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mothers and children matter – so does their health

The healthy future of society depends on the health of the children of today and their mothers, who are guardians of that future. However, despite much good work over the years, 10.6 million children and 529 000 mothers are still dying each year, mostly from avoidable causes. This chapter assesses the current status of maternal and child health programmes against their historical background. It then goes on to examine in more detail the patchwork of progress, stagnation and reversals in the health of mothers and children worldwide and draws attention to the previously underestimated burden of newborn mortality.

Most pregnant women hope to give birth safely to a baby that is alive and well and to see it grow up in good health. Their chances of doing so are better in 2005 than ever before – not least because they are becoming aware of their rights. With today's knowledge and technology, the vast majority of the problems that threaten the world's mothers and children can be prevented or treated. Most of the millions of untimely deaths that occur are avoidable, as is much of the suffering that comes with ill-health. A mother's death is a tragedy unlike others, because of the deeply held feeling that no one should die in the course of the normal process of reproduction and because of the devastating effects on her family (1). In all cultures, families and communities acknowledge the need to care for mothers and children and try to do so to the best of their ability.

An increasing number of countries have succeeded in improving the health and well-being of mothers, babies and children in recent years,

with noticeable results. However, the countries with the highest burden of mortality and ill-health to start with made little progress during the 1990s. In some, the situation has actually worsened in recent years. Progress has therefore been patchy and unless it is accelerated significantly, there is little hope of reducing maternal mortality by three quarters and child mortality by two thirds by the target date of 2015 – the targets set by the Millennium Declaration (2, 3).

In too many countries the health of mothers and children is not making the progress it should. The reasons for this are complex and vary from one country to another. They include the familiar, persistent enemies of health – poverty, inequality, war and civil unrest, and the destructive influence of HIV/AIDS – but also the failure to

translate life-saving knowledge into effective action and to invest adequately in public health and a safe environment. This leaves many mothers and children, particularly the poorest among them, excluded from access to the affordable, effective and responsive care to which they are entitled.

For centuries, care for childbirth and young children was regarded as a domestic affair, the realm of mothers and midwives. In the 20th century, the health of mothers and children was transformed from a purely domestic concern into a public health priority with corresponding responsibilities for the state. In the opening years of the 21st century, the Millennium Development Goals place it at the core of the struggle against poverty and inequality, as a matter of human rights. This shift in emphasis has far-reaching consequences for the way the world responds to the very uneven progress in different countries.

THE EARLY YEARS OF MATERNAL AND CHILD HEALTH

The creation of public health programmes to improve the health of women and children has its origins in Europe at the end of the nineteenth century. With hindsight, the reasons for this concern look cynical: healthy mothers and children were seen by governments at that time to be a resource for economic and political ambitions. Many of Europe's politicians shared a perception that the ill-health of the nation's children threatened their cultural and military aspirations (4). This feeling was particularly strong in France and Britain, which had experienced difficulties in recruiting soldiers fit enough for war. Governments saw a possible solution in the pioneering French experiments of the 1890s, such as Léon Dufour's *Goutte de lait* (drop of milk) clinics and Pierre Budin's *Consultations de nourrissons* (infant welfare clinics) (5). These programmes offered a scientific and convincing way to produce healthy children who would become productive workers and robust soldiers. The programmes also increasingly found support in the emerging social reform and charitable movements of the time. As a result, all industrialized countries and their colonies, as well as Thailand and many Latin American countries, had instituted at least an embryonic form of maternal and infant health services by the onset of the 20th century (6). The First World War accelerated the movement. Josephine Baker, then Chief of the Division of Child Hygiene of New York, summed it up as follows:

One of the first maternal and child health clinics, in the late 19th century, was 'L'Œuvre de la goutte de lait': Dr Variot's consultation at the Belleville Dispensary, Paris.



“It may seem like a cold-blooded thing to say, but someone ought to point out that the World War was a back-handed break for children ... As more and more thousands of men were slaughtered every day, the belligerent nations, on whatever side, began to see that new human lives, which could grow up to replace brutally extinguished adult lives, were extremely valuable national assets. [The children] took the spotlight as the hope of the nation. That is the handsomest way to put it. The ugliest way – and, I suspect, the truer – is to say flatly that it was the military usefulness of human life that wrought the change. When a nation is fighting a war or preparing for another ... it must look to its future supplies of cannon fodder” (7).

Caring for the health of mothers and children soon gained a legitimacy of its own, beyond military and economic calculations. The increasing involvement of a variety of authorities – medical and lay, charitable and governmental – resonated with the rising expectations and political activism of civil society (1). Workers’ movements, women’s groups, charities and professional organizations took up the cause of the health of women and children in many different ways. For example, the International Labour Organization proposed legal standards for the protection of maternity at work in 1919; the *New York Times* published articles on maternal mortality in the early 1930s; and in 1938 the Mothers’ Charter was proclaimed by 60 local associations in the United Kingdom. Backed by large numbers of official reports, maternal and child health became a priority for ministries of health. Maternal and child health programmes became a public health paradigm alongside that of the battle against infectious diseases (8).

These programmes really started to gain ground after the Second World War. Global events precipitated public interest in the roles and responsibilities of governments, and the Universal Declaration of Human Rights in 1948 by the newly formed United Nations secured their obligation to provide “special care and assistance” for mothers and children (9). This added an international and moral dimension to the issue of the health of mothers and children, representing a huge step forward from the political and economic concerns of 50 years earlier.

One of the core functions assigned to the World Health Organization (WHO) in its Constitution of 1948 was “to promote maternal and child health and welfare” (10). By the 1950s, national health plans and policy documents from development agencies invariably stressed that mothers and children were vulnerable groups and therefore priority “targets” for public health action. The notion of mothers and children as vulnerable groups was also central to the primary health care movement launched at Alma-Ata (now Almaty, Kazakhstan) in 1978. This first major attempt at massive scaling up of health care coverage in rural areas boosted maternal and child health programmes by its focus on initiatives to increase immunization coverage and to tackle malnutrition, diarrhoea and respiratory diseases. In practice, child health programmes were usually the central – often the only – programmatic content of early attempts to implement primary health care (11).

WHERE WE ARE NOW: A MORAL AND POLITICAL IMPERATIVE

The early implementation of primary health care often had a narrow focus, but among its merits was the fact that it laid the groundwork for linking health to development and to a wider civil society debate on inequalities. The plight of mothers and children soon came to be seen as much more than a problem of biological vulnerability. The 1987 Call to Action for Safe Motherhood explicitly framed it as “deeply rooted in the adverse social, cultural and economic environments of society, and especially the environment

that societies create for women” (12). Box 1.1 recalls some important milestones in establishing the rights of women and children.

In this more politicized view, women’s relative lack of decision-making power and their unequal access to employment, finances, education, basic health care and other resources are considered to be the root causes of their ill-health and that of their children. Poor nutrition in girls, early onset of sexual activity and adolescent pregnancy all have consequences for well-being during and after pregnancy for both mothers and children. Millions of women and their families live in a social environment that works against seeking and enjoying good health. Women often have limited exposure to the education, information and new ideas that could spare them from repeated childbearing and save their lives during childbirth. They may have no say in decisions on whether to use contraception or where to give birth. They may be reluctant to use health services where they feel threatened and humiliated by the staff, or pressured to accept treatments that conflict with their own values and customs (13). Poverty, cultural traditions and legal barriers restrict their access to financial resources, making it even more difficult to seek health care for themselves or for their children. The unfairness of this situation has made it obvious that the health of mothers and children is an issue of rights, entitlements and day-to-day struggle to secure these entitlements.

The shift to a concern for the rights of women and children was accelerated by the International Conference on Population and Development, held in Cairo, Egypt, in

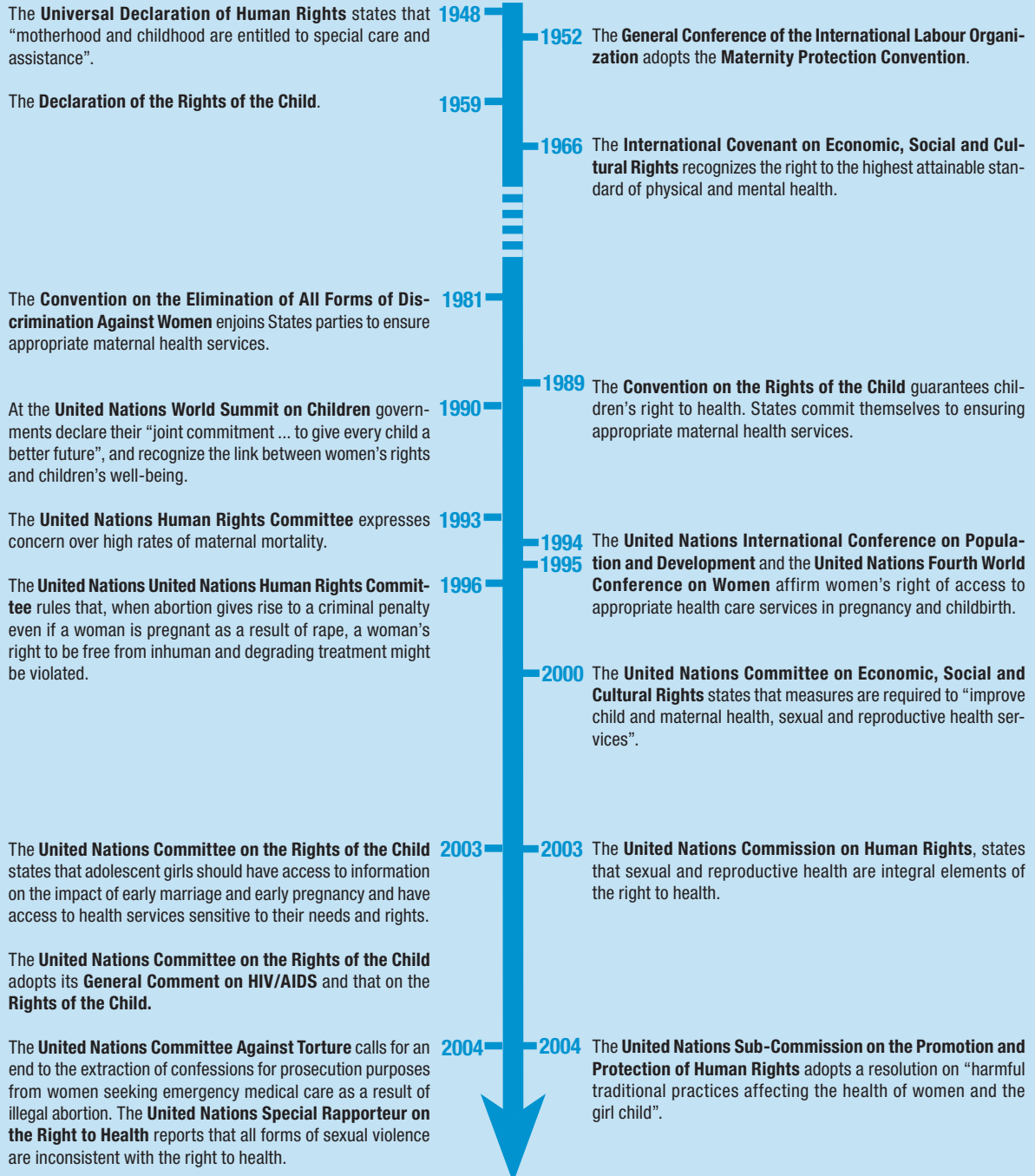


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Child health programmes were central to early attempts to implement primary health care. Here a community nurse in Thailand watches as a mother weighs her baby.

Box 1.1 Milestones in the establishment of the rights of women and children

In the 20th century several international treaties came into being, holding signatory countries accountable for the human rights of their citizens. Over the past two decades United Nations bodies, as well as international, regional and national courts, have increasingly focused on the human rights of mothers and children.



1994. The conference produced a 20-year plan of action that focused on universal access to reproductive health services (of which maternal and child health care became a subset), which was grounded in individual choices and rights. This change in perspective is important, because it alters the rationale for investing in the health of mothers and children.

Today, more is known than ever before about what determines the health of women and children and about which interventions bring about improvements most cost-effectively. This knowledge makes investment more successful, and withholding care even less acceptable. The health of mothers and children satisfies the classical criteria for setting public health priorities (see Box 1.2). Compelling as these arguments may be, however, they miss two vital points.

Box 1.2 Why invest public money in health care for mothers and children?

Modern states guarantee health entitlements for mothers, newborns and children that are grounded in human rights conventions. Ensuring them access to care has become a moral and political imperative, which also has a strong rational basis.

From a public health point of view an important criterion for priority setting and public funding is that cost-effective intervention packages exist. Such packages are well documented in the case of maternal and child health (14, 15). But cost-effectiveness is only one of the criteria for public investment. Others commonly used include: the generation of positive externalities; the production of public goods and the rule of rescue; and the potential to increase equity and avoid catastrophic expenditure (16). Any of these criteria can be a sufficient condition for public investment on its own. When more than one is present, as in maternal and child health interventions, the case for public funding is even stronger.

Health care for mothers and children produces obvious positive externalities through vaccination or the treatment of the infectious diseases of childhood, and through the improved child health that follows improvement of maternal health. There has been little systematic research on the human, social and economic capital generated by improving the health of mothers and children, but the negative externalities of ill-health are clear.

The health of mothers is a major determinant of that of their children, and thus indirectly affects the formation of human capital. Motherless children die more frequently, are more at risk of becoming malnourished and less likely to enrol at school (17, 18). The babies of ill or undernourished pregnant women are more likely to have a low birth weight (19–21) and impaired development (19, 22–24). Low-

birth-weight children in turn are at greater risk of dying and of suffering from infections and growth retardation (25), have lower scores on cognitive tests (26–28) and may be at higher risk of developing chronic diseases in adulthood (29, 30).

Healthy children are at the core of the formation of human capital. Child illnesses and malnutrition reduce cognitive development and intellectual performance (31–33), school enrolment and attendance (34, 35), which impairs final educational achievement. Intrauterine growth retardation and malnutrition during early childhood have long-term effects on body size and strength (36, 37) with implications for productivity in adulthood.

In addition, with the death or illness of a woman, society loses a member whose labour and activities are essential to the life and cohesion of families and communities. Healthy mothers have more time and are more available for the social interaction and the creation of the bonds that are the prerequisite of social capital. They also play an important social role in caring for those who are ill.

The economic costs of poor maternal and child health are high (38); substantial savings in future expenditure are likely through family planning programmes (39, 40) and interventions that improve maternal and child health in the long term. Consequent gains in human and social capital translate into long-term economic benefits (41). There is evidence of economic returns on investment in immunization (42), nutrition programmes (41, 43), interventions to reduce low birth weight (36), and integrated health and social development programmes (44, 45).

Maternal and child health programmes are also prime candidates for public funding because they produce public goods. Although many

maternal and child health interventions can be classified as private goods, a comprehensive programme also includes components such as information on contraception, on sexual health and rights, on breastfeeding and child care, that are obvious public goods. Moreover, the rule of rescue, which gives priority to interventions that save lives, applies to many maternal and child health interventions.

Finally, public funding for maternal and child health care is justified on grounds of equity. Motherhood and childhood are periods of particularly high vulnerability that require “special care and assistance” (19); they are also periods of high vulnerability because women and children are more likely to be poor. Although systematic documentation showing that they are overrepresented among the poor is scarce (46), women are more likely to be unemployed, to have lower wages, less access to education and resources and more restricted decision-making power, all of which limit their access to care. Public investment in maternal and child health care is justified in order to correct these inequities.

In addition, where women and children represent a large proportion of the poor, subsidizing health services for them can be an effective strategy for income redistribution and poverty alleviation (14). Ill-health among mothers and children, and particularly the occurrence of major obstetric problems, is largely unpredictable and can lead to catastrophic expenditures (47) that may push households into poverty. The risk of catastrophic expenditures is often a deterrent for the timely uptake of care – a major argument, technically and politically, for public investment.

First, children are the future of society, and their mothers are guardians of that future. Mothers are much more than caregivers and homemakers, undervalued as these roles often are. They transmit the cultural history of families and communities along with social norms and traditions. Mothers influence early behaviour and establish lifestyle patterns that not only determine their children's future development and capacity for health, but shape societies. Because of this, society values the health of its mothers and children for its own sake and not merely as a contribution to the wealth of the nation (48).

Second, few consequences of the inequities in society are as damaging as those that affect the health and survival of women and children. For governments that take their function of reducing inequality and redistributing wealth seriously, improving the living conditions and providing access to health care for mothers and children are good starting points. Improving their health is at the core of the world's push to reduce poverty and inequality.

MOTHERS, CHILDREN AND THE MILLENNIUM DEVELOPMENT GOALS

In his report to the Millennium Summit, the Secretary-General of the United Nations, Kofi Annan, called on “the international community at the highest level – the Heads of State and Government convened at the Millennium Summit – to adopt the target of halving the proportion of people living in extreme poverty, and so lifting more than 1 billion people out of it, by 2015” (49). He further urged that no effort be spared to



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reach this target by that date in every region, and in every country. The Millennium Declaration (50), coming after a decade of “unprecedented stagnation and deterioration” (51), set out eight specific Millennium Development Goals (MDGs), each with its numerical targets and indicators for monitoring progress. The MDGs galvanized countries and the international community in a global partnership that, for the first time, articulated a commitment by both rich and poor countries to tackle a whole range of dimensions of poverty and inequality in a concerted and integrated way.

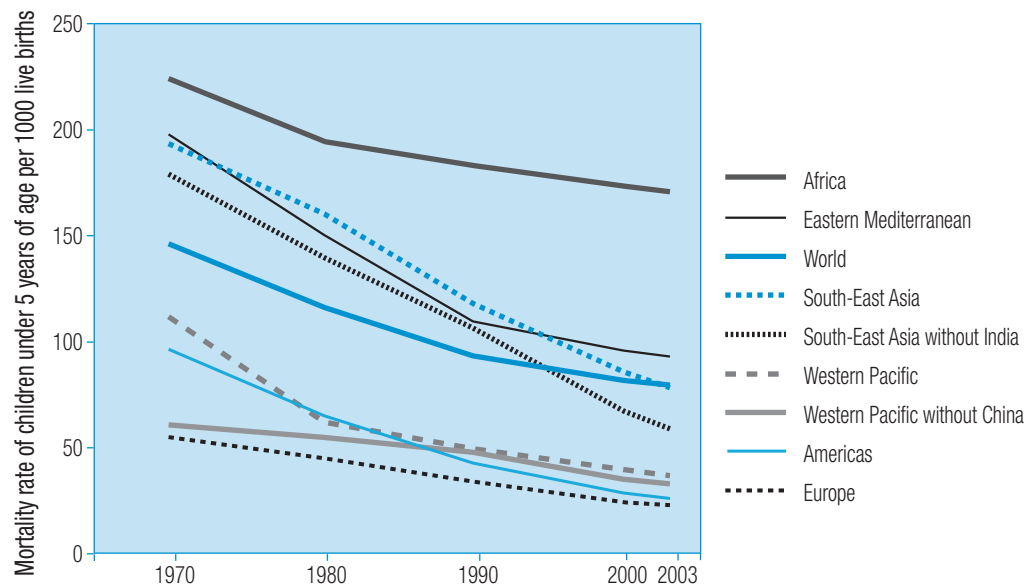
The health agenda is very much in evidence in the MDGs: it is explicit in three of the eight goals, eight of the 18 targets, and 18 of the 48 indicators. This emphasis on health reflects a global consensus that ill-health is an important dimension of poverty in its own right. Ill-health contributes to poverty. Improving health is a condition for poverty alleviation and for development. Sustainable improvement of health depends on successful poverty alleviation and reduction of inequalities.

It is no accident that the formulation of the MDG targets and indicators reveals the special priority given to the health and well-being of women, mothers and children. Mother and child health is clearly on the international agenda even in the absence of universal access to reproductive health services as a specific Millennium Development Goal. Globally, we are making progress towards the MDGs in maternal and child health. Success is overshadowed, however, by the persistence of an unacceptably high mortality and the increasing inequity in maternal and child health and access to health care worldwide.

UNEVEN GAINS IN CHILD HEALTH

Being healthy means much more than merely surviving. Nevertheless, the mortality rates of children under five years of age provide a good indicator of the progress made – or the tragic lack of it. Under-five mortality rates fell worldwide throughout the latter part of the 20th century: from 146 per 1000 in 1970 to 79 per 1000 in 2003. Since 1990, this rate has dropped by about 15%, equating to more than two million lives

Figure 1.1 Slowing progress in child mortality: how Africa is faring worst



saved in 2003 alone. Towards the turn of the millennium, however, the overall downward trend was showing signs of slowing. Between 1970 and 1990, the under-five mortality rate dropped by 20% every decade; between 1990 and 2000 it dropped by only 12% (see Figure 1.1).

The global averages also hide important regional differences. The slowing down of progress started in the 1980s in the WHO African and Western Pacific Regions, and during the 1990s in the Eastern Mediterranean Region. The African Region started out at the highest levels, saw the smallest reductions (around 5% by decade between 1980 and 2000) and the most marked slowing down. In contrast, progress continued or accelerated in the WHO Region of the Americas, and the South-East Asia and European Regions.

The result is that the differences between regions are growing. The under-five mortality rate is now seven times higher in the African Region than in the European Region; the rate was “only” 4.3 times higher in 1980 and 5.4 times higher in 1990. Child deaths are increasingly concentrated in the African Region (43% of the global total in 2003, up from 30% in 1990). As 28% of child deaths still occur in South-East Asia, two of the six WHO regions – Africa and South-East Asia – account for more than 70% of all child deaths. Looking at it another way, more than 50% of all child deaths are concentrated in just six countries: China, the Democratic Republic of the Congo, Ethiopia, India, Nigeria and Pakistan.

The fortunes of the world’s children have also been mixed in terms of their nutritional status. Overall, children today are better nourished: between 1990 and 2000 the global prevalence of stunting and underweight declined by 20% and 18%, respectively. Nevertheless, children across southern and central Asia continue to suffer very high levels of malnutrition, and throughout sub-Saharan Africa the numbers of children who are stunted and underweight increased in this period (52).

THE NEWBORN DEATHS THAT WENT UNNOTICED

If further progress is to be made in reducing child mortality, increased efforts are needed to bring about a substantial reduction in deaths among newborns. The first global estimates of neonatal mortality, dating from 1983 (53), were derived using historical data and are generally considered to give only a rough indication of the magnitude of the problem. More rigorous estimates became available for 1995 and for 2000. These are based on national demographic surveys as well as on statistical models. The new estimates show that the burden of newborn mortality is considerably higher than many people realize.

Each year, about four million newborns die before they are four weeks old: 98% of these deaths occur in developing countries. Newborn deaths now contribute to about 40% of all deaths in children under five years of age globally, and more than half of infant mortality (54, 55). Rates are highest in sub-Saharan Africa and Asia. Two thirds of newborn deaths occur in the WHO Regions of Africa (28%) and South-East Asia (36%) (56). The gap between rich and poor countries is widening: neonatal mortality is now 6.5 times lower in the high-income countries than in other countries. The lifetime risk for a woman to lose a newborn baby is now 1 in 5 in Africa, compared with 1 in 125 in more developed countries (57).

The above figures do not include the 3.3 million stillbirths per year. Data on stillbirths are even more scarce than those on newborn deaths. This is not surprising, as only 14% of births in the world are registered. Both live births and deaths of newborns go underreported; fetal deaths are even more likely to go unreported, particularly early fetal deaths.

While the burden of neonatal deaths and stillbirths is very substantial, it is in many ways only part of the problem, as the same conditions that contribute to it also cause severe and often lifelong disability. For example, over a million children who survive birth asphyxia each year develop problems such as cerebral palsy, learning difficulties and other disabilities (58). For every newborn baby who dies, at least another 20 suffer birth injury, infection, complications of preterm birth and other neonatal conditions. Their families are usually unprepared for such tragedies and are profoundly affected.

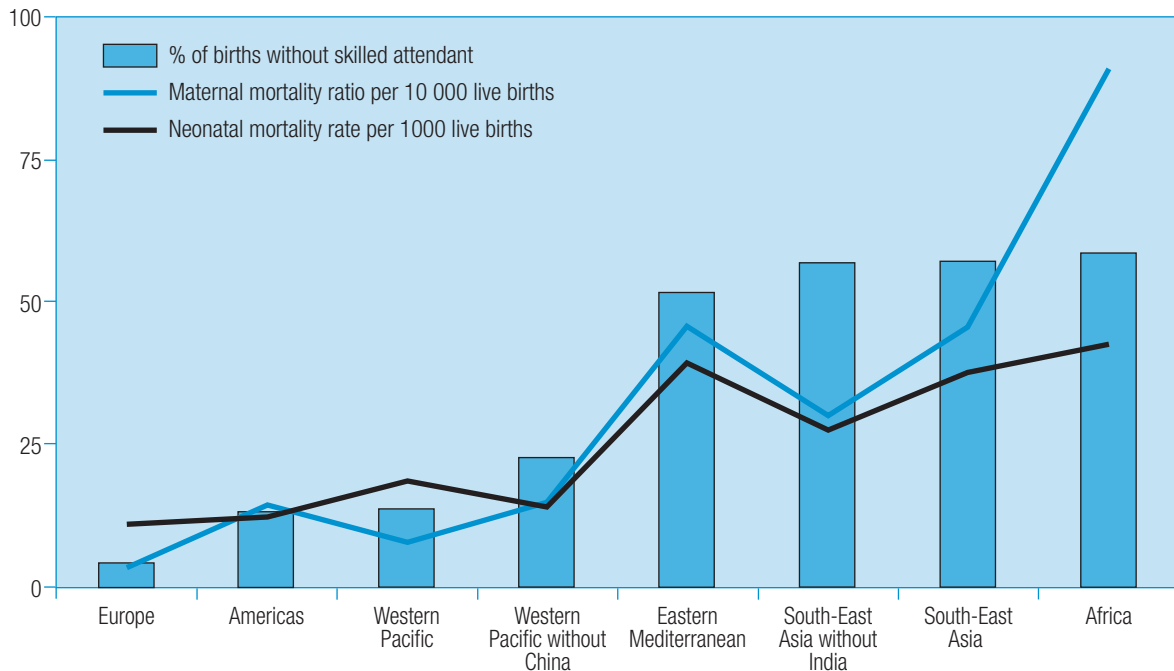
The health and survival of newborn children is closely linked to that of their mothers. First, because healthier mothers have healthier babies; second, because where a mother gets no or inadequate care during pregnancy, childbirth and the postpartum period, this is usually also the case for her newborn baby. Figure 1.2 shows that both mothers and newborns have a better chance of survival if they have skilled help at birth.

FEW SIGNS OF IMPROVEMENT IN MATERNAL HEALTH

Pregnancy and childbirth and their consequences are still the leading causes of death, disease and disability among women of reproductive age in developing countries – more than any other single health problem. Over 300 million women in the developing world currently suffer from short-term or long-term illness brought about by pregnancy and childbirth; 529 000 die each year (including 68 000 as a result of an unsafe abortion), leaving behind children who are more likely to die because they are motherless (59).

There have been few signs of global improvement in this situation. However, during the 1960s and 1970s, some countries did reduce their maternal mortality by half over

Figure 1.2 Neonatal and maternal mortality are related to the absence of a skilled birth attendant



a period of 10 years or less. A few countries such as Bolivia and Egypt have managed this in more recent years. Other countries appear to have suffered reversals (see Box 1.3). Recent success stories in maternal health are less often heard than those for child health. This is partly because it takes longer to show results, partly because changes in maternal mortality are much more difficult to measure with the sources of information available at present.

Today, predictably, most maternal deaths occur in the poorest countries. These deaths are most numerous in Africa and Asia. Less than 1% of deaths occur in high-income countries. Maternal mortality is highest by far in sub-Saharan Africa, where the lifetime risk of maternal death is 1 in 16, compared with 1 in 2800 in rich countries.

Information on maternal mortality remains a serious problem. In the late 1970s, less than one developing country in three was able to provide data – and these were usually only partial hospital statistics. The situation has now improved but births and deaths in developing countries are often only registered for small portions of the population except in some Asian and Latin American countries. Cause of death is routinely reported for only 100 countries of the world, covering one third of the world's population. It is even difficult to obtain reliable survey data that are nationally representative. For 62 developing countries, including most of those with very high levels of mortality, the only existing estimates are based on statistical modelling. These are even more hazardous to interpret than those from surveys or partial death registration. The countries that rely on these modelled estimates represent 27% of the world's births. Effectively, this leaves no record of the fate of 36 million – about 1 out of 4 – of the women who give birth every year.

Gradual improvements in data availability, however, mean that a growing database now exists of maternal mortality by country. Since 1990, a joint working group of WHO, the United Nations Children's Fund (UNICEF) and the United Nations Population Fund (UNFPA) has been regularly assessing and synthesizing the available information (60). It has not been possible, though, to assess changes over time with any confidence: the uncertainty associated with maternal mortality estimates makes it difficult to say whether that mortality has gone up or down, so no global downturn in maternal mortality ratios can yet be asserted.

Nevertheless, there is a sense of progress, backed by the tracking of indicators that point to significant increases in the uptake of care during pregnancy and childbirth

Box 1.3 A reversal of maternal mortality in Malawi

Malawi is one country that experienced a significant reversal in maternal mortality: from 752 maternal deaths per 100 000 live births in 1992 to 1120 in 2000, according to the Malawi Demographic and Health Surveys. According to confidential enquiries into maternal deaths in health facilities in 1989 and 2001, three factors apparently contributed to this increase. First, there was a sharp proportional increase in deaths from AIDS. This is not surprising since Malawi's national HIV prevalence has now reached 8.4%. Second, fewer mothers gave birth in health facilities: the proportion dropped from 55% to 43% between 2000 and

2001. Third, the quality of care within health facilities deteriorated. Between 1989 and 2001 the proportion of deaths associated with deficient health care increased from 31% to 43%. In 2001 only one mother out of four who died in the hospital had received standard care. Wrong diagnosis (11% of deaths), delays in starting treatment (19%), wrong treatment (16%), or lack of blood for transfusion (18%): deficient hospital care was the leading principal avoidable factor in 38% of deaths.

The diminishing coverage and the worsening of the quality of care are related to the deteriorating situation of the health workforce

(itself not independent from the HIV/AIDS epidemic). In remote areas one midwife often has to run the entire rural health centre and is expected to be available for work day and night, seven days a week. One maternity unit out of 10 is closed for lack of staff. Hospitals also experience severe shortages of midwives, and unskilled cleaners often conduct deliveries. The shortage of staff in maternity units is catastrophic and rapidly getting worse; the chances of Malawi women giving birth in a safe environment diminish accordingly.

in all regions except sub-Saharan Africa during the 1990s. The proportion of births assisted by a skilled attendant rose by 24% during the 1990s, caesarean sections tripled and antenatal care use rose by 21%. Since professional care is known to be crucial in averting maternal deaths as well as in improving maternal health, maternal mortality ratios are likely to be declining everywhere except for those countries which started the 1990s at high levels. For these, which are mainly in sub-Saharan Africa, there has been no sign of progress.

A PATCHWORK OF PROGRESS, STAGNATION AND REVERSAL

The slowing down of improvement of global indicators that so worries policy-makers (67) hides a patchwork of countries that are on track, show slow progress, are stagnating or are going into reverse. As most progress is being made in countries that already have relatively low levels of maternal and child deaths, while the worst-off stagnate, the gaps between countries are inevitably widening.

A total of 93 countries, including most of those in the high income bracket, are “on track” to reduce their 1990 under-five mortality rates by two thirds by 2015 or sooner. The on-track countries are those that already had the lowest rates in 1990 (taken together they had a rate of 59 in 1990).

Box 1.4 Counting births and deaths

If nobody keeps track of their births and deaths, women and children simply do not count (61). Mortality rates are frequently only rough estimates, of varying reliability. This is because the ways of estimating mortality are far from perfect and, in many cases, insufficient priority is given to obtaining such vital information.

It is often assumed that the quoted numbers of maternal and child deaths rely on **hospital statistics**. But apart from the problems of maintaining reporting systems, only a fraction of events takes place in facilities. Hospital information is currently the most flawed source of data on births and deaths.

The best approach to estimating maternal and child mortality is to count births and deaths through **vital registration systems**. In many developing countries, however, such systems are still incomplete. The births and deaths that are registered under-represent the rural population and the socioeconomically disadvantaged. In 47 countries of the world, less than 50% of the population registers their deaths. A reliable neonatal mortality rate, for example, can therefore be calculated for only 72 countries – less than 14% of births in the world. Internationally recommended definitions of what constitutes a neonatal death are not always used (62, 63). The calculated rates, especially in central Asia, are therefore not always comparable across countries (64). Vital registration systems are currently even less satisfactory for estimat-

ing maternal mortality. Ascertaining cause of death and relating it to pregnancy is difficult, particularly where most deaths occur at home. Misclassified or undercounting is frequent in countries with fully functioning vital registration systems – between 17% and 63% (65) – let alone in those where such systems cover only part of the population.

Many developing countries where births and deaths are not routinely counted conduct **sample surveys** asking women for their “birth histories” and how many of their children have died, when and at what age. These surveys yield estimates of child mortality. Often quite robust, they can be biased or inaccurate when the surveys are badly sampled and not representative of the population at large. Information on a deceased child whose mother has died herself will simply not be gathered. Mothers often do not know exact dates of birth or may be unwilling or unable to recall at what age a child has died. Completeness and accuracy very much depend on the skills and the cultural sensitivity of the interviewer. Unfortunately, finding out about the quality of survey data in the public domain is often not possible.

Maternal mortality is even more difficult to estimate from sample surveys. Information must be gleaned from relatives. Generally, women are asked whether their sisters died during pregnancy or shortly afterwards (66). This presupposes that each woman who dies

in childbirth had a sister, that her sister is alive to tell the tale, that she knows of her sister’s death, and knows her sister’s age and pregnancy status at death. As maternal deaths are statistically rare, it is difficult to obtain reports on enough deaths to estimate the maternal mortality ratio with sufficient precision and reliability without undertaking more expensive studies such as a reproductive age mortality survey (60). The result is that levels and trends are often very difficult to interpret.

In countries where registration is incomplete and where no survey has been conducted, the only remaining option for assessing mortality is to construct a **modelled estimate**. This is effectively an educated guess based on information from similar or neighbouring countries. A total of 28 countries rely only on such estimates for neonatal mortality, 62 for maternal mortality. These modelled estimates should be treated with great caution, but may be the only information available.

For the first time, this *World Health Report* presents, separately, tables with country estimates of mortality derived from surveys or vital registration, where these are available, and tables for all countries with country estimates that have been modelled and adjusted. These estimates can be found in Annex Tables 2a, 2b and 8.

A total of 51 other countries are showing slower progress: the number of deaths among children under five years of age is going down and the mortality rates are dropping, but not fast enough to reach one third of their 1990 level by 2015 unless they significantly accelerate progress during the coming 10 years. These countries started from a somewhat higher level than those that are on track: an average under-five mortality rate of 92 per 1000.

More problematic are the 29 countries where mortality rates are “stagnating” – where the number of deaths continues to grow, because modest reductions of mortality rates are too small to keep up with the increasing numbers of births. These are the countries that had the highest levels (207 on average) in 1990. Finally, there are 14 “reversal” countries, where under-five mortality rates went down to an average of 111 in 1990 but have increased since. During the 1990s there were more such countries than during the two previous decades combined. These reversals were also more pronounced than before. Countries that show reversal or stagnation are overwhelmingly in the African Region.

This grouping of countries,¹ categorized according to progress in under-five mortality during the 1990s, roughly corresponds to what happened in terms of neonatal and maternal health in these same countries. Although trend data are not available, neonatal and maternal mortality is highest in the countries with reversal and stagnation in under-five mortality (see Table 1.1 and Figures 1.3–1.6).

THE NUMBERS REMAIN HIGH

As the situation improves at a slower pace than expected – and hoped for – the gains in avoided deaths are partially offset by the demographic momentum. The numbers of untimely deaths of mothers and children could well be on the increase, because while rates are dropping, the numbers of mothers, births and children continue to grow. Worldwide, the number of live births will peak at 137 million per year towards 2015 (68): 3.5 million more than at present. Most of the increase will be in sub-Saharan Africa and in parts of Asia – Pakistan and northern India – where the number of births will continue to grow well into the 2020s, even if fertility continues to drop. These are areas where the protection of adolescents and young women against early or unwanted pregnancy is most inadequate, mortality from unsafe abortion most pronounced, giving birth most hazardous and childhood most difficult to survive.

Why is it still necessary for this report to emphasize the importance of focusing on the health of mothers and children, after decades of priority status, and more than 10 years after the United Nations International Conference on Population and Development? Progress has slowed down and is increasingly uneven, with a widening gap between rich and poor countries as well as, often, between the poor and the rich within countries. The reasons for this patchy progress are examined in the next chapter.

¹ No data available for five countries.

Figure 1.3 Changes in under-5 mortality rates, 1990–2003: countries showing progress, stagnation or reversal

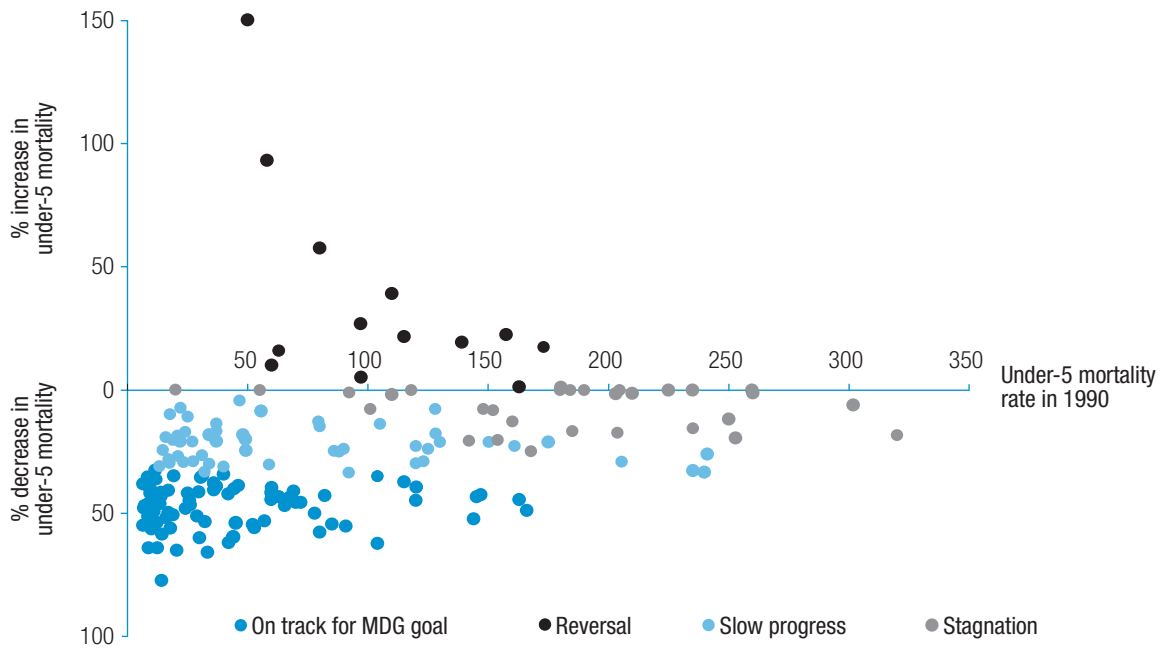


Figure 1.4 Patterns of reduction of under-5 mortality rates, 1990–2003

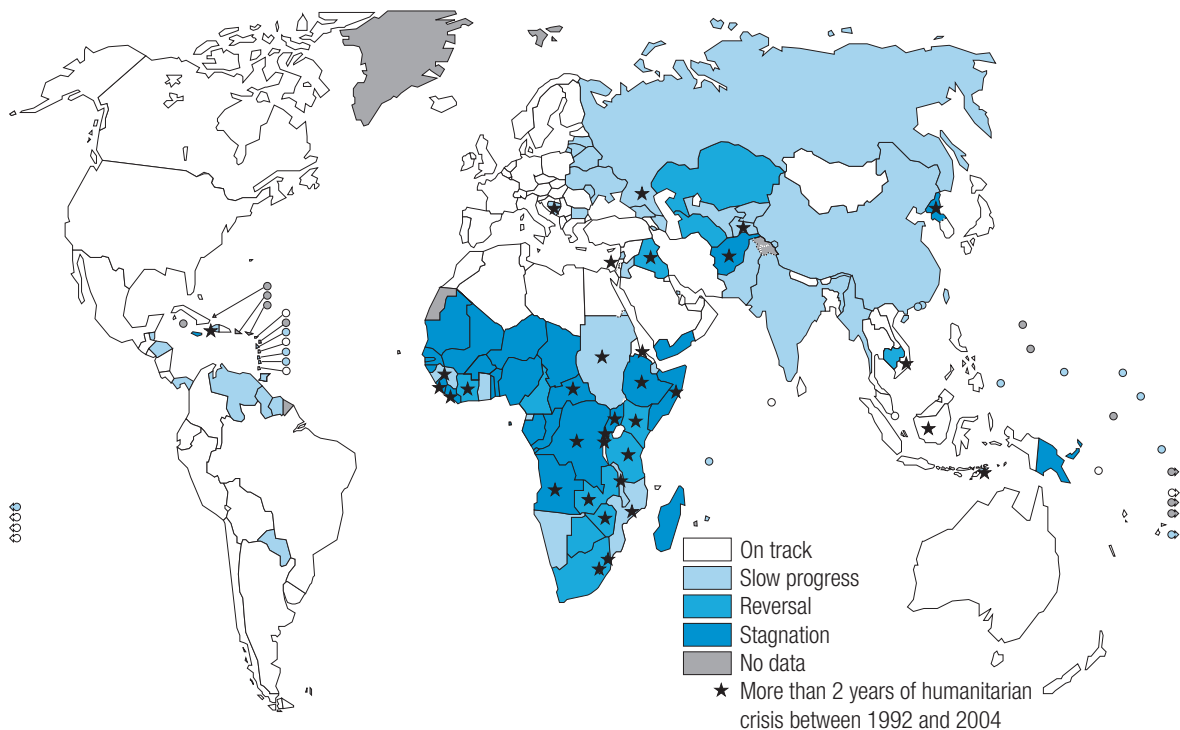


Figure 1.5 Maternal mortality ratio per 100 000 live births in 2000

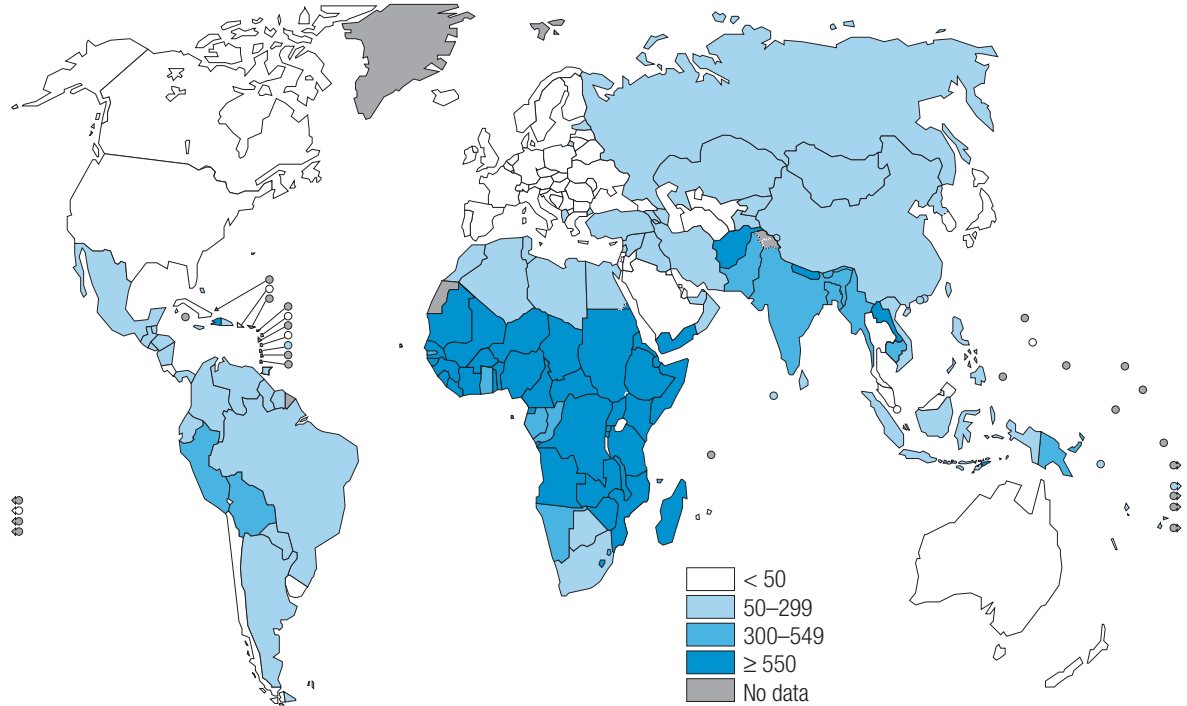


Figure 1.6 Neonatal mortality rate per 1000 live births in 2000^a

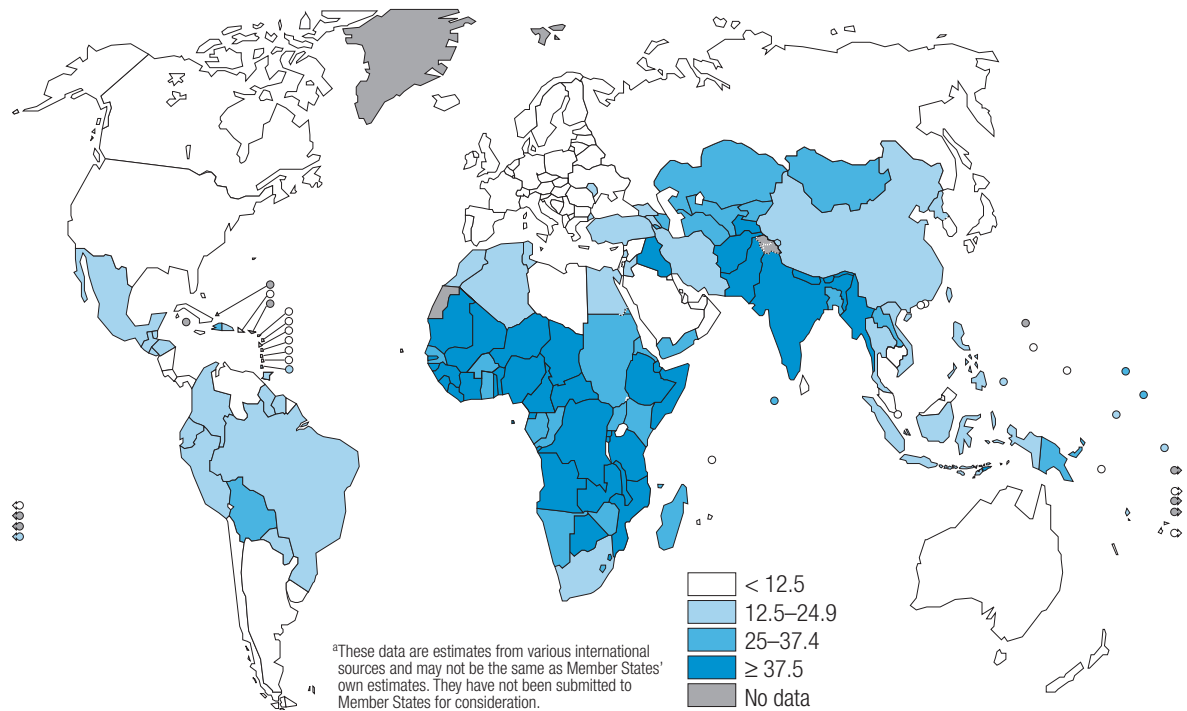


Table 1.1 Neonatal and maternal mortality in countries where the decline in child mortality has stagnated or reversed

Decline of child mortality (1990–2003)	No. of countries	Population (2003) ^a	Average live births per year (2000–2005) ^a	Under-5 mortality rate (1990) ^b	Under-5 mortality rate (2003) ^b	No. of under-5 deaths (2003) ^a	Neonatal mortality rate (2000) ^b	No. of newborn deaths (2000) ^a	Maternal mortality ratio (2000) ^c	No. of maternal deaths (2000) ^a
On track	30 (OECD)	1 155 219 (18%)	14 980 (11%)	22	13	190.5 (2%)	7	110.5 (3%)	29	4.3 (1%)
	63 (non-OECD)	1 386 579 (22%)	30 782 (23%)	78	39	1200.5 (12%)	19	591.6 (15%)	216	65 (12%)
Slow progress	51	3 011 922 (48%)	58 858 (44%)	92	72	4 185.5 (40%)	35	2 069.5 (52%)	364	212.9 (40%)
In reversal	14	241 209 (4%)	7 643 (6%)	111	139	1 046.9 (10%)	41	305.4 (8%)	789	59.9 (11%)
Stagnating	29	487 507 (8%)	20 678 (16%)	207	188	3 773.9 (36%)	47	921.3 (23%)	959	185.8 (35%)

^aNumbers in thousands.

^bPer 1000 live births.

^cPer 100 000 live births.

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