

Health status and key interventions

Understanding key technical interventions for improving maternal health and child health and recognizing how these interventions relate to one another is a prerequisite for making strategic choices about health sector policy and programs. This chapter lays out disease-specific causes of mortality and morbidity, presents estimates (where possible) of the prevalence or the burden of disease associated with those conditions, and describes the primary interventions to address each.

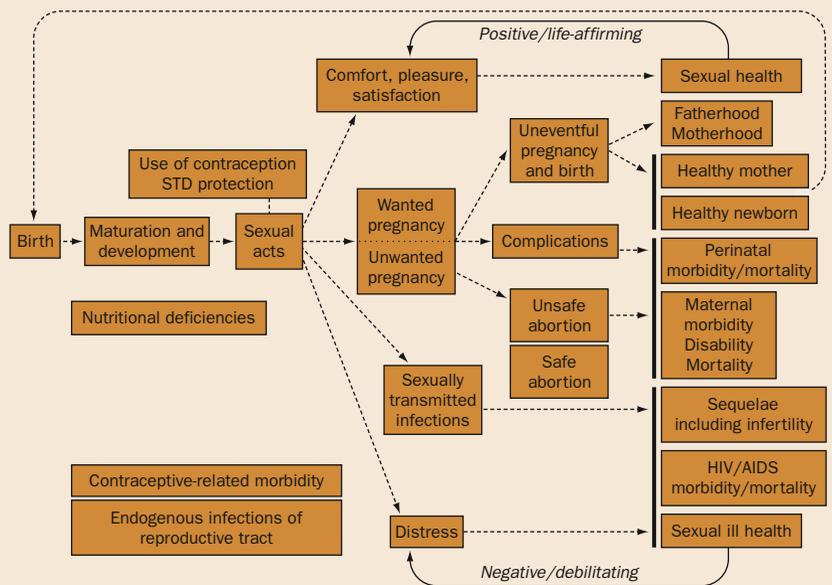
Connecting maternal health and child health

Although child health and maternal health interventions are examined in separate subsections, as lived experience and as a matter of biology they are sometimes—but not always—closely related. The chapter uses a lifecycle approach and the concept of sexual and reproductive health and rights to explicate these relationships. The lifecycle framework is useful for understanding connections over time, as health events at one stage influence health at a later stage across the life span and influence the next generation through the life cycle. The sexual and reproductive health and rights framework is useful because it grounds us in the all-important social, cultural, and political contexts of health. In particular, it reminds us that none of the health interventions considered here “falls like manna from heaven” (Wagstaff and Claeson 2004). Not only must the health system be organized to ensure its availability, but—barring coercion—each woman must make an active decision to use it for herself or her children. That decision will be made from within the tighter or looser web of constraints that bind her specific lived reality (Petchesky and Judd 1998; Shepard 2000).

A sequence of interactions and events frames the experience of sexual and reproductive health over the lifespan (figure 3.1).¹ The conceptual map shown in figure 3.1 is two-dimensional, but as its authors note, the map could also

Figure 3.1
Conceptual map
of sexual and
reproductive health

Source: Adapted from Cottingham and Myntti 2002. Reprinted with permission from MIT Press.



be imagined in layers (Cottingham and Myntti 2002). The base layer is the framework depicted in figure 3.1, including processes (such as maturation), events (such as pregnancy), and outcomes (such as pleasure or distress, health or disease)—simply moving through the stages of life. Superimposed on this base could be a layer of social and institutional arrangements that influence the way in which the different stages are experienced. These social and institutional arrangements include intimate and family relationships; community institutions, such as schools, religious institutions, the media, and the market; preventive and curative healthcare services; and governmental institutions, including the laws and policies they are responsible for implementing.

Such social and institutional arrangements influence the way events depicted in the map are experienced, because these arrangements function as the repositories of power and resources that individuals draw on to protect their health and prevent or treat disease (Link and Phelan 1995). These resources include not simply economic resources but also such nonmonetary assets as social networks, prestige, education, information, and legal claims. For example, a woman who, because of access to resources such as education, legal claims to gender equality, and strong social networks, has been able to obtain formal employment and achieve financial independence is likely to have greater power to negotiate the conditions of intimate relationships, including use of contraception, and to have the resources to obtain the contraceptive that best meets her needs. The constellation of power and resources—the assets—that this woman accesses through multiple social and institutional arrangements thus influences her experience of the box in figure 3.1 labeled “use of contraception/STD protection” and the subsequent sexual and reproductive

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health**

health stages in the map (sexual acts, wanted/unwanted pregnancy, comfort/pleasure/satisfaction, and so on).

These assets are not evenly distributed in any society. Gender, class, race, and ethnicity are intersecting social hierarchies that often act as a grid of inequality through which an individual's experience of the social and institutional arrangements is filtered. Imagined this way, the map helps conceptualize the mechanisms by which inequality in access to power and resources ultimately affects health.

The map also clarifies the critical relationship between sexuality and reproduction, making the important point that many aspects of sexuality are separate from reproduction and have consequences—both positive and negative—for physical and mental health independent of pregnancy and childbearing (Miller 2000). This point becomes critical for developing effective interventions, including strategies for preventing the transmission of HIV. It is also a crucial point in understanding some of the controversy that has sometimes blocked health interventions.

Sexuality and reproduction—both separately and together—are at the core of the intimate, economic, and institutional relationships that characterize both women's oppression and their potential for determining the course of their own lives, that is, for their agency. As the UN Millennium Project Task Force on Education and Gender Equality elaborates in its report, agency is a basic component of gender equality, itself a Goal. As assessed through various indicators of women's status and empowerment (such as control over income and education), agency is in turn positively correlated with aspects of women's health (Lule and others 2003; Barnett and Stein 1998) and children's health (Hobcraft 1993; Wagstaff and Claeson 2004). Thus agency becomes a core principle of sexual and reproductive health, best expressed in the legal concept of sexual and reproductive rights (see box 2.2).

Figure 3.1 refers to both men and women and to both fatherhood and motherhood. The health literature rarely connects the health of children to the health or even the actions of their fathers, apart from genetics.² In societies gripped by epidemics of sexually transmitted infections, including HIV/AIDS, this is a dangerous omission. Although newborns contract HIV from their mothers, virtually all HIV-positive pregnant women contracted HIV from the men with whom they have sexual relationships. The sexual and reproductive health of men, and men's actions, can therefore have a significant effect on the health of both women and their children.

Child health

Important gains were made in child survival during the second half of the twentieth century (Freedman and others 2003). Globally, the under-five mortality rate (the number of deaths per 1,000 live births per year) declined from 159.3 in 1955–59 to 70.4 in 1995–99 (Ahmad, Lopez, and Inoue 2000). The decline

In parts of the world, progress in reducing child mortality has stalled

was most rapid during the 1970s and 1980s. Although the rate of decline slowed during the 1990s, child mortality still fell about 15 percent during that decade. This was an impressive achievement given the events that affected international public health development programs toward the end of the twentieth century—economic stagnation, increasing political instability and conflict, growing resistance to antimalarial drugs, and the relentless spread of the HIV/AIDS pandemic, to name a few. Overall the number of children under the age of five who die in the world each year fell from about 13 million in 1980 to an estimated 10.8 million by the end of the century (Black, Morris, and Bryce 2003).

Despite these gains, more recent trends suggest that there is serious reason to be concerned. The rate of mortality decline seems to have slowed considerably. Part of the decline reflects the fact that very low rates have already been achieved in Europe, the Americas, the Western Pacific, and the Eastern Mediterranean (to use the geographical divisions of the WHO). But the decline also reflects failure to make progress in Sub-Saharan Africa and Southeast Asia. In fact, in a few countries, notably those in southern Africa, where AIDS is taking its greatest toll, child mortality rates have stagnated and even begun to increase.

In 2003 a major review of child mortality was undertaken that addressed disease-specific causes of death and the potential of available public health interventions to prevent them. From a series of articles published in *The Lancet* and in a number of meetings held to discuss the findings and recommendations, six themes emerged:

- A small number of diseases and underlying biological factors are responsible for the large majority of childhood deaths.
- The Goal for reducing child mortality cannot be met without a major effort to reduce newborn deaths—those that occur during the first four weeks of life.
- Existing interventions, if implemented through efficient and effective strategies (in a way that reaches those who need to be reached), could prevent a substantial proportion of existing mortality.
- Child mortality is distributed in an extremely uneven manner. Not only between regions and countries but also within countries, socioeconomic inequities, to a large degree, determine which children live and which ones die.
- Existing interventions can be implemented most effectively in countries where health systems work best.
- Child health programs in developing countries are grossly underfunded; major new investments will be needed in order to achieve the Goal.

Geographical distribution and causes of death

Some 10.8 million children are estimated to die before the age of five every year (Black, Morris, and Bryce 2003). Forty-one percent of these deaths occur

**A few diseases
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in Sub-Saharan Africa, and 34 percent occur in South Asia. Just six countries account for half of all childhood deaths (table 3.1), and 90 percent of deaths occur in 42 countries.

Five diseases—diarrhea, pneumonia, malaria, measles, and AIDS—are responsible for an estimated 56 percent of deaths in children under five (table 3.2). In addition, about one-third of all deaths occur during the first month of life and have conventionally been grouped together as “neonatal deaths.” These have been attributed to a small number of biological conditions: complications of prematurity (27 percent), sepsis and pneumonia (26 percent), birth asphyxia (23 percent), and tetanus (7 percent) (Lawn and others 2005). These neonatal deaths have been relatively neglected in programs aimed at reducing child mortality and, for this reason, they are a special focus of this report.

The impact of these causes of death varies significantly across regions. For example, while deaths from AIDS are not likely to have an appreciable impact on child mortality rates in settings in which HIV prevalence is low, pediatric AIDS is much more important in parts of Sub-Saharan Africa, where prevalence is high (Mahy 2003). The authors of the *Lancet* series grouped the 42 countries that account for 90 percent of annual childhood deaths into five distinct epidemiological profiles, based on the proportion of deaths due to each of the most common causes of child mortality (Black, Morris, and Bryce 2003). In two of these groups, AIDS accounted for more than 10 percent of all under-five mortality; in the smallest group, AIDS was the leading disease-specific cause of death, accounting for 23 percent of under-five deaths. Although the

Table 3.1
**Six countries with
highest number of
annual deaths of
children under age five**
Thousands

Source: Black, Morris,
and Bryce 2003.

Country	Deaths per year
India	2,402
Nigeria	834
China	784
Pakistan	565
Democratic Republic of Congo	484
Ethiopia	472
Total of six countries	5,541
Global annual deaths	10,800

Table 3.2
**Causes of deaths of
children under age five**
Percent

Note: Figures are based
on data from the 42
countries that account for
90 percent of all deaths.

Source: Adapted from Black,
Morris, and Bryce 2003.

Disease or condition	Share of under-five deaths
Neonatal	33
Diarrhea	22
Pneumonia	21
Malaria	9
Measles	1
AIDS	3
Other	9

Deaths from injuries are becoming proportionally more important

countries in this group account for only 1.1 million childhood deaths a year, a small proportion of the global total, for them the AIDS problem has substantial programmatic implications. Many children in these countries are living with AIDS, and many uninfected children have been orphaned by AIDS and may be at greater risk of morbidity and mortality due to their social circumstances. Interventions for the prevention and treatment of pediatric AIDS, a chronic condition, or for the care and support of AIDS orphans and other vulnerable children may be expensive and complicated to implement; providing such care risks drawing resources from other, more common, more easily treatable conditions. But no matter how difficult it may be, for these countries AIDS control is clearly a priority of the highest order. Outside of this relatively small number of countries in Sub-Saharan Africa, however, the contribution of AIDS to under-five mortality is small and will probably remain so (Bellagio Study Group on Child Survival 2003).

In Asia the situation is different. There, mortality from traditional infectious diseases has been substantially reduced. Neonatal causes have emerged as the leading cause of infant mortality, accounting for almost 60 percent of all deaths in the first year of life, according to a series of surveys recently conducted under the auspices of the Alliance for Safe Children and UNICEF (2004).³ The same surveys reported that injuries are a leading cause of death in 1- to 4-year-old children in Asia, causing more than 40 percent of mortality, equal to the proportion caused by all of the common infectious diseases combined. Among children under five, drowning is by far the leading cause of death, representing more than 60 percent of all injury deaths. Drowning is also the leading cause of injury deaths among 5- to 9-year-olds, with road traffic accidents and intentional injuries increasingly important in the later childhood years.

Deaths from injuries are becoming proportionally more important as other causes of death are being reduced. If substantial progress toward the Goal of reducing child mortality is made in Africa, through the control of common infectious diseases, injuries could emerge as a leading cause of death there as well.

And yet, few programs have been directed at preventing injuries. Surveillance data on injury are difficult, if not impossible, to obtain in the absence of surveys such as those conducted by the Alliance for Safe Children and UNICEF. Most health information reporting is from health facilities, whereas most injury deaths occur in the community. Because vital registration systems are weak in most developing countries, and sample sizes for most nationally representative surveys—such as the Demographic and Health Surveys and Multiple Indicator Cluster Surveys—are too small to reveal a comprehensive epidemiology of childhood mortality, deaths due to injury fall below the radar screen. As the importance of deaths from injury grows, and as the deadline for achieving the Goals approaches, behavioral change and other interventions aimed at preventing these deaths will need to be further developed, communicated, and implemented.

**Low birthweight
also remains
a significant
public health
problem**

Describing the causes of childhood deaths is not as simple as table 3.2 suggests. At least two issues complicate attempts to attribute deaths to a single cause. For one thing, two or more potentially fatal infectious diseases of childhood can occur simultaneously, particularly if they are associated with shared risk factors. Unsanitary environmental conditions in the home, for example, can contribute to the incidence of both diarrhea and pneumonia. When these occur together, and the child dies, assigning the death to one or the other cause is difficult.

Second, although not listed specifically as a cause of death, undernutrition (low weight-for-age) contributes greatly to child mortality. Mildly underweight children under age five are twice as likely as their nourished peers to die; moderately underweight children are five times as likely to die, and severely undernourished children are eight times as likely to do so (Pelletier, Frongillo, and Habicht 1993). Overall, 52.5 percent of all postneonatal childhood deaths are associated with undernutrition: 60.7 percent of diarrhea deaths, 57.3 percent of malaria deaths, 52.3 percent of pneumonia deaths, and 44.8 percent of measles. Ensuring the adequate nutrition of children under five could prevent more than 2.5 million deaths from these diseases (Caulfield and others 2004).

Low birthweight (less than 2,500 grams) also remains a significant public health problem in many parts of the world. Shrimpton (2003) estimates that low birthweight is a feature of 25 percent of all births in South Asia, 12 percent in Latin America, and 10 percent in Africa. These are probably gross underestimates, since the data come mostly from hospital deliveries in urban areas. But the importance of low birthweight is clear: an increase of 100 grams in mean birthweight has been associated with a 30–50 percent reduction in neonatal mortality (Shrimpton 2003).

Focus on nutrition

Early childhood malnutrition is strongly influenced by fetal growth, and low birthweight is strongly determined by maternal influences. In fact, it has been suggested that more than half of low birthweight is attributable to maternal nutritional factors (Ramakrishnan 2004). These factors are not ones that can be affected by improved care during pregnancy, however. A clear distinction must be made between women's health and maternal health. A principal emphasis of this report, and that of the Task Force on Education and Gender Equality, is that attention to women's health throughout the life cycle, and not only during pregnancy, childbirth, and lactation, is essential in order to achieve several of the Goals, particularly the child health Goal.

In addition to undernutrition, specific micronutrient deficiencies have been shown to play a major role in child mortality. Several reviews of vitamin A supplementation trials have shown that such programs can reduce mortality among children between 6 months and 5 years by 20–50 percent (Beaton and others 1993; Ramakrishnan and Martorell 1998).

**The importance
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Zinc deficiency is becoming increasingly recognized as an important contributor to child mortality. Zinc supplementation may reduce the incidence of diarrhea by 18 percent and pneumonia by 41 percent; used therapeutically for diarrhea, it shortens the duration and probability of recurrence in the several months following the illness (Walker and Black 2004). The impact of zinc supplementation on malaria incidence is less conclusive. The *Lancet* series reports that zinc given as a preventive intervention can reduce child mortality by 4 percent and that an additional 4 percent of mortality can be averted by making it an essential component of the treatment of diarrhea (Jones and others 2003).

Maternal iron deficiency and its associated anemia is another important risk factor for low birthweight (its role in maternal mortality is discussed below). In malaria-endemic areas, *P. falciparum* infection is the principal cause of anemia during pregnancy and may be responsible for an estimated 8–14 percent of all low-birthweight babies, and 3–8 percent of all infant deaths (Roll Back Malaria 2004).

In short, the importance of adequate nutrition, including micronutrients, throughout the life cycle cannot be overemphasized.

Focus on neonatal mortality

Most of the reduction in child mortality during the 1990s occurred in older children, who had already survived the neonatal period. Because this was not accompanied by an appreciable reduction of neonatal deaths, these began to account for a higher proportion of total under-five mortality. Indeed, by 2000, 37 percent of the 10.8 million deaths in children under the age of five occurred during the neonatal period (WHO forthcoming). A 50 percent reduction in neonatal mortality between 2000 and 2015 is essential if Goal 4 is to be achieved (Healthy Newborn Partnership 2004).

Of the approximately 4 million neonatal deaths each year, 99 percent occur in low- and middle-income countries (Lawn and others 2005). While nearly 40 percent of all neonatal deaths occur in South Asia, the highest rates of neonatal mortality, exceeding 45 per 1,000 live births per year, are found largely in Sub-Saharan Africa, where nearly 30 percent of all neonatal deaths take place.

Enormous disparities exist between rich and poor countries. A mother in West Africa, for instance, is 30 times as likely as a mother in Western Europe to lose her newborn in the first month of life (Save the Children 2001). Within countries poor families are more likely to suffer the loss of newborns: the neonatal mortality rate among the poorest 20 percent of the population in Ghana and India, for instance, is almost twice that of the richest 20 percent, and in Bolivia the two figures differ by a factor of more than five (Healthy Newborn Partnership 2004).

Also associated with high neonatal mortality are the low levels of education, nutrition, and health of women. Poor access to health services plays an important role. Gender bias in some parts of the world may also result in compromised care-seeking for newborn girls (Dadhich and Paul 2004).

**Systemic
infections
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fourth of
neonatal deaths**

Despite the huge number of deaths, the health of newborn babies has been relatively neglected by the global public health community, for several reasons (Lawn and others 2004). Most neonatal deaths are unseen and undocumented. In rich countries childbirth is accompanied by a fanfare, but in many poorer countries childbirth is accompanied by apprehension for the mother and baby, who may remain hidden at home, in confinement. Local traditions frequently dictate that the baby remain unnamed for one to six weeks, reflecting a sense of fatalism and cultural acceptance of high mortality in the earliest stages of life.

Yet interventions capable of saving newborn lives and strategies for their implementation exist, even for poor, rural areas. There is a misconception that newborn survival interventions can be delivered only through high-tech, high-cost, intensive care services. In the United Kingdom, the fall in neonatal mortality rate from more than 30 deaths per 1,000 live births in 1940 to 10 in 1979 coincided with the introduction of free antenatal care, improved care during childbirth, and the increased availability of antibiotics (Lawn and others 2004).

Some developing countries have improved neonatal health by investing in primary care. In Sri Lanka the neonatal mortality rate declined to 22 deaths per 1,000 live births by 1980, before the first neonatal intensive care unit was established (Paul and Singh 2004). Utilization of antenatal care services is nearly universal in Sri Lanka, and 86 percent of births occur at government hospitals, where services are free and attended by a cadre of skilled hospital midwives. The southern Indian state of Kerala has achieved a neonatal mortality rate of 10 deaths per 1,000 live births per year, far below the national average of 44, with hardly any specialized newborn care units (Dadhich and Paul 2004).

Systemic infections, usually pneumonia, septicemia, diarrhea, or tetanus, account for 36 percent of neonatal deaths worldwide (table 3.3). Prematurity and birth asphyxia each account for about a quarter of neonatal deaths, and these causes dominate during the first week of life, when almost 75 percent of all neonatal deaths occur. Low birthweight is the most important underlying risk factor, associated with 60–80 percent of all deaths during the neonatal period. Low birthweight is due to preterm birth, to growth restriction in utero, or both (Kramer 1987). A preterm baby has a much higher risk of death than a baby born at term with growth restriction. Preterm birth is both a direct cause of death and a major underlying cause of death, especially death from neonatal infections. But many of these deaths can be prevented with closer attention to basic elements of care, including warmth, feeding, and early treatment (Daga and others 1988; Aleman and others 1998; Datta 1985).

Interventions to reduce child mortality rates

Knowing the causes of death of children under five allows interventions to be developed that reduce the incidence of potentially fatal diseases or treat those conditions when they occur. Of course, child mortality can also be reduced by increased economic growth and, by extension, improved social and economic

Table 3.3
Causes of neonatal mortality
Percent

Direct cause	Share of deaths
Preterm birth	27
Sepsis, pneumonia	26
Asphyxia	23
Congenital malformations	7
Tetanus	7
Diarrhea	3
Other (jaundice, bleeding)	7

Source: Lawn and others 2005.

circumstances of families and households. Interventions that are implemented outside the health sector, such as improvements in the quantity and quality of water or improved environmental conditions, also play a role. Nevertheless, it is widely believed that the development and implementation of a relatively small number of safe and effective disease-specific interventions explain much of the dramatic decline in child mortality rates during the last quarter of the twentieth century. The discussion of interventions in this report is therefore restricted to those that have traditionally been implemented through the health sector in developing countries.

The second article in the *Lancet* series lists 23 interventions (15 preventive and 8 curative) that are most likely to have an impact on child mortality (Jones and others 2003). Based on estimated mortality in 2000 and assuming universal (100 percent) coverage with these interventions, the *Lancet* authors estimated the number of childhood deaths that could be prevented (table 3.4).

Taking into account the fact that several interventions can contribute to the saving of a single life, the *Lancet* authors estimate that of the 10 million deaths in the 42 countries in which 90 percent of the world's childhood deaths occurred in 2000, 6 million could have been prevented.

A few points are of special note. Several interventions, if fully implemented, could reduce child mortality by at least 5 percent. These include breastfeeding,⁴ oral rehydration therapy, use of insecticide-treated bednets, appropriate weaning and use of complementary foods, use of antibiotics for the treatment of antenatal sepsis and childhood pneumonias, and zinc supplementation.

Many of the interventions that are of proven effectiveness can be implemented at the household and community levels and depend largely on the behaviors of mothers and families; the role of health facilities and healthcare professionals is supportive, not essential. More emphasis is needed on what can be accomplished within communities, but the facility side of health systems also needs to be strengthened. The treatment of life-threatening illnesses, including pneumonia and severe malaria, not to mention emergency obstetric care (addressed fully in other sections of this report), depends on competent healthcare professionals being present in fully equipped health facilities on a permanent basis.⁵

Current coverage with many of the most essential interventions, including those that are of proven effectiveness, is quite low, ranging from 1 percent

Table 3.4
Estimated number of preventable deaths of children under age five
In the 42 countries that account for 90 percent of child mortality, assuming 100 percent coverage

Note: Interventions include only those for which the *Lancet* authors determined that there is at least limited evidence of an effect.

Source: Jones and others 2003.

Intervention	Deaths (thousands)	Preventable proportion of all deaths (percent)
<i>Preventive interventions</i>		
Breastfeeding	1,301	13
Insecticide-treated materials	691	7
Complementary feeding	587	6
Zinc supplementation	459	5
Clean delivery	411	4
Hib vaccine	403	4
Water, sanitation, and hygiene	326	3
Antenatal steroids	264	3
Newborn temperature management	227	2
Vitamin A supplementation	225	2
Tetanus toxoid	161	2
Nevirapine and appropriate feeding	150	2
Antibiotics for premature rupture of membranes	133	1
Measles vaccine	103	1
Intermittent presumptive treatment of malaria during pregnancy	22	<1
<i>Treatment interventions</i>		
Oral rehydration therapy	1,477	15
Antibiotics for neonatal sepsis	583	6
Antibiotics for pneumonia	577	6
Antimalarials	467	5
Zinc supplementation	394	4
Newborn resuscitation	359	4
Antibiotics for dysentery	310	3
Vitamin A	8	<1

for the intermittent presumptive treatment of malaria during pregnancy to 68 percent for measles vaccine. Only breastfeeding, with a mean estimated coverage of 90 percent, approaches full coverage—although the prevalence of exclusive breastfeeding (recommended for the first six months of life, and on the basis of which the potential impact of breastfeeding was calculated) is considerably lower (UNICEF 2003c). And even in this case, culture and tradition, not interventions carried out within the health sector, are probably most responsible for high coverage rates.

Global health policies today prioritize a number of interventions that are directed at diseases that are not responsible for most childhood deaths. Emphasis on the prevention of mother-to-child transmission of AIDS, for example, (which currently accounts for only 3 percent of global deaths, most of them in a relatively small number of countries in Africa) may divert resources from increasing coverage with oral rehydration therapy or antibiotics for pneumonia.

**About two-thirds
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a short period**

But the point is not that some important intervention programs should be sacrificed for the sake of others. Shifting scant resources around within a very small envelope will, in the end, accomplish nothing; forcing proponents of child survival interventions to compete with those of maternal mortality reduction or pitting advocates of expanded vaccination programs against those calling for increased access to treatment for common childhood illnesses is a no-win strategy. Instead, the resources must be made available that would allow for all high-priority child intervention programs to be fully implemented.

Jones and others (2003) note that their estimates of lives saved are conservative, since they include only interventions for which cause-specific mortality prevention data are available. Their report does not analyze the potential impact of birth spacing, for example, which may reduce child mortality by almost 20 percent in India and by more than 10 percent in Nigeria (the two countries with the highest number of deaths of children under five). In addition, new interventions are on the horizon. A rotavirus vaccine, a vaccine to prevent pneumococcal pneumonia, and a malaria vaccine are in various advanced stages of development and could make substantial contributions to reducing mortality before 2015.⁶

This brief review suggests that about two-thirds of current child mortality could be reduced in a relatively short period of time if existing interventions were scaled up to the point that they were made available to and utilized by 100 percent of the population in developing countries. This is, of course, a very big if. This reduction cannot be realized if the international child health community continues to go about its business as usual. The Goal for child health is within reach, but only if the kind of bold and assertive changes called for in this report are implemented without delay.

Interventions for reducing neonatal mortality

Recent and ongoing work has resulted in the identification of a number of evidence-based interventions that can prevent neonatal deaths (Bhutta and others 2005; Darmstadt and others 2005). Interventions to prevent neonatal deaths can be divided into three groups: a universal package, which should be available in all settings; situational interventions, for use in areas with particular epidemiological characteristics, such as a high prevalence of malaria; and additional interventions, which could be implemented where stronger health systems capable of supporting them exist (table 3.5).

Predictions based on the recent application of the Marginal Budgeting for Bottlenecks tool developed by the World Bank and UNICEF in five Sub-Saharan countries and in five states in India indicate that, if taken to scale, existing neonatal survival interventions could prevent 60 percent of neonatal deaths in South Asia and 70 percent of neonatal deaths in Sub-Saharan Africa, where baseline neonatal mortality rates are higher. In the *Lancet* series, Jones and others (2003) and Lawn and others (2004) estimated a potential global reduction

Table 3.5**Evidence-based priority interventions for improving neonatal survival**

PIH: pregnancy induced hypertension.

a. HIV infection is not a cause of neonatal deaths, but the antenatal and postnatal periods are critical entry points for prevention of mother-to-child transmission interventions.

Source: Darmstadt and others 2005.

Timing of intervention	Interventions		
	Interventions for universal coverage (priority interventions for high-mortality settings)	Situational interventions (where specific conditions are prevalent)	Additional interventions (where the healthcare system has additional capacity and the neonatal mortality rate is lower, for example, transition countries)
Antenatal	<ul style="list-style-type: none"> • Antenatal care package • Tetanus toxoid immunization • Detection and management of PIH/eclampsia • Birth and emergency preparedness • Syphilis screening and treatment • Breastfeeding promotion 	<ul style="list-style-type: none"> • Malaria presumptive intermittent therapy • Prevention of mother-to-child transmission of HIV^a 	<ul style="list-style-type: none"> • Peri-conceptual folate supplementation • Detection and treatment of asymptomatic bacteriuria • Antibiotics for preterm premature rupture of membranes • Antenatal corticosteroids for preterm delivery
Intrapartum	<ul style="list-style-type: none"> • Clean delivery practices • Newborn resuscitation • Skilled obstetric care • Comprehensive emergency obstetric care 		
Postnatal	<ul style="list-style-type: none"> • Essential care package <ul style="list-style-type: none"> • Hygienic cord and skin care • Hypothermia prevention and management • Breastfeeding promotion (immediate, exclusive) • Extra care of low-birthweight infants (extra attention to warmth, hygiene, feeding) • Community case management for pneumonia • Emergency management for sepsis and very low birthweight 	<ul style="list-style-type: none"> • Prevention of mother-to-child transmission of HIV^a 	

**Why do
10.8 million
children die
each year?**

of up to 55 percent of neonatal deaths, but the package of interventions on which that work was based did not include important interventions aimed at maintaining the health of mothers, including emergency obstetric care.

The new estimates show that universal (99 percent) coverage of these interventions could avert 41–72 percent of global neonatal deaths (Darmstadt and others 2005). Assuming that the recent gains in survival rates of older children are maintained, reductions of neonatal deaths of these magnitudes in Asia and Africa would ensure achievement of the Goal.

Inequities in child health

If child mortality is due to a limited number of known causes, and if interventions for preventing or treating those causes are currently available, why do 10.8 million children die each year? A 2004 World Bank report found that none of 47 countries in Sub-Saharan Africa was “on track” to reduce child mortality by two-thirds by 2015 (Wagstaff and Claeson 2004).

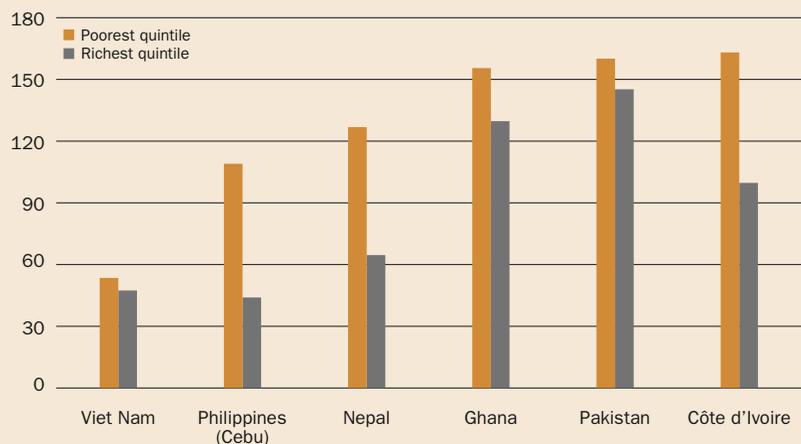
Poverty clearly influences survival rates. The poorer people are, the more likely their children will die in childhood. In fact, globally, there is a twenty-fold difference in child mortality between rich and poor (table 3.6). This influence of wealth on child survival is evident in countries throughout the world (figure 3.2).

Table 3.6
Under-five mortality rates, by country income level
Deaths per 1,000 live births per year
Source: UNICEF 2004.

Income level	Under-five mortality rate
Industrialized countries	7
Developing countries	88
Poorest countries	120

Figure 3.2
Under-five mortality rates by socioeconomic status in selected developing countries, 1978–96
Deaths per 1,000 live births

Source: Wagstaff and others 2003.



**Specific
measures need
to be taken to
ensure that the
poor are not
left behind**

Children of poor families living in unhealthy environments are more likely to become ill due to increased exposure to health risks, including higher levels of undernutrition. They also have greatly limited access to care. In rural Nigeria, for example, children from the lowest socioeconomic quintile of the population need to travel seven times as far as children from the highest quintile to reach the nearest health facility. Similar disparities are found in Bolivia, the Dominican Republic, India, and other countries (World Bank 2003b).

Even among poor people living in the same area, income-based inequities exist. In a recent study of sick children in rural Tanzania, where the likelihood of children falling ill was the same, care-seeking behaviors differed markedly. Caregivers of children in the highest economic quintile were more knowledgeable about the potential danger of their children's illness and were four times as likely to bring sick children to a primary care facility. Children from these households were therefore much more likely to receive antimalarials or antibiotics (Schellenberg and others 2003).

The *Lancet* series on child survival suggests several potential approaches to improving equity in order to reduce child mortality (Victora and others 2003):

- Improve knowledge and change care-seeking behavior of poor mothers.
- Improve access to water and sanitation for poor families.
- Empower poor women (through microcredit schemes, for example).
- Make healthcare more affordable for the poor.
- Make health facilities more accessible to the poor.
- Provide an adequate number of trained health workers in poor communities.
- Make health facilities more inviting.
- Match health expenditures to the needs of the poor.

The *Lancet* authors note that there are essentially two strategies available for redressing inequities in child health. One is to target the poor, identifying poor households and providing them directly with cash, goods, or services; or redistributing health services to geographic areas within which a high proportion of poor households live. The second is to improve the health status of the poor by seeking universal coverage of health services. If everyone is offered better access, and if essential health interventions reach the entire population, both rich and poor benefit. The risk of the second approach is that, because it is easier to reach the better-off with improved services, programs may run out of steam before benefiting the poor. Allowing this to happen would increase, not decrease, the equity gap. Specific measures need to be taken to ensure that the poor are not left behind if universal coverage targets are not met. One measure is to incorporate equity-specific indicators into programs, as proposed in chapter 5. Holding national and local health authorities accountable for reducing the equity gap by making improvements in health status of the poor a criterion

A profound understanding of the relationship between the community and the health system is important

for evaluating the success or failure of their programs could be an important intervention in and of itself.

This section of the report has briefly reviewed the major disease-specific causes of mortality in children and the interventions aimed at reducing their impact. Yet, throughout the report, we contend that the political, social, and economic dimensions of maternal and child health have been even more neglected than the biological. Increasing the ability of the poor to access health services to the same degree as the wealthier can provide a major impetus toward achieving the Goal for child health. In fact, if the under-five mortality rate in developing countries could be lowered just to that already prevailing among the richest 20 percent of the population of those countries, the global child mortality rate could be reduced by as much as 40 percent (Victora and others 2003). This reduction is similar to what would be achieved from full-scale implementation of the four most effective interventions listed in table 3.5.

Home- and community-based interventions are critical to reducing child mortality

A profound understanding of the relationship between the community and the health system is important for ensuring access to health services and coverage of children, especially poor children, with existing safe and effective interventions. Although these are frequently considered to be separate entities, the best-functioning health systems are those that are fully integrated within the community.

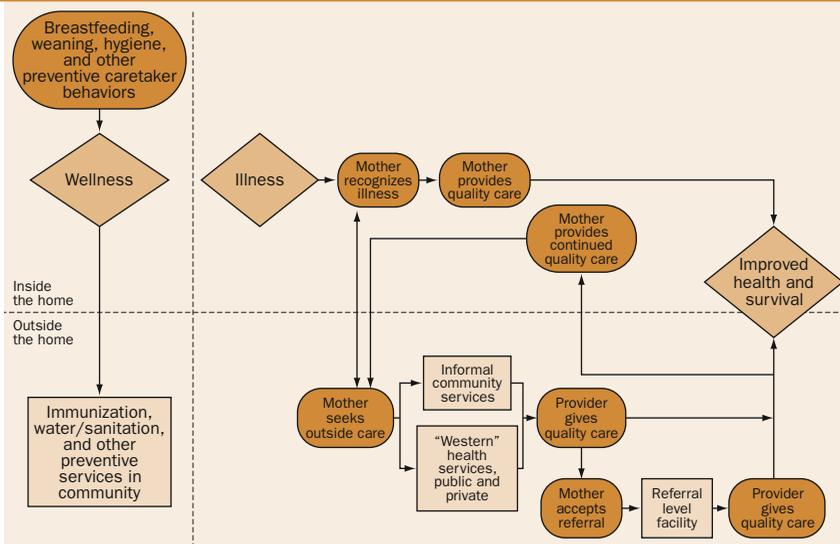
A useful depiction of the relationship between the household and the health system for child health is presented in figure 3.3. The dotted horizontal line separates actions that need to take place in the home from those that need to take place outside the home in order for child mortality to be reduced. The dotted vertical line separates things that are done to prevent illness from actions that are needed to treat a sick child. For example, preventive interventions that can be implemented by mothers alone include breastfeeding, improved complementary feeding, and the use of insecticide-treated materials, such as bednets. Actions that require the more active participation of the facility-based health system or its extension include vaccination, improved water supply, and improved management of newborns.

For all potentially fatal conditions, mothers and other caregivers must learn to recognize the signs of severe illness and know when to take prompt action. For some common childhood conditions, such as diarrhea, mothers can administer oral rehydration fluids and continue feeding at home, or community health workers can make the diagnosis and provide treatment, as is now recommended for pneumonia management. Appropriate management of the child at home, without recourse to facility-based care at any time during the illness, can result in reduced mortality (Aguilar and others 1988).

Similarly, most of the neonatal survival interventions in the universal and situational packages presented above can be delivered through either family-oriented approaches or population-oriented outreach services that even a

Figure 3.3
Pathway to survival

Source: Waldman and others 1996.



country with a relatively weak health system can deliver. Together communities, families, and community health workers can avert millions of newborn deaths in the next few years, even as individual-oriented services requiring skilled professionals and a well functioning health system are strengthened and made available in even more remote areas.

Studies in South Asia have shown convincingly that community-based approaches to newborn health can work extremely well. In different studies community-based health workers without midwifery skills succeeded in reducing neonatal mortality by 25–62 percent (Pratinidhi and others 1986; Datta and others 1987; Daga and others 1992; Bang and others 1999).

The key strategic factor common to these studies was the presence of community health workers who visited homes to ensure multiple contacts with the babies, mothers, and families, starting at or soon after birth. A randomized controlled trial in rural Nepal achieved a 30 percent decline in neonatal mortality rate by using a participatory intervention with women's groups, demonstrating the power of community education and participation to change unhealthy behaviors (Manandhar and others 2004). Importantly, in all of these studies, the measured impact was not only on key behaviors but also on birth outcomes, and substantial improvements were achieved within only a few years of program implementation.

Although the emphasis on prevention and home care is appropriate, it does not substitute, in any way, for the need for accessible health facilities, both outpatient and primary referral hospitals. Mothers will frequently want to, and will often have to, seek care outside the home.

In addition, there are important differences between strategies aimed at reducing child deaths and those aimed at reducing deaths associated with pregnancy. This report has highlighted those differences, stressing the importance

Strategies to address neonatal mortality and maternal mortality are linked but do not substitute for each other

of skilled attendants, emergency obstetric care, and an intact referral system for reducing maternal mortality. Interventions that take place in the home or are provided by community health workers (or traditional birth attendants) play little or no role in reducing maternal deaths.

It is therefore essential to understand that although neonatal and child survival strategies can and should be linked to strategies to address maternal mortality, they should never be allowed to substitute for them. A health system capable of attaining both Goal 4 and Goal 5 must be able to deliver appropriate, high-quality services at each of the household, community, outpatient facility, and referral hospital levels.

Improving care-seeking behaviors is clearly a critical function of the health system. Both knowing when to seek care for potentially fatal childhood illnesses and knowing where to go are important. Mothers have a wide variety of choices once they make the decision to seek care outside the home. In addition to the marketplace, where they can purchase drugs without consulting professional advice, they can, and often do, seek first recourse from traditional healers (“informal community services” in figure 3.3). If “modern” or “Western” care is sought, mothers can choose between private sector and public sector providers. In many, even most, cases, mothers will seek care from multiple sources. Unfortunately, in other cases mothers are prevented from seeking care for their children, as care-seeking decisions are made by husbands, other relatives, or others in the community. In either case, mortality will be reduced only if care of appropriate quality is available and utilized correctly. Training of first-level healthcare workers is clearly necessary, but it is hardly sufficient to reduce childhood mortality.

Whichever provider the mother consults, another choice quickly becomes apparent. The provider can decide that he or she is competent to deal with the illness or decide that referral to a more sophisticated, better equipped facility is required. For many of the more severe cases of illness, the ones that are most likely to result in death, children should be referred. Attention must be paid to strengthening the referral level of the system, especially the district hospital. However, in many cases the mother may not comply with the recommendation of referral. Distance, cost, and competing priorities may determine whether she can and does follow medical advice (English and others 2004; Peterson and others 2004).

In most cases, after consultation with a facility-based healthcare worker, responsibility for the care of the child reverts to the mother. Compliance with professional advice again becomes a critical issue. Completing a course of prescribed antibiotics or antimalarials, maintaining an adequate state of hydration until diarrhea subsides, continuing to breastfeed, and other home-based actions all contribute to whether or not a child survives any episode of illness.

The most common strategy for implementing the interventions known to substantially reduce child mortality is the Integrated Management of

Linking facility-based IMCI to community-level IMCI is critical

Childhood Illnesses (IMCI) strategy, promoted principally by the WHO and UNICEF. IMCI was initially developed as a facility-based initiative to encourage health professionals to diagnose and treat correctly or to refer to an appropriate level of the health system children presenting with the clinical signs of pneumonia, diarrhea, malaria, measles, and malnutrition, as well as to check a child's vaccination and nutritional status. IMCI eventually added non-clinical components as well. Later the program emphasized strengthening the health system to support IMCI activities, especially in the areas of drug supply, monitoring, and supervision. A third, community-level component promotes a number of key household behaviors that prevent illness or reduce the likelihood of complications (box 3.1).

The interventions presented above for reducing neonatal mortality can easily be incorporated into an enriched version of the IMCI strategy. The WHO has recently prepared a generic neonatal IMCI algorithm, and several countries have already included neonatal care in their national adaptations of IMCI. Linking the primarily facility-based IMCI approach to the community-level IMCI strategies—shown to be crucial to reducing neonatal mortality rate—is critical, as most babies in developing countries are born, fall sick, and die at home.

India's version of IMCI (named Integrated Management of Neonatal and Childhood Illness, IMNCI) has attempted to do exactly that (Bang and others 1999). It mandates multiple home visits during the baby's first week of life by healthcare workers who deliver the essential care package. Of course, this is only one possible approach among many, and rigorous evaluations of all efforts to better mobilize communities for improving both neonatal and child health outcomes will be required before the best possible approaches can be described and adapted to local settings.

In fact, recent evaluations of the IMCI strategy, conducted in several countries, provided useful insights into the constraints that limit its successful implementation and the conditions necessary for it to have a major impact (Schellenberg and others 2004; el Arifeen and others 2004). The main constraints to successful implementation were lack of health system support for IMCI (poor supervision, low utilization of government facilities, lack of management support at national or district level, lack of drugs or supplies at implementing facilities, high staff turnover, and other factors) and insufficient implementation of community-based IMCI interventions. The community-based component of IMCI was found to be less successful than the other components. Added emphasis will need to be placed on this aspect of the strategy over the next few years, and new approaches to mobilizing communities and households will need to be developed, tested, and evaluated.

As part of the IMCI evaluations, 12 countries were visited by the research team, 5 of which were selected for in-depth study. In these countries IMCI training of healthcare workers was shown to have improved the quality of care

Box 3.1
Twelve simple family practices can prevent illness or reduce the likelihood of complications

Source: www.who.int/child-adolescent-health/PREVENTION/12_key.htm.

Communities need to be strengthened and families supported to provide the necessary care to improve child survival, growth, and development. The evidence suggests that 12 simple family practices can prevent illness or reduce the likelihood of complications:

- Breastfeed infants exclusively for at least six months. (HIV-positive mothers require counseling about alternatives to breastfeeding.)
- Starting at about six months, feed children freshly prepared energy- and nutrient-rich complementary foods, while continuing to breastfeed up to two years or longer.
- Ensure that children receive adequate amounts of micronutrients (particularly vitamin A and iron), either in their diet or through supplementation.
- Dispose of feces, including children's feces, safely, and wash hands after defecation, before preparing meals, and before feeding children.
- Take children as scheduled to complete a full course of immunizations (BCG, DPT, OPV, and measles) before their first birthday.
- Protect children in malaria-endemic areas, by ensuring that they sleep under insecticide-treated bednets.
- Promote mental and social development by responding to a child's needs for care, through talking, playing, and providing a stimulating environment.
- Continue to feed and offer more fluids, including breast milk, to children when they are sick.
- Give sick children appropriate home treatment for infections.
- Recognize when sick children need treatment outside the home and seek care from appropriate providers.
- Follow the health worker's advice about treatment, follow-up, and referral.
- Ensure that every pregnant woman has adequate antenatal, delivery, and postpartum care. This includes having at least four antenatal visits with an appropriate healthcare provider and receiving the recommended doses of tetanus vaccination. The mother also needs support from her family and community in seeking care at the time of delivery and during the postpartum and lactation period.

To provide this care, families need knowledge, skills, motivation, and support. They need to know what to do in specific circumstances and as the child grows and develops. They need skills to provide appropriate care and to solve problems. They need to be motivated to try and to sustain new practices. They need social and material support from the community. Finally, families need support from the health system, in the form of accessible clinics and responsive services, and healthcare workers able to give effective advice, drugs and more complex treatments when necessary.

at facilities. Although three of the countries experienced serious constraints to implementation, in the other two there was good evidence that the IMCI strategy had had an impact. In Tanzania, IMCI was implemented in two districts where health systems had been strengthened, and utilization rates of government facilities were high. IMCI was associated with a 13 percent reduction in under-five mortality over a two-year period, and stunting (low height-for-age) was reduced significantly (Schellenberg and others 2004). In Bangladesh all three components of IMCI are being implemented. Early results show that the utilization of government facilities—generally low throughout South Asia—has improved substantially as a result of its availability (el Arifeen and others 2004).

**Interventions
that target
households,
communities,
first-line
facilities, and
district-level
hospitals are
all necessary**

IMCI is not the only way to ensure that the most important interventions for reducing child mortality are implemented. All countries must adapt the WHO/UNICEF generic protocols. Policies regarding drug treatment, job descriptions for different categories of health personnel, fee scales, and many other variables must be carefully considered. What is most important is that the relationship between households, communities, and the facility-based health system be clearly understood and that interventions specific to and adapted to each level be made accessible to all.

In summary, a limited number of nondisease determinants make important contributions to health (see figure 3.3). Mothers (or other caregivers) need to know how to recognize the signs of serious illness, how to treat an illness at home, and where to seek care when care outside the home is required, and they need to understand the importance of complying with prescription advice and counseling. But good decisionmaking along these pathways is not a function of knowledge alone. Before deciding to seek care outside the home, for example, a mother will take into consideration physical access to health services, the cost of those services, their quality, and the reception she will receive.

Health workers need appropriate knowledge and skills in order to be able to provide high-quality care to children. In addition, they need to be properly motivated. They need a clear understanding of norms and standards of care, upgraded skills in order to be able to provide the best care in accordance with national child health policies, constructive oversight by supervisors and community members, incentives in the form of career advancement, and, of course, adequate financial compensation.

We contend that although the epidemiology of childhood diseases in developing countries has been reasonably well described, and that although the medical and public health interventions to deal with the most common fatal diseases of childhood exist, much more attention needs to be paid to the nonbiological aspects of healthcare if the Millennium Development Goal is to be achieved. Appropriate preventive and care-seeking behavior by mothers is essential. Opportunities to provide treatment outside of health facilities, while well accepted for diarrhea, need to be explored further for pneumonia and malaria. And the ability of primary care facilities and referral hospitals to make a greater contribution to the health of the communities they serve must be significantly improved.

Adolescent health

Adolescents represent a new generation of 1 billion, the largest generation in history to make the transition from childhood to adulthood. This new cohort presents a tremendous opportunity. As the Committee on the Rights of the Child notes, “the dynamic transition period to adulthood is also generally a period of positive changes, prompted by the significant capacity of adolescents to learn rapidly, to experience new and diverse situations, to develop and use

**Adolescents
represent a
new generation
of 1 billion**

critical thinking, to familiarize themselves with freedom, to be creative and to socialize” (UN CRC 2003). Despite the importance of adolescents, their reproductive and sexual health needs have long been ignored and their views silenced by decisionmakers who influence health and education policy and programs (Dehne and Riedner 2001; Bruce and Clark 2003).

For both biological and social reasons, adolescents, particularly adolescent girls, are a vulnerable group. In many areas of the world, especially South Asia and West, East, and Central Africa, a large percentage of girls are already married by their mid- to late teenage years and have given birth at least once by the age of 18. Early marriage reduces girls’ educational opportunities; starts them on a path toward early childbearing, with its resultant health risks (including mortality); and often locks them into highly unequal relationships with much older men (Mathur, Greene, and Malhotra 2003). Adolescents, particularly those living in highly dependent, precarious circumstances—for example, in intense poverty, in refugee settings, or as orphans—are subject to high rates of abuse, including sexual abuse (UNICEF and UNAIDS 2002; McGinn 2000; UNHCR and Save the Children-UK 2002; Luke and Kurz 2002).

In many countries in Africa, being young and female means having a substantially higher risk of HIV/AIDS. In some settings, women ages 15–24 are 2.5 times as likely as their male counterparts to be infected with HIV; in Zambia and Zimbabwe, women account for 80 percent of all 15- to 24-year-olds with HIV/AIDS (UN Global Coalition on Women and AIDS 2004).

Increased risk of HIV infection among young women stems, in part, from situations in which adolescent girls, with very little negotiating power to either refuse sex or insist upon condom use, are having sex with older boys and men who are themselves at higher risk of HIV infection because of their age (UN Global Coalition on Women and AIDS 2004; Luke and Kurz 2002; Berer 2003a; Dowsett 2003; Machel 2001; Frasca 2003).

Adolescent boys and young men are also at elevated risk of HIV infection and must be part of strategies to stem the epidemic (Dowsett 2003; Berer 2003a). Countries attending the International Conference on Population Development +5 (ICPD+5) recognized this and set a specific target for halving the prevalence of HIV in men and women ages 14–25 by 2010 in countries most affected (UN 1999b). The MDG on HIV includes an indicator for reducing HIV/AIDS among pregnant women ages 15–24.

HIV is not the only reproductive health issue for adolescents. Fifteen million girls between 15 and 19 give birth every year, and another 5 million adolescent pregnancies end in abortion (Pillsbury, Maynard-Tucker, and Nguyen 2000). The risk of dying from pregnancy-related causes is twice as high for women ages 15–19 than for women in their twenties, making pregnancy the leading cause of death for girls ages 15–19 in the developing world (UNFPA 2003a). Reproductive and maternal morbidity also take an enormous toll on adolescents.

**Strategies
for unmarried
adolescents are
not reaching
married
adolescents**

The obstacles facing married and unmarried adolescent girls and young women differ. In many cultures married adolescents are seen as poised between childhood and adulthood. They are likely to be engaging in more unprotected sex and more frequent sex with their partners than their unmarried counterparts. They may also be more isolated, out of school or away from their family support structures and familiar social networks, with healthcare decisions dictated by husbands and mothers-in-law (Bruce and Clark 2003; Barua and Kurz 2001). In contrast, in many cultures unmarried adolescents are viewed as children, and their reproductive health needs and sexuality are overlooked (Dehne and Riedner 2001). Increasingly, attention is being paid to the different policies and programs that must be developed to reach married and unmarried girls and women. Strategies for unmarried adolescents, such as youth centers and peer education, are not reaching married adolescents, and messages on HIV/AIDS prevention tailored to unmarried adults are inappropriate for married adolescents (Bruce and Clark 2003; Barua and Kurz 2001).

In short, a complex set of social, cultural, and economic forces shapes and constrains the social worlds in which adolescents struggle to make choices. Younger women are more likely to lack accurate information about reproductive health, family planning, and sexually transmitted infections, including HIV/AIDS. As a result, married and unmarried adolescents often engage in sexual activity in ways that place them at risk. They lack the knowledge and the access to health services or family planning that would help them protect themselves from sexually transmitted infections and unplanned pregnancies. Even when girls are aware of modern methods of birth control, they often lack knowledge or skill in using contraception. As a result, they experience contraceptive failure more often than adults do (Alan Guttmacher Institute 1998; Malhotra and Mehra 1999). Adolescents are also more likely to resort to unsafe and self-induced abortion and to postpone abortion until later in pregnancy (Friedman 1994). Of unsafe abortions among adolescents in the developing world, 40 percent occur in Sub-Saharan Africa (Shah and Aahmane forthcoming).

Younger women are also less likely to recognize complications during pregnancy (Miller and others 2003). And, in some settings, even when adolescents deliver their babies in health facilities, they suffer higher rates of mortality than older women (Kwast, Rochart, and Kidane-Mariam 1986).

Adolescent childbearing affects infants and children as well. Babies born to adolescent mothers are at increased risk of stillbirth and perinatal mortality (Miller and others 2003). In both developed and developing countries, adolescents are at greater risk of preterm delivery (the most significant cause of infant mortality in the developed world) and of having low-birthweight infants, including very low-birthweight infants (WHO 2003a; Scholl, Hediger, and Belsky 1994). Very young adolescents (under 15) are at even greater risk of having a low-birthweight baby. The higher mortality rates of children born to mothers younger than 20 persist through the age of 5 (Malhotra and Mehra

**Special efforts
must be made
to reach very
young first-
time mothers**

1999). Special efforts must be made to reach very young first-time mothers through the health system. Health services for adolescents must be tailored to address their unique needs and circumstances (Alan Guttmacher Institute 1998; UNFPA 2002b; UN CRC 2003).

Sexual and reproductive health

The burden of sexual and reproductive health conditions can be expressed in absolute numbers: 60–80 million infertile couples; 120–201 million couples with unmet need for contraception; 4 million newborn deaths; 8 million life-threatening maternal morbidities; 529,000 maternal deaths, including 68,000 from unsafe abortion—the list goes on. The aim of disability-adjusted life years (DALYs) as a measure of the burden of disease is to put these and other health conditions into a unit that will allow comparison across different health conditions and will enable cost-effectiveness comparisons for priority setting. Notwithstanding serious flaws that bias downward the burden of disease calculations for sexual and reproductive health (Hanson 2002), DALYs can give a general sense of the scale of sexual and reproductive health conditions and their overall importance in relation to other disease conditions.

According to the most recent calculations by the WHO, sexual and reproductive health conditions account for a substantial portion of the global burden of disease: 17.8 percent of all DALYs lost. But for women in their reproductive years (15–44), the burden of sexual and reproductive health conditions is far higher than any other category of illness, a full 31.8 percent of DALYs lost, of which sexually transmitted infections, including HIV, account for 16 percent. Maternal health conditions (death and disability resulting from pregnancy and childbirth) account for 12.4 percent. For women in Sub-Saharan Africa, the burden of sexual and reproductive health conditions is particularly alarming (figure 3.4).

The burden of sexual and reproductive health conditions worsened in the past decade, mainly due to the rise of HIV/AIDS (figure 3.5). But, as figure 3.5 demonstrates, virtually no improvement occurred during the 1990s in other areas of sexual and reproductive health.

Unwanted and mistimed pregnancies

Unwanted pregnancies contribute directly to the level of maternal mortality. Put simply, if a woman does not get pregnant, she will not die in pregnancy or childbirth. Therefore increasing access to methods to control fertility can have a significant impact on the number of maternal deaths, by reducing the number of times that a woman runs the risk that a fatal obstetric complication will occur. It has been estimated that if unmet need for contraception were filled and women had only the number of pregnancies at the intervals they wanted, maternal mortality would drop 20–35 percent (Maine 1991; Daulaire and others 2002).

However, family planning will not change the maternal mortality ratio (the MDG indicator). The maternal mortality ratio is a measure of the risk

Figure 3.4
Disability-adjusted life years lost among women of childbearing age, 2001

Share of DALYs lost by women ages 15–44 (%)

a. Includes sexually transmitted infections other than HIV/AIDS; iron deficiency anemia for women of reproductive age; breast, ovarian, cervical, and uterine cancer; and genitourinary diseases, excluding nephritis and nephrosis.

Source: WHO 2004b.

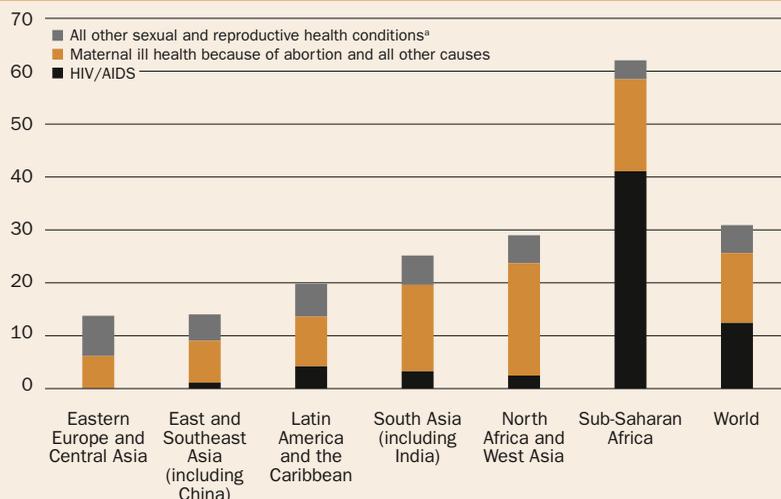
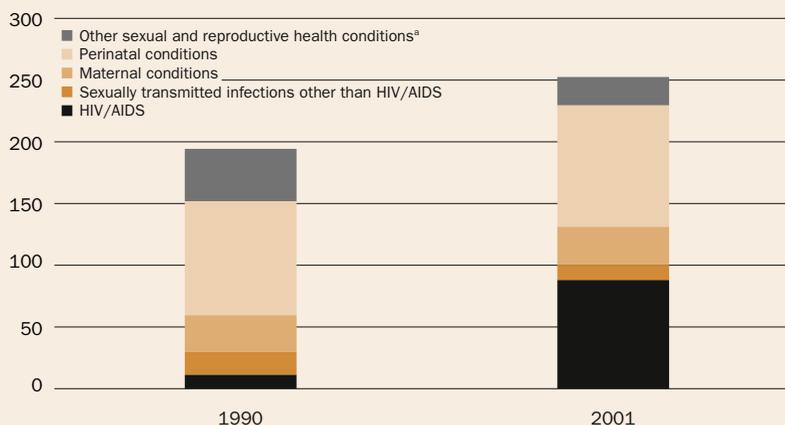


Figure 3.5
Disability-adjusted life years lost by women of childbearing age due to sexual and reproductive health conditions, 1990 and 2001

DALYs lost by women ages 15–44 (millions)

a. Includes iron-deficiency anemia for women of reproductive age; breast, ovarian, cervical, and uterine cancer; and genitourinary diseases, excluding nephritis and nephrosis.

Source: Singh and others 2003. Reprinted with the permission of the Alan Guttmacher Institute.



of dying *once a woman becomes pregnant*. The health sector interventions that enable a woman to go through pregnancy and childbirth safely and to have the best chance of having a healthy baby are discussed in the subsection on maternal mortality and morbidity.

A substantial proportion of unwanted pregnancies is ended by induced abortion, whether or not it is legal and whether or not it is safe. Evidence over the past 20 years indicates that increased access to contraception, nonrestrictive legal frameworks on abortion, and appropriate guidelines and training for practitioners can significantly reduce rates of recourse to induced abortion, including unsafe abortion, and rates of abortion-related maternal mortality and morbidity (Alan Guttmacher Institute 1999; Van Look and Cottingham 2002; WHO 2003e; Crane and Smith forthcoming). Still, of the estimated 45 million abortions that take place in the world each year, some 19 million

Governments should review and revise laws, regulations, and practices that jeopardize women's health

occur in countries in which the procedure is unsafe (WHO 2004f). About 95 percent of unsafe abortions—those characterized by the lack or inadequacy of skills of the provider, hazardous techniques, or unsanitary facilities (WHO Division of Family Health 1993)—occur in developing countries, despite the fact that, of countries with populations of more than 1 million, all but two legally permit abortion for one or more indications (Germain and Kim 1998).

Unsafe abortions are estimated to account for more than 68,000 deaths a year (WHO 2004f), about 13 percent of all maternal mortality. Complications of unsafe abortion are the one category of fatal obstetric complications that could be almost totally prevented through the provision of appropriate services (Maine 1991). The world community has repeatedly agreed that where abortion is legal, it should be provided safely and, in all cases, complications of unsafe abortion should be treated through high-quality health services (UN 1994, 1995, 1999a). As abortion is legal in almost every country for at least one reason, and in three-fifths of all countries to preserve the physical and mental health of the woman (WHO 2003e), the international community agreed in 1999 that “health systems should train and equip health service providers and should take other measures to ensure that such abortion is safe and accessible” (UN 1999a, paragraph 63 (iii)). For abortion, as for other areas of sexual and reproductive health, governments and other relevant actors should review and revise laws, regulations, and practices that jeopardize women's health.

The primary health intervention for preventing unwanted or mistimed pregnancies is contraceptive services. Contraceptive prevalence rates have risen steadily since the 1960s (Lule and others 2003), and the global total fertility rate dropped from 5.0 births per woman in 1960 to 2.7 in 2001, making family planning programs among the most important public health success stories of the past 50 years. Nevertheless, according to the United Nations Population Fund (UNFPA), some 350 million women still do not have access to safe and affordable contraception (UNFPA 2002c). The WHO (2004f) estimates that 120 million women who want to space or limit their pregnancies are not using contraception. Recent estimates for developing countries, using a methodology that includes couples using traditional methods, puts the unmet need for effective contraception at about 201 million women, resulting in 76 million unplanned pregnancies each year (Singh and others 2003).

Neither the level of unmet need nor its health impact is evenly distributed. Levels of unmet need are particularly high in Sub-Saharan Africa (figure 3.6). Contraceptive use also varies within countries. In every one of the 45 countries shown in figure 3.7 richer women are more likely to use contraception than poorer women, although the disparity varies dramatically across countries.

Sexually transmitted infections

The inability of women to protect themselves from HIV infection is a function of unavailability of appropriate means of protection (condoms and

Programs that provide only services for sexually transmitted infection fail to reach women

microbicides), poor access to accurate information about sexuality, and the power imbalances in sexual relationships that leave many women vulnerable. In addition to HIV, there are some 340 million new cases of curable sexually transmitted infections each year (WHO 2003d), with massive implications for the health of both women (including infertility and subfertility) and newborns. Syphilis, for example—90 percent of which occurs in developing countries—is an important cause of stillbirth in Sub-Saharan Africa (Gerbase, Rowley, and Mertens 1998; Watson-Jones and others 2002). More than 99 percent of cases of cervical cancer, the second largest cause of female cancer deaths worldwide, are associated with human papillomavirus (Walboomers and others 1999). Women with other sexually transmitted infections are also more likely to contract HIV (UNFPA 2002c).

Services for preventing and treating sexually transmitted infections must be integrated into other reproductive health programs in order to improve access for women. Because women are often asymptomatic or reluctant to seek treatment because of stigma, programs that provide only services for sexually transmitted infection fail to reach them. Programs offering integrated services, including education and counseling, family planning, maternal health services, and diagnosis and treatment of sexually transmitted infection, are more likely to be effective for women, although they often fail to reach men (Lule and others 2003; Askew and Berer 2003).

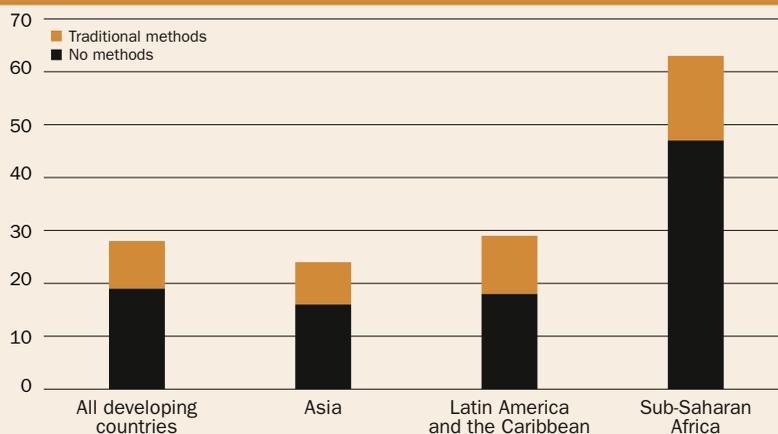
This fact has important implications, particularly for HIV interventions. To stem the epidemic, the health system must reach sexually active people. The enormous sums of money now being poured into HIV interventions can have their greatest effect only if they build on and strengthen the infrastructure already in place, namely, sexual and reproductive health services (Berer 2004).

Other necessary and effective interventions fall in whole or in part outside the health sector. Sexuality education that stresses partner communication, redress of power imbalances, and promotion of gender equality, as well as programs that address women's educational and economic advancement,

Figure 3.6

Unmet need for contraception by region, 2003

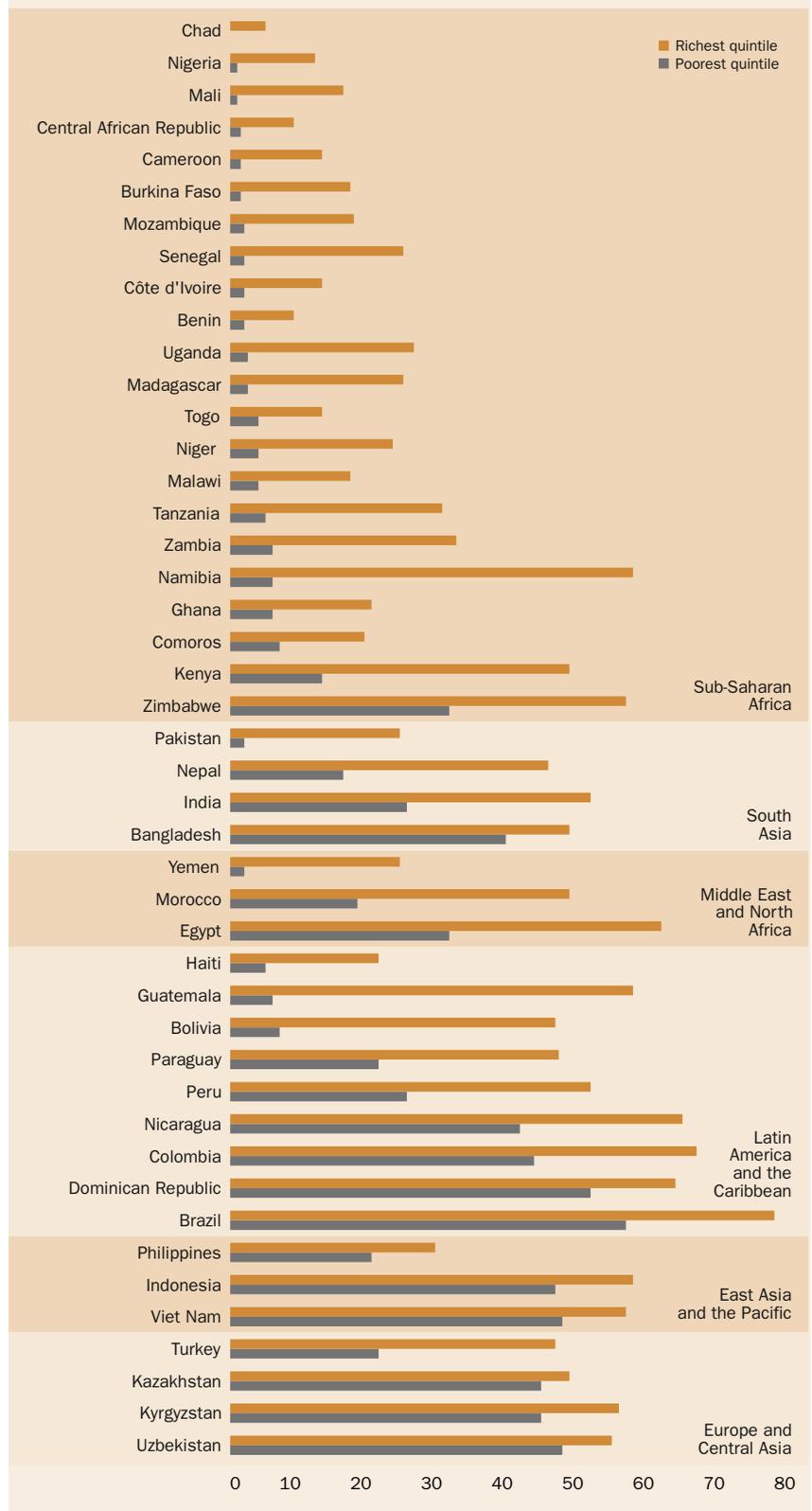
Share of women ages 15–49 at risk of unintended pregnancy (%)



Source: Singh and others 2003. Reprinted with the permission of the Alan Guttmacher Institute.

Figure 3.7
Contraceptive prevalence rates for richest and poorest quintiles in 45 countries, mid-1990s to 2000
 Percent

Source: UNFPA 2003b.



Programs offering integrated services are more likely to be effective for women

have substantial impacts on reproductive and sexual health outcomes, including rates of sexually transmitted infections (Singh and others 2003).

Conflict-affected and displaced populations

More than 40 countries, 90 percent of them low-income nations, are dealing with armed conflict. Implementing reproductive healthcare for a population is never a simple matter; providing such care in areas coping with armed conflict, emergencies, and displacement poses special challenges. People affected by armed conflict have often lost their loved ones, their possessions, their livelihoods, their social status, even their way of life. Maternal and neonatal mortality and morbidity may increase as health services are destroyed or births occur on the roadside during flight (Ahuka, Chabikuli, and Ogunbanjo 2004). Rates of infection of HIV and other sexually transmitted infections may increase with population mixing, exposure to armed men, societal breakdown, and increased sexual assault. Lack of traditional support systems, different cultural pressures, and changing men's and women's roles in society are major barriers to implementing adequate reproductive health programs (McGinn 2000; Doedens and Burns 2001; Purdin 2002). An international working group developed a set of recommendations for providing reproductive health services to address the needs of people living in areas affected by armed conflict (UNHCR 1999) and, for many countries, these recommendations will be a critical part of sexual and reproductive health and rights interventions (see also Bartlett, Purdin, and McGinn 2004).

Maternal mortality and morbidity

Goal 5 sets an ambitious target: reduce the maternal mortality ratio by three-quarters by 2015. Of all the Goals, maternal mortality is the one toward which countries have made the least progress. Ironically, it is also a measure of mortality that can be dramatically, rapidly, and consistently decreased—almost to the point of negligibility—if the appropriate actions are taken. History holds important lessons about the circumstances in which this particular form of mortality declines. More recent experience in the safe motherhood field also tells us a good deal about what works—and what does not—and why.

Precipitous drops in maternal mortality occurred in Scandinavia and Western Europe in the nineteenth century with the deployment of skilled professional midwives. It fell even more precipitously in the United States, Western Europe, and Scandinavia in the 1930s and 1940s with the introduction of key emergency obstetric care techniques (Loudon 1992; Freedman and others 2003; Hogberg 2004). Malaysia and Sri Lanka halved their maternal mortality ratios every 6–12 years during the 1950s–1990s, demonstrating that political commitment to ensure the implementation of a step-by-step program to make services available and utilized can work, even when GDP is relatively low (Pathmanathan and others 2003).

**A step-by-step
program to
make services
available
and utilized
can work**

Of course, every high-mortality country has a different starting point in terms of the way delivery care is organized and how it interfaces with the health system. The ways in which pregnancy and childbirth are managed within families and communities and the culturally articulated ideas that surround them also differ across countries. Successful maternal mortality reduction strategies will be ones that put local problem solving (within facilities and within communities) at the core of implementation. But to be sustainable, local action must be supported by systemic change in the health system and by clear and strong policy direction and resource allocation from the national level. Given the economic and political environment confronting high-mortality countries today, even the most committed governments require clarity in policy and support from the international health and development communities as a whole.

The analysis of maternal mortality, the range of possible solutions, and the need for priority setting begins with the numbers. Maternal mortality is the death of women from causes related to pregnancy and childbirth.⁷ The maternal mortality ratio is the number of deaths per 100,000 live births. It is a measure of the risk of dying once a woman is already pregnant. It can be understood as a measure of the safety of childbirth.

The number of maternal deaths—and therefore the maternal mortality ratio—is difficult to measure accurately. Even in countries with strong vital registration systems, where every death is medically certified, studies show 25–70 percent of maternal deaths are not reported as such (AbouZahr 2003). The WHO, UNICEF, and UNFPA have developed statistical techniques to estimate maternal mortality ratios for most countries in the world. But as the authors of the publication of official UN data explain, the maternal mortality ratio should be used only to give a sense of the scope of the problem. It should not be used to measure short-term trends, and cross-country comparisons should be undertaken only with great caution (WHO, UNICEF, and UNFPA 2004).

Still, the geographic distribution of the approximately 530,000 maternal deaths that occur each year is telling. Sub-Saharan Africa has dramatically higher maternal mortality ratios than any other part of the world (table 3.7). It also accounts for 47 percent of all maternal deaths. Although Asia as a whole has a lower maternal mortality ratio, the region's large size means that it accounts for 48 percent of maternal deaths. Asia is also very diverse, comprising both very high- and very low-mortality countries.

Lifetime risk tells an even more chilling story. This statistic—the chance that a woman will die in pregnancy or childbirth at some point in her life rather than during a single pregnancy—is a function of both the total fertility rate (the number of times a woman gets pregnant) and the maternal mortality ratio (the chance that she will die each time she gets pregnant). While women in developed countries as a whole have a 1 in 2,800 chance of dying in childbirth—with some countries as low as 1 in 8,700—women in Africa have a 1 in 20 chance, and in several countries the lifetime risk exceeds 1 in 10.

Women in Africa have a 1 in 20 chance of dying in childbirth

These dramatic disparities by region are often echoed by significant disparities within countries. Building on the sisterhood method for calculating maternal mortality, Graham and colleagues (2004) use Demographic and Health Survey data to link maternal deaths to data on poverty status. Their analysis of 10 countries with dramatically different maternal mortality ratios, overall levels of human development, and per capita GDP shows that in every country maternal death is associated with poverty-related characteristics. In Indonesia, for example, in 1997 the risk of death was four times higher in the poorest quintile than in the richest.

Data on the proportion of births attended by skilled health personnel also indicate huge disparities. Indeed, among major child and maternal health interventions, the presence of a skilled attendant at delivery is the most inequitably distributed by asset quintile, followed by the use of modern contraception (Gwatkin and others 2003). Education and literacy are, in some countries, even more closely correlated with the presence of a skilled attendant (Kunst and Houweling 2001). Within countries the disparities are often far more extreme. In Chad rich women are 23 times as likely as poor women to be attended during delivery by a skilled health provider; in Bangladesh the difference is a factor of 14. Differences are large in India, where rich women are 10 times as likely to have a skilled birth attendant present, and in Cameroon and Burkina Faso, where the difference is a factor of 3 to 4 (Gwatkin 2004).

Ethnicity sometimes helps explain differentials in access to emergency obstetric care. In Nepal the utilization of emergency obstetric care varies by caste (Institute of Medicine Department of Community Medicine and Family Health 2004). One study found that in mountainous areas, where women in labor can reach emergency care only by being carried, high-caste men were unwilling to transport Dalit (lowest caste) women to the hospital. Dalits also faced opposition from higher caste communities in joining emergency funds meant to reduce the cost barriers to life-saving care (Neupane 2004).

Globally, about 80 percent of maternal deaths are due to direct obstetric complications, primarily hemorrhage, sepsis, unsafe abortion, pre-eclampsia and eclampsia, and prolonged or obstructed labor (figure 3.8). The remaining

Table 3.7

Maternal mortality around the world, 2000

UN region	Maternal mortality ratio (maternal deaths per 100,000 live births)	Number of maternal deaths	Lifetime risk of maternal death
World	400	529,000	1 in 74
Developed regions	20	2,500	1 in 2,800
Developing regions	440	527,000	1 in 61
Africa	830	251,000	1 in 20
Asia ^a	330	253,000	1 in 94
Latin America and the Caribbean	190	22,000	1 in 160
Oceania ^a	240	530	1 in 83

a. Australia, Japan, and New Zealand were excluded from the regional averages and totals.

Source: WHO, UNICEF, and UNFPA 2004.

Some 80 percent of maternal deaths are due to direct obstetric complications

20 percent of maternal deaths are indirect, that is, they are due to existing medical conditions that are aggravated by pregnancy or delivery.

In countries and areas with high HIV or malaria rates, the proportion of indirect deaths may be far higher, with coinfection with tuberculosis a significant contributing factor. HIV infection may make women more susceptible to direct causes of maternal mortality, including puerperal sepsis, postpartum hemorrhage, and complications of cesarean section. HIV and opportunistic infections such as tuberculosis may also progress more quickly because of pregnancy. Nationally representative surveys in Malawi and Zimbabwe suggest that the risk of pregnancy-related death is eight to nine times higher in HIV-positive than HIV-negative women (Bicego, Boerma, and Ronsmans 2002). Since HIV infection rates in pregnant women in different countries range from less than 1 percent to more than 40 percent (McIntyre 2003), this can affect maternal mortality statistics for the population as a whole (and hence progress toward the Goal). For example, over the past 10 years, pregnancy-related mortality risks increased by a factor of 1.9 in Malawi and 2.5 in Zimbabwe, as HIV prevalence among pregnant women increased (Bicego, Boerma, and Ronsmans 2002). At the country level, therefore, coordination with initiatives for meeting the communicable diseases Goals is critical, since gender-sensitive strategies for the control of HIV, tuberculosis, and malaria will have an impact on maternal mortality as well.

Obstetric complications do not always kill the women who experience them. For every woman who dies, an estimated 30–50 women survive the same complications, but with short- or long-term disabilities, although these numbers are hard to verify (Safe Motherhood Initiative).⁸ Short-term morbidity can include hemorrhage, convulsions, cervical tears, shock and fever; long-term, and often chronic, sequelae of childbirth and pregnancy range from infertility to uterine prolapse, depression, and vesico-vaginal fistulae (Fortney and Smith 1996).

Fistulae are holes between the vagina and the urinary tract or between the vagina and the rectum, usually caused by obstructed labor. Unless the fistula is surgically repaired, there is an uncontrollable leakage of urine and

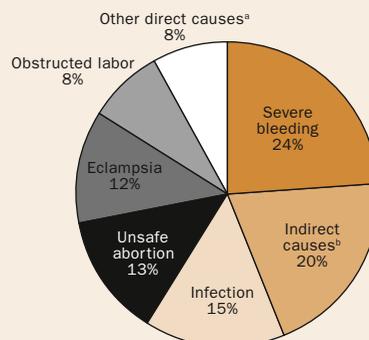
Figure 3.8

Causes of maternal death, 2000

a. Includes ectopic pregnancy, embolism, and anesthesia-related complications.

b. Includes anemia, malaria, and heart disease.

Source: AbouZahr 2003.



A large proportion of maternal morbidity is treatable

feces through the vagina. The implications for the woman's quality of life are enormous. Many women with this humiliating condition become social outcasts, abandoned by their husbands and families, thrown into deeper poverty, sometimes even committing suicide (Fortney and Smith 1996; Reed, Koblinksky, and Mosley 2000; UNFPA 2003c). The complication can be repaired, but very few centers in Africa provide the service. The same interventions that reduce maternal mortality also reduce the incidence of fistulae and other disabling conditions caused by obstetric complications.

A large proportion of maternal morbidity is treatable. But due to lack of knowledge and social stigma, as well as lack of services, millions of women suffer this burden in silence (Donnay and Weil 2004).

Effective interventions for reducing maternal mortality ratios

During the last half of the twentieth century and in the early years of the Safe Motherhood Initiative, launched in 1987, most program recommendations rested on the hypothesis that obstetric complications could be prevented or predicted by good care during pregnancy and delivery. Recognizing that most women in high-mortality countries deliver at home, early programs focused on training traditional birth attendants in safe and hygienic practices.

Although training programs for traditional birth attendants may improve the routine delivery care that mothers and newborns receive, these interventions proved ineffective in reducing maternal deaths (Rosenfield and Maine 1985; Greenwood and others 1990; Goodburn and others 2000; Smith and others 2000). Neither trained traditional birth attendants nor any other category of minimally trained community health worker can prevent the vast majority of obstetric complications from happening, and once the complication occurs, there is almost nothing traditional birth attendants, by themselves, can do to alter the chance that death will ensue.

Another set of early recommendations was based on the hypothesis that, through antenatal care, obstetric complications could be predicted by screening for known risk factors and that high-risk women could then be carefully monitored and treated. Indeed, women with certain attributes—young age or high parity, for example—do have a higher risk of dying than other women and, in some settings where a functioning health system already exists, attention to high-risk pregnancies can bring already low maternal mortality ratios even lower (Danel and Rivera 2003; McCaw-Binns 2003). But high-risk women account for only a small percentage of all maternal deaths; the vast majority of deaths occur in women with no known risk factors. Thus risk screening programs had little impact on overall maternal mortality levels (Maine 1991; Greenwood and others 1987).

Recognizing these flaws in the early recommendations of the Safe Motherhood Initiative, today the clear consensus internationally is that scarce resources should not be spent trying to predict which women will have

High-quality delivery care has three key elements: a skilled attendant at delivery, access to emergency obstetric care, and a functional referral system

life-threatening complications (Safe Motherhood Initiative).⁹ Instead, maternal mortality reduction programs should be based on the principle that every pregnant woman is at risk for life-threatening complications. To reduce the maternal mortality ratio dramatically, all women must have access to high-quality delivery care. That care has three key elements: a skilled attendant at delivery, access to emergency obstetric care, and a functional referral system.

Skilled attendants at delivery. Evidence concerning the effect of skilled attendants at delivery is somewhat muddled by different definitions and by variation across countries in the training of midwives and the regulations governing the procedures they are permitted to perform. In 2004 the WHO, the International Confederation of Midwives, and the International Federation of Gynecology and Obstetrics issued a joint statement with a revised definition of skilled attendant, which is the one used here: “a skilled attendant is an accredited health professional—such as a midwife, doctor or nurse—who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postpartum period, and in the identification, management and referral of complications in women and newborns” (WHO 2004d, p. 1).¹⁰

There is wide variation in the extent to which skilled attendants are supported and supervised in the broader health system. There is also wide variation in the number of deliveries skilled attendants perform. In a country such as Malaysia, which dramatically lowered maternal mortality in the 1960s and 1970s, midwives were the backbone of the program, each delivering 100–200 babies a year (Pathmanathan and others 2003). But in many other countries, birth attendants deliver far fewer babies. This affects their competence, because specific skills, such as manual removal of the placenta, require regular practice in order to be maintained. In Indonesia, where tens of thousands of community midwives have been trained and deployed to villages around the country, each attendant typically delivers fewer than 36 babies a year. Assessments within three years of their placement found that both their confidence and their competency-based skills were exceedingly low, with only 6 percent scoring above 70, the minimum level considered necessary for competence (Koblinsky 2003a).

The first job of the skilled attendant is to conduct routine deliveries. In this role she can influence maternal mortality levels in two ways. First, she can use safe and hygienic techniques, thereby ensuring that she does not cause a complication through mismanagement of the delivery. The attendant’s techniques are certainly important to the health and well-being of each woman, but poor hygiene in routine deliveries accounts for only a small portion of maternal deaths today. Many life-threatening infections are endogenous, due, for example, to delayed treatment of complications such as prolonged labor, ruptured uterus, and retained contraceptive devices (Cunningham and others 1993).

For potentially fatal obstetric complications, a functioning health care system is essential

A second, more promising way in which the skilled attendant can affect maternal mortality levels is by actively managing the third stage of labor in every delivery (McCormick and others 2002). The third stage of labor—the period after the baby is born when the placenta is being expelled—is the period during which most postpartum hemorrhages occur. In many high-mortality settings, postpartum hemorrhage is the leading cause of maternal death. Several large clinical trials provide evidence that the use of manually performed techniques (controlled cord traction and uterine massage) as well as a single dose of an oxytocic drug immediately after delivery can significantly reduce postpartum hemorrhages (WHO 2000a, 2002b). New research on uniject oxytocin, and misoprostol could yield important new technology for this intervention. But the training and competence of the skilled attendant remains crucial. The same techniques of active management of third-stage labor that can prevent some postpartum hemorrhages can also cause serious damage if done incorrectly. This is not just a theoretical risk. Incorrect use of oxytocic drugs, for example, can cause the uterus to rupture, which, in the absence of surgical intervention, can lead to a painful death.

What happens when a routine delivery suddenly, unexpectedly, becomes a complicated one? For most of the potentially fatal obstetric complications, the skilled attendant must have the back-up of a functioning healthcare system in order to save the woman's life. No matter how skilled the attendant is, if she or he is performing deliveries in a setting without the drugs, equipment, and infrastructure to treat the complication—and cannot get the patient quickly to that care—a certain percentage of patients will die. The large majority of maternal deaths entails this kind of unexpected complication.

Access to emergency obstetric care in case of a complication. Even under the very best of circumstances, with adequate nutrition, high socioeconomic status, and good healthcare, a substantial proportion of pregnant women—more than 15 percent—will experience potentially fatal complications (Lobis, Fry, and Paxton forthcoming). But virtually all obstetric complications can be successfully treated. When the emergency obstetric care necessary to treat complications is universally accessible and appropriately utilized, maternal mortality ratios are extremely low and maternal mortality ceases to be a major public health problem.

Emergency obstetric care is generally categorized as either basic or comprehensive care, depending on the functions the facility performs (table 3.8).¹¹ UN guidelines recommend a minimum of one comprehensive emergency obstetric care facility and four basic emergency obstetric care facilities per 500,000 population. To reduce their maternal mortality ratios by 75 percent, high-mortality countries must substantially improve access to emergency care. It is therefore critical that the indicators for tracking progress toward the Goals

When emergency obstetric care is available and utilized, maternal mortality ratios are extremely low

include some measure that is sensitive to coverage of emergency obstetric care, as proposed in chapter 5.

One input that is vital to these functions is the presence of skilled health personnel who can perform them. The WHO definition of the competencies of the skilled birth attendant is nearly identical to the functions that must be performed in a basic emergency obstetric care facility (Maine and Paxton 2003). Thus no matter what mix of strategies is pursued, human resources lie at the heart of the solution, as discussed in chapter 4.

Referral systems. Widely available, good-quality emergency obstetric care is necessary but not sufficient to reduce maternal mortality. Appropriate utilization is also necessary. A helpful way to analyze the barriers to utilization is through the “three delays model” (Thaddeus and Maine 1994). Once a complication occurs the key to saving a woman’s life is to get her adequate care in time. The delays leading to death can be divided into three categories: delay in deciding to seek care, delay in reaching care, and delay in getting treatment at the facility.

One important element of strategies to reduce delays is the strengthening of the referral system. A wide-ranging literature review by Murray and Pearson, jointly commissioned by this task force and the WHO, reveals widespread “failures” in referral systems, particularly for the poor and marginalized (Murray and Pearson 2004). The review found significant gaps in understanding how referral systems are currently functioning. It also highlighted a fundamental problem in the literature: many studies rely on a conceptualization of the ideal referral system that has a dangerously tenuous relationship to realities on the ground. Moreover, the authors suggest, that ideal may actually be the wrong goal in the case of referral for obstetric emergencies.

The authors point out that maternity referral systems were first conceived at a time when risk-screening was thought to be an appropriate maternal mortality reduction strategy even for high-mortality countries. This conception assumed a stepwise hierarchy of increasingly sophisticated facilities, and it assumed that high-risk women would be referred up the ladder as their pregnancy progressed. Today, however, maternal mortality strategies concentrate

Table 3.8
Signal functions of basic and comprehensive emergency obstetric care services

a. By injection or intravenous infusion.

Source: UNICEF, WHO, and UNFPA 1997.

Basic emergency obstetric care services	Comprehensive emergency obstetric care services
Administer parenteral ^a antibiotics Administer parenteral oxytocic drugs Administer parenteral anticonvulsants for pre-eclampsia and eclampsia Perform manual removal of retained products (for example, manual vacuum aspiration) Perform assisted vaginal delivery	All services included in basic emergency obstetric care plus: Perform surgery (cesarean section) Perform blood transfusion

Access to transport is only one part of a far more complex problem

on emergencies. Time is critical. An elegant model of referral from facility to facility could be worse than inefficient. It could be deadly.

Although organized ambulance services appear to be part of the referral system in every country that has achieved major maternal mortality reductions, access to transport is only one part of a far more complex problem. Maternal mortality strategies that address the “second delay” simply by funding and organizing transport fail to grapple with perhaps even more critical systemic issues.

First and foremost is the need for referral facilities that provide 24-hour, 7-day-a-week care within a reasonable distance of where people live. Murray and Pearson conclude that “extensive pyramidal structures of referral systems with multiple tiers of facilities would seem to offer little benefit in the majority of cases for maternity care and may simply delay treatment” (2004, p. 19). In most countries attention should be concentrated on referral within the district-level system. From the perspective of a district health system as a whole, it is the strength of the referral facilities and associated supervision and referral systems that should determine the level of skill that birth attendants must have in order to avert maternal deaths, not vice versa. Murray and Pearson’s analysis of case studies from Latin America, East and South Asia, and Sub-Saharan Africa leads them to concur with Koblinsky and Campbell that “the skill level of the attendant needed at the peripheral level...depends upon the ready accessibility and acceptance of referral care” (Koblinsky and Campbell 2003, p. 17). They give the example of Yunnan, China, where accessible referral facilities, a well functioning referral system, and a strong and very active supervision system has meant that semiskilled village doctors can successfully conduct normal births, recognize problems, stabilize patients, and refer them onward for more complex treatment of emergencies. With this system, Yunnan reduced its maternal mortality ratio from 149 to 101 in the 1990s (Koblinsky and Campbell 2003).

However, such results have not been documented for traditional birth attendants. A stated goal of many training programs for traditional birth attendants is to improve their referral of women experiencing obstetric emergencies to facilities that can manage them. A recent meta-analysis of studies evaluating training programs designed to improve referral practices of traditional birth attendants found little effect (Sibley, Sipe, and Koblinsky 2004). Other recent studies explore why traditional birth attendants often fail to refer even patients with obvious complications. They find that fear of losing prestige and future business often get in the way (Bossyns and Van Lerberghe 2004). Interestingly, diffusion of information important for women and their families occurs even without traditional birth attendant training; women with complications are likely to make greater use of facilities once services are improved and barriers to service use decreased, regardless of traditional birth attendant training (Sibley, Sipe, and Koblinsky 2004).

**Self-referral
can be the
choice most
likely to save a
woman's life**

The referral literature connects in important ways to issues often studied under the rubric of “utilization.” A paper by Maine and Larsen (2004), commissioned by this task force to review the literature on utilization, finds that studies overwhelmingly focus on the individual characteristics and actions of women and their families. Far less attention is given to the features of the health system that shape their choices. Although the three-delays model has been an extremely effective conceptual device for getting health planners to understand the bigger maternal mortality picture—including social, cultural, and economic determinants and factors outside facilities—it is sometimes used to assume a strictly linear decisionmaking process, with narrow interventions (such as information, education, and communication and community mobilization programs) focused on the decisionmakers themselves, in isolation from the deep systemic problems they face (Maine and Larsen 2004). Even the first delay—the decision to seek care—may be influenced by aspects of the second and third delays. For example, women and their families may choose not to seek emergency care because the nearest facilities are not functioning and they know that at the more distant hospital the doctor is often not there; treatment is uncertain due to shortages of electricity, water, or supplies; or paying for transport from their village will throw them into debt. Yet this is often regarded as the failure of the family to make the right decision.

Murray and Pearson (2004) question the reflexive reaction that sees “bypassing” as a referral failure. In fact, self-referral—going directly to a referral facility, bypassing lower level health centers—can be the choice most likely to save a woman's life; it can also prevent economic ruin for the woman's family. Health system planners are sometimes stuck in a model of stepwise hierarchical referral systems, in which the “wise” use of resources is defined by cost-effectiveness and operational efficiency considerations that are unconnected to the true choices that consumers of the services are facing (Leonard 2000; Mwabu 1989). Bypassing can create low levels of utilization in appropriate lower level facilities as well as dangerous overcrowding and overmedicalization in higher level facilities, as it has in the Dominican Republic (Miller, Tejada, and Murgueytio 2002). But a more comprehensive reconceptualization and systemic approach to referral may be a more appropriate response than attempting to change the behavior of patients (Ganatra, Coyaji, and Rao 1998; Maine and Larsen 2004).

New thinking about referral systems will need to consider some of the major changes that have occurred in recent years, including the relationship between public and private sectors. As chapter 4 shows, in many countries people face a wide array of public and private providers and facilities that are not integrated into a coherent system. Many women move between public and private sectors over the course of a pregnancy, giving birth in a government facility but receiving antenatal care in the nongovernmental sector, for example (Murray and Nyambo 2003).

**New thinking
about referral
systems must
consider public
and private
sectors**

How should thinking about and planning for referral for maternal, as well as perinatal and childhood, emergencies move forward? Murray and Pearson (2004) suggest that it may be time to think systemically, to recognize that emergencies stemming from many causes—from trauma to complicated malaria or severe diarrhea—share important characteristics in situations where immediate facility-based medical attention makes the difference between life and death. Integrated referral systems deserve serious exploration, particularly in the context of the Millennium Development Goals (Razzak and Kellermann 2002; Bossyns and others 2004; Macintyre and Hotchkiss 1999).

Prioritizing interventions for mortality reduction

Many other interventions promote a healthy pregnancy and contribute to women's overall health and to the birth of healthy newborns. These interventions do not necessarily have a significant impact on maternal death, however. Immunizing a mother with tetanus toxoid, for example, prevents tetanus for both baby and mother, but, while tetanus is a significant cause of neonatal mortality, it accounts for only a tiny proportion of total maternal deaths.

Another example is anemia. It is estimated that about half of pregnant women in developing countries are anemic, a condition often due to malaria or parasites and not simply a lack of iron-rich foods (UNICEF, WHO, and UNU 2001). Recent reviews of the evidence on anemia and maternal mortality find that there is a strong, probably causal relationship between severe anemia and maternal death but little or no evidence of a relationship between mild to moderate anemia and maternal death (Rush 2000; Stoltzfus 2003).¹² Despite this evidence, new estimates conducted for the Global Burden of Disease project posit a continuous and causal relationship between hemoglobin concentration and mortality risk. And although the evidence base was judged to be weak, iron deficiency anemia was guardedly estimated to be a risk factor in some 115,000 maternal deaths, largely due to hemorrhage (Stoltzfus, Mullany, and Black 2004).

Although it is good practice to provide iron and folate to all pregnant women, it is important to recognize that iron supplementation in pregnancy does not, by itself, solve the very serious problem that anemia creates for women in many aspects of their lives (and not just in pregnancy). Nor will iron supplementation during pregnancy be sufficient to prevent the perinatal mortality attributed to maternal nutritional status; that will require attention to women's nutrition throughout their lives. In fact, in the absence of services to treat hemorrhage, iron supplementation is unlikely to reduce maternal deaths substantially, even where a high proportion of women who die during childbirth and unsafe abortions are anemic (Rush 2000). As Rush points out, nutrition and health services function interdependently; in the case of pregnant women, a food supplementation program that is not complemented

Not all interventions are equal in their effect on maternal mortality

by access to health services can even be dangerous, by increasing fetal size in small-stature women in areas without access to cesarean section (Rush 2000).

Antenatal care is a potentially important way to connect a woman with the health system, which, if it is functioning, will be critical for saving her life in the event of a complication. However, the link between receiving antenatal care during pregnancy and accessing an appropriate facility in an emergency is far from automatic (AbouZahr and Wardlaw 2003).¹³ In highly malarial areas, antenatal care may also provide an opportunity for treatment or prevention of malaria. But antenatal care, by itself, will not substantially reduce maternal mortality. In many countries in Sub-Saharan Africa, including Kenya, Malawi, and Tanzania, levels of antenatal care coverage are high (more than 85 percent) and maternal mortality ratios are very high (more than 1,000 deaths per 100,000 live births) as well. In fact, maternal mortality can decline dramatically without any increase in antenatal care. During the 1990s Egypt cut its maternal mortality ratio by half (from 174 in 1992 to less than 84 in 2000), while utilization of antenatal care stayed basically level, at just over half of pregnant women (Campbell 2003).

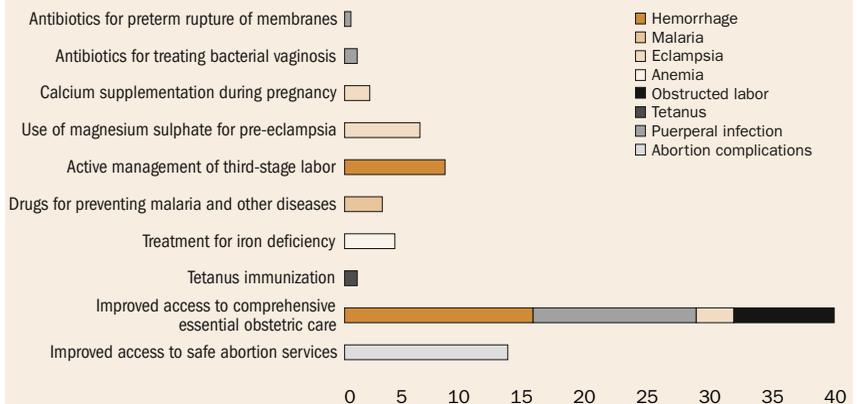
The key point is this: not all interventions are equal in their effect on maternal mortality. Although the World Bank has estimated that full utilization of all interventions would reduce maternal deaths by 74 percent, the contribution that different interventions make to that reduction varies significantly, with emergency obstetric care accounting for the highest contribution by far (figure 3.9) (Wagstaff and Claeson 2004).

We emphasize this point about the relative contributions that different health interventions make to maternal mortality reduction because of the history of maternal mortality programs (Maine and Rosenfield 1999) and because of the task force’s core recommendation regarding health systems. Perhaps more than any other major child health or maternal health condition, reducing maternal mortality depends on a facility-based health system that functions.

Figure 3.9
Maternal deaths in relation to use of existing services

Share of maternal deaths averted (%)

Source: Wagstaff and Claeson 2004.



**A first-line
strategy
must include
interventions
that treat the
complications
that kill women**

When international actors or national governments make policy decisions that—deliberately or not—allow the health system to collapse or when they choose to prioritize investment in vertical programs designed to detour around, rather than engage and strengthen, fragile health systems, they in effect give up on maternal mortality.

In high-mortality settings, where health systems are dysfunctional and failing, investment solely in an intervention deployed outside the health system (for example, trained traditional birth attendants or semiskilled birth attendants)—whose effectiveness in addressing maternal mortality depends on the existence of the health system—represents more than simply an inefficient use of resources. It is arguably a violation of women's very right to health. In making this point, the task force is careful to distinguish between interventions that promote maternal and newborn health and interventions that are necessary to avert maternal death. A strategy designed to address maternal mortality as its true aim—and not just as a welcome, but coincidental, byproduct of a health intervention designed primarily for another purpose (averting newborn death, for example)—must include interventions that prevent and treat the complications that kill women. As a first-line strategy for reducing maternal mortality, anything else arguably fails to meet the fundamental obligations of governments to progressively realize the right to health of millions of women (Freedman 2001; Yamin and Maine 1999).

The maternal mortality ratio is indicative of women's status in a society. But this is not because the standard markers of women's status, such as literacy or income, themselves have a significant impact on maternal mortality.¹⁴ Rather, a society, a global health community, that takes the death of women seriously—that finds it unacceptable that a woman in Africa will, on average, face a 1 in 20 chance of dying in pregnancy—will stop imagining that by addressing child health or even newborn health it has done enough for women. It will, instead, come to grips with prioritizing health system interventions so that the most serious obstacles to reducing maternal mortality receive the most serious attention in maternal mortality strategies.

Getting from here to there: strategic choices and lessons learned

How does a country struggling with high levels of maternal mortality get from where it is today to the ideal situation in which every woman has access to emergency obstetric care, a skilled attendant, and a referral system that ensures that she gets to life-saving care in time to save her life? All three elements are part of a health system. Until the system functions as a system, dramatic reductions will not be possible. But where does a country committed to reducing its maternal mortality and meeting the Goal begin?

In the safe motherhood community today, the issue is often posed as whether to give highest priority to training a cadre of workers with midwifery skills who can attend every birth (since, indeed, every pregnant woman is at

Where should high-mortality countries put their scarce financial, human, and managerial resources?

risk of complications) or to focus on strengthening emergency obstetric care services (including the human resources necessary to staff them) in order to treat the approximately 15 percent of pregnant women who experience complications. The World Bank estimates that if the crude birth rate is 40 per 1,000 people and a skilled attendant manages 200 births a year (far more than most community-based birth attendants manage today), some 60 million births a year occur in developing countries, requiring 400,000 trained and supported skilled birth attendants (Lule and others 2003). This estimate is conservative, if still daunting. Although only 15 percent of pregnant women will need emergency obstetric care services, it is impossible to know which women make up that 15 percent. Under the strategy of emergency obstetric care first, therefore, emergency services need to be accessible to all (albeit not used by all).

In theory, the two interventions—skilled attendants for all births and emergency obstetric care for complicated ones—do not contradict each other. But as strategies in resource-constrained settings they fit less easily together. Ultimately, both interventions appear to be necessary to reach very low maternal mortality levels: in every country with a maternal mortality ratio of less than 50—or even less than 100—a high proportion of births is attended by skilled health personnel and access to emergency obstetric care is widespread. Yet the reality in high-mortality countries today is that policymakers are indeed confronted with a choice between the two interventions, at least as a matter of emphasis or priority setting. Where should they put their scarce financial, human, and managerial resources? How should they sequence these interventions?

Some have looked for guidance to historical examples or to contemporary cases of the few countries or subnational units in which maternal mortality ratios of less than 100 have been achieved. In Malaysia and Sri Lanka, a step-by-step approach, starting with coverage of basic facilities that can deliver emergency obstetric care, followed by a focus on utilization and quality, went hand in hand with the professionalization of midwifery and a governmental commitment to ensuring universal access to health services, including access by the poor and people in rural areas (Pathmanathan and others 2003). Over the course of several decades both countries halved their maternal mortality ratios every 6–12 years, going from more than 500 in 1950 to less than 30 by the early 1990s. Egypt, Honduras, and Yunnan, China, have also succeeded in reducing maternal mortality, cutting rates from about 200 to less than 100 (Koblinsky 2003b).

Although the strategies used in all of these countries (and historically in Western Europe and Scandinavia as well) carry important lessons, it helps to do a reality check against the situation faced today in meeting the MDG target. Thirteen countries are estimated to account for two-thirds of all maternal deaths each year (table 3.9). With the exception of China (which makes the

Thirteen countries are estimated to account for two-thirds of all maternal deaths

list because of the sheer size of its population), virtually every one of these countries has a maternal mortality ratio that exceeds 500, with most closer to 1,000. Looking at the challenge of meeting the Millennium Development Goals on a country-by-country basis, some 46 countries have maternal mortality ratios exceeding 500. Thirty-eight of these countries are in Sub-Saharan Africa, including 17 countries in which maternal mortality ratios exceed 1,000 (table 3.10).

What do maternal mortality ratios of this magnitude tell us about the nature of the health systems in these countries? Is there a difference in the strategies that should be considered by countries with maternal mortality ratios in the 1,000–2,000 range versus those with maternal mortality ratios of 500? Or 200?

In countries in which maternal mortality levels are very high and health systems exceedingly weak, one sometimes hears an argument that goes like this: the vast majority of births (often more than 80 percent) take place at home, very often attended by family members or neighbors; traditional birth attendants or other kinds of minimally trained community health workers are present in communities; the health system is so weak that there is no hope of providing emergency obstetric care or even a true skilled birth attendant in rural areas at any time in the foreseeable future; therefore the strategy should be to provide some additional training to community health workers or traditional birth attendants, making them, in effect, semiskilled attendants.

Table 3.9
Countries with the largest number of maternal deaths, 2000

—Not available.

Note: The 13 countries in the table account for two-thirds of all maternal deaths worldwide (357,000 of 529,000).

Source: WHO, UNICEF, and UNFPA 2004, except skilled attendance, UNDP 2003.

Country	Number of maternal deaths	Maternal mortality ratio (maternal deaths per 100,000 live births)	Lifetime risk of maternal death	Skilled attendance at delivery (percent), 1995–2001
India	136,000	540	1 in 48	43
Nigeria	37,000	800	1 in 18	42
Pakistan	26,000	500	1 in 31	20
Congo, Dem. Rep.	24,000	990	1 in 13	61
Ethiopia	24,000	850	1 in 14	6
Tanzania	21,000	1,500	1 in 10	36
Afghanistan	20,000	1,900	1 in 6	—
Bangladesh	16,000	380	1 in 59	12
Angola	11,000	1,700	1 in 7	23
China	11,000	56	1 in 830	89
Kenya	11,000	1,000	1 in 19	44
Indonesia	10,000	230	1 in 150	56
Uganda	10,000	880	1 in 13	39

Table 3.10
Countries with
maternal mortality
ratios exceeding 500
deaths per 100,000
live births, 2000
(ranked by maternal
mortality ratio)

Note: Figures are intended to give a sense of the scale of the problem. They should not be used to track changes, particularly short-term changes such as those addressed by the Goals.

Source: WHO, UNICEF, and UNFPA 2001.

Country	Estimated number of maternal deaths	Lifetime risk of maternal death	Estimated maternal mortality ratio (maternal deaths per 100,000 live births), 1995	Range of maternal mortality ratio estimates	
				Low	High
Sierra Leone	4,500	1 in 6	2,000	510	3,800
Afghanistan	20,000	1 in 6	1,900	470	3,500
Malawi	9,300	1 in 7	1,800	1,100	2,600
Angola	11,000	1 in 7	1,700	420	3,100
Niger	9,700	1 in 7	1,600	420	3,100
Tanzania	21,000	1 in 10	1,500	910	2,200
Rwanda	4,200	1 in 10	1,400	790	2,000
Mali	6,800	1 in 10	1,200	680	1,700
Central African Republic	1,600	1 in 15	1,100	670	1,600
Chad	4,200	1 in 11	1,100	620	1,500
Guinea-Bissau	590	1 in 13	1,100	280	2,100
Somalia	5,100	1 in 10	1,100	270	2,000
Zimbabwe	5,000	1 in 16	1,100	620	1,500
Burkina Faso	5,400	1 in 12	1,000	630	1,500
Burundi	2,800	1 in 12	1,000	260	1,900
Kenya	11,000	1 in 19	1,000	580	1,400
Mauritania	1,200	1 in 14	1,000	630	1,500
Mozambique	7,900	1 in 14	1,000	260	2,000
Congo, Dem. Rep.	24,000	1 in 13	990	250	1,800
Equatorial Guinea	180	1 in 16	880	220	1,600
Uganda	10,000	1 in 13	880	510	1,200
Benin	2,200	1 in 17	850	490	1,200
Ethiopia	24,000	1 in 14	850	500	1,200
Nigeria	37,000	1 in 18	800	210	1,500
Liberia	1,200	1 in 16	760	190	1,400
Zambia	3,300	1 in 19	750	430	1,100
Guinea	2,700	1 in 18	740	420	1,100
Nepal	6,000	1 in 24	740	440	1,100
Cameroon	4,000	1 in 23	730	430	1,100
Djibouti	180	1 in 19	730	190	1,400
Côte d'Ivoire	3,900	1 in 25	690	170	1,300
Senegal	2,500	1 in 22	690	180	1,300
Haiti	1,700	1 in 29	680	400	970
Timor-Leste	140	1 in 30	660	170	1,200
Lao PDR	1,300	1 in 25	650	160	1,200
Eritrea	930	1 in 24	630	380	890
Sudan	6,400	1 in 30	590	150	1,100

Table 3.10
Countries with
maternal mortality
ratios exceeding 500
deaths per 100,000
live births, 2000
(ranked by maternal
mortality ratio)
(continued)

Country	Estimated number of maternal deaths	Lifetime risk of maternal death	Estimated maternal mortality ratio (maternal deaths per 100,000 live births), 1995	Range of maternal mortality ratio estimates	
				Low	High
Togo	1,000	1 in 26	570	340	810
Yemen	5,300	1 in 19	570	330	810
Lesotho	380	1 in 32	550	140	1,000
Madagascar	3,800	1 in 26	550	310	780
Gambia	270	1 in 31	540	140	1,000
Ghana	3,500	1 in 35	540	140	1,000
India	136,000	1 in 48	540	430	650
Congo	690	1 in 26	510	160	960
Pakistan	26,000	1 in 31	500	130	940

The task force recognizes the enormous pressure that concerned policy-makers feel to do something for the millions of women who give birth in these circumstances. It also recognizes that a semiskilled worker may have the potential to save a substantial number of newborns who otherwise would die. But it must be clearly stated that a strategy of training tens of thousands of semiskilled workers who will not be backed up by a supervision system, a supply system, or a referral system, is not a strategy that will significantly reduce maternal mortality. In fact, the proliferation of unsupported, unsupervised, semiskilled workers (“certified” after short training courses to manage deliveries) who are deployed in the context of policies that effectively marketize and privatize healthcare has the potential to increase the dangers for pregnant and delivering women. In some cases where such a strategy is being considered, the explicit objective is to train such workers on the assumption that they will set up their own private practices (Mavalankar 1997). Such private provision will be quite outside any government supervision, any effective regulatory system, or even any self-policing professional body.

The task force does not suggest that highly trained specialists are necessary to reduce maternal mortality. Many categories of health personnel can be taught to provide various health services—as long as effective systems of support, supervision, and supplies are established.

All the interventions necessary to save women’s lives can be delivered in a district health system—at the primary care and first referral levels. This does not mean that women must give birth in facilities, nor does it mean that traditional birth attendants and other private providers have no place in a delivery system. The case studies of countries that have substantially reduced maternal mortality demonstrate that success is possible with multiple combinations of home and institutional births, attended by different categories of health

workers, as long as women have access to emergency obstetric care staffed by skilled health personnel (Koblinsky 2003b).

The time has come for all countries, especially countries with high rates of maternal mortality, to invest in their district health systems as a matter of urgent priority. That system is essential for saving the women's lives. It is essential for saving many newborns and children under five (Petersen and others 2004). It is also essential for coping with other major killers in poor countries, including tuberculosis (Mahendradhata and others 2003) and HIV (Buve, Kalibala, and McIntyre 2003).

Transforming health systems

Our ability to meet the Millennium Development Goals turns on our ability to think differently and act differently about health systems. The status quo is unacceptable in multiple respects:

- The fragile and fragmented health systems that now exist are unable to ensure availability, access, and utilization of key health interventions in sufficient volume and quality to meet the Goals (Travis and others 2004).
- The costs that people incur in managing (or failing to manage) their health are often catastrophic, deepening poverty (Xu and others 2003).
- As core social institutions, dysfunctional and abusive health systems intensify exclusion, voicelessness, and inequity, while simultaneously defaulting on their potential—and obligation—to fulfill individuals' rights and contribute affirmatively to the building of equitable, democratic societies.

The approach put forward in this chapter responds to the dominant policy packages that have been promoted for health sector reform over the past two decades and to the realities on the ground that have resulted. These prescriptions for reform have been based on the fundamental conviction that health-care is best delivered to populations through competitive markets, as a commodity to be bought and sold. It is often assumed, almost as common sense, that healthcare distributed on this basis will be not only more efficient, it will also be better, that is, it will lead to improvements in health indicators.

There is little evidence that this assumption is true (Ravindran and Weller forthcoming). In fact, the data reveal no mortality benefits associated with a higher private share of total health spending (Mackintosh and Koivusalo 2004). And in the poorest countries, for the conditions relevant to the child health and maternal health Goals, any benefits that may have accrued to the

Both rich and poor face a pluralistic health market with a wide array of services of varying quality

better-off are offset by the fact that, quite systematically, these reforms have been deeply unequalizing.

Market-based approaches to healthcare: a critique

Deepening inequity has less to do with poor implementation of the reforms (an explanation commonly offered by their advocates) than with inherent weaknesses of market-based approaches to healthcare provision. The projected efficiency of market-based approaches depends on the existence of competition and on symmetry in information between supplier and consumer—both elements generally absent in health systems (Roberts and others 2004). It therefore also depends on a strong and effective system of laws and regulations (the “stewardship” function of government). Where there is market failure, the state is expected to step in as the residual “gap-filler” to offer a set of minimum essential services to those who would not otherwise receive care and whose lack of care would have externalities, that is, ramifications for the broader community (by transmitting infectious diseases, for example).

But this basic approach, championed largely by donors as part of a broader strategy for reforming poorly performing public sector institutions, is ideologically opposed to a strong state presence, including in social sectors. The strategy therefore minimizes the role and, in practice, the legitimacy of the state. Yet, paradoxically, the overall weakening of the state has left it unable to perform the regulatory, governance, and gap-filling functions on which a market-based system depends (recognizing that it was often not even strong enough—or in a few instances interested enough—to perform these functions well in the first place). Indeed, that failure and the chaos and inequity that result tend to have exactly the opposite effect: they further delegitimize the state in the eyes of both the people who make up the health system and the people who look to it to manage health and disease.

The result is that neither the public sector nor the private sector work in the idealized way that market-based approaches theorize. Instead, both rich and poor face a pluralistic market with a wide and chaotic array of services of wildly varying quality. In practice, in high-mortality countries, whether the services are private or public, whether fee exemption schemes are in place or not, healthcare now requires outlays of cash to access. In short, commercialization pervades every part of the system, with consequences for the poor and, ultimately, for society as a whole that are unacceptable and that sabotage any serious effort to meet the Millennium Development Goals.

It is important to state that our rejection of a purely market-based approach to healthcare provision does not imply that markets are not important for economic growth or for any other sector. Indeed, as Mackintosh and Koivusalo put it, “It is well understood that a properly functioning health system is essential to an effective market economy. *To make a health system work in a market economy, however, does not imply simply the commercialization of the*

Humiliation and abuse by the health system is part of the experience of being poor

healthcare sector itself. It requires rather a different starting point for health policy” (Mackintosh and Koivusalo 2004, p. 3) (emphasis added). This chapter argues for a different starting point for health systems as the foundation for scaled-up efforts to meet the maternal health and child health Goals.

Defining health systems

This report adopts the WHO definition of the health system: “all the activities whose primary purpose is to promote, restore, or maintain health” (WHO 2000b). This includes interventions in the household and community and the outreach that supports them, as well as the facility-based system and broader public health interventions, such as food fortification and anti-smoking campaigns. It includes all categories of providers—public and private, formal and informal, for-profit and not-for-profit, allopathic, and indigenous. It also includes mechanisms such as insurance by which the system is financed, as well as the various regulatory authorities and professional bodies that are meant to be the “stewards” of the system.

Equally important, we understand health systems to be a vital part of the social fabric of any society. As such, they “are not only producers of health and healthcare, but they are also purveyors of a wider set of societal norms and values” (Gilson 2003, p. 1461). In societies marked by deep inequality, the experience of neglect or abuse by the health system is part of the very experience of what it means to be poor. Conversely, the existence, legitimacy, and vindication of health claims—demands of entitlement pressed against the web of actors (including the state) that make up the health system—should be seen as valuable assets, among the tools of citizenship in a democratic society (Mackintosh 2001). This understanding of health systems as social institutions grounds the task force’s view of health equity and of the role of health systems in reducing poverty.

The literature is replete with anecdotal and quantitative evidence of practices in the health system that communicate norms and values, which then shape the experience of both poverty and citizenship. The Voices of the Poor project undertaken by the World Bank, which included participatory poverty assessments in some 60 countries, consistently found that the poor experience humiliation and abuse at the hands of health systems. In one country, “men, women and young people say over and over again that they are treated ‘worse than dogs’. Before they have a chance to describe their symptoms they ‘are yelled at, told they smell bad, and [that they are] lazy and good-for-nothing’” (Kern and Ritzen 2001, p. 20).

A study of Lady Health Workers and Lady Health Visitors, who are crucial to the delivery of maternal and child healthcare in parts of Pakistan, showed that the feudal values and gender discrimination that characterize the broader society also shape the demeaning treatment received by female healthcare workers—with consequences for their treatment of patients (Mumtaz and others 2003). The

**Rights-based
initiatives
improve access
to services**

corruption that undermines trust of the state more generally has corrosive—even deadly—effects in the health system when it puts life-saving care out of reach (Afsana 2004; Mamdani and Bangser 2004). Drug leakage rates are reportedly 78 percent in Uganda, one-third of total hospital expenditures are unaccounted for in the Dominican Republic, and senior doctors in Venezuela missed one-third of their contracted hours (Asiimwe and others 1997; Jaen and Paravisini 2001; Lewis, La Forgia, and Sulvetta 1996; McPake and others 2000).

Documentation of the active exercise of citizen rights in the health system is harder to come by. But women’s empowerment projects can yield important changes in women’s determination and ability to access services, with significant impacts on neonatal and maternal health (Manandhar and others 2004). Rights-based initiatives to implement meaningful complaint and accountability mechanisms have been shown to improve access to services (Mamdani and Bangser 2004; UNICEF 2003b). Especially in the reproductive health field, a rights-based approach has shaped the services provided by NGOs as well. The International Planned Parenthood Federation (IPPF), for example, widely publicizes and posts its Charter on Sexual and Reproductive Rights. The Charter frames IPPF’s own services as premised on citizenship rights articulated in human rights law. These shifting foundations for the organization’s work have had direct impact on the services it provides (Helzner 2002).

Thinking about health systems

In much of the health policy literature, health systems are treated as “oddly transparent”: “a set of rules and formal organizations that can be rewritten, reorganized, and redirected, given the political will” (Mackintosh 2001, p. 176). In this vision of health systems, government becomes the central actor determining outcomes in a policymaking process that is implicitly understood as linear, running from problem identification to policy formulation to policy implementation. The content and flow of the linear process is assumed to be determined by the objective scientific evidence that is marshaled in the process (Keeley and Scoones 1999).

The result is an approach to policymaking and policy research that is overwhelmingly “prescriptive” in style and content. Specific elements of the system are tested against specific outcome objectives, such as cost, coverage, and quality (Mackintosh and Tibandebage 2004). Systems are understood mechanistically, as though recalibrating each moving part has a quantitatively verifiable effect on another part. This mechanistic view has informed the market-based approach to health systems and health policy that has dominated the health field internationally at least since the influential *World Development Report 1993: Investing in Health* (World Bank 1993).

Simply shuffling standard policies, such as user fees, or declaring by fiat the implementation of new programs ignores the very specific organizational cultures that prevail within any given system, not to mention the cultural and social

**Strengthening
health systems
will require large
new injections
of funds**

dynamics of the broader society. A paper commissioned by this task force examines the literature on organizational culture and “values in use” to gain insights into how the operation of such cultures and values determines what actually happens within the system (Gilson and Erasmus 2004). It highlights the dissonance that sometimes exists between official value systems articulated in government policies (such as public service and improving the health of the country) and the implicitly accepted value system that actually influences behavior. One detailed study from Nepal found that in the “implicitly accepted system services themselves are not seen as very important and there is instead an emphasis on things such as distributing and accounting for funds and on seeing the system as a mechanism simply of providing people with an income” (Aitken 1994). Efforts to improve services through the government’s formulation and promulgation of ethically based policy statements are subverted in the implementation.

Ultimately, this problem must be addressed by “developing cultural changes alongside structural reform” (Scott and others 2003, p. 105) and recognizing the dynamic, multifaceted nature of structural reform itself (Blaauw and others 2003).

Taking redistribution seriously

Strengthening health systems and meeting the Goals will require large new injections of funds. However, experience tells us that simply pouring money into the system or even allocating funds to seemingly “pro-poor” interventions does not guarantee a more equitable system: “allocation matters greatly, but resources are made effective through the operation of the healthcare system as a whole, and where markets dominate, public resources are employed, diverted, invested and recirculated through them. The distributional outcomes depend on the interactions within the system, and between system and users” (Mackintosh and Tibandebage 2004, p. 162). If we care about equity, about what happens to the poor and vulnerable, about the way in which health systems function as social institutions and their ability to deliver critical health interventions to all citizens, then we need to take redistribution seriously.

This report adopts Mackintosh and Tibandebage’s definition of redistribution: “all social processes that create increasingly inclusive or egalitarian access to resources” (Mackintosh and Tibandebage 2004, p. 144). The crux of the problem is not just how to use resources to target a needed intervention to a population that has low access or utilization (what is often labeled a “pro-poor” intervention). Rather, the core issue is how to create a system that encourages, supports, and sustains increasing inclusion, that is, redistribution. Targeted interventions focused on a particular geographic area or population will often be an important element—perhaps an immediate first step—in a broader long-term plan to create the structures that support egalitarian access to resources. For example, in Brazil, where the constitution recognizes health as “a right for all and the duty of the State” (Constitution of Brazil, Article 196), short-term targeting of the poor by

The costs associated with accessing healthcare have led to exclusion

the Family Health Program occurs in the context of a universal health system striving to ensure care for all (Barros, Bertoldi, and Victora 2004).

How do the prescriptions that currently dominate health policy affect redistribution? Mackintosh and Tibandebange (2002, p. 2) contend that marketization of healthcare “exposes and undermines cross-subsidy,” as it creates a segmented health system: private services for those who can pay and targeted “gap-filling” for those who cannot.¹ When access to healthcare explicitly depends on the ability to mobilize cash resources, it effectively legitimates exclusion of the poor.

Substantial evidence shows that the costs associated with accessing healthcare have indeed led to exclusion. In one district in Tanzania, for example, transport costs are so prohibitive that “women say that when obstetric emergencies arise, their only option is to ‘pray to God’” (Mamdani and Bangser 2004, p. 142). Another study documented children dying when their families were unable to pay for treatment: “a mother... was refused maternal and child healthcare because she was not able to pay a ‘fine’ of Tshs 700 for not bringing the child back on time” (Mamdani and Bangser 2004, p. 143). Although many countries have fee exemption policies for the very poorest, these policies are rarely implemented, and there is no recourse when services are denied (Mamdani and Bangser 2004; Ravindran, Kikomba, and Maceira forthcoming).

In a marketized system, where exclusion of those who cannot pay is, by definition, deemed legitimate, any cross-subsidy or redistribution that does exist is increasingly seen as an “unrequited gift” from rich to poor. A system that considers subsidy to the poor as an unrequited gift is difficult to sustain, since it turns on the questionable assumptions that government can successfully mandate that those with power and resources shall act benevolently and share their assets with those less fortunate and that a public system openly premised on such benevolent reciprocity between rich and poor will ultimately function equally for all (Mackintosh and Gilson 2002).

By contrast, a system built around healthcare relationships conceived not as gifts but as entitlements may move in a more sustainable direction. Human rights ideas can be used to work toward a system that recognizes and responds to claims. Londono and Frenk (1997), for example, assert that “essential service packages” should be framed not as “minimums” but as a “nucleus of universality” that constitutes a social commitment grounded in citizenship principles. A rights-based approach—one based on entitlement and obligation—can function as a principle not only for national governments and their citizens but within the global community and in transnational relationships as well. As human rights law evolves, it can begin to capture an emerging understanding of the complicity of wealthy countries in the crisis affecting health today, and it can begin to shape a norm of obligation on which claims for action by international actors can be based (International Council on Human Rights Policy and EGI 2003).

**Governments
are ultimately
responsible for
shaping the
health system**

As countries move toward meeting the Goals, how can governments begin to encourage redistribution and inclusion? In fact, redistribution may need to be managed through explicit “social settlements” that permit a level of inequality to persist in order to maintain the stability needed to implement policies that do advance redistribution and equity (Mackintosh 2001). The better-off should not be encouraged to break away from the system; the system needs to work for them, too (Bloom 2001). This has implications for how we think about the balance between “pro-poor, targeted interventions” and “universal coverage” standards as two possible routes for closing gaps in health status.

What are the most policy-relevant next steps that address the issues systematically rather than as “add-on” gap-fillers? In developing strategies to meet the Goals, no country starts from scratch, attempting to build the ideal health system. To meet the Goals, every country must start from where it currently finds itself. In countries with reasonably robust political structures, a low degree of segmentation, a strong national tax base, and an adequate health workforce, moving toward largely public financed and managed health services is a possibility (Bloom and Standing 2001). But in many poor countries, a huge proportion of healthcare is now being delivered through a largely unregulated and diverse private sector. In Viet Nam 60 percent of all outpatient child healthcare is obtained from private providers, including traditional healers and pharmacists. For the poorest 20 percent of children, 90 percent of the care provided to treat acute respiratory infection and diarrhea is private in Chad and Mali and more than 80 percent of care is private in Bangladesh, India, and Pakistan (Bustreo, Harding, and Axelsson 2003).

Most governments cannot and will not become the supplier and funder of a unitary system. But neither should the state view itself merely as the last-resort provider of a safety net for the poor. Governments control budgets, set standards, develop regulations, license and deploy critical personnel, manage infrastructure, and are ultimately responsible for shaping the nature and form of the health system through both bureaucratic and political means. These critical areas of health system functioning deserve far higher priority in health research, fundamental as they are to meeting the grand challenge of actually changing health and healthcare on the ground (Habicht and others 2004).

Drawing on the still slim but growing multidisciplinary body of research and literature in this area, we formulate three basic principles that we believe can usefully inform policymaking that is committed to increasing inclusion and closing the equity gap. In table 4.1 we present the principles, summarizing the rationale underpinning each and identifying potential policy interventions they could generate.

Principle 1: Strengthen government legitimacy

Strong government legitimacy enables a state to take actions that will increase the currency of redistribution and inclusiveness as social norms. When social

Table 4.1
Principles of redistribution and policy responses

Principle	Policy interventions	Rationale
Principle 1: Strengthen government legitimacy.	<p>Improve access to health services:</p> <ul style="list-style-type: none"> • Encourage progressive financing mechanisms. • Remove regressive user fees. • Improve the quality of care provided by the public sector. <p>Reinforce the commitment to health as a right:</p> <ul style="list-style-type: none"> • Codify the right to healthcare in law. • Create patient charters. • Widely publicize essential packages of care. • Establish transparent and participatory decisionmaking processes. • Monitor the impact of redistribution policies (through national health expenditure accounts, for example). <p>Improve resource allocation to underserved areas:</p> <ul style="list-style-type: none"> • Base allocation on measures of equity and capacity to benefit. • Create transparency in allocation and expenditure. 	<p>Such policies:</p> <ul style="list-style-type: none"> • Address inequity by improving access for the poor and marginalized. • Signal commitment to inclusiveness and redistribution. • Demonstrate procedural fairness. • Increase trust and strengthen government’s ability to regulate effectively. • Enhance the legitimacy required for the ministry of health to improve its status among other government departments.
Principle 2: Prevent excessive segmentation by enhancing norms of collaboration to improve services in both public and private sectors.	<p>Establish collaborative regulation:</p> <ul style="list-style-type: none"> • Ensure agreed explicit rules and encourage informal relationships. • Use regulation to check the power of interest groups. <p>Share resources:</p> <ul style="list-style-type: none"> • Share accurate information. • Share technology. <p>Engage in joint planning.</p> <p>Use financing tools to discourage segmentation:</p> <ul style="list-style-type: none"> • Provide incentives for the private sector to provide comprehensive care, including preventive and promotive care where probity is established. • Subsidize community insurance for the poor and provide direct transfers to the poor to enhance capacity to pay. <p>Reinforce quality in both public and private sectors:</p> <ul style="list-style-type: none"> • Reinforce and recognize probity in the private sector where the poor have been included in care. • Promote competition where it acts to root out poor-quality providers. • Use the community to benchmark facilities; “brand” good facilities. 	<p>Such policies:</p> <ul style="list-style-type: none"> • Create and support collaborative professional and institutional cultures. • Normalize a rights-based approach by including stakeholders. • Shape markets to promote inclusion. • Increase trust and communication between public and private sectors, which reduces complexity and transactions costs. • Use negotiated processes to yield rules with increased legitimacy. • Improve cross-subsidization by keeping those who can pay in the system. • Expose the middle class to issues of the poor rather than excluding the poor from the system.

Table 4.1
Principles of
redistribution and
policy responses
(continued)

Principle	Policy interventions	Rationale
Principle 3: Strengthen the voice of the poor and marginalized to make claims.	<p>Document, monitor, and publicize disparities in health status and healthcare across population groups.</p> <p>Provide opportunities for asserting claims:</p> <ul style="list-style-type: none"> • Introduce patients' charters. • Establish an essential health package as an entitlement. • Ensure fair malpractice and nondiscrimination laws. <p>Regulate to ensure appropriate public inclusion in health institution management in both the public and private sectors.</p> <p>Use space opened by consumers' rights movement for advocating claims.</p> <p>Support and encourage existing civil society organizations to help monitor facilities and providers.</p> <p>Ensure government mechanisms exist to improve responsiveness to claims.</p>	<p>Such policies:</p> <ul style="list-style-type: none"> • Adopt a human rights–based approach to legitimize claims to health. • Improve accountability processes. • Reinforce democratic processes and good governance.

norms support redistribution and inclusiveness, the actual policies to achieve these goals are more likely to be accepted by all segments of society and implemented by “street-level bureaucrats” working within the system (Walker and Gilson 2004). Then the circle is closed: action that truly increases inclusion further enhances legitimacy.

Of course, government legitimacy is, in part, earned through the demonstration of good governance—that is accountability, competence, and respect for human rights and the rule of law (Standing 2004). Legitimacy and demonstrated good governance together increase trust within a system. Trust within the management ranks of the system, among providers, and between providers and patients, all strengthen the state's ability to facilitate a shift in the way society regards issues of redistribution and inclusion. Trust provides a foundation for coordination among relatively autonomous (public and private) providers (principle 2) (Gilson 2003). To cooperate, stakeholders must believe that state action and behavior is fair and that it will be sustained over time (Bloom 2001).

State legitimacy to move the health system toward increased inclusion is enhanced when state policies have “teeth,” when they are more than empty rhetoric, when people make claims and those claims are recognized and enforced (linking to principle 3). A basic commitment to health and healthcare as a right, rather than as a commodity to be bought by those with sufficient means, can be codified in law. Doing so not only signals a fundamental social

**Procedural
fairness in
government
decisionmaking
is central**

value to be reinforced in public discourse, it can also have concrete effects through the legal system to ensure equitable access to care. Right to health provisions in the South African constitution have been used to obtain broader access to nevirapine for the prevention of maternal-to-child transmission of HIV (Minister of Health v. Treatment Action Campaign 2002). In Venezuela constitutional rights to life and health have been invoked to ensure access to antiretroviral therapy within the public system and to reallocate budgets necessary to implement the policy (Cruz Bermudez et al v. Ministerio de Sanidad y Asistencia Social).

Procedural fairness in government decisionmaking is also central if governments are to make difficult decisions relating to equity and, in turn, expect all sectors of society to support those decisions. The more government signals its values through its decisions, proclamations, speeches, and actions, and the more transparent and inclusive such decisions are, the quicker such values become normalized and part of the accepted discourse of the society. So, for example, where there is evidence of norms of probity in the government sector, they should be highlighted and encouraged. The same is true for practices that tackle discrimination and exclusion or demonstrate responsiveness and accountability to the communities they serve. Such practices do exist somewhere in every country. They should be publicized and rewarded.

Principle 2: Prevent excessive segmentation by enhancing norms of collaboration to improve services in the private and public sectors

Marketization of healthcare tends to undermine redistribution when it severely segments the health system, driving a wedge between those who can pay and those who cannot, thereby exposing (and ultimately driving out) any cross-subsidization between them. Policy interventions that consider the system as a whole and build in mechanisms to encourage collaboration between different parts can enhance norms of inclusion, improve the functioning of both the private and the public sectors, and potentially even isolate and remove the most abusive and poorly functioning providers in either sector. There is increasing evidence that though it is significant, users' income is not the most important determinant of their choice of healthcare provider (Hotchkiss 1998; Ndeso-Atanga 2004). A study of poor people in rural areas of Cameroon showed that when faced with poor-quality care, low income did not rule out the choice of expensive (private) providers over inexpensive government services, particularly when users judged their medical conditions as serious and requiring a motivated provider (Ndeso-Atanga 2004).

A starting point is to enhance a norm of collaboration, both within the public health system and between the private and public sectors. Collaborations do not just happen; they require a supportive policy environment and a meaningful congruency of interests. Most governments in poor countries do not have the capacity to mandate and enforce collaboration through legal regulation.

**Collaborative
regulation can
help shape
markets to
work in more
inclusive ways**

The challenge is to find or create situations or institutional arrangements in which there is an alignment of mission or strategy so that collaboration yields added value for both parties (Bloom 2004). The greater the value and more balanced the mutual benefit, the stronger the collaboration (Barrett, Austin, and McCarthy 2002).

Where markets are the driving force in healthcare provision, collaborative regulation can help shape those markets to work in more inclusive ways. For example, within the nongovernmental sector, self-regulatory and collaborative regulatory mechanisms, in which genuinely accessible providers are encouraged to form self-managed associations, can heighten their public profile and enhance their reputation in the community. By publishing benchmark fees and standards of quality of care, these institutions influence public expectations, expanding the information available to users. In this way, self regulation also serves to expose facilities that are dangerous to the poor, differentiating the market in a manner that is beneficial to the poor. This is the idea behind UNICEF's certification of hospitals that meet a set of quality standards as "baby-friendly hospitals." In Bangladesh UNICEF expanded the concept to promote certification of "women-friendly hospitals" as well. In South Africa up to 48 percent of people seeking treatment for sexually transmitted infections access private health services. In an effort to improve the quality of care and address information asymmetry for all patients accessing these services, it has been proposed that general practitioners who agree to adhere to standardized guidelines for the management of sexually transmitted infections receive accreditation (Blaauw and Schneider 2003).

While many governments in developing countries lack inspection capacity, they still have considerable resources that can positively influence the health system. Mackintosh and Tibandebage (2004) suggest that elite hospitals given nonprofit, tax-exempt status can be asked in return for explicit contributions to the capacity, quality, and inclusiveness of the healthcare system as a whole. Government can use incentives, such as access to shared information or technology, or subsidies, or even licensing mechanisms to encourage private providers as individuals or as franchisees of accredited provider networks to set up services in underserved geographic regions (Ravindran and Weller forthcoming; Segall 2000a). Another possibility is to formalize private sector involvement in public sector hospitals. If well managed and carefully monitored, this can be done by cross-subsidizing from private wards in government facilities, providing opportunities for private income to help retain good staff, and improving the quality of care.

Segmentation and lack of collaboration between the private and public sectors can lead to incoherent care. In a number of African countries the private sector is in charge of antenatal care but does not provide delivery care (Berman and Rose 1996). In Tanzania less than 8 percent of private facilities offer delivery services, but 75 percent offer antenatal and postnatal services

**Excessive
segmentation of
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remove the
poor from the
public gaze**

(Ravindran, Kikomba, and Maceira forthcoming). In some cases smooth collaboration across the public-private divide can be essential for saving lives. In maternal health, for example, animosity between public and private providers often obstructs optimal referral of obstetric emergencies (Mamdani and Bangser 2004). But, in many cases, the two have common interests and through communication, regulation, and clearer policies could be brought toward better collaboration (Murray and Pearson 2004).

We recognize that many of the policy interventions suggested are susceptible to corruption, perverse incentives, and co-option of self-regulatory bodies by larger corporations in the private sector. A government's ability to control such capture by powerful associations depends on its commitment to dealing with these negative forces and on the extent to which it can be strengthened and legitimized rather than undermined by external agencies and international development policies.

Finally, excessive segmentation of the healthcare system has, in some cases, effectively removed the poor from the public gaze. Blurring the boundaries between sectors not only improves opportunities for cross-subsidization, it also "reduces middle class ignorance of, and distancing from, the problems" (Mackintosh and Tibandebage 2004, p. 165). Indeed, it may be that only when the better-off come to see their own well-being as connected to that of the poor and marginalized will the political conditions be in place for a truly inclusive system and for significantly increased investment in health and healthcare, reconceived as a public good.

Principle 3: Strengthen the voice of the poor and marginalized to make claims

The South Africa and Venezuela "right to health" cases mentioned above were major lawsuits lodged in the formal judicial system to vindicate a broad, population-wide right to health. But, in every healthcare system, there are countless moments when users face obstacles to accessing appropriate healthcare. An inclusive system makes it possible for users to assert claims of entitlement in these moments and then responds to those claims. This is an essential part of accountability in a rights-based system.

Sometimes claims will be formal claims, asserted through legal or regulatory mechanisms. These can be individual claims, as in a malpractice situation. They can also be broader claims for systemic change, such as those asserted through public interest litigation in the Indian legal system, where government policies on issues such as safety of banked blood have been adjudicated. In Latin America, a legal mechanism called *acción de amparo* (protection suit) has been effectively used by NGOs to vindicate a legally enforceable right to health (Yamin 2000).

However, not all accountability involves violation and not all claims involve a process of finding blame and imposing punishment. "Constructive

**Healthcare
financing
presents a
multifaceted
set of issues**

accountability” is about developing an effective dynamic of entitlement and obligation between people and their government and within the complex of relationships that form the system, both public and private (Freedman 2003; George 2003). That dynamic then becomes a crucial building block in the construction of health systems that function first and foremost for the benefit of people.

Building constructive accountability mechanisms into the system requires building the capacity of communities, civil society organizations, and government staff. Sometimes it may require compensating people for the time they devote to what is essentially civic service and that in turn requires specific allocation in the budget (Murthy and others 2003). Building constructive accountability mechanisms may require structural changes in how planning processes occur, priorities are set, and services are delivered. It may entail basic changes in the way information is treated, opening up information about the budget process to NGOs, for example, and providing information about actual spending and movement of funds to the people whose communities are meant to benefit from them (Fundar, International Budget Project, and International Human Rights Internship Program 2004). This requires a shift in the institutional culture that operates in government finance and planning processes and throughout the health system.

In sum: the real challenge in developing countries is for governments to use their powers to influence sectoral development and alter the balance of benefits between social groups in a way that ensures redistribution and equity. The urgency, pace, and scale of the action required to meet the Goals create the risk of adopting quick-fix solutions that merely address symptoms and not fundamental causes. One size does not fit all; “solutions” that may appear “technocratically correct” may not be appropriate unless they are locally responsive. Pritchett and Woolcock (2004) argue that the absence of consensus on how to improve services is appropriate; what is not appropriate is to do nothing.

Healthcare financing

Healthcare financing in developing countries presents a multifaceted set of issues. In the countries where child mortality and maternal mortality are highest, where women have restricted access to contraception and sexual and reproductive health information, the bottom line is an absolute scarcity of resources and a profound failure to ensure that the poor are reached. Healthcare financing is further complicated by broader economic crises, as well as fragmentation of the health system, fragile or absent government bureaucracies, inadequate internal financial control mechanisms, and limited regulatory powers.

Conventional accounting of health systems financing (resource availability, mobilization, allocation and expenditure monitoring) is a necessary first step to addressing these problems. But if we are serious about developing policies that inform redistribution by ensuring inclusion and preventing excessive segmentation (principle 2), this analysis must be broadened to include an

There is a tendency for health benefits to go disproportionately to the wealthy

understanding of the flow of funds throughout the whole health system, from households to the private and public health sectors. What drives these flows? What are the values informing the mobilization and allocation of funds and the distribution of who pays for what, where, and when?

Achieving equity and meeting the Goals represents a major challenge, for several reasons. First, the gap between the amounts of money required to meet the Goals and the amounts currently available is enormous. The Commission on Macroeconomics and Health estimated that an average of \$34 per capita a year (2002 prices) would be needed to provide essential health services in low-income countries (Commission on Macroeconomics and Health 2001). Current per capita expenditure in some countries is as low as \$1–\$10 a year. And these figures represent national averages. Therefore, it is critical to ask questions about distribution across population groups by geography, gender, race, and wealth and across different levels of care. In many countries a disproportionate amount of resources is spent at the tertiary level rather than on primary care.

Second, out-of-pocket expenditures and utilization of private health services are disproportionately high among poorer communities and in poorer countries. And the poorer the country, the more likely this is to be the case (Mackintosh and Koivusalo 2004). Key drivers behind this phenomenon include the lack of commitment to redistribution in health financing policies, inadequate access to public sector services, the poor quality of care received in the public sector, and a loss of trust in the government as a provider of social services. Despite official dictums, including *World Development Report 1993* (World Bank 1993), that basic public health services should be free, all too often they are not. Indeed, out-of-pocket expenditures for maternal health and child health services can be considerable (Toole and others 2003). A recent study of the costs of accessing emergency obstetric care in Bangladesh showed that despite the government's policy of free healthcare, the average cost for an uncomplicated vaginal delivery was the equivalent of a household's monthly income. Costs for an emergency cesarean section could be as high as five times the average household's monthly salary, leading to an acute crisis and further impoverishment (Afsana 2004).

Third, even where government spending has increased, there is a tendency for the benefits to go disproportionately to the wealthy (World Bank 2003b). In Ghana the poorest quintile received only 12 percent of public expenditure on health in 1994, whereas the richest quintile received 33 percent (World Bank 2003b). Studies in several African countries found that public spending on curative care, even care that targets poorer communities, still mostly favors the better-off (Castro-Leal and others 2000).

Public financing policies

How a government chooses to raise funds for health and the mechanisms it uses to set priorities and allocate those funds provide one of the biggest

Revenue generated through user fees has been very limited

opportunities to signal serious intent to redress inequity. Governments generally employ a range of mechanisms to mobilize funds, each with its own trade-offs between equity and efficiency (table 4.2).

Most low-income countries have limited capacity to mobilize tax revenue. Total tax revenue as a percentage of GDP is only 14 percent in low-income countries, far lower than the 31 percent collected in high-income countries (Ravindran, Kikomba, and Maceira forthcoming). The health sector has to compete with all other sectors, especially “productive” sectors, for a share of this modest outlay. Possibilities for increasing the contribution of tax revenue to the health sector may therefore be limited.

In the absence of tax revenue, many developing countries have attempted to finance health through user fees and, increasingly, prepaid community-based insurance schemes. Social health insurance is the predominant health system financing mechanism in Latin America, but it is generally not feasible in Africa or Asia, as it relies on relatively high levels of formal sector employment.

In theory, user fees are supposed to increase efficiency, by sending price signals that encourage adherence to appropriate referral chains and discourage frivolous use of services, thereby reallocating resources to the more cost-effective primary care services. But, in practice, revenue generated through user fees has been very limited. Data from national user fee systems in Sub-Saharan Africa countries in the 1980s and 1990s indicate an average cost recovery level of about 5 percent of recurrent health system expenditures, gross of administrative costs. Where exemption schemes have been introduced in an attempt to protect the poor, they have generally failed (Ravindran, Kikomba, and Maceira forthcoming).

Substantial evidence shows that user fees are a significant barrier, preventing access to maternal and child health services. In Tanzania one study documented several deaths of women denied treatment because of inability to pay, including the death of a woman in a maternity hospital who was unable to pay for an emergency cesarean section (Mackintosh and Tibandebage 2002). Formal fees have also hindered access to hospital care for children, as documented in recent studies from Kenya and Uganda investigating extremely low compliance with pediatric referral to district hospitals in cases of serious child illness. Cost was cited as the most common reason for not obtaining needed care (English and others 2004; Peterson and others 2004).

A study conducted in Cambodia after the introduction and increase in user fees at a district hospital showed decreased utilization rates, especially among those least able to pay. Exemption mechanisms failed, as they strained already limited administrative capacity, and out-of-pocket expenditures soared. The result was a “medical poverty trap” for those unable to access care: untreated illness, reduced access to care, long-term impoverishment, and irrational drug use (Jacobs and Price 2004).

Table 4.2
Key healthcare financing mechanisms

Source: McIntyre 1997.

Financing mechanism	Efficiency	Displacement effects	Equity
General tax revenue	Usually most important source of healthcare finance Relatively efficient Collection costs low relative to revenue Relatively stable but dependent on political decisions	Leaves potential private funding sources untapped (if health services completely tax funded)	Tends to be progressive overall if efficiently paid by all Depends on progressivity of each tax and the combination of taxes (direct taxes tend to be progressive, indirect taxes tend to be regressive)
Dedicated taxes	Relatively efficient Earmarked for health services Revenue can fluctuate if linked to consumption of certain goods	Tend to displace general tax revenue	Tend to be regressive (with the exception of the tax on luxury goods, most consumption taxes are regressive) Can significantly add to tax burden, often in an invisible manner
User fees	Complementary source Tend to have relatively low revenue-generating potential, particularly if reliant on out-of-pocket payments as opposed to targeting the insured High collection and administration costs	Tend to displace general tax revenue	Tend to be highly regressive Adversely affect health service access of the poorest (this problem can be reduced through effective exemption mechanisms or offset by significant and sustained improvements in quality of health services)
Prepaid community schemes	Complementary source Tend to have relatively low and generally inadequate revenue-generating potential Collection and administration costs not excessive	Replace or reduce user fee revenue Cause minimal tax revenue displacement	Tend to be regressive (burden of financing placed on rural poor) May reduce costs of health services for individuals if service quality (especially drug availability) improves
Social health insurance	Can generate significant revenue (depending on size of formal sector and income levels) Administrative costs can be relatively high	May displace general tax revenue Tends to displace voluntary private insurance (which is minimal in poor countries)	Degree of progressivity depends on extent to which contribution structure is income related and on the level of upper limit Can improve equity within insured group Financing burden usually falls on formally employed Creates a two-tier system Public sector resources may be released, which can be targeted to improving services for noninsured

Abolishing user fees signals the government's commitment to improving equity

Abolishing user fees, a step taken by a number of countries in recent years, signals the government's commitment to improving equity and access to care for the poor. It has also resulted in increased utilization—in some cases dramatically so (Burnham and others 2004). In South Africa a 1994 decision to eliminate all user fees for primary healthcare in the public sector was combined with a policy to provide free care to children under the age of six and to pregnant women (McCoy and Khosa 1996). The result was a significant increase in utilization, although the failure to plan adequately for the removal of user fees led to a decrease in quality of care and staff motivation until the systems were improved.

In a small number of countries, health financing reforms have included the introduction or revival of prepayment schemes or community insurance schemes (Ravindran, Kikomba, and Maceira forthcoming). The main objective of prepayment schemes is to keep poor and vulnerable people within the health system, raising additional revenue without imposing financial burden on those who are ill. Such arrangements facilitate risk pooling for those not covered by formal insurance schemes. In addition, unlike most insurance schemes, prepayment schemes normally cover low-cost but high-probability health needs, such as outpatient care. The volume of funds raised with prepayment schemes is often low, however, and the costs of collection and management comparatively high (Ravindran, Kikomba, and Maceira forthcoming). Evidence suggests that these schemes are able to reduce catastrophic expenditure, but only scanty evidence reveals how these systems can be scaled up or what effect they have on equity (Palmer and others 2004). Moreover, because they are usually implemented in rural areas, prepayment schemes can result in a situation in which “the poor simply cross-subsidize the healthcare costs of other poor members of the population” (Bennett, Creese, and Monasch 1998). Significant cross-subsidization is not likely unless the insurance provided in the formal and informal employment sectors can be linked (McIntyre 2004).

Several other financing schemes, most notably in Latin America, have sought to increase use of key maternal and child health services by the poor by offering specific services for free or providing cash benefits conditioned on the use of particular services. In Mexico the Progresa (education, health, and nutrition) program (now Oportunidades) offered cash transfers to eligible families provided they obtained preventive healthcare, participated in growth monitoring and nutrition supplements programs, and attended health education programs. The PAC (basic healthcare program) worked in synergy with Progresa, targeting the most disadvantaged municipalities in Mexico by delivering a cost-effective basic healthcare package. The program reached 10.9 million poor people, most in small, rural communities. The number of Mexicans with no health coverage declined from 10 million in 1995 to 1.5 million in 1999, and the maternal mortality ratio in the six poorest states fell from 72 per 100,000 live births to 59 over the same period (Gertler and Boyce 2001; Marquez and de Geyndt 2003).

**Enforcement
to guarantee
access
sometimes
requires active
civil society
engagement**

In Bolivia a national health insurance plan, called Maternal and Child National Insurance, was developed in 1996, with the main objective of increasing coverage of maternal and child care. The program covers antenatal care; labor and delivery, including cesarean sections and other obstetric emergencies; and postpartum and newborn care. Women and children under five receive services free of charge. According to Demographic and Health Survey statistics, the skilled birth attendants indicator increased from 43 percent in 1994 to 59 percent in 1998 (Seoane and others 2003). Analysis by quintile shows that the poorest segment of the population has increased use of skilled birth attendants and health facilities for delivery (from 11 percent to 20 percent) in just four years. Still, as of 1998 about 80 percent of the poorest people in Bolivia did not have access to services (Koblinsky and Campbell 2003; Seoane and others 2003).

Enforcement to guarantee access under these schemes sometimes requires active civil society engagement. For example, the NGO SENDAS has organized users' committees and mobilized women's groups to ensure implementation of the free maternity care law in Ecuador (Moya and Acurio 2003).

Nevertheless, these types of schemes send important messages about how the state values the right to health.

Priority setting and resource allocation

The allocation and distribution of resources is an intensely political process affected by power struggles among strong stakeholders with disparate agendas. These stakeholders include both different ministries and levels of government and external players. The ability of the state to set priorities and negotiate the allocation of resources in a way that increases equity and meets the needs of stakeholders is a measure of trust in the state, of the state's legitimacy, and of its commitment to procedural justice.

In many instances the formulas used to allocate resources within the health system actually intensify disparities. Analysis of the health budget of Mexico, undertaken by the NGO Fundar, revealed that states with the worst coverage of facilities and the largest deficits in the health workforce—and hence the worst access to emergency obstetric care and the highest maternal mortality ratios—received the lowest per capita allocations from the budget. Rather than allocating resources to close the capacity gap, the budget ended up wrenching it open even wider (Diaz and Freyermuth 2004; Diaz and Hofbauer 2004).

One approach to this general problem has been put forward by Gavin Mooney (2003) in his work on “capacity to benefit” as a key principle in resource allocation. Recognizing that health systems perform social functions beyond the delivery of disease-specific interventions, he outlines the following process for allocating resources for healthcare:

- Establish what good is to be achieved, in collaboration with those who will benefit.

**As important as
“what” needs
to be done is
“how” to do it**

- See how that good can be made better with the resources available.
- Where regions need help creating the infrastructure needed to do better, adjust the resource allocation formula to allocate funds for this purpose.
- Make due allowance in the allocations for variations in the costs of access across regions.

This process enables values to be translated into funded mandates. It recognizes that some communities are geographically remote and require extra resources to overcome this barrier, and it reinforces the notion that the capacity to benefit from an injection of funds requires a functioning infrastructure and health system to support activities. Lack of capacity in an area must be addressed head-on, not used as part of an efficiency argument not to allocate additional funds.

This approach works in conjunction with a rights-based approach, in which priority setting and resource allocation processes work in collaboration with people to understand better the required choices, to develop and define a vision for change in health systems, and to act upon that vision through organizing, learning, and networking. It explicitly addresses inequality. It also serves as a counter to dominant cost-effectiveness priority-setting mechanisms that result in a collection of basic disease-specific interventions identified as “essential healthcare packages.” Even for such a package, implementation requires appropriate mechanisms (public, private sector, bureaucratic) of information, accountability, redress, and pressure. Given the complexity of priority-setting and resource allocation processes, it is critical that such decisions be transparent and “based on fair reasoned and defensible arguments, which must be publicly accessible—so-called accountability for reasonableness” (Segall 2003, p. s17).

Organizing the health system

This task force report sets out a vision of what needs to be done to achieve the child health and maternal health Goals. The interventions and services required to reduce mortality in women and children and to promote sexual and reproductive health have been described. Just as important as what needs to be done, though, is how to do it. The processes through which interventions are delivered ultimately determine the magnitude and the sustainability of their impact. Strengthening the health system is the central process recommended for ensuring universal access to necessary services for women and children and increasing their use of such services. Health systems must provide services in a way that is equitable; marginalization and exclusion of the poor and other disadvantaged groups must end. There must be a fundamental respect for human rights. Health systems are not machines. They are dynamic entities built around human relationships. They are part of the social fabric, an essential context for the assertion of citizenship. They must be respectful of all whom they exist to serve. For these reasons, the way that a health system is organized is critical.

**A health system
must be driven
by primary
healthcare**

The different levels of primary healthcare

The WHO has called for the strengthening of health systems to be “based on the core principles of primary healthcare as outlined at Alma Ata in 1978,” warning that “it is unrealistic to expect the achievement of the Millennium Development Goals without a health system driven by primary healthcare” (WHO 2003b, p. 14). This task force agrees. Furthermore, we support the pyramid-shaped multilevel structure of a health system that can best support a primary healthcare approach.

Maternal health and child health, while similar in many ways, are also fundamentally different. Recent trends in the delivery of child health services have been to move as many of those services as close to the community as possible. From an emphasis on clinic-based care, most experts now believe that the treatment of common but potentially fatal illnesses such as diarrhea and pneumonia can be carried out by relatively unskilled workers within the community. The Integrated Management of Childhood Illnesses strategy, for example, now has a community-based component that is seen as essential to the successful implementation of the entire package of interventions. Of course, these community health workers must be supported and closely supervised by clinically trained staff at first-level facilities, structures that should be easily accessible to a number of neighboring communities with a population that does not exceed the ability of that staff to provide universal care. The management of seriously ill children must be left to these more competent health professionals, and community-level workers, together with primary caregivers, must be able to recognize the signs of severe illness early and make appropriate referrals. Finally, the same is true on one additional level—the presence of an around-the-clock referral hospital is necessary for cases that are so severe that the primary care facility cannot competently deal with them. Child health conditions requiring hospitalization include severe pneumonia requiring oxygen therapy, cerebral malaria, and septicemia.

For the reduction of maternal mortality, the priorities are somewhat reversed. Antenatal care can be provided at the primary healthcare facility, and all births can be attended, even within the community, by a skilled attendant. But most maternal deaths are the result of obstetric complications that occur around the time of delivery. For the most part these complications require a hospital-level intervention, such as a cesarean section, multiple transfusions, or parenteral antibiotics and 24-hour-a-day monitoring.

In other words, although different degrees of emphasis may be placed on different levels of the system for different purposes, reaching the Goals for both child health and maternal health requires strengthening all of the following: household prevention and care-seeking behaviors; the delivery of services within the community by healthcare workers trained to perform a few specific tasks; a competently staffed and adequately supplied clinic that provides outpatient care; and a first-level referral hospital where severe, life-threatening conditions can be

**District-level
administration
of healthcare
service
delivery can
signal national
commitment
to principles of
inclusiveness**

managed by health professionals trained to do so. A strong, well functioning health system performs all of these functions. In most settings, all can be ensured within a peripheral administrative unit, typically a district, with appropriate support and supervision from provincial and national authorities (Bulatao and Ross 2003; Campbell 2001; McCoy and others 2004; McCoy and Rowson 2004).

Ensuring equity and inclusiveness—another role of the district health system

Because the district health system is—or at least should be—endowed with significant resources, including adequate quantities of drugs and equipment, appropriate levels of technical expertise, and, perhaps especially, a well functioning hospital, it is well placed to reduce the segmentation of the overall health system by becoming the healthcare “leader” in a specific geographic area (Mackintosh and Koivusalo 2004). In doing so, district-level administration of healthcare service delivery can signal national commitment to principles of inclusiveness and redistribution of resources.

In other words, the management of a district health system should promote good health practices and draw people in for appropriate health services (whether public or private), rather than abandoning them to an often unregulated, unsupervised, unaffordable private healthcare system that ultimately fails the poor. Stronger district health systems, especially better managed district health systems with improved financial integrity and accountability, will also reduce reliance by donors and others on a multiplicity of vertical programs, each with its own redundant management structures (Oliveira-Cruz, Kurowski, and Mills 2003).

We propose that the appropriate response to weak government health services is to pull out all the stops in order to strengthen them, not to further undermine them until they are beyond repair. For some countries this will not be an overly burdensome task, provided that the appropriate resources are made available. In others the process of salvaging the health system will be daunting, but nevertheless possible and, we believe, necessary. If the Goals are to be met in these countries, the implementation of the interventions delineated in this report for reducing child and maternal mortality will need to begin before the process of system strengthening is complete.

The strength of a local health system must come as much from below as from above. Unless people believe that they will receive proper treatment, as individuals as well as patients, utilization rates are unlikely to rise. District health system administrators and service providers must do everything necessary to engender trust in the population they serve (Gilson 2003). Women, the poor, and citizens belonging to minority ethnic groups or practicing minority religions must all be equally served in a respectful manner if the indicators proposed in this report for assessing progress toward the Goals are to move in the right direction and at an appropriate pace. A public healthcare system is

**The strength of
a local health
system must
come as much
from below as
from above**

not, after all, worthy of the name unless it is intended to, and is able to, serve all of the public.

Decentralization

There has been a great deal of discussion in the literature, and even some experimentation on the ground, regarding the decentralization of health system functions, at least to the district level. Decentralization creates the potential for greater community involvement in health system management and decisionmaking. It provides a broader array, or at least a more locally tailored array, of consumer choices of services. In theory, realizing this potential could be a formula for increasing inclusivity and trust.

However, in communities in which gross inequities exist in all sectors, greater community control over the health sector may perpetuate them. In many communities strong local interests have been able to control resource allocation for their own narrow purposes, serving their own interests, not those of the community at large.

The data regarding the effects of decentralization on the health of the poor are equivocal (Global Forum for Health Research 2004). The power to decide what needs to be done can, and should, be decentralized if stronger health systems are to develop, but the use of that power needs to be controlled and managed. Local priorities may not reflect national (and international) priorities, and attempts at decentralization have at times been plagued by “a lack of technical, administrative, and financial management expertise and limited awareness of reproductive health problems as public health priorities at the local level” (Langer, Nigenda, and Cantino 2000, p. 671). At other times services as basic as childhood vaccinations have been left off community lists of healthcare priorities. For these reasons, decentralized systems still need to be overseen by national health authorities. Accountability of local authorities to both the public and the central government is critical if equity is to be ensured and national health goals reached. The potential for exacerbating inequities and perpetuating the disenfranchisement of certain groups can be guarded against and the need to respect certain national public health priorities at the local level protected by ensuring a strong, functional partnership between the district health system and more central health authorities.

What has emerged from the research is a set of common denominators of successful decentralization that can be adapted to local contexts (Gilson 2004). These principles can guide the early development of strong systems in countries in which they are in disrepair:

- Communicate a clear and simple vision of the purpose of decentralization. In the context of developing a decentralized district health system, this vision must show that the system is viewed not as a vertical program but as a strategy for all health system development and planning.

Management is a critical aspect of strengthening health systems

- Identify an implementation unit to support health system decentralization. The key function of this unit is to pace the implementation of decentralization at a rate appropriate to the circumstances.
- Develop a mindset at all levels of government that supports decentralization.
- Strengthen coordination by clarifying roles and responsibilities.
- Strengthen supervision, monitoring, evaluation, and accountability.
- Encourage effective leadership throughout the health system. Champions at all levels of the system need to be given the space to take the innovative actions required to make decentralization work.

Health management

Management capacity is a neglected—and now dangerously fragile—part of the overall health system. The structural changes to the health system ushered in by donor-driven neoliberal economic policies and social sector reform agendas create profound and ongoing challenges for health system managers. The newly professed faith in markets and the private sector, together with downsizing and deprecation of the public sector, leave healthcare workers feeling vulnerable, demotivated, undervalued, and cynical (Schaay, Heywood, and Lehmann 1998; Unger, De Paepe, and Green 2003). Diminished service ethics, worsening economic realities, and the tension between managing public interests and private gain have led to a perception—if not a reality—of increased corruption or patronage. Weakened management capacity and the resultant loss of trust in the health system have arguably encouraged vertical programming and donor funding streams that sidestep government channels in order to go directly to “substitute” NGOs (Pfeiffer 2003).

In addition, managers are faced with a complex array of parallel and uncoordinated programs, often introduced top-down without prior consultation, all to be managed with steadily declining resources. For example, a study of management capacity to implement major (and much needed) changes in the huge maternal health programs that have been launched in India reveals a problematically thin management infrastructure (Mavalankar 2003).

To address this situation, managers need a variety of technical skills backed by operational systems. But, just as important are the skills needed to manage the “software” issues in an organization: building trust, shifting organizational culture, and developing organizational networks and relationships (Blaauw and others 2003; Gilson 2003). Successful implementation of policies to promote equity and inclusion requires a focus on human interactions at the micro level, as well as the development of supportive institutional systems for financing, information, and regulation. Development of a rights-based health system that increasingly addresses the systemic barriers to care experienced by poor and vulnerable groups requires managers who are more than administrators, managers who understand a given context and are able to take appropriate action.

Those responsible for policy implementation, the health managers, are seldom consulted

Providing an enabling environment to support management

Inclusion in policy development and planning process. Managers have expressed frustration at having to implement, and at times abandon, ill-conceived policies that they played no role in designing (Lehmann and Sanders 2002). Whereas the importance of consultation with communities and health professionals is increasingly recognized in policy development, those responsible for policy implementation, the health managers, are seldom consulted (Penn-Kekana, Blaauw, and Schneider 2004; Unger, De Paepe, and Green 2003). How this consultation should occur is context specific, but that it should occur, even as early as the design phase, is important for sustainability (Faull 1998).

Efficient operational systems and institutional structures. Efficient and appropriately resourced operational systems that are strategically aligned to the goals of the health system are key to effective service delivery. Operational systems include systems for financial management, a support network of supervision, communications, policy guidance, skills training, human resources management, procurement, logistics, and transport (Toole and others 2003). In addition, clear delineation of the responsibilities and delegated authorities between central and local levels is critical to the effective functioning of the district health system. Underpinning all these structures must be an effective information system that is able to provide appropriate, accurate, and timely information to inform management decisions at all levels of healthcare.

The role of many of these systems is to “regularize” activities that are conducted routinely and that require minimal discretion in their execution (Pritchett and Woolcock 2004). Good operational systems free up the health workforce, including managers, to undertake activities that require discretion and individual judgment. For example, good drug procurement and stock control systems enable healthcare workers to spend less time dealing with stock-outs and more time managing and communicating with patients. If these basic, routine activities were well executed, managers would be free to pursue important discretionary work such as supervision and maternal and perinatal audits to improve quality of care.

Moving from policies to action

Getting the policies right is a necessary first step for charting better directions for health systems. But moving to the stage of operationalizing policy is the crux of the problem for many health systems—the second half of the battle. The global health landscape is littered with policies that are empty shells—never implemented, monitored, or revised. What allows policies to be operationalized is a complex question, one tied to the strength of the health system.

Moving from policies to action is a major challenge in the maternal, child, and reproductive health fields. Even simple, well documented, evidence-based

Trust must exist among managers, staff, and the community

practices, such as the use of magnesium sulphate for eclampsia, continue to meet resistance in clinical practice in many countries. Why are midwives, nurses, and doctors in many parts of the world unaware of the appropriate interventions for averting maternal deaths, for providing basic HIV/AIDS counseling, for controlling infection? Why is there such ambiguity about and distrust of referral systems (Murray and Pearson 2004)? How can new evidence-based interventions, such as active management of the third stage of labor, trickle down from the WHO into the practices of rural midwives in Malawi?

The answers to these questions lie not just in the pieces of paper, manuals, posters, and booklets that outline norms and protocols. Rather, they lie in a broader notion of “operational systems”—the components that intersect to make a health system. Disseminating the latest international norms requires enlightened managers with good leadership skills who can adapt national guidelines to local contexts. It requires resources that flow in the directions needed and healthcare workers who are flexible and empowered to take up new knowledge, practices, and roles. Trust must exist between managers and staff and between staff and the community. Continuing education and supportive supervision must exist as a vehicle for conveying new information. Logistics for drug supply and referral mechanisms must be mapped out and functional. All of this depends on strong management guided by clear values and trust. Equity must be a guiding principle for those interpreting and implementing policies and deciding who, where, and what is prioritized. Ultimately, the health system must not be regarded as a static venue for delivering a set of interventions but, rather, a dynamic, interactive set of people, innovations, knowledge, and behaviors that, based on a set of guidelines, work to improve health, starting with those who need it most.

A health workforce to meet the Millennium Development Goals

The downward spiral of neglect that plagues so many health systems cannot be reversed without a fresh, long-term approach to creating a viable health workforce.²

Strengthening human resources is critical to ensuring inclusive and equitable health systems, for several reasons:

- Health workers—in sheer number, quality, and attitude—profoundly affect health outcomes and the ability to realize health goals (Martinez and Martineau 1998; Narasimhan and others 2004; Padarath and others 2003; Physicians for Human Rights 2004; USAID 2003). Studies indicate that the density of human resources for health, in particular nurses and doctors, is a significant determinant of variation in the rates of infant, under-five, and particularly maternal mortality across countries (Anand and Barnighausen 2004).
- Salaries for healthcare workers generally constitute the greatest share of the health budget, in some countries up to 75 percent. And healthcare workers

There is a failure to adopt a systemwide approach to addressing human resources in health

constitute a substantial share of the formal labor force in most countries. It is estimated that there are three or more uncounted healthcare workers, including informal, traditional, and community health workers, for every formally trained doctor or nurse (Joint Learning Initiative 2004).

- Healthcare workers' performance is a very tangible manifestation of the values and norms not only of the health system but of the government itself, setting, exemplifying, and promoting the health system's mission and core values. In many instances healthcare workers act as "street-level bureaucrats," with the power to interpret, implement, or sabotage health policies and programs (Gilson and Erasmus 2004).
- Healthcare workers manage all other resources within the health system, and they spearhead performance. The availability of healthcare workers is often the proven constraint to scaling up, limiting HIV/AIDS and tuberculosis treatment, immunization coverage, and other interventions (Mercer and others 2003; Physicians for Human Rights 2004). They determine the absorptive capacity of all other resources (Wyss 2004).
- Despite their importance, "stocks of human resources for health systems are small and in some countries emigration and HIV/AIDS are making it smaller" (Wagstaff and Claeson 2004, p. 111). Recent reports estimate a global shortage of healthcare workers at more than 4 million workers, with Sub-Saharan Africa alone short 1 million healthcare providers (Joint Learning Initiative 2004).

Despite these compelling reasons to focus on healthcare workers, there is a legacy of chronic underinvestment and a failure to adopt a systemwide approach to addressing human resources in health (Joint Learning Initiative 2004). Consequently, most governments and donors deal with different health workforce planning issues in isolation, resulting in patchy and unsustainable solutions (USAID 2003).

Three key problems affecting the health workforce

Three key problems associated with the health workforce have a broad impact on health systems and must be considered when planning an effective health workforce to meet the Goals:

Impact of internal and international migration of healthcare workers. Ironically, "[j]ust as drugs and funds are beginning to flow from the developed to the developing world, the exodus of trained healthcare workers is accelerating in the opposite direction" (Narasimhan and others 2004, p. 1471).

The brain drain of healthcare workers is hitting many developing countries hard, particularly in Sub-Saharan Africa. Half of medical school graduates from Ghana emigrate within 4.5 years of graduation, and 75 percent leave within 9.5 years (Lehmann and Sanders 2002). In South Africa more than 300 specialist

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nurses leave every month, many never to return (Physicians for Human Rights 2004). Nearly a third of the health workforce in the United Kingdom comes from other countries (EQUINET 2004). “Millions of healthcare workers are ‘acting with their feet,’ demonstrating their own response to weaknesses in the system by securing the personal ‘best options’ for themselves. While this responds to individual demands for security and well-being, it has costs to the healthcare workers, the primary and district level of health systems, the poorest populations and public health sectors in the south” (Padarath and others 2003, p. 4).

Factors driving the brain drain are complex and fundamentally linked to broader health system failures in both “recipient” and “donor” countries (box 4.1) (Physicians for Human Rights 2004). Pull factors include the failure of recipient countries to adequately address their own shortages of nurses and physicians, leading them to recruit from countries already suffering a deficit of qualified workers (Padarath and others 2003; Physicians for Human Rights 2004; USAID 2003). Push factors drive healthcare workers out of a country, and they also operate within a country, causing migration from rural to urban areas and from public to private practice. Skilled workers are also “siphoned off” to vertical programs and

Box 4.1
**A variety of
factors affects
the brain drain
of healthcare
workers**

Source: Padarath
and others 2003.

Push factors endogenous to the healthcare system

- Low remuneration levels
- Work-related risks, such as exposure to HIV/AIDS and tuberculosis
- Unrealistic work loads, as a result of inadequate human resource planning
- Poor infrastructure
- Suboptimal working conditions

Push factors exogenous to the healthcare system

- Crime
- High taxes
- Repressive political environments
- Falling service standards

Pull factors

- Aggressive recruitment
- Better quality of life
- Opportunities for study and specialization
- Better pay

“Stick factors” influencing decision not to emigrate

- Family ties
- Psychological links with home
- Migration costs
- Language and other social and cultural factors

“Stay factors” influencing decision to remain in recipient country

- Reluctance to disrupt family life and schooling
- Lack of employment opportunities in home country
- Higher standard of living in recipient country

HIV/AIDS has contributed to the shortage of health personnel

donor-driven projects, which offer higher status and higher salaries (Mackintosh 2003; Padarath and others 2003; Van Lerberghe and others 2002).

The drivers and characteristics of the health workforce crisis differ from place to place (Dussault and Dubois 2003; Egger, Lipson, and Adams 2000; Kowalewski and Jahn 2001; Padarath and others 2003; Wahba 2004; Wyss 2004; Zurn and others 2002). Imbalances in the workforce take many different forms. These include rural to urban migration; movement away from the public sector into the private sector, particularly in areas where the private sector is more developed (Padarath and others 2003); and imbalances and shortages of appropriate skills within and between different levels of care. A study in Tanzania found that every fourth task that required a skilled health professional was being performed by an unskilled worker (Wagstaff and Claeson 2004).

It is appropriate that skilled personnel concentrate at higher levels of the health system. Of greater equity concern are differences in the distribution of health personnel at the same level of care across districts. These differences are usually driven by inequalities in resource allocation to the districts (McIntyre and others 1995).

Impact of HIV/AIDS. HIV/AIDS has contributed to the shortage of health personnel in many rural and underserved areas, both directly and indirectly. It has caused attrition of HIV-infected healthcare workers and decreased job satisfaction, as services become unbearably stretched and palliative care squeezes out curative care. Healthcare workers face a triple burden from the epidemic—as workers, as patients, and as caregivers. Along with caring for HIV-positive patients at work, many female healthcare workers, like women throughout their countries, are apt to be caregivers for HIV-positive family members at home, and they are susceptible to the virus themselves (Jackson and others 2004). A recent study in South Africa showed an HIV prevalence of 20 percent among younger healthcare workers (Physicians for Human Rights 2004; Shisana and others 2004); in 1997 Malawi lost the equivalent of 44 percent of the nurses it trains in a year to AIDS (Hongoro and McPake 2004). Better training programs that incorporate information on HIV/AIDS treatment and support; flexible work schemes; succession planning (where feasible, from within the same household); support services; and plans to treat people infected with HIV are urgently required (Lehmann and Sanders 2002).

Impact of labor and civil service “reforms.” Public sector healthcare workers belong to the civil service and thus have been subject to all of the human resource policies introduced as part of public sector reforms (ILO and WHO 2003; Physicians for Human Rights 2004; USAID 2003). As part of overall structural adjustment policies, health reforms imposed ceilings on staff numbers and salaries while capping investment in higher education and training. “Two decades of health sector ‘mis-reforms’ treated healthcare workers as a

**Strategic health
workforce
development
requires building
a “strong
action coalition
across all
stakeholders”**

cost burden, not an asset” (Joint Learning Initiative 2004, p. 20). Civil service reforms have had a particularly devastating effect on skilled and experienced healthcare workers in Sub-Saharan Africa, where cuts were skill neutral, focused on reducing absolute numbers rather than retaining the most experienced, skilled personnel (USAID 2003). Beyond sheer numbers, civil service restrictions disallowed important financial and nonfinancial incentives for doctors and nurses who agreed to work in remote rural areas (USAID 2003). Even for those who stayed in the civil service, salaries were often reduced and liberalization of medical practice pushed civil servants into private practice, segmenting the health market and further reducing access of poor people to healthcare.

Proactive health workforce planning is needed to create an inclusive and equitable health system

To meet these challenges a major shift in approaches to human resource planning and management is required. Healthcare workers can no longer be seen as simply cogs in the system, delivering discrete interventions. Instead, the task force advocates proactive health workforce planning and management requiring strong leadership and collaboration with key stakeholders. Plans based on a clear understanding of the nature and distribution of the health workforce must align with the goals and values of the health system and seek innovative solutions to particular problems. Attention to the livelihoods and respect for the rights of healthcare workers must inform planning and management of healthcare workers, particularly if significant inroads are to be made to stanch the brain drain. Supportive systems and policies are required to reinforce this approach; they should also motivate workers. Finally, global players need to support rather than undermine these processes.

The goal is a health workforce that ensures quality care, collaborates across services and sectors, is receptive to the needs of clients, and strengthens equitable health systems.

Strong leadership and collaboration with key stakeholders. Strong, legitimate government with the political will and public commitment to strategic health workforce development is central to the crafting and implementation of health and development policies. This is an inherently “political exercise that goes beyond technical activities and calls for a process of exchange and negotiation between various interest groups” (Dussault and Dubois 2003, p. 8). It requires the building of a “strong action coalition across all stakeholders” (Joint Learning Initiative 2004, p. 5). Professional associations must be engaged, leadership in key fields like nursing and midwifery must be supported, parliamentary committees on healthcare workers must be fostered, and political ingenuity among stakeholders that is directed toward change must be rewarded (Chamberlain and others 2003; Schiffman 2003). In addition, public involvement

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demand equity-
oriented action**

must be bolstered to demand equity-oriented action and dilute the power of factions resisting change.

Strategies to “delegate” specialist functions to another level of health provider are often resisted by specialists. The doctor-dominated Health Professions Council in Zimbabwe, for example, has denied nurses the right to prescribe drugs privately, even though they do so in the public sector (Bloom and Standing 2001). The hierarchy within nursing is pronounced and formidable (Bloom and Standing 2001). Registered nurses’ lobbies in Ghana, Kenya, Malawi, and Zambia strongly resisted and ultimately banned attempts to create “enrolled nurses,” who have less training than registered nurses (Dovlo 2004). But such opposition is not universal. In India, for example, in order to make emergency obstetric care more widely available, the Federation of Obstetric and Gynecology Societies of India (a national association of some 20,000 obstetricians and gynecologists) has taken up an initiative to train nonspecialist doctors (medical officers) in providing emergency obstetric care, including cesarean section. The government of India welcomed this initiative, which it plans to support (India, Ministry of Health and Family Welfare 2004).

Expanded cadre of mid-level workers. In many countries achieving equity in the distribution of healthcare workers will require a significant number of additional skilled professionals. Given the cost and long lead time to train physicians (as well as the diminished ability of many developing countries to retain them in the public sector), countries have two viable ways to obtain more skilled staff. The first is a massive scale-up in the training and deployment of nurses and midwives, together with an expansion of their scope of practice, including the right to diagnose, prescribe, and dispense medication. In many countries nurses’ skills have been upgraded to allow them to perform surgical procedures and administer anesthesia (Dickinson 2003; Kowalewski and Jahn 2001).

The second, often complementary, option is to develop “alternative” or “substitute” healthcare workers. In some developing countries bold measures have been taken to ensure that the structure of the health workforce meets the true needs of the people. The “scope of practice” of the health workforce, previously modeled on the structure of the health workforce in developed countries, is now being adapted to reflect local demands. Substitute cadres typically have less academic training, including shorter preservice training. But in some settings they can perform clinical tasks at a level equivalent to nurses and physicians (Dovlo 2004; Kowalewski and Jahn 2001; Rana and others 2003; Thairu and Schmidt 2003; Vaz and others 1999). The appeal of using alternative cadres is the cost savings, the shorter period needed for training, and the potential for better and wider distribution to a population in need. Country-specific alternative cadres are also less likely to find employment in the international labor market, because their job titles and qualifications are not internationally recognized (Dovlo 2004). They may therefore be less likely to emigrate. Any

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strategy to use alternative cadres must include plans for monitoring, evaluating, supervising, and regulating these cadres to ensure high-quality care and to protect patients' and workers' rights.

Focus on skilled birth attendants. No human resource plan should be considered complete without explicit attention to the training, accreditation, deployment, supervision, and monitoring of skilled birth attendants. Too often the need for and unique characteristics of this type of worker are missing from international and national agendas (WHO 2002c).

In maternal and reproductive health, alternative cadres have been used to deliver critical services effectively. Evidence has shown that nonphysician teams can be trained to undertake functions at the first referral level, including emergency operations (Kowalewski and Jahn 2001). Paraprofessionals have been trained to perform cesarean sections in Burkina Faso and Mozambique, provide anesthesia in a few African countries, and perform sterilizations in Bangladesh and India. Mid-level providers have been trained to provide abortion and postabortion services, including manual vacuum aspiration in Kenya, South Africa, and Uganda (Dickson-Tetteh and others 2000; Kiggundu 1999; Yumkella and Githiori 2000). In Ethiopia, Nepal, and Tanzania midwives provide all basic emergency obstetric functions.

Whether skilled attendants are based in the community or in a facility, their ability to manage the complications that kill women depends on their ability to access a functioning health system. Desperately needed initiatives to expand the number of skilled attendants must therefore be linked to and properly sequenced with initiatives to strengthen the health system (especially emergency obstetric care services) and improve workforce policies. The converse is also true: health system and health workforce strategies must give careful attention to the unique role of skilled attendants.

Long-term investments in the health workforce. While the training of mid-level and substitute workers are medium-term investments, sustainable long-term investments in health workforce development require the adoption of an "education pipeline" approach. This approach focuses on the country's basic and secondary educational systems, ensuring that sufficient numbers of students with a solid secondary-level education go on to become health professionals.

The perennial lack of healthcare workers in rural areas suggests that training programs must select and recruit people who reflect the demographics of the people most in need of care. In many places this means recruiting ethnic minorities and people with rural backgrounds (Wyss 2004). It may also mean that training institutions are best situated in rural communities.

To this end, it is essential that the ministries of education and finance be part of human resource planning. Maternal and child health can be the losers when ministry of education priorities are at odds with those of the ministry of

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health. In Uganda, for example, health training institutes are under the purview of the ministry of education and a bias toward general medical practitioners does not match the desperate need for nurse-midwives (Ssengooba, Oliveira-Cruz, and Pariyo 2004). In addition, the literature implies that ministry of education jurisdiction over tertiary educational institutions may be skewing the supply of health professionals away from primary healthcare (Dovlo 2004).

Finally, strengthening the health workforce requires a long-term investment in information and management systems to effectively monitor the health workforce dynamics—distribution, trends, pay differentials between cadres, posting and transfer mechanisms, and information on vacancies. Comprehensive human resource management systems must include qualitative monitoring and evaluation using clinical audits, healthcare workers' assessments of their working environment, evaluation of the referral system, monitoring of the level and reasons for brain drain, and clear evaluations of career paths. More detailed analyses, such as the WHO's Workload Indicators of Staffing Need tool, which allows finer tuning of the exact number and skill mix of staff in each district and health center, have been used with success in Papua New Guinea, Tanzania, and elsewhere (WHO 1998).

Focus on the human rights and livelihoods of healthcare workers. Given the massive migration of healthcare workers, the impact of HIV/AIDS, and deep dissatisfaction with working environments, a plan for the health workforce must start with a focus on the human rights and livelihoods of healthcare workers themselves. Governments must ensure a viable career in the health sector, for both men and women—one with proper accreditation, training, continuing education, opportunities for promotion, and livable wages. Rwanda's effort to place healthcare workers at the front of the queue for antiretroviral treatment represents a proactive approach to protecting healthcare workers (Rwanda, Ministry of Health 2003).

In most countries, the majority of frontline workers, especially nurses and midwives, are women. The pressures that confront women workers stem from deeper social dynamics, such as gender hierarchies and class structures. These issues cannot be addressed immediately, but the specific expression of those dynamics within the clinical setting—such as sexual harassment—can (Mumtaz and others 2003). Gender-sensitive career paths (allowing women to move in and out of the labor market), personal security, nondiscrimination in working conditions, and promotions are essential to any systemic human resources plan.

Many of the problems experienced by healthcare workers as a whole are particularly acute for community health workers, whose livelihoods and rights are often overlooked. These workers are usually trained but seldom retrained; they work as volunteers or are given small, irregular allowances; they receive little supervision; and they have almost no job security, as any commitment to

A systemic approach requires a careful rethinking of motivation and incentives that affect performance

them ends as abruptly as does the donor funding (Flores and McCoy 2004; USAID 2003). Yet the literature is clear that “adequate and sustained remuneration is essential to maintain the interest of the Community Health Worker and to ensure the stability of a program” (Lehmann, Friedman, and Sanders 2004, p. 25). Adequate training and supervision are also critically important to the sustainability of community health worker programs; a poorly managed program disconnected from a strong health system may well do more harm than good (Bloom and Standing 2001). Unsupported, community health workers may become involved in predatory practices, setting up in the private sector to offer services they are not trained or competent to provide or demanding informal fees in the public sector for services that are meant to be free (Pangu 2000).

Rethinking the motivation and incentive mechanisms. Moving from a dry culture of personnel administration to a systemic approach to sustaining a health workforce requires a careful rethinking of motivation and incentives that affect performance. If the “most precious possession of any health service is the dedication and inner motivation of its healthcare workers,” then the health system must nurture their ability to exercise that dedication and inner motivation (Pangu 2000; Segall 2000a, p. 62). Too often healthcare workers are paid too little (or too infrequently) to have their employment in the public sector count as a viable career. As a result, they turn to moonlighting in the private sector (Pangu 2000; Physicians for Human Rights 2004; Segall 2000b; USAID 2003). The evidence on coping strategies used by healthcare workers is a testament to the depth of the problem, including the negative impact of such strategies on provider-client trust and worker morale (Ferrinho and others 2004; Van Lerberghe and others 2002). In addition, failure to address nonmonetary incentives—such as having adequate supplies, running electricity, and water in the health clinic and sufficient staff to reduce workloads—contributes to low morale and reduces the motivation to solve problems and provide responsive services (Mackintosh 2003; McCoy and others 2004).

Various approaches have been proposed to provide incentives and reward performance. A number of countries have moved toward results-oriented management and performance management, with mixed results. Linking pay, bonuses, and other financial incentives to individual performance depends on the ability to measure clearly delineated outputs. But measuring health outputs is extremely complex and not without problems (Ssenooba, Oliveira-Cruz, and Pariyo 2004). False reporting, skewing of management focus to ensure good output measures, increased competition among colleagues, and lack of monitoring capacity reduce the potential effectiveness of this approach. In contrast, cooperative behavior can be stimulated when incentives are shared by staff. Studies of the Republic of Korea and Taiwan (China) suggest that groupwide incentives work well for public health staff (Khaleghian and Das Gupta 2004).

Solving the problems of the health workforce in poor countries is a global responsibility

Nonmonetary incentives include ongoing training and education (Bloom and Standing 2001; Physicians for Human Rights 2004; UNAIDS 2003), as well as more rapid advancement within careers and public acknowledgment of service (Kowalewski and Jahn 2001). Accreditation and membership in professional associations are also important means of improving motivation and incentives that are often lacking for professions such as midwifery.

Also important are the “software” issues of motivating and retaining staff. These include ensuring an organizational culture that is supportive, encourages dialogue, and gives voice to front-line workers who implement systems changes (Penn-Kekana, Blaauw, and Schneider 2004).

Greater accountability of global players. Solving the problems of the health workforce in poor countries is a global responsibility. Donors must shift toward funding long-term investments rather than providing short-term, front-end input into specialized training programs. They should commit to funding health programs that are located within the health system rather than vertical programs that siphon off skilled healthcare workers. All parties should be open to new thinking about the health workforce, including new ideas about the kind of worker most suited to handle the health issues in each developing country (Biscoe 2001; USAID 2003).

Donors and governments alike must look outside the health sector to determine how civil service policies, including IMF conditionalities on such policies, affect the health workforce. The IMF and World Bank must encourage countries to use Poverty Reduction Strategy Papers and medium-term expenditure frameworks to promote the cross-sectoral work of human resource planning.

While country-level commitment to follow-through on strengthening the health workforce is critical, even poor countries with strong human resource policies have porous boundaries, allowing exit by skilled personnel to “greener pastures” and entrance for privatizing forces that threaten to further dismantle public systems. Rich countries must examine the ways in which their own policies contribute to dangerous imbalances.

Clearly, global leadership, technical assistance, and coordinated development assistance are needed to create a new vision for healthcare workers in the poorest regions of the world. In particular, the unique role of the skilled birth attendant must be explicitly included in the emerging international reckoning on the crisis in the global health workforce. Currently, the global human resource initiatives, the safe motherhood community, and the WHO do not speak with a unified voice on this issue. Disappointingly, a recent World Bank publication on strengthening health systems in order to meet the Millennium Development Goals points to the importance of human resources but does not identify the specific healthcare workers essential to reducing maternal and neonatal mortality (World Bank 2003b). And the Joint Learning Initiative on human resources for health and development does not emphasize the need for

skilled birth attendants (Joint Learning Initiative 2004). These critical strands of global discourse must be unified if real change is to occur on the ground. Thus any initiative—regional, national, or global—that addresses the health workforce or human resource development in keeping with the priorities set by the Goals must include a particular emphasis on pregnancy and delivery care and the skilled birth attendant.