods of contraception available and affordable is correct

D Require stringent training for medical personnel and licensing of abortion facilities

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WEB LINKS

25. www.unfpa.org/publications Many publications from the United Nations Population Fund (UNFPA) can be found and downloaded from this site.

Credits

Laurel A. Spielberg, MA, MPH, DrPH is Research Assistant Professor, Community & Family Medicine, Dartmouth Medical School, Hanover, N.H.

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