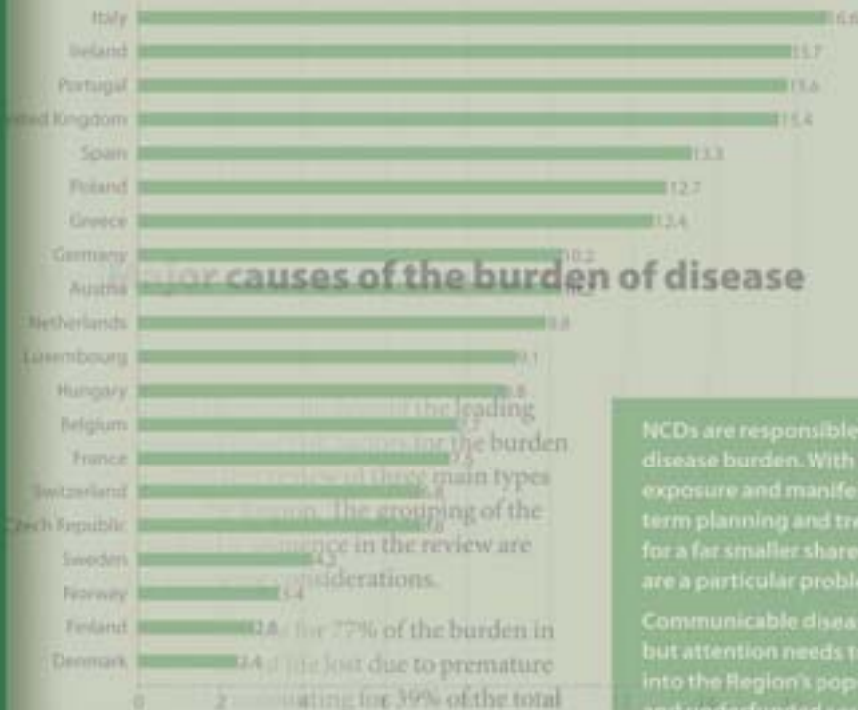




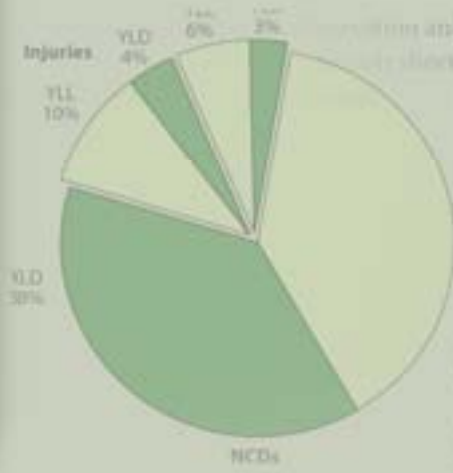
# The European health report 2005



Major causes of the burden of disease

Cardiovascular disease is the leading cause of the burden of disease in the Region, followed by cancer. The grouping of the diseases into three main types (communicable, maternal, perinatal and nutritional conditions; injuries; and noncommunicable diseases) in the review are based on the following considerations. Communicable diseases account for 77% of the burden in 2002, but attention needs to be paid to the increasing burden of injuries and noncommunicable diseases, which are a particular problem for some countries. Communicable diseases are a particular problem for some countries. Communicable diseases are a particular problem for some countries.

NCDs are responsible for 7% of the burden of disease. With the high exposure and manifestation of these diseases, long-term planning and treatment are needed for a far smaller share of the population. These diseases are a particular problem for some countries. Communicable diseases are a particular problem for some countries.



Cardiovascular disease is the leading cause of the burden of disease in the Region, followed by cancer. The grouping of the diseases into three main types (communicable, maternal, perinatal and nutritional conditions; injuries; and noncommunicable diseases) in the review are based on the following considerations. Communicable diseases account for 77% of the burden in 2002, but attention needs to be paid to the increasing burden of injuries and noncommunicable diseases, which are a particular problem for some countries. Communicable diseases are a particular problem for some countries.

	2002	1990	Change in 1990-2002 (%)
Total	152.11	144.14	5.5
Female	75.71	73.12	3.5
Male	76.40	71.02	7.3
Country range (lowest-highest)	54-145	49-126	-32.4
Country range (lowest-highest)	60-173	40-173	-52.6
Country range (lowest-highest)	88-272	73-247	6.7
Country range (lowest-highest)	169-298	169-298	6.3

## Public health action for healthier children and populations

Cardiovascular disease is the leading cause of the burden of disease in the Region, followed by cancer. The grouping of the diseases into three main types (communicable, maternal, perinatal and nutritional conditions; injuries; and noncommunicable diseases) in the review are based on the following considerations. Communicable diseases account for 77% of the burden in 2002, but attention needs to be paid to the increasing burden of injuries and noncommunicable diseases, which are a particular problem for some countries. Communicable diseases are a particular problem for some countries.

**The European  
health report 2005**

**Public health action  
for healthier children  
and populations**

The World Health Organization was established in 1948 as the specialized agency of the United Nations responsible for directing and coordinating authority for international health matters and public health. One of WHO's constitutional functions is to provide objective and reliable information and advice in the field of human health. It fulfils this responsibility in part through its publications programmes, seeking to help countries make policies that benefit public health and address their most pressing public health concerns.

The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health problems of the countries it serves. The European Region embraces some 870 million people living in an area stretching from the Arctic Ocean in the north and the Mediterranean Sea in the south and from the Atlantic Ocean in the west to the Pacific Ocean in the east. The European programme of WHO supports all countries in the Region in developing and sustaining their own health policies, systems and programmes; preventing and overcoming threats to health; preparing for future health challenges; and advocating and implementing public health activities.

To ensure the widest possible availability of authoritative information and guidance on health matters, WHO secures broad international distribution of its publications and encourages their translation and adaptation. By helping to promote and protect health and prevent and control disease, WHO's books contribute to achieving the Organization's principal objective – the attainment by all people of the highest possible level of health.



# **The European health report 2005**

**Public health action  
for healthier children  
and populations**

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# Abbreviations

## Organizations, other entities and activities

CHILD	Child Health Indicators of Life and Development (project)
CIS	Commonwealth of Independent States
DOTS	directly observed treatment, short-course (strategy for tuberculosis control)
EU	European Union
Eur-A	27 countries in the WHO European Region with very low mortality in both children and adults
Eur-B	16 countries in the WHO European Region with low mortality in both children and adults
Eur-C	9 countries in the WHO European Region with low child mortality and high adult mortality
FCTC	WHO Framework Convention on Tobacco Control
HBSC	Health Behaviour in School-aged Children (study)
IMCI	Integrated Management of Childhood Illness (strategy)
MONICA	multinational monitoring of trends and determinants in cardiovascular disease project
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund

## Technical terms

BMI	body mass index
CVD	cardiovascular diseases
DALYs	disability-adjusted life-years
GDP	gross domestic product
GNI	gross national income
HAART	highly active antiretroviral therapy
HALE	healthy life expectancy
IDD	iodine deficiency disorder
MDR-TB	multidrug-resistant TB
NCDs	noncommunicable diseases
SARS	severe acute respiratory syndrome
TB	tuberculosis
YLL	years of life lost due to premature mortality
YLD	years lived in disability

## **Foreword: putting knowledge at the service of a healthier future**

*The European health report 2005 was inspired by the idea that knowledge can be used to improve people's lives. Good future decisions on public health require the right people to have the right information. With this report, we at the WHO Regional Office for Europe offer a practical knowledge resource to health professionals and all other stakeholders in public health to use in this task.*

*The report offers an up-to-date map of health in the 52 countries in the WHO European Region. The analysis focuses particularly on the major determinants of health, particularly poverty and social inequalities. It calls attention to the widening health gaps between the countries of the Region and between the richer and poorer groups within countries. Today, a limited set of risk factors causes the bulk of the burden of disease. The report describes this burden and how the wider use of effective public health interventions can reduce it, spelling out some lessons learned and giving examples of successful interventions.*

*In particular, the report highlights children's health and the work being done – and still to be done – to improve it. Healthy children become healthy adults. Despite the overall improvement in child health in the Region, the incidence of many diseases and chronic conditions is rising in various countries. The report shares evidence on both the risks to children's health and the opportunities of improving it.*

*Our main objective is to support countries to choose the best possible investments in health on the basis of evidence and knowledge. We hope that this publication will be a step forward in helping Member States to deal successfully with today's public health challenges and those to come.*



Marc Danzon

WHO Regional Director for Europe



## Executive summary

### East–west gap in healthy life expectancy, 2002

#### Highest

San Marino: 73.4 years

Sweden: 73.3 years

Switzerland: 73.2 years

#### Lowest

Kyrgyzstan: 55.3 years

Tajikistan: 54.7 years

Turkmenistan: 54.4 years

Good health is a fundamental resource for social and economic development. Higher levels of human development mean that people live longer and enjoy more healthy years of life.

While the health of the 879 million people in the WHO European Region has in general improved over time, inequalities between the 52 Member States in the Region and between groups within countries have widened. In addition to the east–west gap in health, differences in health between socioeconomic groups have increased in many countries.

Reducing inequality is increasingly vital. As most countries have declining birth rates and growing elderly populations, it is particularly important to help children to avoid ill health and to become resilient enough to remain in good health long into old age.

*The European health report 2005* contributes to this task by summarizing the major public health issues facing the Region, particularly its children, and describing effective policy responses. This helps to supply the reliable, evidence-based information needed for sound decision-making on public health.

### Content and methods

The report first summarizes the facts on public health in the Region and then looks specifically at children's health and development. It ends with statistical tables giving some of the data that form the basis for its conclusions, and definitions of some of the terms used. The report is not a comprehensive review of all available information, but a synthesis of evidence and analyses from WHO and various other sources. It presents evidence on the burden of disease from particular conditions, the impact of particular risk factors and a selection of successful initiatives and interventions that could improve public health across the Region.

The report presents the latest available figures on a variety of health indicators. Where possible, the results are given for three groups of countries in the European Region; allocation to these groups is based on mortality in children and adults, rather than geographical or political factors. The report looks at life expectancy and the causes of mortality, and uses the measures of healthy life expectancy (HALE) and disability-adjusted life-years (DALYs). Combining these measures with traditional indicators, such as mortality rates and disease incidence and prevalence, allows the report to highlight current issues and give a better picture of the situation in the Region.

### Tackling risk factors to reduce the burden of disease

The most important causes of the burden of disease in the Region are noncommunicable diseases (NCDs – 77% of the total), external causes of injury and poisoning (14%) and communicable diseases (9%). In 2002, NCDs caused 86% of the 9.6 million deaths and 77% of the 150.3 million DALYs in the Region. They originate from complex interactions of genetics, behaviour and the environment, and thus require long-term planning and treatment. In addition, injuries are a particular problem for young people.

Further, poverty and underfunded services create a double burden of noncommunicable and communicable diseases for some countries in the eastern half of the Region. This double burden is partly responsible for the health gaps between and within countries.

Just seven leading risk factors – tobacco, alcohol, high blood pressure, high cholesterol, overweight, low fruit and vegetable intake and physical inactivity – are mainly responsible for the differences between countries in the burden of disease due to seven leading conditions – ischaemic heart disease, unipolar depressive disorders, cerebrovascular disease, alcohol use disorders, chronic pulmonary disease, lung cancer and road-traffic injury. Using well-known interventions to tackle the risk factors would largely prevent these conditions. This creates a compelling argument for action.

The report highlights success stories from across the Region to illustrate how NCDs and injuries can be attacked by concerted, yet relatively simple measures. Countries have a choice of measures for certain diseases, and sharing information on the successes and limitations of interventions is vital to their adaptation and use in other countries. For example, the success of Sweden's Vision Zero initiative in reducing traffic injuries has led to its adoption by several other countries. The topics and home countries of the success stories vary; what they share is their involvement of all stakeholders, from patients to health care providers to government and other bodies. These examples prove that simple but comprehensive measures can lead to important benefits for health.

## **Focus on children**

*The European health report 2005* has a special focus on children's health, because health in childhood determines health throughout life and into the next generation. The period between birth and 5–6 years of age is critical. Ill health or harmful lifestyle choices in childhood can lead to ill health throughout life, which creates health, financial and social burdens for countries today and tomorrow.

## **Health patterns and problems in children**

Overall, the health status of children in the 52 countries in the WHO European Region reflects the widening east–west gap seen in adults. Despite overall improvement, children's health in the European Region shows large differences according to age, gender, geographical location and socioeconomic position, both within and between countries. Social inequalities are increasing in all countries, but particularly in the eastern half of the Region.

The inequalities in children's health are unacceptably large, and overwhelmingly affect the countries, societies, communities, families and children with the fewest resources to cope with them. Even in more affluent countries, the poorer members of society carry a disproportionate share of the disease burden.

The causes and rates of illness and death in children vary widely across the Region. In particular, eastern countries have higher morbidity and mortality from respiratory and infectious diseases, and injuries and poisoning, which create a different pattern than that of ill health in adults. In the western countries, mortality from these causes is already very low, which means a smaller disease burden overall. Children's disease patterns in western countries therefore include proportionately more NCDs, such as asthma and allergies, diabetes, obesity and neuropsychiatric disorders. Vaccine-preventable diseases remain a worry across the Region.

Poverty is the greatest threat to children's health, regardless of a country's level of development. Rates of disease and harmful behaviour are closely linked to socioeconomic

factors, which include poor neonatal health (from malnutrition, for example), lack of access to health care, unhealthy or unsafe environments, and behavioural factors such as poor diet, physical inactivity and early smoking, drinking or drug taking.

The different patterns of child and adult health underline the need for countries to design complementary health strategies for the two. Because working for optimal health and development for all children is an increasingly complex task for countries, the WHO Regional Office for Europe is developing a new approach to assist them: a European Strategy for Child and Adolescent Health and Development. In addition, all countries need better information on and monitoring systems for children's health, particularly in relation to social inequalities.

### **Successful policies: applying available knowledge in comprehensive strategies**

Investing in children's health is a way of investing in the future, and brings health, financial and social benefits. *The European health report 2005* calls for renewed effort to protect and promote children's health. While the report points out that a responsible balance must be struck between current burdens and future benefits for the whole population, it also makes clear that investing in children's health and development not only is a key to a population's future health but also will reduce today's inequalities.

Much of the knowledge required to improve health for everyone in the Region is already available; the challenge is transforming it into action.

Despite the wide differences in the health problems of children across the WHO European Region, the evidence shows that successful health promotion and disease prevention programmes share some common factors. The most successful interventions:

- are created as part of comprehensive national planning involving all stakeholders, including children;
- are based on solid evidence on the target populations, the interventions' effectiveness and country health systems' capacity for implementation;
- address both the broad determinants of ill health – poverty and social inequality – and particular risk factors;
- involve multisectoral, multifaceted and multilevel action by government and other stakeholders, using the whole array of available policy instruments and calling on wide social support for change;
- target the populations in most need; and
- are adapted to local needs, resources and circumstances, including cultural, religious and gender factors.

Focusing on children's health now can improve adult health in the future. While more effort and, naturally, resources are needed for the successful implementation of the interventions known to be effective, action for children's health and development primarily requires the ambition to pursue substantial improvements. Much work is needed, but, as *The European health report 2005* shows, today's effort is tomorrow's success.

# PART 1

INTRODUCTION

# Introduction

## The task

Good health is a fundamental resource for social and economic development. Unquestionable evidence shows inextricable links between health and sustainable human development. Health is also one of the fundamental rights of every human being. That is why it is encouraging to know that health in the WHO European Region has improved considerably over time.

Nevertheless, the Region also displays glaring contrasts. On the one hand, its richest and most developed countries are among the healthiest on the planet in terms of longevity, late onset of disease and disability and increased attention to the ability to function and the quality of life. On the other hand, the Region also contains poor countries that are still struggling with severe ill health among younger groups in their populations. These countries carry a double burden of disease: they lack the advanced means of controlling the traditional burden of infectious diseases and injuries, while already carrying a large modern burden of noncommunicable diseases. Further, all countries, even the most affluent, have vast and growing inequalities in health between the richest and poorest people. Reducing inequalities within a population to the minimum feasible is a key challenge for every country.

## The means

WHO believes that sharing information and knowledge helps equip countries to reduce inequalities in health. As a result, *The European health report 2005* first reviews and summarizes the evidence on the state of public health in the Region and the main interventions that can improve the health of populations. Then it takes a step forward, looking at children as the population group whose improved health would bring the greatest cumulative effects and identifying common factors in successful programmes to prevent disease and promote health in this group. Action at the start of life can reap lifelong benefits; actors in the health field should seize all opportunities to obtain them. The report ends with statistical tables giving some of the data that form the basis for its conclusions, and definitions of some of the terms used.

This report draws extensively on evidence gathered and analyses made for the 2002 and 2004 WHO world health reports (1,2) and the WHO Global Burden of Disease project (3). It is also founded on various databases and publications of the WHO Regional Office for Europe, especially those related to sessions of the WHO Regional Committee for Europe (WHO's governing body in the Region), ministerial conferences and high-priority technical work. Each part concludes with a list of key sources.

The evidence indicates interventions of proven effectiveness, although this knowledge is often not optimally transformed into action. Intersectoral action and multifaceted strategies are needed, with a focus on disadvantaged groups. The evolving broader understanding of public health requires the health sector to win new partners to tackle this task. Health in today's world is the responsibility of government as a whole, along with other stakeholders, transcending traditional sectoral boundaries. New courage is needed to employ the new approaches to population health that are supported by mounting evidence. *The European health report 2005* traces the way forward and indicates the support available to Member States in their work to protect and improve health.

## **The message**

The main message is that, while the current gaps in health are important and action is needed to protect the whole population, ill health in children and young people has particular significance that requires a targeted response. It can affect the health experience throughout life; in particular, by triggering harmful behaviour and health problems, it sets the stage for poor health and disease in adult life. Children's ill health also has a wider impact on parents, families and society. Moreover, each period of child development poses a new set of health challenges and requires policies tailored to it.

Special effort should therefore be made to invest in children's health as much as necessary in any given situation. Dramatic social and economic transformations are underway in countries, communities, families and individuals; these add to the complexity of this challenge. A responsible balance must be struck between current burdens on and future benefits for the whole population, but investing in children's health and development is not only a key to the future health of the population but will also reduce inequalities within it. This is the rationale that has inspired this report.

# Conceptual framework of the report

## Background: implications of multifactorial health for policy-making

Many factors shape the health of populations: genetic and biological factors, individual lifestyles, conditions in the living and working environments, and health care services. Moreover, socioeconomic factors underlie the major determinants of health in both children and adults. They have a profound effect on mortality, morbidity and health-related behaviour from conception and birth, through the most important early years of development to the end of life. This multifactorial nature of health makes it appropriate for policy-makers to take a broad view of all the factors that may affect its determinants and outcomes.

In addition, these multiple determinants influence people's health through a dynamic and continuous interaction between biology, past exposures and current life circumstances. They also interact over time, so their effects on health accumulate. People who have been more exposed to risk factors in the past tend to respond less resiliently to current and future pressures in life. Many chronic diseases in adults have their origins in childhood.

These circumstances have three implications for policy-making.

1. Policy-making on health requires a broad view, with a focus on the environment – in the broadest sense – to which people are exposed.
2. Health and social policies need to work upstream, on the precursors of unhealthy behaviour, chronic diseases and mental disorders, and to provide services and programmes along the entire lifespan to offset earlier exposures to risk factors.
3. In general, the most appropriate public health interventions are multifactorial and comprehensive, address diverse aspects of a health problem and consider individuals in the context of their living, working and social circumstances.

## Approach of this report

Accordingly, this report uses a broad analytical framework, focused on the different developmental stages along the lifespan and based largely on reviewing both the disease burden and the relevant health determinants and interventions for the population as a whole and, more specifically, for children. The burden-of-disease approach helps the report to focus on the big picture and to attach the highest importance to the biggest problems. Support from the database of the WHO Global Burden of Disease project (3), tailored specifically to the needs of this report, enabled this approach to be used. In addition, the report highlights the relevance of factors and interventions in earlier developmental stages, which offers opportunities vital to building healthier populations for the future.

The nature and comparability of the available data limit the scope of the analyses that can be made. Although existing data are mainly on negative indicators, children's health encompasses both hazards and positive dimensions. One of the latter is the extent to which children are able to realize their potential to achieve success in their lives. In addition, while the scientific evidence shows the importance of the socioeconomic determinants of health, some of the indicators were not linked to information on levels of income, education and other social characteristics at the country level.

Although access to and the provision of appropriate, high-quality health care services are vital and a basic human right, the report focuses mainly on health determinants and uses examples of effective service interventions where necessary. This is in accordance with the WHO policy for health for all, which suggests that countries pull together the contributions of all direct and indirect factors that influence health, and allocate resources to address each of these factors in relationship to their relative weight and demonstrated impact.

## Methods

Using this conceptual framework, *The European health report 2005* addresses the broad public health issues in the WHO European Region, presenting the evidence on:

- the burden of disease from specified conditions;
- the strength of the impact of specific risk factors on diseases and conditions; and
- selected public health interventions that can clearly improve the health situation, provided that the contextual factors for successful implementation are taken into account.

The burden of disease is expressed using both:

- conventional indicators, such as mortality, incidence and prevalence; use of resources of the health care and social systems; and cost to the economy; and
- summary measures of levels of and gaps in population health, such as healthy life expectancy (HALE) and disability-adjusted life-years (DALYs).

Although the importance of socioeconomic determinants of health should always be kept in mind, the quantitative estimates of impact are in general limited to the effects of direct determinants and are derived by statistical techniques that artificially separate the effect of one risk factor from those of other factors. Nevertheless, the reader should remember that such factors often operate simultaneously and interact.

The examples of interventions given were selected on the basis of systematic reviews of evidence, but the report also highlights widely accepted good practices and illustrates them with success stories.

At this point, it is necessary to emphasize the need for caution in using the indicators and other evidence in the report. The conventional indicators and the summary measures are mutually supportive, rather than alternatives. The former can provide timely and very specific information on the health situation and trends and the responses of health systems, while the latter amalgamate information on the basis of various assumptions and generalized statistical models. Summary measures are intended to standardize information from very different sources, while single indicators aim to reveal points for targeted action. There is a trade-off between specificity and cross-country comparability here. Both precise but very numerous individual indicators and standardized summary measures (which can provide an overview of the total burden and express this in common measures) are therefore useful. In the complex process of tracing changes in health patterns, both have their uses and strengths. In addition, summary estimates may be the most robust or sensitive measures in areas where the regular reporting systems do not provide solid conventional indicators.

The Global Burden of Disease project has produced country-specific DALY estimates for all countries in the WHO European Region, by condition and known risk factors. WHO's methods were developed to maximize comparability across populations. The analyses take account of incomplete coverage of cause-of-death registration in countries and are adjusted for biases in self-reported morbidity data from surveys. In addition, steps are being taken to incorporate adjustments in the statistical data modelling for dependent comorbidity and populations in institutions, which



are usually difficult to estimate and account for statistically. Nevertheless, the DALY and HALE estimates should be considered in the context of the explicit uncertainties, which are part of the estimates, and used carefully. The WHO estimates presented may therefore be better understood as the best available approximations, rather than results of direct measurement.

In essence, the identifiable risk factors usually contribute to the causation of several conditions, so the total actual impact of a factor may be greater than its estimated effect on a specific condition. At the same time, because the effects of the individual risk factors are not independent but interrelated, the total effect of a group of factors contributing to a condition is usually not equivalent to the sum of the DALYs attributable to each of them. Determining the total effect requires additional statistical adjustments to be made. On the other hand, one person may acquire several diseases, each of which is related to the same risk factors; this also needs to be taken into account. Putting all of these scenarios together, summary measures can provide additional insights that cannot be gained from solely using specific conventional indicators.

Lessons and considerations for policy are derived from the work of the WHO Regional Office for Europe, internal reviews and consensus estimates. Evidence of interventions' demonstrated impact has been systematically sought, but not necessarily graded. These searches have been deliberately limited to priority areas, as defined by the magnitude of the disease burden and the attributable risk.

## Country groupings

In attempting to facilitate analysis, compare and identify trends and priorities, it is useful to group countries. Various approaches can be used.

For *The European health report 2002 (4)*, the criterion used to group countries was the traditional distinction between such entities as the European Union (EU), the countries of central and eastern Europe and the newly independent states of the former USSR. The latter

## Epidemiological subregions of the WHO European Region

To aid analyses of mortality and the burden of disease, WHO (1) introduced the division of WHO Member States into five mortality strata on the basis of their levels of mortality in children under 5 years of age and male adults aged 15–59 years. Quintiles of the distribution of child mortality (both sexes combined) were used to define groups in which mortality was very low (1st quintile), low (2nd and 3rd quintiles) and high (4th and 5th quintiles). The groups with low and high child mortality were further qualified by the level of adult mortality (using the regression line of adult mortality on child mortality). In this way, five global mortality strata were defined:

- A: very low child and adult mortality
- B: low child and adult mortality
- C: very low child and high adult mortality
- D: high child and adult mortality
- E: high child and very high adult mortality

The Member States in the 6 WHO regions of the world were allocated to 14 epidemiological subregions. The WHO European Region was divided into three such subregions, called Eur-A, -B and -C:

1. Eur-A (27 countries with very low mortality in both children and adults): Andorra, Austria, Belgium, Croatia, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, the Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland and the United Kingdom;
2. Eur-B (16 countries with low mortality in both children and adults): Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Serbia and Montenegro, Slovakia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan and Uzbekistan; and
3. Eur-C (9 countries with low child mortality and high adult mortality): Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, the Republic of Moldova, the Russian Federation, Ukraine.

These mortality strata were defined on the basis of empirical information and statistically modelled death rate estimates. WHO used this classification in its world health reports through 2004 (2).

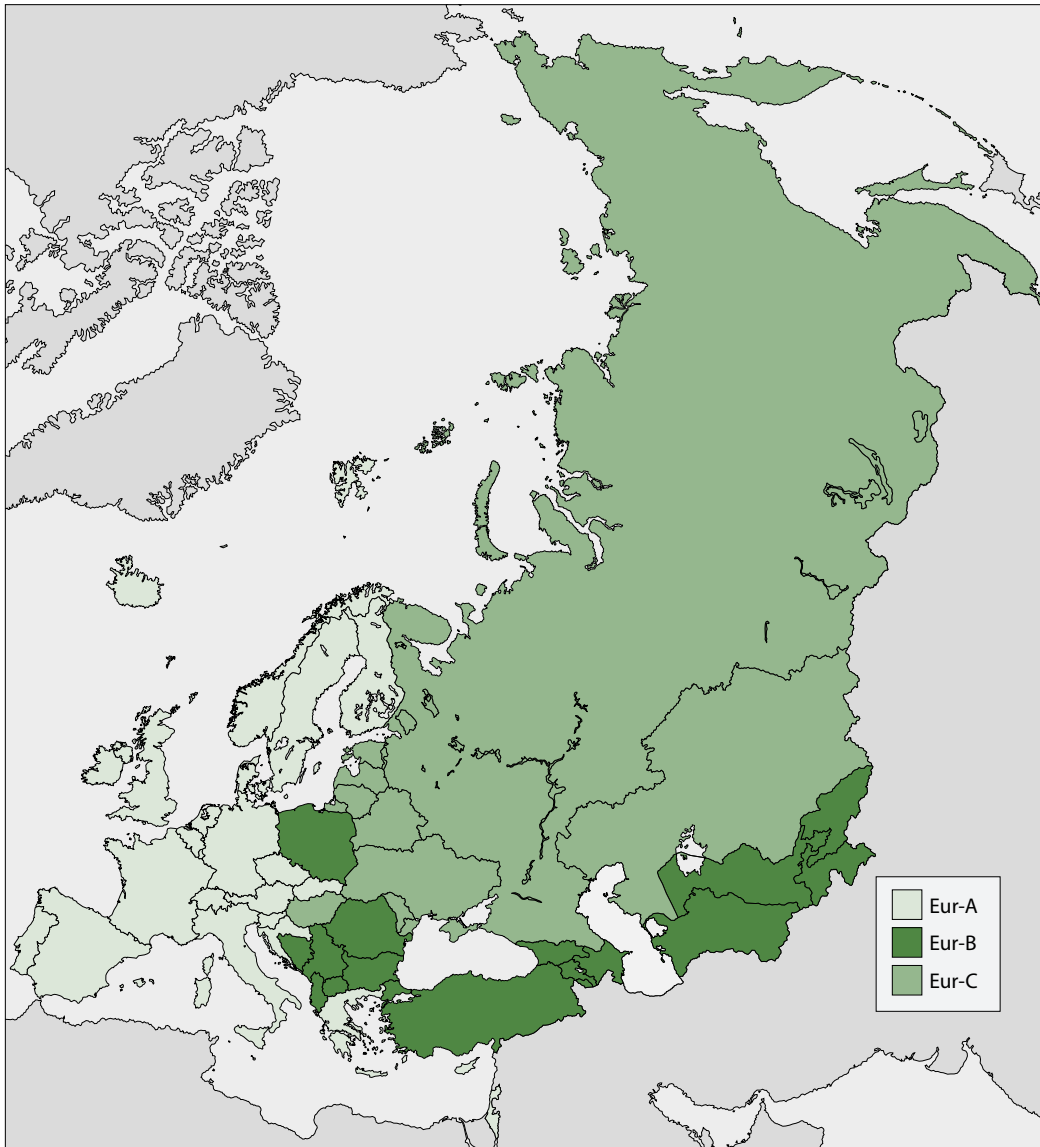


Fig. 1.  
Epidemiological  
subregions of  
WHO European  
Region: Eur-A,  
Eur-B and Eur-C

were defined as the 15 countries that became independent after the dissolution of the USSR, including Estonia, Latvia and Lithuania. The countries of central and eastern Europe comprised 12 countries of the formerly centrally planned economies of central and eastern Europe that were not part of the USSR. When the grouping western Europe was used, it included the 15 members of the EU and the developed market economies outside it. This approach was considered to be losing relevance at that time, and is less appropriate now, after 10 countries (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) entered the EU in May 2004.

As well as using some general geographical groupings, *The European health report 2005* therefore allocates countries into three groups – Eur-A, Eur-B and Eur-C – according to levels of mortality (Fig. 1), to gain a more useful picture of health in the Region (see technical note and *The world health report 2004* (2)). This approach was first established by WHO headquarters and is based on data from countries and statistically modelled estimates from WHO.

The use of this approach, it is hoped, will enrich the traditional approach of grouping the countries in the European Region by geographical location and/or affiliation to some international structure. Although the geopolitical approach is useful for some purposes, it should be balanced by another distribution of countries, using some neutral concept. This should assist judgement of the actual health situation.

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# PART 2

THE  
GENERAL  
PUBLIC HEALTH  
PERSPECTIVE

## Overview

This part of the report maps the health gaps in the Region as measured by DALYs. These are statistical estimates of currently unrealized years of healthy life on average for a given country population and as compared to a reasonably feasible standard (see technical note below).

DALYs serve two purposes: they can be used to estimate the current burden created by causes of ill health such as disease and injuries, and they can be attributed to preventable risk factors, or causes in an etiological sense, to estimate the avoidable burden in the future. These summary indicators of health gaps ensure that all diagnosable health outcomes (both deaths and non-fatal outcomes) are assigned to a defined category and contained in one account of the total disease burden that a population has to carry. The total burden can then be sorted by the size of its constituent parts; these can be further assessed to determine whether and to what extent they can be avoided through reducing behavioural and environmental hazards.

On this basis, the leading causes and risk factors can be identified and used as a canvas on which to picture the relevant evidence on the health situation: achievements, problems, policy considerations and interventions. Such a DALY-based canvas lends a simple but solid logic to the report because it leaves no doubt about the real proportions of the constituent health gap, as the lists of categories used are complete and do not overlap. This helps the reader to keep sight of the big picture and avoid bias in epidemiological judgement.

In addition to DALYs, as one summary measure of health, the core of the report rests on two other such measures: life expectancy and its mortality correlates, and HALE, an indicator of the quality of the current average lifespan. This combination of summary measures of health levels and health gaps makes up the firm structure needed to assess the general situation of public health in the Region today.

### Population of the WHO European Region

The total population of the 52 countries in the WHO European Region was estimated at 879.6 million in 2003 (see also Annex Table 1). (The population data in this section come mainly from WHO (1), the United Nations Development Programme (2) and the Council of Europe.) In general, countries continue moving towards low levels of fertility and premature mortality. Natural population growth (the excess of births over deaths) is declining and is negative or only marginally positive in many countries, particularly those in the eastern half of the Region, in many of which the decline started in or even before 1990.

While the WHO European Region continues moving towards low levels of fertility and premature mortality, differences between and within countries have widened. In addition to the east–west gap in life expectancy, socioeconomic gradients in mortality have increased in many countries.

Fortunately, well-known and feasible public health interventions can greatly reduce the years of life lost to illness and premature death. Interventions addressing the seven leading risk factors can largely prevent the leading seven conditions. This creates a compelling argument for action to reduce these risks to the minimum possible.

Family structures show major changes. The trends point to a declining number of marriages and an increase in separations and cohabitation, with a parallel increase in the number of births outside marriage. The declining marriage rate is accompanied by an increase in the age at first marriage. Changes in the structure of families can affect parents' relationships with children and consequently children's well-being and development. Continuing to track and understand the effect of these changes is essential to providing children with a good start in life. This could include looking at broader policies and laws that affect families, such as those on marriage, divorce and custody arrangements.

The fertility rate in the Region – the average number of children expected to be born per woman during her reproductive years – is in general below the replacement level of 2.1, except in the central Asian republics, Israel and Turkey. In addition, women show a growing tendency to delay their first pregnancies. This increases the risk of congenital anomalies and leads to a decrease in families with three or more children. First and second births comprise a higher proportion of the total.

In recent decades, mortality has declined substantially in most countries in the Region. In Eur-A, people now live longer, as mortality here is considerably lower than in most countries in Eur-B and -C.

The combination of declining fertility and mortality has raised the proportion of older people (aged 65 years and over) in the population. Practically all Member States have ageing populations. This demographic transition is expected to continue, and the share of older people in the total population will continue to grow. As fewer children are born and people live longer, greater care than ever must be taken to help children not only to avoid sickness but to be maximally resilient to the stresses of life and capable of maintaining good health into very old age.

## **Longevity and mortality**

Life expectancy has risen across the Region since 1990, with women in general living longer than men, but increased differences between countries and worrying increases in early death in men in eastern countries, particularly middle-aged men in Eur-C, need to be addressed.

### **Life expectancy**

Average life expectancy is the standard summary measure of the length of the lifespan. The average for the Region has reached 74 years, an increase of 1 year since 1990. The life-expectancy estimates in this section are based exclusively on official statistics of Member States and may differ from those in Annex Table 2, which were computed by WHO to assure comparability.

Life expectancy has recouped the losses of the mid-1990s, although several countries in the Commonwealth of Independent States (CIS) still struggle to regain the positions they held in 1990. Differences between individual countries, and between Eur-A, -B and -C, however, have widened (Table 1).

Countries such as the Czech Republic, Hungary and Poland have made big strides, but others were in turmoil in the early 1990s, with significant declines in life expectancy. The difference between the countries with the highest and lowest estimated average life expectancy rose from about 12 years in 1990 (Iceland and Sweden versus Turkey and Turkmenistan) to about 15 years in 2003 (Iceland and Switzerland versus Kazakhstan and the Russian Federation).

In many countries, the average life expectancy for women is now over 80 years, particularly in Eur-A (Fig. 2). Eur-C males have the lowest figures. The average gap in life expectancy between

**Table 1. Life expectancy at birth in the WHO European Region**

Country	Life expectancy (years)		
	1990	1995	Latest available (year)
Albania	72.6	74.9	75.8 (2003)
Andorra	NA <sup>a</sup>	NA	NA
Armenia	72.1	73.0	73.1 (2003)
Austria	76.0	77.1	78.9 (2003)
Azerbaijan	71.4	69.5	72.4 (2002)
Belarus	71.3	68.6	68.5 (2003)
Belgium	76.3	77.1	77.6 (1997)
Bosnia and Herzegovina	72.9	NA	72.7 (1991)
Bulgaria	71.5	71.0	72.4 (2003)
Croatia	72.6	73.3	74.7 (2003)
Cyprus	NA	NA	79.4 (2003)
Czech Republic	71.5	73.3	75.4 (2003)
Denmark	75.1	75.5	77.2 (2000)
Estonia	69.9	67.8	71.2 (2002)
Finland	75.1	76.8	78.7 (2003)
France	77.6	78.7	79.4 (2000)
Georgia	73.0	70.4	76.1 (2001)
Germany	75.5	76.8	78.8 (2001)
Greece	77.2	77.8	79.0 (2001)
Hungary	69.5	70.1	72.6 (2003)
Iceland	78.2	78.0	80.9 (2001)
Ireland	74.8	75.5	77.2 (2001)
Israel	76.8	77.5	79.7 (2003)
Italy	77.2	78.4	80.3 (2001)
Kazakhstan	68.8	64.7	65.9 (2003)
Kyrgyzstan	68.8	65.5	67.9 (2003)
Latvia	69.5	66.3	71.0 (2003)
Lithuania	71.6	69.2	72.2 (2003)
Luxembourg	75.5	77.4	78.9 (2003)
Malta	76.2	77.3	78.6 (2003)
Monaco	NA	NA	NA
Netherlands	77.2	77.7	78.8 (2003)
Norway	76.7	77.9	79.1 (2002)
Poland	71.0	72.0	74.7 (2002)
Portugal	74.1	75.3	77.3 (2002)
Republic of Moldova	68.6	65.9	68.1 (2003)
Romania	69.8	69.4	71.0 (2002)
Russian Federation	69.3	64.7	64.9 (2003)
San Marino	NA	79.9	82.3 (2000)
Serbia and Montenegro	NA	72.7	72.7 (2002)
Slovakia	71.1	72.5	73.9 (2002)
Slovenia	74.1	74.9	76.5 (2003)
Spain	77.0	78.1	79.8 (2001)
Sweden	77.8	79.1	80.0 (2001)
Switzerland	77.6	78.8	80.5 (2001)
Tajikistan	70.0	68.0	72.0 (2001)
TFYR Macedonia <sup>b</sup>	NA	72.2	73.5 (2003)
Turkey	66.2	68.0	70.0 (2003)
Turkmenistan	66.6	65.2	66.1 (1998)
Ukraine	70.5	66.9	67.8 (2003)
United Kingdom	75.9	76.8	78.5 (2002)
Uzbekistan	69.7	67.9	70.0 (2002)
European Region	73.1	72.5	74.0
Eur-A	76.3	77.4	79.0 (2003)
Eur-B	69.5	69.7	71.6 (2002)
Eur-C	69.6	65.6	66.3 (2003)

<sup>a</sup> NA= not available.

<sup>b</sup> The former Yugoslav Republic of Macedonia  
Source: European health for all database (3).

women and men in the Region is about 8 years: about 4 years in Tajikistan and Iceland, but 13 years in the Russian Federation. In general, the female–male differences in life expectancy between countries decreased in the 1990s. These differences are smallest in Eur-A, where the difference decreased considerably, while life expectancy in Eur-B increased more for men than women. The difference grew in Eur-C, however, where male mortality increased in several CIS countries.

### Mortality and socioeconomic factors

The mortality crises in several CIS countries have been accompanied by increasing inequality in socioeconomic indicators, at least temporarily (Annex Table 3). In the early 1990s, the Russian Federation and Ukraine were among those with the largest increases in income inequality (4) and in mortality among middle-aged men, although the most recent surveys show improvements. Among the countries in the eastern half of the Region, relatively small increases in income inequalities were found in the Czech Republic, Hungary and Poland, where male life expectancy at birth rose.

Gradients in mortality between socioeconomic groups have increased in many western European countries, too, such as France, the Nordic countries and the United Kingdom (5).

Underlying societal changes have shaped the health trajectories of populations in the European Region, across countries and socioeconomic subgroups. In many cases, unfavourable mortality trends in particular socioeconomic subgroups are probably behind the increasing health inequalities in countries. In general,

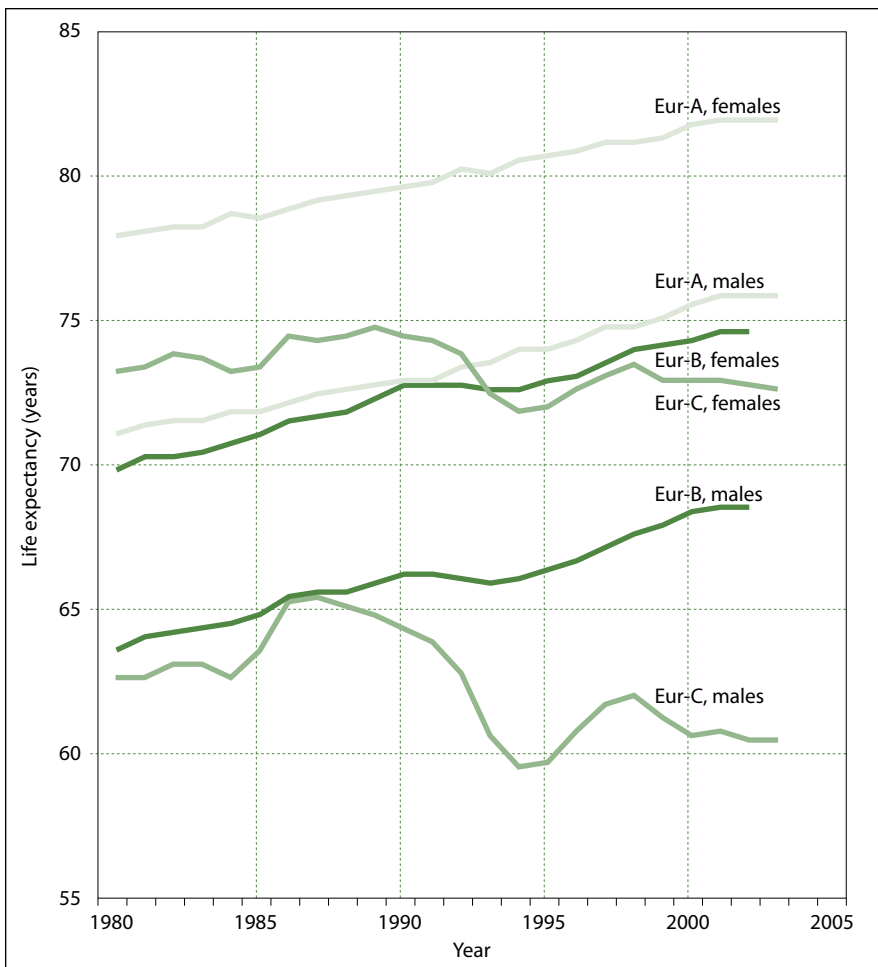


Fig. 2. Life expectancy at birth by sex and country grouping, 1980–2003

Source: European health for all database (3).

disadvantaged groups benefit later from improvements in health determinants. They are also the most vulnerable when unexpected societal changes occur. Evidence is accumulating, however, that such vulnerability is related to negative changes in people's relative position in society, which create long periods of unhealthy psychosocial stress. This can result in unhealthy behaviour, particularly in the absence of supportive social environments and personal coping skills (6–9).

### Amenable mortality

Analysis of amenable mortality – the deaths that would be preventable if all the relevant medical knowledge, services and resources of the health system and society were optimally applied – can address the question of how much health systems specifically contribute to health. The results could indicate the levels of utilization of the available knowledge in practice. The question has two parts: what are the contributions of health care and of public health programmes to population health outcomes?

This report addresses the latter, as amenable mortality can show the impact of primary and secondary prevention. Primary prevention – interventions to reduce people's exposure to lifestyle and occupational risk factors for diseases and injuries – should reduce the incidence and deadliness of amenable conditions. Secondary prevention comprises screening, early case detection, diagnosis and adequate treatment.



Table 2 shows a time cross-section of such conditions (10) and the mortality rates in the countries in the Region. Countries show little difference in some conditions, such as melanoma of the skin and breast cancer, but large differences, which mean potential for improvement, in others, such as stroke, liver diseases, cancer of the uterus and traffic accidents.

Over time, amenable mortality is one of the factors underlying the differentials in mortality between countries. A recent study showed that, in 1980–1997, amenable mortality declined in all the countries that comprised the EU before May 2004 (11). The largest variations in trends between countries, however, appeared in conditions mainly subject to prevention strategies. Several countries showed trends that deviated significantly from the average, and some large avoidable causes had relatively unfavourable trends.

Similarly, amenable mortality can explain a large part of the east–west gap in life expectancy. Andreev et al. (12) compared trends in life expectancy in the Russian Federation and the United Kingdom and their components attributable to amenable mortality. In the period 1965–1999, mortality from such causes remained practically unchanged in the Russian Federation (apart from fluctuations), while the rates in the United Kingdom steadily declined. In 1999, amenable causes were responsible for differentials in life expectancy between the two countries: three years in men and two years in women.

Differences across countries and population groups indicate how much impact policies to prevent and control major risk factors – such as high blood pressure, high cholesterol, smoking, etc. – could have. They also show that no country consistently has the best results on all indicators. Rather, every country can learn from comparisons with its peers and benefit from their knowledge, if appropriately transferred and adapted for use according to local needs and resources.

## Healthy time lived and healthy time lost

Rising life expectancy makes it more important for public health professionals to have information on non-fatal health problems and rates of good health. HALE (healthy life expectancy) and DALYs (disability-adjusted life-years) allow this analysis, and reveal that higher levels of health development mean more healthy years of life and that noncommunicable diseases present the Region with its biggest challenge.

Summary measures of population health combine information on population mortality and non-fatal health outcomes, to represent a population's state of health in a single number (see technical note).

### HALE

The methodology of HALE estimations has improved considerably in recent years. This has created momentum in countries: HALE is increasingly calculated at country and subnational level and, no less important, public health experts and authorities have started to demand HALE estimates to assist their policy-making. They appreciate that HALE can usefully complement traditional health indicators. For example, an analysis of HALE in the Russian Federation (13) provided insights into patterns of population health in different age groups and by sex; these differ from the mortality patterns. Public health experts in the United Kingdom (14) recognize that HALE provides valuable information on morbidity and health care use and can therefore complement the analyses of population health needs and health inequalities that form the basis for the allocation of resources at the subnational level (15). HALE is a practical summary measure of population health, because the indicator is easy to communicate and suitable data are available in many countries of the Region through registers and population surveys.

Table 2. Mortality amenable to primary or secondary prevention: average deaths per 100 000 population

Country	Mortality amenable to primary prevention						Mortality amenable to secondary prevention			
	Motor-vehicle traffic injury <sup>a</sup>	Cerebro-vascular disease	Chronic liver disease and cirrhosis	Cancer of the: liver	Cancer of the: upper airway and digestive tract	lung	Melanoma of the skin	Cancer of the: breast	Cancer of the: cervix uteri	other parts of the uterus
Albania	6.0	20.9	0.0	4.7	1.3	13.3	0.4	7.4	1.0	3.3
Andorra	NA <sup>b</sup>	NA	NA	NA	NA	NA	NA	NA	NA	NA
Armenia	5.7	26.0	7.7	NA	2.1	19.3	0.7	20.4	4.5	4.3
Austria	10.2	9.2	13.8	2.5	5.6	17.8	1.5	15.3	2.0	2.2
Azerbaijan	5.7	33.9	22.3	NA	4.5	12.6	0.4	11.2	2.0	3.9
Belarus	16.2	58.3	11.0	NA	7.1	25.5	1.5	15.2	4.4	3.4
Belgium	15.2	9.1	8.2	1.6	6.2	25.6	NA	22.6	2.2	1.8
Bosnia and Herzegovina	NA	30.5	12.1	NA	3.4	27.4	NA	11.3	2.8	3.8
Bulgaria	10.0	45.7	12.0	4.3	4.1	22.8	0.7	14.2	6.1	4.3
Croatia	13.9	27.0	21.2	3.0	8.1	28.4	2.0	16.5	2.5	2.7
Cyprus	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Czech Republic	11.2	16.3	13.5	3.4	6.4	27.1	1.6	14.9	4.6	3.0
Denmark	9.1	10.9	12.7	1.6	5.4	23.7	NA	23.5	3.5	1.8
Estonia	16.8	35.3	16.9	2.4	6.9	22.6	1.7	19.5	5.8	2.6
Finland	7.5	11.6	10.3	1.6	2.5	10.7	1.2	14.4	1.1	1.2
France	12.6	7.1	11.1	3.5	9.6	22.0	1.1	17.4	1.5	2.1
Georgia	4.8	49.5	14.4	NA	2.2	12.7	0.5	16.4	4.0	5.1
Germany	8.8	8.3	13.6	1.7	6.3	17.8	1.1	17.3	2.5	1.3
Greece	19.1	12.6	2.5	3.1	1.6	19.7	0.6	13.0	1.2	1.6
Hungary	13.1	33.7	53.6	3.3	18.4	44.9	1.6	19.5	6.0	2.6
Iceland	8.4	6.2	1.4	1.1	2.1	18.1	0.7	12.3	2.4	1.7
Ireland	10.4	9.7	3.6	1.2	5.0	14.8	1.1	22.2	3.3	1.0
Israel	9.6	8.2	2.7	1.2	1.4	11.2	1.5	20.0	1.6	1.7
Italy	12.0	7.7	7.4	4.2	3.6	17.1	1.2	15.8	0.7	2.4
Kazakhstan	11.4	68.4	21.8	NA	9.7	24.7	1.3	15.8	5.9	4.0
Kyrgyzstan	11.5	88.6	34.7	NA	4.9	11.2	0.7	9.9	6.4	2.6
Latvia	25.3	43.3	11.5	2.1	6.1	23.6	1.4	17.5	5.1	3.8
Lithuania	21.7	24.7	15.7	1.8	8.6	22.3	1.5	17.7	9.1	2.9
Luxembourg	14.8	11.4	12.6	1.7	7.7	18.7	1.5	15.4	2.2	1.9
Malta	4.0	7.3	3.3	1.1	2.9	13.5	0.8	20.5	1.5	2.0
Monaco	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Netherlands	6.6	8.4	3.4	1.0	4.7	20.6	1.8	21.7	1.7	1.3
Norway	7.2	7.1	3.9	0.6	2.7	15.2	2.5	15.2	3.0	1.3
Poland	18.4	23.1	9.3	2.9	5.7	34.3	NA	15.4	7.5	2.8
Portugal	16.1	18.4	12.3	2.0	6.3	13.9	0.7	14.9	2.9	2.3
Republic of Moldova	13.4	67.0	62.8	5.0	7.7	20.9	1.0	18.0	7.4	3.7
Romania	12.5	51.1	35.1	4.3	7.0	26.7	0.9	15.7	12.2	3.1
Russian Federation	20.6	68.6	NA	NA	7.1	25.9	NA	17.5	5.0	3.6
San Marino	14.8	4.0	3.5	0.0	1.7	14.5	0.0	6.0	1.7	0.0
Serbia and Montenegro	8.4	39.3	6.6	3.5	4.4	26.6	1.3	19.2	6.3	3.2
Slovakia	13.5	16.8	22.4	3.2	13.5	25.1	1.8	15.5	5.4	3.0
Slovenia	14.1	15.1	24.0	2.3	7.5	22.7	2.0	17.2	3.3	2.1
Spain	13.9	8.0	7.5	2.8	5.9	20.0	0.9	13.8	1.8	1.6
Sweden	5.5	7.7	3.4	1.5	2.3	11.0	1.7	14.4	1.7	1.4
Switzerland	6.7	4.7	5.8	2.1	5.0	15.1	1.5	15.8	1.2	1.1
Tajikistan	7.3	32.1	19.4	NA	5.9	5.3	0.5	4.8	2.7	2.4
TFYR Macedonia <sup>c</sup>	6.8	38.7	5.4	3.6	2.4	22.8	1.7	17.8	3.8	5.2
Turkey	NA	NA	NA	NA	0.0	NA	NA	NA	NA	NA
Turkmenistan	9.5	39.9	28.2	NA	13.8	10.3	0.8	7.9	3.4	1.8
Ukraine	12.5	52.7	21.9	NA	7.7	24.0	1.8	19.1	6.0	4.0
United Kingdom	5.7	10.7	6.7	0.8	5.0	17.2	1.4	20.6	2.7	1.2
Uzbekistan	8.7	47.0	30.7	NA	6.7	7.4	0.4	8.5	3.9	2.3

<sup>a</sup> Average deaths per 100 000 population, all ages.

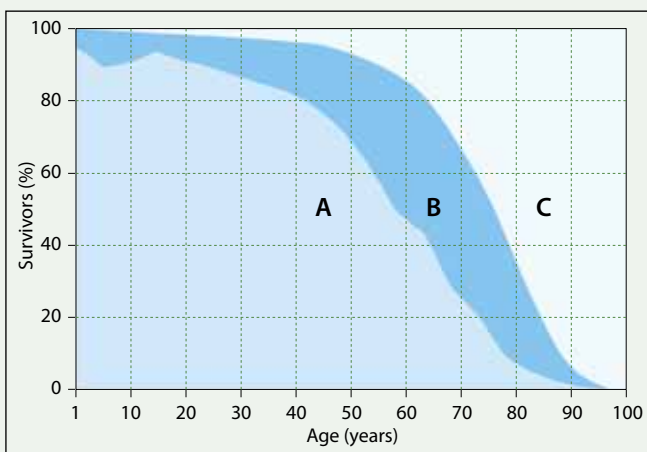
<sup>b</sup> NA = not available.

<sup>c</sup> The former Yugoslav Republic of Macedonia

Source: European health for all database (3).

## Summary measures of population health

Two kinds of summary measures exist, focusing on health expectancies or health gaps (16). The first kind includes, for example, HALE, which can be seen as the health credit or the number of healthy years people can expect to live under current conditions. Measures of health gaps estimate the loss of healthy time to premature death and ill health, for example, in numbers of DALYs: the equivalent of the healthy years that did not happen, or the health debit.



In the figure:

Area A = time lived in full health

Area B = time lived in less than full health, weighted for severity

Area C = time lost to premature mortality

Life expectancy = A + B

Health expectancies (such as HALE) = A + f(B)

Health gaps (such as DALY) = C + g(B)

where  $f$  is a function assigning weights to health states in units of years on a scale where 1 is equivalent to 1 year of full health and  $g$  is the corresponding inverse function on a scale where 1 is equivalent to 1 year of full health lost because of disease, injury or death.

TECHNICAL NOTE

The summary measures aim to combine information on mortality and various states of imperfect health in a common currency of health. In principle, these states are innumerable and can include any deviation from complete health, functional limitations, etc. Assessments of these states include comparisons with a certain ideal, norm or target, so the measures are relative. They also include value judgements and choices among alternatives. Summary measures can be used, for example:

- to compare the health of two populations
- to monitor changes in the health of a given population
- to inform public health policy on priorities for action
- to analyse the benefits of public health interventions.

A central quality of summary measures is the use of a time dimension. Health expectancies summarize the times spent at different levels of health. (Traditional life expectancy summarizes solely the time lived between birth and death into a summary measure of the average time lived.) These times naturally add up to overall life expectancy, but a breakdown of HALE

into times attributable to specific diseases or risk factors is not available at present.

The gap measures summarize the losses of healthy time relative to a preferred norm and involve valuation of health states and the use of other values, such as age and equity weighting. The losses can be attributed to specific diseases or health determinants.

WHO uses summary measures of population health to serve its Member States by:

- reporting on levels of and inequalities in health;
- reporting on the causes of health loss such as diseases, injuries and risk factors;
- advising on potential gains in health through cost-effective interventions; and
- analysing the efficiency of health systems.

Summary measures of population health have become increasingly useful as Member States invest increasing amounts of money in tackling public health problems. These measures are an important but still incomplete development in population health studies. WHO has produced fundamental reference material for experts in all public health disciplines, on the construction and use of summary measures of population health (17,18).

HALE can be used to answer two strategically important questions. Has an increase in health accompanied the increase in longevity? What is the average time that people live in good health, and what is the percentage of time spent in less-than-good health?

The answers are that the general increase in life expectancy has also meant a general increase in healthy years of life, and the proportion of life spent in less-than-perfect health has decreased. This is a major improvement of the health situation. Nevertheless, the health differentials between populations are wider in terms of HALE than in life expectancy estimates only. As social factors are at the root of many of these differentials, the impact of the social determinants of health needs continuing monitoring that takes account of both mortality and non-fatal health outcomes. This is a prerequisite for timely evaluations and reforms of health systems and policies, which should help people to stay healthy into older age.

In 2002, HALE at birth in the Region ranged from 73.4 years in San Marino to 54.4 in Turkmenistan (Table 3). For males, the range was from 72.1 in Iceland to 51.6 in Turkmenistan and, for females, from 75.9 in San Marino to 56.4 in Tajikistan.

The percentage of life lived in less-than-good health varied between 9.3% (Germany) and 15.3% (Kyrgyzstan) for females, and between 7.8% (Norway) and 13.5% (Kyrgyzstan) for males. Countries with higher life expectancy, educational levels and expenditure on public health (as percentages of both gross domestic product (GDP) and total government expenditure) (Annex Table 2) lost fewer healthy years of life in both absolute and relative terms.

## **DALYs**

In 2002, the population of the WHO European Region lost an estimated total of 150.3 million DALYs to three main groups of causes:

- noncommunicable diseases (NCDs – 77% of the total)
- external causes of injury and poisoning (14%)
- communicable diseases (9%).

The bulk of the total burden is therefore due to chronic, degenerative diseases. These comprise a very large and diverse group, but still share some common characteristics. Injuries and communicable diseases are responsible for much smaller shares of the disease burden.

The 10 leading conditions are usually selected from among these groups, as they constitute a manageable number of priorities and a big and reasonably representative fraction of the total burden. The 10 leading conditions for the Region as a whole are responsible for 40.7% of total DALYs: they are 9 NCDs and road traffic injury.

Fortunately, seven of the leading causes of DALYs are largely preventable, as their main risk factors are behavioural, and can be influenced by the effective use of well-known and feasible public health interventions. These seven conditions (Table 4) cause 33.8% of the total DALYs in the Region. The other three are hearing loss (adult onset), self-inflicted injuries and osteoarthritis; these have multiple and less well-understood risk factors, so they are more difficult to prevent at present. The seven leading conditions result from exposure to multiple risk factors, known and unknown.

The seven leading risk factors (Table 5) account for over half of the attributable DALYs in the Region. Moreover, each risk factor is associated with two or more of the seven leading conditions and, conversely, each of the conditions is associated with two or more risk factors (see Table 6), although the links are not fully explored.

These relationships offer important opportunities to improve populations' health. Policies and interventions tackling the risk factors promote several positive health outcomes in the population, because of the multicausality of many conditions, likely synergistic effects and general societal changes, as indicated below.

**Table 3. HALE at birth in the WHO European Region, 2002**

Country	Females (years)			Males (years)			Total population estimate (years)
	Estimate	Uncertainty limits		Estimate	Uncertainty limits		
Albania	63.3	61.7	63.9	59.5	58.0	60.8	61.4
Andorra	74.6	73.7	75.5	69.8	68.5	70.7	72.2
Armenia	62.6	61.1	63.1	59.4	58.3	60.5	61.0
Austria	73.5	72.9	74.3	69.3	68.6	70.0	71.4
Azerbaijan	58.7	57.0	59.4	55.8	54.5	57.2	57.2
Belarus	64.9	63.6	65.5	56.6	55.7	57.5	60.7
Belgium	73.3	72.8	74.1	68.9	68.3	69.5	71.1
Bosnia and Herzegovina	66.4	64.7	67.2	62.3	60.8	63.9	64.3
Bulgaria	66.8	66.0	67.7	62.5	61.6	63.3	64.6
Croatia	69.3	68.4	70.0	63.8	63.2	64.6	66.6
Cyprus	68.5	67.1	70.0	66.7	65.9	67.5	67.6
Czech Republic	70.9	70.2	71.7	65.9	65.2	66.5	68.4
Denmark	71.1	70.6	71.8	68.6	68.0	69.1	69.8
Estonia	69.0	67.5	70.5	59.2	58.6	59.8	64.1
Finland	73.5	72.7	74.1	68.7	68.0	69.3	71.1
France	74.7	74.0	75.4	69.3	68.6	70.0	72.0
Georgia	66.6	64.8	67.7	62.2	61.1	63.3	64.4
Germany	74.0	73.4	74.8	69.6	68.9	70.4	71.8
Greece	72.9	72.3	73.8	69.1	68.4	69.7	71.0
Hungary	68.2	67.6	69.0	61.5	60.9	62.2	64.9
Iceland	73.6	72.7	74.2	72.1	71.2	72.9	72.8
Ireland	71.5	70.8	72.3	68.1	67.3	68.9	69.8
Israel	72.3	71.6	73.1	70.5	69.4	71.2	71.4
Italy	74.7	74.0	75.5	70.7	70.0	71.5	72.7
Kazakhstan	59.3	58.0	60.0	52.6	51.6	53.7	55.9
Kyrgyzstan	58.4	56.9	59.1	52.2	51.2	53.3	55.3
Latvia	67.5	66.7	68.5	58.0	57.2	59.2	62.8
Lithuania	67.7	67.0	68.6	58.9	58.1	60.1	63.3
Luxembourg	73.7	73.1	74.7	69.3	68.6	69.9	71.5
Malta	72.3	71.4	73.4	69.7	68.9	70.5	71.0
Monaco	75.2	74.4	76.0	70.7	70.0	71.4	72.9
Netherlands	72.6	72.0	73.4	69.7	69.1	70.4	71.2
Norway	73.6	72.8	74.4	70.4	69.5	71.3	72.0
Poland	68.5	67.9	69.2	63.1	62.4	63.8	65.8
Portugal	71.7	71.1	72.5	66.7	66.0	67.4	69.2
Republic of Moldova	62.4	61.2	62.9	57.2	56.2	58.2	59.8
Romania	65.2	64.3	66.3	61.0	59.9	62.1	63.1
Russian Federation	64.3	63.6	65.4	52.8	51.9	54.0	58.6
San Marino	75.9	75.0	78.0	70.9	69.4	72.3	73.4
Serbia and Montenegro	64.9	63.7	65.3	62.7	62.0	63.5	63.8
Slovakia	69.4	68.7	70.2	63.0	62.3	63.8	66.2
Slovenia	72.3	71.6	73.1	66.6	65.8	67.4	69.5
Spain	75.3	74.6	76.1	69.9	69.1	70.7	72.6
Sweden	74.8	74.0	75.5	71.9	71.2	72.5	73.3
Switzerland	75.3	74.5	76.0	71.1	70.3	71.8	73.2
Tajikistan	56.4	54.5	57.6	53.1	51.7	55.0	54.7
TFYR Macedonia <sup>a</sup>	65.0	63.7	65.6	61.9	61.0	62.8	63.4
Turkey	62.8	61.7	64.0	61.2	60.3	62.2	62.0
Turkmenistan	57.2	55.9	57.8	51.6	50.8	52.5	54.4
Ukraine	63.6	62.8	64.7	54.9	54.1	55.9	59.2
United Kingdom	72.1	71.3	73.0	69.1	68.5	69.9	70.6
Uzbekistan	60.9	59.4	61.4	57.9	56.9	58.9	59.4

<sup>a</sup> The former Yugoslav Republic of Macedonia

Source: *The world health report 2004 – Changing history* (19).

Nevertheless, as mentioned, the DALY-based structure guides this report's analysis, as it offers a strong message about the priorities at a Region-wide level. The section on the major causes of the burden of disease focuses on the three leading groups of conditions listed above, including the seven leading conditions. The next section presents evidence on the seven

leading risk factors, ranked according to their attributable share of total DALYs.

### Two issues: levels of certainty and interrelationships between risk factors

Before this schema can be followed, however, two additional issues must be addressed.

While the information above is robust at the level of the Region and the country groups (Eur-A, -B and -C), the estimates are less certain at the level of individual countries because of the limitations of the currently available data at this level and the assumptions in the epidemiological modelling. Nevertheless, country-level disaggregates of burden of disease estimates, and of comparative estimates of attributable risk, have been produced for this report. These are ranked by the proportion of deaths and DALYs attributable to each cause and risk factor, and the top 10 causes and risk factors for each country in the Region are presented in Annex Tables 4 and 5. These should help to give a better understanding of the health situation in individual countries and country groups, and to design further analyses, strategies and intervention programmes.

The country estimates for risk factors are based on the comparative risk assessment analyses carried out for *The world health report 2002* (20), but with updated country burden and country-specific exposure data for around four of the risk factors. For most risk factors, either the data for average exposure for the country groups or the overall disease-specific population attributable fractions (PAFs) for the country groups were used at the country level. In particular, the country-specific alcohol exposures are based on a preliminary adjustment of subregional consumption distributions, using country estimates of abstainers and apparent consumption per head. Thus, the attributable mortality and burden estimates, while based on the best information currently available, usually have more uncertainty at the country level than that of the Region, and could be improved with better country-specific exposure estimates. Ezzati et al. (18) published the detailed methods and data for these risk factors.

In addition, the reader should remember that the risk factors and conditions are interrelated. Individual risk factors are linked to different proportions of the total burden in DALYs. Purely

Condition	Total DALYs (%)
1. Ischaemic heart disease	10.5
2. Unipolar depressive disorders	6.2
3. Cerebrovascular disease	7.2
4. Alcohol-use disorders	3.1
5. Chronic pulmonary disease	2.3
6. Road traffic injury	2.4
7. Lung cancer	2.2
Total	33.8

**Table 4. Shares of seven leading conditions in the DALY burden in the WHO European Region, 2002**

Source: *The world health report 2004 – Changing history* (19).

Risk factor	Total DALYs (%)
A. High blood pressure	12.8
B. Tobacco	12.3
C. Alcohol	10.1
D. High blood cholesterol	8.7
E. Overweight	7.8
F. Low fruit and vegetable intake	4.4
G. Physical inactivity	3.5
Total	59.6

**Table 5. Shares of seven leading risk factors in the DALY burden in the WHO European Region, 2000**

Source: *The world health report 2002 – Reducing risks, promoting healthy life* (20).

Conditions	Factors' individual PAFs (%)							
	A. High blood pressure	B. Tobacco	C. Alcohol	D. High cholesterol	E. Overweight and obesity	F. Low fruit and vegetable intake	G. Physical inactivity	H. Other known factors
1. Ischaemic heart disease	58	22	0.2	63	33	28	22	
2. Unipolar depressive disorders			3					4
3. Cerebrovascular disease	72	22	0	27	23	12	9	
4. Alcohol-use disorders			100					3
5. Chronic pulmonary disease		69						2
6. Road traffic injury			38					8
7. Lung cancer		85				11		

**Table 6. Average contribution of the seven major risk factors to the disease burden from the seven major conditions in developed countries worldwide**

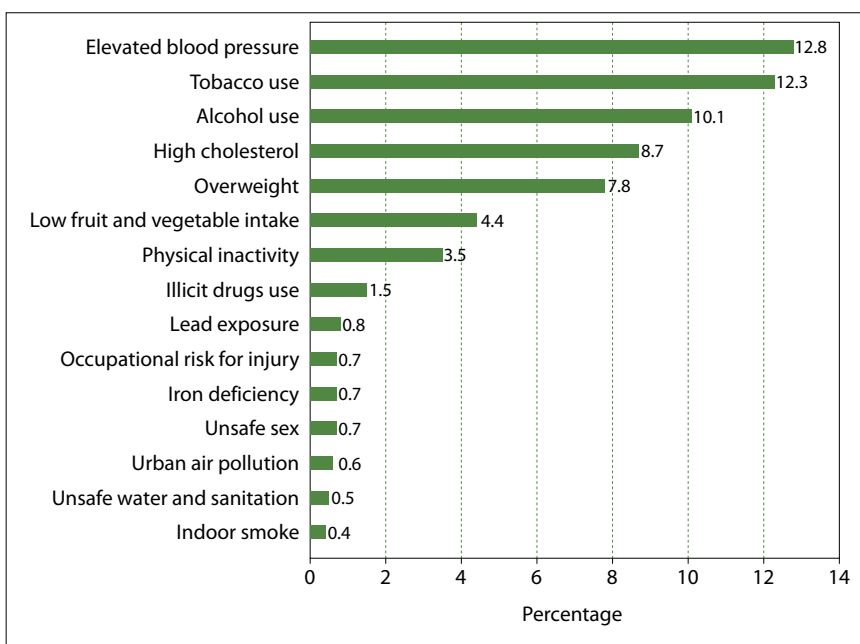
Source: adapted from Ezzati et al. (21).

arithmetically, the sum of the DALYs attributable to each of the risk factors individually amounts to three fifths of the total in the Region. This does not mean that the joint impact of those risk factors on the population's health amounts to three fifths of the total DALYs. It is less, because several diseases are caused by more than one risk factor, and each factor contributes to more than one condition.

Technically, the impact of each risk factor on the population's health is measured by the PAF in DALYs or deaths. This is the proportion of the disease burden on the population that would be eliminated if the current exposure to the risk factor were reduced to the minimum feasible. Table 6 shows the estimated PAFs of the seven leading risk factors as related to the DALY burden of each of the seven leading conditions, on average, for the developed countries in the world. The individual PAFs of two or more risk factors can add up to a joint PAF, which is smaller than the sum of its parts. In essence, joint PAFs need to be calculated to estimate the simultaneous effect of several risk factors. WHO estimates that the joint PAF for the many known risk factors for NCDs in the WHO European Region is about 41–42% of the DALYs and 54–57% of the deaths caused by NCDs (18). Fig. 3 presents the 15 most significant known risk factors.

Interventions addressing the seven leading risk factors can largely prevent the seven leading conditions. This creates a compelling argument for making every effort to implement the available knowledge and strategies to reduce these risks to the minimum possible. WHO's recent, more precise analyses (21) conclude that the potential health gain from controlling them is greater than previously estimated.

**Fig. 3. Proportions of total DALYs that can be attributed to the leading 15 known risk factors in the WHO European Region, 2000**



Source: data from *The world health report 2002 – Reducing risks, promoting healthy life* (20).

## Major causes of the burden of disease

The overview of the relationships of the leading individual causes of and risk factors for the burden of disease leads to this review of three main types of conditions in the Region. The grouping of the conditions and their sequence in the review are based on the following considerations.

1. NCDs are responsible for 77% of the burden in DALYs, with years of life lost due to premature mortality (YLL) accounting for 39% of the total burden in 2002 and years lived in disability (YLD), 38%. NCDs are therefore a priority for all countries. They are characterized by a long time-lag between exposure and manifestation, and usually require life-long observation and treatment. Both incidence and severity, however, can be reduced in a relatively short time: improvements occur some 2–7 years after eliminating exposure to a risk factor.
2. Injuries account for 14% of DALYs (10% YLL and 4% YLD), but place a very high burden of disease on younger people and have severe social consequences. They are largely preventable through changes in both the physical environment and prevailing norms of behaviour and social cooperation (intolerance of violence, solidarity, etc.).
3. Communicable diseases are responsible for 9% of DALYs (6% YLL and 3% YLD). The time between exposure and occurrence is short, however, and epidemics can develop very fast, endangering the health of large populations.

Fig. 4 illustrates the proportions of the overall burden of disease in the WHO European Region.

### NCDs

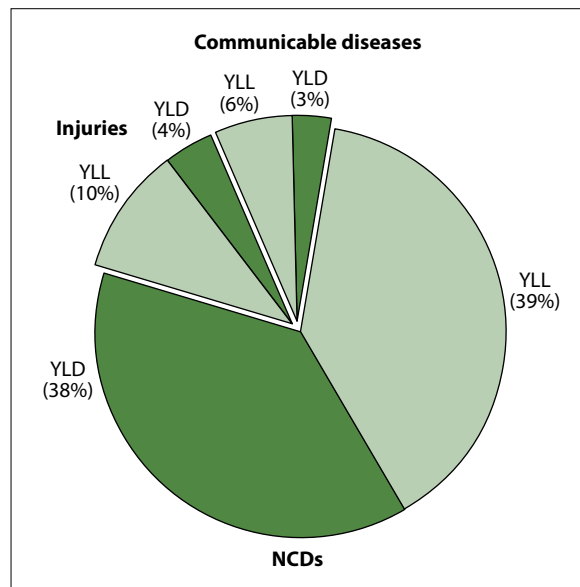
In 2002, NCDs caused 8.1 million deaths (85.8% of total deaths) in the WHO European Region and 115.3 million DALYs (76.7% of the total disease burden).

Table 7 presents the deaths and DALYs caused by the main groups of NCDs in the WHO European Region in 2002, and shows that their ranking differs between the two measures. In terms of mortality, the leading NCDs in the Region were cardiovascular diseases (CVD) and cancer, followed by the considerably smaller groups of respiratory diseases, digestive diseases

NCDs are responsible for 77% of the Region's disease burden. With the long time-lag between exposure and manifestation, they require long-term planning and treatment. While accounting for a far smaller share of the burden, injuries are a particular problem for young people.

Communicable diseases affect the fewest people, but attention needs to be paid to stop their spread into the Region's population at large. And poverty and underfunded services create a double burden of noncommunicable and communicable diseases for some countries.

Fig. 4. Proportional burden of disease in the WHO European Region, 2002





**Table 7. Deaths (in thousands) and burden of disease (in thousands of DALYs) from NCDs in the WHO European Region by cause and mortality strata, 2002**

Group of causes	Eur-A		Eur-B		Eur-C		Region	
	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs
CVD	1 612	8 838	1 052	8 175	2 263	17 405	4 927	34 418
Neuropsychiatric disorders	185	13 732	24	7 055	47	8 562	256	29 349
Cancer	1 038	8 549	291	3 289	504	5 322	1 833	17 160
Digestive diseases	182	2 414	76	1 900	131	3 082	389	7 396
Respiratory diseases	220	3 406	72	1 547	112	1 782	404	6 735
Sense organ disorders	0	2 465	0	1 589	0	2 167	0	6 221
Musculoskeletal diseases	20	2 197	2	1 513	4	1 924	26	5 634
Diabetes mellitus	92	1 105	29	566	21	522	142	2 193
Other NCDs	140	3 489	44	1 590	49	3 131	233	8 210
Total for NCDs	3 489	45 091	1 590	27 441	3 131	42 807	8 210	115 339
Total for all causes	3 920	51 725	1 865	37 697	3 779	60 900	9 564	150 322

Source: The world health report 2004 – Changing history (19).

and neuropsychiatric disorders. In terms of DALYs, however, CVD remained first but neuropsychiatric disorders ranked ahead of cancer.

## Leading NCDs

The seven leading conditions (see Table 4) include six NCDs: ischaemic heart disease, depressive disorders, cerebrovascular disease, alcohol-use disorders, chronic respiratory diseases and lung cancer. As trends over time in DALYs are not available, an approximation of the trends in the burden from some diseases in the Region is inferred from trends in mortality. This did not seem appropriate for depression and alcohol-use disorders, however, where the mortality components of DALYs are much smaller and less indicative of the time trends in the overall disease burden. For the latter two causes, a general situation assessment is given.

Since 1990, mortality from **ischaemic heart disease** has declined in Eur-A, but increased in Eur-B and -C, albeit with considerable fluctuations and differences between countries (Table 8).

**Depression** is a major cause of death and disability in all countries. It is the most frequent mental health problem, is responsible for most suicides and has considerable negative impact on functioning and quality of life, as well as a considerable financial burden. The indirect costs to society as a whole have been estimated to be seven times the direct costs. In western Europe, major depression affects 5–10% of people at any point in time. Owing to non-specific complaints, underdiagnosis is common. For example, depression is not recognized in about 50% of people in primary care.

Among the countries in the European Region reporting **suicide** to WHO, the highest rates are found in eastern countries, such as Lithuania (40 per 100 000 population), the Russian

Federation (34 per 100 000) and Belarus (33 per 100 000).

Nevertheless, the Eur-A average (31 per 100 000) is nearly three times those for Eur-B and -C (around 11 per 100 000).

Suicide rates tend to increase with age. On average, the rates in the Region for people aged 75 and older are about twice those of people aged 15–29. This trend holds for both sexes, but suicide levels among males are 3–4 times those for females.

**Table 8. Mortality from ischaemic heart disease: levels, ranges and trends in the WHO European Region**

Country group	Deaths per 100 000, 2002		Change in 1990–2002 (%)
	Average levels	Country range (lowest–highest)	
<b>Eur-A</b>			
Total	95.86	64–179	–27.9
Females	66.13	44–134	–26.4
Males	135.39	88–210	–29.6
<b>Eur-B</b>			
Total	249.12	108–424	9.4
Females	200.92	75–351	15.3
Males	310.88	142–515	3.9
<b>Eur-C</b>			
Total	418.15	222–592	29.6
Females	309.03	171–517	23.2
Males	590.24	293–718	32.1

Source: European health for all database (3).

While depression and other neuropsychiatric disorders clearly cause an enormous burden, major improvements in policy and services are taking place (see success story).

**Cerebrovascular disease** is steadily declining in Eur-A countries (Table 9). In Eur-B, it increased in the early 1990s, but stabilized in recent years and may now be decreasing. In Eur-C, levels rose considerably in the early 1990s, with fluctuations, and show no reversal.

**Alcohol-use disorders** are part of the group of neuropsychiatric conditions. They include the direct burden of alcohol dependence and harmful use due to conditions such as alcohol psychoses and dependence syndrome, and acute intoxications due to excessive drinking. They do not include the burden of other diseases or injuries where alcohol is a causal factor.

The analysis of *The world health report 2004 (19)* found that the burden of disease attributable to alcohol-use disorders was 4.6 million DALYs in the European Region in 2002: 3.1% of the total. Alcohol-use disorders are directly responsible for about 37% of total alcohol-attributable DALYs, but the proportion is lower for deaths, because these disorders result in considerable non-fatal loss of health. By all measures, the burden is 4–5 times higher in males than females. As to the disability component of the burden, however, the levels in males are about the same in all three country groups and seem to be falling, while those in females seem to be rising.

Overall, mortality from **chronic respiratory diseases** has steadily fallen in the Region as a whole and in Eur-A and -B countries since 1990. In Eur-C, death rates rose considerably and peaked in the early 1990s, but then dropped to pre-1990 levels (Table 10).

Cancer was responsible for around 18% of all deaths in the Region in 2003. Since 1990, trends have showed a general decline in all parts of the Region. This trend is also seen for the leading cause: **lung cancer**, which is responsible for 22% of all cancer deaths in the Region. The overall downward trend in lung cancer deaths, however, was due to decreases in males, while deaths rose in females in Eur-A and -B (Table 11), largely owing to smoking. As the prevalence of smoking among women remains high and is probably rising in eastern Europe, the death toll from lung cancer is likely to increase unless rates of smoking cessation improve rapidly.

## Injuries

Intentional and unintentional injuries continue to be a considerable public health problem, largely underestimated and even neglected in many countries. One of the main reasons for the

Country group	Deaths per 100 000, 2002		Change in 1990–2002 (%)
	Average levels	Country range (lowest–highest)	
<b>Eur-A</b>			
Total	61.15	54–145	–32.3
Females	55.71	49–126	–32.4
Males	68.05	60–173	–32.8
<b>Eur-B</b>			
Total	153.04	88–272	7.1
Females	139.62	73–247	6.7
Males	168.85	109–298	6.3
<b>Eur-C</b>			
Total	258.11	122–307	16.6
Females	227.12	112–270	12.6
Males	302.66	137–359	17.5

**Table 9. Mortality from cerebrovascular disease: levels, ranges and trends in the WHO European Region**

Source: European health for all database (3).

Country group	Deaths per 100 000, 2002		Change in 1990–2002 (%)
	Average levels	Country range (lowest–highest)	
<b>Eur-A</b>			
Total	20.2	14–29	–24.2
Females	13.0	5–45	–12.6
Males	32.5	14–49	–31.4
<b>Eur-B</b>			
Total	26.4	7–95	–23.3
Females	17.7	6–82	–22.6
Males	39.3	9–164	–23.9
<b>Eur-C</b>			
Total	34.8	11–53	–12.1
Females	16.6	5–40	–28.6
Males	69.6	23–105	–6.7

**Table 10. Mortality from chronic respiratory diseases: levels, ranges and trends in the WHO European Region**

Source: European health for all database (3).

**Table 11.**  
Mortality from lung cancer: levels, ranges and trends in the WHO European Region

Country group	Deaths per 100 000, 2002		Change in 1990–2002 (%)
	Average levels	Country range (lowest–highest)	
<b>Eur-A</b>			
Total	37.06	23–47	–7.4
Females	16.39	6–30	21.0
Males	63.88	42–88	–16.1
<b>Eur-B</b>			
Total	31.67	10–53	–3.8
Females	11.29	4–20	13.7
Males	58.39	16–101	–6.7
<b>Eur-C</b>			
Total	36.23	24–63	–17.4
Females	9.28	5–32	–16.6
Males	79.16	46–112	–19.8

Source: European health for all database (3).

problem is actually relative ignorance of both its size and the effective interventions available to deal with it (such as that in the success story below).

In the WHO European Region, injuries are estimated to have caused 21 million DALYs in 2002 (Table 12). Unintentional injuries accounted for 14.5 million DALYs (69%) and intentional injuries, 6.5 million (31%).

The ranking of the leading causes of DALYs lost from injuries differs between country groups. The leading causes are:

- road traffic injuries, self-inflicted injuries, falls, violence and poisoning in Eur-A and -B; but
- self-inflicted injuries, violence, poisoning, road traffic injuries and falls in Eur-C.

The escalation of violence and poisoning in Eur-C must be seen in context: overall rates of injuries in terms of DALYs are five times higher in Eur-C than Eur-A. Levels in Eur-B are twice those in Eur-A. This steep gradient in destructive and self-destructive health-related behaviour suggests that the eastern half of the Region has greater need for strategies to prevent injuries and violence, and that all such strategies in the Region should be tailored to the specific characteristics of both physical and social environments, and the cultural background of risk-taking behaviour.

### *Improving mental health in The former Yugoslav Republic of Macedonia: from hospital to the community*

In The former Yugoslav Republic of Macedonia, people with serious mental illnesses were traditionally viewed as unable to participate in community life. Independent living, and having a job and a social life were considered beyond their capacities. It was also believed that they needed prolonged treatment in a psychiatric hospital.

The mental health reforms in 2000 opened a new window. Attitudes started to shift away from custodial care towards treatment in the community. The WHO mental health project (22), involving the WHO Country Office, supported these reforms.

These changes enabled the creation of another kind of service through the transformation of the big psychiatric hospitals. Community mental health centres were established in four cities: two in Skopje (the capital) and one each in Tetovo, Prilep and Gevgelija. For the first time, protected apartments in three cities in the country were created to enable people with long-term illnesses to live with their neighbours in the community. The opening of a social cooperative (a cleaning service and hairdresser) gave people with mental illnesses the chance to enter the labour market. To strengthen

the role of service users, work began to start three social clubs and nongovernmental institutions.

Real political commitment to the country's mental health reforms is supported through the intersectoral National Commission for the Protection of Mental Health, which was established in May 2003 under the auspices of the Minister of Health. The national policy, operational action plan and mental health legislation were finalized. The policy and legislation are being submitted for endorsement by the Government.

The new mental health services started changes in the community. Transformation of the treatment system helped to change views on care in the community. The creation of the alternative services initiated a process that facilitates dynamic relationships between different groups and institutions, followed by the process of discussion, agreement and disagreement and finally consensus between different stakeholders: governmental and nongovernmental bodies, service users, families, professional institutions and international organizations. The process is long and the story still unfolding.

Group of causes	Eur-A		Eur-B		Eur-C		Region	
	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs	Deaths	DALYs
Unintentional injuries	137	3 042	76	3 123	321	8 317	534	14 482
Road traffic injuries	46	1 233	22	641	59	1 732	127	3 606
Poisoning	6	126	6	126	99	1 885	110	2 137
Falls	47	615	9	481	24	939	80	2 035
Fires	3	57	3	153	18	425	24	635
Drowning	4	74	6	167	28	649	38	890
Other	32	937	31	1 556	94	2 686	156	5 179
Intentional injuries	53	1 039	33	935	170	4 489	257	6 463
Self-inflicted injuries	48	890	23	532	92	1 969	164	3 391
Violence	4	134	8	255	61	1 912	73	2 301
War	0	14	2	130	17	605	19	749
Total for all causes	190	4 081	110	4 058	492	12 806	791	20 945
Total for all causes (in rates per 1000 population)	0.5	9.8	0.5	18.2	2.1	53.4	0.9	23.9

**Table 12. Deaths (in thousands) and burden of disease (in thousands of DALYs) from injuries in the WHO European Region by cause and mortality strata, 2002**

Source: The world health report 2004 – Changing history (19).

In particular, the overall proportion of DALYs due to injuries is nearly twice as high for males as for females, although there are differences by type of injury. This gender difference emerges in early childhood. To target preventive actions, the authorities therefore need to understand and take account of a number of factors: the specific characteristics of gender roles, the related risk-taking behaviour, and the risk and contributing factors related to each type of setting and injury in the country: for example, the time of occurrence, type of family or professional background of the affected people, etc. Moreover, the death and disability toll is directly related to poverty and socioeconomic deprivation. Worldwide, by 2020 injury rates are expected to drop by 30% from 2000 levels in higher-income countries, but rise by 80% in poorer countries, if current trends continue (23).

**Road traffic injuries** are among the 10 leading causes of the disease burden in all parts of the Region. In 2002, such injuries accounted for 3.0 DALYs per 1000 population in Eur-A, and 2.9 and 7.2 DALYs per 1000 in Eur-B and -C, respectively. As mentioned, this indicates that different types of phenomena and risk factors in countries, which require detailed analysis, may lie behind these figures.

Trends in mortality from all types of traffic injury – which are likely to be more comparable across the Region – peaked around 1990 in all country groups, but steadily decreased afterwards in Eur-A and -B. Eur-C experienced a decrease until 1997, after which deaths increased for six years in a row but remained below the peak of 30 per 100 000 in 1991. The reasons may be that economic recovery was not accompanied by improvements in infrastructure and driving behaviour, as preventive programmes were not fully implemented. Pedestrians are killed in traffic more often in Eur-B and -C than in Eur-A. Mortality from motor-vehicle traffic injury shows a similar trend, falling from 25 per 100 000 in 1991 to 16 per 100 000 in 1997 and then more or less levelling off at 18 per 100 000 (Table 13).

The economic toll of traffic accidents is also high: estimated to be about 2% of GDP per year in some western countries of the Region. Yet some effective control measures – such as enforcing laws against drink-driving, and requiring cyclists to wear helmets and motor-vehicle occupants to wear seat-belts – are not very expensive.

The success of some Member States in reducing the toll from road traffic injuries reconfirms that the key is political commitment and comprehensive measures (see success story). The health sector should use this experience as an opportunity to review and perhaps enhance its role and responsibilities as a partner of the other sectors involved, such as transport, finance, the judiciary and the environment (24).

**Table 13.**  
**Mortality from motor vehicle traffic injury: levels, ranges and trends in the WHO European Region**

Country group	Deaths per 100 000, 2002		Change in 1990–2002 (%)
	Average levels	Country range (lowest–highest)	
<b>Eur-A</b>			
Total	9.9	4–19	–29.6
Females	4.64	1–8	–32.8
Males	15.38	7–22	–29.1
<b>Eur-B</b>			
Total	9.88	6–14	–47.8
Females	4.45	3–6	–42.2
Males	15.78	10–23	–49.2
<b>Eur-C</b>			
Total	17.92	12–23	–26.6
Females	8.7	6–10	–12.5
Males	28.45	20–38	–30.1

Source: European health for all database (3).

- the continuing threat from other, mainly epidemic-prone, communicable diseases; and
- the emergence of new diseases.

The WHO European Region reported 34 cases of severe acute respiratory syndrome (SARS) in 10 countries, indicating how the globalization of trade and travel has put the Region at risk of importing both new and re-emerging diseases. New pathogens will continue to emerge and

## Communicable diseases

Communicable diseases account for 9% of the disease burden measured in DALYs, a little over half of which is related to HIV and tuberculosis (TB), but this should not be the main criterion for judging their public health importance. Communicable diseases remain important owing to:

- the high rates of TB and growing rates of HIV infection in several countries, particularly in the CIS;

## Preventing road-traffic accidents in Sweden

The Vision Zero project in Sweden is a traffic safety policy developed in the late 1990s and based on four elements: ethics, responsibility, a philosophy of safety and creating mechanisms for change. The Swedish Parliament voted to adopt this policy in October 1997. Since then, several other countries have followed the example.

### Ethics

Human life and health are paramount. According to Vision Zero, life and health should not be allowed in the long run to be traded off against the benefits of the road transport system, such as mobility. Mobility and accessibility are therefore functions of the inherent system, not vice versa, as is usual today.

### Responsibility

Until recently, responsibility for crashes and injuries was placed principally on the individual road user. In Vision Zero, responsibility is shared between the users and providers of the system. The designers and enforcers of the system – such as those providing the road infrastructure, the automobile industry and the police – are responsible for its functioning. At the same time, the road user is responsible for following basic rules, such as obeying speed limits and not driving while under the influence of alcohol. If users fail to follow such rules, the system designers are responsible for redesigning the system, including rules and regulations.

### Safety philosophy

As with accidents and injuries, the responsibility for safety formerly lay with the road user. Vision

Zero has an outlook that has been successfully used in other fields. Its two premises are that:

- human beings make errors; and
- there is a critical limit beyond which survival and recovery from an injury are not possible.

The road transport system should be able to take account of human failings and absorb errors in such a way as to avoid death and serious injuries. The occurrence of crashes and even minor injuries, on the other hand, needs to be accepted.

### Creating mechanisms for change

Changing the system involves acting on the first three elements of the policy. The main measures taken in Sweden include:

- setting safety performance goals for various parts of the road traffic system;
- a focus on crash protection for vehicles, and support for the consumer information programme of the European New Car Assessment Programme;
- securing higher levels of seat-belt use and fitting smart, audible seat-belt reminders in new cars;
- installing crash-protective central barriers on single-carriageway rural roads;
- encouraging local authorities to create zones with a speed limit of 30 km per hour;
- wider use of speed cameras;
- an increased number of random breath tests; and
- the promotion of safety as a competitive variable in road transport contracts.

Source: World report on road traffic injury prevention (23).

can quickly become a public health threat on all continents. The risk of terrorist attacks using biological agents adds to the risks of the natural occurrence of communicable diseases.

Factors that increase the epidemiological risks and create the double disease burden borne by some countries include poverty and underfunded government services that reduce people's access to basic sanitation and hygiene, healthy and safe food and drinking-water, and preventive and curative health services.

All Member States need the capacity to detect, analyse and contain threats from communicable diseases. In recent years, surveillance systems have been systematically reviewed. The results can be summarized as follows.

In Eur-A, the surveillance systems are mostly well developed, including complex, sometimes Internet-based reporting systems. Early warning systems are usually well developed. Recent policies of decentralization, however, mean that not all epidemiological information is available on time at the national and international levels. The surveillance systems in most of the new EU members are a mix of systems typical of either the CIS or western European countries. They are well designed and based on international case definitions. Many countries, however, need to review their outdated national legislation on communicable diseases.

In Eur-B and -C, the level of development of surveillance systems varies widely. Some countries used to have well-developed systems that combined human surveillance with surveillance of environmental determinants. The transition from centralized to market economies, and civil unrest, however, mean that many of these systems are no longer sustained and have practically collapsed. Very few communicable disease programmes supported by the international community have maintained their effectiveness. The CIS countries have probably suffered the most from the transition, and their surveillance systems almost totally lack the required infrastructure. Where surveillance systems are operating, local health systems do not systematically use the information gained for decision-making and give little feedback on the collected data and reports. In addition, laboratory capacity in several CIS countries is much too limited.

## **HIV/AIDS**

HIV/AIDS is fast becoming a major threat to health, economic stability and human development in many parts of the WHO European Region (25). WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) estimate that, at the end of 2003, 1.88 million people were living with HIV/AIDS in the WHO European Region, 1.3 million of them in the CIS (26). Estimated HIV prevalence in adults exceeded 1% in three countries – Estonia, the Russian Federation and Ukraine (26). These three, and Latvia, have some of the highest HIV rates in the world.

The HIV/AIDS epidemic in the Region shows important differences between groups of countries. In western Europe, peaks in HIV incidence in 1983 (among men who had sex with men) and 1987/1988 (among injecting drug users) gave way to a period of relative decline and stability. Unfortunately, the rate of newly diagnosed HIV infections is once again increasing (27). Infections through heterosexual contact increased markedly in 2002 and 2003, mostly due to cases diagnosed in people from countries with generalized epidemics – mainly in sub-Saharan Africa – who were probably infected there (28). Western European countries experiencing such increases include Belgium, Denmark, Germany, Ireland, Sweden, Switzerland and the United Kingdom (28). Cases among men who have sex with men also increased in western European countries in 2002 and 2003 (28). Following the introduction

and widespread use of highly active antiretroviral therapy (HAART) in these countries, AIDS incidence and deaths declined sharply in the mid/late-1990s (29) and continue to fall, albeit with a noticeable levelling off after 1998. Recent increases in HIV and AIDS in some western European countries raise concerns about the vulnerability of migrants, increased risk behaviour among men who have sex with men, treatment complacency (in which people resume risk behaviour because the disease is treatable), weakening government commitment and waning prevention efforts.

In central and eastern European countries, the overall rates of both newly diagnosed HIV infection and AIDS remained relatively low and unchanged in recent years. Around 21 000 new HIV infections were reported in this region by the end of 2003. Three quarters of all cases are in Romania and Poland. In the same period, 12 791 cases of AIDS and 5869 AIDS deaths were reported (27). Trends in newly reported HIV cases and AIDS deaths have stabilized over the past decade, while numbers of reported AIDS cases have declined slowly in the last six years. High levels of risk behaviour, low levels of knowledge and poorly developed prevention and treatment services in some countries are preconditions for potentially devastating HIV/AIDS epidemics (30).

In the Baltic states and many CIS countries, more than 80% of reported HIV cases are in injecting drug users (31). Well-documented HIV epidemics among injecting drug users have been reported in Belarus, Estonia, Latvia, Lithuania, Kazakhstan, the Republic of Moldova, the Russian Federation and Ukraine. In the Russian Federation, new HIV infections doubled every 6–12 months between 1995 and 2001 (see success story for one republic's response). In addition, these countries have the highest incidence of TB and multidrug-resistant TB in the Region. TB/HIV co-infection is associated with higher morbidity and mortality and increased TB transmission to the general population. In the Russian Federation, TB was estimated to cause 35% of deaths in adults with AIDS in 2000 (32).

### *HIV prevention and harm reduction programmes in the Russian Federation: the Renewal project in the Republic of Tatarstan*

#### SUCCESS STORY

An increasing number of regions in the Russian Federation include HIV harm-reduction programmes in their disease prevention strategies, targeting diseases of public health concern. This shows that HIV prevention activities can be incorporated in existing infrastructures, which are not dependent on funding from donors.

An example is the Renewal project, which started small in 1999 in the Republic of Tatarstan with external financial support, and developed into a Republic-wide harm-reduction programme implemented in nine cities with regular-budget funding. Early on, the project gained the support of ministries other than the health ministry, particularly the interior ministry. The project focuses on injecting drug users, sex workers and prisoners. The interventions include: needle-exchange programmes; distribution of condoms, antiseptic and other materials;

information, education and outreach activities; free and anonymous HIV testing, sexually transmitted infection testing and treatment; and other medical consultations. In 2004, the harm-reduction programme started TB diagnosis and treatment, including support for adherence to treatment and directly observed TB treatment.

A good understanding of the needs and living circumstances of the target populations benefited the design and implementation of the project. Most important, however, the attitudes of the law enforcement services towards these highly vulnerable groups have changed from repressive to supportive. In 2002, the harm-reduction programme was legally sanctioned by the government of the Republic of Tatarstan. The annual rates of newly registered HIV cases decreased by factors of 1.9 in 2002 and 1.6 in 2003.

## Malaria

Overall, malaria is under control but political will is decisive in maintaining and improving the situation. Ten countries in the Region have been affected by malaria in the last two decades (33–37). The number of malaria cases rose from 8884 in 1990 to 90 506 in 1995 and then fell to 37 170 in 1999. The latest available figure (15 983 cases in 2003) shows a continued decline.

Malaria re-emerged in countries in the Caucasus and central Asia, owing to the considerable political and socioeconomic changes and the resulting movements of population, extensive development projects and the practical discontinuation of malaria prevention and control activities in the early 1990s. The real magnitude of the problem is uncertain. The affected countries in the Region will continue to face the risk of growing malaria-related public health problems, unless both countries and the international community make a sustainable effort to control the disease.

## TB

TB is the leading communicable-disease killer of young adults in the European Region (38–41). Most cases are in people aged 15–54 years, with the peak among those aged 45–54 years. The rate among males is three times that in females. The trends in the epidemic are comparable to those in the African countries most affected by HIV/AIDS; the number of reported new cases in the Region rose from 231 608 in 1991 to 360 741 in 2003 (42).

The situation is critical in the Baltic states, the CIS and Romania. These 16 countries have four fifths of all cases notified in the Region. TB is a public health concern, however, in other countries with an intermediate or low TB burden, where the decline in notification rates has levelled off as a result of war, civil conflict and instability, or the emergence of high-risk groups among immigrants.

The major factors behind the epidemic are poverty, multidrug-resistant TB (MDR-TB), HIV co-infection and the spread of TB in prison populations.

Evidence of what works is categorical. Recalling World Health Assembly resolution WHA53.1 (43), which recognized that the global TB burden is a major impediment to socioeconomic development and a significant cause of premature deaths and human suffering, the WHO Regional Committee for Europe (40) in September 2002 called for:

- accelerated implementation of the strategy of directly observed treatment, short-course (DOTS) to achieve the global targets by 2005 (70% detection of infectious TB cases and 85% treatment success) and to prevent new MDR-TB cases; and
- implementation of the DOTS-Plus strategy to manage MDR-TB in countries with high rates.

The main barriers to the successful implementation of this proven strategy are a lack of political commitment in some countries, a lack of funds and weaknesses in the public health infrastructure.



## Major preventable risk factors

As mentioned, just seven risk factors are responsible for most of the burden of disease from NCDs in the WHO European Region: high blood pressure, tobacco use, harmful and hazardous alcohol use, high cholesterol, being overweight, low fruit and vegetable intake, and physical inactivity. They occupy the top ranks in terms of attributable DALYs (Annex Table 5) in each of the three country groups.

They are also the top seven preventable risk factors in most countries. There are two main exceptions. First, the use of illicit drugs is among the leading seven risk factors in some western European countries, mostly because low fruit and vegetable intake ranks lower. Second, three environmental factors of particular relevance for children's health are among the leading seven risk factors in the central Asian republics: unsafe water and sanitation, indoor smoke from burning of solid fuels, and childhood and maternal underweight.

Just seven risk factors are responsible for the majority of NCDs in the WHO European Region: high blood pressure, tobacco, alcohol, high cholesterol, being overweight, low intake of fruits and vegetables, and physical inactivity.

To reduce these risk factors coordinated, multifaceted, multisectoral action needs to be taken to change behaviour across the Region.

### Effective approaches

Again, the combined effect of any group of known risk factors is often less than the sum of their separate effects. Nevertheless, the multicausal nature of NCDs often gives countries both a choice among different preventive strategies in terms of cost-effectiveness, and opportunities for great potential benefit from simultaneous interventions. WHO estimates, for example, that modest population-wide and simultaneous reductions in blood pressure, obesity, cholesterol and tobacco use would more than halve CVD incidence (see success story). The removal of the leading 20 risk factors known to be largely preventable would lead to important gains in HALE: over 5 years, 8 years and 10 years in Eur-A, -B and -C, respectively. This would considerably reduce the inequalities between countries.

These common risk factors have economic, social, gender, political, behavioural and environmental determinants. The behavioural determinants have major mental health components. All these determinants and factors need to be taken into account in the design of cost-effective intervention strategies to prevent and treat NCDs.

While primary prevention is a more long-term task, real short-term gains can be made in treating people at high risk, such as those with established coronary heart disease. More needs to be done to ensure that those who would benefit from drug treatment receive the support they need. Drugs such as beta-blockers, acetylsalicylic acid and lipid-lowering agents can be highly effective in reducing the risks of CVD morbidity and mortality.

A combination of measures aimed simultaneously at both populations and individuals at high risk of developing disease is also very important, as shown by the discussion below. For example, positive evaluations were given to both types of measure to reduce CVD: population interventions to reduce salt intake, cholesterol and body mass index, and the use of the absolute risk approach, which aims interventions at individuals at high risk.

The following sections present data on the prevalence of the major NCD risk factors in the Region. Priority should be given to controlling these risk factors where effective preventive strategies are available. Interventions should take place at the individual as well as population level. Individuals should be empowered and encouraged to make positive, health enhancing decisions about, for example, the risks from smoking, alcohol consumption, an unhealthy diet and unsafe sex. Reducing the burden of death and disability from NCDs by controlling these risk factors requires a multisectoral approach that mobilizes the combined energy, resources and expertise of all stakeholders. A balance must be struck between government, communities and individual action, supported by nongovernmental organizations, the mass media and others.

In May 2004, World Health Assembly resolution WHA57.17 (45) endorsed the Global Strategy on Diet, Physical Activity and Health (46). It encourages governments to build on existing structures and processes that already address aspects of diet, nutrition and physical activity, and to set up national coordinating mechanisms that address these issues in the context of a comprehensive plan for NCD prevention and health promotion. Resolution WHA57.17 sees industry as part of the solution, and recommends joint action with the food industry (45). Consumers require accurate and clear information in order to make informed choices. Many governments are revisiting their regulations on nutrition labelling and health claims, because they see that claims based on scientific evidence can help promote healthy choices.

The health ministry has the responsibility to coordinate and facilitate the contributions of other ministries and government agencies to a country's health strategies. These contributors include ministries and government institutions responsible for policies on food, agriculture,

## Preventing NCDs in Finland

### SUCCESS STORY

The North Karelia Project in Finland shows how, over a period of 25 years, major changes took place in the levels of targeted risk factors. Among the male population in the North Karelia region, smoking declined greatly and dietary habits changed markedly. The proportion of middle-aged men in North Karelia who smoked fell from 52% in 1972 to 31% in 1997.

In the early 1970s, the use of vegetables or vegetable oil products was very rare; now it is very common. In 1972 about 90% of the population in North Karelia reported using mainly butter on bread. Today's figure is less than 7%. Such dietary changes have led to a reduction of about 17% in the population's mean level of serum cholesterol. High blood pressure was brought well under control and leisure-time physical activity increased.

Women made similar changes in their dietary habits and cholesterol and blood-pressure levels, but smoking increased somewhat, although from a low level.

These changes in risk factors extended well beyond the original reference area, to be paralleled all over Finland. In the 1980s, the trends in North Karelia levelled off, but remarkable changes followed, particularly in dietary changes to lower cholesterol. These were associated with major reductions in serum cholesterol levels.

By 1995, the annual mortality for coronary heart disease in middle-aged men (adults aged under 65

years) in North Karelia had fallen about 73% from the rate in the years preceding the Project (1967–1971). This reduction was especially rapid in the 1970s and after the mid-1980s. Mortality from coronary heart disease in men in North Karelia fell by about 8% per year during the last 10 years. The reduction in mortality from CVD among women was of the same magnitude.

After the 1980s, these favourable changes began to develop all over Finland. By 1995, the annual mortality from coronary heart disease among men in Finland had fallen by 65%. Lung cancer mortality also fell in this period, by more than 70% in North Karelia and nearly 60% in Finland as a whole.

With greatly reduced CVD and cancer mortality, all-cause mortality declined about 45%, leading also to greater life expectancy: about 7 additional years for men and 6 for women. Associated with favourable changes in risk factors and lifestyles, people's general health greatly improved. A separate analysis showed that most of the decline in mortality from coronary heart disease can be explained by the change in the population levels of the target risk factors, and that the reduction in cholesterol levels was the strongest contributor.

*Source: Successful prevention of noncommunicable diseases: 25 year experiences with North Karelia Project in Finland (44).*

young people, recreation, sports, education, commerce and industry, finance, transport, the mass media and communications, social affairs and environmental and urban planning (46).

Validated and comparable epidemiological data on these issues are scarce. Governments are strongly encouraged to support data collection on risk factors across time and population groups. Overall, prevalence levels seem to be slowly declining, as documented by data of the MONICA (multinational monitoring of trends and determinants in cardiovascular disease) project, which are limited in coverage but still one of the most uniform sources of such information (47,48). With some additional information, the situation can be presented as follows.

### **High blood pressure**

High blood pressure is one of the most important preventable causes of premature death. People with elevated blood pressure have a considerably higher risk of stroke, ischaemic heart disease, other cardiac diseases and renal failure. This risk in turn is related to unhealthy diets, especially high salt intake, insufficient physical exercise, excess body weight and risky alcohol use. High blood pressure is found in both richer and poorer countries. In most countries, it is estimated that up to 30% of adults suffer from high blood pressure and a further 50–60% would be in better health if they reduced their blood pressure by increasing physical activity, maintaining healthier body weight and eating more fruits and vegetables (49).

High blood pressure is the top-ranking risk factor in the European Region in terms of attributable DALYs (12.8% of total DALYS). It is widely underestimated, and often ignored as a problem. Data from the MONICA project show very large variations in blood pressure levels between different populations. Fortunately, blood pressure levels appear to be falling in considerably more populations than those in which they are rising. Countries should work together to establish comparable databases to monitor this and other major risk factors.

### **Tobacco**

Tobacco use has become the single biggest preventable cause of death. Smoking is the second most important risk factor in the Region (accounting for 12.3% of total DALYS) and continues to expand in poorer countries and disadvantaged socioeconomic groups.

Although current prevalence is only a proxy of past exposure, it provides a general indication of the stage reached by a given population in the course of the smoking epidemic. While the epidemic is slowing in western Europe, it is still growing in the countries in the eastern half of the Region (50).

Half of tobacco users will die of a tobacco-related disease. The morbidity or impaired health caused by tobacco is more widespread. As most of these deaths occur in middle age, the loss of income and the effects of chronic illness severely affect the quality of life and well-being of tobacco users' families. In addition, smoking rates are highest among the poorest, who suffer more than the rich from the consequences of tobacco use and have fewer resources to use in coping with them.

All factors considered, tobacco use is a net loss to an economy. At the same time, public health interventions to reduce smoking are highly cost-effective (see success story and key points for decision-makers). Comparable data on the prevalence of smoking, however, are rarely available. Countries are encouraged to collect reliable, valid and comparable data on smoking – especially by gender, age and socioeconomic population groups – to enable better targeting and monitoring of public health interventions.

## Smoking cessation in Coventry, United Kingdom

Coventry's smoking-cessation service is one of the most successful in England, easily exceeding Government targets every year for the last four years and helping thousands of people break the smoking habit. When the Government introduced its targets in 2000, health managers in the city aimed to help 150–200 people a year.

The Coventry Teaching Primary Care Trust, which oversees the service, found that more than 1800 people who used the service between April 2003 and March 2004 stopped smoking after four weeks. Of these, an estimated 700 will have quit smoking for good.

Since half of all smokers die from their habit, health experts believe about 350 lives will have been saved.

In the last four years, the targets have increased almost tenfold, and every year the smoking-cessation team has exceeded them. Health managers say those who quit for good benefit from a whole range of positive effects, including saving an average £4.50 a day on cigarettes. It is estimated that the 700 people who quit smoking in the last year will have already saved more than £1 million between them, much of which is spent locally.

Sources: *Coventry Evening Telegraph* (51) and Coventry Teaching Primary Care Trust (52).

One very important tool to manage the tobacco epidemic is the WHO Framework Convention on Tobacco Control (FCTC), the world's first public health treaty (54). Ratification by the fortieth WHO Member State, Peru, in November 2004 triggered the FCTC's entry into force in February 2005. The first 40 countries included 8 in the European Region: Armenia, France, Hungary, Iceland, Malta, Norway, San Marino and Slovakia. The Region as a whole played a very active role in the FCTC negotiation process, which started in 2000. The tasks ahead include gaining the active participation of other countries and the implementation of the FCTC.

## Evidence-based assessment of key points for decision-makers: tobacco

Although tobacco deaths are on the rise globally, control policies have managed to reduce smoking in some places. Millions of people in the WHO European Region could be spared disease and early death if effective policies were put in place.

Raising the prices of tobacco products is one of the most effective means of reducing cigarette smoking. A price increase of 10% results in a 2.5–5% smoking reduction in the short run and possibly up to 10% in the long run, if prices are increased to keep pace with inflation. Young people may reduce their smoking at two to three times the rate of older people. This level of response could result in 0.5–2 million fewer deaths from smoking in the better-off, western half of the Region, and in 0.6–1.8 million fewer deaths in the less affluent eastern half. Some

countries have raised taxes to 70–80% of the price of a pack of cigarettes, resulting in significant reductions in smoking, although smaller tax raises have also been successful.

The most common concerns about price increases are:

- that government revenues may fall and jobs may be lost owing to reduced tobacco consumption;
- that smuggling may increase dramatically; and
- that an increase in price disproportionately burdens lower-income smokers.

Such consequences are either false or overestimated. The economic and health benefits from increased tobacco prices appear to outweigh any disadvantages.

The principal recommendation for policy-makers is that tobacco

control programmes should be comprehensive to maximize smoking reductions, and should include:

- permanent price increases, scaled to inflation;
- comprehensive bans on promoting tobacco products;
- strong restrictions on smoking in workplaces and public spaces;
- education and counter-advertising campaigns;
- improved product warning labels; and
- increased access to cessation therapies.

Different measures likely have synergistic effects, and the consensus is that comprehensive approaches are the most effective means of reducing tobacco consumption.

Source: Health Evidence Network (53).

## Alcohol

Of all WHO regions, the European Region has the highest alcohol intake. The steady decrease in alcohol consumption that began in the 1980s, stopped in the mid-1990s. Levels have not changed since then.

The countries in the Region show a clear tendency towards harmonizing their consumption levels towards the middle of the range. As a risk factor, alcohol consumption has two dimensions: average volume and patterns of drinking. Average consumption figures hide wide variations in individual consumption levels and drinking habits. The adverse effects of drinking, however, are not confined to a minority of easily identified heavy or problem drinkers or people dependent on alcohol. Many moderate or occasional drinkers also suffer from alcohol-related problems, especially when they use alcoholic beverages as intoxicants.

Alcohol consumption produces effects that are often perceived as positive, but it has been estimated to cause 5.5% of all the deaths and 10.1% of all DALYs in the Region, much higher than the global estimates of 3.2% of all deaths and 4.0% of all DALYs being attributable to alcohol (55–57). Eur-C has the highest alcohol-related burden of disease in the world. This burden is far larger for men than women, and alcohol is the most important risk factor for mortality and morbidity in young people.

Research indicates a causal relationship between alcohol consumption and more than 60 types of disease and injury. While evidence is accumulating that drinking might have positive links to a few diseases, most notably ischemic heart disease, aggregate-level studies have failed to corroborate this. In contrast to most other risk factors in developed countries – such as tobacco, hypertension or high cholesterol – alcohol harms health relatively early in life, while the possible protective effects on CVD occur late in life. From a public health perspective, alcohol policies that do not focus on reducing harm can thus have serious implications, not only on the size of the problems but also on the distribution of morbidity and mortality among age groups (58).

Alcohol causes harm to health and societies that extends well beyond drinkers. Policies to reduce the rates of alcohol-related harm thus not only improve the health and save the lives of such people but can also have a broader impact on the health and well-being of families, communities and society at large (see key points for decision-makers).

## High cholesterol

Cholesterol plays an important role in a healthy body. The liver produces the amounts needed, and foods contain cholesterol, particularly egg yolks, meat, poultry, fish, seafood and whole-milk dairy products. Fruits, vegetables and cereals do not contain cholesterol. A high level of cholesterol in the blood is a key component in the development of atherosclerosis, the accumulation of fatty deposits on the inner lining of arteries. Mainly as a result of this, cholesterol increases the risks of CVD.

In 2000, high cholesterol was estimated to cause 18% of global cerebrovascular disease (mostly non-fatal events) and 56% of global ischaemic heart disease. Overall this amounts to about 4.4 million deaths (7.9% of the total) and 40.4 million DALYs (2.8% of the total) (20). Of this global burden, 18% occurred in Eur-C. In the European Region, 8.7% of DALYs were attributable to high cholesterol levels. In most regions, the proportion of female deaths attributable to cholesterol is slightly higher than that for men (60).

Both the population and the individual approaches are useful in lowering high cholesterol levels.

## Evidence-based assessment of key points for decision-makers: alcohol

The most effective way to tackle alcohol-related problems in the population is to implement multiple policies that increase alcohol prices, reduce the availability of alcohol and take measures against drink-driving and underage drinking.

### Prices

Substantial evidence shows that raising alcohol prices reduces consumption and the level of alcohol-related problems. In most countries and particularly those with low alcohol tax rates, tax-induced price increases on alcoholic beverages lead to increases in the state's tax revenues and decreases in its expenses on alcohol-related harm. The effects of price increases, like the effects of other alcohol control measures, differ among countries, depending on such factors as the prevailing

alcohol culture and public support for stricter alcohol controls. The effects on alcohol-related harm are definite and the costs low, however, making price increases a cost-effective measure.

### Availability

Stricter controls on the availability of alcohol – especially the setting of a minimum legal purchasing age, a government monopoly of retail sales, restrictions on sales times and regulation of the number of distribution outlets – are effective interventions.

### Drink-driving

Most measures against drink-driving – such as sobriety check-points, random breath testing, lower limits on blood alcohol concentrations, suspension of driver's licences, graduated licensing for novice drivers and brief interventions for hazardous drinkers

– also receive high effectiveness ratings. These interventions are applicable in most countries and are relatively inexpensive to implement and sustain.

### Underage drinking

If young people's drinking is seen as a specific alcohol policy problem, increasing the legal age limit for purchasing or selling alcoholic beverages is the most immediate and effective measure. Various educational approaches have been developed to reduce alcohol consumption. Although they are growing in popularity, there is little evidence of their effectiveness. Similarly, current research findings show that both alcohol advertising and bans on such advertising have only limited effects on consumption.

*Source: Health Evidence Network (59).*

The population-wide approach seeks to lower average levels of blood cholesterol by encouraging people to reduce their intake of saturated fat and cholesterol, increase their physical activity and control their weight. Health education, through the broadcast and print media, is expected to lead to a 2% reduction in total cholesterol levels across the board. Population strategies to reduce cholesterol are very cost-effective. Their total impact in terms of DALYs gained, however, is relatively small, although this conclusion is based on evidence from studies with a relatively short follow-up period. The long-term effect over generations is likely to be greater because overall cultural changes in dietary habits can be self-reinforcing (60).

The individual approach promotes the detection, treatment and education of people whose elevated blood cholesterol places them at significantly higher risk for CVD. The combinations of treatment with cholesterol-lowering drugs, four annual visits to a health care provider for evaluation and one or two annual outpatient visits for health education sessions, is proven to be cost-effective (60). Another effective intervention is educating patients: a large systematic review showed that counselling patients can improve their dietary behaviour, including reductions in total and saturated fat intake and increases in fruit and vegetable intake. More intensive counselling and counselling for higher-risk patients have in general produced larger changes than less intensive interventions delivered to low-risk populations (60).

As in the case of other risk factors analysed in this report, a multisectoral approach is needed to achieve sustainable changes at the population level. The process should establish working relationships between communities and governments, involve the agriculture sector and food industry, and encourage local initiatives focusing on schools and workplaces.

## Overweight and obesity

Overweight is responsible for about 7.8% of total DALYs in the WHO European Region. It is a risk factor for a number of conditions, including diabetes, CVD, joint diseases and cancer.

Overall, excess body mass accounts for an estimated 5% of all cancers in the EU. Obesity has a strong negative impact on the quality of life. It costs some countries up to 7% of their total health care budget.

The global epidemic of obesity and overweight is a major challenge to the successful prevention of NCDs (see key points for decision-makers). In many countries in the European Region, over half the adult population has crossed the threshold of overweight, and 20–30% of adults are categorized as clinically obese. For example, one in five adults is obese in Finland, Germany and the United Kingdom. The figures are even higher in the eastern half of the Region. Trends are mostly rising, although the rates of increase vary.

Information on recent policy developments in the Region is provided in the section on overweight and obesity in children in Part 3 (pp. 64–65).

### Evidence-based assessment of key points for decision-makers: obesity

The development of obesity depends largely on genetic factors. An inherited predisposition to obesity is widespread in the population. In genetically predisposed individuals, lifestyle factors (such as diet and exercise) and social, behavioural, cultural and community factors determine whether obesity develops.

Information about the cost-effectiveness of different methods of combating obesity, however, is limited. Owing to the very broad range of outcomes of preventive methods, their cost-effectiveness cannot be calculated. Among treatment methods, the costs of achieving weight

loss are relatively low for dietary counselling, behavioural therapy, dietary replacement formulas with low energy content, and surgical treatment, but considerably higher for pharmacological treatment.

#### Policy considerations

Most population-based prevention programmes that have been scientifically assessed have not shown any favourable effect on the prevalence of obesity. Some programmes for both adults and children have been successful, however, at least in the short term. New strategies need to be developed and assessed to

disseminate knowledge about the causes and risks of obesity, to change dietary habits and to motivate people to increase their physical activity. Concurrently, policy interventions at the societal level are needed to reduce the prevalence of obesity.

The risks related to obesity can be reduced through weight reduction, regardless of the methods used. Even if weight reduction is not successful, the risks associated with obesity can be reduced by increased physical activity, smoking cessation and improved control of diabetes, high blood pressure and elevated blood lipids.

Source: Health Evidence Network (61).

### Low fruit and vegetable intake

Low intake of fruits and vegetables is a major risk factor to which 4.4% of the DALYs in the Region can be attributed. Fruits and vegetables are important components of a healthy diet and could help prevent major diseases such as CVD and gastrointestinal cancer. Low intake is estimated to cause around 18% of gastrointestinal cancer, about 28% of ischaemic heart disease and 18% of stroke in Europe.

Increased fruit and vegetable intake has the potential to bring important health gains. In the 15 countries comprising the EU before May 2004 and 3 of the new EU countries, it is estimated that increasing the currently insufficient average intake of fruits and vegetables to that of the groups consuming the most, would prevent about 23 000 deaths each year from coronary heart disease and major types of cancer in people under the age of 65. Diet is one of the most important modifiable determinants of cancer risk for the great majority of the population that does not smoke.

WHO recommends an average daily intake of 400 g fruits and vegetables (49,62,63). Since 1995, the available data show that the average daily intake in the Region has ranged from a little above 200 g in the United Kingdom and Austria to about 500 g in Greece and Finland. The

average intake in Finland nearly tripled in a relatively short period (see success story above). There is a general north–south gradient, with higher intake in the south.

Consumption patterns for dietary components are linked to national wealth (62,63). These patterns change over time, and, at the level of households, may depend on access to and the availability of foods. Rapid changes in lifestyles, resulting from industrialization, urbanization, economic development and market globalization, are significantly affecting the nutritional status of populations. At the global level, good evidence indicates a worrying transition in nutrition, in which rising national wealth is accompanied by changes in diet, with increased consumption of animal-derived products, fat and oil and reduced intake of cereal foods and vegetables. In the European Region, countries such as Greece, Portugal and Spain show some evidence of slowly making this transition, moving from what is called the Mediterranean diet, rich in cereals, fruits and vegetables, towards that of northern Europe, rich in meat and dairy products. At the same time, the populations of the CIS experience rapid changes in diet owing to massive social and technological change, which affects food supplies.

Public health policies should therefore aim at making positive changes in the patterns of the nutrition transition. They should promote the desire for and affordability of healthy diets and discourage unhealthy eating habits, to improve the control of diet-related public health problems such as CVD, cancer, obesity and non-insulin-dependent diabetes.

### Evidence-based assessment of key points for decision-makers: physical inactivity

Hillsdon & Thorogood (65) reviewed studies of strategies to promote physical activity. They searched computerized databases of bibliographic references, and asked experts for information about their current work. The studies assessed

were randomized controlled trials of healthy adults living in their own homes, where exercise behaviour was the dependent variable.

The authors found that interventions that encourage walking and do not require attendance at a

sports or exercise facility are most likely to lead to sustainable increases in overall physical activity. Brisk walking has the greatest potential for increasing the overall activity levels of a sedentary population and meeting public health recommendations.

## Physical inactivity

Physical inactivity is responsible for 3.5% of the total DALYs in the WHO European Region. Industrialization, urbanization and motorized transport have reduced physical activity. At present, more than 60% of the global population are not sufficiently active (61). In western Europe, more than 30% of adults are not sufficiently active and levels of physical activity are continuing to decline (64).

The validity of the data in this area is a problem, however. Very little comparable evidence is available across populations. Most information is collected in self-reported surveys using different standards and questions; in addition, the populations responding to the questionnaires have different norms and expectations for health.

Physical activity is probably one of public health's most cost-effective tools; it:

- reduces the risk of conditions such as CVD, non-insulin-dependent diabetes and obesity;
- by improving people's physical coordination, balance and strength, reduces the risk of injuries and is likely to prevent, for example, falls among elderly people; and
- contributes to mental well-being (see key points for decision-makers).



Along with other international and national agencies, WHO encourages people to take at least 30 minutes of physical activity each day, defined as any body movement that results in energy expenditure. Thus physical activity includes sports but also, for example, walking (see success story), cycling, playing, cleaning house or climbing stairs.

### *Walking programmes for elderly people in Israel*

A national programme promotes walking by elderly people in Israel. Specific local initiatives are initiated across the country to raise their awareness of the importance of walking to their health and to establish walking groups. A programme coordinator in each city or region recruits volunteers to serve as group leaders: people over the age of 60 years who like to walk. These volunteers participate in training seminars and then form and lead walking groups for elderly people in their neighbourhoods.

In addition, the programme promotes safety for the elderly pedestrian, one of the major groups at risk on the roads. People aged 60 and over comprise 11% of

the total population but 40% of injured pedestrians. To promote safe walking habits, as well as health, the Road Safety Authority distributes to walkers hats, reflectors, membership cards and pamphlets with safety messages.

In addition to local activities, twice a year the steering committee organizes special sport and walking events: regional marches on World Health Day, 7 April, and a national day in October, which coincides with the International Day of Older Persons. Thousands of people attend these events, and the number of participants grows from year to year. In 2001, about 6000 people participated.

*Source: Racioppi F et al. (64).*

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# PART 3

CHILD AND  
ADOLESCENT  
HEALTH AND  
DEVELOPMENT



## Rationale for the focus on children

This report uses the definition of *child* from the United Nations Convention on the Rights of the Child: “every human being below the age of eighteen years” (1). The general term *children’s health* fully includes infants, pre-school children, older children and adolescents. These groups also comprise subgroups that differ in stages of development, risks to and determinants of health, and needs for services and public health measures.

This third part of the report has a structure similar to the general overview in Part 2. It reviews mortality indicators, the summary measures of the burden of disease (in DALYs) and selected morbidity indicators. Examples of appropriate policy responses and concrete interventions are given. Part 3 ends with a summary of a systematic review – coordinated by the Health Evidence Network at the WHO Regional Office for Europe in conjunction with the preparation of this report – of the evidence on the factors that influence the effective implementation of disease prevention and health promotion programmes for children.

Health in childhood determines health throughout life and into the next generation. Despite overall improvements, children’s health in the European Region shows large differences according to age, gender, geographical location and socioeconomic position, both within and between countries. Social inequalities are increasing in all countries, particularly in the eastern half of the Region.

Because working for optimal health and development for all children is an increasingly complex task for countries, the WHO Regional Office for Europe is developing a new approach to assist them: a strategy for child and adolescent health in the European Region. In addition, all countries need better information on and monitoring systems for children’s health, particularly in relation to social inequalities.

### Gaps in children’s health

As indicated in Part 2, most indicators show that, in recent decades, public health has succeeded in improving health at the population level in the WHO European Region and globally, but health inequalities within and between countries remain unacceptably large and continue to grow (2). The evidence clearly demonstrates that social factors account for the bulk of these disparities (3–5), and people from socially disadvantaged groups get sicker and die sooner than people in more privileged social positions (6). Public health action to address the major causes of the burden of disease will therefore continue to be less successful than necessary and possible, as long as it fails also to address the root causes of morbidity and mortality.

This general conclusion holds true for children’s health, too. For example, rates of mortality and malnutrition in children continue to decline globally, but large inequalities between poor and better-off children continue to exist, both between and within countries. These inequalities appear to be widening. WHO therefore concluded that the health of children and mothers must be reinstated as an important item in the agendas of health and education ministries, and United Nations and other organizations (7,8).

### Broader, better targeted interventions

In many areas, what to do – for example, to reduce child mortality or promote healthy behaviour – is well known, but the effective interventions available do not reach enough people or target

those in most need (9). Interventions must reach more children and mothers; their delivery must be scaled up and high coverage rates maintained, particularly among vulnerable groups. In the longer term, all partners in work to improve children's health – including governments, and international and nongovernmental organizations – must commit themselves to strengthening the capacity for public health programmes at the local level. Most importantly, interventions to reduce disease and save lives must take account of the social determinants of health, as these factors determine whether available knowledge and resources reach those in need. Unfortunately, neglect of these factors continues to undermine efforts to improve health (10).

Improving the health of young people will contribute substantially to achieving the Millennium Development Goals (11).

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender equality and empower women.
4. Reduce child mortality.
5. Improve maternal health.
6. Combat HIV/AIDS and other diseases.
7. Ensure environmental sustainability.
8. Develop a global partnership for development.

World leaders adopted the Goals as landmarks of what could and needed to be done, and challenged the public health community to develop a map for their achievement. The Goals establish poverty reduction and human development as the cornerstones for sustaining social and economic progress (see also pp. 75–77).

The first seven Goals focus on tackling poverty in all its forms. They are designed to break the cycle of poverty and ill health. Better health is strongly correlated with improved educational attainment, which in turn leads to better health. Both education and health are resources for increased income, which enables access to better education and health care, and health enhancing environments. All the Goals are relevant to children's health, welfare and development.

## **Reasons to focus on children**

This report focuses on children's health for two reasons. First, as mentioned in Part 2, fewer children are being born in the WHO European Region and they are likely to live a long time. Thus, it is vital to do everything possible to ensure that these children grow up healthy and maintain their health into old age. Second, childhood is the best period in which to act. This is when action is most effective in both promoting good health and preventing ill health in childhood and later life.

Health in childhood determines health over the total lifespan and into the next generation. The first years of life lay the foundations for people's achievement of their health potential. How the brain develops in early life determines whether people have the skills to cope with disease risk in later life (12). Problems in early childhood development have a strong relationship to NCDs in adult life. Health promotion is most effective in the early years of life.

Further, disease prevention and control should counter the negative influences on health as early as possible in life, to keep problems from passing into later stages of development. To a large extent, each stage in the development of a child prepares the way for the next. That is why it is important to anticipate risks as and when they are likely to emerge. This means that the wisest policies on children's health focus on early and well-targeted interventions.

In addition to the public health rationale and the moral obligation, investment in children's health is good economics, as it literally pays off for the individual and society. Thus, this investment must be society's responsibility and extend beyond the health sector.

Children in the Region show large differences in health according to age, sex, geographical location and socioeconomic position, both within and between countries, so general approaches must be adapted for sustainable implementation in the very different circumstances of children and families. As mentioned, the overall improvements in the population averages for a range of conventional health indicators hide increasing social inequalities in all countries, particularly in the eastern half of the Region. Even in the 15 more affluent countries comprising the EU before May 2004, about 30–50% of all deaths and health problems that occur in children are estimated to be associated with parents' low socioeconomic position (13). In addition, the social gradient is mostly steeper within countries than between them. Thus, public health systems clearly face an increasingly complex task in ensuring the circumstances for optimal health and development for all children.

### **New strategy**

There is growing international agreement that a new approach is needed for this task. Following a 2003 resolution of the WHO Regional Committee for Europe (14), the WHO Regional Office for Europe is developing a European strategy for child and adolescent health and development (15). Its aim is to assist Member States in formulating their own policies and programmes, not to act as a straitjacket for the Region. The strategy identifies the main challenges to child and adolescent health and, most important, provides options that are based on evidence and the experience gleaned by WHO over recent years. The strategy and an associated toolkit will help Member States identify any gaps in their plans and clarify their priorities for future investment. Because circumstances vary, each country in the Region must decide its own priorities. Countries will remain free to set their own targets for achievement, in the light of their particular circumstances and resources. While the principles and approaches that underpin child and adolescent health and development are universal, their application may vary from country to country in this complex and diverse Region.

All these approaches share basic features: they must be evidence based, broad and better aimed at underprivileged groups in the population (see pp. 78–81 for further discussion of factors in success). While more effort and, naturally, resources are needed for the successful implementation of the interventions known to be effective, one thing is clear: delays in action on children's health and development are not primarily a question of evidence but one of the ambition required to pursue substantial improvements. In particular, the recent economic growth in most eastern countries in the Region is an opportunity to scale up services for child health and development that will pay off in the future.

The aim is to ensure full coverage of children of all social and ethnic groups by the best achievable public health services. This must be supplemented by access to high-quality health services, which can deliver indispensable results. This short report does not include health care services in its scope, but aims to focus on population-level indicators of interest to public health. The process of preparing this report uncovered many limitations in the availability of adequate information on children's health, as discussed below. In general, all countries need better information on and monitoring systems for children's health, particularly in relation to social inequalities.

## Information on children's health

In general, good data on children's health are still surprisingly difficult to obtain. Regrettably, existing data are often inaccurate, incomplete or inconsistent. The methods used to access and present data vary considerably between countries, adding to the complexities of analysis. The lack of data on the total population of children (that is, all those aged 0–17 years) is a particular problem. A more standardized approach will not only help build the evidence base for children's health and development but also improve the confidence of policy-makers in the information available to support policy.

In particular, neonatal, infant and child mortality is underreported in several countries, mainly in the Caucasus and central Asia, which have only recently started to use the international definition of live birth. Underreporting is also a problem in some countries in the Balkans. Household surveys carried out in some of these countries in the 1990s produced estimates of mortality that are much higher than the official figures, which are based on registration. Similarly, the children's immunization rates given by official sources are sometimes at variance with those derived from household surveys (16).

Owing to these differences, in May 2004, WHO, the United Nations Children's Fund (UNICEF), the United Nations Population Division and the World Bank agreed to carry out regular, joint activities to improve the estimation of mortality. Accordingly, WHO and UNICEF produced a consistent set of mortality rates for children aged under 5 years by country for the period 1990–2003; these may not be directly derived from reported data and should be interpreted as the best estimates of WHO, rather than the official views of Member States. WHO published these data with uncertainty intervals, to communicate the plausible range between the high and low estimates for each country (8). Fig. 5 shows the uncertainty intervals in relation to the officially reported data. In a number of countries in the Eur-B and -C groups, mainly in the Caucasus and central Asia, even the low WHO estimate is considerably higher than the official figures (see Annex Table 2 for the WHO estimates of the midpoints of the uncertainty intervals). While the rates in Eur-A are around 5 deaths per 1000 live births, those for some central Asian republics are estimated at over 100 per 1000.

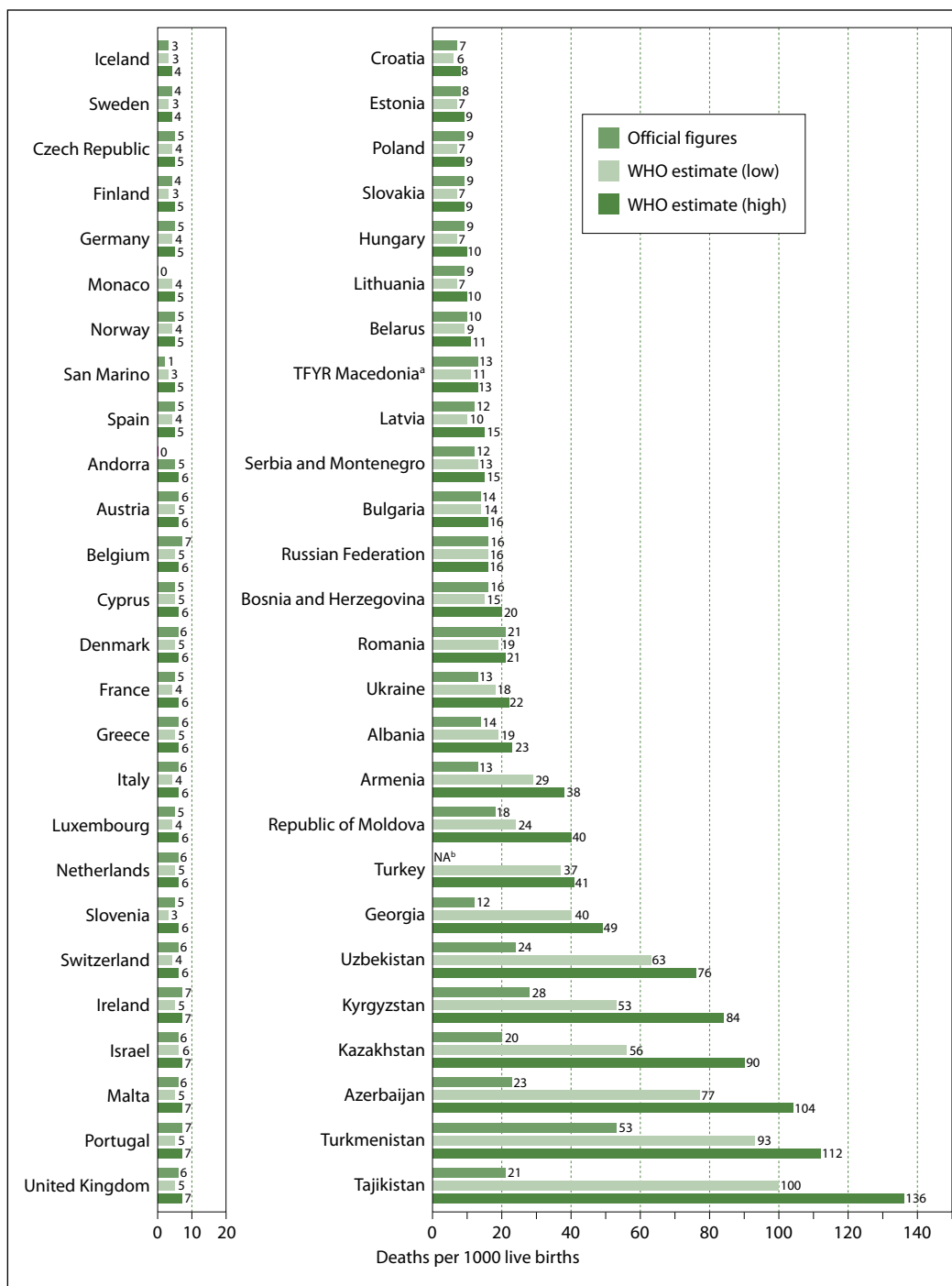
Unfortunately, health data for socioeconomic subgroups are mainly available through research studies or population surveys. For this reason, the country averages usually conceal the differences between such groups, such as the health experience of subgroups with a mobile lifestyle, including homeless people and refugees; or the impact of disability on access to services, such as education.

Another major concern is the lack of sufficient information at the population level on the positive aspects of children's health and development.

The WHO Regional Office for Europe carried out a special data collection exercise to support the move to a more child-centred approach to compiling and presenting data on children's health. The Regional Office sent the data specifications – based on the recommendations of the Child Health Indicators of Life and Development (CHILD) project (18,19) – to all 52 Member States in the Region and invited them to nominate focal points; the focal points submitted the data available to them by September 2004. These were added to the data already available in the Regional Office. The analyses for this report have used all data selectively (see Annex Table 6).

The overall conclusion of the exercise is that the required data are not readily available in a single central database in any country, and compiling them requires special effort and resources. Thus, the existing data on children's health are most likely underused.

**Fig. 5. Official figures and WHO estimates of deaths in children under 5 in the WHO European Region, 2003**



<sup>a</sup> The former Yugoslav Republic of Macedonia.

<sup>b</sup> NA = not available.

Source: official estimates from the European health for all database (17); WHO estimates from *The world health report 2005 – Make every mother and child count* (8).

The development of this report was an interactive exercise, involving divisions and programmes in the Regional Office, WHO headquarters, selected other organizations and individual experts. In particular, WHO headquarters databases – the Global Burden of Disease Database (20) and the WHO Global InfoBase (21) – have provided estimates of the burden of disease in children for each Member State in the WHO European Region.

# Major causes of the burden of disease

## Overview

In general, the health status of children in the 52 countries in the WHO European Region reflects the widening east–west gap seen in adults, with health worsening as one moves from Eur-A to -B and then -C. In contrast to this pattern, however, high rates of respiratory and infectious diseases in Eur-B mean that overall child mortality is higher in this group than in Eur-C. In Eur-A, mortality from such causes is already very low, which means a smaller disease burden overall, but the disease patterns include proportionately more NCDs, originating from complex interactions of genetics, behaviour and the environment, such as asthma and allergies, diabetes, obesity and neuropsychiatric disorders.

Overall, the countries in the Region have made substantial progress in reducing mortality and morbidity from acute conditions, although considerable problems remain in many countries in Eur-B and -C, particularly Turkey and the countries in the Caucasus and central Asia.

Unintentional and intentional injuries remain much too frequent in all countries. In addition, evidence is accumulating of growing inequalities in health in many countries.

This section of Part 3 begins by analysing mortality in the group aged 0–14 years, which provides one very important view on children's health. An analysis of the DALY estimates for this age group follows, and provides useful additional insights. The section concludes by examining two additional types of indicators of child health: largely preventable conditions and very complex conditions.

## Mortality in children

Death is the childhood health outcome that is most difficult to accept. The burden it places on the family may last for many years. In addition, it is particularly sensitive to the impact of and inequalities in both the immediate and the more distant determinants of health, including health-related policies. This section discusses deaths in children in various age groups.

The results for overall mortality are somewhat better for Eur-C than Eur-B, which includes many of the countries with higher child mortality. The opposite is in general true of adults, as shown in Part 2. From a global perspective, however, Eur-B and -C have low child mortality. In addition, the differences between the two are small in comparison to those between them and Eur-A, where child mortality is very low. The differences in the patterns of child and adult health underline the need for countries to design complementary health strategies for the two.

## Children under 5 years

In general, deaths in both infants and children aged 1–4 years have decreased in most countries in the European Region, although at different speeds. In particular, most of the countries in the Caucasus and central Asia, which have very high mortality in children under 5, made very little

The causes and rates of deaths and loss of health in children vary widely across the Region. In general, eastern countries have higher morbidity and mortality from respiratory and infectious diseases, and injuries and poisoning. Asthma and obesity rates are rising sharply in the western countries, which have lower mortality. Vaccine-preventable diseases remain a worry across the Region. The different patterns of child and adult health underline the need for countries to design complementary health strategies for the two.

progress in the period 1995–2003 (8). This has contributed to the widening of the differences between the countries in the Region.

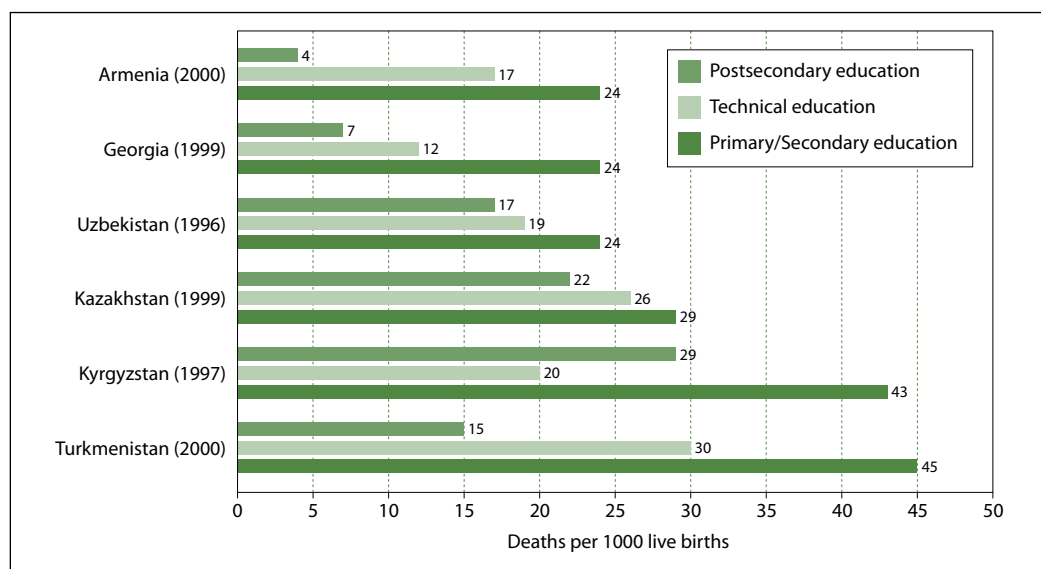
### Infants

Mortality rates for children aged under 1 year have continued to fall in the Region as whole. The average in Eur-A is around 4.6 deaths per 1000 live births. That for Eur-B remains very high (25.8 per 1000) and improvement actually halted in the period 1998–2002, while the average for Eur-C improved considerably, to 11.7 per 1000 live births in 2003.

As to individual causes, perinatal conditions are responsible for 50%, 35% and 44% of infant deaths in Eur-A, -B and -C, respectively. The mortality due to infectious and parasitic diseases in Eur-A (8 per 100 000 children under 1 year of age), however, is only one fifteenth of the level in Eur-B (126 per 100 000). Eur-C occupies a level between the two: 58 per 100 000. The differentials are even larger when the rates of death due to respiratory diseases are considered. These are around 6.6 per 100 000 in Eur-A countries, but 480 in Eur-B and 119 in Eur-C.

As mentioned, analyses of socioeconomic differentials in mortality and other indicators of children's health are not yet common, although both scientists and governments have declared that social inequalities are a priority in public health. As an example that highlights the significance of social variables, Fig. 6 shows postneonatal mortality in six CIS countries according to the level of mothers' education. The rates were estimated by population surveys, and show differences in some countries of the magnitude of 1:3 or even 1:5.

**Fig. 6. Postneonatal mortality in six CIS countries according to the level of mothers' education**

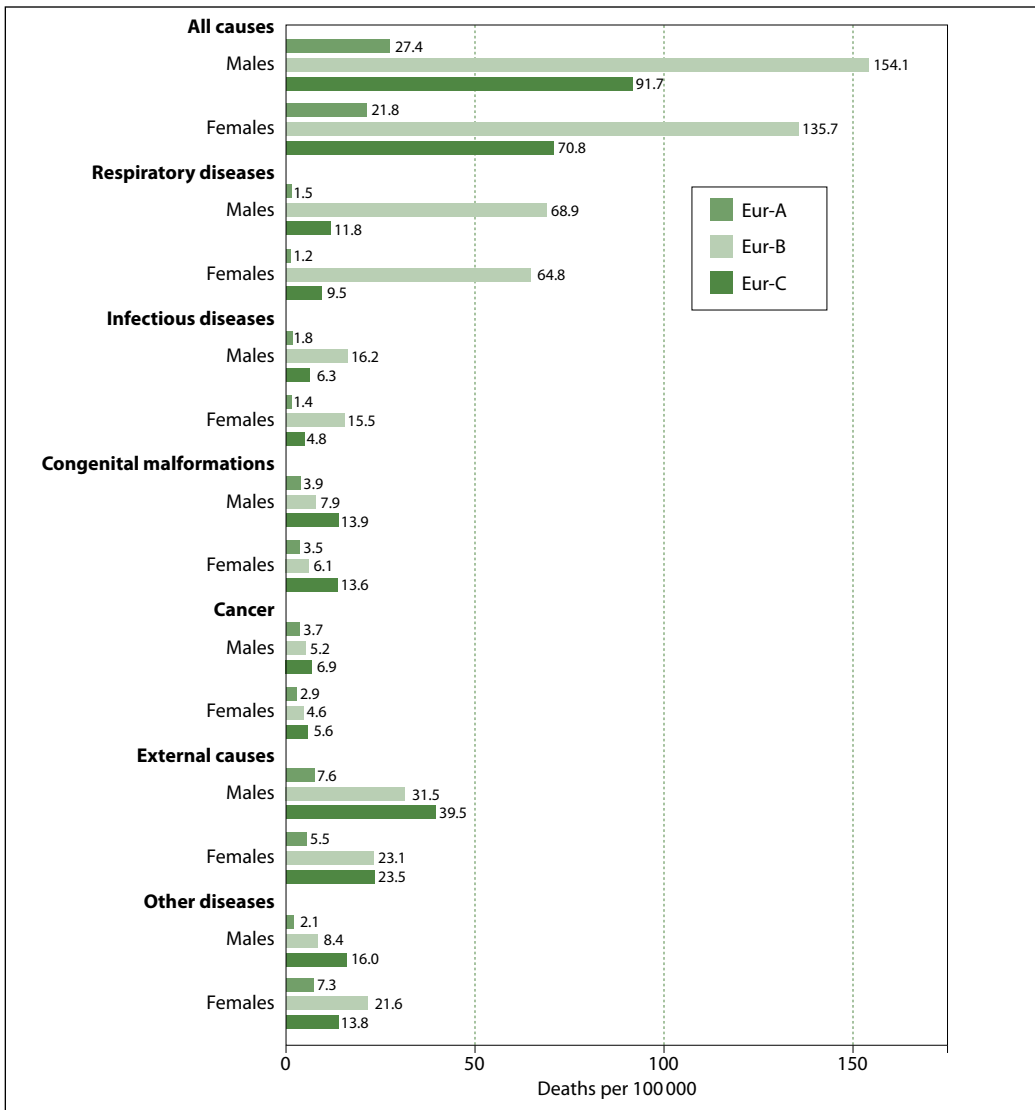


Note. Figures cover postneonatal mortality in the 10 years preceding the surveys.  
Source: data from *Reproductive, maternal and child health in eastern Europe and Eurasia: a comparative report* (22).

### Children aged 1–4 years

The reporting on children aged 1–4 years seems to be complete enough in the countries of the Region with regular registration systems, that the differences in the overall mortality rates of the country groups were not subject to doubt in this report's analysis. As Fig. 7 shows, there is considerable scope for improvement, particularly in Eur-B.

In this age group, mortality rates are lowest in Eur-A. The overall mortality rates in Eur-B and -C are about six times and three times, respectively, those in Eur-A, and deaths from external causes are about four times more frequent.



**Fig. 7.**  
Mortality in children aged 1–4 years in Eur-A, -B and -C, by main causes and sex, 2003

Source: European health for all database (17).

Respiratory diseases are the main cause of death in Eur-B, responsible for 45% of all deaths. In fact, the excess mortality from these diseases is mainly responsible for the higher overall mortality in Eur-B than Eur-C. Mortality from individual causes within this group (such as acute respiratory infections, pneumonia and influenza) shows differences across countries of three-digit magnitude.

Deaths from infectious and parasitic diseases – which are relatively easy to prevent – are higher in Eur-B, while deaths from congenital malformations are higher in Eur-C by a similar rate. Cancer mortality is relatively evenly distributed across the Region.

### Interventions for children under 5

Several evidence-based interventions are available and feasible for implementation in countries with high mortality in children under 5. Analyses indicate that the consistent implementation of a set of selected interventions at high levels of coverage could prevent about two thirds of such deaths. WHO has combined several of these interventions to create integrated guidelines,



and developed tools to facilitate their joint delivery. A core set of tools is available, and others are being developed, to improve health workers' skills, health system capacities, and family and community practices. These strategies include:

- integrated management of pregnancy and childbirth (23), including antenatal care, skilled attendance at birth, postpartum care and support for appropriate home-care practices;
- Integrated Management of Childhood Illness (IMCI) (24), including case management of children aged 0–4 years and support for appropriate home-care practices;
- Expanded Programme on Immunization (25); and
- the Global Strategy for Infant and Young Child Feeding (26).

In partnership with UNICEF, the WHO Regional Office for Europe launched the IMCI strategy in the European Region in 1997 (24). The strategy combines improved management of childhood illness with components from nutrition, immunization and other sectors that influence child health. IMCI's objectives are to reduce deaths, to reduce the frequency and severity of illness and disability, and to contribute to improved growth and development. The core interventions comprise the integrated management of the five major causes of childhood death: acute respiratory infections, diarrhoea, measles, malaria and malnutrition.

Integrated management includes a range of preventive and curative interventions to improve practice both in health facilities and at home. The combination of interventions is adapted in individual countries to accommodate local conditions and epidemiological and other important issues.

### **Children aged 5–14 years**

Mortality in older children is less frequently discussed, but the analysis is essential for a better understanding of the health of children in these developmental stages and overall. As Fig. 8 shows, overall mortality rates for this age group in Eur-B and -C are 2.6 times and 3 times, respectively, those in Eur-A. Eur-B shows extremely high mortality from infectious and respiratory diseases, on top of the very high rates for external causes, while Eur-C is plagued primarily by mortality from external causes and by the category other diseases and disorders.

External causes of death comprise the most important group of causes throughout the Region, but particularly in Eur-C, where they are responsible for over 50% of all deaths. The rates in Eur-B and -C are 2.6 times and 4.6 times, respectively, those in Eur-A. The excess mortality from external causes of injuries and poisoning is mainly responsible for the higher overall mortality in Eur-C than Eur-B. This situation is due largely to the extremely high rate in the Russian Federation and its relatively large population (see p. 70 for evidence on interventions to reduce injuries). Mortality from nearly all other causes of death is lower in Eur-C than Eur-B.

CVD emerge as a significant cause of death in this age group, while congenital malformations retreat behind the scenes. Also relatively less important are infectious and parasitic diseases, and respiratory diseases. Nevertheless, mortality from infectious diseases in Eur-B and -C is 6 times and 2.4 times, respectively, that in Eur-A, and mortality from respiratory diseases in Eur-B and -C is 10 times and 3 times, respectively, the rate in Eur-A. Cancer mortality remains relatively evenly spread across the country groups.

### **Overall mortality in the group aged 0–14 years**

Table 14 summarizes the age-specific variations in children's mortality discussed above. All cause mortality in Eur-B and -C is about 3.4 times and 2.8 times, respectively, that in Eur-A.

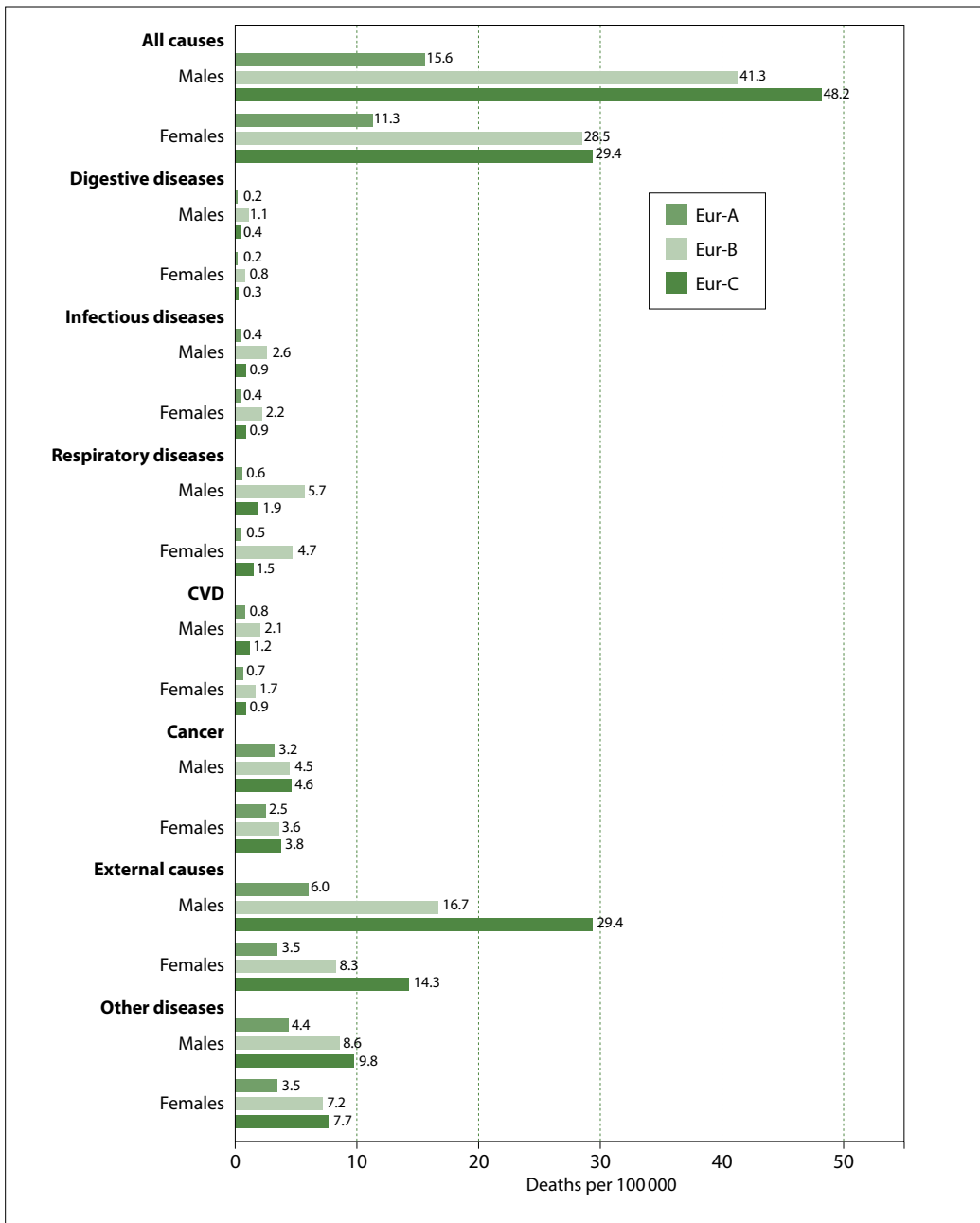


Fig. 8. Mortality in children aged 5–14 years in Eur-A, -B and -C, by main causes and sex, 2003

Source: European health for all database (17).

Diseases of the respiratory system are the main killer of children aged 0–14 years in the Region as a whole, and particularly in Eur-B, where the rate is 47 times that in Eur-A. While deaths from respiratory diseases have been halved in the last two decades in each of the three country groups, this cause remains the top priority in Eur-B. Clearly, the risk factors associated with the diseases of the respiratory system remain a very important reason for the differences in children’s mortality across the Region.

After respiratory diseases, congenital anomalies still cause very high mortality in most countries, particularly in Eur-C, although occurring mostly in children under 5. Mortality from this cause is difficult to compare and interpret because of differences in reporting, as well as

**Table 14.**  
**Mortality in**  
**children aged**  
**0–14 years in the**  
**WHO European**  
**Region, by main**  
**causes of death,**  
**2003**

Causes	Deaths per 100 000			
	Eur-A	Eur-B	Eur-C	Region
All causes	49.4	169.7	136.1	102.4
Respiratory diseases	1.2	56.1	12.6	17.9
Congenital malformations	10.8	17.6	27.2	17.0
Infectious and parasitic diseases	1.3	14.8	6.4	5.9
Cancer	3.0	4.3	5.0	3.9
CVD	1.4	4.1	2.0	2.2
External causes	5.8	18.4	28.7	15.1
Other diseases	25.9	54.4	54.2	40.4

Source: European health for all database (17).

lower numbers of motorized vehicles per head, but the overall social environment probably plays the leading role, as indicated in the section on injuries and violence in Part 2 (pp. 23–25). Unfortunately, there is little information on the occurrence of the factors contributing to the high incidence and lethality of injuries.

Although the group aged 15–19 years is not analysed here, death rates from injuries and poisoning in older teenagers are 3–5 times those the group aged 10–14 years in most countries (Fig. 9). In addition, levels in individual countries vary widely; for example, the rates in the middle 80% of countries ranged between 18 and 65 per 100 000 around 2002.

Further, mortality in children aged 0–14 from infectious and parasitic diseases – which probably reflects general living conditions more directly than any other cause of death – remains high in Eur-B and -C. In particular, the average for Eur-B is 10 times that for Eur-A. Again, the vast majority of these excess deaths should be preventable.

As a cause of mortality in children, cancer shows relatively smaller differences across the Region. These are difficult to interpret, due to the low numbers of deaths, and the likely differences in reporting and incidence. Nevertheless, detailed analysis of routinely reported mortality may provide clues to the availability of and access to medical treatment using higher technology. A recent major study, based on high-quality data from 63 European population-based cancer registers, found that the overall incidence of cancer in children has increased over the last three decades, but survival has improved dramatically, although more in the west than the east (28). In the 1990s, the overall five-year survival rate for children was 64% in eastern countries and 75% in western ones, with east–west differences for virtually all tumour groups.

In summary, the higher average mortality in Eur-B than Eur-C is mainly due to acute respiratory and infectious diseases, which more than compensate for the relatively lower rates from congenital malformations and injuries. As mentioned, the differences between the two lose importance when the very low mortality in Eur-A from practically all causes is used as a benchmark.

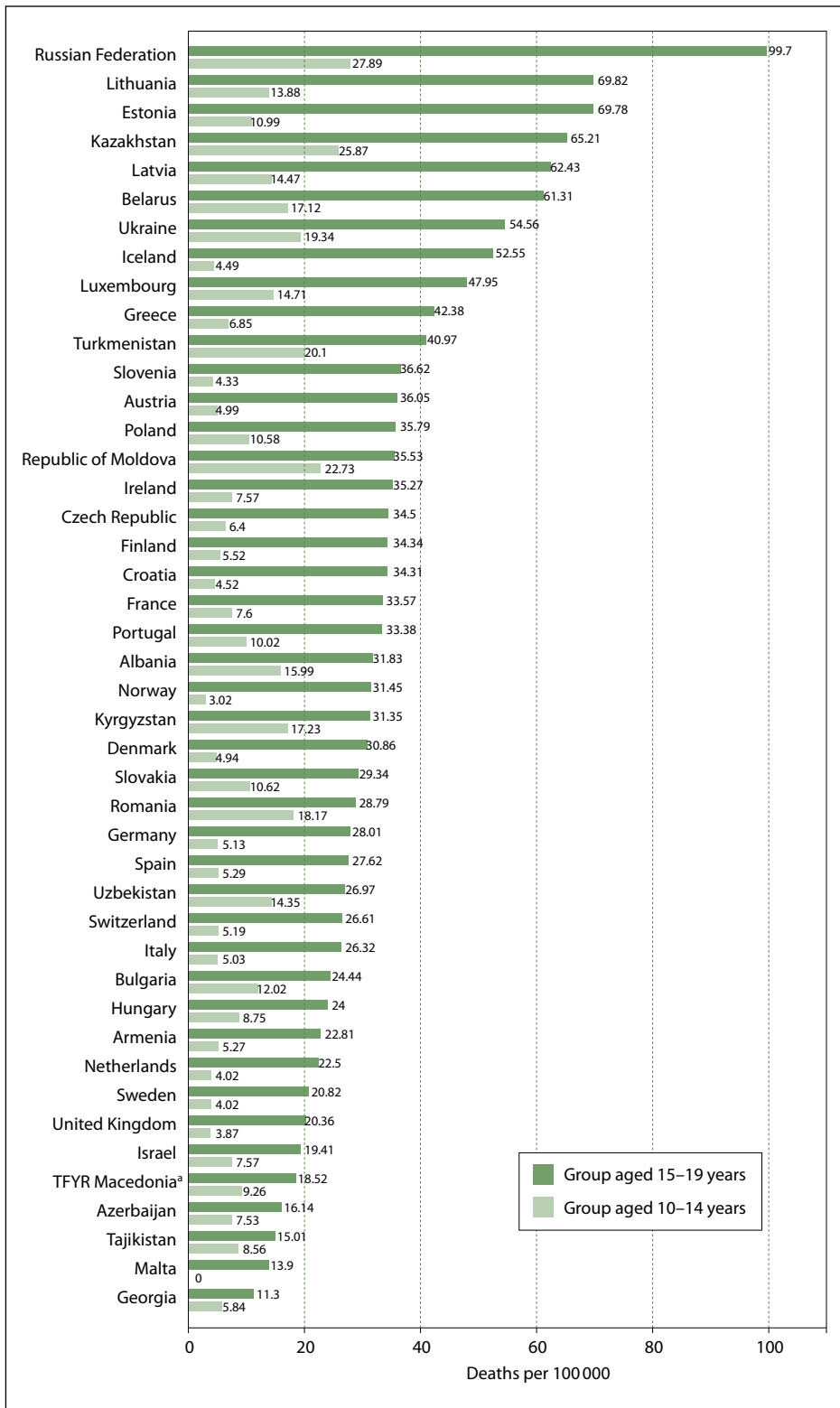
### **Children's loss of healthy years of life (DALYs)**

Annex Table 7 presents the DALY estimates for the group aged 0–14 years. For the first time, the Global Burden of Disease project (20) has made the data available on a country-by-country basis. These data should be interpreted with caution, however,<sup>1</sup> particularly in relation to their comparability between countries. At this stage, the available DALY estimates should be used mainly to complement the understanding of the size and proportions of the overall disease

the effects of differences in screening procedures, specialized treatment and national policies on children with malformations.

At a short distance follow external causes of injury and poisoning. The rates in Eur-C are five times those in Eur-A. The slightly lower rates in Eur-B than in Eur-C may be partly due to

<sup>1</sup> The DALY summary tables for the countries in the WHO European Region are for 2002, with some revisions in December 2004, to adjust for the UNAIDS updates of HIV estimates in eastern European countries in that year. While based on the best information currently available to WHO, the DALY estimates in general have more uncertainty at the country level than the Region level, and in some cases could be improved with additional work and input of data on countries.



**Fig. 9. Deaths from injuries and poisoning in two groups of young people in most countries in the WHO European Region, 2002 or latest available year**

<sup>a</sup> The former Yugoslav Republic of Macedonia. Source: WHO mortality database (27).

burden in children, and possibly to qualify some conclusions about priority needs and levels of achievement on the basis of indicators of mortality and the occurrence of specific diseases. From this perspective, the following broad picture has emerged from the analysis of the data.

Overall, neonatal morbidity accounts for the largest share of the disease burden on children in the European Region. In this report, it includes low birth weight, birth asphyxia and birth trauma, which are largely preventable. The rates of DALYs per 1000 children aged 0–14 years range between 1.5 in Sweden and 41.6 in Kyrgyzstan. While countries have achieved very large reductions in neonatal morbidity, considerable further improvements can be made at relatively low cost. The large variations within the Region and the country groups emphasize the role of efficient health and social systems.

Respiratory infections are the second-largest overall cause in terms of DALYs, but they appear among the top 10 causes in only 20 of the 52 countries in the Region. Among these 20, their burden in DALYs ranges from 1.5 per 1000 children in Bosnia and Herzegovina, Slovakia and Ukraine to 59.1 per 1000 in Turkmenistan.

Congenital anomalies are among the leading 10 causes of the disease burden in every country in the Region, and the third most important in the Region as a whole. The estimated burdens at country level vary between 1.7 and 14.1 DALYs per 1000 children. Some of the limitations of the data on congenital anomalies have been mentioned. In general, however, evidence points to multiple reasons for the relatively high and persisting burden. These include increasing average maternal age, uneven progress with primary prevention (for example, encouraging pregnant women to take folic acid supplements and increasing prenatal screening programmes, which should respond effectively to cultural differences), and unmet needs for counselling and a choice of preventive interventions. In addition, the socioeconomic differentials seem to have increased because the lower socioeconomic groups of the population have less knowledge of the available preventive measures or lack the means to take full advantage of them. Even the countries in Eur-A do not take full advantage of the benefits of folic-acid supplementation.

Neuropsychiatric disorders are among the 10 leading causes of the disease burden on children in all countries and the Region as whole. In this report, these disorders include unipolar depressive disorders, schizophrenia and migraine. The other major causes of the disease burden on the Region's children are iodine deficiency, unintentional injuries and asthma. The first and third of these are discussed below.

The DALY profiles vary considerably across country groups. In summary, the data presented in Annex Table 7 indicate the following.

1. The total burden of disease on the group aged 0–14 years varies across countries by a factor of about 6. At the country level, the burden is highest in Tajikistan (224 DALYs per 1000 children) and lowest in Sweden (36 DALYs per 1000 children).
2. Neuropsychiatric disorders are the leading cause of the disease burden in Eur-A, but rank lower in Eur-B and -C. Further, the differences between countries in terms of DALYs due to these conditions are relatively small, in contrast to the variations in the shares of the burden due to infectious diseases and other acute conditions. As acute conditions become well controlled in central Asian and some other countries, the relative importance of neuropsychiatric problems will increase there and in the Region as a whole.
3. The situation with congenital anomalies is similar. These are among the leading 10 causes in all countries, but the burden is smaller in the western and central countries in the Region than in the rest.

4. Neonatal morbidity is a major problem in all countries, although its share of the disease burden varies widely.
5. Asthma is among the leading 10 causes in all countries in Eur-A, but in only about half of the countries in Eur-B and -C.
6. Unintentional injuries are among the leading 10 causes of the burden of disease on children in nearly all countries in the Region.

## **Other indicators of child health**

The mortality and DALY analyses of the overall burden of disease summarize the most salient features of the situation and trends in children's health, but these measures overlook or only partially reflect some aspects and processes of health development in the Region. Owing to their nature, clinical manifestation or the limitations of regular health monitoring, certain conditions require a special focus and special indicators; these indicators would include, for example, body mass index (BMI, to evaluate weight for height) and the prevalence of asthma symptoms, rather than addressing mortality or incidence. This section points out two types of such conditions.

The first type comprises largely preventable conditions that are or should be well under control, provided that the recommended preventive programmes work well. The examples addressed here are: vaccine-preventable diseases, TB and micronutrient deficiencies. The second type comprises complex conditions that may be less well understood and are deeply rooted in social and environmental change. Some of these take the form of creeping epidemics, but can nevertheless be managed to a large extent by means of early prevention, diagnosis and treatment. The examples discussed here are mental health problems, asthma and obesity.

Both types of conditions are presented using a few examples, and were not selected on the basis of a comprehensive review. While several available good indicators of child health could not be included, such as diabetes, a comprehensive cross-national review of all relevant data sources and indicators would be very difficult, as the number of currently feasible indicators for international comparisons is very small. For many indicators, experience shows serious gaps in the available database and points to the need for better data in most countries. This is one of the main preconditions for better public health services for all children and families.

## **Largely preventable conditions**

### **Vaccine-preventable diseases**

Immunization saves millions of lives every year by preventing death and disability from infectious diseases at a fraction of the cost of treatment. Every child has the right to be protected against vaccine-preventable diseases through a strong and effective immunization system. Immunization is not just an effective tool to prevent death and disease among children: its benefits last through adolescence and adulthood.

With stable, high vaccination coverage, disease declines, as shown in the European Region by its historic certification as poliomyelitis free in 2002 and the dramatic reduction in reported measles cases from 200 000 in 1994 to 30 000 in 2003. There are many challenges to ensuring strong immunization services, however, both in countries undergoing health care reform and in those with stable and well-funded primary health care systems. In the absence of disease, immunization loses priority. Owing to insufficient vaccination coverage, outbreaks of serious diseases such as measles continue to occur in the Region, causing unnecessary illness and death. In addition, increasing numbers of women are reaching child-bearing age without immunity to

rubella, which increases the risk of children's being born with congenital abnormalities. This is a result of inadequate uptake of measles-mumps-rubella vaccine during childhood.

In addition, immunization helps reduce health inequalities, particularly in high-risk and vulnerable populations. In all countries of the Region, some children remain at risk of contracting preventable diseases because they do not have access to good immunization services. The reasons for this may be socioeconomic, geographical or simply caregivers' ignorance of the importance of timely immunization and the risks of non-immunization.

Population immunity and disease reduction can be ensured by maintaining key components of immunization systems, such as:

- the political commitment to ensure sustainable resources for high-quality vaccines;
- an efficient maintenance and distribution system for vaccines, including outreach services;
- the provision of appropriate information and training for health care providers and the general public; and
- an effective system of monitoring and data analysis to drive the management of evidence-based national immunization programmes.

## TB

TB is an underestimated cause of morbidity and mortality in children aged 0–14 years. The epidemiology of childhood TB varies considerably between countries. Worldwide, the share of all TB cases occurring in children is estimated to be in the range of 2–7% in industrialized western countries and 15–40% in lower-income countries. In the WHO European Region, the figure most probably varies between 2% and 10%: for example, 4.2% in the Russian Federation and 8.4% in Latvia.

Increasing rates of childhood TB have been reported from many countries in the Region, including Austria, Israel, Denmark, Latvia, Sweden, the Russian Federation and the United Kingdom (29). Increases are likely in countries where adult TB is rising, as deterioration in the control of the disease rapidly affects the youngest groups.

Socioeconomic risk factors, including poverty and crowding, continue to be associated with a greater risk of children's developing TB. Risk factors in the Region also include immigration, particularly in western countries, where TB has been increasingly confined to high-risk groups, including ethnic minorities. Studies from low- and middle-income countries have confirmed associations with poverty and malnutrition as risk factors.

Infected children make up the reservoir of future disease, so interventions specifically targeting children can contribute considerably to reducing the future burden of TB. Unfortunately, policy documents on TB control rarely touch on childhood TB as a public health problem (30). This may be a side-effect of the fact that confirmation of a diagnosis of TB in a child by sputum microscopy is rarely possible. Nevertheless, although cheap and effective treatment of TB in children is available, it is likely not to reach many who need it, particularly among the most socially disadvantaged.

As long as both TB and migration remain high globally, the WHO European Region can be expected to continue to experience a steady or even increasing burden of TB in children. In general, a weak public health infrastructure would result in such an increase. In several CIS countries, however, two additional aggravating factors should be kept in mind: the HIV/AIDS epidemic, which is superimposed on the TB burden, and the extraordinarily large numbers of abandoned, homeless or neglected children.

### Iron deficiency

Iron deficiency is responsible for 0.7% of DALYs in the European Region. It can result in impaired brain development in infants, and attention deficit and reduced cognitive functioning in both children and adults. Poor feeding practices, including low breastfeeding rates, are a major cause of iron deficiency in infants and young children in the Region. Prematurity and infestation with parasites or helminths, as a result of poor hygiene and sanitation, also contribute to the problem.

Iron deficiency is a major cause of anaemia. A high prevalence of mild and moderate (but not severe) anaemia has been reported in children in Bosnia and Herzegovina, the central Asian republics and parts of western Europe. In addition, adolescents may be prone to iron deficiency. Significant socioeconomic deprivation can in part explain these high rates, although probably not in all countries. UNICEF and WHO (31) reviewed iron deficiency in central Asian countries, and recommended an integrated approach, including:

- improving feeding practices for infants and young children (exclusive breastfeeding for six months and timely introduction of appropriate iron-rich foods, such as puréed fruit and vegetables and liquidized liver);
- promoting positive dietary change in women;
- fortifying cereals (such as flour) and infants' food with iron and other micronutrients;
- using oral iron supplementation;
- better controlling infections; and
- monitoring of programme implementation.

These interventions should be linked to public health programmes for, for example, family planning, breastfeeding promotion, improved maternal health, Making Pregnancy Safer (32) and IMCI (24). Governments should make firm commitments to build sustainable programmes to prevent iron deficiency. Action should involve all stakeholders, including the food-processing industry, the education sector, civil-society organizations and the mass media.

### Iodine deficiency

Iodine deficiency remains a public health problem in much of the WHO European Region. It is the main cause of preventable mental retardation and brain damage, decreases child survival, causes goitre, and impairs growth and development. Iodine deficiency in pregnant women causes miscarriages, stillbirths and other complications. Children with iodine deficiency disorder (IDD) can grow up stunted, apathetic, mentally retarded, and incapable of normal movements, speech or hearing (33). In the European Region, 60% of children aged 6–12 years and 57% of the general population have insufficient iodine intake, reflected by median urinary iodine levels below 100 µg/litre. Iodine deficiency is considered to be a public health problem in such populations (34).

Using iodized salt to eliminate IDD has consistently been shown to be a highly cost-effective intervention. The proportion of households using this salt is negatively correlated with the prevalence of low iodine intake. Among WHO regions, the Americas has the highest proportion of households consuming iodized salt (90%) and the lowest proportion of the population with insufficient iodine intake and the European Region has the lowest household consumption of iodized salt (27%) and the highest proportion of the population with insufficient iodine intake.

The world has made substantial progress towards eliminating iodine deficiency in the last decade. Improved iodine intake reflects the validity of WHO's strategy (based on salt iodization,



complemented by iodine supplementation in remote areas or severely deficient population groups) and countries' effective implementation of IDD control programmes. For example, Turkmenistan achieved universal salt iodization in November 2004 and was awarded a certificate by UNICEF and WHO. Every effort needs to be made to ensure that programmes continue to cover at-risk populations in order to eliminate IDD.

### **Three complex conditions**

#### **Mental health problems, self-harm and suicide**

Studies in the United Kingdom indicate that about 10% of children aged 5–15 have a mental health disorder (35). Of these, 5% have conduct disorders, 4% emotional disorders and 1% hyperactivity disorders. Suicide rates among people under 20 years of age have increased in many countries over the last two decades, more clearly among males than females and particularly in several countries in Eur-A. Owing to underregistration, however, true rates of suicide are difficult to establish.

There is evidence that screening in mothers who have just delivered their babies identifies postnatal depression and that subsequent home visiting improves the outcome. Some evidence also exists for the efficacy of programmes training parents to tackle conduct disorder in their children (36).

Many widely used suicide prevention programmes have never been scientifically assessed, thus making it uncertain which are effective (37). In the general school population, school-based suicide prevention programmes that focus on behavioural change and coping strategies are associated with a lower rate of suicide attempts and improved personality development and coping skills. In students at high risk, school-based programmes based on skills training and social support are effective in reducing risk factors and enhancing protective factors. No single intervention, however, appears to be effective in reducing the suicide rate. Effective prevention strategies need to employ a broad array of interventions addressing different risk factors at different levels.

Given young people's vulnerability and needs, activities to promote their mental health and to prevent and care for mental health problems should have high priority. Many countries have inadequate capacity in this area, however, and services and staff are often poorly prepared to deal with developmental and age-related problems.

Because mental disorders in childhood can be important precursors of those in adults, supporting children's mental health should be seen as a strategic investment with many long-term benefits for individuals, health systems and societies. Thus, the 2005 WHO Mental Health Action Plan for Europe (35) calls on Member States to take the following action:

- ensuring that policies on mental health include as priorities children's mental health and well-being;
- incorporating the rights of children specified in international treaties and conventions (1) into mental health legislation;
- involving young people as much as possible in setting priorities for activities to promote mental health and to prevent and care for mental health problems; and
- paying special attention to marginalized groups, including children from migrant families.

Mental health problems in adolescents are closely related to other health problems, including drug and alcohol use. Understanding the prevalence of mental health problems in different groups can help target interventions: for example, aiming preventive measures at those at high

risk of suicide, especially those suffering from conduct disorder, schizophrenia, major affective disorder, drug and alcohol use, and anorexia nervosa (39). Current research indicates that early assessment and treatment of even the more serious and enduring mental health disorders can reduce the burden of some related conditions later in life (40).

## Asthma

Over the last three decades, the prevalence of allergic diseases and asthma has risen throughout the European Region. They make an important contribution to the burden of disease.

Prevalence varies widely, however, with rates of asthma symptoms in western countries being 10 times those in eastern countries. An unknown proportion of the difference is likely to be attributable to environmental factors (41). A recent global summary (42) published prevalence estimates in children aged 13–14 years for 30 countries in the Region, which range from under 5% in countries such as Albania, Georgia, Greece, Romania and the Russian Federation to over 30% in the United Kingdom.

Allergies and asthma are multifactorial; they result from complex interactions of genes and the environment (40). Exposure to indoor air pollutants (such as smoke from solid-fuel combustion) can increase the severity or frequency of asthmatic symptoms and the risk of respiratory illness, and is associated with decreases in lung functioning. Environmental tobacco smoke is known to increase the risk of asthma and respiratory infections, and to impair lung functioning. In addition, outdoor air pollution (with, for example, ozone and particulate matter) was shown to increase the risk of asthma attacks and to have an adverse impact on respiratory health.

Factors related to a westernized lifestyle (such as less exposure to infections, siblings or certain nutrients) may cause deficits of specific influences on the developing immune system that lead to suboptimal immune responses and thus increase children's risk of developing atopic diseases. The influence of many environmental factors on the natural history of asthma and allergies is not well understood, however, and this makes it difficult to select preventive measures.

To reduce the prevalence and severity of asthma and allergic conditions in childhood, the following measures are currently advocated to prevent sensitization, particularly of infants at risk of developing allergic diseases (those with a strong family history of atopy) (41):

- avoidance of exposure to environmental tobacco smoke before and after birth;
- exclusive breastfeeding for 4–6 months (see also pp. 67–68), combined with avoidance of solid foods (43);
- promotion of a healthy indoor environment, including the design and construction of well-ventilated, low-allergen housing;
- measures to prevent indoor air pollution;
- avoidance of allergens such as animal dander, house dust mites and moulds (44), substances that cause irritation on contact with the skin and metals used in ear-piercing, etc.; and
- measures to control or prevent exposure to outdoor air pollution.

Secondary prevention in children who have asthma should include education on how to avoid environmental factors that can trigger attacks and symptoms. Worldwide, it has been estimated that better education about the potentially fatal risks of allergy (anaphylaxis) and asthma, especially in children, and increased dialogue between families and physician could prevent about 25 000 childhood deaths from asthma each year (45).

A substantial reduction in exposure to air pollution from traffic (46,47) and other indoor and outdoor sources would benefit children's respiratory health in the long term. This could be achieved through such measures as:

- making technical improvements in vehicles and fuels;
- regulating transport at the local level;
- preventing indoor air pollution from, for example, solid-fuel combustion; and
- preventing children's exposure to environmental tobacco smoke.

Although extensive epidemiological and clinical evidence backs several of these recommendations, the benefits of their implementation are, for the most part, not yet fully evaluated. Operational research is required to investigate the impact of measures to reduce air pollution on children's respiratory health, including a systematic approach addressing social deprivation and the risk of multiple exposures to, for example, traffic and tobacco smoke (48).

### Overweight and obesity

Excess body weight (overweight including obesity, as determined by BMI equivalents appropriate for children) is the most common childhood disorder in the European Region, and is rapidly becoming a major concern globally (49). In several countries of western Europe, its prevalence rose from around 10% in the early 1980s to around 20% by the end of the 1990s. In several areas in southern Europe, one child in three is overweight. In general, lower rates are found in central and eastern European countries, in part related to the economic difficulties of the 1990s. Overweight is more prevalent among children of higher-income families in less industrialized countries, especially as they move to urban areas, and among lower-income families in more industrialized societies.

Overweight in children increases the risk of NCDs and leads to low self-esteem, depression and social exclusion. Childhood obesity is associated with a number of conditions – such as poor glucose tolerance and increased risk of non-insulin-dependent diabetes, hypertension and sleep apnoea – but the greatest problems are increased rates of NCDs in adulthood – such as CVD, diabetes, certain types of cancer, osteoarthritis, and gall bladder and endocrine disorders.

Obesity imposes a major financial burden on health care services. Obesity-related disorders account for up to 7% of direct health care costs in the western half of the Region and 5% in eastern countries (50,51).

Prevention is the only feasible option and is essential for all countries. WHO (49,52) recommends the development of multisectoral strategies for supportive action to increase the availability of appropriate foods, reduce dependence on motorized transport, increase access to recreation facilities and ensure that health information is easily understood, relevant, consistent and widely available (see recent developments in policy, and pp. 72–73). Interventions in schools need to go hand in hand with changes in the social and cultural context. Health and education systems, parents, the food industry, the mass media, urban planners and politicians at all levels will need to coordinate their efforts.

A systematic review of 10 trials (57) designed to prevent obesity in childhood assessed the effectiveness of educational, health promotion and/or psychological, family, behavioural therapy, counselling and management interventions focused on diet, physical activity and/or lifestyle and social support. High-quality data were limited, and no generalizable conclusions could be drawn, although concentration on strategies that encourage reduced sedentary behaviour and increased physical activity might be fruitful. Nevertheless, studies suggest that

## Recent developments in policy in countries

Food and nutrition policies can protect and promote health and reduce the burden of disease related to inappropriate diet, while contributing to socioeconomic development and a sustainable environment (46). Different sectors play complementary roles in formulating and implementing such policies. These usually include strategies on food, nutrition and a sustainable food supply (food security). The European Region offers some good recent examples of policies on food and nutrition.

### The Netherlands

Although life expectancy is increasing in the Netherlands, unhealthy lifestyles are affecting it. Obesity leading to disease is one of the major issues that the country emphasizes in its health policy (53).

### Slovenia

To improve dietary habits and reduce the harm caused by diseases related to unhealthy nutrition and lifestyles, Slovenia launched a national nutrition policy programme in March 2005 (54).

### Spain

Changes in eating habits and lifestyles are the principal causes of the increase in obesity in Spain. The country has adopted a strategy on nutrition, physical activity and the prevention of obesity (55) that recognizes the multifactorial nature of obesity, aims to improve the diets of and encourage regular physical activity by all citizens, and pays special attention to prevention in childhood.

### United Kingdom

A government white paper on public health (56) lists new measures including:

- curbs on the promotion of unhealthy foods to children;
- clear, unambiguous labelling of the nutritional content of food;
- advice from National Health Service health trainers to individuals on how to improve their lifestyles; and
- a wide range of measures to tackle social and geographical inequalities in health.

most children are at risk of weight gain and that preventive strategies taking a population approach will benefit the health of all children.

Recognizing that obesity is a major public health threat, the WHO Regional Office for Europe has designated it a priority area for work in the coming years. A planned ministerial conference late in 2006 will aim to raise both awareness of the problem in the Region and political commitment to counteracting it.

## Children's health determinants and policy responses

Poverty is the greatest threat to children's health, regardless of a country's level of development (58). This section discusses the range of health determinants, including some interventions found to be effective (see also Annex Table 6). The next section (pp. 78–81) draws together the various factors mentioned here, to list those shared by successful interventions.

### Determinants in early stages of development

#### Links to maternal health

Children's health has a close link with policies on maternal health. The mother's living circumstances fundamentally influence the health of the child. Further, initial work to protect and promote children's health – through, for example, adequate newborn care and exclusive breastfeeding – can only be supported within the framework of maternal health and care.

As indicated, the basis for good health is established even before conception, and is decisive in the first, formative years. For example, congenital anomalies can be prevented through various interventions:

1. women's taking folic acid supplements around the time they conceive, which has a strong protective effect against the development of neural tube defects in fetuses (59);
2. extending programmes to vaccinate babies and/or young girls against rubella;
3. ensuring the best clinical care of pregnant women with epilepsy or diabetes and implementing a strategy to combat the risk related to maternal obesity;
4. strengthening the testing of pharmaceuticals before they are marketed and surveillance of them afterwards;
5. reducing parents' abuse of recreational drugs such as cocaine and alcohol;
6. providing genetic counselling services; and
7. adopting a precautionary approach to exposure to factors in the environment: reducing high exposure to by-products of drinking-water chlorination, endocrine-disrupting chemicals, releases from waste disposal sites and pesticides.

A healthy diet and a clean water supply are crucial to every stage of development, from before conception through to later life. Poor nutrition is associated with a reduced resistance to disease, impaired physical and psychological development, and infant morbidity and mortality.

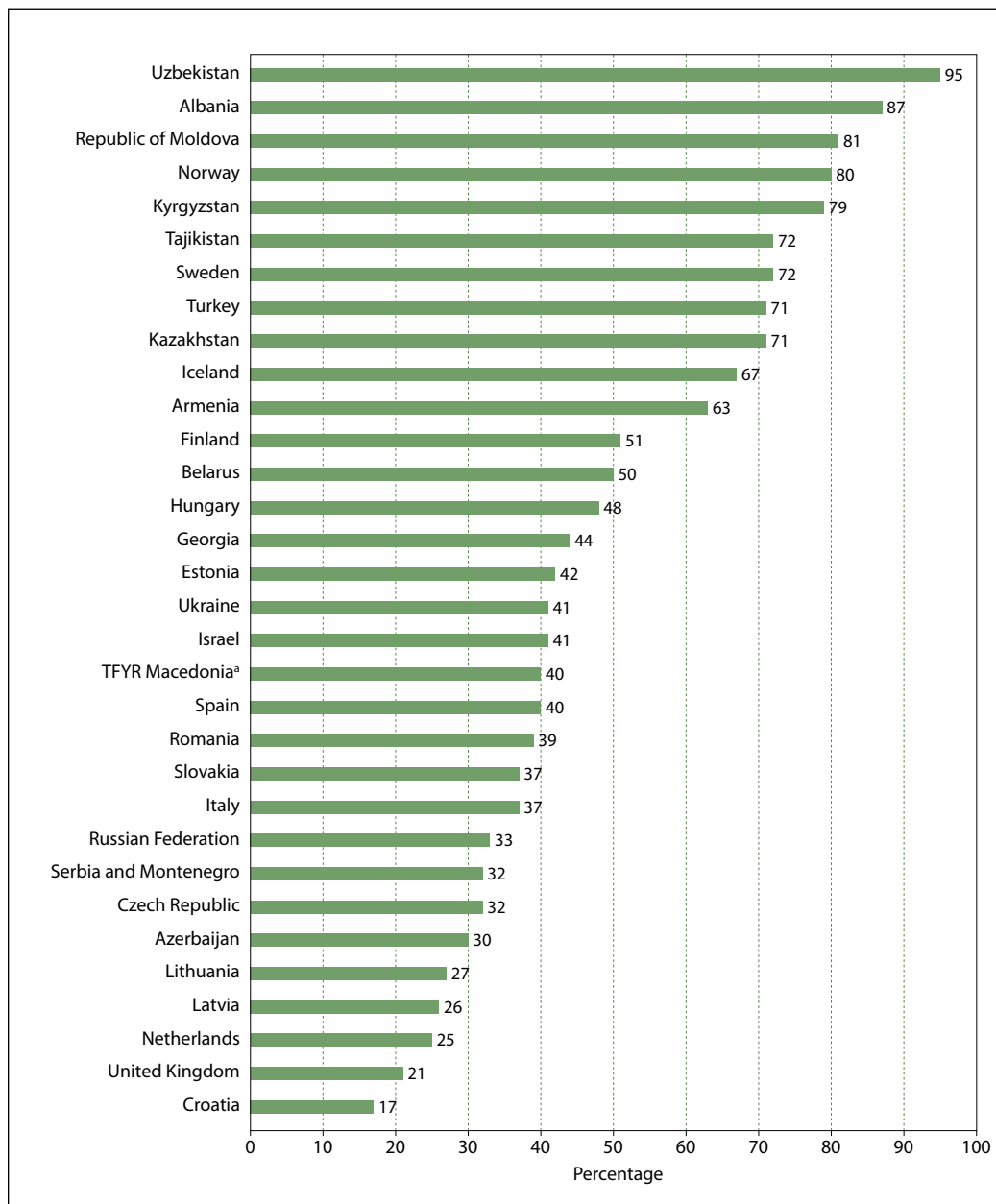
The neonatal period is critical. Experience shows that sophisticated technology is not the main factor. Neonatal health depends largely on socioeconomic circumstances, access to appropriate antenatal and delivery services, and parental education. Improvements in the socioeconomic circumstances of those at greatest risk are effective, combined with measures to promote health and prevent disease. While the survival of the newborn does not depend primarily on expensive medical facilities, access to basic health care is crucial.

Poverty is the greatest threat to children's health, regardless of a country's level of development. Rates of disease and health threatening behaviour are closely linked to socioeconomic factors, which include poor neonatal health (from malnutrition, for example), lack of access to health care, unhealthy or unsafe environments, and behavioural factors such as early smoking, drinking or drug taking.

Low birth weight (below 2500 g) increases the risk of ill health in the newborn child and in later life. It is associated with increased rates of coronary heart disease, stroke, hypertension and non-insulin-dependent diabetes. Its prevalence ranges from around 4% to around 16% across the Region. Young mothers have a greater tendency to produce low-birth-weight babies. Such babies are also more frequent among mothers who smoke, and this appears to be the main factor in the Region. In addition, low birth weight may indicate inadequate maternal nutrition.

## Breastfeeding

Breastfeeding is an effective means of improving infants' well-being at low financial cost. Low rates and early cessation of breastfeeding:



**Fig. 10.**  
Proportion of at least partially breastfed children aged 6 months in 32 countries in the WHO European Region, 2000

<sup>a</sup> The former Yugoslav Republic of Macedonia. Source: European health for all database (17).

- have important adverse health and social implications for women, children and the community;
- result in greater national expenditure on health care provision; and
- increase inequalities in health (60).

In all Member States, too few mothers breastfeed their babies until the age of 6 months (Fig. 10); WHO recommends exclusive breastfeeding during this period.

Breastfeeding can be supported through a variety of measures, such as counselling, enlightened employment practices and paid maternity leave. The mass media and education authorities can play their part by encouraging social norms that support these activities. A review of the evidence indicates that all forms of extra support for mothers have beneficial effects on the duration of both exclusive and partial breastfeeding. Extra professional support is beneficial for any breastfeeding, and lay support is effective in reducing the cessation of exclusive breastfeeding. Professional support from appropriately instructed personnel showed benefits to health including a significant reduction in the risk of gastrointestinal infections and atopic eczema. Research indicates that general support for breastfeeding increases both the number of mothers involved and the duration (61).

There is consensus on how best to encourage breastfeeding. A Blueprint for Action (60), funded by the European Commission, builds on the WHO Global Strategy for Infant and Young Child Feeding (26). It calls for national strategies that emphasize the translation of policy into practice. Vigilance is required, for instance, to ensure that the International Code of Marketing of Breast-milk Substitutes (62) continues to be followed.

### **Feeding practices**

Poor feeding practices can be a major cause of malnutrition in young children. The main sign of this in the Region is low height for age (stunting). The proportion of stunted children aged under 5 in the period 1997–2003 (see Annex Table 2) was highest in Albania and Tajikistan (over 35%), but considerable in several other countries with large child populations. Suboptimal growth patterns are also found among poorer groups in more affluent countries, such as the United Kingdom.

Stunting increases the risk of ill health, and is associated with impaired cognitive development and reduced work capacity later in life. Stunting is also a sensitive measure of poverty. Low-birth-weight infants are more likely to be stunted (63). Poor nutrition in early life is associated with an increased susceptibility to hypertension, diabetes and CVD. Low-birth-weight girls are more likely to become stunted mothers, who in turn are at greater risk of producing low-birth-weight babies (49).

Dietary practices are a function of economic circumstances and social norms. Social norms can be influenced through education, and communication initiatives reinforced by community action and professional advice. Changes in the food supply may require governments to take action at the national level and involve the food-processing industry, education sector, civil-society organizations and the mass media.

### **HIV infection**

As the number of HIV-infected women in the European Region steadily rises, so does the transmission of the infection to the newborn. Nevertheless, the Strategic Framework for the Prevention of HIV Infection in Infants (64) provides an opportunity to eliminate this problem

from the Region. Prevention goes beyond clinical care and needs to include a range of care and protective work, both in health institutions and in the community. The Framework is based on the experience of countries in the Region. It outlines strategies for implementation at the country level to achieve the goals set out in the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia (65). The Framework calls for:

- integrating services for the prevention of HIV infection in infants into maternal and child health and other reproductive health services;
- reaching women who have limited or late access to such services; and
- expanding high-quality counselling and testing and linking them with other services for HIV prevention and care.

## **Environmental determinants**

Exposure to harmful factors in the environment is an important contributor to ill health among children, but major gaps remain in the knowledge of the magnitude and distribution of the environmental burden of disease among the young. Moreover, there is concern about the exposure of prospective parents before conception and of the developing fetus.

Environmental conditions clearly influence the health and development of young children. Those at most risk are among the most disadvantaged in their countries. Poverty is closely associated with environmental degradation. Exposure to lead, substandard housing, poor air quality and undernutrition are all characteristics of disadvantaged communities. In addition, children from poor families are more likely to suffer injuries from road accidents or in the home. Drowning and fire-related deaths predominate in younger, housebound children.

## **Environmental burden of disease**

In 2004, the WHO Regional Office for Europe carried out a study of the environmental burden of disease, the first attempt to assess the impact of the environment on child health in the European Region (66). The study concentrated on hazards with well-documented health effects from four major environmental risk factors (outdoor and indoor air pollution, unsafe water and sanitation, and lead) and injuries. (It did not tackle such areas as the effects of endocrine-disrupting agents, about which there are still many uncertainties but whose impact on children's health raises great concern.) The study aimed to estimate the health gains achievable from reducing the exposure of the child population in the Region to these hazards.

Using 2001 as the reference year, the study showed that the environmental risk factors and injuries accounted for one third of the total burden of disease in people aged 0–19 years (66). It also estimated the number of lives and DALYs that could be saved in the Region by reducing children's exposure to these hazards. Overall, among children aged 0–4 years, outdoor air pollution accounted for 1.8–6.4% of deaths from all causes; acute lower respiratory tract infections attributable to indoor air pollution, for 4.6% of all deaths and 3.1% of DALYs; and mild mental retardation resulting from lead exposure, for 4.4% of DALYs. In the group aged 0–14 years, diarrhoea attributable to inadequate water and sanitation accounted for 5.3% of deaths and 3.5% of DALYs. In the group aged 0–19 years, injuries were the cause of 22.6% of deaths and 19.0% of DALYs.

In absolute terms, the data showed that, in 2001, up to 13 000 children under 5 died from outdoor air pollution with particulate matter; 10 000 died as a result of solid-fuel use at



home; and lead poisoning was responsible for over 150 000 DALYs. Poor water and sanitation accounted for 13 000 deaths in children under 15 years of age.

The burden of disease is much higher in Eur-B and -C than Eur-A, due to varying combinations of poor housing conditions, a polluted environment and less access to programmes for disease and injury prevention and health care.

### Need for multisectoral response

Children in particularly adverse conditions – such as those who are poor, abandoned, living on the street, exploited or trafficked, or suffering the consequences of armed conflict – have the highest risk of injuries and environmental exposures, as well as psychological trauma, acute and chronic infections and NCDs, impaired growth and development, disability and death. Even though the understanding of the nature and the amount of health effects produced on children is incomplete, there is already evidence that action to reduce exposure to environmental risk factors and to prevent injuries (see key points for decision-makers) can result in substantial public health gains.

## Evidence-based assessment of key points for decision-makers: preventing injuries in children

Injury is a serious but largely unappreciated public health problem in the WHO European Region; the greatest burden falls on the young and on older people, and those living in the most deprived circumstances. The causes of injury are multifaceted and interrelated, and thus call for wide-ranging policy solutions. Educational approaches are considerably more effective when they are applied in combination with legislative measures and environmental modifications, as their effects interact. The following approaches should be considered specifically for children.

### Education and skills development

Training programmes in pedestrian skills, which involve practical roadside experience, have been shown to improve children's skills.

Education targeting both parents and children has produced good evidence of behaviour change and some evidence of casualty reduction.

There is some evidence that training schemes can improve children's behaviour when cycling.

Campaigns to prevent home accidents by educating parents can lead to some reductions in medically attended injuries in young children or to behavioural and environmental changes.

### Promoting the use of safety devices

There is some evidence of a reduction in injuries as a result of programmes to distribute smoke alarms.

The evidence of the effectiveness of bicycle-helmet programmes is overwhelming. Promotional campaigns, particularly those employing multiple intervention strategies, can be effective in increasing helmet use.

Educational campaigns on child restraints in vehicles (seat-belts, etc.) lead to an increase in observed restraint use. No evidence has been shown of effects on injury outcomes,

however. In buildings, window bars are effective in decreasing falls.

### Supportive home visits

There is some evidence that advice and support, provided at home by a visiting health professional or community volunteer, leads to behavioural and/or environmental change that reduces hazards.

### Modification of the environment

Community-wide safety programmes (using localized traffic calming and a range of other measures, such as speed bumps and roundabouts) are effective in reducing accidents, particularly among child pedestrians and cyclists. Speed-reduction zones are effective in reducing both traffic speed and accidents.

Source: Health Evidence Network (67).

On the basis of the evidence, the health and environment ministers in the WHO European Region, gathered at the Fourth Ministerial Conference on Environment and Health in June 2004, agreed to step up action to protect children's health from harmful environmental exposures. They adopted the Children's Environment and Health Action Plan for Europe (68), which set four regional priority goals for action addressing the diseases and disability arising from exposure to chemical, physical and biological agents. The Action Plan is a framework

within which countries can make national action plans suited to their circumstances and needs (69).

## **Behavioural determinants**

A recent WHO report provides revealing insight into the lives of young people (70). It gives the results of the most recent survey of the Health Behaviour in School-aged Children (HBSC) study, covering almost 162 000 young people aged 11, 13 and 15 years in 35 countries in the WHO European Region and North America. In addition to social and economic factors, the report covers alcohol, tobacco and cannabis use, injuries, physical activity, bullying and sexual behaviour.

### **Smoking**

Smoking is a habit that is usually established or reinforced during the teenage years; some 80% of adult smokers started before the age of 18. Weekly smokers comprise 11–57% of boys and 12–67% of girls aged 15 (70); most of them smoke daily. Although boys tend to start smoking at an earlier age, the proportion of girls who smoke is increasing in a number of countries. More boys than girls smoke at age 15 in eastern Europe, while the opposite is the case in northern and western parts of the Region. The rates are similar for both genders in southern and central European countries.

The most effective public health interventions available are increasing the price of cigarettes and banning cigarette advertising, as described in Part 2 (p. 33). There is little evidence that school-based programmes are effective in preventing young people from starting to smoke, although there is some limited support for the effectiveness of community interventions in this task (60). Clearly, more needs to be done to tackle tobacco use among young people. Success depends on using the full range of policy instruments available to governments: taxation, smoking controls in public places, gender-specific programmes targeted at adolescents, mass-media campaigns, and smoking cessation services all have a part to play in combating the tobacco epidemic.

### **Alcohol**

Alcohol is a regular feature in the lives of many European adolescents. Almost 30% of 15-year-olds report regular drinking (70), although there are substantial differences across the Region. Young people in many countries appear to start drinking at an earlier age than previously. Research has found that this is associated with an increased likelihood of both alcohol dependence and alcohol-related injury later in life. Over 50% of 15-year-olds report weekly drinking in England, the Netherlands and Wales, but the rates are below 17% in France, Finland, Latvia and Portugal. In all countries, proportions of weekly drinking are higher among boys than girls.

Hazardous and harmful alcohol use can be both a symptom and a cause of mental health problems. It is frequently associated with violence by young people, which contributes to family and community stress. Alcohol is associated with the deaths of 55 000 young people in the European Region each year, and many intervention projects have been designed to promote sensible drinking among them. Many programmes have adopted educational approaches, often in school settings. Although education may change attitudes and beliefs, on its own it tends to have little impact on drinking behaviour.

The formula for success is similar to that in other areas: a mix of policy initiatives is required to bring about real change. The available policy tools include: taxation, legal age limits on purchase

and/or consumption, restrictions on advertising, controls on drinking in public places, mass-media advocacy and education.

### **Illicit drug use**

Cannabis use is common in some countries in the Region, such as England and Switzerland (70). Although girls are less likely to use cannabis than boys, this difference may shrink in the future. A growing proportion of adolescents perceives the recreational use of cannabis as normal behaviour.

Heavy consumption, defined as using cannabis more than 40 times within a year, may be associated with depression and risk taking. Specific interventions should focus on the relatively small numbers of young people reporting heavy use, as they may well be at particular risk.

In addition, evidence from some countries indicates that injecting drug use is starting at an earlier age. The average age at first injection in eastern European and central Asian countries is 16–19 years, although some adolescents start before the age of 15. Injecting drug users, many of whom are young, are estimated to comprise up to 1% of the population in some countries of the Region, and up to 5% in some eastern European cities.

### **Physical activity and nutrition**

Investment in the next generation is a matter of encouraging positive, healthy lifestyles, as well as tackling ill health. Physical activity and a healthy diet form part of the foundation for mental and physical well-being. Physical activity is an important factor in promoting cardiovascular fitness, maintaining normal body weight and supporting optimal skeletal growth and development. Unfortunately, substantial numbers of young people in all countries in the HBSC survey fall short of current guidelines, which recommend 60 minutes of physical activity per day. In addition, activity levels decline with age, particularly among girls (70).

There is general consensus that good nutritional practices and physical activity should be encouraged as early as possible in life, and that parents' knowledge, attitudes and behaviour are important in creating role models (51). At present, work to improve nutrition and increase exercise has tended to focus on educational interventions in schools throughout the Region, such as the programme carried out by the European Network of Health Promoting Schools (71). There is some evidence that multifaceted school-based programmes that combine the promotion of physical activity, the modification of dietary intake and the reduction of sedentary behaviour, may help to reduce obesity in schoolchildren, particularly girls (72). Although messages on healthy eating are reaching adolescents, interventions are needed to help them translate these messages into behaviour.

Any strategy designed to improve physical activity among young people must take account of a number of factors. Young people's views are critical. They can describe the barriers to exercise in a way that is sensitive to their culture and age group. Gender differences must also be considered. The social aspects of participation are of particular significance, as are access to and the costs of using exercise facilities.

People are likely to maintain the eating habits developed during childhood and adolescence into adulthood. Good nutrition helps to reduce the incidence of overweight and obesity, dental caries and anaemia. A high-quality diet promotes proper growth and development, and contributes to the young person's ability to learn. Diet is subjected to numerous social, cultural and commercial influences. Peers often have greater influence than parents, and advertising often targets children.

Fruit and vegetable consumption among children is worryingly low across the Region. The HBSC survey (70) showed that only 30% of boys and 37% of girls aged 13–15 years eat fruit every day. Vegetable consumption shows a similar pattern. Young people from less affluent backgrounds have a greater tendency to skip breakfast, eat fewer fruits and vegetables, and eat sweets and snacks more often.

### Teenage pregnancy

Teenage pregnancy and early parenthood can lead to poor educational achievement, poor physical and mental health, poverty and social isolation for mothers and their children. Rates of teenage pregnancy vary across the European Region, with eastern countries in general experiencing higher rates than western ones, although patterns vary considerably. The rates in most western European countries range between 13 and 25 pregnancies per 1000 girls aged 15–19 years and peak at around 50 per 1000. Some of the countries of central and eastern Europe show similar figures. Several other countries have rates 2–4 times higher, peaking at over 100 per 1000 girls in Ukraine.

Factors that are relatively strongly associated with teenage birth rates in countries across the Region include: rates of teenage marriage, overall wealth and income distribution, the average length of education and the influence of religion. Socioeconomic disadvantage can be both a cause and an effect of young parenthood. As with other threats to children's health, teenage pregnancy requires a broad response (see key points for decision-makers).

### Evidence-based assessment of key points for decision-makers: teenage pregnancies

Experience in the European Region has shown that a focus on the following may be effective in reducing the rates and negative consequences of teenage pregnancy:

- preventing unintended conceptions, rather than reducing pregnancy levels through higher abortion rates;
- strengthening secondary preventive efforts – education, employment and support – to help mothers and children, particularly single mothers;
- integrating preventive efforts with other related services; and
- providing sex education before young people become sexually active, with open attitudes and a positive approach to sexual health and relationships.

Policies should:

1. focus on improving contraceptive use and at least one other behaviour likely to prevent pregnancy and sexually transmitted infections;
2. provide long-term services and interventions tailored to meet the needs of young people, particularly those in high-risk groups;
3. provide clear and unambiguous information;
4. include the development of interpersonal skills in, for example, negotiation and refusal;
5. provide timely intervention, for example, when an adolescent receives a negative pregnancy test from a clinic;
6. build programmes on theory-driven approaches with clear behavioural goals and outcomes, using participatory teaching methods;
7. ensure that interventions and services are accessible by young people;
8. select and train staff committed to programme goals and respectful of confidentiality;
9. work with teenage opinion leaders, including those in peer groups;
10. make sure interventions are appropriate to the age group;
11. encourage a local culture permitting the discussion of sex, sexuality and contraception; and
12. coordinate services to prevent pregnancy with other services for young people, and work in partnership with the community.

Source: Health Evidence Network (73).

### Family and community determinants

Strengthening families and the communities in which they live is at the heart of child health and development. As mentioned in Part 2, family structure has changed noticeably in many societies over recent decades. Single-parent families, or families where one of the parents is not

the birth parent, have increased. The divorce rate has escalated, as has the number of children born outside marriage. Migration from the countryside to cities continues, often leaving behind the traditional support network of the extended family. In many countries, mothers are more likely to hold paid jobs than in previous generations. As a consequence of all these factors, the social system that used to buttress young families is no longer available to the same extent in many parts of the WHO European Region.

### **Need for health promoting home environments**

How a family functions is integral to the healthy development of young people. The definition of a family has widened; there is no blueprint for the ideal parent. The quality of the relationships within a family is more important than its structure. Positive relationships with parents increase feelings of well-being and decrease the likelihood of health damaging behaviour, such as smoking.

Infants and young children in particular need a safe, stable and supportive home environment. Creating the right climate for their development is an investment with lifetime dividends: it should not only protect children from physical challenges to health but also offer the right support for their physical, social and emotional growth.

Families operate within the context of the community and the wider environment. A range of factors determines every family's access to health-related products and services, such as time, money, transport, knowledge and skills, and the availability of products and services. The resources available limit the action that families can take. Education, employment and the material conditions of life are crucial to the family's ability to maintain and improve its health. People see health as a luxury when life is a struggle for survival.

As mentioned, the most disadvantaged families need the greatest support. Any investment in better housing, improved educational opportunities or better nutrition will strengthen the chances of children in poor families for healthy lives. Targeted welfare benefits can ameliorate the worst ravages of poverty, if they are managed so as to benefit children directly.

### **Prevention of child abuse (74–80)**

Investment in children's health should include the prevention of abuse. Child abuse falls into four broad categories:

1. neglect: the persistent or severe neglect of a child, or the failure to protect a child from exposure to any kind of danger;
2. physical abuse: actual or likely physical injury to a child, or failure to prevent injury or suffering;
3. sexual abuse: actual or likely sexual exploitation of a child; and
4. emotional abuse: an actual or likely severe adverse effect on the emotional and behavioural development of a child caused by persistent or severe emotional maltreatment or rejection.

No reliable information exists to determine trends in the occurrence of child abuse. Observed changes may be due to changes in data collection. Nevertheless, mortality registers showed a dramatic rise in infant homicide and manslaughter in many countries in the eastern half of the WHO European Region, particularly in the CIS, in the 1990s. This may be associated with the disruption of community, health and social services brought about by political, social and economic change; infant deaths from child abuse in the western half of the Region remained lower and relatively constant in that period. Since 2000, mortality has fallen again in central and eastern Europe, possibly owing to the redevelopment of health and social services.

The prevention of child abuse should be viewed in the broader context of child welfare in the family and community. From a health service perspective, this requires the integration of good practices (such as programmes for home visitation and other forms of family support) in services for families and children, including aiming services at families with a high number of risk factors for child abuse. The risk factors are both individual and societal. For example, young children are most at risk of physical abuse, while sexual abuse is more likely among adolescents. Boys are more often victims of beatings, while girls are at higher risk of sexual abuse and educational neglect. In addition, child abusers frequently have a history of being abused and of substance abuse. Societal-level risk factors include household overcrowding, insufficient family income, the presence of other violent relationships in the home, and high rates of poverty and weak social networks in communities.

Caution is needed, however, in using a risk-based approach. Focusing on one or a combination of risk factors for child abuse is likely to stigmatize families that fit the profile, which may translate into marginalization of the families and their children, and to overlook abuse in other families. Moreover, as no single risk factor sufficiently predicts child abuse, prevention is most likely to be effective if it targets both individual and societal risks simultaneously.

### **Underlying social determinants**

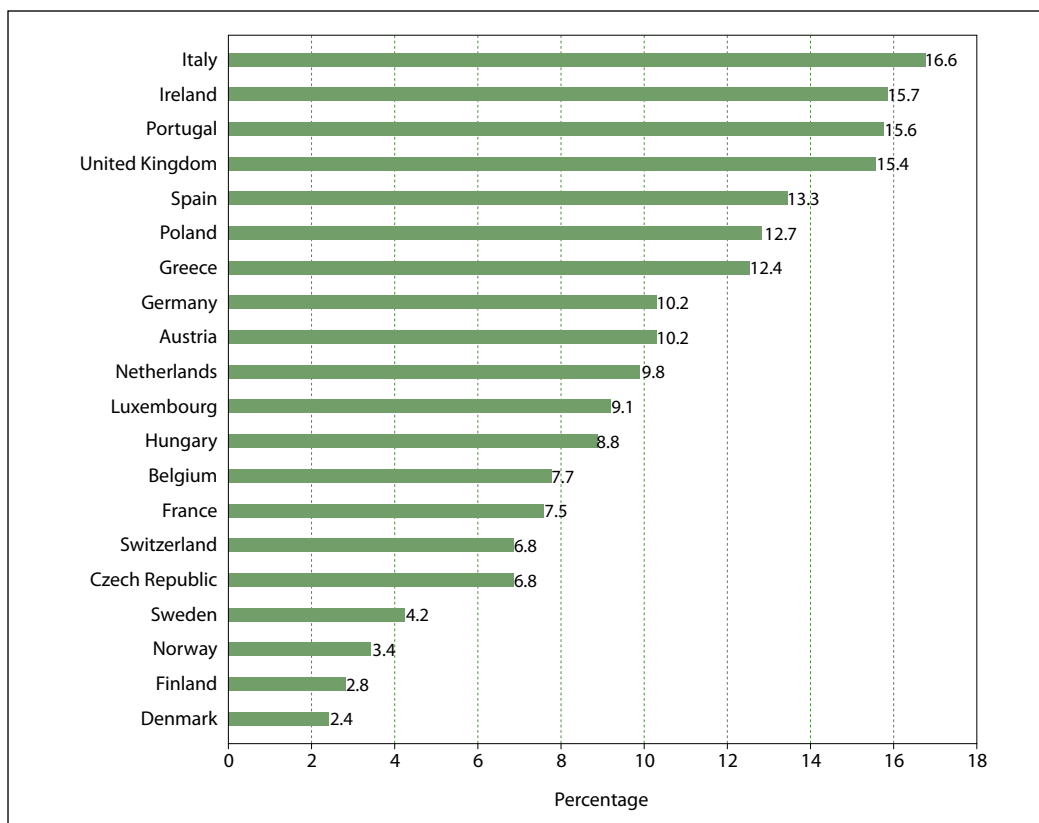
The magnitude of the unnecessary ill health and death caused by social factors and widening inequalities give priority to reducing poverty and achieving the Millennium Development Goals (11) (see p. 47). In this context, WHO has re-emphasized that interventions succeed in reducing disease and saving lives only when they take adequate account of the social determinants of health (10). Although much is known about these causes of the causes of ill health, this knowledge still needs further development, consolidation and communication, so that more effective action can follow. To meet this need, WHO launched the Commission on Social Determinants of Health in March 2005; its task is to develop practical recommendations on how to improve health by acting on its social determinants, for presentation in 2008 (81).

### **Need to tackle poverty and inequality**

The most effective way to protect and improve child health in all countries is to eliminate poverty, socioeconomic inequality and their consequences (58). The health effects of material deprivation – for example, poor nutrition, unhealthy environments and lack of access to high-quality health care – have been discussed. Although absolute poverty that directly threatens people's lives has almost been eliminated in the more affluent countries in the Region, relative poverty remains, in which certain members of society do not enjoy the living standards available to their fellow citizens. Any attempt to define overall poverty needs therefore to take account of both absolute and relative poverty.

In the low- and middle-income countries in the eastern half of the Region, absolute child poverty is frequently observed, but appropriate individual-level statistics are difficult to obtain. As an alternative, UNICEF (82) assessed the risks of poverty for children at the macro level, defining it as a gross national income (GNI) per head of US\$ 765 or less in 2003, or a stagnant or negative average annual growth rate in GDP per head in 1990–2003. Six CIS countries were assessed to have met the criteria for poverty as a threat to childhood around 2003: Georgia, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. The UNICEF report

**Fig. 11. Children living in relative poverty in selected affluent countries in the WHO European Region, 2005**



Source: data from UNICEF Innocenti Research Centre (83).

(82) emphasizes, however, that poverty is more than material deprivation and has different dimensions and implications in children than adults.

As one moves westward, towards the higher-income countries in the Region, the form and statistical indicators of poverty change. A 2005 review of child poverty in rich countries by UNICEF (83) found that the proportion of children aged under 18 years living in relative poverty in the industrialized world actually rose over the last decade, no matter which of the commonly used measures of poverty was applied. Fig. 11 shows the percentage of children living in relative poverty (households with income below 50% of the national median income) in 20 countries in the Region designated as affluent by UNICEF.

Fig. 11 shows rates of child poverty ranging from under 5% in Scandinavia to over 15% in Ireland, Italy and the United Kingdom. Such variation reflects differences in national policies, interacting with social changes. Higher government spending on family and social benefits is clearly associated with lower rates of child poverty. In the countries with the lowest levels, governments reduce by 80% or more the child poverty that would result from leaving market forces to themselves (83).

Moreover, there is a social gradient in health from the poorest to the richest. Where material deprivation is severe, a social gradient could arise from degrees of absolute deprivation, but the gradient in the more affluent countries reflects relative deprivation, which restricts people's right to realize their health potential in terms of capabilities and functioning. Both physical and psychosocial needs are therefore likely to be important to the gradient in health (84).

In particular, there is strong evidence that diet, smoking, alcohol use and physical activity are associated with social and economic circumstances, and ultimately with health outcomes

in adults. As far as children's health is concerned, solid knowledge is available on the role of the proximate determinants of children's health (9), especially in mortality, malnutrition and other problems in early childhood. The causes of the disparities in these proximate determinants are clear: social inequalities, which interact with other determinants. In addition, the evidence suggests that some mental health problems – such as aggressive behaviour, low self-esteem and inability to cope with life's challenges – are indirectly related to low socioeconomic status. Thus, socioeconomic conditions may also influence health through the psychosocial impact of relative poverty.

Taking action on the social determinants of health is imperative for all countries. Such action should include the relief of poverty but also pursue the broader aim of improving people's living and working conditions. The task also requires knowledge of the health effects of the social and economic policies of all sectors that can be translated into action; the WHO Commission on Social Determinants of Health is expected to add to this knowledge. While the health sector will continue to have a pivotal role, action is required from many sectors of government and society.

Health is a multisectoral endeavour, which will yield multisectoral benefits. The aim is to make healthy choices the easier choices for people to make.



## Main factors in successful implementation of policies and interventions

Making effective policy depends on a number of factors, which determine the usefulness, effectiveness and efficiency of any subsequent plans for implementation. Evidence-based policy is now more feasible than ever before. A number of recurring themes emerge from the knowledge about how best to improve the health and development opportunities for children.

- Accurate and reliable information must provide the basis for planning, monitoring and evaluation of policies and programmes.
- Policy without implementation is meaningless. The capacity to deliver must be considered when policy is formulated.
- Children themselves should be involved in designing policies and programmes.
- Policy goals and programme objectives must be clear and unambiguous.
- Educational approaches alone are likely to be of limited effectiveness. They need to form part of a wide set of initiatives that use the full set of policy instruments available to decision-makers.
- Although the health sector is important, it is only one player in the quest for better health. Multisectoral action is essential, and a mechanism is needed to coordinate work across ministries.
- Facilities and programmes for children must take account of their culture, attitudes and beliefs. Child-friendly services are effective services.

This report has presented a framework of key health indicators of the burden of disease and determinants of health, and highlighted, mainly by the way of example, policies and programmes for disease prevention and health promotion. Here it is important to address the question of what the evidence shows are the common factors for success in practice, across interventions and populations. These factors are related to both the types of interventions and the contexts in which they are carried out.

A review of such evidence by the Health Evidence Network (85) points to the following ingredients of success.

### Approach and scope

Two basic approaches to health promotion and disease prevention tackle:

1. the underlying determinants of health, such as poverty and socioeconomic inequality; or
2. specific risk factors for specific health outcomes, such as lack of physical activity, some forms

Despite wide differences in the health problems of children across the WHO European Region, successful health promotion and disease prevention programmes share some common factors. The most successful interventions:

- are created as part of comprehensive national planning and are based on solid evidence;
- address both the broad determinants of ill health and particular risk factors;
- involve multisectoral, multifaceted and multilevel action by government and other stakeholders, using the whole array of available policy instruments; and
- target the populations in most need, and are adapted to local needs, resources and circumstances.

of obesity or lack of blood pressure control (which leads to hypertension), which increase the risk of atherosclerosis and therefore coronary heart disease.

The approaches are interrelated, since poverty and socioeconomic inequality are key underlying determinants of many risk factors. Nevertheless, they call for different types of action. The second approach encourages health education focused on individuals and aimed at increasing their awareness of and involvement in taking proper care of their health. Action on the first approach requires a more comprehensive, societal approach, using the democratic process to foster changes in policy, leading to the fair distribution of resources.

In general, the available evidence suggests that the most effective public health programmes, for children and adults alike, are those carried out by the government – and supported by society in general by promoting policy change – to alleviate the harm done to health by poverty and to increase social equality.

Interventions that address multiple broader issues are more likely to succeed. The health promotion interventions that are least likely to work:

- deal with single issues;
- deliver a negative message; and
- address only one setting.

An example would be campaigns in schools telling students not to smoke.

In addition, effective interventions use the whole array of available policy instruments, either mainly on the responsibility of a country's government or involving it. Examples given in this report include tobacco and alcohol use, and nutrition, physical activity and obesity.

There is also evidence that general health promotion campaigns are more effective when they are multifaceted and multilevel: that is, when there are simultaneous, multidimensional efforts at the national, local and individual levels.

## **Need for evidence**

Strong and credible scientific evidence that a public health intervention is effective is a pre-requisite for success. At least two types of evidence are required:

1. evidence that an intervention in itself works; and
2. evidence that the intervention programme works over time and in different epidemiological circumstances, health systems and cultural contexts.

Little rigorous research is documented on interventions' adaptability. Such systematic research is urgently needed, as the coverage of effective interventions tends to be lowest in poor countries and the poorest populations.

Because interventions must be adapted to local circumstances, the capacity of the health system at different levels in the country should be assessed. For example, how far are regional needs in child health taken into account at the national level? How are resources redirected to programmes with a high political profile, such as those to prevent AIDS? Other factors to consider include:

- the degree of development and the organization of a country's health system (for example, national systems versus local, private systems);
- the health system's strengths, weaknesses, infrastructure, current coverage and utilization;

- the population's patterns of seeking health care, which are influenced by socioeconomic and cultural factors;
- the various options for financing; and
- the human and financial resources available.

In addition, the availability of relevant and reliable data on the population targeted for intervention is a prerequisite for knowing whether the intervention should be made and determining its effectiveness. Such data need to be collected at the national, regional and/or local levels to assess the epidemiological situation, political willingness to act, the capacity of the health system to take part and the preferences of the community. Only when such data are available are public health interventions justifiable.

## Tactics

Targeting particular population groups with interventions is key. Certain groups of children and adults are more vulnerable than others to particular hazardous behaviour, such as smoking, alcohol, poor diets and lack of exercise. Such populations include people living in poverty, cultural minority groups, the socially excluded and those with mental health problems.

The people who plan and implement programmes should take account of the age and developmental stage of the target population. For example, programmes on drug use may focus on prevention among children aged 9–10 years and the minimization of harm among older teenagers, who may already be using illegal drugs.

In addition, effective interventions take account of cultural, religious and gender factors. For example, different approaches to some issues, such as the prevention of pregnancy, may need to be taken for the male and female populations. The approach to other issues – such as reducing smoking by banning cigarette advertising and increasing the prices of tobacco products – may be the same for both genders, even though their behaviour may differ.

Further, successful implementation is associated with a perception by the public that the health problem represents significant burden to society, families and individuals, as indicated by prevalence, economic impact and high political profile. In addition, programmes should account for different groups' varying perceptions of risks. In many societies, for example, adults see smoking as a threat to health, while adolescents value its immediate attractions more than the long-term risks (70).

There is some evidence for the effectiveness of mass-media involvement. Important factors appear to be the education level of the population, the duration of delivery and the intensity of media programmes, and the credibility of the source of the information given.

## Conclusion

To be most successful, public health interventions need to address all the direct and indirect influences on children's health, and take action on many fronts and in many sectors. Implementation strategies are most successful when they are based on comprehensive national planning that:

- involves children themselves;
- utilizes the contributions of families and communities, schools, the mass media, the health system and government; and
- uses such tools as policy, legislation and regulations.

This work can take the form of a national joint plan or programme (see success story).

All these elements of success fall under the four guiding principles of the European strategy for child and adolescent health and development (15) (see p. 48):

- equity: addressing inequalities and facilitating the fulfilment of human rights, including access to appropriate services for those in greatest need;
- intersectoral action: adopting an intersectoral public health approach that addresses the fundamental determinants of health;
- involvement of the public and young people: engaging them in the planning, delivery and monitoring of policies and services; and
- a life-course approach: making policies and implementing programmes that reflect the health challenges at each stage of growth and development.

### *Ireland's Programme of Action for Children*

Ireland's Programme of Action for Children (86) originated as Best Health for Children, a multisectoral initiative jointly owned by all the health boards of Ireland and endorsed by all their chief executive officers, key nongovernmental organizations for children and young people, and the Government through the Department of Health and Children.

Having identified issues needing to be addressed, the initiative seeks to evaluate potential intervention

programmes as a matter of routine before recommending them as adopted policies. By this route, it has yielded a number of best-practice documents based on evidence of effectiveness gained by evaluation (87). Best Health for Children has now been drawn into the Irish Health Boards Executive as one of its joint national programmes. As the Programme of Action for Children, its task is to manage child-related projects, ensuring equity of approach and tailoring to local needs.

In sum, success in the planning, implementation and evaluation of interventions in different contexts requires an understanding of health problems and interventions in terms of the conceptual framework described in Part 1 of this report, which emphasizes the complex relationships among multiple general determinants, specific risk factors and health. This broad view of health implies that public health authorities must not only look at the known risk factors and interventions but also look beyond them to the underlying environmental, behavioural and social factors that influence health outcomes in different ways in different circumstances. Understanding and applying this knowledge comprise part of the art and science of public health.

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# ANNEX

STATISTICAL  
TABLES

## Note on estimates of the burden of disease in countries

Annex Tables 4 and 5 present the first country-specific estimates of the causes of the burden of disease and attributable risk, in terms of both deaths and DALYs, for the WHO European Region. Annex Table 7 presents burden of disease estimates in DALYs in children aged 0–14 years. These estimates were produced in 2004, specifically for this report, by the Global Burden of Disease project of the WHO Global Programme on Evidence for Health Policy.

The estimates of the burden of disease elaborate on previous results of the 2000 Global Burden of Disease study (1) as published in the world health reports for 2003 and 2004 (2,3), and use the most recent additional information available to WHO in 2004.

The estimates of attributable risk elaborate on the comparative risk assessment analyses carried out for *The world health report 2002* (4), but with updated country data on the burden from and exposure to around four of the risk factors. Some changes were made in methods and results, in general small ones, as compared to those of the 2002 report and published by Ezzati et al. (5).

These prior estimates should be interpreted as the best estimates of WHO, rather than the official estimates of Member States. They have been computed using standard categories and methods to ensure cross-national comparability, and may not be the same as official national estimates produced using different but potentially equally rigorous methods. Documentation and summary tables on the Global Burden of Disease study (6) are available, along with software tools and a manual providing guidelines for conducting a national burden of disease study (7).

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Table 1. Population of the WHO European Region, 1990 to 2015 (projected)

Member State	Total population (millions)			Average annual population growth (%)		Urban population (% of total)		Population under age 15 (% of total)		Population aged 65 and above (% of total)		Total fertility rate, 2000–2005
	1990	2003	2015	1990–2003	2003–2015	2002	2015	2003	2015	2003	2015	
Albania	3.3	3.2	3.5	-0.3	0.8	43.2	51.2	27.3	2.9	7.3	0.1	2.3
Andorra	–	–	–	–	–	91.9	91.1	–	–	–	–	–
Armenia	3.5	3.1	3.0	-1.1	-0.1	64.6	64.2	20.5	14.4	10.2	9.9	1.2
Austria	7.7	8.1	8.1	0.4	0.0	65.8	67.2	16.2	12.4	16.0	19.5	1.3
Azerbaijan	7.2	8.2	9.0	1.1	0.7	50.2	51.3	27.0	23.5	7.5	5.9	2.1
Belarus	10.2	9.9	9.3	-0.2	-0.5	70.5	75.2	16.8	14.1	14.0	14.3	1.2
Belgium	10.0	10.4	10.5	0.3	0.1	97.2	97.5	17.0	15.5	16.8	19.5	1.7
Bosnia and Herzegovina	4.5	4.1	4.2	-0.6	0.2	43.9	51.1	17.2	14.1	10.9	13.6	1.3
Bulgaria	8.7	7.8	7.2	-0.8	-0.7	69.4	74.0	14.4	12.6	16.4	18.0	1.1
Croatia	4.8	4.4	4.3	-0.6	-0.3	58.6	64.6	16.2	16.5	15.8	17.8	1.7
Cyprus	–	–	–	–	–	69.0	71.6	–	18.9	–	14.9	1.9
Czech Republic	10.4	10.2	9.9	-0.1	-0.2	74.2	75.7	15.5	13.2	13.9	18.6	1.2
Denmark	5.1	5.4	5.4	0.4	0.1	85.2	86.8	18.6	16.3	14.9	19.2	1.8
Estonia	1.6	1.4	1.3	-1.1	-0.5	69.4	71.4	16.1	14.2	15.2	18.2	1.2
Finland	5.0	5.2	5.3	0.3	0.1	61.0	62.1	17.6	15.8	15.3	20.3	1.7
France	56.7	59.8	61.8	0.4	0.3	76.1	79.0	18.6	17.8	16.1	18.5	1.9
Georgia	5.5	5.1	4.7	-0.5	-0.7	52.2	51.6	18.4	15.2	14.3	14.9	1.4
Germany	79.4	82.5	80.6	0.3	-0.2	87.9	90.0	14.9	13.2	17.3	20.8	1.4
Greece	10.2	11.0	11.0	0.6	0.0	60.6	65.2	14.7	13.2	18.7	20.9	1.3
Hungary	10.4	10.1	9.6	-0.2	-0.5	64.7	70.0	16.3	13.3	14.7	17.4	1.2
Iceland	–	–	–	–	–	92.7	94.1	–	18.7	–	13.5	2.0
Ireland	3.5	4.0	4.4	1.0	0.8	59.6	63.6	21.3	20.3	11.2	13.4	1.9
Israel	4.7	6.7	7.9	2.8	1.4	91.6	92.4	27.4	24.8	9.7	11.4	2.7
Italy	56.7	57.6	55.1	0.1	-0.4	67.3	69.2	14.0	12.3	19.0	22.3	1.2
Kazakhstan	16.3	14.9	15.5	-0.7	0.3	55.8	58.2	24.5	21.4	8.1	8.4	2.0
Kyrgyzstan	4.4	5.1	5.8	1.0	1.1	34.0	35.4	31.7	26.4	6.1	5.9	2.6
Latvia	2.7	2.3	2.1	-1.1	-0.7	66.3	66.3	15.1	13.0	15.5	18.3	1.1
Lithuania	3.7	3.5	3.3	-0.5	-0.4	66.8	67.5	17.7	16.0	14.2	16.4	1.3
Luxembourg	–	–	–	–	–	91.6	94.1	–	17.6	–	14.4	1.7
Malta	–	–	–	–	–	91.4	93.7	–	17.0	–	18.0	1.8
Monaco	–	–	–	–	–	100.0	100.0	–	–	–	–	–
Netherlands	15.0	16.2	16.6	0.6	0.2	65.4	71.4	18.3	16.4	14.0	17.4	1.7
Norway	4.2	4.6	4.7	0.6	0.3	77.6	86.4	19.7	16.6	14.9	18.0	1.8
Poland	38.1	38.2	37.9	0.0	-0.1	61.8	64.0	17.6	14.6	12.5	14.8	1.3
Portugal	9.9	10.4	10.5	0.4	0.0	54.1	60.9	17.3	15.3	15.2	18.0	1.5
Republic of Moldova	4.4	4.2	4.1	-0.2	-0.2	45.9	50.0	20.4	16.5	11.1	10.9	1.4
Romania	23.2	21.7	21.1	-0.5	-0.3	54.5	56.4	16.6	15.4	13.9	14.8	1.3
Russian Federation	148.3	143.4	134.5	-0.3	-0.5	73.3	74.3	16.3	13.7	13.2	14.3	1.1
San Marino	–	–	–	–	–	88.8	89.1	–	–	–	–	–
Serbia and Montenegro	10.5 <sup>a</sup>	8.1	10.7	0.1 <sup>b</sup>	2.3	51.8	55.5	19.6	16.9	14.0	14.9	1.7
Slovakia	5.3	5.4	5.3	0.2	-0.1	57.2	60.8	18.2	15.4	11.4	13.6	1.3
Slovenia	2.0	2.0	2.0	0.0	-0.1	50.8	52.6	15.0	12.1	14.6	18.5	1.1
Spain	38.8	41.1	41.5	0.4	0.1	76.4	78.1	15.0	13.2	17.1	19.2	1.2
Sweden	8.6	9.0	9.0	0.3	0.1	83.3	84.3	17.5	15.7	17.5	21.4	1.6
Switzerland	6.7	7.4	7.6	0.7	0.2	67.6	68.7	16.6	12.6	15.6	22.0	1.4
Tajikistan	5.3	6.3	7.2	1.3	1.1	25.0	24.4	36.5	28.5	4.6	4.6	3.1
TFYR Macedonia <sup>c</sup>	1.9	2.0	2.2	0.6	0.5	59.4	62.0	21.5	20.0	10.7	12.2	1.9
Turkey	56.2	70.7	81.2	1.8	1.2	65.8	71.9	28.3	25.0	5.9	6.7	2.4
Turkmenistan	3.7	4.9	5.7	2.2	1.3	45.1	50.0	33.8	27.4	4.5	4.6	2.7
Ukraine	51.9	48.4	44.7	-0.5	-0.7	67.2	68.9	16.0	13.2	15.1	16.1	1.2
United Kingdom	57.6	59.3	60.0	0.2	0.1	89.0	90.2	18.2	15.9	16.0	17.8	1.6
Uzbekistan	20.5	25.6	30.1	1.7	1.3	36.8	37.0	33.3	26.2	4.9	5.0	2.4

<sup>a</sup> Includes population of Kosovo until 2001.

<sup>b</sup> Data are for 1990 to 2001.

<sup>c</sup> The former Yugoslav Republic of Macedonia.

Sources: World development indicators 2005. Washington, DC, World Bank, 2005 (<http://www.worldbank.org/data/wdi2005/>; accessed 25 May 2005), and Human development report 2004. Cultural liberty in today's diverse world. New York, United Nations Development Programme (<http://hdr.undp.org/reports/global/2004/>; accessed 25 May 2005).

**Table 2. Basic public health indicators in the WHO European Region**  
Health expenditure, immunization and ill health

Member State	Total health expenditure, 2002		General government health expenditure, 2002		One-year-olds immunized (%), 2003		TB under DOTS	
	% of GDP	Per head (international dollar rate)	% of total expenditure on health	% of total government expenditure	With DTP3	Against measles	Cases detected (%), 2003	Treatment success (%), 2002
Albania	6.1	302	39	8	97	93	28	90
Andorra	6.5	1908	71	27	99	96	75	100
Armenia	5.8	232	23	6	94	94	58	79
Austria	7.7	2220	70	11	84	79	87 <sup>a</sup>	64 <sup>b</sup>
Azerbaijan	3.7	120	22	3	97	98	25	84
Belarus	6.4	583	74	11	86	99	98	–
Belgium	9.1	2515	71	13	90	75	73	69
Bosnia and Herzegovina	9.2	322	50	9	87	84	76	95
Bulgaria	7.4	499	53	10	96	96	90	86
Croatia	7.3	630	81	12	94	95	0	–
Cyprus	7.0	883	41	7	98	86	102	75
Czech Republic	7.0	1118	91	15	97	99	92	73
Denmark	8.8	2583	83	13	96	96	88	77
Estonia	5.1	604	76	11	94	95	85	67
Finland	7.3	1943	76	11	98	97	0	–
France	9.7	2736	76	14	97	86	0	–
Georgia	3.8	123	27	6	76	73	99	65
Germany	10.9	2817	79	18	89	92	97	69
Greece	9.5	1814	53	11	88	88	0	–
Hungary	7.8	1078	70	10	99	99	88	55
Iceland	9.9	2802	84	18	97	93	63	100
Ireland	7.3	2367	75	16	85	78	0	–
Israel	9.1	1890	66	11	97	95	83	80
Italy	8.5	2166	76	13	96	83	101	79
Kazakhstan	3.5	261	53	9	99	99	120	78
Kyrgyzstan	4.3	117	51	10	98	99	97	82
Latvia	5.1	477	64	9	98	99	97	76
Lithuania	5.9	549	73	14	94	98	108	72
Luxembourg	6.2	3066	85	12	98	91	98	–
Malta	9.7	965	72	14	94	90	26	60
Monaco	11.0	4258	80	15	99	99	–	–
Netherlands	8.8	2564	66	12	98	96	102	68
Norway	9.6	3409	84	18	90	84	128	80
Poland	6.1	657	72	10	99	97	81	86
Portugal	9.3	1702	71	14	99	96	86	82
Republic of Moldova	7.0	151	58	13	98	96	55	61
Romania	6.3	469	66	13	97	97	45	76
Russian Federation	6.2	535	56	10	98	96	13	67
San Marino	7.7	3094	79	20	96	91	58	0
Serbia and Montenegro	8.1	305	63	11	89	87	51	91
Slovakia	5.9	723	89	10	99	99	69	84
Slovenia	8.3	1547	75	15	92	94	75	85
Spain	7.6	1640	71	14	98	97	0	–
Sweden	9.2	2512	85	14	98	94	98	73
Switzerland	11.2	3446	58	19	95	82	0	–
Tajikistan	3.3	47	28	6	82	89	8	78
TFYR Macedonia <sup>c</sup>	6.8	341	85	14	96	96	75	79
Turkey	6.5	420	66	10	68	75	–	–
Turkmenistan	4.3	182	71	12	98	97	56	77
Ukraine	4.7	210	71	9	97	99	0	–
United Kingdom	7.7	2160	83	16	91	80	0	–
Uzbekistan	5.5	143	46	7	98	99	34	80

<sup>a</sup> 2002.

<sup>b</sup> 2001.

<sup>c</sup> The former Yugoslav Republic of Macedonia.

## Life expectancy and mortality

Stunting in children under 5 (%), 1997–2003	Low birth weight (%), 2000–2002	Life expectancy at birth (years), 2003		Adult mortality rate (per 1000 population aged 15–60 years), 2003		Under-5 mortality rate (per 1000 live births)		Maternal mortality rate (per 100 000 live births)		Coverage of registration of deaths (%), 2003 or latest available year
		Males	Females	Males	Females	Under 5 years, 2003	Before 28 days, 2000	WHO estimate, 2000	Reported, 1995–2003	
35.1	3	69	75	167	92	21	12	55	20	94
–	–	78	84	107	41	5	4	–	–	46
12.9	7	65	72	240	108	33	17	55	34	78
–	7	76	82	115	59	6	3	5	3	100
13.3	11	62	68	220	120	91	36	94	29	72
–	5	63	75	370	130	10	5	36	20	98
–	8	75	82	125	66	5	3	10	7	100
9.7	4	69	76	190	89	17	11	31	–	88
–	10	69	76	216	91	15	8	32	16	100
–	6	71	78	173	70	7	5	10	13	99
–	–	76	81	99	47	6	4	47	7	83
–	7	72	79	166	74	5	2	9	7	100
–	5	75	80	121	73	5	4	7	12	100
–	4	65	77	319	114	8	6	38	19	100
–	4	75	82	134	57	4	2	5	5	100
–	7	76	84	132	59	5	3	17	9	100
11.7	6	67	75	195	76	45	25	32	51	64
–	7	76	82	115	59	5	3	9	5	100
–	8	76	81	118	48	6	4	10	4	90
–	9	68	77	257	111	9	6	11	7	100
–	4	78	82	81	53	3	2	0	15	91
–	6	76	81	100	60	6	4	4	4	98
–	8	78	82	92	51	6	4	13	5	100
–	6	78	84	93	47	5	3	5	3	98
9.7	8	56	67	419	187	73	32	210	54	79
24.8	7	59	68	339	160	68	31	110	51	71
–	5	66	76	306	120	13	7	61	22	100
–	4	66	78	302	106	9	5	19	13	100
–	8	76	82	115	63	4	4	28	11	100
–	6	76	81	84	49	6	5	–	15	100
–	–	78	85	110	47	4	3	–	–	–
–	–	76	81	93	66	6	4	16	8	100
–	5	77	82	96	58	4	3	10	6	98
–	6	71	79	202	81	8	6	10	5	100
–	8	74	81	150	63	6	3	8	6	100
–	5	63	71	303	152	32	16	36	30	83
10.1	9	68	75	239	107	20	9	58	32	100
–	6	58	72	480	182	16	9	65	37	97
–	–	78	84	73	32	4	2	–	–	>75
5.1	4	70	75	186	99	14	9	9	7	90
–	7	70	78	204	77	8	5	10	8	100
–	6	73	81	165	69	5	4	17	14	100
–	6	76	83	116	46	5	3	5	4	100
–	4	78	83	79	50	4	2	8	4	100
–	6	78	83	90	50	5	3	7	5	100
36.2	15	59	63	225	169	118	38	100	42	50
6.9	5	69	75	202	86	12	9	13	10	90
16	16	68	73	176	111	39	22	70	–	43
22.3	6	56	65	352	171	102	35	31	–	76
15.9	5	62	73	384	142	20	9	38	23	99
–	8	76	81	103	64	6	4	11	5	100
21.1	7	63	69	226	142	69	27	24	33	80

Note. WHO computed the figures to ensure comparability; they are not necessarily the official statistics of Member States, which may use alternative rigorous methods. Sources: *The world health report 2005 – Make every mother and child count*. Geneva, World Health Organization, 2005 (<http://www.who.int/whr/2005/en>, accessed 25 May 2005) and *World health statistics 2005*. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/>, accessed 30 May 2005).



Table 3. Level and distribution of income in the WHO European Region

Member State	GDP per head (US\$ PPP), 2002	Average annual growth of GDP (%)		Share of income or consumption (%)				Inequality measures	
		1980–1990	1990–2003	Poorest 10%	Poorest 20%	Richest 20%	Richest 10%	Ratio of income or consumption share of richest 10% to poorest 10%	Gini index
Albania	4 830	1.5	4.6	3.8	9.1	37.4	22.4	5.9	28.2
Andorra	–	–	–	–	–	–	–	–	–
Armenia	3 120	–	1.5	2.6	6.7	45.1	29.7	11.5	37.9
Austria	29 220	2.3	2.1	3.1	8.1	38.5	23.5	7.6	30.0
Azerbaijan	3 210	–	–1.5	3.1	7.4	44.5	29.5	9.7	36.5
Belarus	5 520	–	0.6	3.5	8.4	39.1	24.1	6.9	30.4
Belgium	27 570	2.1	2.1	2.9	8.3	37.3	22.6	7.8	25.0
Bosnia and Herzegovina	–	–	–	3.9	9.5	35.8	21.4	5.4	26.2
Bulgaria	7 130	3.4	–0.2	2.4	6.7	38.9	23.7	9.9	31.9
Croatia	10 240	–	1.7	3.4	8.3	39.6	24.5	7.3	29.0
Cyprus	18 150	–	–	–	–	–	–	–	–
Czech Republic	15 780	–	1.4	4.3	10.3	35.9	22.4	5.2	25.4
Denmark	30 940	2.0	2.3	2.6	8.3	35.8	21.3	8.1	24.7
Estonia	12 260	2.2	2.1	1.9	6.1	44.0	28.5	14.9	37.2
Finland	26 190	3.3	2.8	4.0	9.6	36.7	22.6	5.6	26.9
France	26 920	2.4	1.9	2.8	7.2	40.2	25.1	9.1	32.7
Georgia	2 260	0.4	–3.1	2.3	6.4	43.6	27.9	12.0	36.9
Germany	27 100	2.3	1.5	3.2	8.5	36.9	22.1	6.9	28.3
Greece	18 720	0.9	2.7	2.9	7.1	43.6	28.5	10.0	35.4
Hungary	13 400	1.3	2.4	4.0	9.5	36.5	22.2	5.6	26.9
Iceland	29 750	–	–	–	–	–	–	–	–
Ireland	36 360	3.2	7.7	2.8	7.1	43.3	27.6	9.7	35.9
Israel	19 530	3.5	4.3	2.4	6.9	44.3	28.2	11.7	35.5
Italy	26 430	2.5	1.6	2.3	6.5	42.0	26.8	11.6	36.0
Kazakhstan	5 870	–	–0.6	3.2	7.8	40.0	24.4	7.6	32.3
Kyrgyzstan	1 620	–	–1.4	3.2	7.7	43.0	27.9	8.7	34.8
Latvia	9 210	3.2	1.0	2.8	7.3	41.1	26.1	9.3	33.6
Lithuania	10 320	–	–0.1	3.2	7.9	40.0	24.9	7.9	31.9
Luxembourg	61 190	–	–	3.5	8.4	38.9	23.8	6.8	30.8
Malta	17 640	–	–	–	–	–	–	–	–
Monaco	–	–	–	–	–	–	–	–	–
Netherlands	29 100	2.4	2.7	2.5	7.6	38.7	22.9	9.2	30.9
Norway	36 600	3.0	3.5	3.9	9.6	37.2	23.4	6.1	25.8
Poland	10 560	–	4.2	3.1	7.6	41.9	26.7	8.6	34.1
Portugal	18 280	3.2	2.6	2.0	5.8	45.9	29.8	15.0	38.5
Republic of Moldova	1 470	2.8	–5.9	2.7	6.8	44.1	28.4	10.5	36.9
Romania	6 560	1.3	0.1	3.2	7.9	41.0	26.1	8.2	30.3
Russian Federation	8 230	–	–1.8	3.3	8.2	39.3	23.8	7.2	31.0
San Marino	–	–	–	–	–	–	–	–	–
Serbia and Montenegro	–	–	1.4	–	–	–	–	–	–
Slovakia	12 840	2.0	2.5	3.1	8.8	34.8	20.9	6.7	25.8
Slovenia	18 540	–	3.1	3.6	9.1	35.7	21.4	5.9	28.4
Spain	21 460	3.1	2.8	2.8	7.5	40.3	25.2	9.0	32.5
Sweden	26 050	2.5	2.3	3.6	9.1	36.6	22.2	6.2	25.0
Switzerland	30 010	2.0	1.2	2.6	6.9	40.3	25.2	9.9	33.1
Tajikistan	980	2.0	–5.3	3.3	7.9	40.8	25.6	7.8	32.6
TFYR Macedonia <sup>a</sup>	6 470	–	–0.1	3.3	8.4	36.7	22.1	6.8	28.2
Turkey	6 390	5.3	3.1	2.3	6.1	46.7	30.7	13.3	40.0
Turkmenistan	4 250	–	0.9	2.6	6.1	47.5	31.7	12.3	40.8
Ukraine	4 870	–	–5.3	3.7	8.8	37.8	23.2	6.4	29.0
United Kingdom	26 150	3.2	2.7	2.1	6.1	44.0	28.5	13.8	36.0
Uzbekistan	1 670	–	1.2	3.6	9.2	36.3	22.0	6.1	26.8

<sup>a</sup> The former Yugoslav Republic of Macedonia.

Note: WHO computed the figures to ensure comparability; they are not necessarily the official statistics of Member States, which may use alternative rigorous methods. Sources: *World development indicators 2005*. Washington, DC, World Bank, 2005 (<http://www.worldbank.org/data/wdi2005/>; accessed 2 May 2005) and *Human development report 2004. Cultural liberty in today's diverse world*. New York, United Nations Development Programme (<http://hdr.undp.org/reports/global/2004/>; accessed 2 May 2005).

Table 4. Deaths and DALYs attributable to the 10 leading causes in the WHO European Region, 2002

Member State	Mortality				DALYs		
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total	
ALBANIA	<b>All causes</b>	<b>22 096</b>	<b>100.0</b>	<b>All causes</b>	<b>502 753</b>	<b>100.0</b>	
	1. Cerebrovascular disease	4 169	18.9	1. Unipolar depressive disorders	36 939	7.3	
	2. Ischaemic heart disease	3 989	18.1	2. Ischaemic heart disease	35 959	7.2	
	3. Lower respiratory infections	973	4.4	3. Cerebrovascular disease	33 238	6.6	
	4. Trachea, bronchus and lung cancer	933	4.2	4. Perinatal conditions	21 520	4.3	
	5. Stomach cancer	572	2.6	5. Lower respiratory infections	18 911	3.8	
	6. Liver cancer	552	2.5	6. Osteoarthritis	12 258	2.4	
	7. Perinatal conditions	540	2.4	7. Falls	10 198	2.0	
	8. Hypertensive heart disease	444	2.0	8. Iodine deficiency	9 376	1.9	
	9. Nephritis and nephrosis	369	1.7	9. Hearing loss, adult onset	9 087	1.8	
	10. Chronic obstructive pulmonary disease	275	1.2	10. Trachea, bronchus and lung cancer	8 828	1.8	
ANDORRA	<b>All causes</b>	<b>562</b>	<b>100.0</b>	<b>All causes</b>	<b>8 546</b>	<b>100.0</b>	
	1. Ischaemic heart disease	67	12.0	1. Unipolar depressive disorders	715	8.4	
	2. Cerebrovascular disease	52	9.3	2. Alcohol-use disorders	449	5.3	
	3. Alzheimer's and other dementias	35	6.2	3. Alzheimer's and other dementias	378	4.4	
	4. Trachea, bronchus and lung cancer	30	5.3	4. Ischaemic heart disease	369	4.3	
	5. Chronic obstructive pulmonary disease	25	4.5	5. Cerebrovascular disease	342	4.0	
	6. Colon and rectum cancer	22	3.9	6. Hearing loss, adult onset	303	3.6	
	7. Diabetes mellitus	14	2.5	7. Chronic obstructive pulmonary disease	286	3.3	
	8. Lower respiratory infections	13	2.3	8. Road-traffic accidents	276	3.2	
	9. Breast cancer	11	2.0	9. Trachea, bronchus and lung cancer	250	2.9	
	10. Road-traffic accidents	10	1.9	10. Diabetes mellitus	224	2.6	
ARMENIA	<b>All causes</b>	<b>26 148</b>	<b>100.0</b>	<b>All causes</b>	<b>516 208</b>	<b>100.0</b>	
	1. Ischaemic heart disease	8 515	32.6	1. Ischaemic heart disease	65 285	12.6	
	2. Cerebrovascular disease	4 212	16.1	2. Unipolar depressive disorders	38 243	7.4	
	3. Diabetes mellitus	1 559	6.0	3. Cerebrovascular disease	34 430	6.7	
	4. Trachea, bronchus and lung cancer	998	3.8	4. Perinatal conditions	20 268	3.9	
	5. Chronic obstructive pulmonary disease	782	3.0	5. Diabetes mellitus	18 936	3.7	
	6. Inflammatory heart diseases	580	2.2	6. Hearing loss, adult onset	15 853	3.1	
	7. Hypertensive heart disease	511	2.0	7. Congenital anomalies	14 392	2.8	
	8. Breast cancer	504	1.9	8. Vision disorders, age-related	11 688	2.3	
	9. Stomach cancer	502	1.9	9. Trachea, bronchus and lung cancer	10 070	2.0	
	10. Cirrhosis of the liver	496	1.9	10. Chronic obstructive pulmonary disease	8 920	1.7	
AUSTRIA	<b>All causes</b>	<b>70 450</b>	<b>100.0</b>	<b>All causes</b>	<b>969 681</b>	<b>100.0</b>	
	1. Ischaemic heart disease	15 418	21.9	1. Unipolar depressive disorders	95 118	9.8	
	2. Cerebrovascular disease	7 559	10.7	2. Ischaemic heart disease	79 989	8.2	
	3. Trachea, bronchus and lung cancer	3 170	4.5	3. Cerebrovascular disease	49 230	5.1	
	4. Colon and rectum cancer	2 531	3.6	4. Alcohol-use disorders	48 850	5.0	
	5. Chronic obstructive pulmonary disease	2 122	3.0	5. Hearing loss, adult onset	36 543	3.8	
	6. Cirrhosis of the liver	1 758	2.5	6. Alzheimer's and other dementias	34 102	3.5	
	7. Breast cancer	1 633	2.3	7. Chronic obstructive pulmonary disease	30 652	3.2	
	8. Self-inflicted injuries	1 476	2.1	8. Trachea, bronchus and lung cancer	26 882	2.8	
	9. Diabetes mellitus	1 428	2.0	9. Self-inflicted injuries	26 204	2.7	
	10. Hypertensive heart disease	1 247	1.8	10. Cirrhosis of the liver	95 118	9.8	

Source: data from Mathers C et al. *Global burden of disease in 2002: data sources, methods and results*. Geneva, World Health Organization, 2004 ([http://www3.who.int/whosis/menu.cfm?path=evidence,burden,burden\\_gbd2000docs,burden\\_gbd2000docs\\_DP54&language=english](http://www3.who.int/whosis/menu.cfm?path=evidence,burden,burden_gbd2000docs,burden_gbd2000docs_DP54&language=english), accessed 25 May 2005).

Table 4 contd

Member State	Mortality			DALYs		
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total
AZERBAIJAN	<b>All causes</b>	<b>64 213</b>	<b>100.0</b>	<b>All causes</b>	<b>1 545 013</b>	<b>100.0</b>
	1. Ischaemic heart disease	22 302	34.7	1. Ischaemic heart disease	180 052	11.7
	2. Lower respiratory infections	6 540	10.2	2. Lower respiratory infections	156 395	10.1
	3. Unipolar depressive disorders	5 260	8.2	3. Unipolar depressive disorders	99 044	6.4
	4. Perinatal conditions	2 212	3.4	4. Perinatal conditions	68 795	4.5
	5. Cerebrovascular disease	1 666	2.6	5. Cerebrovascular disease	60 065	3.9
	6. Diarrhoeal diseases	1 648	2.6	6. Diarrhoeal diseases	36 545	2.4
	7. Tuberculosis	1 532	2.4	7. Tuberculosis	36 406	2.4
	8. Hearing loss, adult onset	1 485	2.3	8. Hearing loss, adult onset	35 630	2.3
	9. Anaemia	1 464	2.3	9. Anaemia	35 164	2.3
	10. Diabetes mellitus	1 343	2.1	10. Diabetes mellitus	34 711	2.2
BELARUS	<b>All causes</b>	<b>143 574</b>	<b>100.0</b>	<b>All causes</b>	<b>2 192 251</b>	<b>100.0</b>
	1. Ischaemic heart disease	59 423	41.4	1. Ischaemic heart disease	382 458	17.4
	2. Cerebrovascular disease	22 790	15.9	2. Cerebrovascular disease	188 174	8.6
	3. Chronic obstructive pulmonary disease	5 192	3.6	3. Unipolar depressive disorders	107 552	4.9
	4. Poisonings	3 956	2.8	4. Self-inflicted injuries	78 206	3.6
	5. Self-inflicted injuries	3 796	2.6	5. Poisonings	75 063	3.4
	6. Trachea, bronchus and lung cancer	3 707	2.6	6. Alcohol-use disorders	63 271	2.9
	7. Stomach cancer	3 146	2.2	7. Chronic obstructive pulmonary disease	62 291	2.8
	8. Colon and rectum cancer	2 550	1.8	8. HIV/AIDS	55 818	2.5
	9. HIV/AIDS	2 201	1.5	9. Road-traffic accidents	52 635	2.4
	10. Drownings	1 712	1.2	10. Hearing loss, adult onset	52 491	2.4
BELGIUM	<b>All causes</b>	<b>102 947</b>	<b>100.0</b>	<b>All causes</b>	<b>1 357 930</b>	<b>100.0</b>
	1. Ischaemic heart disease	14 985	14.6	1. Unipolar depressive disorders	131 685	9.7
	2. Cerebrovascular disease	9 234	9.0	2. Ischaemic heart disease	88 271	6.5
	3. Trachea, bronchus and lung cancer	7 191	7.0	3. Chronic obstructive pulmonary disease	66 096	4.9
	4. Lower respiratory infections	5 043	4.9	4. Cerebrovascular disease	62 978	4.6
	5. Chronic obstructive pulmonary disease	4 989	4.8	5. Alzheimer's and other dementias	56 459	4.2
	6. Alzheimer's and other dementias	4 193	4.1	6. Trachea, bronchus and lung cancer	55 114	4.1
	7. Colon and rectum cancer	3 471	3.4	7. Alcohol-use disorders	47 778	3.5
	8. Breast cancer	2 586	2.5	8. Hearing loss, adult onset	46 041	3.4
	9. Self-inflicted injuries	2 148	2.1	9. Self-inflicted injuries	42 090	3.1
	10. Prostate cancer	2 104	2.0	10. Road-traffic accidents	36 582	2.7
BOSNIA AND HERZEGOVINA	<b>All causes</b>	<b>34 894</b>	<b>100.0</b>	<b>All causes</b>	<b>649 408</b>	<b>100.0</b>
	1. Cerebrovascular disease	6 508	18.7	1. Cerebrovascular disease	63 065	9.7
	2. Ischaemic heart disease	5 590	16.0	2. Unipolar depressive disorders	51 184	7.9
	3. Inflammatory heart diseases	3 404	9.8	3. Ischaemic heart disease	50 385	7.8
	4. Trachea, bronchus and lung cancer	1 618	4.6	4. Inflammatory heart diseases	26 265	4.0
	5. Diabetes mellitus	646	1.9	5. Osteoarthritis	20 224	3.1
	6. Colon and rectum cancer	587	1.7	6. Trachea, bronchus and lung cancer	17 241	2.7
	7. Self-inflicted injuries	572	1.6	7. Perinatal conditions	16 876	2.6
	8. Liver cancer	545	1.6	8. Hearing loss, adult onset	15 671	2.4
	9. Nephritis and nephrosis	519	1.5	9. Self-inflicted injuries	12 971	2.0
	10. Cirrhosis of the liver	517	1.5	10. Vision disorders, age-related	12 927	2.0

Member State	Mortality		DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total
BULGARIA	<b>All causes</b>	<b>106 748</b>	<b>100.0</b>	<b>All causes</b>	<b>1 464 368</b>	<b>100.0</b>
	1. Ischaemic heart disease	26 638	25.0	1. Ischaemic heart disease	179 532	12.3
	2. Cerebrovascular disease	21 508	20.1	2. Cerebrovascular disease	164 980	11.3
	3. Hypertensive heart disease	4 709	4.4	3. Unipolar depressive disorders	94 865	6.5
	4. Trachea, bronchus and lung cancer	3 052	2.9	4. Osteoarthritis	40 511	2.8
	5. Colon and rectum cancer	2 323	2.2	5. Diabetes mellitus	36 538	2.5
	6. Diabetes mellitus	1 972	1.8	6. Hearing loss, adult onset	33 172	2.3
	7. Stomach cancer	1 783	1.7	7. Alcohol-use disorders	32 527	2.2
	8. Lower respiratory infections	1 566	1.5	8. Hypertensive heart disease	32 470	2.2
	9. Cirrhosis of the liver	1 494	1.4	9. Vision disorders, age-related	32 027	2.2
	10. Self-inflicted injuries	1 347	1.3	10. Trachea, bronchus and lung cancer	31 686	2.2
CROATIA	<b>All causes</b>	<b>50 446</b>	<b>100.0</b>	<b>All causes</b>	<b>709 409</b>	<b>100.0</b>
	1. Ischaemic heart disease	11 653	23.1	1. Cerebrovascular disease	77 915	11.0
	2. Cerebrovascular disease	8 653	17.2	2. Ischaemic heart disease	73 783	10.4
	3. Trachea, bronchus and lung cancer	2 729	5.4	3. Unipolar depressive disorders	52 908	7.5
	4. Colon and rectum cancer	1 620	3.2	4. Alcohol-use disorders	33 345	4.7
	5. Cirrhosis of the liver	1 392	2.8	5. Trachea, bronchus and lung cancer	24 818	3.5
	6. Stomach cancer	1 045	2.1	6. Hearing loss, adult onset	19 980	2.8
	7. Breast cancer	957	1.9	7. Cirrhosis of the liver	19 749	2.8
	8. Self-inflicted injuries	885	1.8	8. Alzheimer's and other dementias	18 178	2.6
	9. Lower respiratory infections	869	1.7	9. Road-traffic accidents	15 660	2.2
	10. Hypertensive heart disease	865	1.7	10. Chronic obstructive pulmonary disease	15 405	2.2
CYPRUS	<b>All causes</b>	<b>7 494</b>	<b>100.0</b>	<b>All causes</b>	<b>108 491</b>	<b>100.0</b>
	1. Ischaemic heart disease	1 358	18.1	1. Unipolar depressive disorders	7 476	6.9
	2. Cerebrovascular disease	795	10.6	2. Ischaemic heart disease	7 400	6.8
	3. Lower respiratory infections	497	6.6	3. Vision disorders, age-related	7 224	6.7
	4. Road-traffic accidents	214	2.9	4. Road-traffic accidents	5 931	5.5
	5. Trachea, bronchus and lung cancer	182	2.4	5. Hearing loss, adult onset	5 480	5.1
	6. Breast cancer	126	1.7	6. Cataracts	4 536	4.2
	7. Colon and rectum cancer	107	1.4	7. Diabetes mellitus	4 283	3.9
	8. Nephritis and nephrosis	99	1.3	8. Cerebrovascular disease	3 609	3.3
	9. Bladder cancer	76	1.0	9. Lower respiratory infections	2 936	2.7
	10. Stomach cancer	74	1.0	10. Schizophrenia	2 017	1.9
CZECH REPUBLIC	<b>All causes</b>	<b>103 313</b>	<b>100.0</b>	<b>All causes</b>	<b>1 474 275</b>	<b>100.0</b>
	1. Ischaemic heart disease	25 899	25.1	1. Ischaemic heart disease	163 488	11.1
	2. Cerebrovascular disease	15 663	15.2	2. Cerebrovascular disease	115 113	7.8
	3. Trachea, bronchus and lung cancer	5 736	5.6	3. Unipolar depressive disorders	104 052	7.1
	4. Colon and rectum cancer	4 607	4.5	4. Alcohol-use disorders	63 520	4.3
	5. Lower respiratory infections	2 291	2.2	5. Trachea, bronchus and lung cancer	51 746	3.5
	6. Breast cancer	1 931	1.9	6. Hearing loss, adult onset	44 139	3.0
	7. Cirrhosis of the liver	1 812	1.8	7. Colon and rectum cancer	40 399	2.7
	8. Chronic obstructive pulmonary disease	1 774	1.7	8. Alzheimer's and other dementias	38 864	2.6
	9. Falls	1 758	1.7	9. Chronic obstructive pulmonary disease	36 750	2.5
	10. Self-inflicted injuries	1 665	1.6	10. Self-inflicted injuries	31 758	2.2

Table 4 contd

Member State	Mortality				DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total		
DENMARK	<b>All causes</b>	<b>57 418</b>	<b>100.0</b>	<b>All causes</b>	<b>750 197</b>	<b>100.0</b>		
	1. Ischaemic heart disease	10 013	17.4	1. Unipolar depressive disorders	61 059	8.1		
	2. Cerebrovascular disease	4 871	8.5	2. Chronic obstructive pulmonary disease	57 489	7.7		
	3. Chronic obstructive pulmonary disease	4 039	7.0	3. Ischaemic heart disease	46 019	6.1		
	4. Trachea, bronchus and lung cancer	3 380	5.9	4. Cerebrovascular disease	35 294	4.7		
	5. Colon and rectum cancer	2 480	4.3	5. Alcohol-use disorders	35 276	4.7		
	6. Falls	1 637	2.9	6. Trachea, bronchus and lung cancer	25 904	3.5		
	7. Alzheimer's and other dementias	1 591	2.8	7. Alzheimer's and other dementias	25 119	3.3		
	8. Breast cancer	1 496	2.6	8. Hearing loss, adult onset	23 447	3.1		
	9. Diabetes mellitus	1 493	2.6	9. Colon and rectum cancer	17 723	2.4		
	10. Lower respiratory infections	1 476	2.6	10. Diabetes mellitus	15 452	2.1		
ESTONIA	<b>All causes</b>	<b>18 246</b>	<b>100.0</b>	<b>All causes</b>	<b>264 152</b>	<b>100.0</b>		
	1. Ischaemic heart disease	6 235	34.2	1. Ischaemic heart disease	33 180	12.6		
	2. Cerebrovascular disease	2 964	16.2	2. Cerebrovascular disease	18 850	7.1		
	3. Trachea, bronchus and lung cancer	664	3.6	3. Unipolar depressive disorders	14 195	5.4		
	4. Poisonings	431	2.4	4. Poisonings	8 267	3.1		
	5. Self-inflicted injuries	384	2.1	5. Alcohol-use disorders	7 918	3.0		
	6. Colon and rectum cancer	381	2.1	6. Self-inflicted injuries	7 639	2.9		
	7. Hypertensive heart disease	350	1.9	7. Hearing loss, adult onset	7 338	2.8		
	8. Stomach cancer	340	1.9	8. Road-traffic accidents	6 612	2.5		
	9. Lower respiratory infections	334	1.8	9. Violence	6 302	2.4		
	10. Inflammatory heart diseases	313	1.7	10. Osteoarthritis	6 175	2.3		
FINLAND	<b>All causes</b>	<b>48 461</b>	<b>100.0</b>	<b>All causes</b>	<b>667 725</b>	<b>100.0</b>		
	1. Ischaemic heart disease	12 488	25.7	1. Unipolar depressive disorders	72 348	10.8		
	2. Cerebrovascular disease	4 875	10.0	2. Ischaemic heart disease	62 918	9.4		
	3. Alzheimer's and other dementias	3 682	7.6	3. Cerebrovascular disease	35 795	5.4		
	4. Lower respiratory infections	2 375	4.9	4. Alzheimer's and other dementias	30 261	4.5		
	5. Trachea, bronchus and lung cancer	1 934	4.0	5. Alcohol-use disorders	26 466	4.0		
	6. Self-inflicted injuries	1 215	2.5	6. Self-inflicted injuries	25 330	3.8		
	7. Chronic obstructive pulmonary disease	1 095	2.3	7. Hearing loss, adult onset	22 888	3.4		
	8. Colon and rectum cancer	1 073	2.2	8. Osteoarthritis	14 899	2.2		
	9. Falls	1 055	2.2	9. Trachea, bronchus and lung cancer	13 986	2.1		
	10. Breast cancer	933	1.9	10. Chronic obstructive pulmonary disease	13 976	2.1		
FRANCE	<b>All causes</b>	<b>499 040</b>	<b>100.0</b>	<b>All causes</b>	<b>7 406 472</b>	<b>100.0</b>		
	1. Ischaemic heart disease	45 501	9.1	1. Unipolar depressive disorders	761 929	10.3		
	2. Cerebrovascular disease	37 246	7.5	2. Alcohol-use disorders	398 770	5.4		
	3. Trachea, bronchus and lung cancer	26 069	5.2	3. Alzheimer's and other dementias	288 825	3.9		
	4. Lower respiratory infections	19 404	3.9	4. Cerebrovascular disease	259 266	3.5		
	5. Colon and rectum cancer	17 499	3.5	5. Hearing loss, adult onset	253 702	3.4		
	6. Alzheimer's and other dementias	16 739	3.4	6. Ischaemic heart disease	248 323	3.4		
	7. Chronic obstructive pulmonary disease	16 138	3.2	7. Road-traffic accidents	245 691	3.3		
	8. Breast cancer	12 535	2.5	8. Trachea, bronchus and lung cancer	243 306	3.3		
	9. Diabetes mellitus	11 378	2.3	9. Chronic obstructive pulmonary disease	205 199	2.8		
	10. Falls	10 055	2.0	10. Self-inflicted injuries	174 870	2.4		

Member State	Mortality			DALYs		
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total
GEORGIA	<b>All causes</b>	<b>61 349</b>	<b>100.0</b>	<b>All causes</b>	<b>892 192</b>	<b>100.0</b>
	1. Ischaemic heart disease	26 035	42.4	1. Ischaemic heart disease	163 411	18.3
	2. Cerebrovascular disease	15 680	25.6	2. Cerebrovascular disease	122 449	13.7
	3. Cirrhosis of the liver	1 641	2.7	3. Unipolar depressive disorders	61 490	6.9
	4. Diabetes mellitus	1 202	2.0	4. Perinatal conditions	37 345	4.2
	5. Trachea, bronchus and lung cancer	1 193	1.9	5. Osteoarthritis	24 362	2.7
	6. Perinatal conditions	950	1.5	6. Drug-use disorders	21 844	2.4
	7. Breast cancer	879	1.4	7. Cirrhosis of the liver	21 203	2.4
	8. Lower respiratory infections	872	1.4	8. Hearing loss, adult onset	19 467	2.2
	9. Stomach cancer	828	1.3	9. Diabetes mellitus	17 864	2.0
	10. Tuberculosis	729	1.2	10. Vision disorders, age-related	17 793	2.0
GERMANY	<b>All causes</b>	<b>815 401</b>	<b>100.0</b>	<b>All causes</b>	<b>10 414 377</b>	<b>100.0</b>
	1. Ischaemic heart disease	172 717	21.2	1. Ischaemic heart disease	871 228	8.4
	2. Cerebrovascular disease	79 326	9.7	2. Unipolar depressive disorders	818 642	7.9
	3. Trachea, bronchus and lung cancer	42 079	5.2	3. Alcohol-use disorders	521 875	5.0
	4. Colon and rectum cancer	32 424	4.0	4. Cerebrovascular disease	513 718	4.9
	5. Chronic obstructive pulmonary disease	21 948	2.7	5. Hearing loss, adult onset	393 423	3.8
	6. Diabetes mellitus	20 873	2.6	6. Alzheimer's and other dementias	377 824	3.6
	7. Lower respiratory infections	20 608	2.5	7. Trachea, bronchus and lung cancer	353 787	3.4
	8. Breast cancer	19 660	2.4	8. Chronic obstructive pulmonary disease	334 100	3.2
	9. Hypertensive heart disease	18 302	2.2	9. Cirrhosis of the liver	264 492	2.5
	10. Cirrhosis of the liver	17 979	2.2	10. Osteoarthritis	251 575	2.4
GREECE	<b>All causes</b>	<b>113 981</b>	<b>100.0</b>	<b>All causes</b>	<b>1 393 137</b>	<b>100.0</b>
	1. Cerebrovascular disease	22 694	19.9	1. Cerebrovascular disease	130 517	9.4
	2. Ischaemic heart disease	16 825	14.8	2. Ischaemic heart disease	111 885	8.0
	3. Trachea, bronchus and lung cancer	6 274	5.5	3. Unipolar depressive disorders	72 775	5.2
	4. Colon and rectum cancer	2 948	2.6	4. Road-traffic accidents	51 404	3.7
	5. Upper respiratory infections	2 375	2.1	5. Hearing loss, adult onset	50 397	3.6
	6. Road-traffic accidents	2 152	1.9	6. Alzheimer's and other dementias	50 146	3.6
	7. Liver cancer	2 038	1.8	7. Trachea, bronchus and lung cancer	48 553	3.5
	8. Breast cancer	1 999	1.8	8. Alcohol-use disorders	48 424	3.5
	9. Stomach cancer	1 831	1.6	9. Diabetes mellitus	38 437	2.8
	10. Chronic obstructive pulmonary disease	1 784	1.6	10. Osteoarthritis	32 509	2.3
HUNGARY	<b>All causes</b>	<b>122 161</b>	<b>100.0</b>	<b>All causes</b>	<b>1 778 886</b>	<b>100.0</b>
	1. Ischaemic heart disease	29 420	24.1	1. Ischaemic heart disease	186 226	10.5
	2. Cerebrovascular disease	16 757	13.7	2. Cerebrovascular disease	121 473	6.8
	3. Trachea, bronchus and lung cancer	7 569	6.2	3. Unipolar depressive disorders	104 867	5.9
	4. Cirrhosis of the liver	5 652	4.6	4. Cirrhosis of the liver	93 358	5.2
	5. Colon and rectum cancer	4 596	3.8	5. Alcohol-use disorders	82 576	4.6
	6. Hypertensive heart disease	3 816	3.1	6. Trachea, bronchus and lung cancer	76 036	4.3
	7. Falls	2 853	2.3	7. Hearing loss, adult onset	54 648	3.1
	8. Self-inflicted injuries	2 795	2.3	8. Chronic obstructive pulmonary disease	48 778	2.7
	9. Chronic obstructive pulmonary disease	2 786	2.3	9. Self-inflicted injuries	48 137	2.7
	10. Breast cancer	2 202	1.8	10. Osteoarthritis	46 469	2.6

Table 4 contd

Member State	Mortality				DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total		
ICELAND	<b>All causes</b>	<b>1 905</b>	<b>100.0</b>	<b>All causes</b>	<b>28 340</b>	<b>100.0</b>		
	1. Ischaemic heart disease	416	21.8	1. Unipolar depressive disorders	2 900	10.2		
	2. Cerebrovascular disease	189	9.9	2. Ischaemic heart disease	1 940	6.8		
	3. Trachea, bronchus and lung cancer	115	6.0	3. Cerebrovascular disease	1 192	4.2		
	4. Alzheimer's and other dementias	101	5.3	4. Alzheimer's and other dementias	1 117	3.9		
	5. Lower respiratory infections	89	4.7	5. Hearing loss, adult onset	1 069	3.8		
	6. Chronic obstructive pulmonary disease	71	3.7	6. Chronic obstructive pulmonary disease	1 054	3.7		
	7. Colon and rectum cancer	59	3.1	7. Trachea, bronchus and lung cancer	954	3.4		
	8. Breast cancer	48	2.5	8. Self-inflicted injuries	830	2.9		
	9. Prostate cancer	46	2.4	9. Alcohol-use disorders	778	2.7		
	10. Pancreatic cancer	39	2.0	10. Road-traffic accidents	688	2.4		
IRELAND	<b>All causes</b>	<b>31 236</b>	<b>100.0</b>	<b>All causes</b>	<b>487 635</b>	<b>100.0</b>		
	1. Ischaemic heart disease	6 527	20.9	1. Unipolar depressive disorders	40 534	8.3		
	2. Lower respiratory infections	2 667	8.5	2. Ischaemic heart disease	37 464	7.7		
	3. Cerebrovascular disease	2 650	8.5	3. Alcohol-use disorders	26 143	5.4		
	4. Trachea, bronchus and lung cancer	1 596	5.1	4. Cerebrovascular disease	19 947	4.1		
	5. Chronic obstructive pulmonary disease	1 558	5.0	5. Chronic obstructive pulmonary disease	18 711	3.8		
	6. Colon and rectum cancer	1 014	3.2	6. Hearing loss, adult onset	14 363	2.9		
	7. Breast cancer	742	2.4	7. Alzheimer's and other dementias	12 862	2.6		
	8. Prostate cancer	601	1.9	8. Road-traffic accidents	12 510	2.6		
	9. Lymphomas, multiple myeloma	491	1.6	9. Asthma	12 199	2.5		
	10. Self-inflicted injuries	458	1.5	10. Trachea, bronchus and lung cancer	11 995	2.5		
ISRAEL	<b>All causes</b>	<b>35 355</b>	<b>100.0</b>	<b>All causes</b>	<b>658 655</b>	<b>100.0</b>		
	1. Ischaemic heart disease	5 705	16.1	1. Unipolar depressive disorders	82 393	12.5		
	2. Diabetes mellitus	2 813	8.0	2. Ischaemic heart disease	29 866	4.5		
	3. Cerebrovascular disease	2 233	6.3	3. Diabetes mellitus	22 344	3.4		
	4. Colon and rectum cancer	1 537	4.3	4. Hearing loss, adult onset	20 415	3.1		
	5. Trachea, bronchus and lung cancer	1 239	3.5	5. Alzheimer's and other dementias	18 480	2.8		
	6. Breast cancer	1 172	3.3	6. Perinatal conditions	17 569	2.7		
	7. Chronic obstructive pulmonary disease	968	2.7	7. Cerebrovascular disease	17 345	2.6		
	8. Nephritis and nephrosis	956	2.7	8. Congenital anomalies	16 640	2.5		
	9. Lower respiratory infections	835	2.4	9. Endocrine disorders	15 978	2.4		
	10. Lymphomas, multiple myeloma	804	2.3	10. Drug-use disorders	15 071	2.3		
ITALY	<b>All causes</b>	<b>570 710</b>	<b>100.0</b>	<b>All causes</b>	<b>6 789 291</b>	<b>100.0</b>		
	1. Ischaemic heart disease	92 928	16.3	1. Unipolar depressive disorders	464 873	6.8		
	2. Cerebrovascular disease	69 075	12.1	2. Ischaemic heart disease	450 953	6.6		
	3. Trachea, bronchus and lung cancer	32 114	5.6	3. Cerebrovascular disease	385 564	5.7		
	4. Hypertensive heart disease	20 566	3.6	4. Alzheimer's and other dementias	304 193	4.5		
	5. Chronic obstructive pulmonary disease	20 042	3.5	5. Hearing loss, adult onset	272 459	4.0		
	6. Diabetes mellitus	19 335	3.4	6. Diabetes mellitus	253 447	3.7		
	7. Colon and rectum cancer	17 875	3.1	7. Trachea bronchus lung cancers	238 299	3.5		
	8. Lower respiratory infections	14 604	2.6	8. Alcohol-use disorders	227 530	3.4		
	9. Alzheimer's and other dementias	13 627	2.4	9. Road-traffic accidents	182 555	2.7		
	10. Breast cancer	11 625	2.0	10. Osteoarthritis	177 068	2.6		

Member State	Mortality				DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total		
KAZAKHSTAN	<b>All causes</b>	<b>184 078</b>	<b>100.0</b>	<b>All causes</b>	<b>3 752 121</b>	<b>100.0</b>		
	1. Ischaemic heart disease	51 948	28.2	1. Ischaemic heart disease	409 227	10.9		
	2. Cerebrovascular disease	26 874	14.6	2. Cerebrovascular disease	248 561	6.6		
	3. Poisonings	9 023	4.9	3. Poisonings	186 699	5.0		
	4. Self-inflicted injuries	5 746	3.1	4. Unipolar depressive disorders	163 543	4.4		
	5. Hypertensive heart disease	5 639	3.1	5. Self-inflicted injuries	137 970	3.7		
	6. Chronic obstructive pulmonary disease	5 218	2.8	6. Perinatal conditions	119 481	3.2		
	7. Tuberculosis	4 828	2.6	7. Tuberculosis	118 961	3.2		
	8. Trachea bronchus lung cancers	4 420	2.4	8. Lower respiratory infections	109 198	2.9		
	9. Lower respiratory infections	4 379	2.4	9. Violence	104 789	2.8		
	10. Cirrhosis of the liver	4 358	2.4	10. Chronic obstructive pulmonary disease	97 422	2.6		
KYRGYZSTAN	<b>All causes</b>	<b>45 256</b>	<b>100.0</b>	<b>All causes</b>	<b>1 141 177</b>	<b>100.0</b>		
	1. Ischaemic heart disease	10 850	24.0	1. Perinatal conditions	92 799	8.1		
	2. Cerebrovascular disease	8 366	18.5	2. Cerebrovascular disease	84 183	7.4		
	3. Chronic obstructive pulmonary disease	2 873	6.3	3. Ischaemic heart disease	84 092	7.4		
	4. Perinatal conditions	2 158	4.8	4. Lower respiratory infections	63 417	5.6		
	5. Lower respiratory infections	2 116	4.7	5. Unipolar depressive disorders	57 911	5.1		
	6. Cirrhosis of the liver	1 788	3.9	6. Chronic obstructive pulmonary disease	47 784	4.2		
	7. Tuberculosis	1 047	2.3	7. Congenital anomalies	31 682	2.8		
	8. Stomach cancer	781	1.7	8. Cirrhosis of the liver	31 659	2.8		
	9. Nephritis and nephrosis	768	1.7	9. Tuberculosis	26 126	2.3		
	10. Self-inflicted injuries	750	1.7	10. Diarrhoeal diseases	25 942	2.3		
LATVIA	<b>All causes</b>	<b>33 451</b>	<b>100.0</b>	<b>All causes</b>	<b>482 223</b>	<b>100.0</b>		
	1. Ischaemic heart disease	9 928	29.7	1. Ischaemic heart disease	60 445	12.5		
	2. Cerebrovascular disease	7 278	21.8	2. Cerebrovascular disease	45 102	9.4		
	3. Trachea, bronchus and lung cancer	1 145	3.4	3. Unipolar depressive disorders	24 848	5.2		
	4. Self-inflicted injuries	709	2.1	4. Alcohol-use disorders	20 747	4.3		
	5. Colon and rectum cancer	678	2.0	5. Road-traffic accidents	15 991	3.3		
	6. Inflammatory heart diseases	665	2.0	6. Inflammatory heart diseases	13 916	2.9		
	7. Stomach cancer	652	1.9	7. Self-inflicted injuries	13 328	2.8		
	8. Road-traffic accidents	583	1.7	8. Hearing loss, adult onset	12 823	2.7		
	9. Falls	450	1.3	9. Osteoarthritis	10 804	2.2		
	10. Breast cancer	437	1.3	10. Trachea, bronchus and lung cancer	10 139	2.1		
LITHUANIA	<b>All causes</b>	<b>41 060</b>	<b>100.0</b>	<b>All causes</b>	<b>625 222</b>	<b>100.0</b>		
	1. Ischaemic heart disease	14 662	35.7	1. Ischaemic heart disease	77 874	12.5		
	2. Cerebrovascular disease	5 089	12.4	2. Unipolar depressive disorders	36 789	5.9		
	3. Self-inflicted injuries	1 577	3.8	3. Cerebrovascular disease	34 155	5.5		
	4. Trachea, bronchus and lung cancer	1 467	3.6	4. Self-inflicted injuries	30 657	4.9		
	5. Chronic obstructive pulmonary disease	963	2.3	5. Road-traffic accidents	19 637	3.1		
	6. Colon and rectum cancer	953	2.3	6. Alcohol-use disorders	18 200	2.9		
	7. Stomach cancer	828	2.0	7. Hearing loss, adult onset	18 067	2.9		
	8. Road-traffic accidents	709	1.7	8. Osteoarthritis	15 323	2.5		
	9. Poisonings	670	1.6	9. Violence	14 094	2.3		
	10. Cirrhosis of the liver	666	1.6	10. Trachea, bronchus and lung cancer	12 675	2.0		



Table 4 contd

Member State	Mortality				DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total		
LUXEMBOURG	<b>All causes</b>	<b>3 410</b>	<b>100.0</b>	<b>All causes</b>	<b>55 069</b>	<b>100.0</b>		
	1. Ischaemic heart disease	455	13.3	1. Unipolar depressive disorders	5 255	9.5		
	2. Cerebrovascular disease	390	11.4	2. Alcohol-use disorders	3 324	6.0		
	3. Trachea, bronchus and lung cancer	183	5.4	3. Cerebrovascular disease	2 971	5.4		
	4. Colon and rectum cancer	128	3.7	4. Ischaemic heart disease	2 778	5.0		
	5. Chronic obstructive pulmonary disease	109	3.2	5. Hearing loss, adult onset	1 915	3.5		
	6. Lower respiratory infections	104	3.0	6. Road-traffic accidents	1 800	3.3		
	7. Breast cancer	91	2.7	7. Alzheimer's and other dementias	1 779	3.2		
	8. Alzheimer's and other dementias	89	2.6	8. Chronic obstructive pulmonary disease	1 765	3.2		
	9. Cirrhosis of the liver	75	2.2	9. Trachea, bronchus and lung cancer	1 563	2.8		
	10. Self-inflicted injuries	72	2.1	10. Self-inflicted injuries	1 296	2.4		
MALTA	<b>All causes</b>	<b>2 962</b>	<b>100.0</b>	<b>All causes</b>	<b>43 508</b>	<b>100.0</b>		
	1. Ischaemic heart disease	773	26.1	1. Ischaemic heart disease	4 502	10.3		
	2. Cerebrovascular disease	316	10.7	2. Unipolar depressive disorders	3 182	7.3		
	3. Lower respiratory infections	230	7.8	3. Cerebrovascular disease	2 368	5.4		
	4. Trachea, bronchus and lung cancer	133	4.5	4. Diabetes mellitus	1 875	4.3		
	5. Colon and rectum cancer	98	3.3	5. Hearing loss, adult onset	1 607	3.7		
	6. Diabetes mellitus	92	3.1	6. Alzheimer's and other dementias	1 362	3.1		
	7. Breast cancer	89	3.0	7. Chronic obstructive pulmonary disease	1 338	3.1		
	8. Chronic obstructive pulmonary disease	73	2.5	8. Trachea, bronchus and lung cancer	1 106	2.5		
	9. Skin conditions	54	1.8	9. Alcohol-use disorders	1 050	2.4		
	10. Nephritis and nephrosis	50	1.7	10. Osteoarthritis	1 024	2.4		
MONACO	<b>All causes</b>	<b>261</b>	<b>100.0</b>	<b>All causes</b>	<b>3 876</b>	<b>100.0</b>		
	1. Ischaemic heart disease	27	10.4	1. Unipolar depressive disorders	337	8.7		
	2. Cerebrovascular disease	22	8.4	2. Alcohol-use disorders	213	5.5		
	3. Trachea, bronchus and lung cancer	14	5.2	3. Hearing loss, adult onset	145	3.7		
	4. Lower respiratory infections	11	4.3	4. Cerebrovascular disease	142	3.7		
	5. Colon and rectum cancer	9	3.3	5. Ischaemic heart disease	139	3.6		
	6. Chronic obstructive pulmonary disease	8	3.1	6. Alzheimer's and other dementias	138	3.6		
	7. Endocrine disorders	6	2.4	7. Chronic obstructive pulmonary disease	117	3.0		
	8. Breast cancer	6	2.3	8. Trachea, bronchus and lung cancer	115	3.0		
	9. Falls	5	2.0	9. Road-traffic accidents	107	2.8		
	10. Diabetes mellitus	5	1.9	10. Endocrine disorders	104	2.7		
NETHERLANDS	<b>All causes</b>	<b>139 374</b>	<b>100.0</b>	<b>All causes</b>	<b>1 868 545</b>	<b>100.0</b>		
	1. Ischaemic heart disease	19 045	13.7	1. Unipolar depressive disorders	145 864	7.8		
	2. Cerebrovascular disease	12 459	8.9	2. Ischaemic heart disease	116 880	6.3		
	3. Trachea, bronchus and lung cancer	9 054	6.5	3. Chronic obstructive pulmonary disease	97 583	5.2		
	4. Lower respiratory infections	8 016	5.8	4. Cerebrovascular disease	86 157	4.6		
	5. Chronic obstructive pulmonary disease	7 226	5.2	5. Trachea, bronchus and lung cancer	72 975	3.9		
	6. Alzheimer's and other dementias	5 847	4.2	6. Alzheimer's and other dementias	70 892	3.8		
	7. Colon and rectum cancer	5 133	3.7	7. Hearing loss, adult onset	69 337	3.7		
	8. Breast cancer	3 956	2.8	8. Alcohol-use disorders	68 738	3.7		
	9. Diabetes mellitus	3 582	2.6	9. Osteoarthritis	43 099	2.3		
	10. Prostate cancer	2 914	2.1	10. Breast cancer	42 988	2.3		

Member State	Mortality			DALYs		
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total
NORWAY	<b>All causes</b>	<b>45 207</b>	<b>100.0</b>	<b>All causes</b>	<b>520 406</b>	<b>100.0</b>
	1. Ischaemic heart disease	8 886	19.7	1. Unipolar depressive disorders	46 167	8.9
	2. Cerebrovascular disease	4 817	10.7	2. Ischaemic heart disease	39 668	7.6
	3. Lower respiratory infections	2 749	6.1	3. Cerebrovascular disease	25 324	4.9
	4. Trachea, bronchus and lung cancer	1 885	4.2	4. Chronic obstructive pulmonary disease	23 033	4.4
	5. Colon and rectum cancer	1 868	4.1	5. Alzheimer's and other dementias	21 191	4.1
	6. Chronic obstructive pulmonary disease	1 684	3.7	6. Hearing loss, adult onset	18 755	3.6
	7. Prostate cancer	1 281	2.8	7. Alcohol-use disorders	15 226	2.9
	8. Alzheimer's and other dementias	1 087	2.4	8. Trachea, bronchus and lung cancer	14 948	2.9
	9. Falls	943	2.1	9. Drug-use disorders	13 063	2.5
	10. Breast cancer	892	2.0	10. Colon and rectum cancer	12 637	2.4
POLAND	<b>All causes</b>	<b>351 944</b>	<b>100.0</b>	<b>All causes</b>	<b>5 832 411</b>	<b>100.0</b>
	1. Ischaemic heart disease	77 151	21.9	1. Ischaemic heart disease	533 090	9.1
	2. Cerebrovascular disease	43 032	12.2	2. Unipolar depressive disorders	467 645	8.0
	3. Trachea, bronchus and lung cancer	22 831	6.5	3. Cerebrovascular disease	337 626	5.8
	4. Colon and rectum cancer	11 186	3.2	4. Trachea, bronchus and lung cancer	214 605	3.7
	5. Stomach cancer	7 039	2.0	5. Osteoarthritis	182 809	3.1
	6. Lower respiratory infections	6 818	1.9	6. Alcohol-use disorders	178 498	3.1
	7. Self-inflicted injuries	6 692	1.9	7. Road-traffic accidents	152 199	2.6
	8. Road-traffic accidents	6 012	1.7	8. Hearing loss, adult onset	142 890	2.4
	9. Breast cancer	5 948	1.7	9. Self-inflicted injuries	137 566	2.4
	10. Chronic obstructive pulmonary disease	5 941	1.7	10. Vision disorders, age-related	127 710	2.2
PORTUGAL	<b>All causes</b>	<b>94 312</b>	<b>100.0</b>	<b>All causes</b>	<b>1 415 476</b>	<b>100.0</b>
	1. Cerebrovascular disease	20 069	21.3	1. Cerebrovascular disease	145 965	10.3
	2. Ischaemic heart disease	10 927	11.6	2. Unipolar depressive disorders	76 723	5.4
	3. Lower respiratory infections	5 384	5.7	3. Ischaemic heart disease	69 821	4.9
	4. Diabetes mellitus	3 402	3.6	4. Alcohol-use disorders	60 323	4.3
	5. Colon and rectum cancer	3 241	3.4	5. Hearing loss, adult onset	43 514	3.1
	6. Trachea, bronchus and lung cancer	3 154	3.3	6. Road-traffic accidents	43 328	3.1
	7. Stomach cancer	2 952	3.1	7. Alzheimer's and other dementias	43 191	3.1
	8. Chronic obstructive pulmonary disease	2 569	2.7	8. Chronic obstructive pulmonary disease	42 410	3.0
	9. Prostate cancer	1 911	2.0	9. Diabetes mellitus	41 896	3.0
	10. Cirrhosis of the liver	1 896	2.0	10. HIV/AIDS	36 983	2.6
REPUBLIC OF MOLDOVA	<b>All causes</b>	<b>48 206</b>	<b>100.0</b>	<b>All causes</b>	<b>883 014</b>	<b>100.0</b>
	1. Ischaemic heart disease	18 559	38.5	1. Ischaemic heart disease	110 615	12.5
	2. Cerebrovascular disease	7 848	16.3	2. Cerebrovascular disease	72 774	8.2
	3. Cirrhosis of the liver	3 809	7.9	3. Alcohol-use disorders	61 483	7.0
	4. Chronic obstructive pulmonary disease	1 671	3.5	4. Cirrhosis of the liver	53 605	6.1
	5. Trachea, bronchus and lung cancer	950	2.0	5. Unipolar depressive disorders	46 127	5.2
	6. Lower respiratory infections	845	1.8	6. Chronic obstructive pulmonary disease	22 884	2.6
	7. Self-inflicted injuries	782	1.6	7. Congenital anomalies	20 936	2.4
	8. Tuberculosis	694	1.4	8. Road-traffic accidents	20 004	2.3
	9. Colon and rectum cancer	686	1.4	9. Hearing loss, adult onset	19 937	2.3
	10. Road-traffic accidents	670	1.4	10. Lower respiratory infections	17 593	2.0

Table 4 contd

Member State	Mortality			DALYs		
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total
ROMANIA	<b>All causes</b>	<b>258 675</b>	<b>100.0</b>	<b>All causes</b>	<b>4 106 104</b>	<b>100.0</b>
	1. Ischaemic heart disease	60 718	23.5	1. Cerebrovascular disease	416 656	10.1
	2. Cerebrovascular disease	52 272	20.2	2. Ischaemic heart disease	403 640	9.8
	3. Hypertensive heart disease	16 858	6.5	3. Unipolar depressive disorders	268 936	6.5
	4. Cirrhosis of the liver	10 996	4.3	4. Cirrhosis of the liver	159 426	3.9
	5. Trachea, bronchus and lung cancer	8 904	3.4	5. Alcohol-use disorders	125 986	3.1
	6. Lower respiratory infections	6 367	2.5	6. Osteoarthritis	107 647	2.6
	7. Chronic obstructive pulmonary disease	5 743	2.2	7. Lower respiratory infections	104 787	2.6
	8. Colon and rectum cancer	4 612	1.8	8. Hypertensive heart disease	103 018	2.5
	9. Stomach cancer	4 394	1.7	9. Trachea, bronchus and lung cancer	91 790	2.2
	10. Breast cancer	3 392	1.3	10. Hearing loss, adult onset	86 627	2.1
RUSSIAN FEDERATION	<b>All causes</b>	<b>2 405 721</b>	<b>100.0</b>	<b>All causes</b>	<b>39 409 946</b>	<b>100.0</b>
	1. Ischaemic heart disease	711 571	29.6	1. Ischaemic heart disease	5 472 308	13.9
	2. Cerebrovascular disease	533 675	22.2	2. Cerebrovascular disease	3 930 367	10.0
	3. Poisonings	66 930	2.8	3. Unipolar depressive disorders	1 574 695	4.0
	4. Self-inflicted injuries	59 015	2.5	4. Violence	1 459 927	3.7
	5. Trachea, bronchus and lung cancer	58 899	2.4	5. Self-inflicted injuries	1 297 152	3.3
	6. Violence	47 461	2.0	6. Road-traffic accidents	1 292 752	3.3
	7. Road-traffic accidents	44 580	1.9	7. Poisonings	1 272 366	3.2
	8. Stomach cancer	44 557	1.9	8. Alcohol-use disorders	1 258 936	3.2
	9. Colon and rectum cancer	38 141	1.6	9. Hearing loss, adult onset	765 988	1.9
	10. Cirrhosis of the liver	37 426	1.6	10. Tuberculosis	700 997	1.8
SAN MARINO	<b>All causes</b>	<b>260</b>	<b>100.0</b>	<b>All causes</b>	<b>3 042</b>	<b>100.0</b>
	1. Ischaemic heart disease	40	15.4	1. Unipolar depressive disorders	245	8.1
	2. Cerebrovascular disease	26	9.9	2. Ischaemic heart disease	219	7.2
	3. Trachea, bronchus and lung cancer	18	6.8	3. Cerebrovascular disease	158	5.2
	4. Stomach cancer	12	4.4	4. Hearing loss, adult onset	130	4.3
	5. Lower respiratory infections	9	3.3	5. Alzheimer's and other dementias	129	4.2
	6. Lymphomas, multiple myeloma	8	3.2	6. Trachea, bronchus and lung cancer	116	3.8
	7. Colon and rectum cancer	6	2.4	7. Alcohol-use disorders	107	3.5
	8. Prostate cancer	5	1.9	8. Osteoarthritis	84	2.8
	9. Inflammatory heart diseases	5	1.9	9. Road-traffic accidents	81	2.7
	10. Breast cancer	4	1.6	10. Diabetes mellitus	78	2.6
SERBIA AND MONTENEGRO	<b>All causes</b>	<b>120 948</b>	<b>100.0</b>	<b>All causes</b>	<b>1 823 369</b>	<b>100.0</b>
	1. Ischaemic heart disease	23 610	19.5	1. Cerebrovascular disease	182 445	10.0
	2. Cerebrovascular disease	21 756	18.0	2. Ischaemic heart disease	173 717	9.5
	3. Trachea, bronchus and lung cancer	4 986	4.1	3. Unipolar depressive disorders	123 248	6.8
	4. Inflammatory heart diseases	4 903	4.1	4. Alcohol-use disorders	64 796	3.6
	5. Diabetes mellitus	3 239	2.7	5. Other genitourinary-system diseases	63 507	3.5
	6. Chronic obstructive pulmonary disease	2 730	2.3	6. Trachea, bronchus and lung cancer	50 952	2.8
	7. Colon and rectum cancer	2 576	2.1	7. Osteoarthritis	49 912	2.7
	8. Breast cancer	1 870	1.5	8. Perinatal conditions	41 560	2.3
	9. Cirrhosis of the liver	1 818	1.5	9. Hearing loss, adult onset	40 272	2.2
	10. Other genitourinary-system diseases	1 810	1.5	10. Diabetes mellitus	38 588	2.1

Member State	Mortality				DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total		
SLOVAKIA	<b>All causes</b>	<b>49 852</b>	<b>100.0</b>	<b>All causes</b>	<b>834 289</b>	<b>100.0</b>		
	1. Ischaemic heart disease	14 609	29.3	1. Ischaemic heart disease	83 412	10.0		
	2. Cerebrovascular disease	4 445	8.9	2. Unipolar depressive disorders	65 871	7.9		
	3. Hypertensive heart disease	3 281	6.6	3. Alcohol-use disorders	33 199	4.0		
	4. Trachea, bronchus and lung cancer	2 112	4.2	4. Cerebrovascular disease	31 508	3.8		
	5. Colon and rectum cancer	1 801	3.6	5. Osteoarthritis	25 284	3.0		
	6. Lower respiratory infections	1 409	2.8	6. Hypertensive heart disease	22 720	2.7		
	7. Cirrhosis of the liver	1 313	2.6	7. Cirrhosis of the liver	22 621	2.7		
	8. Breast cancer	852	1.7	8. Hearing loss, adult onset	19 526	2.3		
	9. Stomach cancer	810	1.6	9. Trachea, bronchus and lung cancer	19 263	2.3		
	10. Diabetes mellitus	783	1.6	10. Vision disorders, age-related	16 923	2.0		
SLOVENIA	<b>All causes</b>	<b>18 192</b>	<b>100.0</b>	<b>All causes</b>	<b>282 355</b>	<b>100.0</b>		
	1. Ischaemic heart disease	2 803	15.4	1. Unipolar depressive disorders	26 947	9.5		
	2. Cerebrovascular disease	2 003	11.0	2. Ischaemic heart disease	17 813	6.3		
	3. Trachea, bronchus and lung cancer	982	5.4	3. Cerebrovascular disease	17 284	6.1		
	4. Inflammatory heart diseases	793	4.4	4. Alcohol-use disorders	12 595	4.5		
	5. Cirrhosis of the liver	786	4.3	5. Cirrhosis of the liver	12 094	4.3		
	6. Colon and rectum cancer	651	3.6	6. Self-inflicted injuries	10 458	3.7		
	7. Chronic obstructive pulmonary disease	608	3.3	7. Trachea, bronchus and lung cancer	9 154	3.2		
	8. Self-inflicted injuries	586	3.2	8. Hearing loss, adult onset	8 854	3.1		
	9. Lower respiratory infections	575	3.2	9. Road-traffic accidents	8 247	2.9		
	10. Diabetes mellitus	564	3.1	10. Chronic obstructive pulmonary disease	7 919	2.8		
SPAIN	<b>All causes</b>	<b>355 695</b>	<b>100.0</b>	<b>All causes</b>	<b>4 951 588</b>	<b>100.0</b>		
	1. Ischaemic heart disease	45 018	12.7	1. Unipolar depressive disorders	274 925	5.6		
	2. Cerebrovascular disease	34 880	9.8	2. Ischaemic heart disease	254 464	5.1		
	3. Trachea, bronchus and lung cancer	18 298	5.1	3. Alcohol-use disorders	227 749	4.6		
	4. Alzheimer's and other dementias	17 341	4.9	4. Cerebrovascular disease	220 220	4.4		
	5. Chronic obstructive pulmonary disease	17 148	4.8	5. Alzheimer's and other dementias	216 950	4.4		
	6. Colon and rectum cancer	13 127	3.7	6. Hearing loss, adult onset	179 798	3.6		
	7. Diabetes mellitus	9 965	2.8	7. Chronic obstructive pulmonary disease	165 829	3.3		
	8. Lower respiratory infections	9 805	2.8	8. Road-traffic accidents	165 584	3.3		
	9. Stomach cancer	6 569	1.8	9. Trachea, bronchus and lung cancer	154 604	3.1		
	10. Road-traffic accidents	6 489	1.8	10. Drug-use disorders	145 699	2.9		
SWEDEN	<b>All causes</b>	<b>91 085</b>	<b>100.0</b>	<b>All causes</b>	<b>977 415</b>	<b>100.0</b>		
	1. Ischaemic heart disease	20 122	22.1	1. Unipolar depressive disorders	95 031	9.7		
	2. Cerebrovascular disease	9 984	11.0	2. Ischaemic heart disease	86 116	8.8		
	3. Alzheimer's and other dementias	5 024	5.5	3. Cerebrovascular disease	52 520	5.4		
	4. Lower respiratory infections	3 114	3.4	4. Alzheimer's and other dementias	52 277	5.3		
	5. Trachea, bronchus and lung cancer	2 954	3.2	5. Hearing loss, adult onset	39 099	4.0		
	6. Prostate cancer	2 742	3.0	6. Alcohol-use disorders	35 028	3.6		
	7. Colon and rectum cancer	2 702	3.0	7. Chronic obstructive pulmonary disease	28 598	2.9		
	8. Chronic obstructive pulmonary disease	2 341	2.6	8. Osteoarthritis	25 508	2.6		
	9. Diabetes mellitus	1 994	2.2	9. Trachea, bronchus and lung cancer	22 603	2.3		
	10. Breast cancer	1 637	1.8	10. Self-inflicted injuries	20 218	2.1		

Table 4 contd

Member State	Mortality				DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total		
SWITZERLAND	<b>All causes</b>	<b>60 919</b>	<b>100.0</b>	<b>All causes</b>	<b>798 617</b>	<b>100.0</b>		
	1. Ischaemic heart disease	10 746	17.6	1. Unipolar depressive disorders	82 410	10.3		
	2. Cerebrovascular disease	4 508	7.4	2. Ischaemic heart disease	49 624	6.2		
	3. Trachea, bronchus and lung cancer	2 893	4.7	3. Alzheimer's and other dementias	37 445	4.7		
	4. Alzheimer's and other dementias	2 867	4.7	4. Alcohol-use disorders	36 543	4.6		
	5. Lower respiratory infections	2 518	4.1	5. Hearing loss, adult onset	33 189	4.2		
	6. Chronic obstructive pulmonary disease	1 980	3.2	6. Cerebrovascular disease	26 201	3.3		
	7. Diabetes mellitus	1 855	3.0	7. Trachea, bronchus and lung cancer	24 504	3.1		
	8. Colon and rectum cancer	1 801	3.0	8. Chronic obstructive pulmonary disease	22 679	2.8		
	9. Prostate cancer	1 514	2.5	9. Self-inflicted injuries	22 172	2.8		
	10. Hypertensive heart disease	1 374	2.3	10. Osteoarthritis	21 426	2.7		
TAJIKISTAN	<b>All causes</b>	<b>54 286</b>	<b>100.0</b>	<b>All causes</b>	<b>1 374 273</b>	<b>100.0</b>		
	1. Ischaemic heart disease	11 447	21.1	1. Perinatal conditions	132 906	9.7		
	2. Hypertensive heart disease	6 276	11.6	2. Lower respiratory infections	125 475	9.1		
	3. Lower respiratory infections	5 474	10.1	3. Ischaemic heart disease	83 634	6.1		
	4. Perinatal conditions	3 088	5.7	4. Unipolar depressive disorders	68 596	5.0		
	5. Cerebrovascular disease	3 048	5.6	5. Diarrhoeal diseases	68 332	5.0		
	6. Diarrhoeal diseases	2 032	3.7	6. Hypertensive heart disease	47 926	3.5		
	7. Cirrhosis of the liver	1 303	2.4	7. Meningitis	37 258	2.7		
	8. Tuberculosis	1 155	2.1	8. Tuberculosis	28 984	2.1		
	9. Meningitis	1 096	2.0	9. Chronic obstructive pulmonary disease	25 759	1.9		
	10. Chronic obstructive pulmonary disease	1 028	1.9	10. Cerebrovascular disease	25 174	1.8		
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA	<b>All causes</b>	<b>18 972</b>	<b>100.0</b>	<b>All causes</b>	<b>326 031</b>	<b>100.0</b>		
	1. Cerebrovascular disease	3 772	19.9	1. Cerebrovascular disease	30 091	9.2		
	2. Inflammatory heart diseases	3 219	17.0	2. War	26 142	8.0		
	3. Ischaemic heart disease	2 544	13.4	3. Unipolar depressive disorders	24 263	7.4		
	4. War	803	4.2	4. Ischaemic heart disease	22 280	6.8		
	5. Trachea, bronchus and lung cancer	674	3.6	5. Inflammatory heart diseases	17 853	5.5		
	6. Diabetes mellitus	615	3.2	6. Perinatal conditions	10 232	3.1		
	7. Hypertensive heart disease	475	2.5	7. Osteoarthritis	9 167	2.8		
	8. Stomach cancer	392	2.1	8. Hearing loss, adult onset	7 171	2.2		
	9. Colon and rectum cancer	369	1.9	9. Trachea, bronchus and lung cancer	7 150	2.2		
	10. Chronic obstructive pulmonary disease	309	1.6	10. Diabetes mellitus	6 610	2.0		
TURKEY	<b>All causes</b>	<b>436 920</b>	<b>100.0</b>	<b>All causes</b>	<b>11 449 790</b>	<b>100.0</b>		
	1. Ischaemic heart disease	102 552	23.5	1. Ischaemic heart disease	842 438	7.4		
	2. Cerebrovascular disease	62 782	14.4	2. Unipolar depressive disorders	818 907	7.2		
	3. Perinatal conditions	19 513	4.5	3. Perinatal conditions	767 718	6.7		
	4. Chronic obstructive pulmonary disease	18 221	4.2	4. Cerebrovascular disease	730 232	6.4		
	5. Lower respiratory infections	12 891	3.0	5. Lower respiratory infections	383 673	3.4		
	6. Hypertensive heart disease	11 680	2.7	6. Chronic obstructive pulmonary disease	317 991	2.8		
	7. Trachea, bronchus and lung cancer	10 121	2.3	7. Congenital anomalies	310 417	2.7		
	8. Meningitis	7 642	1.7	8. Osteoarthritis	252 122	2.2		
	9. Diarrhoeal diseases	6 942	1.6	9. Meningitis	249 240	2.2		
	10. Congenital anomalies	6 679	1.5	10. Diarrhoeal diseases	235 894	2.1		

Member State	Mortality		DALYs			
	Causes	Total deaths	% of total	Causes	Total DALYs	% of total
TURKMENISTAN	<b>All causes</b>	<b>41 735</b>	<b>100.0</b>	<b>All causes</b>	<b>1 070 033</b>	<b>100.0</b>
	1. Ischaemic heart disease	11 671	28.0	1. Lower respiratory infections	114 409	10.7
	2. Hypertensive heart disease	5 068	12.1	2. Ischaemic heart disease	102 191	9.6
	3. Lower respiratory infections	3 720	8.9	3. Unipolar depressive disorders	55 051	5.1
	4. Cerebrovascular disease	2 182	5.2	4. Hypertensive heart disease	51 101	4.8
	5. Tuberculosis	1 491	3.6	5. Perinatal conditions	40 553	3.8
	6. Cirrhosis of the liver	1 421	3.4	6. Diarrhoeal diseases	38 911	3.6
	7. Diarrhoeal diseases	1 097	2.6	7. Tuberculosis	36 958	3.5
	8. Perinatal conditions	910	2.2	8. Cirrhosis of the liver	28 496	2.7
	9. Self-inflicted injuries	599	1.4	9. Cerebrovascular disease	22 071	2.1
	10. Diabetes mellitus	552	1.3	10. Congenital anomalies	17 493	1.6
UKRAINE	<b>All causes</b>	<b>782 993</b>	<b>100.0</b>	<b>All causes</b>	<b>11 340 794</b>	<b>100.0</b>
	1. Ischaemic heart disease	335 610	42.9	1. Ischaemic heart disease	2 067 811	18.2
	2. Cerebrovascular disease	126 117	16.1	2. Cerebrovascular disease	958 442	8.5
	3. Chronic obstructive pulmonary disease	25 304	3.2	3. Unipolar depressive disorders	525 321	4.6
	4. Trachea, bronchus and lung cancer	18 953	2.4	4. HIV/AIDS	354 531	3.1
	5. Self-inflicted injuries	17 520	2.2	5. Self-inflicted injuries	339 304	3.0
	6. Poisonings	16 577	2.1	6. Chronic obstructive pulmonary disease	321 391	2.8
	7. Stomach cancer	12 629	1.6	7. Poisonings	312 298	2.8
	8. Cirrhosis of the liver	12 459	1.6	8. Hearing loss, adult onset	266 302	2.3
	9. Colon and rectum cancer	12 413	1.6	9. Violence	241 668	2.1
	10. HIV/AIDS	12 223	1.6	10. Cirrhosis of the liver	224 442	2.0
UNITED KINGDOM	<b>All causes</b>	<b>599 344</b>	<b>100.0</b>	<b>All causes</b>	<b>7 555 040</b>	<b>100.0</b>
	1. Ischaemic heart disease	120 530	20.1	1. Ischaemic heart disease	653 004	8.6
	2. Lower respiratory infections	65 395	10.9	2. Unipolar depressive disorders	586 613	7.8
	3. Cerebrovascular disease	59 322	9.9	3. Chronic obstructive pulmonary disease	366 584	4.9
	4. Trachea, bronchus and lung cancer	33 314	5.6	4. Cerebrovascular disease	365 846	4.8
	5. Chronic obstructive pulmonary disease	28 421	4.7	5. Alcohol-use disorders	277 584	3.7
	6. Colon and rectum cancer	19 350	3.2	6. Alzheimer's and other dementias	276 347	3.7
	7. Breast cancer	14 989	2.5	7. Hearing loss, adult onset	252 668	3.3
	8. Alzheimer's and other dementias	13 162	2.2	8. Trachea, bronchus and lung cancer	229 789	3.0
	9. Prostate cancer	10 995	1.8	9. Lower respiratory infections	226 081	3.0
	10. Lymphomas, multiple myeloma	8 431	1.4	10. Drug-use disorders	162 131	2.1
UZBEKISTAN	<b>All causes</b>	<b>171 512</b>	<b>100.0</b>	<b>All causes</b>	<b>4 300 427</b>	<b>100.0</b>
	1. Ischaemic heart disease	55 693	32.5	1. Ischaemic heart disease	379 347	8.8
	2. Cerebrovascular disease	23 436	13.7	2. Lower respiratory infections	339 614	7.9
	3. Lower respiratory infections	10 922	6.4	3. Unipolar depressive disorders	294 066	6.8
	4. Hypertensive heart disease	9 004	5.2	4. Perinatal conditions	207 600	4.8
	5. Cirrhosis of the liver	6 695	3.9	5. Cerebrovascular disease	183 670	4.3
	6. Perinatal conditions	4 854	2.8	6. Cirrhosis of the liver	132 821	3.1
	7. Inflammatory heart diseases	4 479	2.6	7. Tuberculosis	107 645	2.5
	8. Tuberculosis	4 384	2.6	8. Congenital anomalies	92 923	2.2
	9. Chronic obstructive pulmonary disease	3 400	2.0	9. Hearing loss, adult onset	92 032	2.1
	10. Diabetes mellitus	2 955	1.7	10. Anaemia	86 482	2.0

Table 5. Shares of total deaths and DALYs attributable to 10 leading risk factors in the WHO European Region, 2002

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
ALBANIA	1. High blood pressure	22.0	1. Tobacco	9.2
	2. Tobacco	21.6	2. High blood pressure	7.5
	3. High cholesterol	11.0	3. Alcohol	6.5
	4. High BMI	10.0	4. High BMI	5.2
	5. Low fruit and vegetable intake	6.3	5. High cholesterol	4.4
	6. Alcohol	5.7	6. Low fruit and vegetable intake	2.5
	7. Physical inactivity	5.3	7. Physical inactivity	2.2
	8. Urban outdoor air pollution	1.7	8. Indoor smoke from solid-fuel use	1.5
	9. Indoor smoke from solid-fuel use	1.3	9. Childhood and maternal underweight	1.3
	10. Lead	1.1	10. Lead	1.3
ANDORRA	1. Tobacco	16.6	1. Tobacco	11.2
	2. High blood pressure	14.5	2. Alcohol	8.6
	3. High BMI	7.5	3. High BMI	5.8
	4. Physical inactivity	4.0	4. High blood pressure	5.5
	5. Low fruit and vegetable intake	2.8	5. Physical inactivity	2.2
	6. Alcohol	1.2	6. Illicit drugs	2.2
	7. Unsafe sex	0.9	7. Low fruit and vegetable intake	1.5
	8. Occupational airborne particulate matter	0.7	8. Unsafe sex	1.4
	9. Illicit drugs	0.6	9. Iron deficiency	0.6
	10. Urban outdoor air pollution	0.5	10. Occupational airborne particulate matter	0.5
ARMENIA	1. High blood pressure	22.9	1. Tobacco	12.3
	2. Tobacco	19.6	2. High BMI	9.9
	3. High BMI	18.5	3. High blood pressure	8.5
	4. High cholesterol	17.5	4. High cholesterol	7.8
	5. Physical inactivity	9.2	5. Alcohol	4.6
	6. Low fruit and vegetable intake	9.0	6. Physical inactivity	4.2
	7. Alcohol	4.8	7. Low fruit and vegetable intake	4.0
	8. Urban outdoor air pollution	2.2	8. Unsafe sex	2.0
	9. Indoor smoke from solid-fuel use	1.6	9. Iron deficiency	1.9
	10. Lead	1.3	10. Indoor smoke from solid-fuel use	1.2
AUSTRIA	1. High blood pressure	22.8	1. Tobacco	11.0
	2. Tobacco	15.8	2. Alcohol	9.2
	3. High cholesterol	14.3	3. High blood pressure	8.9
	4. High BMI	9.6	4. High BMI	6.7
	5. Physical inactivity	6.0	5. High cholesterol	6.6
	6. Low fruit and vegetable intake	4.2	6. Physical inactivity	3.0
	7. Alcohol	2.2	7. Low fruit and vegetable intake	2.2
	8. Unsafe sex	0.8	8. Illicit drugs	1.8
	9. Urban outdoor air pollution	0.5	9. Unsafe sex	1.0
	10. Illicit drugs	0.4	10. Childhood sexual abuse	0.5
AZERBAIJAN	1. High blood pressure	21.6	1. High BMI	7.8
	2. High cholesterol	17.8	2. Tobacco	6.9
	3. High BMI	15.8	3. High cholesterol	6.8
	4. Tobacco	9.9	4. High blood pressure	6.7
	5. Low fruit and vegetable intake	9.0	5. Alcohol	3.8
	6. Physical inactivity	8.5	6. Low fruit and vegetable intake	3.5
	7. Alcohol	5.1	7. Physical inactivity	3.4
	8. Indoor smoke from solid-fuel use	2.5	8. Indoor smoke from solid-fuel use	3.3
	9. Urban outdoor air pollution	2.0	9. Childhood and maternal underweight	2.7
	10. Childhood and maternal underweight	1.7	10. Iron deficiency	2.5

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
BELARUS	1. High blood pressure	35.3	1. High blood pressure	16.7
	2. High cholesterol	29.2	2. Alcohol	14.3
	3. Tobacco	15.4	3. High cholesterol	14.1
	4. Low fruit and vegetable intake	15.4	4. Tobacco	11.6
	5. High BMI	13.4	5. High BMI	9.6
	6. Physical inactivity	10.9	6. Low fruit and vegetable intake	7.9
	7. Alcohol	10.1	7. Physical inactivity	5.5
	8. Urban outdoor air pollution	1.4	8. Illicit drugs	2.2
	9. Illicit drugs	1.3	9. Unsafe sex	1.4
	10. Lead	1.1	10. Lead	1.1
BELGIUM	1. Tobacco	23.3	1. Tobacco	15.8
	2. High blood pressure	13.4	2. Alcohol	6.6
	3. High cholesterol	11.2	3. High cholesterol	6.1
	4. High BMI	7.3	4. High blood pressure	6.1
	5. Physical inactivity	4.5	5. High BMI	5.9
	6. Low fruit and vegetable intake	3.3	6. Physical inactivity	2.6
	7. Occupational airborne particulate matter	0.7	7. Low fruit and vegetable intake	1.9
	8. Unsafe sex	0.7	8. Illicit drugs	1.6
	9. Urban outdoor air pollution	0.5	9. Unsafe sex	0.8
	10. Occupational carcinogens	0.5	10. Occupational airborne particulate matter	0.7
BOSNIA AND HERZEGOVINA	1. High blood pressure	28.5	1. Tobacco	14.7
	2. Tobacco	21.1	2. High blood pressure	13.3
	3. High cholesterol	10.6	3. High BMI	7.4
	4. High BMI	10.3	4. High cholesterol	6.0
	5. Low fruit and vegetable intake	5.8	5. Alcohol	5.8
	6. Physical inactivity	5.3	6. Low fruit and vegetable intake	3.2
	7. Alcohol	4.0	7. Physical inactivity	3.0
	8. Urban outdoor air pollution	1.9	8. Lead	1.2
	9. Lead	1.1	9. Illicit drugs	1.2
	10. Illicit drugs	0.5	10. Urban outdoor air pollution	0.8
BULGARIA	1. High blood pressure	40.0	1. High blood pressure	20.4
	2. High cholesterol	14.3	2. Tobacco	12.4
	3. High BMI	14.2	3. High BMI	10.9
	4. Tobacco	13.5	4. High cholesterol	8.4
	5. Low fruit and vegetable intake	7.4	5. Alcohol	7.9
	6. Physical inactivity	7.1	6. Low fruit and vegetable intake	4.3
	7. Alcohol	6.5	7. Physical inactivity	4.3
	8. Urban outdoor air pollution	2.0	8. Illicit drugs	1.8
	9. Lead	1.3	9. Lead	1.3
	10. Unsafe sex	0.8	10. Unsafe sex	1.2
CROATIA	1. High blood pressure	26.4	1. Tobacco	15.8
	2. Tobacco	21.3	2. High blood pressure	13.8
	3. High cholesterol	18.3	3. High cholesterol	10.7
	4. High BMI	11.9	4. Alcohol	9.7
	5. Physical inactivity	6.9	5. High BMI	9.2
	6. Low fruit and vegetable intake	5.2	6. Physical inactivity	4.1
	7. Alcohol	4.1	7. Low fruit and vegetable intake	3.2
	8. Urban outdoor air pollution	0.6	8. Illicit drugs	1.6
	9. Unsafe sex	0.6	9. Unsafe sex	0.8
	10. Occupational carcinogens	0.4	10. Childhood sexual abuse	0.4



Table 5 contd

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
CYPRUS	1. High blood pressure	23.6	1. High blood pressure	8.0
	2. High cholesterol	9.8	2. Tobacco	5.6
	3. Tobacco	9.7	3. High BMI	5.2
	4. Low fruit and vegetable intake	4.8	4. High cholesterol	3.9
	5. Physical inactivity	4.4	5. Physical inactivity	2.4
	6. High BMI	4.3	6. Low fruit and vegetable intake	2.1
	7. Urban outdoor air pollution	1.2	7. Iron deficiency	1.5
	8. Alcohol	0.9	8. Lead	1.2
	9. Iron deficiency	0.4	9. Alcohol	1.1
	10. Unsafe sex	0.4	10. Unsafe sex	1.0
CZECH REPUBLIC	1. High blood pressure	26.8	1. Tobacco	15.5
	2. Tobacco	21.8	2. High blood pressure	12.8
	3. High cholesterol	18.3	3. High cholesterol	9.8
	4. High BMI	11.4	4. High BMI	8.4
	5. Physical inactivity	7.3	5. Alcohol	6.2
	6. Low fruit and vegetable intake	5.2	6. Physical inactivity	4.1
	7. Unsafe sex	0.9	7. Low fruit and vegetable intake	3.0
	8. Urban outdoor air pollution	0.6	8. Unsafe sex	1.2
	9. Occupational carcinogens	0.4	9. Illicit drugs	0.9
	10. Illicit drugs	0.3	10. Iron deficiency	0.5
DENMARK	1. Tobacco	25.7	1. Tobacco	17.7
	2. High blood pressure	11.8	2. Alcohol	7.2
	3. High cholesterol	11.5	3. High BMI	6.3
	4. High BMI	8.4	4. High cholesterol	5.4
	5. Physical inactivity	5.1	5. High blood pressure	5.0
	6. Low fruit and vegetable intake	3.4	6. Physical inactivity	2.7
	7. Occupational airborne particulate matter	0.8	7. Low fruit and vegetable intake	1.8
	8. Unsafe sex	0.8	8. Illicit drugs	1.6
	9. Urban outdoor air pollution	0.5	9. Unsafe sex	1.0
	10. Illicit drugs	0.4	10. Occupational airborne particulate matter	0.8
ESTONIA	1. High blood pressure	28.3	1. Alcohol	15.4
	2. High cholesterol	23.7	2. High blood pressure	12.5
	3. Tobacco	17.4	3. Tobacco	11.9
	4. Low fruit and vegetable intake	12.6	4. High cholesterol	10.1
	5. High BMI	11.4	5. High BMI	7.5
	6. Alcohol	10.9	6. Low fruit and vegetable intake	5.9
	7. Physical inactivity	9.1	7. Physical inactivity	4.1
	8. Urban outdoor air pollution	1.2	8. Illicit drugs	1.3
	9. Lead	0.8	9. Unsafe sex	1.2
	10. Unsafe sex	0.8	10. Lead	0.9
FINLAND	1. High blood pressure	22.0	1. High blood pressure	9.3
	2. High cholesterol	17.3	2. High cholesterol	7.9
	3. Tobacco	13.9	3. Tobacco	7.7
	4. High BMI	8.9	4. Alcohol	6.9
	5. Physical inactivity	6.3	5. High BMI	6.7
	6. Low fruit and vegetable intake	4.5	6. Physical inactivity	3.2
	7. Urban outdoor air pollution	0.6	7. Low fruit and vegetable intake	2.3
	8. Illicit drugs	0.5	8. Illicit drugs	1.4
	9. Unsafe sex	0.5	9. Unsafe sex	0.7
	10. Occupational airborne particulate matter	0.4	10. Childhood sexual abuse	0.5

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
FRANCE	1. Tobacco	16.2	1. Tobacco	12.4
	2. High blood pressure	12.8	2. Alcohol	10.7
	3. High BMI	6.5	3. High blood pressure	4.9
	4. High cholesterol	6.4	4. High BMI	4.7
	5. Alcohol	4.6	5. High cholesterol	3.1
	6. Physical inactivity	3.3	6. Physical inactivity	1.8
	7. Low fruit and vegetable intake	2.3	7. Illicit drugs	1.5
	8. Unsafe sex	0.8	8. Low fruit and vegetable intake	1.3
	9. Occupational airborne particulate matter	0.5	9. Unsafe sex	1.0
	10. Illicit drugs	0.4	10. Iron deficiency	0.5
GEORGIA	1. High blood pressure	48.8	1. High blood pressure	23.5
	2. High cholesterol	22.9	2. High cholesterol	11.9
	3. High BMI	17.3	3. High BMI	11.9
	4. Low fruit and vegetable intake	11.1	4. Tobacco	9.2
	5. Physical inactivity	10.6	5. Low fruit and vegetable intake	5.8
	6. Tobacco	9.3	6. Alcohol	5.8
	7. Alcohol	4.6	7. Physical inactivity	5.6
	8. Urban outdoor air pollution	2.6	8. Illicit drugs	2.6
	9. Lead	1.5	9. Unsafe sex	1.6
	10. Unsafe sex	0.7	10. Lead	1.6
GERMANY	1. High blood pressure	25.9	1. Tobacco	13.7
	2. Tobacco	18.3	2. High blood pressure	11.2
	3. High cholesterol	15.1	3. Alcohol	7.5
	4. High BMI	9.9	4. High cholesterol	7.2
	5. Physical inactivity	5.9	5. High BMI	7.1
	6. Low fruit and vegetable intake	4.1	6. Physical inactivity	3.2
	7. Unsafe sex	0.7	7. Low fruit and vegetable intake	2.2
	8. Urban outdoor air pollution	0.6	8. Illicit drugs	1.7
	9. Occupational airborne particulate matter	0.4	9. Unsafe sex	0.8
	10. Illicit drugs	0.4	10. Iron deficiency	0.5
GREECE	1. High blood pressure	25.0	1. Tobacco	12.9
	2. Tobacco	19.3	2. High blood pressure	11.8
	3. High cholesterol	11.6	3. High BMI	8.5
	4. High BMI	8.3	4. High cholesterol	7.6
	5. Physical inactivity	5.0	5. Alcohol	4.3
	6. Low fruit and vegetable intake	3.9	6. Physical inactivity	3.5
	7. Urban outdoor air pollution	0.6	7. Low fruit and vegetable intake	2.6
	8. Unsafe sex	0.5	8. Illicit drugs	1.7
	9. Occupational carcinogens	0.4	9. Unsafe sex	0.8
	10. Illicit drugs	0.3	10. Iron deficiency	0.5
HUNGARY	1. Tobacco	26.3	1. Tobacco	20.9
	2. High blood pressure	26.0	2. Alcohol	15.5
	3. High cholesterol	17.2	3. High blood pressure	12.2
	4. Alcohol	11.4	4. High cholesterol	8.9
	5. High BMI	11.1	5. High BMI	7.8
	6. Low fruit and vegetable intake	10.3	6. Low fruit and vegetable intake	5.7
	7. Physical inactivity	7.5	7. Physical inactivity	3.9
	8. Urban outdoor air pollution	1.1	8. Unsafe sex	1.0
	9. Occupational carcinogens	0.9	9. Lead	0.9
	10. Lead	0.8	10. Contaminated injections in health care settings	0.8

Table 5 contd

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
ICELAND	1. Tobacco	20.8	1. Tobacco	12.6
	2. High cholesterol	15.2	2. High cholesterol	5.9
	3. High blood pressure	15.0	3. High BMI	5.4
	4. High BMI	8.0	4. High blood pressure	5.2
	5. Physical inactivity	5.6	5. Alcohol	4.8
	6. Low fruit and vegetable intake	4.1	6. Physical inactivity	2.5
	7. Unsafe sex	0.8	7. Illicit drugs	2.1
	8. Urban outdoor air pollution	0.6	8. Low fruit and vegetable intake	1.9
	9. Illicit drugs	0.5	9. Unsafe sex	1.1
	10. Occupational airborne particulate matter	0.4	10. Iron deficiency	0.7
IRELAND	1. Tobacco	23.2	1. Tobacco	11.8
	2. High blood pressure	18.0	2. Alcohol	7.9
	3. High cholesterol	14.4	3. High blood pressure	7.2
	4. High BMI	8.4	4. High cholesterol	6.4
	5. Physical inactivity	5.6	5. High BMI	5.5
	6. Low fruit and vegetable intake	4.1	6. Physical inactivity	2.8
	7. Illicit drugs	0.6	7. Illicit drugs	2.6
	8. Occupational airborne particulate matter	0.6	8. Low fruit and vegetable intake	2.0
	9. Urban outdoor air pollution	0.6	9. Unsafe sex	0.7
	10. Unsafe sex	0.5	10. Occupational airborne particulate matter	0.6
ISRAEL	1. High BMI	12.5	1. Tobacco	6.1
	2. High blood pressure	11.8	2. High BMI	6.0
	3. Tobacco	11.8	3. High blood pressure	3.8
	4. High cholesterol	8.2	4. Alcohol	3.0
	5. Physical inactivity	5.5	5. High cholesterol	2.9
	6. Low fruit and vegetable intake	3.1	6. Illicit drugs	2.7
	7. Unsafe sex	0.6	7. Physical inactivity	2.2
	8. Illicit drugs	0.4	8. Low fruit and vegetable intake	1.2
	9. Urban outdoor air pollution	0.4	9. Unsafe sex	0.8
	10. Occupational airborne particulate matter	0.4	10. Iron deficiency	0.7
ITALY	1. High blood pressure	21.7	1. Tobacco	12.0
	2. Tobacco	18.8	2. High blood pressure	8.9
	3. High cholesterol	11.1	3. High BMI	8.4
	4. High BMI	10.0	4. Alcohol	5.9
	5. Physical inactivity	5.0	5. High cholesterol	5.7
	6. Low fruit and vegetable intake	3.5	6. Physical inactivity	3.1
	7. Unsafe sex	0.6	7. Illicit drugs	2.2
	8. Alcohol	0.6	8. Low fruit and vegetable intake	2.0
	9. Urban outdoor air pollution	0.6	9. Unsafe sex	1.1
	10. Occupational airborne particulate matter	0.5	10. Iron deficiency	0.6
KAZAKHSTAN	1. High blood pressure	29.3	1. Tobacco	13.4
	2. High cholesterol	21.5	2. Alcohol	12.8
	3. Tobacco	19.1	3. High blood pressure	12.3
	4. High BMI	12.5	4. High cholesterol	9.6
	5. Low fruit and vegetable intake	11.8	5. High BMI	7.4
	6. Alcohol	10.9	6. Low fruit and vegetable intake	5.5
	7. Physical inactivity	8.0	7. Physical inactivity	3.5
	8. Indoor smoke from solid-fuel use	1.5	8. Indoor smoke from solid-fuel use	1.7
	9. Lead	1.2	9. Illicit drugs	1.4
	10. Urban outdoor air pollution	1.1	10. Lead	1.2

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
KYRGYZSTAN	1. High blood pressure	19.5	1. Tobacco	6.6
	2. High cholesterol	14.1	2. Alcohol	6.4
	3. High BMI	11.4	3. High blood pressure	6.1
	4. Tobacco	10.7	4. High BMI	5.4
	5. Low fruit and vegetable intake	7.0	5. High cholesterol	5.3
	6. Alcohol	6.9	6. Indoor smoke from solid-fuel use	4.6
	7. Physical inactivity	6.4	7. Childhood and maternal underweight	3.2
	8. Indoor smoke from solid-fuel use	5.2	8. Low fruit and vegetable intake	2.6
	9. Childhood and maternal underweight	2.1	9. Physical inactivity	2.4
	10. Urban outdoor air pollution	1.9	10. Unsafe water, sanitation and hygiene	2.0
LATVIA	1. High blood pressure	31.7	1. Alcohol	15.4
	2. High cholesterol	23.0	2. High blood pressure	14.0
	3. Tobacco	16.5	3. Tobacco	12.0
	4. Low fruit and vegetable intake	12.4	4. High cholesterol	11.0
	5. High BMI	11.1	5. High BMI	7.8
	6. Alcohol	10.8	6. Low fruit and vegetable intake	6.4
	7. Physical inactivity	8.9	7. Physical inactivity	4.4
	8. Urban outdoor air pollution	1.2	8. Illicit drugs	1.9
	9. Unsafe sex	1.0	9. Unsafe sex	1.3
	10. Lead	0.9	10. Lead	0.9
LITHUANIA	1. High blood pressure	33.0	1. Alcohol	14.9
	2. High cholesterol	23.2	2. High blood pressure	13.0
	3. Tobacco	17.8	3. Tobacco	11.5
	4. Low fruit and vegetable intake	12.0	4. High cholesterol	9.2
	5. Alcohol	10.7	5. High BMI	6.9
	6. High BMI	10.5	6. Low fruit and vegetable intake	5.4
	7. Physical inactivity	9.1	7. Physical inactivity	3.9
	8. Urban outdoor air pollution	1.2	8. Unsafe sex	1.3
	9. Unsafe sex	1.1	9. Lead	0.9
	10. Lead	0.8	10. Illicit drugs	0.9
LUXEMBOURG	1. Tobacco	17.7	1. Tobacco	11.3
	2. High blood pressure	15.2	2. Alcohol	10.8
	3. High cholesterol	10.7	3. High blood pressure	6.0
	4. High BMI	7.9	4. High BMI	5.6
	5. Physical inactivity	4.5	5. High cholesterol	5.1
	6. Low fruit and vegetable intake	3.2	6. Physical inactivity	2.3
	7. Alcohol	3.1	7. Illicit drugs	2.2
	8. Unsafe sex	0.6	8. Low fruit and vegetable intake	1.6
	9. Illicit drugs	0.5	9. Unsafe sex	0.8
	10. Urban outdoor air pollution	0.5	10. Iron deficiency	0.6
MALTA	1. High blood pressure	25.0	1. High blood pressure	11.0
	2. High cholesterol	19.9	2. High BMI	9.8
	3. Tobacco	15.4	3. Tobacco	9.7
	4. High BMI	11.7	4. High cholesterol	9.4
	5. Physical inactivity	7.2	5. Physical inactivity	4.1
	6. Low fruit and vegetable intake	4.9	6. Alcohol	3.0
	7. Unsafe sex	0.6	7. Low fruit and vegetable intake	2.5
	8. Urban outdoor air pollution	0.6	8. Unsafe sex	0.9
	9. Occupational airborne particulate matter	0.4	9. Illicit drugs	0.9
	10. Occupational carcinogens	0.3	10. Iron deficiency	0.6

Table 5 contd

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
MONACO	1. Tobacco	15.8	1. Tobacco	10.4
	2. High blood pressure	14.2	2. Alcohol	9.3
	3. High cholesterol	8.0	3. High BMI	5.6
	4. High BMI	6.4	4. High blood pressure	5.2
	5. Physical inactivity	3.5	5. High cholesterol	3.5
	6. Low fruit and vegetable intake	2.5	6. Physical inactivity	2.0
	7. Alcohol	2.3	7. Unsafe sex	1.3
	8. Unsafe sex	0.8	8. Low fruit and vegetable intake	1.3
	9. Illicit drugs	0.4	9. Illicit drugs	1.1
	10. Occupational airborne particulate matter	0.4	10. Iron deficiency	0.6
NETHERLANDS	1. Tobacco	23.7	1. Tobacco	16.7
	2. High blood pressure	17.4	2. High blood pressure	7.8
	3. High cholesterol	8.1	3. High BMI	6.1
	4. High BMI	7.8	4. Alcohol	5.0
	5. Physical inactivity	4.5	5. High cholesterol	4.7
	6. Low fruit and vegetable intake	3.2	6. Physical inactivity	2.7
	7. Occupational airborne particulate matter	0.7	7. Low fruit and vegetable intake	1.9
	8. Unsafe sex	0.6	8. Illicit drugs	1.8
	9. Urban outdoor air pollution	0.5	9. Unsafe sex	0.9
	10. Occupational carcinogens	0.4	10. Occupational airborne particulate matter	0.6
NORWAY	1. High blood pressure	18.8	1. Tobacco	11.8
	2. Tobacco	15.4	2. High blood pressure	7.8
	3. High cholesterol	14.9	3. High cholesterol	7.0
	4. High BMI	7.7	4. High BMI	6.1
	5. Physical inactivity	5.3	5. Alcohol	4.2
	6. Low fruit and vegetable intake	3.6	6. Illicit drugs	3.1
	7. Illicit drugs	1.0	7. Physical inactivity	2.9
	8. Unsafe sex	0.6	8. Low fruit and vegetable intake	1.9
	9. Urban outdoor air pollution	0.5	9. Unsafe sex	0.8
	10. Occupational airborne particulate matter	0.5	10. Iron deficiency	0.6
POLAND	1. Tobacco	25.3	1. Tobacco	16.6
	2. High blood pressure	25.0	2. High blood pressure	10.4
	3. High cholesterol	13.8	3. Alcohol	9.2
	4. High BMI	10.6	4. High BMI	7.1
	5. Alcohol	6.7	5. High cholesterol	6.9
	6. Low fruit and vegetable intake	6.6	6. Low fruit and vegetable intake	3.3
	7. Physical inactivity	6.1	7. Physical inactivity	3.1
	8. Urban outdoor air pollution	1.7	8. Unsafe sex	1.3
	9. Unsafe sex	1.1	9. Illicit drugs	1.2
	10. Lead	0.9	10. Lead	1.0
PORTUGAL	1. High blood pressure	23.0	1. High blood pressure	10.5
	2. Tobacco	12.1	2. Tobacco	10.4
	3. High cholesterol	10.7	3. Alcohol	8.5
	4. High BMI	10.2	4. High BMI	7.9
	5. Physical inactivity	5.0	5. High cholesterol	6.1
	6. Low fruit and vegetable intake	3.6	6. Illicit drugs	3.3
	7. Alcohol	3.1	7. Physical inactivity	2.9
	8. Unsafe sex	1.6	8. Unsafe sex	2.5
	9. Illicit drugs	0.9	9. Low fruit and vegetable intake	2.1
	10. Urban outdoor air pollution	0.5	10. Iron deficiency	0.5

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
REPUBLIC OF MOLDOVA	1. High blood pressure	33.3	1. Alcohol	20.8
	2. High cholesterol	27.3	2. High blood pressure	13.1
	3. Alcohol	17.4	3. High cholesterol	10.6
	4. Low fruit and vegetable intake	14.1	4. Tobacco	9.7
	5. High BMI	13.1	5. High BMI	7.6
	6. Tobacco	12.5	6. Low fruit and vegetable intake	5.9
	7. Physical inactivity	10.3	7. Physical inactivity	4.2
	8. Indoor smoke from solid-fuel use	1.8	8. Indoor smoke from solid-fuel use	1.6
	9. Urban outdoor air pollution	1.3	9. Unsafe sex	1.2
	10. Contaminated injections in health care settings	1.2	10. Lead	1.0
ROMANIA	1. High blood pressure	31.8	1. High blood pressure	13.8
	2. Tobacco	16.3	2. Tobacco	13.1
	3. High cholesterol	14.4	3. Alcohol	12.4
	4. High BMI	13.9	4. High BMI	9.2
	5. Alcohol	12.4	5. High cholesterol	7.5
	6. Low fruit and vegetable intake	7.1	6. Low fruit and vegetable intake	3.7
	7. Physical inactivity	6.6	7. Physical inactivity	3.5
	8. Urban outdoor air pollution	2.1	8. Unsafe sex	1.6
	9. Lead	1.3	9. Lead	1.2
	10. Unsafe sex	1.2	10. Indoor smoke from solid-fuel use	0.9
RUSSIAN FEDERATION	1. High blood pressure	35.5	1. Alcohol	16.5
	2. High cholesterol	23.0	2. High blood pressure	16.3
	3. Tobacco	17.1	3. Tobacco	13.4
	4. Low fruit and vegetable intake	12.9	4. High cholesterol	12.3
	5. High BMI	12.5	5. High BMI	8.5
	6. Alcohol	11.9	6. Low fruit and vegetable intake	7.0
	7. Physical inactivity	9.0	7. Physical inactivity	4.6
	8. Urban outdoor air pollution	1.2	8. Illicit drugs	2.2
	9. Lead	1.2	9. Lead	1.1
	10. Illicit drugs	0.9	10. Unsafe sex	1.0
SAN MARINO	1. High blood pressure	22.2	1. Tobacco	11.0
	2. Tobacco	22.0	2. High blood pressure	9.8
	3. High cholesterol	11.2	3. High BMI	6.8
	4. High BMI	5.8	4. High cholesterol	6.4
	5. Physical inactivity	4.2	5. Alcohol	4.7
	6. Low fruit and vegetable intake	3.6	6. Physical inactivity	2.9
	7. Unsafe sex	0.7	7. Low fruit and vegetable intake	2.2
	8. Occupational carcinogens	0.5	8. Unsafe sex	1.0
	9. Urban outdoor air pollution	0.5	9. Iron deficiency	0.6
	10. Lead	0.1	10. Illicit drugs	0.4
SERBIA AND MONTENEGRO	1. High blood pressure	34.2	1. High blood pressure	16.8
	2. Tobacco	19.7	2. Tobacco	15.3
	3. High BMI	12.1	3. High BMI	8.6
	4. High cholesterol	11.7	4. Alcohol	7.2
	5. Low fruit and vegetable intake	6.4	5. High cholesterol	6.8
	6. Physical inactivity	6.2	6. Low fruit and vegetable intake	3.7
	7. Alcohol	4.1	7. Physical inactivity	3.6
	8. Urban outdoor air pollution	1.9	8. Lead	1.2
	9. Lead	1.1	9. Unsafe sex	1.2
	10. Indoor smoke from solid-fuel use	1.1	10. Illicit drugs	1.1

Table 5 contd

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
SLOVAKIA	1. High blood pressure	29.7	1. Alcohol	13.2
	2. Tobacco	19.2	2. Tobacco	12.2
	3. High cholesterol	14.3	3. High blood pressure	11.4
	4. High BMI	14.0	4. High BMI	8.0
	5. Alcohol	11.5	5. High cholesterol	5.7
	6. Low fruit and vegetable intake	7.4	6. Physical inactivity	3.1
	7. Physical inactivity	7.2	7. Low fruit and vegetable intake	3.1
	8. Urban outdoor air pollution	1.9	8. Illicit drugs	1.7
	9. Lead	1.0	9. Unsafe sex	1.1
	10. Unsafe sex	0.9	10. Lead	1.0
SLOVENIA	1. Tobacco	19.7	1. Tobacco	13.7
	2. High blood pressure	17.8	2. Alcohol	11.4
	3. High cholesterol	12.1	3. High blood pressure	8.2
	4. High BMI	10.0	4. High BMI	6.8
	5. Alcohol	6.5	5. High cholesterol	6.3
	6. Physical inactivity	5.1	6. Physical inactivity	2.8
	7. Low fruit and vegetable intake	3.6	7. Low fruit and vegetable intake	2.1
	8. Unsafe sex	0.8	8. Illicit drugs	1.1
	9. Urban outdoor air pollution	0.5	9. Unsafe sex	0.8
	10. Occupational airborne particulate matter	0.5	10. Childhood sexual abuse	0.5
SPAIN	1. Tobacco	16.8	1. Tobacco	12.3
	2. High blood pressure	15.6	2. Alcohol	7.6
	3. High cholesterol	8.9	3. High BMI	6.4
	4. High BMI	7.9	4. High blood pressure	5.8
	5. Physical inactivity	4.2	5. High cholesterol	4.5
	6. Low fruit and vegetable intake	3.0	6. Illicit drugs	3.9
	7. Unsafe sex	0.8	7. Physical inactivity	2.5
	8. Alcohol	0.8	8. Low fruit and vegetable intake	1.7
	9. Occupational airborne particulate matter	0.7	9. Unsafe sex	1.4
	10. Illicit drugs	0.6	10. Iron deficiency	0.6
SWEDEN	1. High blood pressure	25.2	1. High blood pressure	10.5
	2. High cholesterol	14.5	2. Tobacco	8.0
	3. Tobacco	10.8	3. High cholesterol	7.1
	4. High BMI	8.4	4. High BMI	6.8
	5. Physical inactivity	5.7	5. Alcohol	4.2
	6. Low fruit and vegetable intake	3.8	6. Physical inactivity	3.2
	7. Unsafe sex	0.6	7. Low fruit and vegetable intake	2.1
	8. Urban outdoor air pollution	0.5	8. Illicit drugs	1.2
	9. Occupational airborne particulate matter	0.3	9. Unsafe sex	0.8
	10. Illicit drugs	0.3	10. Iron deficiency	0.6
SWITZERLAND	1. High blood pressure	25.2	1. Tobacco	10.7
	2. High cholesterol	14.5	2. Alcohol	7.2
	3. Tobacco	10.8	3. High blood pressure	6.3
	4. High BMI	8.4	4. High BMI	6.0
	5. Physical inactivity	5.7	5. High cholesterol	4.9
	6. Low fruit and vegetable intake	3.8	6. Illicit drugs	2.7
	7. Unsafe sex	0.6	7. Physical inactivity	2.4
	8. Urban outdoor air pollution	0.5	8. Low fruit and vegetable intake	1.7
	9. Occupational airborne particulate matter	0.3	9. Unsafe sex	1.0
	10. Illicit drugs	0.3	10. Childhood sexual abuse	0.6

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
TAJIKISTAN	1. High blood pressure	21.4	1. High blood pressure	5.8
	2. High BMI	13.7	2. High BMI	5.4
	3. High cholesterol	10.5	3. Alcohol	4.8
	4. Alcohol	6.1	4. Unsafe water, sanitation and hygiene	4.3
	5. Low fruit and vegetable intake	5.3	5. Indoor smoke from solid-fuel use	4.2
	6. Physical inactivity	4.9	6. Childhood and maternal underweight	4.0
	7. Indoor smoke from solid-fuel use	3.4	7. High cholesterol	3.5
	8. Unsafe water, sanitation and hygiene	3.2	8. Tobacco	2.3
	9. Tobacco	3.0	9. Iron deficiency	2.1
	10. Childhood and maternal underweight	2.5	10. Low fruit and vegetable intake	1.8
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA	1. High blood pressure	23.6	1. Tobacco	11.1
	2. Tobacco	15.9	2. High blood pressure	10.8
	3. High BMI	11.8	3. High BMI	7.6
	4. High cholesterol	9.4	4. Alcohol	5.4
	5. Low fruit and vegetable intake	5.3	5. High cholesterol	5.4
	6. Physical inactivity	5.1	6. Low fruit and vegetable intake	3.0
	7. Alcohol	3.9	7. Physical inactivity	2.9
	8. Urban outdoor air pollution	2.1	8. Unsafe sex	1.2
	9. Lead	1.0	9. Lead	1.2
	10. Indoor smoke from solid-fuel use	0.7	10. Illicit drugs	1.0
TURKEY	1. High blood pressure	20.7	1. Tobacco	7.0
	2. Tobacco	11.8	2. High blood pressure	6.1
	3. High BMI	11.6	3. High BMI	5.8
	4. High cholesterol	10.5	4. Alcohol	4.3
	5. Low fruit and vegetable intake	6.7	5. High cholesterol	4.2
	6. Physical inactivity	6.2	6. Low fruit and vegetable intake	2.5
	7. Alcohol	4.3	7. Physical inactivity	2.4
	8. Urban outdoor air pollution	1.8	8. Childhood and maternal underweight	2.1
	9. Childhood and maternal underweight	1.4	9. Unsafe water, sanitation and hygiene	1.8
	10. Unsafe water, sanitation and hygiene	1.4	10. Lead	1.3
TURKMENISTAN	1. High blood pressure	22.8	1. High BMI	7.4
	2. High BMI	16.5	2. High blood pressure	7.1
	3. High cholesterol	14.1	3. Alcohol	6.0
	4. Alcohol	7.7	4. High cholesterol	5.5
	5. Tobacco	6.9	5. Tobacco	5.1
	6. Low fruit and vegetable intake	6.8	6. Childhood and maternal underweight	4.4
	7. Physical inactivity	6.4	7. Indoor smoke from solid-fuel use	3.6
	8. Childhood and maternal underweight	3.1	8. Unsafe water, sanitation and hygiene	3.1
	9. Indoor smoke from solid-fuel use	2.9	9. Low fruit and vegetable intake	2.7
	10. Unsafe water, sanitation and hygiene	2.3	10. Physical inactivity	2.5
UKRAINE	1. High blood pressure	36.3	1. High blood pressure	16.6
	2. High cholesterol	29.9	2. High cholesterol	14.4
	3. Low fruit and vegetable intake	15.5	3. Tobacco	12.8
	4. Tobacco	14.8	4. Alcohol	12.3
	5. High BMI	13.2	5. High BMI	9.0
	6. Physical inactivity	11.2	6. Low fruit and vegetable intake	8.0
	7. Alcohol	9.2	7. Physical inactivity	5.6
	8. Illicit drugs	1.4	8. Illicit drugs	3.0
	9. Urban outdoor air pollution	1.4	9. Unsafe sex	1.6
	10. Indoor smoke from solid-fuel use	1.3	10. Indoor smoke from solid-fuel use	1.1



Table 5 contd

Member State	Deaths		DALYs	
	Risk factor	% of total	Risk factor	% of total
UNITED KINGDOM	1. Tobacco	24.3	1. Tobacco	14.2
	2. High blood pressure	19.4	2. High blood pressure	8.6
	3. High cholesterol	13.3	3. High cholesterol	6.9
	4. High BMI	8.0	4. High BMI	6.3
	5. Physical inactivity	5.5	5. Alcohol	5.2
	6. Low fruit and vegetable intake	4.0	6. Physical inactivity	3.1
	7. Occupational airborne particulate matter	0.6	7. Illicit drugs	2.6
	8. Urban outdoor air pollution	0.6	8. Low fruit and vegetable intake	2.2
	9. Unsafe sex	0.6	9. Unsafe sex	0.8
	10. Illicit drugs	0.4	10. Occupational airborne particulate matter	0.6
UZBEKISTAN	1. High blood pressure	20.0	1. High BMI	6.4
	2. High cholesterol	16.7	2. High blood pressure	6.1
	3. High BMI	15.0	3. High cholesterol	5.4
	4. Low fruit and vegetable intake	8.1	4. Alcohol	4.7
	5. Physical inactivity	7.7	5. Indoor smoke from solid-fuel use	3.9
	6. Alcohol	5.3	6. Childhood and maternal underweight	3.7
	7. Tobacco	4.1	7. Tobacco	3.1
	8. Indoor smoke from solid-fuel use	3.3	8. Low fruit and vegetable intake	2.6
	9. Childhood and maternal underweight	2.3	9. Physical inactivity	2.5
	10. Urban outdoor air pollution	2.1	10. Iron deficiency	2.3

**Table 6. Basic indicators of the status and determinants of child health in the WHO European Region, 2002 or latest available year<sup>a</sup>**  
Health status

Member State	Mortality from all causes in children aged (years):				Mortality from specific causes, 1–19				Morbidity			Prevalence of asthma at age 13–14 (%)
	0–1	1–4	5–14	1–19	Infectious diseases	Congenital anomalies	Cancer	Accidents	Incidence of:		cancer, 0–14	
									measles, all ages (annual average, 1998–2002)	insulin- dependent diabetes, 0–14		
Albania	1157.7	114.3	39.5	62.5	1.9	1.4	4.3	16.3	20.5	3.6	–	2.6
Andorra	–	–	–	–	–	–	–	–	3.8	12.8	–	–
Armenia	1285.2	52.6	16.3	31.8	1.8	3.1	5.7	8.0	1.2	–	–	–
Austria	411.8	19.6	11.3	23.5	0.5	2.1	2.4	9.3	–	9.5	–	11.6
Azerbaijan	1286.3	248.0	45.3	94.6	7.4	1.5	7.0	11.6	22.6	1.2	–	–
Belarus	911.5	62.2	28.3	49.8	1.8	3.9	4.3	24.0	1.5	5.7	154.4	–
Belgium	560.1	25.9	14.9	26.5	0.9	1.1	4.2	11.0	–	11.8	–	12.0
Bosnia and Herzegovina	1525.1	42.2	27.4	41.8	0.4	2.1	3.7	9.2	20.6	3.5	–	–
Bulgaria	1349.4	67.2	26.4	40.9	1.1	2.9	4.5	11.7	0.4	8.8	102.7	–
Croatia	698.0	29.1	12.4	25.8	0.6	2.6	4.6	10.1	3.1	6.6	–	–
Cyprus	–	–	–	–	–	–	–	–	–	10.5	–	–
Czech Republic	419.8	28.0	15.1	26.4	0.5	1.5	3.2	11.2	0.1	9.8	124.9	–
Denmark	413.7	21.7	17.6	25.9	0.8	3.9	3.7	10.1	0.3	19.4	149.7	–
Estonia	580.9	49.0	27.3	48.3	0.2	2.4	6.3	22.7	0.6	11.4	126.2	10.8
Finland	296.5	16.1	12.1	21.9	0.4	0.7	3.3	9.2	0.0	37.4	154.7	16.0
France	441.8	24.7	14.3	26.0	0.5	1.2	3.0	11.5	41.3	8.3	135.6	13.5
Georgia	1187.7	38.5	20.7	35.7	1.6	0.0	2.4	3.8	3.0	8.1	–	3.6
Germany	421.2	25.3	12.3	23.1	0.8	1.7	3.0	8.2	–	12.2	128.7	13.8
Greece	618.2	27.0	15.3	29.1	0.7	3.1	4.4	15.4	0.4	9.1	–	3.7
Hungary	728.5	36.3	18.9	28.3	0.7	3.0	4.4	9.4	0.1	9.6	119.6	–
Iceland	238.6	0.0	20.2	22.0	1.2	0.0	5.6	7.0	0.0	13.9	129.2	–
Ireland	600.9	35.8	14.2	29.1	0.8	2.2	3.0	10.9	12.8	16.3	133.2	29.1
Israel	587.0	35.2	16.0	24.2	0.6	1.7	3.0	7.1	0.3	5.9	–	–
Italy	451.0	18.9	13.7	21.9	0.3	1.4	4.3	8.2	9.4	9.5	158.0	8.9
Kazakhstan	1715.5	127.4	46.8	80.8	3.8	5.0	5.6	27.2	4.9	1.2	–	–
Kyrgyzstan	2175.8	197.5	43.3	86.4	8.5	4.0	3.2	21.0	12.4	1.2	–	–
Latvia	992.8	84.2	31.8	56.7	2.4	4.8	5.1	29.3	0.0	7.1	–	8.4
Lithuania	778.6	52.8	27.0	48.1	0.9	3.6	5.3	21.2	1.0	7.8	127.7	–
Luxembourg	390.7	30.8	12.7	28.0	1.0	1.0	2.0	13.1	0.4	11.9	–	–
Malta	588.7	28.4	11.0	20.3	1.0	2.7	6.4	4.9	0.8	–	148.7	16.0
Monaco	–	–	–	–	–	–	–	–	–	–	–	–
Netherlands	518.0	28.1	13.4	23.4	0.9	1.4	3.6	7.2	4.3	13.0	137.5	–
Norway	396.9	21.2	9.4	22.8	0.8	2.0	2.2	7.7	0.1	22.5	139.5	–
Poland	754.5	31.3	18.7	29.4	0.7	2.4	4.5	10.8	1.3	6.7	106.5	8.1
Portugal	565.0	42.6	22.8	38.4	2.1	2.1	4.3	8.3	0.5	11.5	139.4	9.5
Republic of Moldova	1472.8	77.2	38.4	54.8	2.0	5.1	7.2	23.7	32.9	5.0	–	–
Romania	1747.4	82.6	44.6	54.8	5.7	3.9	6.7	19.9	8.8	5.0	101.8	3.0
Russian Federation	1375.3	85.5	43.6	75.7	2.5	4.8	5.5	33.3	2.9	7.2	–	4.4
San Marino	0.0	0.0	0.0	38.0	0.0	0.0	19.0	19.0	0.9	9.5	–	–
Serbia and Montenegro	1336.2	61.0	23.3	37.7	2.7	3.1	3.8	7.6	2.5	8.1	119.4	–
Slovakia	627.2	43.9	22.8	33.1	0.5	2.1	5.1	13.1	2.0	9.2	131.5	–
Slovenia	383.6	26.3	13.7	27.0	0.6	3.3	3.6	9.3	0.1	8.5	119.1	–
Spain	450.7	26.1	16.3	26.1	1.3	2.0	3.7	11.5	0.5	12.8	137.9	10.3
Sweden	367.4	18.9	10.2	17.3	0.2	1.5	3.3	5.9	0.2	28.0	154.3	12.9
Switzerland	492.6	22.1	13.9	22.2	0.8	1.8	3.0	8.0	11.6	7.9	146.9	–
Tajikistan	1419.7	187.1	41.3	80.1	14.6	2.1	2.3	12.6	14.5	1.2	–	–
TFYR of Macedonia <sup>b</sup>	1370.7	46.7	21.9	32.6	1.5	0.7	3.8	10.4	2.2	3.6	–	–
Turkey	–	–	–	–	–	–	–	–	29.9	3.2	115.6	–
Turkmenistan	3085.0	533.0	64.2	183.6	24.5	2.6	5.1	34.2	7.0	1.2	–	–
Ukraine	1110.6	79.7	36.9	58.5	2.1	5.2	6.4	23.0	13.0	8.1	–	–
United Kingdom	571.2	27.2	13.0	23.8	1.3	1.7	3.3	6.3	0.2	18.9	121.0	32.2
Uzbekistan	1837.5	206.0	43.8	89.4	5.8	2.1	4.2	21.3	1.8	1.2	–	9.2

<sup>a</sup> Figures were compiled by WHO to ensure comparability. All rates are per 100 000 of the relevant population, unless otherwise specified.

<sup>b</sup> The former Yugoslav Republic of Macedonia.

Table 6 contd

## Health determinants

Member State	Health and well-being (%)				Socioeconomic determinants			
	High life satisfaction, 15	Children in relative poverty, 0-17	Low socio-economic status, 11-15	Living in a single-parent family, 1-15	Expected years of schooling	At least partially breastfed infants aged 6 months (%)	Good parental support, 15 (%)	Exposure to household tobacco smoke, under 5 (%)
Albania	-	-	-	-	10.9	87.0	-	-
Andorra	-	-	-	-	-	-	-	-
Armenia	-	-	-	-	8.5	63.0	-	-
Austria	86.8	10.2	16.8	12.5	14.8	-	72.8	-
Azerbaijan	-	-	-	-	10.5	30.4	-	-
Belarus	-	-	-	-	12.2	50.5	-	-
Belgium	84.6	7.7	19.1	11.7	16.0	-	68.4	-
Bosnia and Herzegovina	-	-	-	-	-	-	-	68.6
Bulgaria	-	-	-	-	12.7	-	-	-
Croatia	72.4	-	43.5	7.4	11.9	17.1	82.4	-
Cyprus	-	-	-	-	13.0	-	-	-
Czech Republic	83.0	6.8	40.2	13.4	13.6	31.7	74.6	54.0
Denmark	88.1	2.4	13.5	16.5	15.0	-	72.0	-
Estonia	69.6	-	40.1	17.7	14.4	42.1	71.2	59.2
Finland	89.3	2.8	17.8	14.6	16.7	51.0	78.6	-
France	81.0	7.5	16.1	11.0	15.4	-	78.9	-
Georgia	-	-	-	-	6.4	44.2	-	73.0
Germany	85.7	10.2	16.4	12.8	15.3	-	75.3	-
Greece	88.6	12.4	28.7	7.5	14.9	-	72.6	-
Hungary	79.9	8.8	38.7	13.4	13.6	48.3	86.4	-
Iceland	-	-	-	-	16.0	67.2	-	-
Ireland	83.2	15.7	20.7	10.3	14.9	-	73.5	-
Israel	84.8	-	27.5	9.3	14.8	41.0	77.7	-
Italy	81.8	16.6	26.0	7.0	14.9	37.8	73.0	-
Kazakhstan	-	-	-	-	11.7	71.5	-	-
Kyrgyzstan	-	-	-	-	-	79.1	-	-
Latvia	74.7	-	55.9	18.6	13.3	26.4	75.9	63.6
Lithuania	71.4	-	53.1	13.5	14.2	26.6	69.9	62.9
Luxembourg	-	9.1	-	-	13.1	-	-	-
Malta	78.0	-	43.1	4.8	14.0	-	74.5	-
Monaco	-	-	-	-	-	-	-	-
Netherlands	92.5	9.8	9.0	10.7	16.0	25.0	87.1	-
Norway	78.8	3.4	5.8	16.2	16.9	80.0	75.0	-
Poland	72.3	12.7	43.1	10.2	14.7	-	86.4	67.2
Portugal	73.8	15.6	28.9	9.8	-	-	79.1	-
Republic of Moldova	-	-	-	-	9.7	81.0	-	-
Romania	-	-	-	-	11.7	38.9	-	-
Russian Federation	72.1	-	58.3	16.9	-	32.6	79.7	62.9
San Marino	-	-	-	-	-	-	-	-
Serbia and Montenegro	-	-	-	-	10.3	32.0	-	65.0
Slovakia	-	-	-	-	13.1	36.8	-	54.5
Slovenia	82.0	-	20.5	8.7	15.0	-	88.7	47.7
Spain	84.8	13.3	22.4	9.1	15.5	40.0	79.0	-
Sweden	80.3	4.2	9.2	16.8	15.9	72.4	81.9	-
Switzerland	88.7	6.8	13.1	12.5	15.1	-	77.5	-
Tajikistan	-	-	-	-	9.9	72.3	-	-
TFYR Macedonia <sup>b</sup>	86.9	-	42.7	6.7	-	40.3	90.4	-
Turkey	-	-	-	-	9.5	71.4	-	-
Turkmenistan	-	-	-	-	-	-	-	-
Ukraine	-	-	-	-	11.4	41.4	-	58.9
United Kingdom	81.4	15.4	15.7	16.8	16.3	21.0	79.4	-
Uzbekistan	-	-	-	-	-	95.5	-	-

<sup>b</sup> The former Yugoslav Republic of Macedonia.

<sup>c</sup> Estimates derived by regression and similar estimation methods.

Source: data from a wide array of publications and databases of WHO and other specialized agencies of the United Nations, and from *Diabetes atlas*, 2nd ed. Brussels, International Diabetes Federation 2003 (<http://www.eatlas.idf.org>, accessed 25 May 2005).

Family determinants				Lifestyle determinants in 15-year-olds (%)				Health care determinants			
Assault: estimated annual incidence of bone fracture, 0-14	Fair or poor health at age 15 (%)	Suicide rates, 0-14	DALYs per 1000 children, 0-14	Tobacco smoking	Alcohol use	Canabis use	Overweight	Early neonatal deaths per 1000 live births, 2000	One-year-olds immunized with hepatitis B3 (%)	Oral health (DMFT) at age 12	Leukaemia survival (%), 0-14
-	-	0.8	129.8	-	-	-	-	9 <sup>c</sup>	97	3.0	-
-	-	-	47.9	-	-	-	-	3 <sup>c</sup>	84	-	-
-	-	0.1	108.8	-	-	-	-	13	93	-	-
400.0	18.2	0.3	39.7	22.1	34.5	11.6	10.8	2	44	1.0	-
-	-	0.2	196.1	-	-	-	-	27 <sup>c</sup>	98	-	-
-	-	0.7	73.9	-	-	-	-	3	99	2.7	54.0
-	20.0	-	47.0	18.6	35.3	22.5	10.6	2	50	1.6	-
-	-	-	86.7	-	-	-	-	9	-	6.1	-
-	-	0.6	73.6	-	-	-	-	5	96	4.4	50.0
-	29.0	0.0	57.5	16.9	29.6	13.9	10.4	4	-	3.5	-
-	-	-	65.8	-	-	-	-	3 <sup>c</sup>	88	-	-
-	12.1	0.3	40.4	21.6	28.9	26.9	9.2	2	86	2.5	72.2
90.0	17.5	0.3	49.7	14.8	46.5	21.2	11.7	3	-	0.9	64.0
-	21.7	1.7	64.3	17.3	23.7	14.3	6.9	4	-	2.4	50.0
300.0	14.2	0.3	44.4	22.7	16.8	7.4	13.2	2	-	1.2	53.0
-	-	0.4	48.9	19.8	16.8	27.4	11.0	2	29	1.9	69.0
-	-	0.1	84.8	-	-	-	-	19 <sup>c</sup>	49	-	-
450.0	17.2	0.3	40.1	27.5	39.3	18.3	11.1	2	81	1.2	88.0
-	12.2	0.2	44.3	9.9	27.5	4.1	15.6	3	88	2.2	-
-	19.3	0.4	59.3	19.1	24.4	11.8	11.6	5	-	-	54.0
80.0	-	0.0	39.0	13.6	-	-	-	2	-	1.5	84.0
-	18.5	0.2	58.8	15.8	17.4	18.5	11.9	3	-	1.2	79.0
230.0	13.4	0.3	57.6	9.7	18.1	6.7	10.3	3	98	1.7	90.0
-	18.5	0.2	42.6	16.1	37.1	20.1	13.0	2	97	-	64.0
-	-	1.8	134.4	-	-	-	-	29	99	-	-
-	-	1.0	217.2	-	-	-	-	26	99	-	-
-	34.7	0.7	70.8	17.6	16.7	7.6	6.1	5	98	3.5	50.0
-	35.8	0.6	73.4	19.1	-	6.1	4.1	3	95	2.4	33.0
-	-	0.0	48.2	-	-	-	-	3	49	0.7	-
70.0	24.7	0.0	46.6	8.5	47.3	5.9	22.4	4	70	-	64.0
-	-	-	58.8	-	-	-	-	2 <sup>c</sup>	99	-	-
-	22.5	0.2	48.1	19.2	51.4	21.6	8.9	3	-	0.8	71.0
-	23.9	0.0	42.7	17.8	19.7	-	12.0	2	-	1.5	58.0
30.0	18.9	0.5	55.7	16.3	19.2	14.8	6.6	4	97	3.8	62.0
-	22.9	0.4	51.8	16.5	15.5	19.4	11.7	3	94	3.0	57.0
-	-	0.5	113.7	-	-	-	-	16	99	-	-
-	-	1.0	99.9	-	-	-	-	6	98	7.3	28.0
-	36.7	1.3	100.5	15.8	21.6	8.3	4.8	7	94	-	-
-	-	0.0	36.8	-	-	-	-	2 <sup>c</sup>	96	-	-
-	-	0.4	74.6	-	-	-	-	7	-	3.3	-
240.0	-	0.2	58.7	-	-	-	-	4	99	4.3	49.0
260.0	17.2	0.3	45.6	22.9	34.3	24.4	12.9	3	-	1.8	70.0
-	13.8	0.2	42.7	20.1	28.3	30.8	15.2	2	83	1.1	59.0
310.0	17.6	0.3	35.9	9.8	20.1	4.7	15.2	2	-	1.1	88.7
-	10.4	0.3	44.1	17.1	33.5	37.9	9.1	3	-	0.9	64.0
-	-	0.2	223.8	-	-	-	-	29 <sup>c</sup>	57	-	-
-	13.3	0.2	78.0	9.8	18.2	3.1	10.1	7	-	3.0	-
-	-	-	158.7	-	-	-	-	19	68	-	-
-	-	1.0	200.4	-	-	-	-	26	97	-	-
-	-	0.7	95.9	-	-	-	-	9	77	-	-
430.0	26.5	0.1	49.4	17.7	51.4	33.8	14.5	3	-	0.9	78.4
-	-	0.7	132.9	-	-	-	-	21	99	0.9	-

**Table 7. Burden of disease from seven leading conditions in children aged 0–14 years (DALYs per 1000) in the WHO European Region, 2002**

Member State	1. Neonatal morbidity	2. Respiratory infections	3. Major congenital anomalies	4. Neuro-psychiatric disorders	5. Iodine deficiency	6. Unintentional injuries	7. Asthma	Total, columns 1–7	All causes
Albania	12.5	15.9	4.4	6.0	10.2	4.4	1.8	55.1	129.8
Andorra	5.7	0.5	5.6	6.2	0.0	2.7	3.3	23.8	47.9
Armenia	23.4	8.0	13.4	6.2	0.6	3.7	2.5	57.7	108.8
Austria	4.3	0.2	2.8	7.5	0.0	1.1	2.7	18.6	39.7
Azerbaijan	22.6	56.4	4.9	6.4	1.6	2.6	2.8	97.3	196.1
Belarus	3.6	1.2	8.5	6.6	5.5	7.6	1.2	34.1	73.9
Belgium	3.7	0.3	4.6	7.9	0.0	1.5	3.0	21.0	47.0
Bosnia and Herzegovina	17.9	1.5	3.1	6.2	5.4	2.0	2.1	38.3	86.7
Bulgaria	5.6	5.1	4.4	6.1	6.1	3.7	2.0	33.1	73.6
Croatia	9.0	0.6	6.2	7.3	0.1	2.9	3.6	29.7	57.5
Cyprus	6.8	4.7	2.5	5.1	0.0	3.9	2.5	25.5	65.8
Czech Republic	3.8	0.9	2.2	6.8	0.0	2.8	3.5	20.0	40.4
Denmark	5.2	0.2	5.5	7.4	0.1	2.8	3.7	24.9	49.7
Estonia	4.6	0.4	6.1	6.5	1.7	5.5	3.1	27.8	64.3
Finland	1.8	0.4	4.1	8.3	0.0	2.9	4.4	21.9	44.4
France	4.2	0.3	4.3	7.6	0.0	3.3	3.3	23.0	48.9
Georgia	32.4	7.1	1.7	6.0	4.3	1.4	2.3	55.1	84.8
Germany	4.8	0.2	3.3	6.8	0.1	1.8	3.1	20.1	40.1
Greece	6.8	0.6	4.9	5.5	0.1	2.9	2.0	22.9	44.3
Hungary	7.2	0.6	6.5	6.6	2.0	3.5	1.3	27.6	59.3
Iceland	4.6	0.4	3.8	6.8	0.0	1.8	2.4	19.8	39.0
Ireland	5.9	0.7	7.2	6.7	0.1	1.3	5.9	27.7	58.8
Israel	7.7	0.4	6.2	7.8	0.0	1.2	3.5	26.8	57.6
Italy	6.3	0.3	4.1	6.1	0.1	1.1	2.7	20.7	42.6
Kazakhstan	16.8	20.6	10.9	3.7	5.6	3.0	1.2	61.7	134.4
Kyrgyzstan	41.6	42.3	14.1	3.5	1.7	9.5	2.7	115.5	217.2
Latvia	6.7	0.8	7.8	6.6	1.6	8.5	2.1	34.1	70.8
Lithuania	2.0	1.4	7.4	6.6	8.9	6.8	1.3	34.4	73.4
Luxembourg	7.4	0.1	2.5	7.5	0.0	3.1	3.7	24.3	48.2
Malta	6.3	0.2	4.1	6.0	0.0	1.9	4.2	22.7	46.6
Monaco	4.3	0.2	5.9	8.4	0.0	1.5	4.6	24.9	58.8
Netherlands	4.9	0.4	4.6	6.4	0.0	1.0	4.7	22.0	48.1
Norway	2.5	0.3	4.2	7.0	0.0	1.2	3.7	18.8	42.7
Poland	5.3	0.6	3.9	6.0	1.0	4.7	2.7	24.2	55.7
Portugal	5.3	0.7	4.1	5.8	0.1	1.9	3.9	21.8	51.8
Republic of Moldova	11.9	9.2	13.3	6.5	10.0	9.2	1.2	61.3	113.7
Romania	8.4	13.7	7.6	5.9	2.1	5.7	1.0	44.4	99.9
Russian Federation	7.8	2.1	8.4	6.4	10.9	7.6	1.2	44.3	100.5
San Marino	2.1	0.0	2.7	5.8	0.0	0.9	3.3	14.8	36.8
Serbia and Montenegro	14.9	3.9	4.3	6.0	0.9	1.8	2.1	33.9	74.6
Slovakia	5.1	1.5	3.3	6.1	1.5	2.8	2.1	22.4	58.7
Slovenia	3.0	0.4	3.8	7.7	0.1	2.7	3.4	21.1	45.6
Spain	4.0	0.3	4.5	5.4	0.1	1.5	2.8	18.4	42.7
Sweden	1.5	0.2	4.0	7.5	0.0	0.8	3.1	17.1	35.9
Switzerland	3.6	0.2	5.0	7.4	0.0	2.3	3.1	21.7	44.1
Tajikistan	40.2	38.1	5.4	3.4	1.7	5.3	2.7	96.9	223.8
TFYR Macedonia <sup>a</sup>	19.2	2.0	4.1	6.0	0.0	2.2	2.2	35.7	78.0
Turkey	31.1	15.1	9.5	3.5	8.0	3.0	2.5	72.6	158.7
Turkmenistan	18.6	59.1	5.0	3.6	0.2	8.1	2.9	97.5	200.4
Ukraine	8.1	1.5	9.4	6.6	12.2	6.9	1.2	46.0	95.9
United Kingdom	7.2	0.6	3.9	6.8	0.0	1.7	5.8	26.1	49.4
Uzbekistan	19.4	32.8	5.2	6.2	1.2	6.6	2.7	74.1	132.9
<b>European Region</b>	<b>11.8</b>	<b>7.4</b>	<b>6.3</b>	<b>6.0</b>	<b>3.8</b>	<b>3.3</b>	<b>1.9</b>	<b>40.4</b>	<b>89.6</b>

<sup>a</sup> The former Yugoslav Republic of Macedonia.

Note. 1 = low birth weight, birth asphyxia and birth trauma; 2 = lower and upper respiratory infections; 3 = congenital heart anomalies, Down's syndrome and spina bifida; 4 = unipolar depressive disorders, schizophrenia and migraine; 6 = falls, road-traffic accidents and drownings.

Source: data from Mathers C et al. *Global burden of disease in 2002: data sources, methods and results*. Geneva, World Health Organization, 2004 ([http://www3.who.int/whosis/menu.cfm?path=evidence,burden,burden\\_gbd2000docs,burden\\_gbd2000docs\\_DP54&language=english](http://www3.who.int/whosis/menu.cfm?path=evidence,burden,burden_gbd2000docs,burden_gbd2000docs_DP54&language=english), accessed 25 May 2005).

## Definitions of the indicators included in the tables

### Adult mortality rate

Probability of dying (per 1000 population) between the ages of 15 and 60 years.

Source: World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#adultmortality>, accessed 15 June 2005).

### Alcohol use

Percentage of 15-year-olds who report that they drink alcohol (beer, wine or spirits) every week.

Source: Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

### Assault: estimated annual incidence of bone fracture

Annual number of hospital admissions per 100 000 children aged 0–14 years for the following fractures: fractures of humerus; multiple fractures of clavicle, scapula and humerus; fractures of shoulder and upper arm; fractures of forearm (radius and ulna); fractures of femur (all parts of femur); fracture of lower leg (tibia and fibula) including ankle; multiple injuries that include fractures to the above bones.

Source: Rigby M, Köhler L, eds. *Child health indicators of life and development (CHILD). Report to the European Commission*. Luxembourg, Directorate-General for Health and Consumer Protection, 2002 ([http://www.ggd.nl/kennisnet/uploaddb/downl\\_object.asp?atoom=15443&V olgNr=1](http://www.ggd.nl/kennisnet/uploaddb/downl_object.asp?atoom=15443&V olgNr=1), accessed 15 June 2005).

### Cannabis use

Percentage of 15-year-olds who report that they have ever used cannabis and have used it within the previous 12 months.

Source: Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

### Children living in relative poverty

Children living in households with income below 50% of the national median income.

Source: UNICEF Innocenti Research Centre. *Child poverty in rich countries 2005*. Florence, United Nations Children's Fund (Report Card No. 6; <http://www.unicef-icdc.org/publications/pdf/repcard6e.pdf>, accessed 25 May 2005).

### Coverage of registration of deaths

Percentage of estimated total deaths that are counted through vital registration system.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#registereddeathcoverage>, accessed 15 June 2005).

### Early neonatal mortality

Number of deaths of live-born infants during the first week of life per 1000 live births.

*Source:* Statistical annex. Explanatory notes. In: *The world health report 2005 – Make every mother and child count*. Geneva, World Health Organization, 2005 ([http://www.who.int/whr/2005/10\\_annexes\\_notes\\_en.pdf](http://www.who.int/whr/2005/10_annexes_notes_en.pdf), accessed 15 June 2005).

### Expected years of schooling

The total number of years of schooling that a child can expect to receive, assuming that the probability of his or her being enrolled in school at any particular future age is equal to the current enrolment ratio at that age.

*Source:* UNESCO Institute for Statistics [web site]. Montreal, UNESCO Institute for Statistics, 2005 ([http://www.uis.unesco.org/en/stats/statistics/indicators/i\\_pages/indspec/tecspe\\_sle.htm](http://www.uis.unesco.org/en/stats/statistics/indicators/i_pages/indspec/tecspe_sle.htm), accessed 15 June 2005).

### Health expenditure

**GDP** (gross domestic product) is the value of goods and services provided in a country by residents and non-residents without regard to their allocation among domestic and foreign claims. This corresponds to the total sum of expenditure (consumption and investment) of the private and government agents of the economy during the reference year.

**General government expenditure** includes consolidated direct and indirect outlays, including capital, of all levels of government, social security institutions, autonomous bodies and other extrabudgetary funds.

**International dollars** are derived by dividing local currency units by an estimate of their purchasing power parity (PPP) compared to US dollar, a measure that minimizes the consequences of differences in price levels between countries.

**Total health expenditure** is the sum of general government expenditure on health and private expenditure on health in a given year (in international dollars).

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#totexponhealthaspercentofgdp>, accessed 15 June 2005).

### Exposure to household tobacco smoke

Percentage of those aged 0–4 years who live in households in which any member smokes.

*Source:* Rigby M, Köhler L, eds. *Child health indicators of life and development (CHILD)*. Report to the European Commission. Luxembourg, Directorate-General for Health and Consumer Protection, 2002 ([http://www.ggd.nl/kennisnet/uploaddb/downl\\_object.asp?atoom=15443&VolgNr=1](http://www.ggd.nl/kennisnet/uploaddb/downl_object.asp?atoom=15443&VolgNr=1), accessed 15 June 2005).

**Fair or poor health**

Percentage of 15-year-olds rating their health as fair or poor.

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

**Gini index**

The Gini index measures the extent to which the distribution of income (or consumption) among individuals or households within a country deviates from a perfectly equal distribution. A value of 0 represents perfect equality, a value of 100 perfect inequality.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#totexponhealthaspercentofgdp>, accessed 15 June 2005).

**Good parental support**

Percentage of 15-year-olds who find it easy to talk to their mothers.

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

**High life satisfaction**

Percentage of 15-year-olds who place themselves above the middle of a life-satisfaction scale (scores of 6 or more on a ten-point scale, the Cantril ladder).

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

**Incidence of insulin-dependent diabetes**

Estimated annual number of newly diagnosed cases of childhood-onset type 1 diabetes (requiring insulin for survival) per 100 000 people aged 0–14 years.

*Source:* *Diabetes atlas*, 2nd ed. Brussels, International Diabetes Federation, 2003.

**Incidence of measles, all ages (annual average)**

The incidence is the number of all new cases of measles in a year, in all age groups, that are reported by a country to WHO, divided by the total population of the country. As the number of cases per year fluctuates considerably, the average number of cases per 100 000 population per year for 1998–2002 is presented.

*Source:* devised at the WHO Regional Office for Europe for this report.



**Leukaemia survival**

National estimates of five-year observed cumulative survival.

*Source:* Automated Childhood Cancer Information System (ACCIS) [online database]. Lyon, International Agency for Research on Cancer, 2003 (<http://www-dep.iarc.fr/accis/data.htm>, accessed 15 June 2005).

**Life expectancy at birth**

Average number of years that a newborn baby is expected to live if current mortality rates continue to apply.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#lifeexpectancy>, accessed 15 June 2005).

**Living in a single-parent family**

Percentage of children aged 11–15 years who report living in a single-parent family, with the main home as the reference.

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

**Low birth weight**

Percentage of live-born infants weighing less than 2500 g at birth in a given time period.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#lowbirthweight>, accessed 15 June 2005).

**Low socioeconomic status**

Percentage of children aged 11–15 years reporting low family affluence according to a composite score on the family affluence scale (FAS), based on family car ownership, bedroom occupancy, family holidays and computer ownership.

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

**Maternal mortality rate**

Number of maternal deaths per 100 000 live births during the same time period.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#maternalmortality>, accessed 15 June 2005).

**One-year-olds immunized against measles**

Percentage of 1-year-olds who have received at least one dose of measles-containing vaccine in a given year. For countries recommending the first dose of measles among children older than 12 months of age, the indicator is calculated as the proportion of children aged less than 24 months receiving one dose of measles-containing vaccine.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#measles>, accessed 15 June 2005).

**One-year-olds immunized with DTP3**

Percentage of 1-year-olds who have received three doses of the combined diphtheria and tetanus toxoid and pertussis vaccine in a given year.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#dtp3>, accessed 15 June 2005).

**One-year-olds immunized with hepatitis B3**

Percentage of 1-year-olds who have received three doses of hepatitis B3 vaccine in a given year.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#hepb>, accessed 15 June 2005).

**Oral health (DMFT)**

Number of decayed, missing or filled teeth at age 12 (DMFT-12 index).

*Source:* European health for all database [online database]. Copenhagen, WHO Regional Office for Europe, 2005 (<http://www.euro.who.int/hfad>; accessed 2 May 2005).

**Overweight**

Percentage of 15-year-olds classified as overweight (combined total of pre-obese and obese) using self-reported weight and height data and international cut-off points that correspond to adult body mass index (BMI) values of 25.0–29.0 for overweight and  $\geq 30.0$  for obesity;  $BMI = \text{weight (kg)}/\text{height (m)}^2$ .

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

**Prevalence of asthma**

Percentage of children aged 13–14 years reporting asthma symptoms in the previous 12 months.

Source: Tamburlini G, von Ehrenstein O, Bertollini R, eds. *Children's health and environment: a review of evidence*. Copenhagen, European Environment Agency, 2002:44–47 (Environmental Issue Report No. 29; <http://www.euro.who.int/document/e75518.pdf>, accessed 25 May 2005).

### Stunting in children under 5

Percentage of children aged under 5 years who have a height for age below –2 standard deviations of the United States National Center for Health Statistics/WHO reference median.

Source: World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#childrenstunted>, accessed 15 June 2005).

### TB under DOTS

**Case detection** means that TB is diagnosed in a patient and is reported.

**Cases detected under DOTS** are the percentage of the total number of smear-positive TB cases estimated to occur countrywide in a given year that are diagnosed (correctly or incorrectly) and reported under DOTS to the national health authority.

**Detection under DOTS** implies that all components of the internationally recommended DOTS strategy for TB control are in place where patients are detected: political commitment, uninterrupted drug supply, use of smear microscopy in diagnosis, standardized short-course treatment regimens, direct observation of treatment and monitoring of treatment outcomes for 100% of patients with TB.

**DOTS case detection rate** is the ratio of the number of notified new smear-positive cases by DOTS programmes to the total number of new smear-positive cases estimated for that year and country. The case detection rate and the DOTS case detection rate are identical when DOTS coverage is 100%.

The number of cases notified is usually smaller than estimated new cases because of incomplete coverage by health services, underdiagnosis, or deficient recording and reporting. The calculated detection rate can exceed 100%, however, if case finding has been intense in an area that has a backlog of chronic cases, if there has been overreporting (for example, double counting) or overdiagnosis, or if estimates of incidence are too low. If the expected number of cases per year is very low, the case detection rate can vary markedly from year to year, owing to chance. Whenever this index comes close to or exceeds 100%, WHO attempts to investigate which of these explanations is correct.

**Treatment success** is the percentage of a group of TB cases registered under DOTS in a specified period that successfully completed treatment, whether with bacteriologic evidence of success (“cured”) or without (“treatment completed”). For new smear-positive cases, there is a target of 85% treatment success, based on the assumption of what can be reasonably achieved assuming the baseline proportion of unfavourable outcomes (death, failure and default) to be about 15%.

Sources: World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#dotsdetected> and <http://www3.who.int/statistics/compendium.htm#dotstreated>, accessed 15 June 2005) and Methods. Monitoring progress towards the Millennium Development Goals. In: *Global tuberculosis control: surveillance, planning, financing. WHO report 2005*. Geneva, World Health

Organization, 2005 ([http://www.who.int/tb/publications/global\\_report/2005/methods/en/index.html](http://www.who.int/tb/publications/global_report/2005/methods/en/index.html), accessed 15 June 2005).

### **Tobacco smoking**

Percentage of 15-year-olds who report that they smoke every day.

*Source:* Currie C et al., eds. *Young people's health in context. Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4; [http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518\\_1](http://www.euro.who.int/eprise/main/who/informationssources/publications/catalogue/20040518_1), accessed 25 May 2005).

### **Total fertility rate**

Number of children that would be born per woman, assuming no female mortality at childbearing age and the age-specific fertility rates of a specified country and reference period.

*Source:* United Nations Common Database [online database]. New York, United Nations Statistics Division, 2005 ([http://first.sipri.org/www/first\\_un\\_life.html](http://first.sipri.org/www/first_un_life.html), accessed 15 June 2005).

### **Under-5 mortality rate**

Probability of dying (per 1000 live births) before reaching the age of 5 years in a specified period, if subject to age-specific mortality rates of that period.

*Source:* World health statistics 2005. Indicators [online database]. Geneva, World Health Organization, 2005 (<http://www3.who.int/statistics/compendium.htm#under5mortality>, accessed 15 June 2005).

Governments and policy-makers in the WHO European Region know that good health is a fundamental resource for social and economic development. While rightly proud of the overall improvement in health in the Region, they still face a widening gap between the western and eastern countries in the Region and between socioeconomic groups in countries. Reducing these inequalities is increasingly vital. *The European health report 2005* shows that it is also feasible. The report summarizes the major public health issues facing the Region, particularly its children, and describes effective policy responses. This helps to supply the reliable, evidence-based information needed for sound decision-making on public health.

A synthesis of evidence and analyses from WHO and other sources, the report identifies both noncommunicable diseases as the main cause of the burden of disease on the Region, and communicable diseases as an additional burden on eastern countries, caused by poverty and underfunded health services. It shows that using well-known, comprehensive interventions to tackle the leading risk factors – tobacco, alcohol, high blood pressure, high cholesterol, overweight, low fruit and vegetable intake, and physical inactivity – would largely prevent the leading conditions – ischaemic heart disease, unipolar depressive disorders, cerebrovascular disease, alcohol-use disorders, chronic pulmonary disease, lung cancer and road traffic injury. This creates a compelling argument for action.

*The European health report 2005* has a special focus on children's health, because health in childhood determines health throughout life and into the next generation. It reveals differences between the patterns of ill health in children and in adults, and wide differences in the causes and rates of illness and death in children across the Region. This shows the need for complementary policies on adults and children and the complexity of the task countries face in working to improve children's health. While recognizing that each country must chart its own course, the report identifies poverty and socioeconomic inequality as the greatest threats to children's health, calls for renewed effort in protection and promotion, and provides an evidence-based list of the characteristics of the most successful policies and programmes. Investing in children's health is investing in the future.

### World Health Organization Regional Office for Europe

Scherfigsvej 8, DK-2100 Copenhagen Ø, Denmark  
Tel.: +45 39 17 17 17. Fax: +45 39 17 18 18.  
E-mail: [postmaster@euro.who.int](mailto:postmaster@euro.who.int)  
Web site: [www.euro.who.int](http://www.euro.who.int)



#### The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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