



Part 2

Causes of death

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1. Deaths in 2004: who and where?

Almost one in five of all deaths are of children aged under five years

In 2004, an estimated 58.8 million deaths occurred globally, of which 27.7 million were females and 31.1 million males. More than half of all deaths involved people 60 years and older, of whom 22 million were people aged 70 years and older, and 10.7 million were people aged 80 years and older. Almost one in five deaths in the world was of a child under the age of five years (Figure 1).

In Africa, death takes the young; in high-income countries, death takes the old

The distribution of deaths by age differs markedly between regions. In the African Region, 46% of all deaths were children aged under 15 years, whereas only 20% were people aged 60 years and over. In contrast, in the high-income countries, only 1% of deaths were children aged under 15 years, whereas 84% were people aged 60 years and older. There were also large differences in the Asia and Pacific regions. In the South-East Asia Region, 24% of deaths were of children aged under 15 years, compared with 8% in the low- and middle-income countries of the Western Pacific Region, where 67% of deaths were of people aged 60 years and older (Figure 2).

2. Deaths by broad cause groups

Out of every 10 deaths, 6 are due to noncommunicable conditions; 3 to communicable, reproductive or nutritional conditions; and 1 to injuries

The GBD study classifies disease and injury, causes of death and burden of disease into three broad cause groups:

- Group I – communicable, maternal, perinatal and nutritional conditions
- Group II – noncommunicable diseases
- Group III – injuries.

Group I causes are conditions that occur largely in poorer populations, and typically decline at a faster pace than all-cause mortality during the epidemiological transition (in which the pattern of mortality shifts from high death rates from Group I causes at younger ages to chronic diseases at older ages). Among both men and women, most deaths are due to noncommunicable conditions (Group II), and they account for about 6 out of 10 deaths globally. Communicable, maternal, perinatal and nutritional conditions are responsible for just under one third of deaths in both males and females. The largest difference between the sexes occurs for Group III, with injuries accounting for almost 1 in 8 male deaths and 1 in 14 female deaths (Figure 3).

Cardiovascular diseases are the leading cause of death

Figure 4 shows the distribution of deaths at all ages for 12 major cause groups (groups responsible for at least 2% of all deaths, plus maternal conditions). This illustrates the relative importance of the respective causes of death and of male–female differences. Cardiovascular diseases are the leading cause of death in the world, particularly among women; such diseases caused almost 32% of all deaths in women and 27% in men in 2004. Infectious and parasitic diseases are the next leading cause, followed by cancers, but these groupings show much smaller overall sex differentials. The largest differences between men and women are observed for intentional injuries (twice as high among men) and unintentional injuries. Maternal conditions account for 1.9% of all female deaths. The respiratory infections are treated by the GBD as a separate cause group from infectious and parasitic diseases, and are to be distinguished from respiratory diseases, which refers to noncommunicable respiratory diseases (refer to Annex Table C3).

Figure 1: Distribution of age at death and numbers of deaths, world, 2004

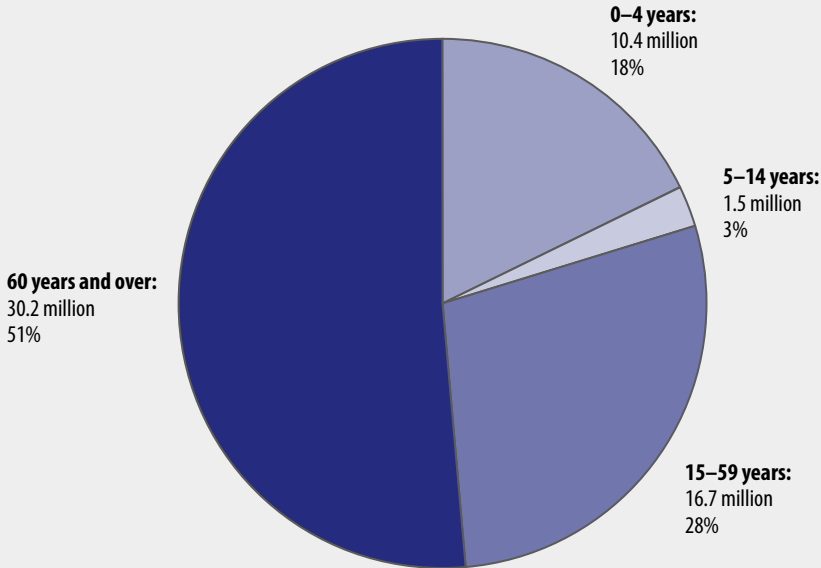
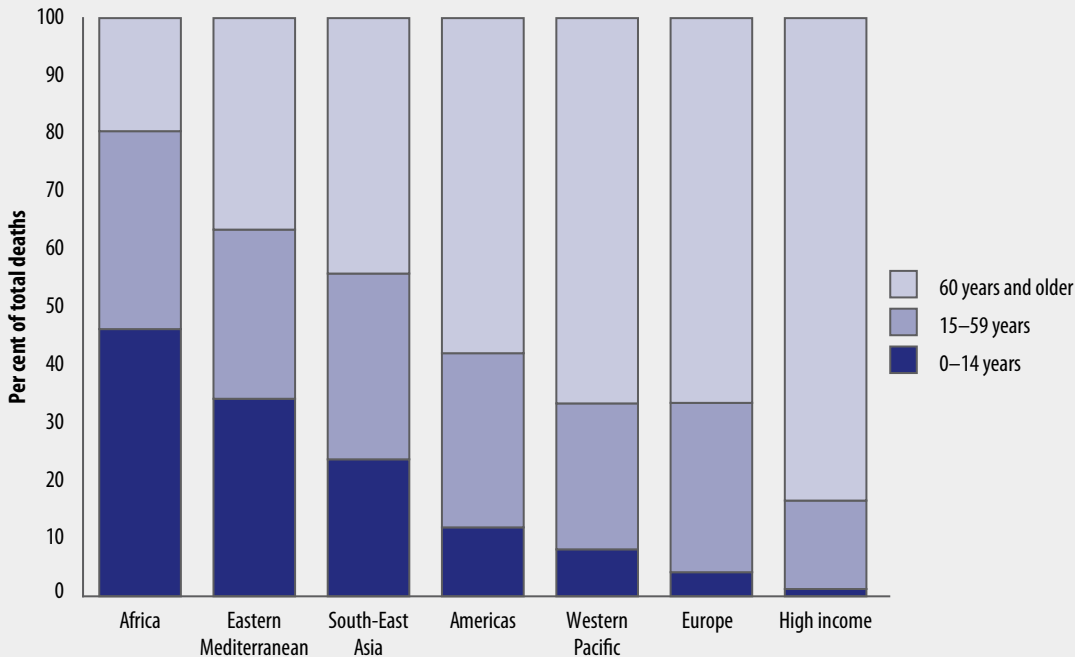


Figure 2: Per cent distribution of age at death by region, 2004



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Figure 3: Distribution of deaths in the world by sex, 2004

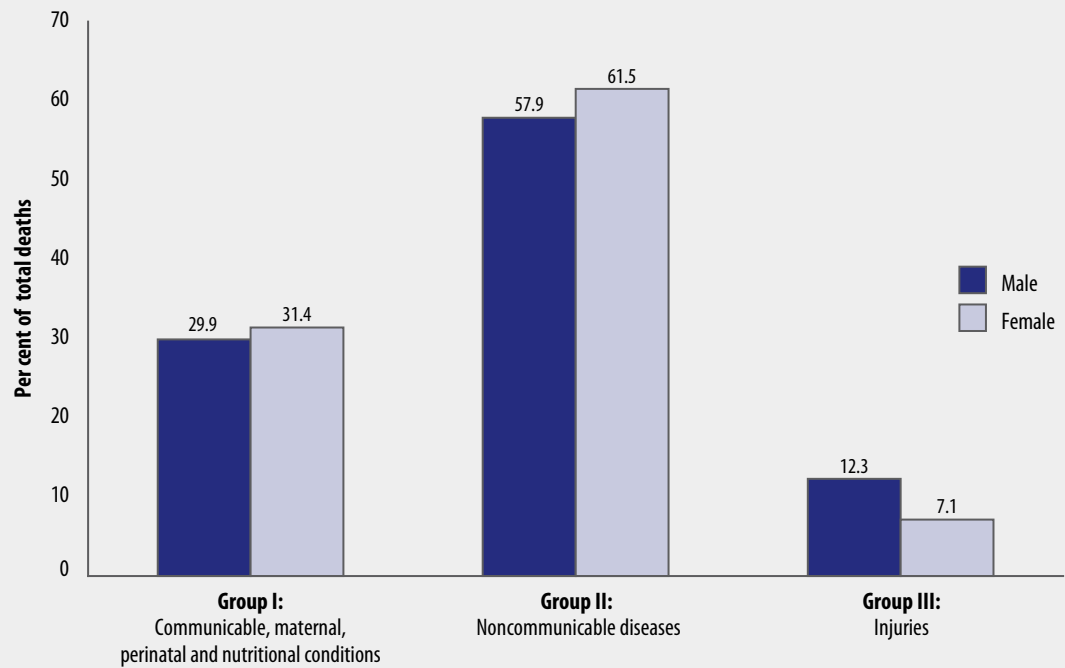
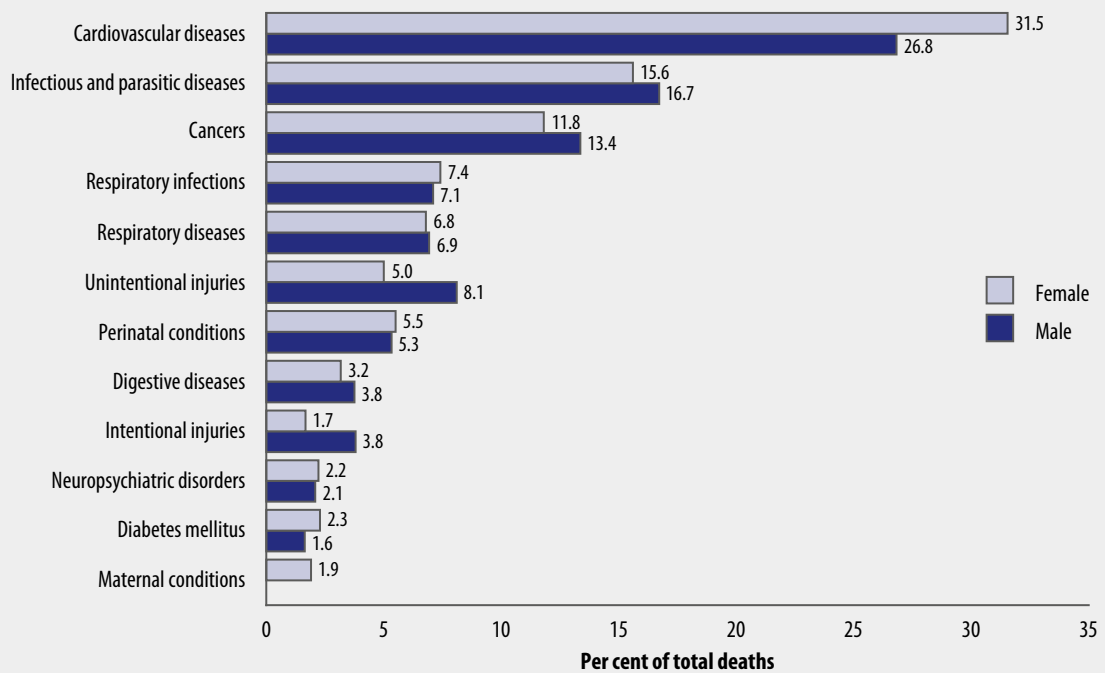


Figure 4: Distribution of deaths by leading cause groups, males and females, world, 2004



3. Leading causes of death

This report uses 136 categories for disease and injury causes. The 20 most frequent causes of death are shown in [Table 1](#). Ischaemic heart disease and cerebrovascular disease are the leading causes of death, followed by lower respiratory infections (including pneumonia), chronic obstructive pulmonary disease and diarrhoeal diseases. HIV/AIDS and TB are the sixth and seventh most common causes of death

respectively, and together caused 3.5 million deaths in 2004.

As may be expected from the very different distributions of deaths by age and sex, there are major differences in the ranking of causes between high- and low-income countries ([Table 2](#)). In low-income countries, the dominant causes are infectious and parasitic diseases (including malaria), and perinatal conditions. In the high-income countries, 9 out of the 10 leading causes of death are noncommunicable conditions, including four types of cancer. In the middle-income countries, the 10 leading causes of death are again dominated by noncommunicable conditions; they also include road traffic accidents as the sixth most common cause.

Table 1: Leading causes of death, all ages, 2004

	Disease or injury	Deaths (millions)	Per cent of total deaths
1	Ischaemic heart disease	7.2	12.2
2	Cerebrovascular disease	5.7	9.7
3	Lower respiratory infections	4.2	7.1
4	COPD	3.0	5.1
5	Diarrhoeal diseases	2.2	3.7
6	HIV/AIDS	2.0	3.5
7	Tuberculosis	1.5	2.5
8	Trachea, bronchus, lung cancers	1.3	2.3
9	Road traffic accidents	1.3	2.2
10	Prematurity and low birth weight	1.2	2.0
11	Neonatal infections ^a	1.1	1.9
12	Diabetes mellitus	1.1	1.9
13	Hypertensive heart disease	1.0	1.7
14	Malaria	0.9	1.5
15	Birth asphyxia and birth trauma	0.9	1.5
16	Self-inflicted injuries ^b	0.8	1.4
17	Stomach cancer	0.8	1.4
18	Cirrhosis of the liver	0.8	1.3
19	Nephritis and nephrosis	0.7	1.3
20	Colon and rectum cancers	0.6	1.1

COPD, chronic obstructive pulmonary disease.

^a This category also includes other non-infectious causes arising in the perinatal period, apart from prematurity, low birth weight, birth trauma and asphyxia. These non-infectious causes are responsible for about 20% of deaths shown in this category.

^b Self-inflicted injuries resulting in death can also be referred to as suicides.

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Table 2: Leading causes of death by income group, 2004

Disease or injury		Deaths (millions)	Per cent of total deaths	Disease or injury		Deaths (millions)	Per cent of total deaths
World				Low-income countries^a			
1	Ischaemic heart disease	7.2	12.2	1	Lower respiratory infections	2.9	11.2
2	Cerebrovascular disease	5.7	9.7	2	Ischaemic heart disease	2.5	9.4
3	Lower respiratory infections	4.2	7.1	3	Diarrhoeal diseases	1.8	6.9
4	COPD	3.0	5.1	4	HIV/AIDS	1.5	5.7
5	Diarrhoeal diseases	2.2	3.7	5	Cerebrovascular disease	1.5	5.6
6	HIV/AIDS	2.0	3.5	6	COPD	0.9	3.6
7	Tuberculosis	1.5	2.5	7	Tuberculosis	0.9	3.5
8	Trachea, bronchus, lung cancers	1.3	2.3	8	Neonatal infections ^b	0.9	3.4
9	Road traffic accidents	1.3	2.2	9	Malaria	0.9	3.3
10	Prematurity and low birth weight	1.2	2.0	10	Prematurity and low birth weight	0.8	3.2
Middle-income countries				High-income countries			
1	Cerebrovascular disease	3.5	14.2	1	Ischaemic heart disease	1.3	16.3
2	Ischaemic heart disease	3.4	13.9	2	Cerebrovascular disease	0.8	9.3
3	COPD	1.8	7.4	3	Trachea, bronchus, lung cancers	0.5	5.9
4	Lower respiratory infections	0.9	3.8	4	Lower respiratory infections	0.3	3.8
5	Trachea, bronchus, lung cancers	0.7	2.9	5	COPD	0.3	3.5
6	Road traffic accidents	0.7	2.8	6	Alzheimer and other dementias	0.3	3.4
7	Hypertensive heart disease	0.6	2.5	7	Colon and rectum cancers	0.3	3.3
8	Stomach cancer	0.5	2.2	8	Diabetes mellitus	0.2	2.8
9	Tuberculosis	0.5	2.2	9	Breast cancer	0.2	2.0
10	Diabetes mellitus	0.5	2.1	10	Stomach cancer	0.1	1.8

COPD, chronic obstructive pulmonary disease.

^a Countries grouped by gross national income per capita – low income (\$825 or less), high income (\$10 066 or more). Note that these high-income groups differ slightly from those used in the Disease Control Priorities Project (see Annex C, Table C2).

^b This category also includes other non-infectious causes arising in the perinatal period, which are responsible for about 20% of deaths shown in this category.

4. Cancer mortality

The relative importance of the most common cancers, in terms of numbers of deaths at all ages, is summarized in Table 3. Globally, lung cancers (including trachea and bronchus cancers) are the most common cause of death from cancer among men, and this is also the case in five of the seven regional groupings of countries. Lung cancers are the second most common cause of male cancer deaths in the low- and middle-income countries of

the Americas, and the fifth most common cause in the African Region. For males, stomach cancer mortality is second overall, being a leading cause in all regions, whereas liver cancer is the second leading cause of cancer death in the African Region. Colon and rectum cancers are the fourth leading cause and oesophagus cancer the fifth leading cause globally. Prostate cancer is sixth globally, but is the leading cause of cancer deaths in the African Region and in the low- and middle-income countries of the Region of the Americas. In the South-East Asia Region,

cancers of the mouth and oropharynx are the second leading cause of cancer deaths.

For women, 15 cancers are ranked for each of the regions. The most common cancer at the global level is breast cancer, followed by cancers of the trachea, bronchus and lung, and stomach cancer. Breast cancer is the leading cause in four of the seven regions, second in two regions and fifth in the Western

Pacific Region. Stomach cancer is the main cause of cancer death among women in that Region, followed by lung cancer and liver cancer. Cervix uteri cancer is the number one cause of cancer deaths in the South-East Asia Region and the African Region. Other cancers of the female reproductive system are the eighth (ovary) and thirteenth (corpus uteri) leading causes of cancer deaths globally.

Table 3: Ranking of most common cancers among men and women according to the number of deaths, by cancer site and region, 2004

	World	High income	Africa	Americas	Eastern Mediter-ranean	Europe	South-East Asia	Western Pacific
Men								
Trachea, bronchus, lung cancers	1	1	5	2	1	1	1	1
Stomach cancer	2	4	6	3	4	2	5	2
Liver cancer	3	5	2	10	10	10	6	3
Colon and rectum cancers	4	2	8	4	8	3	7	5
Oesophagus cancer	5	8	3	8	6	9	3	4
Prostate cancer	6	3	1	1	9	4	8	11
Mouth and oropharynx cancers	7	11	7	7	5	5	2	7
Lymphomas and multiple myeloma	8	6	4	5	3	11	4	9
Leukaemia	9	10	10	6	7	8	9	6
Bladder cancer	10	9	9	11	2	6	10	10
Pancreas cancer	11	7	11	9	11	7	11	8
Melanoma and other skin cancers	12	12	12	12	12	12	12	12
Women								
Breast cancer	1	1	2	1	1	1	2	5
Trachea, bronchus, lung cancers	2	2	11	5	10	4	5	2
Stomach cancer	3	6	5	3	5	3	8	1
Colon and rectum cancers	4	3	7	4	8	2	6	6
Cervix uteri cancer	5	10	1	2	6	5	1	7
Liver cancer	6	8	3	10	12	11	11	3
Oesophagus cancer	7	13	6	12	2	12	4	4
Ovary cancer	8	7	8	8	9	6	7	10
Lymphomas and multiple myeloma	9	5	4	6	4	10	9	12
Pancreas cancer	10	4	12	7	14	7	12	9
Leukaemia	11	9	10	9	3	8	10	8
Mouth and oropharynx cancers	12	15	9	14	7	15	3	11
Corpus uteri cancer	13	11	15	11	13	9	14	14
Bladder cancer	14	12	13	13	11	14	13	13
Melanoma and other skin cancers	15	14	14	15	15	13	15	15

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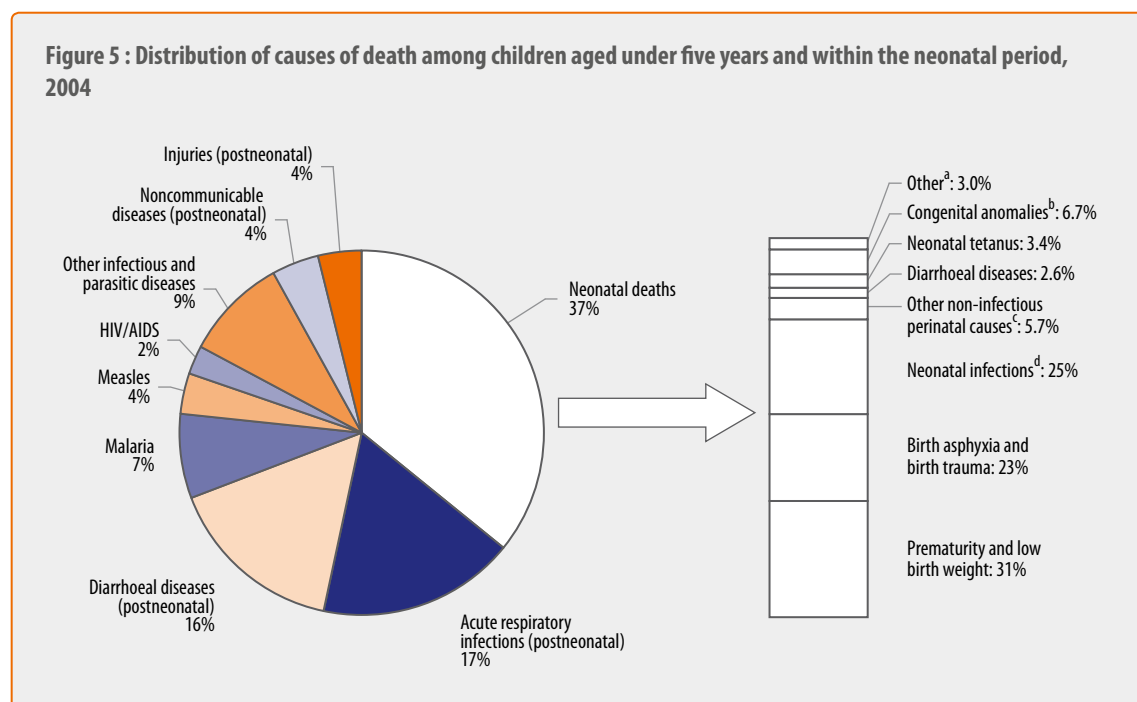
5. Causes of death among children aged under five years

Six causes of death account for 73% of the 10.4 million deaths among children under the age of five years worldwide (Figure 5):

- acute respiratory infections, mainly pneumonia (17%)
- diarrhoeal diseases (17%)
- prematurity and low birth weight (11%)
- neonatal infections such as sepsis (9%)

- birth asphyxia and trauma (8%)
- malaria (7%).

The four communicable disease categories above account for one half (50%) of all child deaths. Undernutrition is an underlying cause in an estimated 30% of all deaths among children under five (14). In this analysis, “undernutrition” refers to childhood malnutrition resulting in stunting and wasting, together with micronutrient deficiencies (iron, iodine, vitamin A and zinc). If the effects of suboptimal breastfeeding are also included, an estimated 35% of child deaths are due to undernutrition.



^a Includes other non-communicable diseases (1%) and injuries (0.3%).

^b ICD-10 codes Q00-Q99. Another 1.2% of neonatal deaths are due to genetic conditions classified elsewhere.

^c Other non-infectious causes arising in the perinatal period.

^d Includes all neonatal infections except diarrhoeal diseases and neonatal tetanus.

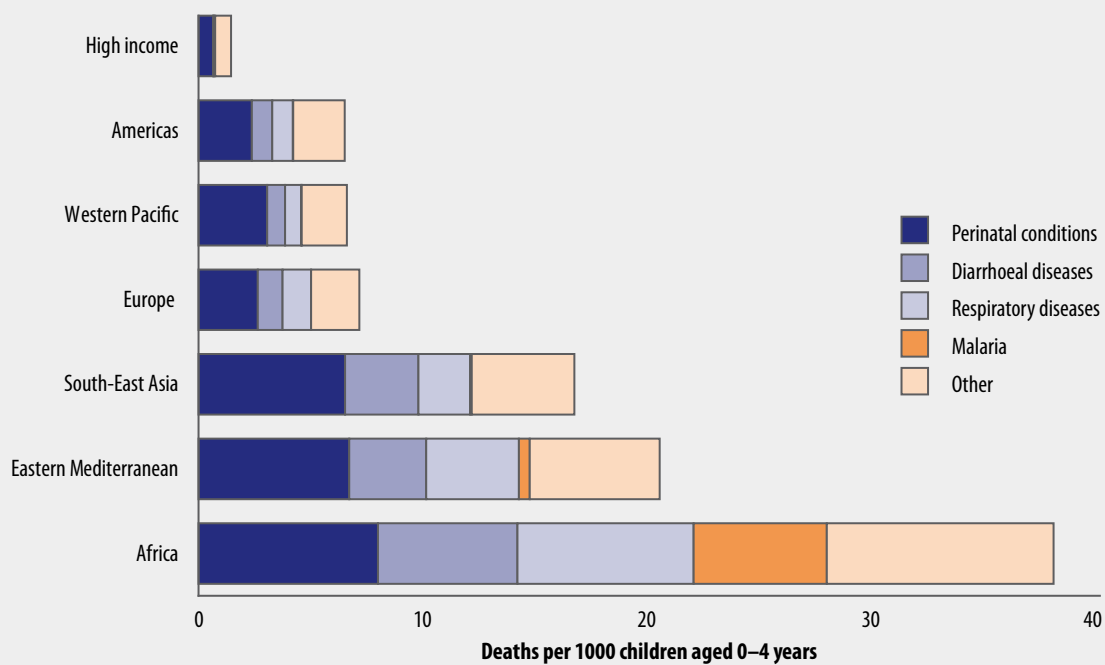
Deaths in the neonatal period (0–27 days) account for more than one third of all deaths in children. Among neonatal deaths, three main causes account for 80% of all neonatal deaths: prematurity and low birth weight (31%), neonatal infections (mainly sepsis and pneumonia and excluding diarrhoeal diseases) (26%) and birth asphyxia and birth trauma (23%).

Several analyses have shown that the decline in mortality in children aged under five years is falling behind the Millennium Development Goal 4 of reducing child mortality by two thirds from 1990 levels (15, 16). For some causes – notably for measles and diarrhoeal diseases – there is evidence of a substantial decline. The GBD analysis by cause of death also shows that renewed efforts will be needed to prevent and control pneumonia and diarrhoea, and to address the underlying cause of undernutrition

in all WHO regions (Figure 6). In the WHO African Region, increased efforts to prevent and control malaria are essential. Deaths in the neonatal period must also be addressed in all regions to achieve the Millennium Development Goal 4. In general, neonatal mortality becomes more important as mortality levels in children aged under five years decline. Cost-effective interventions are available for all major causes of death (17).

Deaths in the neonatal period – including prematurity and low birth weight, birth asphyxia and birth trauma, and other perinatal conditions based on the GBD cause list – represent between 42% and 54% of child deaths in all regions apart from the African Region, where the proportion of neonatal deaths (25%) is depressed by high numbers of postneonatal deaths, particularly those due to malaria (Figure 6).

Figure 6: Child mortality rates by cause and region, 2004



Among the 10.4 million deaths in children aged under five years worldwide, 4.7 million (45%) occur in the African Region, and an additional 3.1 million (30%) occur in the South-East Asia Region. The death rate per 1000 children aged 0–4 years in the African Region is almost double that of the region with the next highest rate, the Eastern Mediterranean, and more than double that of any other region (Figure 6). The two leading communicable disease killers in all regions are diarrhoeal diseases and respiratory infections. Deaths directly attributable to malaria occur almost entirely in the African Region, representing 16% of all under-five deaths in that region.

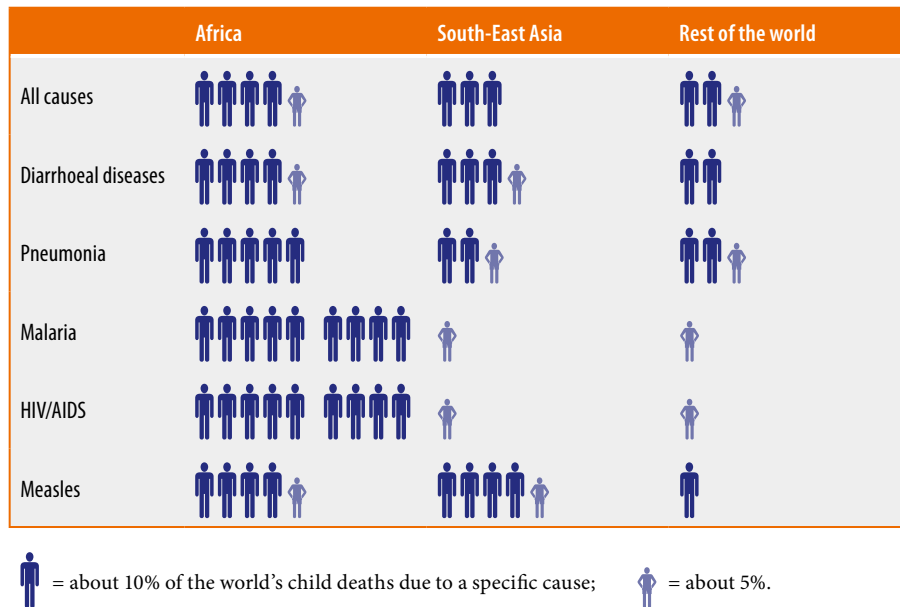
HIV/AIDS and measles are important causes of death summarized in the “other” category. Globally, estimates suggest that 2.5% of all child deaths are associated with HIV infection. In the African Region, however – where more than 9 out of 10 of

the total global number of child deaths due to HIV/AIDS in 2004 occurred – 5% of all child deaths are associated with HIV. Measles mortality, which has declined considerably in recent years, is estimated to be responsible for 4% of deaths among children aged under five years worldwide and also 4% of such deaths in the African Region.

More than 7 out of every 10 child deaths are in Africa and South-East Asia

Further analyses of under-five deaths by cause show a burden distribution that is heavily skewed toward Africa (Table 4). More than 9 out of 10 child deaths directly attributable to malaria, 9 out of 10 child deaths due to HIV/AIDS, 4 out of 10 child deaths due to diarrhoeal diseases and 5 out of 10 child deaths due to pneumonia occur in the WHO African Region.

Table 4: Distribution of child deaths for selected causes by selected WHO region, 2004



6. Causes of death among adults aged 15–59 years

The ranking of regions by mortality rates among adults aged 15–59 years differs markedly from the rankings by child mortality. The European Region (low- and middle-income countries) is the WHO region with the second highest mortality level for adults aged 15–59 years; the mortality level is lower than for the African Region but higher than that for the South-East Asia Region (Figure 7). The Eastern Mediterranean Region drops to fourth place for this age group.

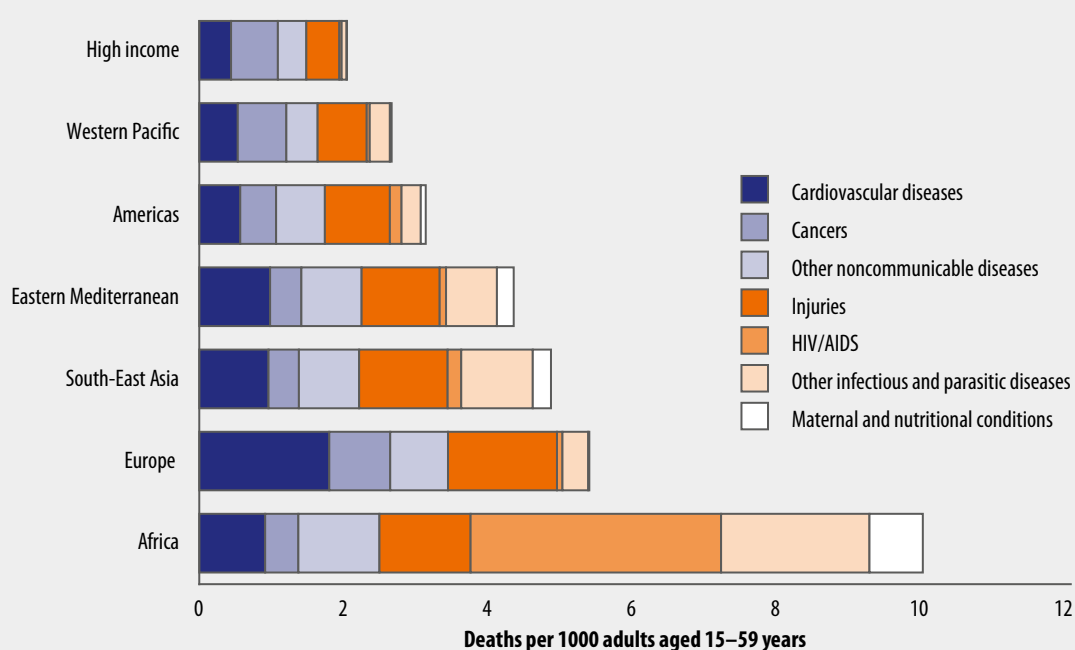
The difference between the high-income countries and other regions is less pronounced for adult mortality than for child mortality, due in part to the population structure – high-income countries have a higher proportion of people in the 15–59 years age group, and a higher proportion of people at the older end of this range, than lower income countries. These rankings are overshadowed by adult mortality in the African Region, which is 40% higher than for the next highest mortality region, and nearly four

times higher than for high-income countries.

The mortality rate due to noncommunicable diseases is highest in Europe, where nearly two thirds of all deaths at ages 15–59 years for low- and middle-income countries are associated with cardiovascular diseases, cancers and other noncommunicable diseases. Mortality rates due to noncommunicable diseases are second highest in the African Region, followed by the Eastern Mediterranean and South-East Asia regions, and lowest in the high-income countries. Injury mortality ranges from 0.5 (high-income countries) to 1.5 (European Region) per 1000 adults aged 15–59 years. The proportion of deaths in this age group due to injuries ranges from 22% (high-income countries) to 29% (the Americas) of all deaths at ages 15–59, except in Africa, where it is 13%.

Group I causes of death – which include infectious and parasitic diseases, and maternal and nutritional conditions – account for more than one fifth of all deaths in adults aged 15–59 years in two regions: South-East Asia (29%) and Africa (62%). This includes 35% of the adult deaths due to HIV/

Figure 7: Adult mortality rates by major cause group and region, 2004



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AIDS in Africa. In fact, the mortality rate among adults due to HIV/AIDS alone in Africa is higher than mortality at 15–59 years due to all causes in three other regions: high-income countries, the Americas and the Western Pacific Region.

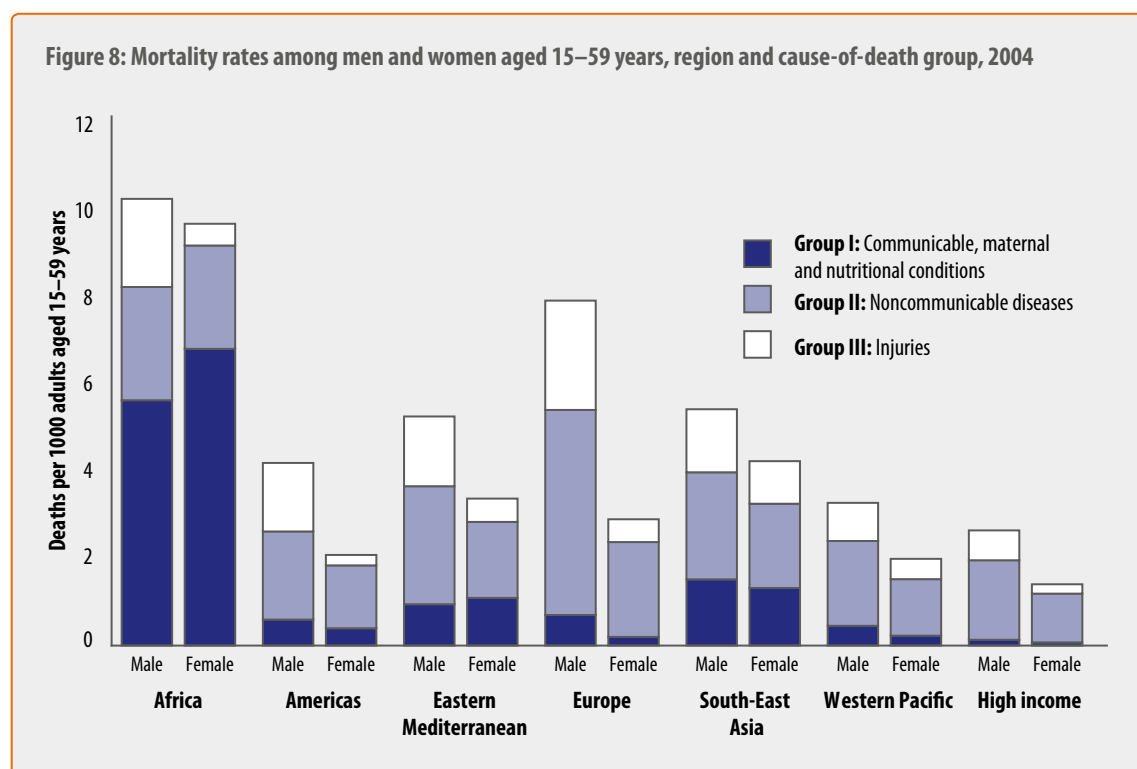
Mortality is high among adult men in Eastern Europe

There are major differences in adult mortality by sex and major cause grouping (Figure 8). Overall, mortality is highest among men and women in the African Region, mainly because of high mortality due to Group I causes. Men in the European Region (excluding high-income countries) had the second highest mortality rates at ages 15–59 years, considerably higher than mortality in South-East Asia, the Eastern Mediterranean and the Americas. In all regions, men had higher mortality rates than women. The largest differences were observed in Europe (male mortality 2.7 times as high as the female mortality rate), the Americas (2.0 times as high) and high-income countries (1.9 times as high).

HIV/AIDS is the main cause of adult mortality in Africa

In the African Region, mortality among men is slightly higher than among women, due entirely to higher mortality through injuries. Women have higher mortality due to Group I causes. Figure 9 presents a more detailed look at the mortality rates in the African Region, by sex, for major cause groupings. At ages 15–59 years, women have much higher mortality than men for HIV/AIDS, which causes more than half of all deaths in Group I and 40% of all female deaths. Maternal conditions were associated with 14% of all deaths.

In the South-East Asia Region, differences between male and female mortality were relatively small, with similar levels of mortality due to Group I causes, and somewhat higher mortality for men due to Group II and III causes. The Eastern Mediterranean Region presents a different picture, with much higher mortality among men, due almost entirely to Group III causes; that is, injuries. Figure 10 shows the distribution of male deaths due to Group III causes



in the Eastern Mediterranean. War and violence caused almost 40% of these deaths, followed by road traffic accidents (31%).

Injuries and cardiovascular diseases are leading causes of death among men in Europe

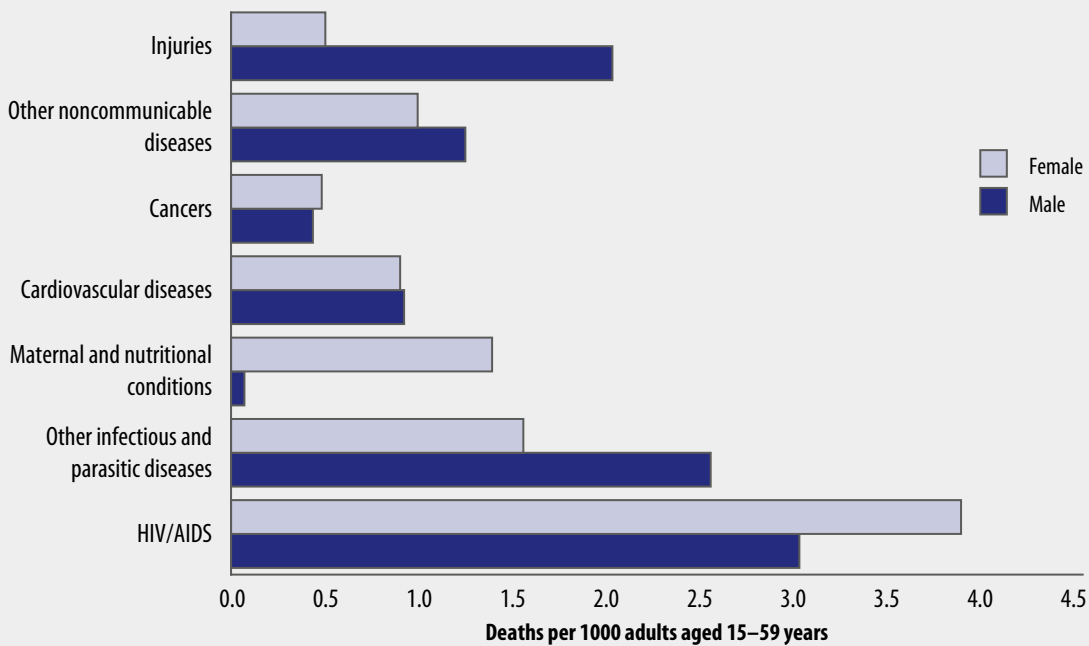
Figure 11 illustrates the high levels of mortality among men in the low- and middle-income countries of the European Region. The main reason is the high mortality rates due to cardiovascular diseases and injuries, each associated with a mortality rate exceeding 2.5 per 1000 adults aged 15–59 years, and together

being responsible for almost two thirds of overall male mortality in this age group.

Injuries are the main cause of death for adult men in Latin America and the Caribbean

The most striking data from the low- and middle-income countries of the Americas relate to injury mortality, which is about 1.6 per 1000 men aged 15–59 years, making it the leading cause group (Figure 12). Intentional injuries account for 57% of adult mortality due to injuries, while motor vehicle accidents account for 25% of adult mortality due to injuries.

Figure 9: Adult mortality rates among those aged 15–59 years in the African Region, by sex and major cause group, 2004



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Figure 10: Causes of injury deaths among men aged 15–59 years, Eastern Mediterranean Region, 2004

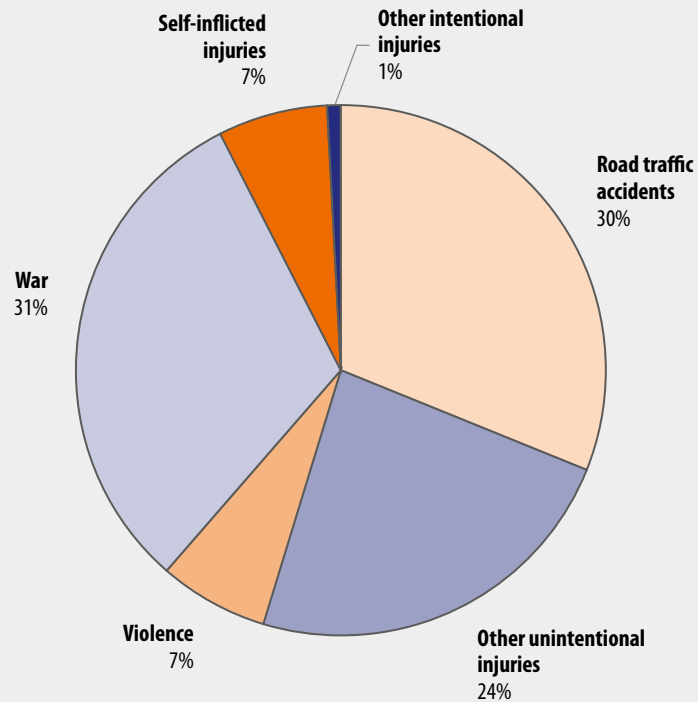


Figure 11: Adult mortality among those aged 15–59 years in the low- and middle-income countries of the European Region by sex and major cause grouping, 2004

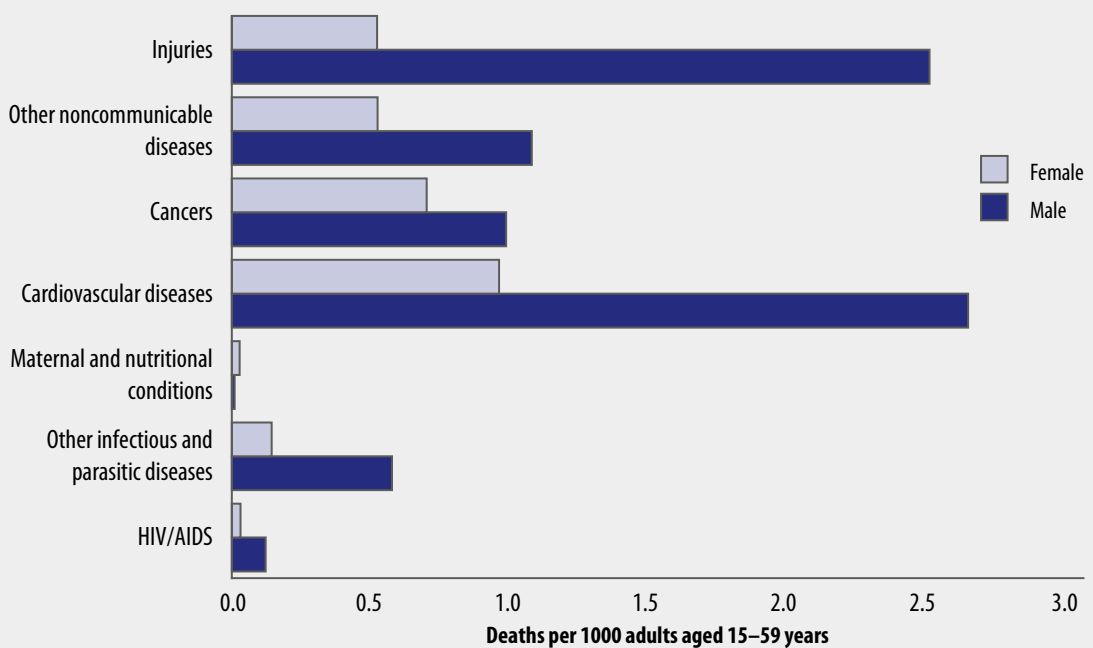
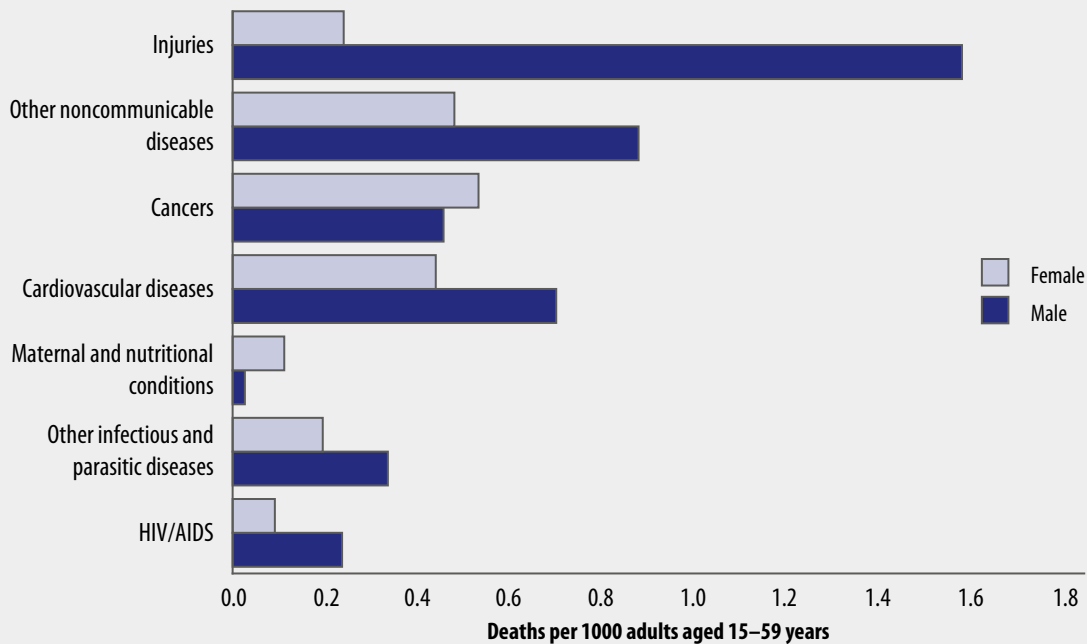


Figure 12: Adult mortality among those aged 15–59 years in the low- and middle-income countries of the Americas by sex and major cause grouping, 2004



7. Years of life lost: taking age at death into account

The years of life lost (YLL) measure is a measure of premature mortality that takes into account both the frequency of deaths and the age at which death occurs, and is an important input in the calculation of the DALYs for a disease or health condition (see Box 1, page 3). YLL are calculated from the number of deaths at each age multiplied by a global standard life expectancy for the age at which death occurs.

Taking into account the age at death causes major shifts in the proportion of deaths occurring in each of the WHO Regions (Figure 13). Based on the distribution of the world's 58.8 million deaths in 2004, the South-East Asia Region has the highest proportion of deaths (26%), followed by the African Region (19%), the Western Pacific Region (18%) and high-income countries (14%). Based on the YLL, however, the African Region accounts for 32% of all YLL, followed by South-East Asia (30%), the Western Pacific

(13%) and the Eastern Mediterranean (9%) regions. Using the YLL increases the relative importance of Africa and South-East Asia in the global picture, because people from these regions die at a relatively young age. The relative importance of the Eastern Mediterranean and the Americas change little, and the remaining three regions decline in relative importance.

Noncommunicable diseases become less important

Figure 14 presents similar data on the proportional distribution of deaths and YLL for the leading causes of death. Taking the age at death into account causes major shifts in the relative importance of the major causes. The two most common causes of death – ischaemic heart disease (12.2% of all deaths) and cerebrovascular conditions (9.7% of all deaths) – are responsible for only 5.8% and 4.2% of YLL, respectively. The main causes of YLL are perinatal conditions (prematurity and low birth weight, birth

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asphyxia and birth trauma, and other perinatal conditions), lower respiratory infections, diarrhoeal diseases and HIV/AIDS.

8. Projected trends in global mortality: 2004–2030

WHO has previously published projections of mortality from 2002 to 2030 based on the GBD 2002 estimates and using projection methods similar to those used in the original GBD 1990 study (18, 19). These projections have been updated (Figure 15) using the GBD 2004 estimates as a starting-point, together with updated projections of HIV deaths prepared by UNAIDS and WHO (20), and updated forecasts of economic growth by region published by the World Bank (21) (see Annex B7 for further information).

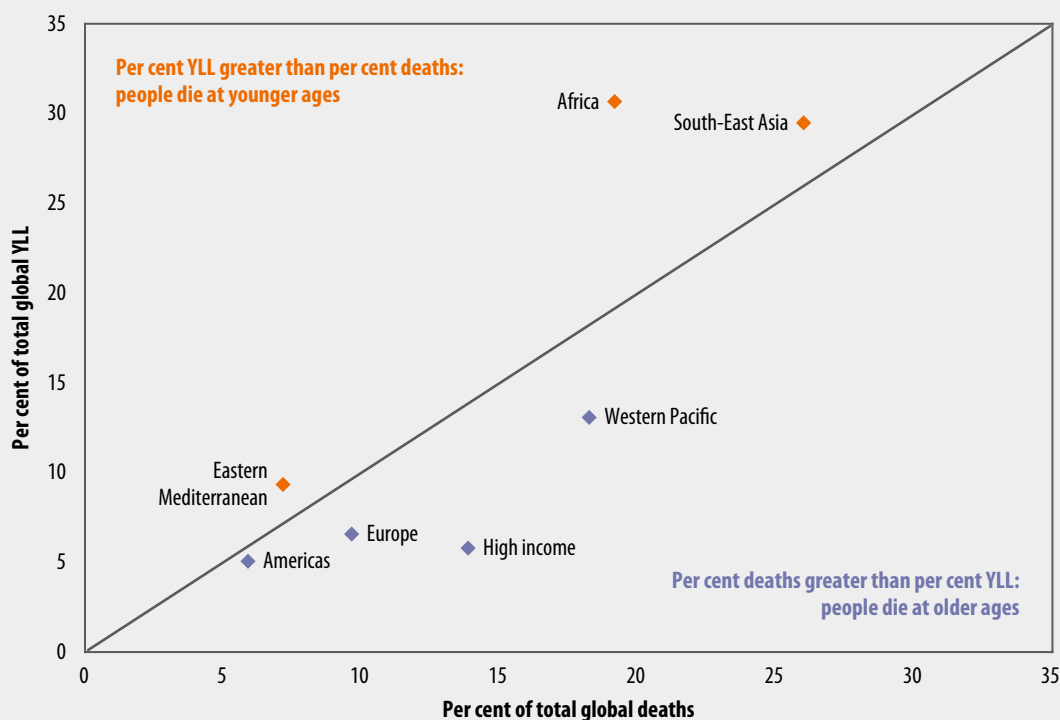
Large declines in mortality between 2004 and 2030 are projected for all of the principal communicable, maternal, perinatal and nutritional causes,

including HIV/AIDS, TB and malaria. Global HIV/AIDS deaths are projected to rise from 2.2 million in 2008 to a maximum of 2.4 million in 2012, and then to decline to 1.2 million in 2030, under a baseline scenario that assumes that coverage with antiretroviral drugs continues to rise at current rates.

Ageing of populations in low- and middle-income countries will result in significantly increasing total deaths due to most noncommunicable diseases over the next 25 years. Global cancer deaths are projected to increase from 7.4 million in 2004 to 11.8 million in 2030, and global cardiovascular deaths from 17.1 million in 2004 to 23.4 million in 2030. Overall, non-communicable conditions are projected to account for just over three quarters of all deaths in 2030.

The projected 28% increase in global deaths due to injury between 2004 and 2030 is predominantly due to the increasing numbers of road traffic accident deaths, and increases in population numbers are projected to more than offset small declines in age-specific death rates for other causes of injury.

Figure 13: Comparison of the proportional distribution of deaths and YLL by region, 2004



Road traffic accident deaths are projected to increase from 1.3 million in 2004 to 2.4 million in 2030, primarily due to the increased motor vehicle ownership and use associated with economic growth in low- and middle-income countries.

Leading causes of death in 2030

The four leading causes of death globally in 2030 are projected to be ischaemic heart disease, cerebrovascular disease (stroke), chronic obstructive pulmonary disease and lower respiratory infections (mainly pneumonia). Total tobacco-attributable deaths are projected to rise from 5.4 million in 2004 to 8.3 million in 2030, at which point they will represent almost 10% of all deaths globally.

Apart from lower respiratory infections, the 10 main causes of death in 2004 included three other communicable diseases: diarrhoeal diseases, HIV/AIDS and TB. HIV/AIDS deaths are projected to

decrease by 2030, but will remain the tenth leading cause of death globally. Deaths due to other communicable diseases are projected to decline at a faster rate: TB will drop to the twentieth leading cause and diarrhoeal diseases to twenty-third. Population ageing will result in significant increases in the rankings for most noncommunicable diseases, particularly cancers. Increasing levels of tobacco smoking in many middle- and low-income countries will contribute to increased deaths from cardiovascular disease, chronic obstructive pulmonary disease and some cancers. Road traffic accidents are projected to rise from the ninth leading cause of death globally in 2004 to the fifth in 2030.

Figure 16 shows projected trends in total numbers of global deaths for selected causes of death. This figure clearly illustrates the projected increases in numbers of deaths for important noncommunicable causes, and the projected declines for leading Group I causes.

Figure 14: Comparison of the proportional distribution of deaths and YLL by leading cause of death, 2004

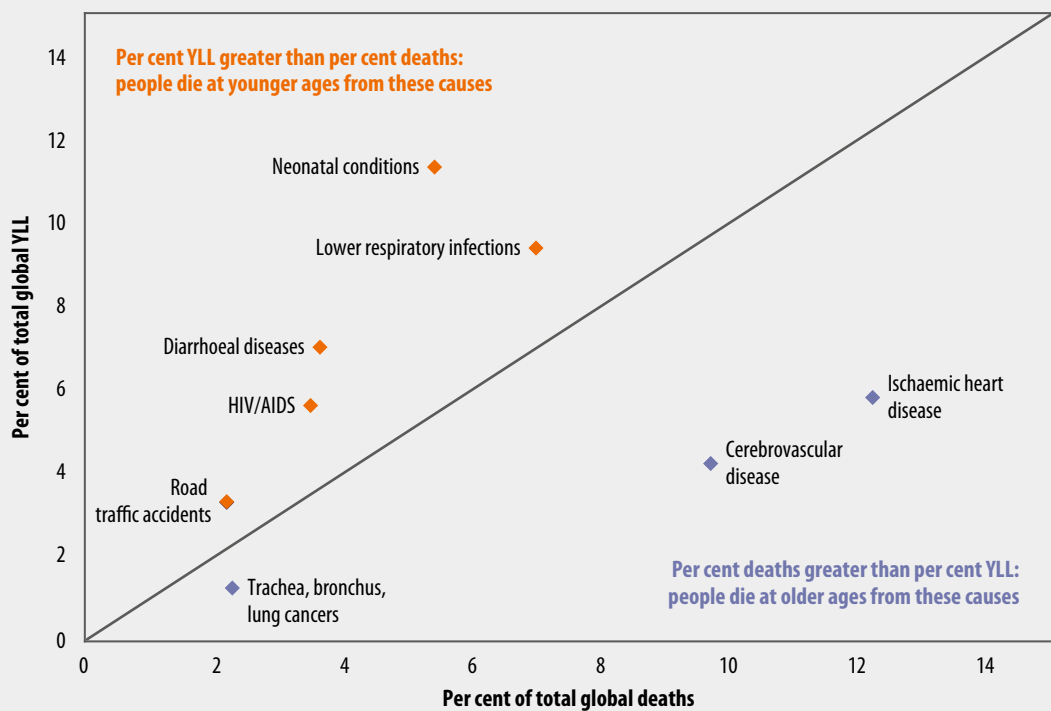


Figure 15: Projected deaths by cause for high-, middle- and low-income countries

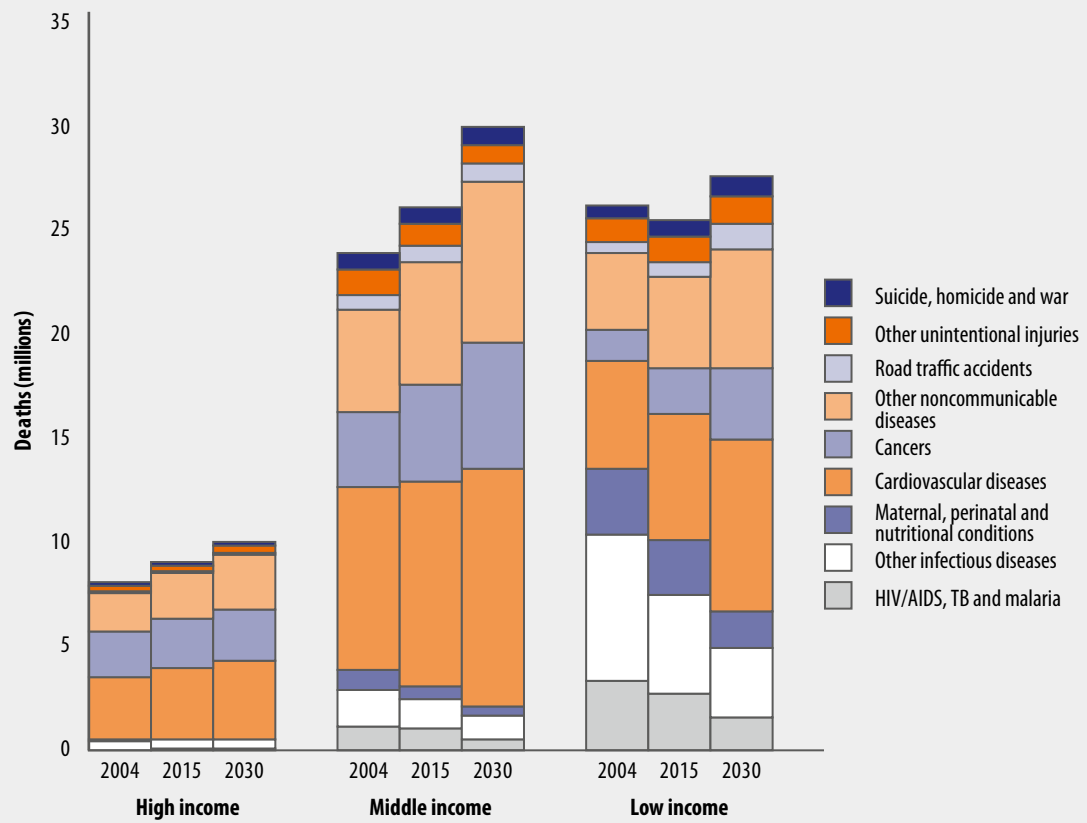
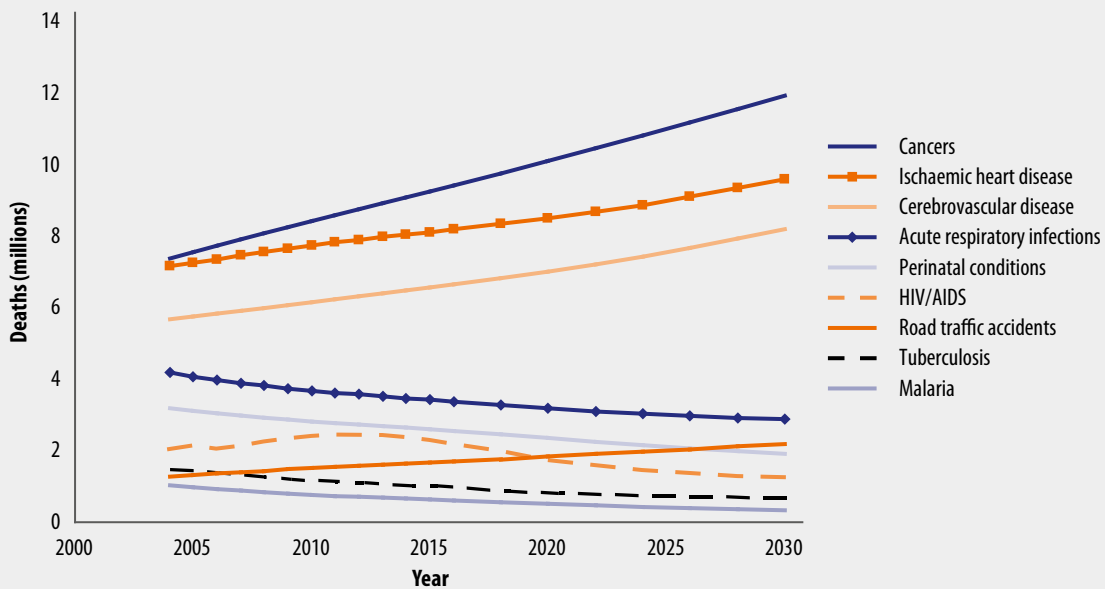


Figure 16: Projected global deaths for selected causes, 2004–2030



Decomposition of projected changes in cause-specific deaths

Projected changes in numbers of deaths may be due to changes in age-specific disease and injury death rates, or due to demographic changes that alter the size and age composition of the population, or both. Death rates are strongly age dependent for most causes, so changes in the age structure of a population may result in substantial changes in the number of deaths, even when the age-specific rates remain unchanged.

The relative impact of demographic and epidemiological change on the projected numbers of deaths by cause is shown in Figure 17. The change in the projected numbers of deaths globally from 2004 to 2030 can be divided into three components. The first is *population growth*, which shows the expected increase in deaths due to the increase in the total size of the global population, assuming there are no changes in age distribution. The second is *population ageing*, which shows the additional increase in deaths resulting from the projected changes in the age distribution of the population from 2004 to 2030. Both the population-related components are

calculated assuming that the age- and sex-specific death rates for causes remain at 2004 levels. The final component, *epidemiological change*, shows the increase or decrease in numbers of deaths occurring in the 2030 population due to the projected change from 2004 to 2030 in the age- and sex-specific death rates for each cause.

For most Group I causes, the projected reduction in global deaths from 2004 to 2030 is due mostly to epidemiological change, offset to some extent by population growth. Population ageing has little effect. For noncommunicable diseases, demographic changes in all regions will tend to increase total deaths substantially, even though age- and sex-specific death rates are projected to decline for most causes, other than for lung cancer. The impact of population ageing is generally much more important than that of population growth. For injuries, demographic change also dominates the epidemiological change. The total epidemiological change for injuries is small in most regions, because the projected increase in road traffic fatalities is offset by projected decreases in death rates for other unintentional injuries.

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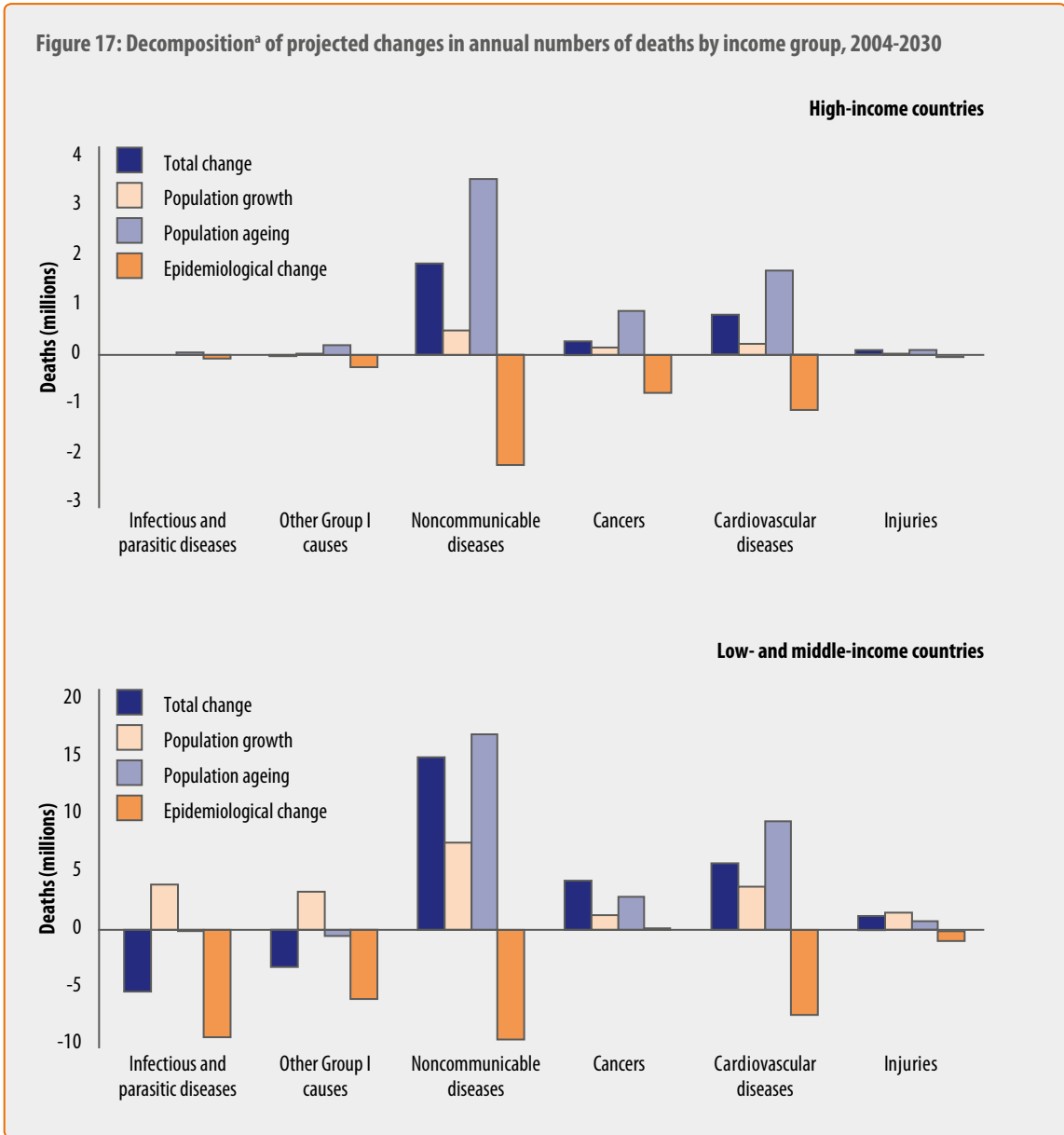
Annex A

Annex B

Annex C

References

Figure 17: Decomposition^a of projected changes in annual numbers of deaths by income group, 2004-2030



^a The dark blue bars show the total projected change in the annual numbers of deaths (in millions) from 2004 to 2030 for a given cause group. The dark orange bars show the change in the annual numbers of deaths that would have occurred due to epidemiological change only (changes in age- and sex-specific death rates) if the population size and age structure had remained unchanged. The light orange bars show the change that would have occurred due to population growth only, if the age structure had remained unchanged, and age- and sex-specific death rates had also remained unchanged. The purple bars show the change that would have occurred due to changes in the age distribution of the population only, if the size of the population had remained constant, and the age- and sex-specific death rates also remained unchanged.