



Chapter One

Global Health: today's challenges

Reviewing the latest global health trends, this chapter finds disturbing evidence of widening gaps in health worldwide. In 2002, while life expectancy at birth reached 78 years for women in developed countries, it fell back to less than 46 years for men in sub-Saharan Africa, largely because of the HIV/AIDS epidemic. For millions of children today, particularly in Africa, the biggest health challenge is to survive until their fifth birthday, and their chances of doing so are less than they were a decade ago. This is a result of the continuing impact of communicable diseases. However, a global increase in noncommunicable diseases is simultaneously occurring, adding to the daunting challenges already facing many developing countries.

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Global Health: today's challenges

Although this report is global in scope, the findings irresistibly draw the main focus to the increasingly fragile health of sub-Saharan Africa. It is here, where scores of millions of people scrape a living from the dust of poverty, that the price of being poor can be most starkly seen. Almost an entire continent is being left behind.

Overall, 35% of Africa's children are at higher risk of death than they were 10 years ago. Every hour, more than 500 African mothers lose a small child. In 2002, more than four million African children died. Those who do make it past childhood are confronted with adult death rates that exceed those of 30 years ago. Life expectancy, always shorter here than almost anywhere else, is shrinking. In some African countries, it has been cut by 20 years and life expectancy for men is less than 46 years.

Mostly, death comes in familiar garb. The main causes among children are depressingly recognizable: the perinatal conditions closely associated with poverty; diarrhoeal diseases; pneumonia and other lower respiratory tract conditions; and malaria. Becoming more familiar by the day, HIV/AIDS, now the world's leading cause of death in adults aged 15–59 years, is killing almost 5000 men and women in this age group, and almost 1000 of their children, every 24 hours in sub-Saharan Africa.

The main components of Africa's tragedy are shared by many of the poorest people everywhere and include the agonizingly slow progress towards the Millennium Development Goals of reduced maternal and child mortality; the HIV/AIDS pandemic; and the double burden of communicable diseases plus noncommunicable diseases, including the tobacco epidemic and the avoidable deaths from road traffic crashes. Subsequent chapters of this report will examine each of these components and show how they can and must be reshaped for a better future.

The global picture

Life expectancy improves – but not for all

Over the past 50 years, average life expectancy at birth has increased globally by almost 20 years, from 46.5 years in 1950–1955 to 65.2 years in 2002. This represents a global average increase in life expectancy of 4 months per year across this period. On average, the gain in life expectancy was 9 years in developed countries (including Australia, European countries, Japan, New Zealand and North America), 17 years in the high-mortality developing countries (with high child and adult mortality levels), including most African countries and poorer

countries in Asia, the Eastern Mediterranean Region and Latin America; and 26 years in the low-mortality developing countries. As shown in Figure 1.1, the large life expectancy gap between the developed and developing countries in the 1950s has changed to a large gap between the high-mortality developing countries and others.

Life expectancy at birth in 2002 ranged from 78 years for women in developed countries to less than 46 years for men in sub-Saharan Africa, a 1.7-fold difference in total life expectancy. Exceptions to the life expectancy increases in most regions of the world in the last 50 years are Africa and countries of eastern Europe formerly in the Soviet Union. In the latter case, male and female life expectancies at birth declined, by 2.9 years and 1 year, respectively, over the period 1990 to 2000. Estimated life expectancies for males and females for 2002 are given in Annex Table 1 for all Member States of the World Health Organization (WHO).

The increases in life expectancy that occurred in the first half of the 20th century in developed countries were the result of rapid declines in mortality, particularly infant and maternal mortality, and that caused by infectious diseases in childhood and early adulthood. Access to better housing, sanitation and education, a trend to smaller families, growing incomes, and public health measures such as immunization against infectious diseases all contributed greatly to this epidemiological transition. In many developed countries, this shift started approximately 100 to 150 years ago. In a number of countries, such as Japan, the transition started later but proceeded much more quickly. In many developing countries, the transition started even later and has not yet been completed. In developed countries, improvements in life expectancy now come mainly from reductions in death rates among adults.

Global mortality patterns

Almost 57 million people died in 2002, 10.5 million (or nearly 20%) of whom were children of less than 5 years of age (see Figure 1.2). Of these child deaths, 98% occurred in developing

Figure 1.1 Life expectancy at birth: developed and developing countries, 1955–2002

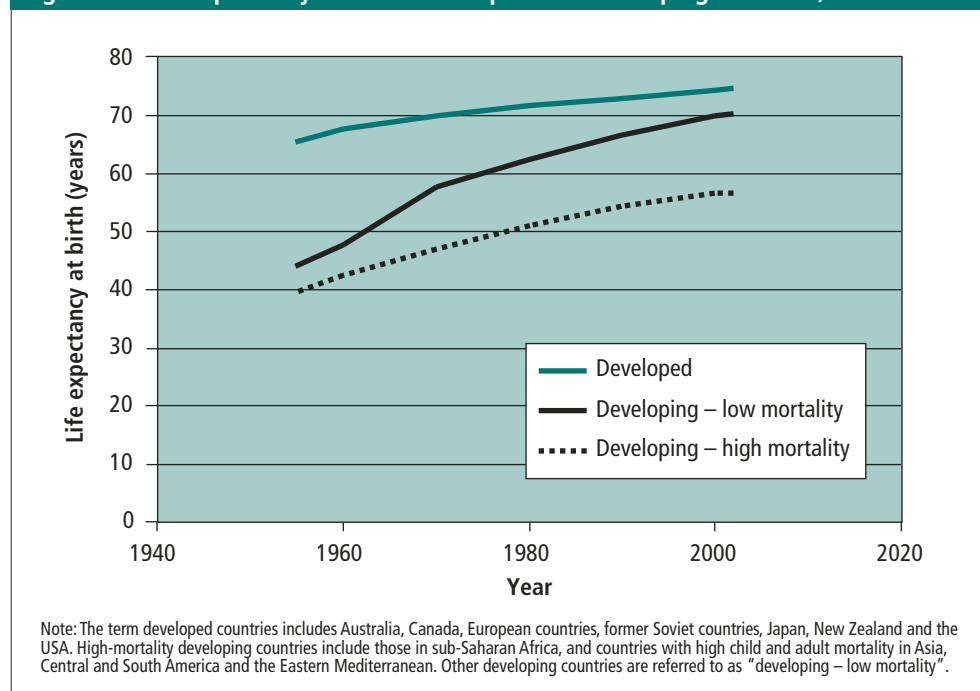
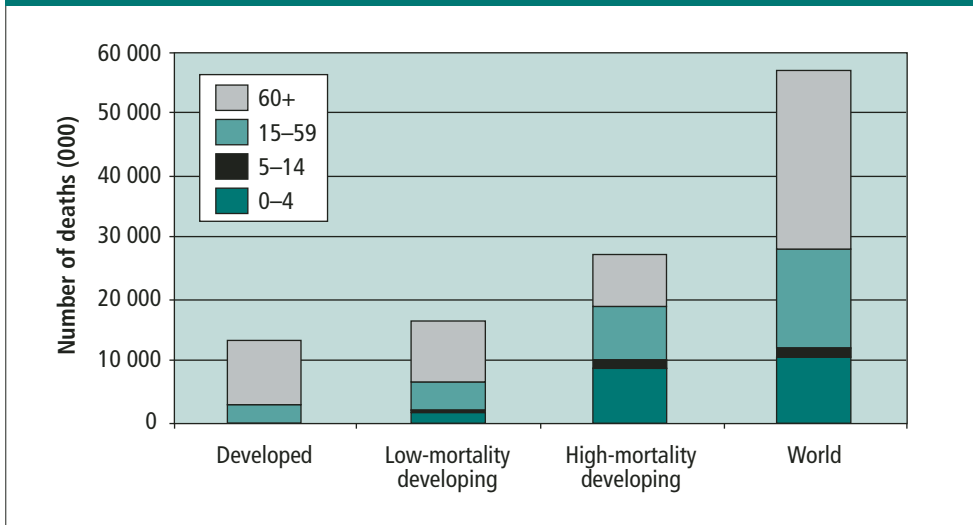


Figure 1.2 Age distribution of global mortality: developed and developing countries, 2002



countries. Over 60% of deaths in developed countries occur beyond age 70, compared with about 30% in developing countries. A key point is the comparatively high number of deaths in developing countries at younger adult ages (15–59 years). Just over 30% of all deaths in developing countries occur at these ages, compared with 20% in richer regions. This vast premature adult mortality in developing countries is a major public health concern.

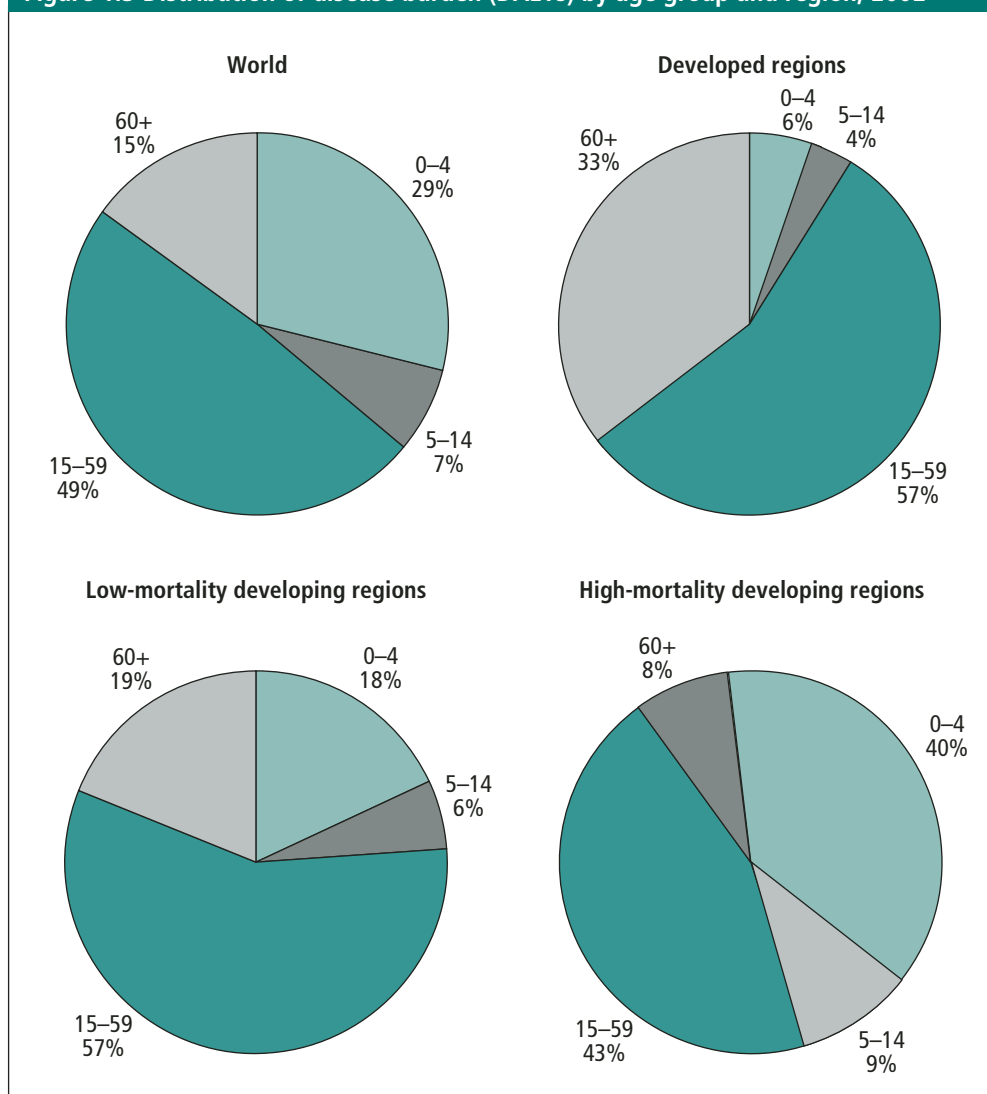
Developing countries themselves are a very heterogeneous group in terms of mortality (Figure 1.1). A contrast between low-mortality developing countries such as China (with more than one-sixth of the world's population) and high-mortality countries in Africa (with one-tenth of the global population) illustrates the extreme diversity in health conditions among developing countries. Less than 10% of deaths in China occur below 5 years of age compared with 40% in Africa. Conversely, 48% of deaths in China occur beyond age 70, compared with only 10% in Africa.¹

Although risk of death is the simplest comparable measure of health status for populations, there has been increasing interest in describing, measuring and comparing health states of populations. Mortality statistics, in particular, substantially underestimate the burden from noncommunicable adult disease because they exclude non-fatal health outcomes such as depression and visual impairment. A useful method of formulating a composite summary of disease burden is to calculate disability-adjusted life years (DALYs), which combine years of life lost (YLLs) through premature death with years lived with disability (YLDs) (1). One DALY can be thought of as one lost year of “healthy” life and the measured disease burden is the gap between a population's health status and that of a normative global reference population with high life expectancy lived in full health. In terms of DALYs, 36% of total lost years of healthy life for the world in 2002 were a result of disease and injury in children aged less than 15 years, and almost 50% as a result of disease and injury in adults aged 15–59 years (see Figure 1.3).²

¹ Estimated deaths by cause, age group and sex for 2002 are available on the WHO web site for the six WHO regions and for the 14 epidemiological subregions (www.who.int/evidence/bod).

² Estimated DALYs by cause, age group and sex for 2002 are available on the WHO web site for the six WHO regions and for the 14 epidemiological subregions (www.who.int/evidence/bod).

Figure 1.3 Distribution of disease burden (DALYs) by age group and region, 2002



As Figure 1.3 illustrates, child survival continues to be a major focus of the international health agenda for developing countries (2). Because nearly 90% of global deaths under age 15 occur before the age of 5, the following sections focus on child deaths under 5 years. In contrast, the international effort to understand the magnitude of challenges to adult health in developing countries is still in its early stages. Even at present, there remains a perception that adult health is of great concern only in wealthy countries, where premature mortality among children has been substantially reduced. However, Figures 1.2 and 1.3 also illustrate the high proportion of burden of disease and injury suffered by adults in developing countries, a growing burden that requires urgent action by the global public health community. This chapter therefore first examines trends and issues in child health, focusing on ages 0–4, then among adults aged 15–59 years and among adults aged 60 years and over.

Unfortunately, complete cause-specific death registration data are routinely available for only a minority of the world's countries (see Chapter 7 and the Explanatory Notes in the Statistical Annex). However, complete or incomplete vital registration data (see Box 1.1) together

Box 1.1 Sentinel vital registration in the United Republic of Tanzania

Accurate statistics on basic demographic events are an important foundation of rational health and public policy. Unfortunately, reliable vital registration is lacking for the vast majority of the world's poorest countries. Some new approaches to meeting the need for mortality and morbidity data have been pioneered in the United Republic of Tanzania. In 1992, the Ministry of Health established the Adult Morbidity and Mortality Project (AMMP) in partnership with the University of Newcastle upon Tyne, England, and with funding from the United Kingdom Department for International Development.

AMMP developed a demographic surveillance system and verbal autopsy tools for measuring levels and causes of death, and a validated tool for estimating household consumption expenditure to monitor income poverty. One of the initial project aims was to establish baseline levels of adult mortality by cause in three selected districts (3–5). In 1997, the Ministry of Health elected to expand data collection to a larger sample of districts and to establish a national sentinel system for health and poverty monitoring. In addition, the contributions of other demographic surveillance sites were coordinated to produce annual health statistics abstracts and public health sector performance profiles.

In 2002, sentinel vital registration, cause of death, and poverty monitoring figures flowing from five sites managed by the Ministry of Health and local councils and three sites managed by health develop-

ment and research bodies began to provide essential indicators to the National Poverty Monitoring Master Plan. In the context of all information systems in the United Republic of Tanzania that produce demographic, health and poverty indicators, sentinel demographic surveillance generates a large number of indicators from a sample of over 500 000 people, at a per capita recurrent cost of US\$ 0.02 per year. These costs are considerably less than for many other systems.

At the local level, AMMP has helped districts to feed sentinel surveillance information about the prevailing burden of disease back to community members who have, in turn, actively participated in setting priorities for district health. One local council was prompted by data on health-seeking for children dying at home from acute febrile illness to increase the resources allocated to fight malaria and to promote the use of treated bednets. At the national level, these same data provided an evidence base for a policy change in first-line malaria drug use, and the overall cause-specific mortality burden measured in years of life lost was a key input to the design of the first national package of essential health interventions. Drawing on the poverty data from sentinel sites, it has also been possible to provide government with solid evidence about how health intervention priorities among the poorest citizens differ from those of others.

with sample registration systems now capture one-third of deaths globally and provide information on 74% of global mortality, and these have been used to analyse adult mortality patterns and trends here.

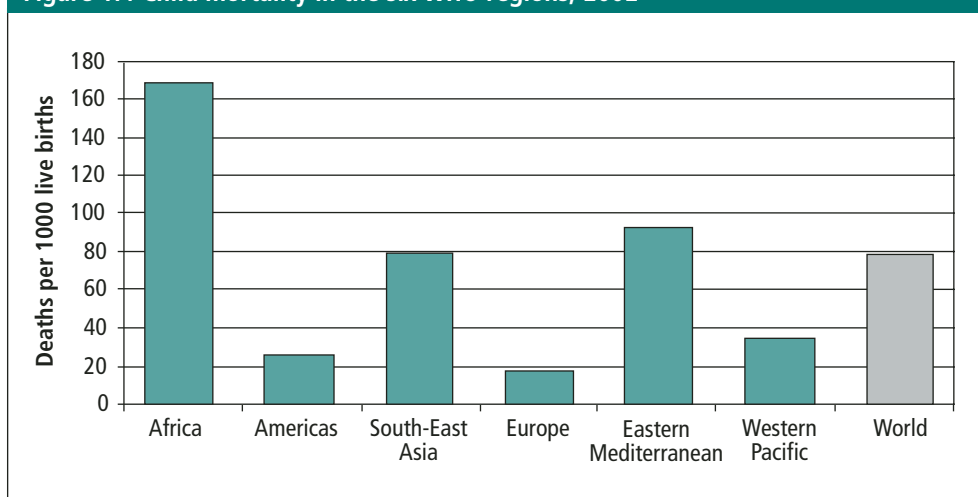
Surviving the first five years of life

Although approximately 10.5 million children under 5 years of age still die every year in the world, progress has been made since 1970, when the figure was more than 17 million. These reductions did not take place uniformly across time and regions, but the success stories in developing countries demonstrate clearly that low mortality levels are attainable in those settings. The effects of such achievements are not to be underestimated. If the whole world were able to share the current child mortality experience of Iceland (the lowest in the world in 2002), over 10 million child deaths could be prevented each year.

Today nearly all child deaths occur in developing countries, almost half of them in Africa. While some African countries have made considerable strides in reducing child mortality, the majority of African children live in countries where the survival gains of the past have been wiped out, largely as a result of the HIV/AIDS epidemic.

Across the world, children are at higher risk of dying if they are poor. The most impressive declines in child mortality have occurred in developed countries, and in low-mortality developing countries whose economic situation has improved. In contrast, the declines observed in countries with higher mortality have occurred at a slower rate, stagnated or even reversed. Owing to the overall gains in developing regions, the mortality gap between the developing and developed world has narrowed since 1970. However, because the better-off countries in developing regions are improving at a fast rate, and many of the poorer populations are losing ground, the disparity between the different developing regions is widening.

Figure 1.4 Child mortality in the six WHO regions, 2002



Child mortality: global contrasts

Regional child mortality levels are indicated in Figure 1.4. Of the 20 countries in the world with the highest child mortality (probability of death under 5 years of age), 19 are in Africa, the exception being Afghanistan.

A baby born in Sierra Leone is three and a half times more likely to die before its fifth birthday than a child born in India, and more than a hundred times more likely to die than a child born in Iceland or Singapore. Fifteen countries, mainly European but including Japan and Singapore, had child mortality rates in 2002 of less than 5 per 1000 live births. Estimated child mortality rates for 2002 are given for all WHO Member States in Annex Table 1.

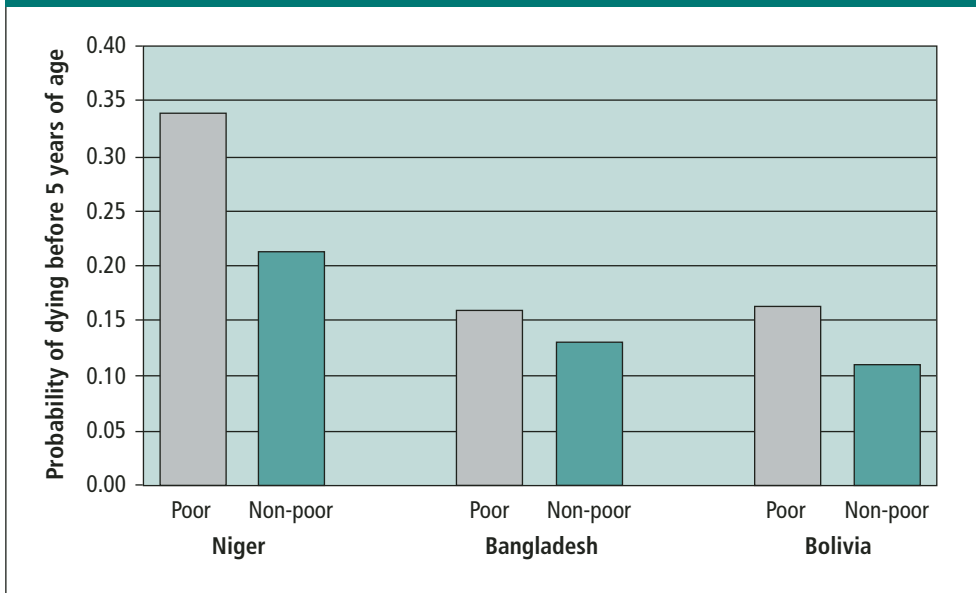
Child mortality: gender and socioeconomic differences

Throughout the world, child mortality is higher in males than in females, with only a few exceptions. In China, India, Nepal and Pakistan, mortality in girls exceeds that of boys. This disparity is particularly noticeable in China, where girls have a 33% higher risk of dying than their male counterparts. These inequities are thought to arise from the preferential treatment of boys in family health care-seeking behaviour and in nutrition.

There is considerable variability in child mortality across different income groups within countries. Data collected by 106 demographic and health surveys in more than 60 countries show that children from poor households have a significantly higher risk of dying before the age of 5 years than the children of richer households. This is illustrated in Figure 1.5, using the results for three countries from different regions. The vertical axis represents the probability of dying in childhood (on a zero to one scale). The horizontal axis shows the information by “poor” and “non-poor”.¹ The identification of poor and non-poor populations uses a global scale based on an estimate of permanent income constructed from information on ownership of assets, availability of services and household characteristics. This approach has the advantage of allowing comparison of socioeconomic levels across countries. It implies that the individuals defined as poor in Bangladesh have the same economic status as the population defined as poor in Bolivia or Niger.

¹ The “poor” are individuals from the lowest quintile of income, while the “non-poor” are the remainder.

Figure 1.5 Differences in child mortality in three developing countries according to socioeconomic status



There are significant differences in child mortality risks by poverty status in all countries, although the size of the gap varies; the risk of dying in childhood is approximately 13 percentage points higher for the poor than for the non-poor in Niger but less than 3 percentage points higher in Bangladesh.

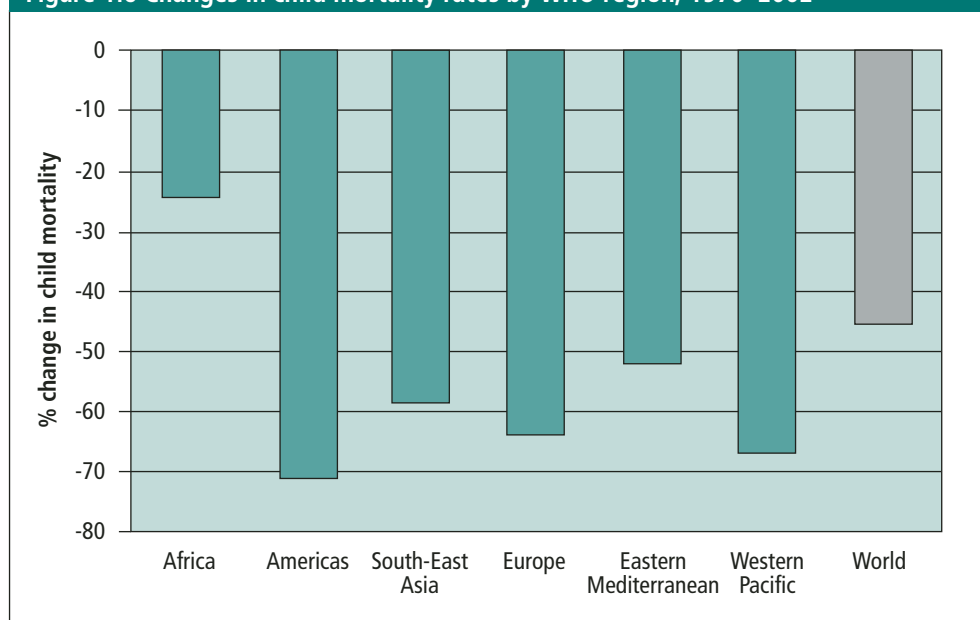
Child mortality rates among the poor are much higher in Africa than in any other region despite the same level of income used to define poverty. The probability of poor children in Africa dying is almost twice that of poor children in the Americas. Likewise, better-off children in Africa have double the probability of dying than their counterparts in the Americas. Moreover, better-off children in Africa have a higher mortality risk (16%) than poor children in the Americas, whose risk of death is 14%.

Child survival: improvements for some

The last three decades have witnessed considerable gains in child survival worldwide (shown by WHO region in Figure 1.6). Global child mortality decreased from 147 per 1000 live births in 1970 to about 80 per 1000 live births in 2002. The reduction in child mortality has been particularly compelling in certain countries of the Eastern Mediterranean and South-East Asia Regions and Latin America, while that of African countries was more modest. Gains in child survival have also occurred in rich industrialized nations, where levels of mortality were already low.

Although child mortality has fallen in most regions of the world, the gains were not consistent across time and regions. The greatest reductions in child mortality across the world occurred 20–30 years ago, though not in the African or the Western Pacific Regions, where the decline slowed down during the 1980s, nor in some eastern European countries, where mortality actually increased in the 1970s. Over the past decade, only countries of the South-East Asia Region and the higher mortality countries in Latin America have further accelerated their reduction in child mortality.

Figure 1.6 Changes in child mortality rates by WHO region, 1970–2002



The most impressive gains in child survival over the past 30 years occurred in developing countries where child mortality was already relatively low, whereas countries with the highest rates had a less pronounced decline. Despite an overall decline in global child mortality over the past three decades, the gap between and within developing regions has widened.

Although the chances of child survival among less developed regions of the world are becoming increasingly disparate, the gaps in child mortality among affluent nations have been closing over the past 30 years, largely as a result of medico-technological advances, particularly in the area of neonatal survival.

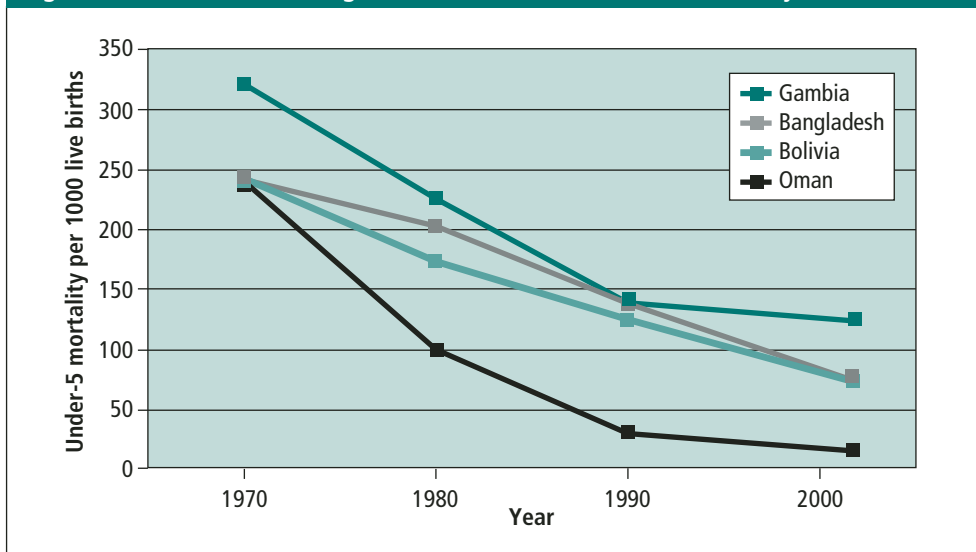
In 16 countries (14 of which are in Africa) current levels of under-5 mortality are higher than those observed in 1990. In nine countries (eight of which are in Africa) current levels exceed even those observed over two decades ago. HIV/AIDS has played a large part in these reversals.

Analyses from the demographic and health surveys show that, while child mortality has increased in many of the African countries surveyed, the gap between poor and non-poor populations has remained constant over time in this setting. In contrast, there has been a widening of the mortality gap between poor and better-off groups in the Americas, where overall child mortality rates have fallen. This indicates that survival gains in many regions have benefited the better-off. The reduction in child mortality has been much slower in rural areas, where poor people are concentrated, than in urban areas (6). These analyses suggest that health interventions implemented in the past decade have not been effective in reaching poor people.

Losses in child survival in the countries described above are at odds with impressive gains in some African countries. Despite the ravages of the HIV/AIDS epidemic in Africa, eight countries in the region have reduced child mortality by more than 50% since 1970. Among these are Gabon, the Gambia and Ghana.

Overall, at least 169 countries, 112 of them developing countries, have shown a decline in child mortality since 1970. Some of these are presented in Figure 1.7. Oman has had the most

Figure 1.7 Countries with large absolute reductions in child mortality since 1970



striking reduction, from 242 per 1000 live births in 1970 to its current rate of 15 per 1000 live births, which is lower than that of many countries in Europe. Overall, the lower mortality countries of the Eastern Mediterranean Region experienced an impressive decline in child mortality, which has been accompanied by a reduction in the gap between countries' child mortality levels since 1970.

Child mortality has also declined substantially in the Americas. The most striking proportional reductions in mortality have been seen in Chile, Costa Rica and Cuba, where child mortality has decreased by over 80% since 1970. There have also been large absolute reductions in child mortality in Bolivia, Nicaragua and Peru. In contrast, Haitian child mortality rates are still 133 per 1000: almost double the mortality rate of Bolivia, the next highest country in the Americas.

An interesting pattern of child mortality trends has been observed in several eastern European countries. Here, child mortality initially increased or remained constant during the 1970s, only to decline after 1980 (7). This may to some extent be attributed to a more complete registration of child and infant deaths during that period. Interestingly, while adult mortality levels increased in the early 1990s, child mortality continued to decline. There is no other region where this particular pattern of mortality has occurred in such a systematic manner, and the reasons for the trend remain poorly understood.

Causes of death in children

Infectious and parasitic diseases remain the major killers of children in the developing world, partly as a result of the HIV/AIDS epidemic. Although notable success has been achieved in certain areas (for example, polio), communicable diseases still represent seven out of the top 10 causes of child deaths, and account for about 60% of all child deaths. Overall, the 10 leading causes represent 86% of all child deaths (see Table 1.1).

Many countries of the Eastern Mediterranean Region and in Latin America and Asia have partly shifted towards the cause-of-death pattern observed in developed countries. Here, conditions arising in the perinatal period, including birth asphyxia, birth trauma and low birth weight, have replaced infectious diseases as the leading cause of death and are now

Table 1.1 Leading causes of death in children in developing countries, 2002

Rank	Cause	Numbers (000)	% of all deaths
1	Perinatal conditions	2 375	23.1
2	Lower respiratory infections	1 856	18.1
3	Diarrhoeal diseases	1 566	15.2
4	Malaria	1 098	10.7
5	Measles	551	5.4
6	Congenital anomalies	386	3.8
7	HIV/AIDS	370	3.6
8	Pertussis	301	2.9
9	Tetanus	185	1.8
10	Protein-energy malnutrition	138	1.3
	Other causes	1 437	14.0
Total		10 263	100

responsible for one-fifth to one-third of deaths. Such a shift in the cause-of-death pattern has not occurred in sub-Saharan Africa, where perinatal conditions rank in fourth place. Here, undernutrition, malaria, lower respiratory tract infections and diarrhoeal diseases continue to be among the leading causes of death in children, accounting for 45% of all deaths.

About 90% of all HIV/AIDS and malaria deaths in children in developing countries occur in sub-Saharan Africa, where 23% of the world's births and 42% of the world's child deaths are observed (see Box 1.2). The immense surge of HIV/AIDS mortality in children in recent years means that HIV/AIDS is

now responsible for 332 000 child deaths in sub-Saharan Africa, nearly 8% of all child deaths in the region.

Some progress has been observed in the areas of diarrhoeal diseases and measles. While incidence is thought to have remained stable, mortality from diarrhoeal diseases has fallen from 2.5 million deaths in 1990 to about 1.6 million deaths in 2002, now accounting for 15% of all child deaths. There has also been a modest decline in deaths from measles, although more than half a million children under 5 years of age still succumb to the disease every year (8). Malaria causes around a million child deaths per year, of which 90% are children under 5 years of age. In this age group the disease accounts for nearly 11% of all deaths (see Table 1.1).

The overall number of child deaths in India has fallen from approximately 3.5 million in 1990 to approximately 2.3 million in 2002. This impressive decline is a result of a reduction in overall child mortality rates of about 30%, and a decline in total fertility rates of around 10%. The cause-of-death pattern has remained fairly stable, with the exception of perinatal conditions whose proportion has notably increased. There were some declines in the proportion of deaths from diarrhoeal diseases, measles and tetanus, which may be the result of increased use of oral rehydration therapy and improved coverage of routine vaccination, as well as intensive immunization campaigns.

A similar picture is emerging in China, where the number of child deaths has decreased by 30% since 1990, owing to a reduction in child mortality of 18% and a 6% decline in total fertility. As in India, the most notable change in the cause-of-death pattern in China over the past decade is an increase in the proportion of perinatal deaths.

The challenge of reducing child mortality is widely recognized and effective interventions are available. The issue now is urgent implementation. The adult mortality challenges are more complex, as described in the next section.

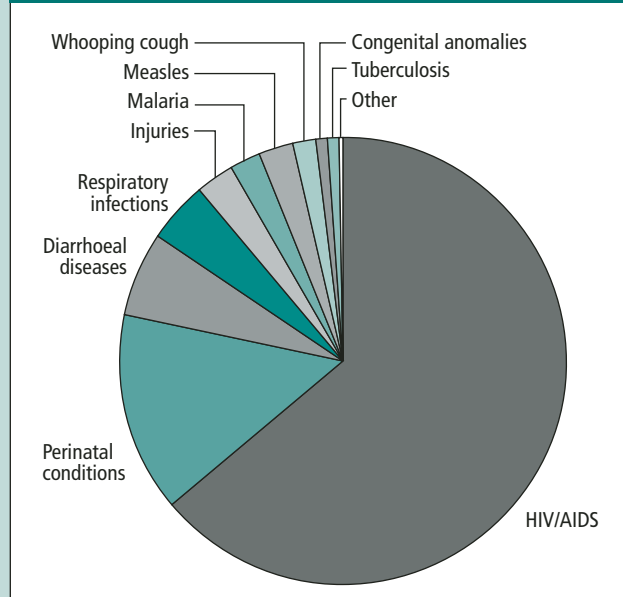
Adult health at risk: slowing gains and widening gaps

Adult mortality rates have been declining in recent decades in most regions of the world. Life expectancy at age 15 has increased by between 2 and 3 years for most regions over the last 20 years. The notable exceptions are the high-mortality countries in Africa, where life expect-

Box 1.2 The African crisis of child mortality

There are 14 countries in WHO's African Region in which child mortality has risen since reaching its lowest level in 1990. About 34% of the population under five years of age in sub-Saharan Africa is now exposed to this disturbing trend. Only two countries outside Africa observed similar setbacks in the same period – countries that experienced armed conflict or economic sanctions. Eight of the 14 countries are in southern Africa, which boasted some of the most notable gains in child survival during the 1970s and 1980s. Those promising gains have been wiped out in a mere decade.

Causes of child deaths in Botswana, 2002



The surge of HIV/AIDS is directly responsible for up to 60% of child deaths in Africa, as illustrated by the causes of child deaths in Botswana shown in the figure.

The indirect effects of HIV/AIDS in adults contribute to the tragedy. Children who lose their mothers to HIV/AIDS are more likely to die than children with living mothers, irrespective of their own HIV status. The diversion of already stretched health resources away from child health programmes into care of people living with AIDS further compounds the situation, in the presence of increasing malaria mortality, civil unrest or social anarchy.

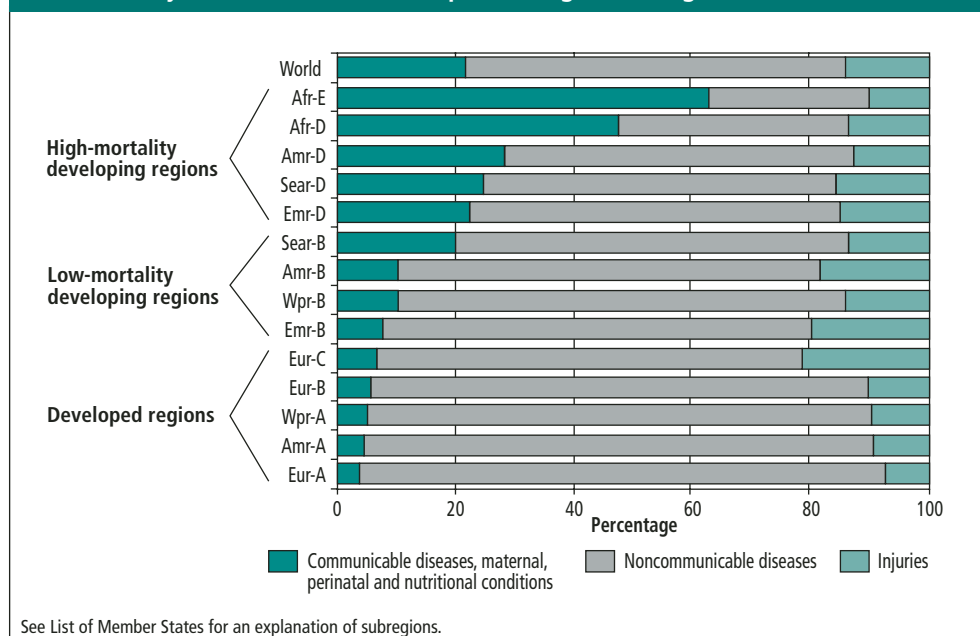
ancy at age 15 decreased by nearly 7 years between 1980 and 2002, and the high-mortality countries, mainly those of the former Soviet Union, in eastern Europe, where life expectancy at age 15 decreased over the same period by 4.2 years for males and 1.6 years for females.

Of the 45 million deaths among adults aged 15 years and over in 2002, 32 million, or almost three-quarters, were caused by noncommunicable diseases, which killed almost four times as many people as communicable diseases and maternal, perinatal and nutritional conditions combined (8.2 million, or 18% of all causes). Injuries killed a further 4.5 million adults in 2002, 1 in 10 of the total adult deaths. More than 3 million of these injury deaths – almost 70% of them – concern males, whose higher risk is most pronounced for road traffic injuries (three times higher) and for violence and war (more than four times higher).

The relative importance of these causes varies markedly across regions. Thus in Africa, only about 1 in 3 adult deaths is caused by noncommunicable diseases, compared with nearly 9 out of 10 in developed countries. It is of concern that 3 in 4 adult deaths in Latin America and in the developing countries of Asia and the Western Pacific Region are caused by noncommunicable disease, reflecting the relatively advanced stage of the epidemiological transition achieved in these populations and the emergence of the double burden of disease. Estimated total deaths by cause in 2002 are given for each of the epidemiological subregions and the world in Annex Table 2. More detailed tables showing deaths by cause, age and sex in each of the regions are available on the WHO web site (<http://www.who.int/evidence/bod>).

Figure 1.8 highlights the marked contrast in patterns of health transition among adults (aged 15 years and over) in different parts of the world. In developed countries, communicable diseases and maternal, perinatal and nutritional conditions contribute only 5% to the total burden of disease, while in high-mortality developing regions this figure rises to 40%. In African regions where the HIV/AIDS epidemic has confounded the pattern of health transition during the past decade, these conditions can contribute as much as 50–60% of the over-

Figure 1.8 Disease burden (DALYs) among adults (aged 15 years and over) by broad cause, selected epidemiological subregions, 2002



all disease burden. Estimated total DALYs by cause in 2002 are given for each of the epidemiological subregions and the world in Annex Table 3.

The 10 leading causes of disease burden among men and women aged 15 years and over are shown in Table 1.2. Ischaemic heart disease and stroke (cerebrovascular disease) are two of the three leading causes of burden of disease in adult males globally. HIV/AIDS is the leading cause for males and the second leading cause for females, accounting for around 6% of the global burden of disease. Unipolar depressive disorders are the leading cause of burden for females, reflecting their higher prevalence in women. Though the individual maternal conditions of haemorrhage, sepsis and obstructed labour do not appear in Table 1.2, as a group they remain one of the leading causes of the burden of disease for women globally, reflecting the continuing high levels of maternal mortality in many developing countries, and also the high levels of disability resulting from these conditions.

Table 1.2 Leading causes of disease burden (DALYs) for males and females aged 15 years and older, worldwide, 2002

Males	%DALYs	Females	%DALYs
1 HIV/AIDS	7.4	1 Unipolar depressive disorders	8.4
2 Ischaemic heart disease	6.8	2 HIV/AIDS	7.2
3 Cerebrovascular disease	5.0	3 Ischaemic heart disease	5.3
4 Unipolar depressive disorders	4.8	4 Cerebrovascular disease	5.2
5 Road traffic injuries	4.3	5 Cataracts	3.1
6 Tuberculosis	4.2	6 Hearing loss, adult onset	2.8
7 Alcohol use disorders	3.4	7 Chronic obstructive pulmonary disease	2.7
8 Violence	3.3	8 Tuberculosis	2.6
9 Chronic obstructive pulmonary disease	3.1	9 Osteoarthritis	2.0
10 Hearing loss, adult onset	2.7	10 Diabetes mellitus	1.9

The following section summarizes the risk of premature adult death in terms of the probability of death between 15 and 60 years of age – the proportion of 15-year-olds who will die before their 60th birthday – and examines global patterns of cause of death in the age range 15–59 years. The health of adults aged 60 years and older is then examined.

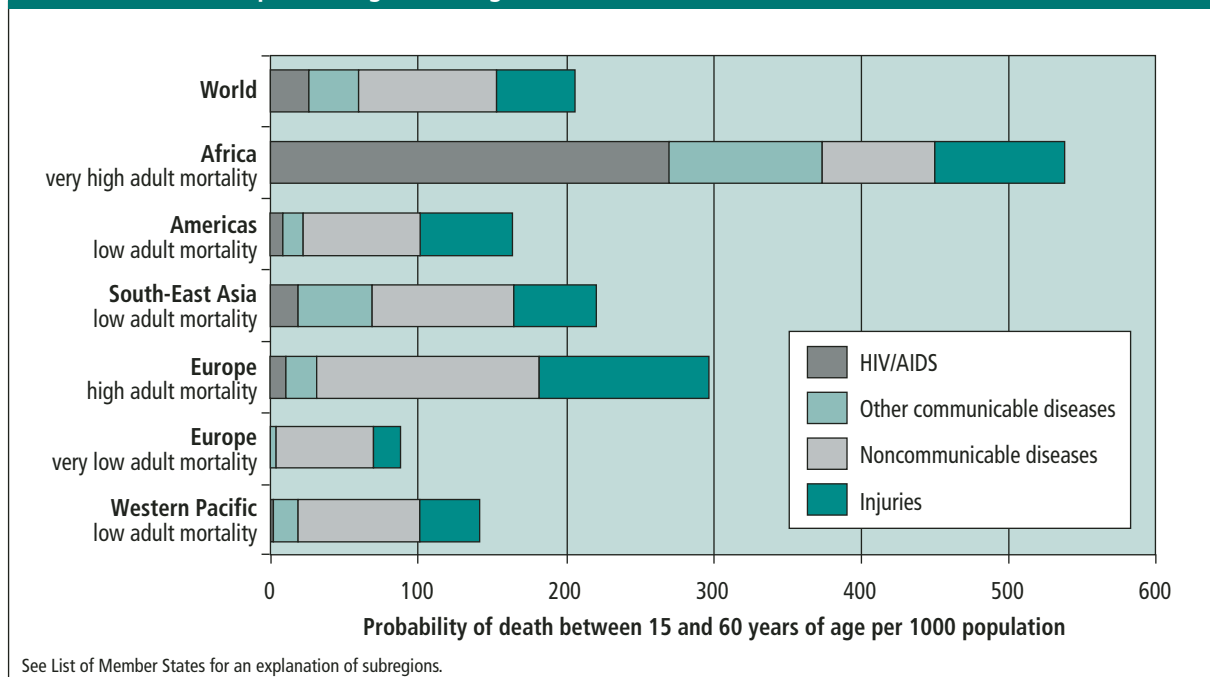
Global patterns of premature mortality risk

The probability of premature adult death varies widely between regions, as shown in Figure 1.9. For example, the probability of premature adult death in some parts of sub-Saharan Africa is much higher – nearly four times higher – than that observed in low-mortality countries of the Western Pacific Region. Even within developed regions there are wide variations. Men in some eastern European countries are three to four times more likely to die prematurely than men in other developed regions. Furthermore, male adult mortality in eastern Europe is much greater than in developing countries of the Americas, Asia and the Eastern Mediterranean Region. In all regions, male mortality is higher than female, and the discrepancy between the two sexes in mortality risk is much larger than that seen among children. The variation in the proportion of women dying prematurely is much less dramatic.

Adult mortality trends: 15–59 years of age

There have been impressive gains in the health status of adults worldwide in the past five decades. The risk of death between ages 15 and 60 has declined substantially from a global average of 354 per 1000 in 1955 to 207 per 1000 in 2002. The recent slowdown in the rate of decline is a clear warning that continued reductions in adult mortality, particularly in developing countries, will not be easily achieved.

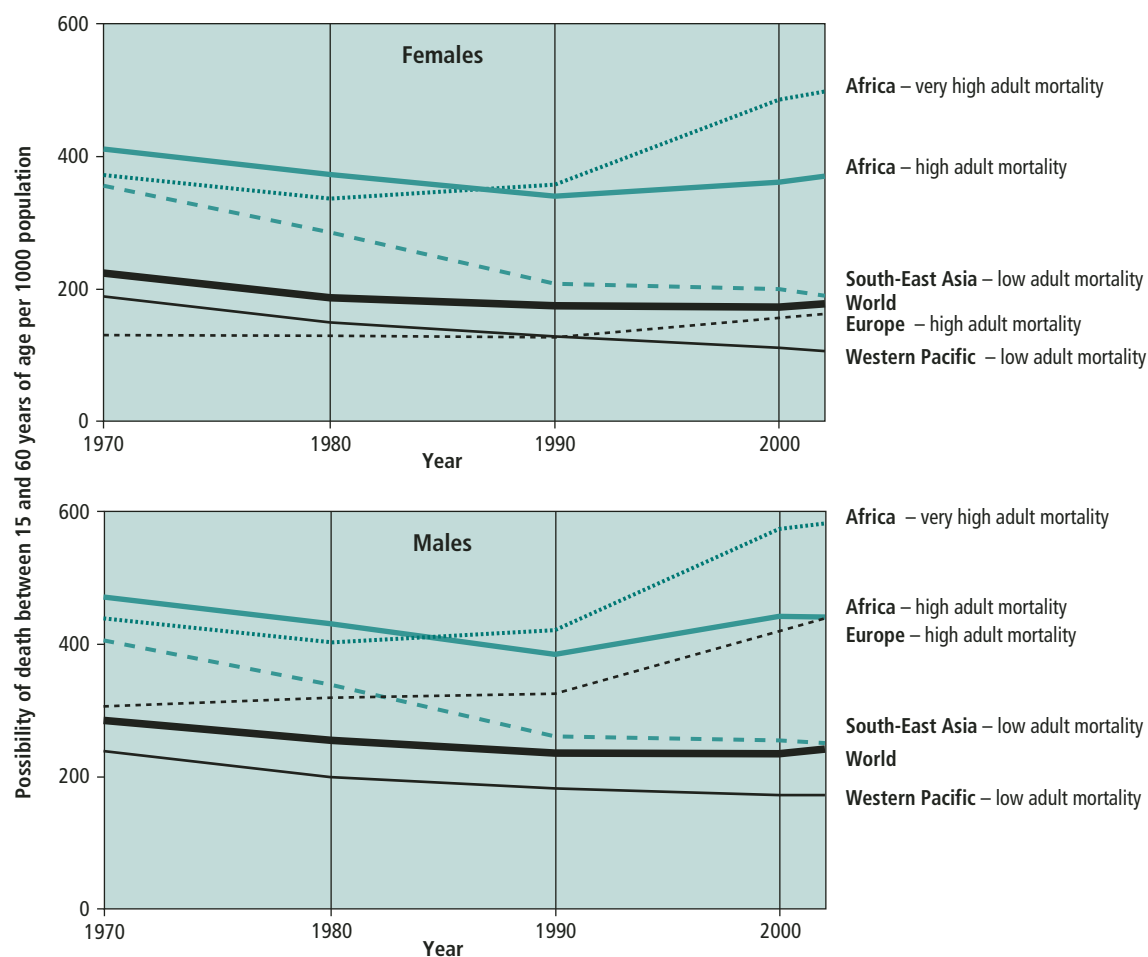
Figure 1.9 Adult mortality: probabilities of death between 15 and 60 years of age by cause, selected epidemiological subregions, 2002



There is substantial variation in the pace and magnitude of declining trends in premature adult mortality across both sexes and global regions (see Figure 1.10). The global slowdown of the pace is primarily a result of a shift in trends in adult mortality in a few regions. Among the signs of deteriorating adult health, the most disturbing is the fact that adult mortality in Africa has reversed, shifting in 1990 from a state of steady decline into a situation characterized by rapidly increasing mortality. The reversal in parts of sub-Saharan Africa has been so drastic that current adult mortality rates today exceed the levels of three decades ago. In Zimbabwe, upturns in reported adult deaths were significantly greater in 1991–1995 than in 1986–1990. Older childhood and older adult mortality have changed little (9). Without HIV/AIDS, life expectancy at birth in the African Region would have been almost 6.1 years higher in 2002. The reduction in life expectancy varies significantly across the African Region. The greatest impact has been in Botswana, Lesotho, Swaziland and Zimbabwe, where HIV/AIDS has reduced male and female life expectancies by more than 20 years.

The fragile state of adult health in the face of social, economic and political instability is also apparent in regions outside Africa. Male mortality in some countries in eastern Europe has increased substantially and is approaching the level of adult mortality in some African

Figure 1.10 Trends of adult mortality by sex, selected epidemiological subregions, 1970–2002



See List of Member States for an explanation of subregions.

countries. As a result, for the European Region as a whole, average adult mortality risk for men between 15 and 60 years is 230 per 1000, which is similar to the rate observed in the 1980s. This contrasts with the continuously declining trend for women in this region as a whole. Their risk has declined from 130 in 1970 to 98 in 2002. Figure 1.8 illustrates the fact that the probability of death from injury among adults aged 15–59 years in the high-mortality countries of eastern Europe is nearly six times higher than in neighbouring western European countries.

Adult mortality: widening gaps

Continuously declining adult mortality in low-mortality regions, combined with trend reversals in high-mortality areas, have resulted in widening gaps in adult mortality worldwide. The gap between the lowest and highest regional adult mortality risk between ages 15 and 60 has now increased to a level of 340 per 1000 in 2002. Regional aggregation of adult mortality also hides enormous and sobering disparities between countries. For example, within the Eastern Mediterranean Region, adult mortality risk between ages 15 and 60 among women in Djibouti was seven times higher than that of women in Kuwait in 2002. Overall, there is an almost 12-fold difference between the world's lowest and highest adult mortality at country level (see Annex Table 1).

HIV/AIDS: the leading health threat

Table 1.3 shows the leading causes of deaths and DALYs among adults worldwide for 2002. Despite global trends of declining communicable disease burden in adults, HIV/AIDS has become the leading cause of mortality and the single most important contributor to the burden of disease among adults aged 15–59 years (see Chapter 3).

Table 1.3 Leading causes of mortality and disease burden (DALYs) among adults, worldwide, 2002

Mortality – adults aged 15–59			Mortality – adults aged 60+		
Rank	Cause	Deaths (000)	Rank	Cause	Deaths (000)
1	HIV/AIDS	2279	1	Ischaemic heart disease	5825
2	Ischaemic heart disease	1332	2	Cerebrovascular disease	4689
3	Tuberculosis	1036	3	Chronic obstructive pulmonary disease	2399
4	Road traffic injuries	814	4	Lower respiratory infections	1396
5	Cerebrovascular disease	783	5	Trachea, bronchus, lung cancers	928
6	Self-inflicted injuries	672	6	Diabetes mellitus	754
7	Violence	473	7	Hypertensive heart disease	735
8	Cirrhosis of the liver	382	8	Stomach cancer	605
9	Lower respiratory infections	352	9	Tuberculosis	495
10	Chronic obstructive pulmonary disease	343	10	Colon and rectum cancers	477

Disease burden – adults aged 15–59			Disease burden – adults aged 60+		
Rank	Cause	DALYs (000)	Rank	Cause	DALYs (000)
1	HIV/AIDS	68 661	1	Ischaemic heart disease	31 481
2	Unipolar depressive disorders	57 843	2	Cerebrovascular disease	29 595
3	Tuberculosis	28 380	3	Chronic obstructive pulmonary disease	14 380
4	Road traffic injuries	27 264	4	Alzheimer and other dementias	8 569
5	Ischaemic heart disease	26 155	5	Cataracts	7 384
6	Alcohol use disorders	19 567	6	Lower respiratory infections	6 597
7	Hearing loss, adult onset	19 486	7	Hearing loss, adult onset	6 548
8	Violence	18 962	8	Trachea, bronchus, lung cancers	5 952
9	Cerebrovascular disease	18 749	9	Diabetes mellitus	5 882
10	Self-inflicted injuries	18 522	10	Vision disorders, age-related and other	4 766

Nearly 80% of the almost 3 million global deaths from HIV/AIDS in 2002 occurred in sub-Saharan Africa. As stated earlier, HIV/AIDS is the leading cause of death in this region. It causes more than 6000 deaths every day and accounts for one in two deaths of adults aged 15–59 years. It has reversed mortality trends among adults in this region and turned previous gains in life expectancy into a continuous decline in life expectancy since 1990.

Mortality and disease among older adults

In developing countries, 42% of adult deaths occur after 60 years of age, compared with 78% in developed countries. Globally, 60-year-olds have a 55% chance of dying before their 80th birthday. Regional variations in risk of death at older ages are smaller, ranging from around 40% in the developed countries of western Europe to 60% in most developing regions and 70% in Africa. Historical data from countries such as Australia and Sweden show that life expectancy at age 60 changed slowly during the first six to seven decades of the 20th century but, since around 1970, has started to increase substantially. Life expectancy at age 60 has now reached 25 years in Japan. From 1990 onwards, eastern European countries such as Hungary and Poland have started to experience similar improvements in mortality for older people, but others, such as the Russian Federation, have not, and are experiencing worsening trends. The leading causes of mortality and burden of disease in older people have not changed greatly over the past decade.

The growing burden of noncommunicable diseases

The burden of noncommunicable diseases is increasing, accounting for nearly half of the global burden of disease (all ages), a 10% increase from estimated levels in 1990. While the proportion of burden from noncommunicable diseases in developed countries remains stable at over 80% in adults aged 15 years and over, the proportion in middle-income countries has already exceeded 70%. Surprisingly, almost 50% of the adult disease burden in the high-mortality regions of the world is now attributable to noncommunicable diseases. Population ageing (see Box 1.3) and changes in the distribution of risk factors have accelerated the epidemic of noncommunicable diseases in many developing countries (10).

Box 1.3 Population ageing

A demographic revolution is under way throughout the world. Today, there are around 600 million people in the world aged 60 years and over. This total will double by 2025 and by 2050 will reach two billion, the vast majority of whom will be in the developing world. Such accelerated global population ageing will increase economic and social demands on all countries.

While the consequences of population ageing in the areas of health and income security are already at the centre of discussions by policy-makers and planners in the developed world, the speed and impact of population ageing in the less developed regions are yet to be fully appreciated. By 2025, in countries such as Brazil, China and Thailand, the proportion of older people will be above 15% of the population, while in Colombia, Indonesia and Kenya the absolute numbers will increase by up to 400% over the next 25 years – up to eight times higher than the increases in already aged societies in western Europe where population ageing occurred over a much longer period of time (11).

Population ageing is driven by two factors: a decline in the proportion of children, reflecting declines in fertility rates in the overall population, and an increase in the proportion of adults 60 years of age and over as mortality rates decline. This demographic transition will bring

with it a number of major challenges for health and social policy planners. As populations age, the burden of noncommunicable diseases increases. Evidence from developed countries, however, shows that the prevalence of chronic diseases and the levels of disability in older people can be reduced with appropriate health promotion and strategies to prevent noncommunicable diseases. It is of great concern that the prevalence of risk factors for chronic diseases is on the increase in developing countries. Opportunities missed by health systems to deal with or manage age-related noncommunicable diseases will lead to increases in the incidence, prevalence and complications of these diseases and may take resources away from other priorities, such as child and maternal health.

Improving health systems and their responses to population ageing makes economic sense. With old-age dependency ratios increasing in virtually all countries of the world, the economic contributions and productive roles of older people will assume greater importance. Supporting people to remain healthy and ensure a good quality of life in their later years is one of the greatest challenges for the health sector in both developed and developing countries (12).

Cardiovascular diseases account for 13% of the disease burden among adults over 15 years of age. Ischaemic heart disease and cerebrovascular disease (stroke) are the two leading causes of mortality and disease burden among older adults (over age 60). In developed countries, ischaemic heart disease and cerebrovascular disease are together responsible for 36% of deaths, and death rates are higher for men than women. The increase in cardiovascular mortality in eastern European countries has been offset by continuing declines in many other developed countries. In contrast, the mortality and burden resulting from cardiovascular diseases are rapidly increasing in developing regions (see Chapter 6).

Of the 7.1 million cancer deaths estimated to have occurred in 2002, 17% were attributable to lung cancer alone and of these, three-quarters occurred among men (13). There were an estimated 1.2 million lung cancer deaths in 2000, an increase of nearly 30% in the 10 years from 1990, reflecting the emergence of the tobacco epidemic in low-income and middle-income countries.

Stomach cancer, which until recently was the leading cause of cancer mortality worldwide, has been declining in all parts of the world where trends can be reliably assessed, and now causes 850 000 deaths each year, or about two-thirds as many as lung cancer. Liver and colon/rectum cancers are the third and fourth leading causes. More than half of all liver cancer deaths are estimated to occur in the Western Pacific Region. Among women, the leading cause of cancer deaths is breast cancer. During the past decade, breast cancer survival rates have been improving, though the chance of survival varies according to factors such as coverage and access to secondary prevention. Globally, neuropsychiatric conditions account for 19% of disease burden among adults (see Box 1.4), almost all of this resulting from non-fatal health outcomes.

Injuries – a hidden epidemic among young men

Injuries, both unintentional and intentional, primarily affect young adults, often resulting in severe disabling consequences. Overall, injuries accounted for over 14% of adult disease burden in the world in 2002. In parts of the Americas, eastern Europe and the Eastern Mediterranean Region, more than 30% of the entire disease burden among male adults aged 15–44 years is attributable to injuries.

Box 1.4 The burden of mental ill-health

Mental, neurological and substance use disorders cause a large burden of disease and disability: globally, 13% of overall disability-adjusted life years (DALYs) and 33% of overall years lived with disability (YLDs). Behind these stark figures lies human suffering: more than 150 million people suffer from depression at any point in time; nearly 1 million commit suicide every year; and about 25 million suffer from schizophrenia, 38 million from epilepsy, and more than 90 million from an alcohol or drug use disorder.

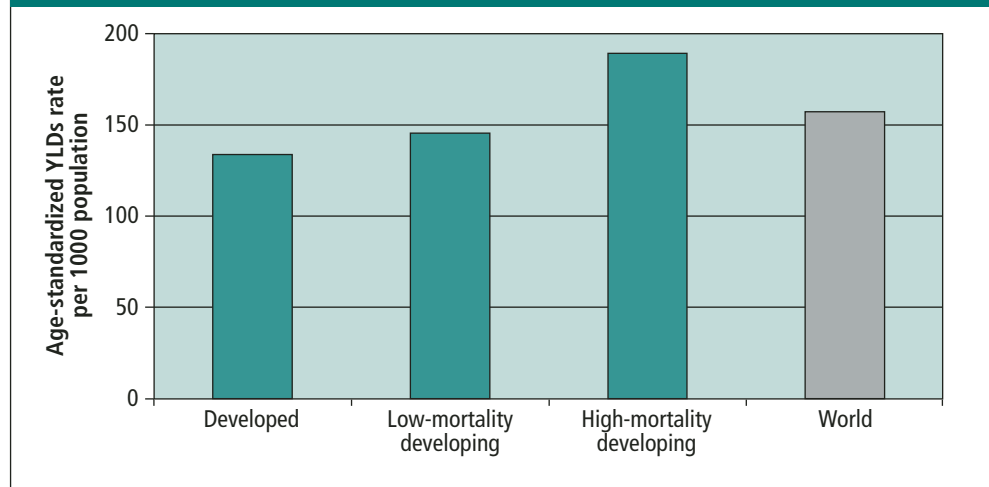
A large proportion of individuals do not receive any health care for their condition, firstly because the mental health infrastructure and services in most countries are grossly insufficient for the large and growing needs (14) and, secondly, because widely prevalent stigma and discrimination prevent them from seeking help. A policy for mental health care is lacking in 40% of countries, and 25% of those with a policy assign no budget to implement it. Even where a budget exists, it is very small: 36% of countries devote less than 1% of their total health resources to mental health care. Though community-based services are recognized to be the most effective, 65% of all psychiatric beds are still in mental hospitals – cutting into the already meagre budgets while

providing largely custodial care in an environment that may infringe patients' basic human rights.

Cost-effective health care interventions are available. Recent research clearly demonstrates that disorders such as depression, schizophrenia, alcohol problems and epilepsy can be treated within primary health care. Such treatment is well within the reach of even low-income countries and will reduce substantially the overall burden of these disorders. Interventions rely on inexpensive medicines that are commonly available and, for the most part, free of patent restrictions, and basic training of health professionals (15).

Mental health also has an impact on health care systems in other ways. A large proportion of people with chronic physical diseases such as diabetes and hypertension, malignancies and HIV/AIDS suffer from concurrent depression, which significantly interferes with their adherence to health care regimens. Behavioural and lifestyle factors are also responsible for many communicable and noncommunicable diseases (10). Though these links have been recognized, most countries are not adequately using this information to enhance the effectiveness of their health care systems.

Figure 1.11 Age-standardized rate of years lived with disability (YLDs): developed and developing countries, 2002



Among men, road traffic injuries, violence and self-inflicted injuries are all among the top 10 leading causes of disease burden in the 15–44-year-old age group. Globally, road traffic injuries are the third leading cause of burden in that age and sex group, preceded only by HIV/AIDS and unipolar depression. The burden of road traffic injuries is increasing, especially in the developing countries of sub-Saharan Africa and South-East Asia, and particularly affects males (see Chapter 6).

Intentional injuries, a group that includes self-inflicted injuries and suicide, violence and war, account for an increasing share of the burden, especially among economically productive young adults. In developed countries, suicides account for the largest share of intentional injury burden whereas, in developing regions, violence and war are the major causes. Countries of the former Soviet Union and other high-mortality countries of eastern Europe have rates of injury death and disability among males that are similar to those in sub-Saharan Africa.

Non-fatal health outcomes

The overall burden of non-fatal disabling conditions is dominated by a relatively short list of causes. In all regions, neuropsychiatric conditions, largely depression, are the most important causes of disability, accounting for over 35% of YLDs among adults (aged 15 and over). Their disabling burden is almost the same for men and women, but the major contributing causes are different. The burden of depression is 50% higher for women than for men, and women also have higher burden from anxiety disorders, migraine and senile dementias. In contrast, the burden for alcohol and drug use disorders is nearly six times higher in men than in women, and accounts for one-quarter of the male neuropsychiatric burden.

In high-mortality developing regions, visual impairment, hearing loss and HIV/AIDS are the other major contributors to YLDs. In developed and low-mortality developing regions, visual impairment, hearing loss, musculoskeletal disease, chronic obstructive pulmonary disease, and other noncommunicable diseases, particularly stroke, account for the majority of adult disability.¹

¹ Estimated YLDs by cause, age group and sex for 2002 are available on the WHO web site for the six WHO regions and for the 14 epidemiological subregions (www.who.int/evidence/bod).

Surprisingly, more than 80% of global YLDs are in developing countries and nearly half occur in high-mortality developing countries. Figure 1.11 shows higher rates of YLDs per 1000 (age-standardized to the world population in 2002) in developing regions, indicating a higher incidence of disabling conditions as well as increased levels of severity of these conditions. Although the prevalence of disabling conditions, such as dementia and musculoskeletal disease, is higher in countries with long life expectancies, this is offset by lower disability from conditions such as cardiovascular disease, chronic respiratory diseases and long-term sequelae of communicable diseases and nutritional deficiencies. In other words, people living in developing countries not only face lower life expectancies (higher risk of premature death) than those in developed countries, but also live a higher proportion of their lives in poor health.

Healthy life expectancy varies across regions of the world even more than total life expectancy, ranging from a low of 41 years for sub-Saharan Africa to 71.4 years for western Europe, with a global average of 57.7 years in 2002. Healthy life expectancy converts total life expectancy into equivalent years of “full health” by taking into account years lived in less than full health as a result of diseases and injuries. The gap between total life expectancy and healthy life expectancy represents the equivalent lost healthy years resulting from states of less than full health in the population, and ranges from 9% in the European Region and the Western Pacific Region to 15% in Africa. Annex Table 4 contains estimates of healthy life expectancy for all WHO Member States in 2002.

To sum up, this chapter is a reminder that children are among the most vulnerable members of societies around the world. Despite considerable achievements, much still needs to be done, urgently, to avert child deaths from preventable causes. The success stories in many poor countries in all regions demonstrate clearly that much progress can be made with limited resources. Tragically, many other countries, particularly in Africa, have lost the ground gained in previous decades. The gaps in mortality between rich and poor populations are widening, leaving 7% of the world's children and 35% of Africa's children at higher risk of death today than they were 10 years ago.

In the last five decades there have been impressive gains in adult health status worldwide. The average figures, however, mask disparities in population health. Of great concern are the reversals in adult mortality in the 1990s in sub-Saharan Africa caused by HIV/AIDS and in parts of eastern Europe attributable to a number of noncommunicable diseases (particularly cardiovascular and alcohol-related diseases) and injuries.

Demographic trends and health transitions, along with changes in the distribution of risk factors, have accelerated the epidemic of noncommunicable disease in many developing countries. Infectious diseases such as HIV/AIDS and tuberculosis have serious socioeconomic consequences in both the developed and the developing worlds. Thus, the majority of developing countries are facing a double burden from both communicable and noncommunicable diseases. In addition, contrary to common perceptions, disabilities tend to be more prevalent in developing regions, as the disease burden is often skewed towards highly vulnerable sub-populations. The global public health community is now faced with a more complex and diverse pattern of adult disease than previously expected. It has been estimated that 47% of premature deaths and 39% of the total disease burden result from 20 leading risk factors for childhood and adult diseases and injuries and that removal of these risks would increase global healthy life expectancy by 9.3 years, ranging from 4.4 years in industrialized countries of the Western Pacific Region to 16.1 years in parts of sub-Saharan Africa (16).

Historically unprecedented increases in life expectancy at older ages in developed countries have already exceeded earlier predictions of maximum population life expectancy. With such increases, the non-fatal burden of disease plays an increasingly important role, and it will be a major goal of health policy worldwide to ensure that longer life is accompanied by greater health and less disability.

This chapter has described many of the facts of life and death across the world and the underlying trends that influence them. Much of what has been reviewed here relates closely to the health-related Millennium Development Goals. Understanding the goals, and why the progress towards them is so important and at the same time so difficult, is the subject of the next chapter.

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