

# HIGHLIGHTS ON HEALTH IN ESTONIA



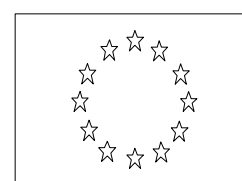
Country Highlights give an overview of the health and health-related situation in a given country and compare, where possible, its position in relation with other countries in the region. The Highlights have been developed in collaboration with Member States for operational purposes and do not constitute a formal statistical publication. They are based on information provided by Member States and other sources as listed.

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|                                |  |
|--------------------------------|--|
| Health Information Unit        | Telephone: +45 39 17 12 00   |
| WHO Regional Office for Europe | Telex: 12000 who dk  |
| 8 Scherfigsvej                 | Telefax: +45 39 17 18 95   |
| DK-2100 Copenhagen Ø           | E-mail: <a href="mailto:rpf@who.dk">rpf@who.dk</a>   |
| Denmark                        | Web: <a href="http://www.euro.who.int/countryinformation">http://www.euro.who.int/countryinformation</a> |

## AN OVERVIEW

The crude birth rate per 1000 population has decreased in Estonia, and the natural growth rate was negative during the entire 1990s. The rate in 1999 was much lower than the EU average or the average of the reference countries<sup>1</sup>.

In 1999, male life expectancy at birth was the second lowest among the reference countries, even lower than in the mid-1960s, despite an increasing trend in the late 1990s. For women, life expectancy stagnated in the late 1980s and declined in the early 1990s before an increase in the late 1990s. Estonia's relative position among the reference countries is better for women, as their life expectancy is near the average of the reference countries.

For both sexes, but particularly men, the SDR (standardized death rate) for cardiovascular diseases in the age group 0–64 increased significantly in the late 1980s and in the early 1990s, but decreased to the level of the mid-1980s later in the decade. The SDR for all cardiovascular diseases is near the average of the reference countries, but the SDR for ischaemic heart disease is the second highest among the reference countries.

The SDR for cancer in the age group 0–64 has been high, but has decreased since the mid-1980s. For some female cancers – for example for breast cancer and cancer of the cervix – the SDR in 1999 was higher than in the mid-1980s.

The SDR for external causes for all ages for men more than doubled from 1986 to 1994. Though the SDR has decreased by a third since then, it is still the highest among the reference countries. For women, the pattern was similar and Estonia had the second highest SDR for females, even though the changes

have not been as large as for men. The SDRs for homicides and for occupational accidents are among the highest of the reference countries. The SDR for suicide is higher than the average of the reference countries, especially for males. Although motor vehicle traffic mortality is still high relative to the reference countries and the EU, there appears to have been a very significant decline following the implementation of a traffic accident prevention programme introduced in 1996.

Estonia, together with the other Baltic states, shared with the Russian Federation a particular pattern of changes between 1984 and 1996 in deaths related to alcohol (cardiovascular, particularly sudden cardiac deaths, and external causes), with a clear fall in overall mortality in 1986 related to a period of restrictive alcohol policy. Mortality then rose steadily to around 1991 and reached a steep peak in 1994.

The SDR for respiratory diseases for all ages is among the lowest in the reference countries. The SDR for digestive diseases is also low, but has increased since the late 1980s.

The infant mortality rate has decreased by a third since 1985, and is below the average of the reference countries. The proportion of new-born weighting less than 2500 grams is among the lowest in the reference countries.

The decline in the incidence of tuberculosis and syphilis ended in the 1990s, and both have increased significantly since then. Increases in mortality from tuberculosis among men have contributed to most of the 50% increase in infectious disease mortality since the late 1980s. Estonia has not experienced an epidemic of diphtheria, despite epidemics in several countries of the former Soviet Union, including those which border Estonia.

Though declining, the prevalence of smoking is still higher than the EU average. The SDR for lung cancer has also been relatively high, but has fallen below the average of the reference countries.

<sup>1</sup> The following ten candidate countries for accession to the European Union were used as reference countries: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Registered consumption of alcohol has increased in the 1990s, though there are problems with these statistics. The SDR for chronic liver disease and cirrhosis for all ages was below the average of the reference countries and the EU rate until the late 1990s, but the Estonian SDR for these causes has since increased rapidly.

An insurance-based public health system was established in 1992, when the Health Insurance Law was introduced. Between 5% and 8% of Estonian residents are not, however, covered by health insurance.

The number of hospital beds has decreased significantly in the 1990s, and Estonia's number per 100 000 population is now placed between the average of the reference countries and the EU average. The number of physicians is above the average of the reference countries, but clearly below the EU average.

## TECHNICAL NOTES

Highlights on Health provide an overview of the health of a country's population and the main factors related to it. When possible, international comparisons are used as one means of assessing the country's comparative strengths and weaknesses and to provide a summary assessment of what has been achieved so far and what could be improved in the future. The country groups used for comparison are called reference countries and are chosen based on:

- similar health and socioeconomic trends or development; and/or
- geopolitical groups such as the European Union (EU), the newly independent states, the central Asian republics or the candidate countries for EU accession.

For Estonia, the reference countries are ten central and eastern European candidate countries for accession to the EU (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia).

To make comparisons between countries as valid as possible, data for each indicator have, whenever possible, been taken from one common international source (such as WHO, EUROSTAT, the Organisation for Economic Co-operation and Development or the International Labour Office). This is done to ensure that they have been harmonised in a reasonably consistent way. It should also be noted, however, that other factors such as recording and classification practices and cultural differences can influence the comparability of the data. Unless otherwise mentioned, the source of all data is the health for all statistical database of the WHO Regional Office for Europe (*WHO Regional Office for Europe, 2001*). Information on national policies has been obtained from health for all evaluation reports from national authorities and by personal communication with them and from *Health in Europe 1997 (WHO Regional Office for Europe, 1998)*.

A special case of comparison is when each country is given a rank order. Although useful as a summary measure, ranking can be misleading and should be interpreted with caution, especially if used alone, as the rank is sensitive to small differences in the value of an indicator. Also, when used to assess trends (such as the table at the start of the section on health status), ranking can hide important absolute changes in the level of an individual country. Mostly bar charts (to indicate a country's position versus the reference countries according to the latest data) or line charts (usually to show time trends from 1970 onwards) have been used. Line charts present the trends for all the reference countries and for the EU, as appropriate. Only the country in focus and the appropriate group average are highlighted in bold and identified in the legend. This enables the country's trends to be followed in relation to those of all the reference countries, and performance in relation to observable clusters and/or the main trend or average can be recognized more easily. To smooth out fluctuations in annual rates caused by small numbers, 3-year averages have been used, as appropriate. For example, this is the case for maternal mortality for all reference countries.

Comparisons should preferably refer to the same point in time. However, the countries' latest available data are not all for the same year. This should be kept in mind, as the country's position may change when more recent data become available.

## THE COUNTRY AND ITS PEOPLE<sup>2</sup>

In March 1990, the Estonian Supreme Court adopted a declaration calling for the eventual re-establishment of full sovereignty. At a referendum in March 1991, a majority of the votes cast were in favour of independence. The Estonian Parliament declared independence in August 1991 and full independence was conceded by the USSR State Council in September 1991.

A draft constitution drawn up by a constitutional assembly was approved at a referendum in June 1992. According to the constitution, which came into effect in July 1992, Estonia is a democratic state guided by the rule of law, where universally recognized norms of international law are an inseparable part of the legal system.

The 101-member National Assembly, Riigikogu, is elected for four-year terms. The head of the state is the President, elected by the Parliament for five-year terms.

There are 254 local municipalities, of which 207 are rural and 47 urban. The electorate consists of citizens and residents of five years' standing. Only citizens may stand for office.

Estonia is a member of the United Nations, the Council of Europe and the NATO Partnership for Peace, and it is an associate member of the European Union and an associated partner of the Western European Union. Estonia applied to join the European Union in November 1995.

Table 1. Estonia and the reference countries (1999)

|   | <b>Estonia</b>   | Reference countries |           |            |
|---|------------------|---------------------|-----------|------------|
| Capital   | <b>Tallinn</b>   | Average/total       | Minimum   | Maximum    |
| Population  | <b>1 442 400</b> | 104 705 300         | 1 442 400 | 38 741 000 |
| Population 0–14 years (%)                                 | <b>18.3</b>      | 18.8                | 16.1      | 21.2       |
| Population 15–64 years (%)                                | <b>67.3</b>      | 68.4                | 66.3      | 74.2       |
| Population ≥ 65 years (%)                                 | <b>14.4</b>      | 12.8                | 9.6       | 16.0       |
| Area in km <sup>2</sup>                                   | <b>45 100</b>    | 1 078 066           | 20 000    | 313 000    |
| Density per km <sup>2</sup>                               | <b>32</b>        | 97                  | 32        | 130        |
| Urban population (%)                                      | <b>69</b>        | 64                  | 50        | 75         |
| Births per 1000 population                                | <b>8.7</b>       | 9.7                 | 8.0       | 10.5       |
| Deaths per 1000 population                                | <b>12.8</b>      | 11.2                | 9.6       | 14.2       |
| Natural growth rate per 1000 population                   | <b>-4.1</b>      | -1.5                | -5.5      | 0.8        |
| GDP per person in US \$ PPP                               | <b>8355</b>      | 8369                | 5071      | 15 977     |
| GDP: gross domestic product; PPP: purchasing power parity |                  |                     |           |            |

<sup>2</sup> These introductory paragraphs are based on the material from *The Statesman's yearbook* (Turner, 2000).

## Demography

The shape of an age pyramid shows the stage of the demographic transition of a population. The overall changes in population structure, caused by changes in fertility, mortality and migration, can be easily seen when the age pyramids for two different years are compared (Fig. 1). The countries of the EU have generally reached an advanced stage of demographic transition, with the younger age groups becoming smaller in relation to the middle and, at times, older age groups. The reference countries are, in general, developing a similar population structure.

The Estonian age groups of 0–4 years and 15–24 years were proportionally smaller, and age groups of 25–39 years and 55–69 years larger than the average of reference countries in 1999. For women also age groups 70 years or more were also larger than in the reference countries in general (Fig. 1).

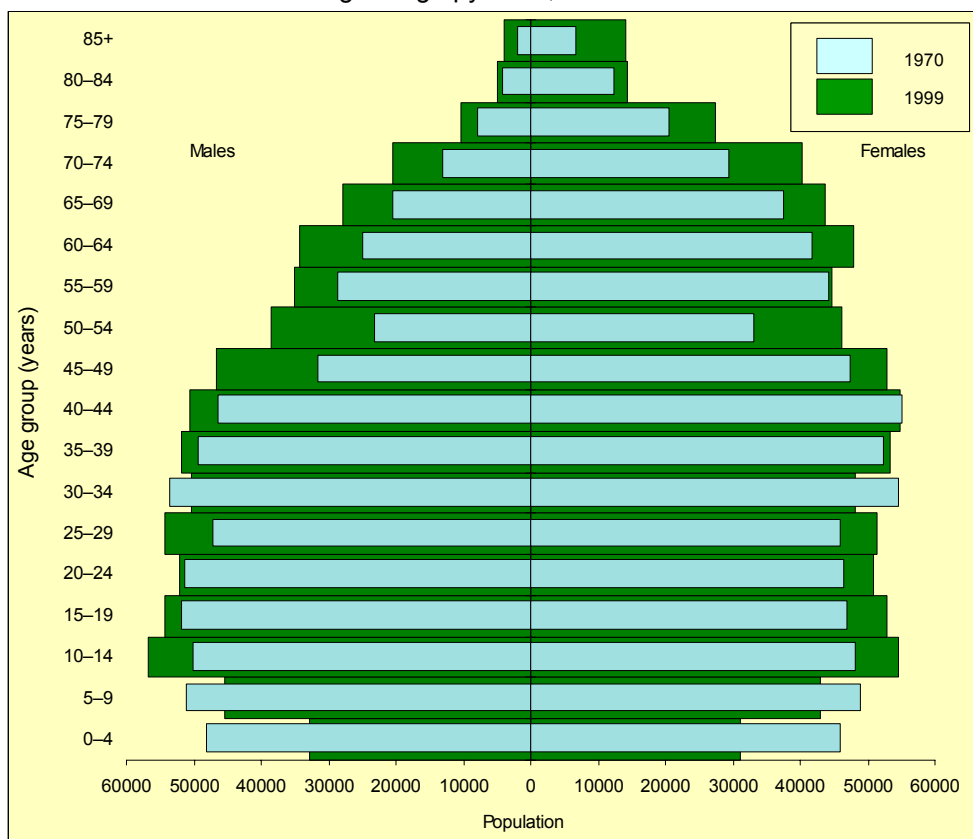
Since 1987, the crude live birth rate has almost halved from 16.2 per 1000 population to 8.7 per 1000 in 1999. The Estonian natural growth rate became lower than the EU rate in 1990, and it has been negative since 1991. In 1999, the Estonian figure (-4.1/1000 population) was the fourth lowest among the reference countries, much below the average of the reference countries (-1.6/1000 in 1999) and that of the EU (+0.9/1000 in 1997) (Fig. 2).

The fertility rate has fallen below replacement level in Estonia (1.2 in 1999) like in all other reference countries (average 1.3, variation from 1.1 to 1.4).

## Migrant population and ethnic profile

Immigrants and ethnic minorities can have specific patterns of disease and health needs because of cultural, socioeconomic and behavioural factors and exposure to a different environment in their country of origin.

Fig. 1. Age pyramid, 1970 and 1999





Obtaining access to health care that can meet such specific needs and that is culturally and linguistically acceptable can also be difficult. Moreover, many such people have a higher risk of living in relative poverty and being marginalized, which can result in reduced health status compared with other minority groups. Illegal immigrants, in particular, can find it difficult to obtain health care, and following up any care given can be problematic.

According to the Census in 1989, 62% of the population were Estonians, 30% Russians, 3% Ukrainians, 2% Belarussians and 1% Finns (Turner, 2000). In 1999, 65% of the population were Estonians, 28% Russians, 2.5% Ukrainians, 1.5% Belarussians and 1% Finns.

The net migration has been negative during the 1990s, but its level has generally decreased from its highest level -33 800 in 1992 to -600 in 1999 (Council of Europe, 1999). Approximately 70% of the negative net migration has been caused by emigration to the Russian Federation. Other important emigration destinations have been Finland and Germany (Council of Europe, 1997).

### Social conditions and economy

The relevance of educational attainment to health is well documented. The literacy rate among the adult population (aged 15 or older) has often been used as an indicator, but the uniformly high adult literacy rates in Europe

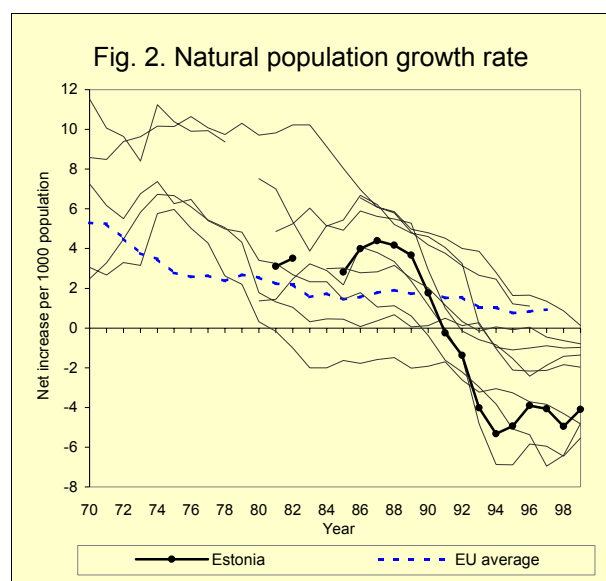
(all reference countries report a literacy rate of 96% or more) limit its value for comparison. As all the reference countries have universal primary education with almost all children participating, the enrolment ratio<sup>3</sup> for primary education is also an insensitive indicator for detecting differences in educational levels.

Comparable data on enrolment ratios in secondary education (such as middle school, high school and vocational and technical schools) are more useful. In Estonia, enrolment in secondary education has been at a constant level in the 1990s. By 1996, the net enrolment ratio for secondary education was among the highest in the reference countries, at 83%, compared with an average of 79% (UNESCO, 1999).

The Estonian gross domestic product (GDP) adjusted by purchasing power parity (PPP) was US \$3842 in 1992, increasing to US \$7682 in 1998. This was slightly below the average of the reference countries and only some 35% of the EU average. It has since increased still further, to US \$8355 in 1999 (United Nations Economic Commission for Europe, 1999). Real wages have also increased in Estonia, by 44% between 1992 and 1999. According to preliminary figures for 1999, 63% of the GDP came from services, 18% from industry and 3% from agriculture (UNDP, 2000).

The official unemployment rate in Estonia was 12.3% in 1999. This is one of the highest figures among the reference countries, and also above the EU average (10.3%). Unemployment in most countries in central and eastern Europe may be higher than these official rates.

Inflation has caused severe problems for countries in the central and eastern Europe. In Estonia, inflation in 1992 reached 1076%, but decreased to 3% in 1999.



<sup>3</sup> The net enrolment ratio is the number of enrolled students in the official age group, divided by the population of the same age group which corresponds to a specific level of education. National regulations are used to define the level of education and, therefore, the official age group (UNESCO, 1999).



## HEALTH STATUS

A summary of recent changes in Estonia's health position compared to the reference countries (Fig. 3) shows:

- Estonia's relative position on life expectancy has not changed but remains poor. It now has the largest difference between the sexes in life expectancy. The position on infant mortality has deteriorated while on maternal mortality it has improved;
- It's relatively poor position on cardiovascular mortality has only improved slightly;
- The position on cancers is more promising, particularly for lung cancer, though the position for breast cancer has deteriorated markedly;
- The position on external causes has also deteriorated markedly.

| Fig. 3. Estonia relative to reference countries in 1985 ● and in 1999 <sup>e</sup> ☺ |                       |   |   |   |   |                |   |   |   |    |   |                           |                      |                      |
|--|-----------------------|---|---|---|---|----------------|---|---|---|----|---|---------------------------|----------------------|----------------------|
| POSITION   | BEST                  |   |   |   |   | WORST          |   |   |   |    | Estonia   | Reference country average | Minimum <sup>a</sup> | Maximum <sup>b</sup> |
|  | 1                     | 2 | 3 | 4 | 5 | 6              | 7 | 8 | 9 | 10 |   |                           |                      |                      |
| Life expectancy at birth (years)   |                       |   |   |   |   |                | ☺ |   |   |    | 71.1  | 72.3                      | 70.2                 | 75.8                 |
| Male versus female difference in life expectancy at birth (years)                    |                       |   |   |   |   |                |   |   |   | ☺  | 10.9  | 8.2                       | 6.8                  | 10.9                 |
| Infant mortality rate per 1000 live births   |                       |   |   | ● |   |                | ☹ |   |   |    | 9.5   | 10.9                      | 4.6                  | 18.6                 |
| Maternal mortality rate from all causes per 100 000 live births <sup>c</sup>         |                       |   |   |   |   | ☺              |   |   | ● |    | 16.0  | 17.6                      | 6.3                  | 44.1                 |
| SDR <sup>d</sup> from cardiovascular diseases, age 0–64 years                        |                       |   |   |   |   |                | ☺ | ● |   |    | 155.5   | 129.9                     | 61.1                 | 167.3                |
| SDR from ischaemic heart disease, age 0–64 years                                     |                       |   |   |   |   |                |   |   | ☺ |    | 76.4  | 57.5                      | 25.3                 | 88.0                 |
| SDR from cerebrovascular disease, age 0–64 years                                     |                       |   |   |   |   | ☺              | ● |   |   |    | 36.3  | 32.6                      | 14.3                 | 51.1                 |
| SDR from cancer, age 0–64 years  |                       |   |   | ☺ |   | ●              |   |   |   |    | 99.6  | 107.3                     | 92.7                 | 145.3                |
| SDR from trachea/bronchus/lung cancer, age 0–64 years                                | ☺                     |   |   |   | ● |                |   |   |   |    | 19.4  | 26.8                      | 19.4                 | 42.0                 |
| SDR from cancer of the cervix among females aged 0–64 years                          |                       |   |   |   | ☺ |                |   |   |   |    | 6.1   | 7.4                       | 3.3                  | 11.9                 |
| SDR from breast cancer among females aged 0–64 years                                 |                       |   | ● |   |   |                |   | ☹ |   |    | 17.4  | 15.7                      | 13.7                 | 20.6                 |
| SDR from external causes of injury and poisoning                                     |                       |   |   |   |   |                | ● |   | ☹ |    | 151.4   | 74.0                      | 52.2                 | 156.6                |
| SDR from motor vehicle traffic accidents   |                       |   |   |   |   | ●              |   | ☹ |   |    | 16.8  | 14.5                      | 10.2                 | 26.0                 |
| SDR from suicide and self-inflicted injury   |                       |   |   |   |   |                | ● |   | ☹ |    | 31.1  | 17.3                      | 12.0                 | 42.1                 |
| ☺  | Position improved     |   |   |   |   | 5 (indicators) |   |   |   |    | <sup>a</sup> Lowest value observed among ten reference countries  |                           |                      |                      |
| ☺  | Position unchanged    |   |   |   |   | 4 (indicators) |   |   |   |    | <sup>b</sup> Highest value observed among ten reference countries |                           |                      |                      |
| ☹  | Position deteriorated |   |   |   |   | 5 (indicators) |   |   |   |    | <sup>c</sup> Three-year averages                                  |                           |                      |                      |
| <sup>d</sup> SDR: standardized death rate  |                       |   |   |   |   |                |   |   |   |    |   |                           |                      |                      |
| <sup>e</sup> Maternal mortality 1997–1999 (Poland 1994–1996)                         |                       |   |   |   |   |                |   |   |   |    |   |                           |                      |                      |

## Life expectancy

The Estonian life expectancy at birth was 65.5 years for men and 76.4 years for women in 1999. For both sexes, the difference between Estonia and the EU average has grown considerably since the 1980s, and the most recent Estonian life expectancy for women is more than five years and for men almost ten years shorter than the EU countries average (Fig. 4, 5).

Increasing male life expectancy in the mid-1980s ceased in the late 1980s, mainly due to increasing mortality from external causes and cardiovascular diseases. The lowest figure was reached in 1994, when life expectancy for men was more than six years shorter than seven years earlier and even shorter than in the mid-1960s (*Põlluste, 1998*). Subsequently, mortality rates for the main causes of death – cardiovascular diseases, cancer and external causes – have declined and more than half of the decline in the life expectancy has been regained. Despite this improvement, the life expectancy for Estonian men is the second lowest in the reference countries.

The progress in the life expectancy for women has been similar to that for men, though the changes have not been as large. Life expectancy declined from 75.0 years in 1991 to 73.2 years in 1994, but has improved by three years

since then. For women, this deterioration was also caused by increasing mortality rates from cardiovascular diseases and external causes. For women, Estonia is better placed among the reference countries than for men, since the most recent figures for Estonia are near to the average life expectancy in the reference countries. Among the countries in the WHO European region, a lower overall life expectancy can be found only in Latvia, Hungary, Romania and in some other selected countries of the former Soviet Union (Fig. 6).

The gender difference in life expectancy has increased in almost all the reference countries. In the mid-1980s, the Estonian difference was almost ten years, but this difference increased to 10.9 years by 1999. This is the largest gender difference among the reference countries, and only Belarus (11.7 years) and the Russian Federation (12.5 years) have a larger gender difference in the entire WHO European region.

In 1996, a third of all deaths in Estonia were premature, i.e. they occurred before the age of 65 years. Also for this indicator, a large gender difference was observed: one fifth of deaths among women, but almost half of deaths among men were premature (*Põlluste, 1998*).

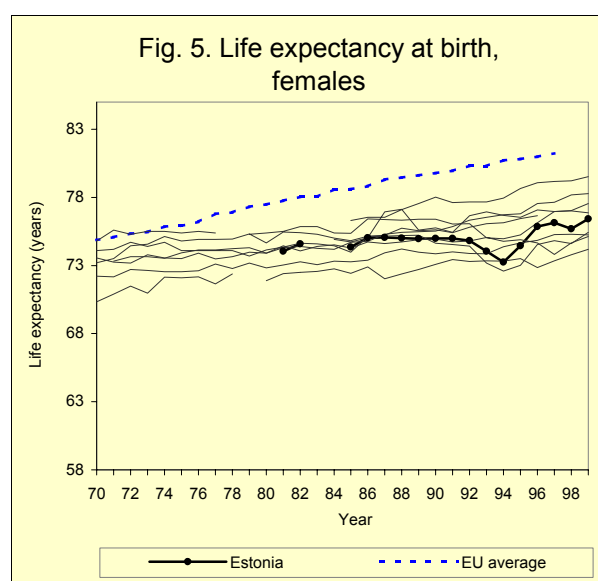
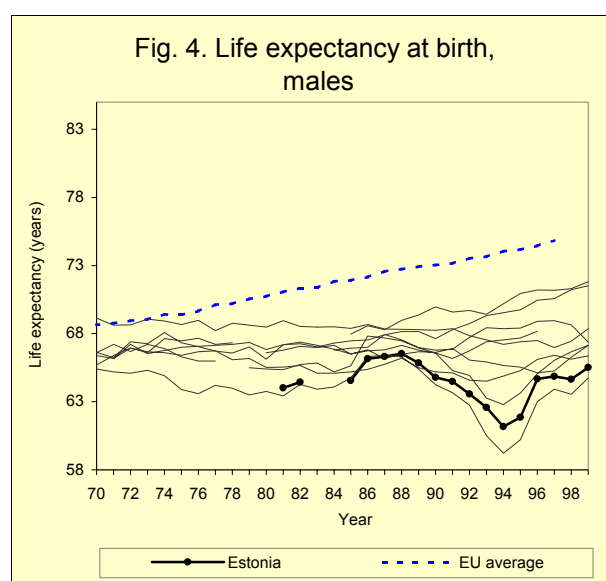
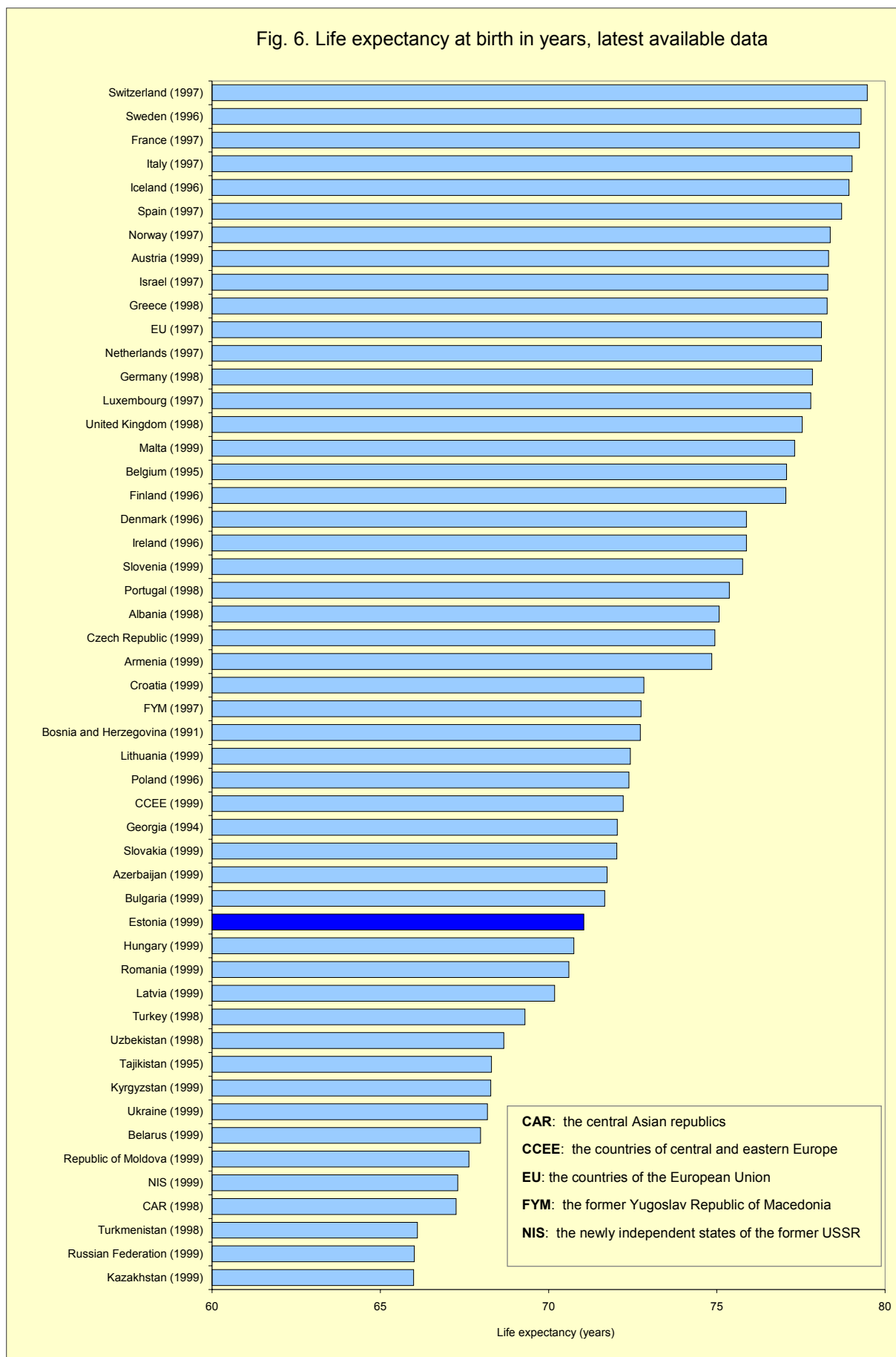


Fig. 6. Life expectancy at birth in years, latest available data

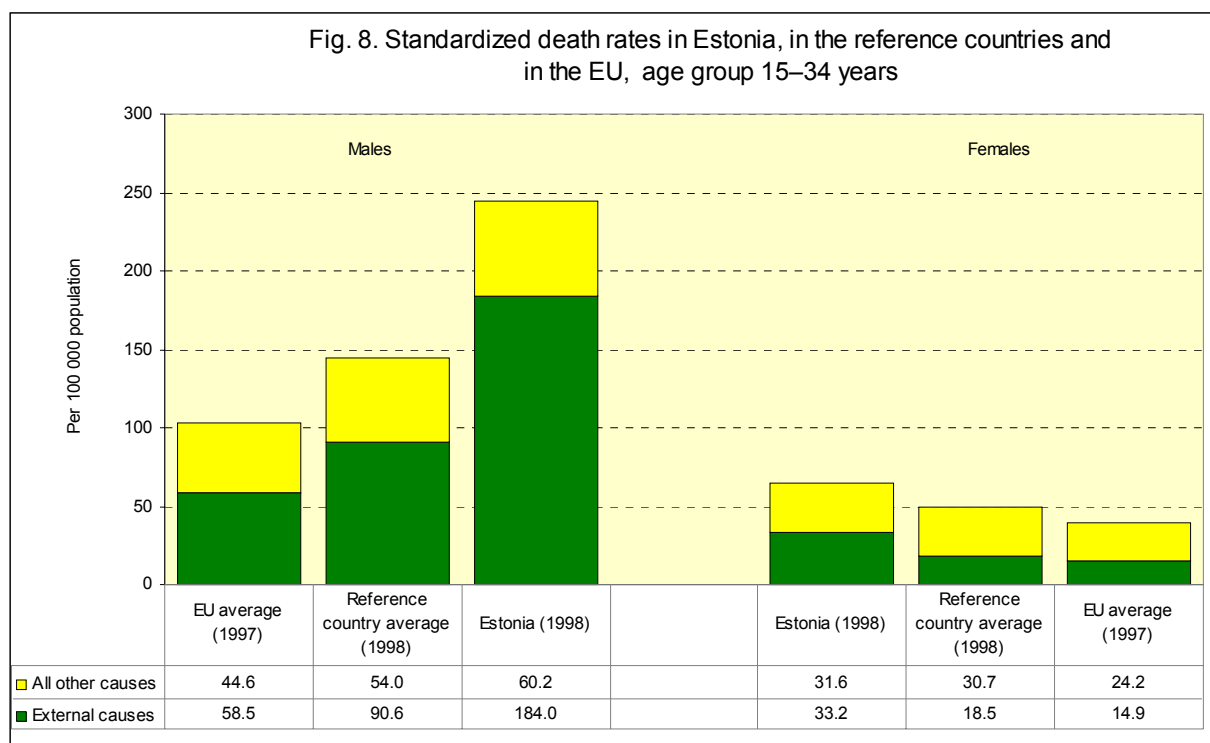
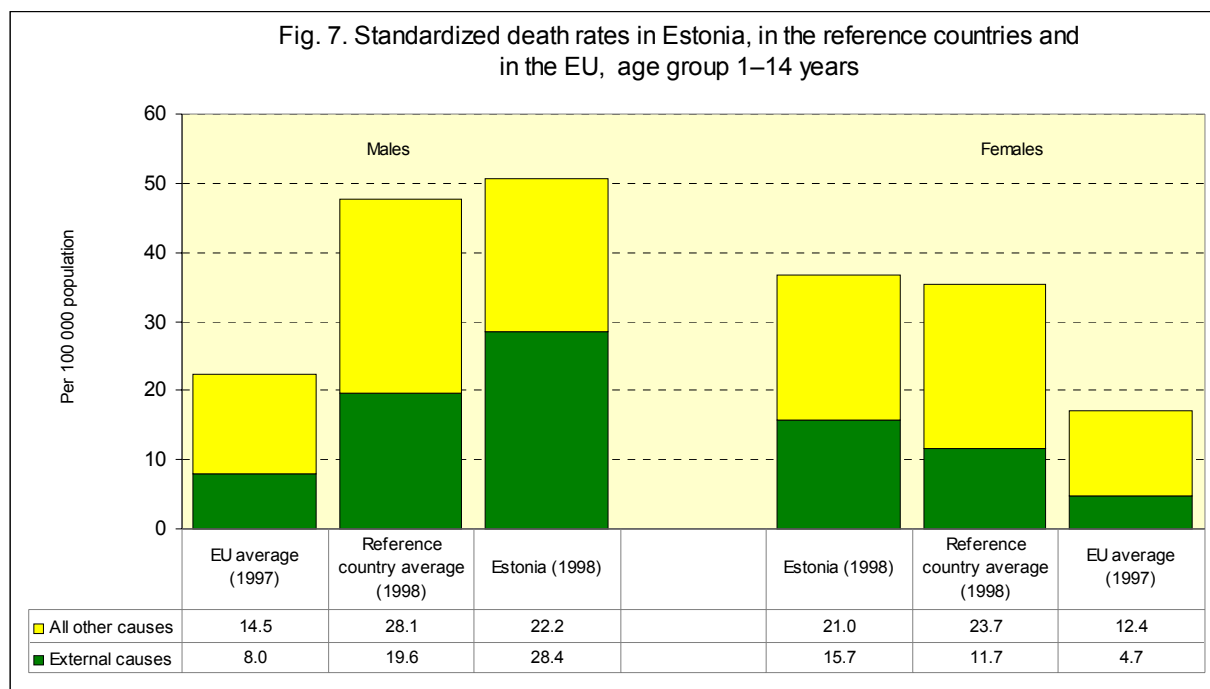


### Main causes of death

Comparing the death rates from main causes between countries can indicate how far the observed mortality might be reduced. As almost all the causes underlying the deaths attributed to cardiovascular diseases, cancer and accidents are influenced by collective and individual habits and behaviour, a wide variety of health promotion and prevention measures

can bring about changes to reduce health risks and thus disease and premature deaths.

For those aged 1–14 years in Estonia, external causes of death are a major cause of mortality. Indeed, male mortality from external causes alone exceeds the EU average for all causes and the rate for females approaches the average total mortality rate in the EU (Fig. 7).

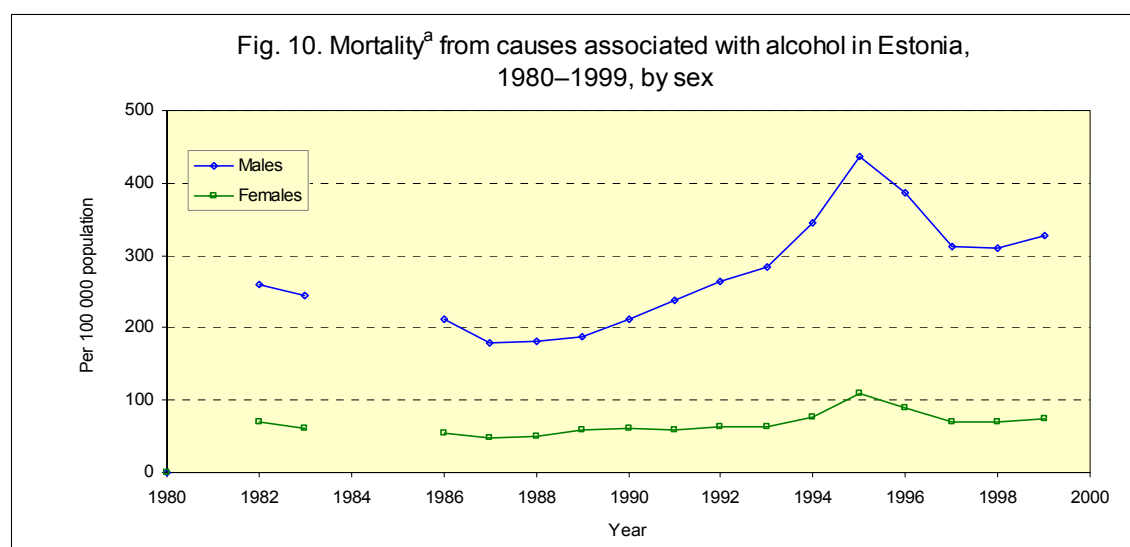
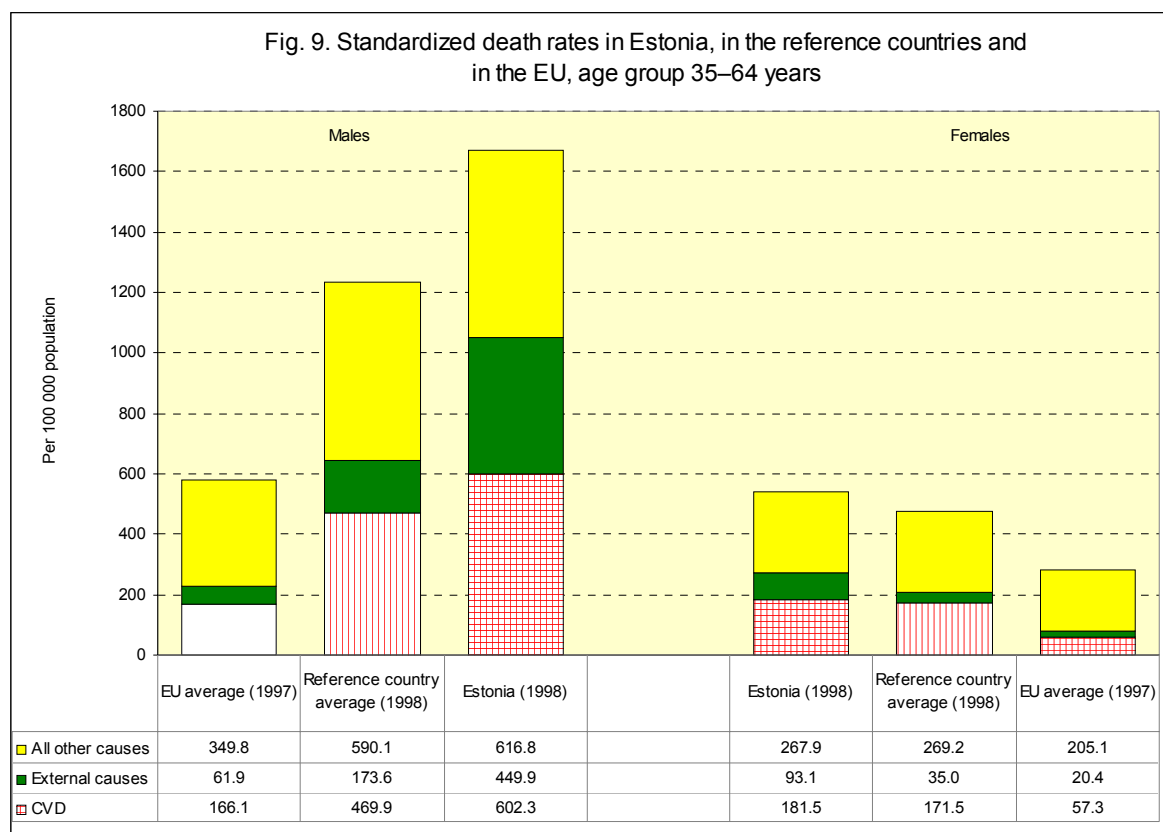


For the age group 15–34, male mortality from external causes is particularly high, three times the EU average and twice the reference country average. Indeed, male mortality from external causes is almost double the total mortality across the EU (Fig. 8).

For the age group 35–64, cardiovascular disease makes a dramatic contribution, with Estonian mortality being more than three times

the EU average for both sexes. The female mortality in Estonia from cardiovascular disease exceeds the male average rate in the EU.

Mortality from external causes, though not as high as from cardiovascular diseases, is still many times the EU average for both sexes (seven times higher for males, over four times higher for females) (Fig. 9).



<sup>a</sup> Includes mortality from cancer of oesophagus and larynx, alcohol dependence syndrome, chronic liver disease and cirrhosis and all external causes.

In 1986, Estonia shared with the other countries of the former Soviet Union a fall in the SDR from all causes, reflecting a reduction in deaths from cardiovascular disease and external causes. This followed the introduction in June 1985 of a vigorous campaign to restrict and thereby reduce alcohol consumption (the so-called Gorbachov anti-alcohol campaign). Mortality rates reached a low point in 1989. Following economic liberalisation in 1991, alcohol became more widely available and relatively cheaper than in 1985. This is believed to have contributed to the 12% increase between 1992 and 1994 in overall mortality (SDR all causes, all ages) in Estonia. The changes in SDRs are dominated by changes in male mortality (Fig. 10). These trends, and the evidence supporting the causal role of alcohol, are covered in more detail in *Health in Europe 1997* (WHO Regional Office for Europe, 1998).

### Cardiovascular diseases

The SDR for cardiovascular diseases for men aged 0–64 years in Estonia has been one of the highest among the reference countries since the 1980s. The Estonian rate increased by 40% between 1987 and 1994, but since then the SDR has decreased to the same level as in the mid-1980s. Despite this recent improvement,

the SDR is still three times the EU rate, and among the highest rates in the reference countries (Fig. 11).

The pattern is the same for women in the same age group, even though the level of SDR for women is much lower than the rate for men. The increase between 1987 and 1994 was proportionally slightly smaller for women than for men, and the difference from the EU is also somewhat smaller than for men (Fig. 12, 13).

Fig. 12. Trends in mortality from cardiovascular diseases among females aged 0–64 years

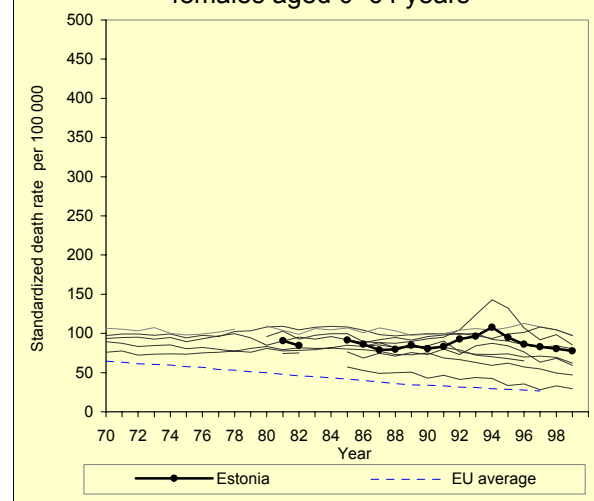


Fig. 11. Trends in mortality from cardiovascular diseases among males aged 0–64 years

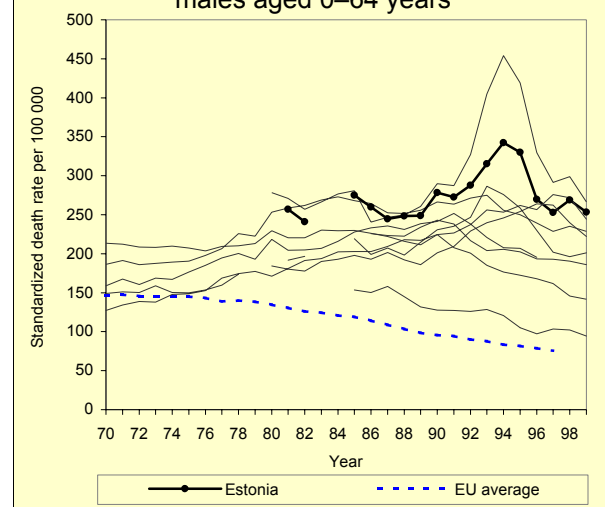
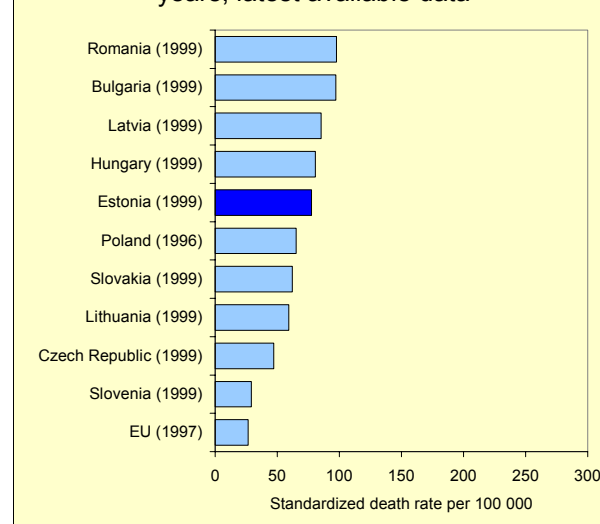


Fig. 13. Mortality from cardiovascular diseases among females aged 0–64 years, latest available data



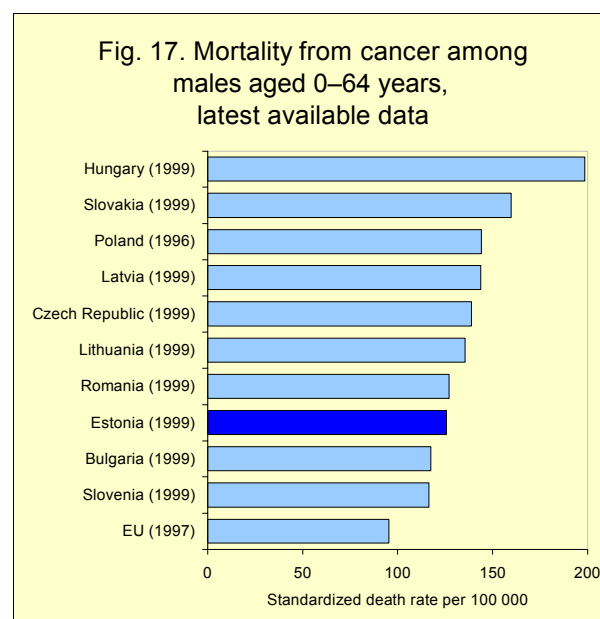
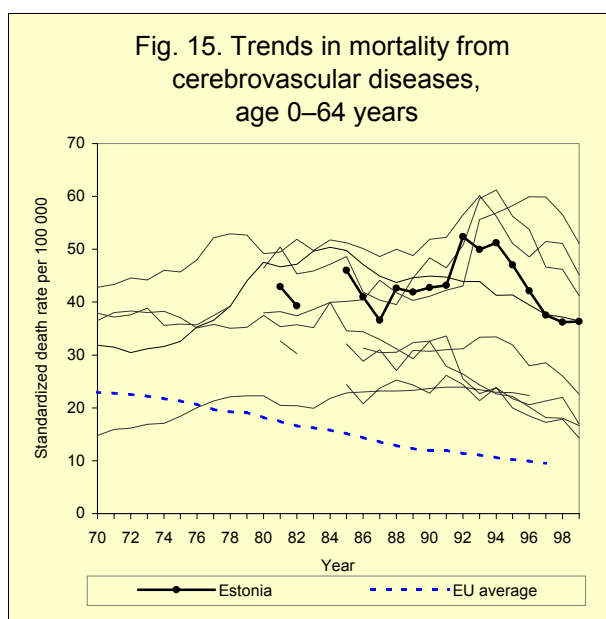
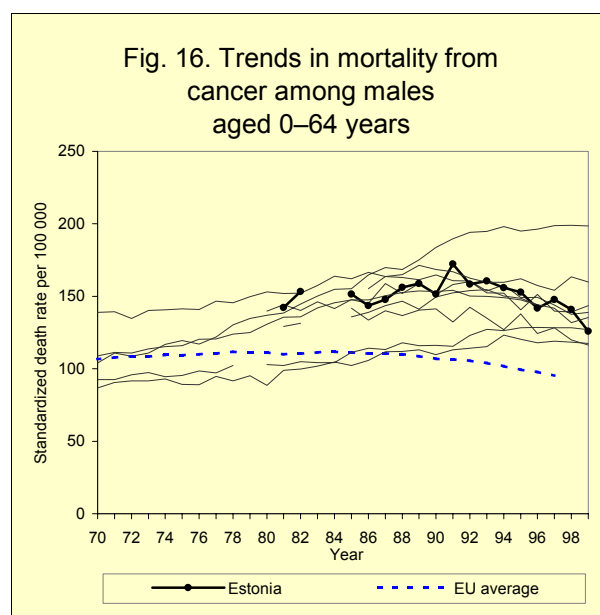
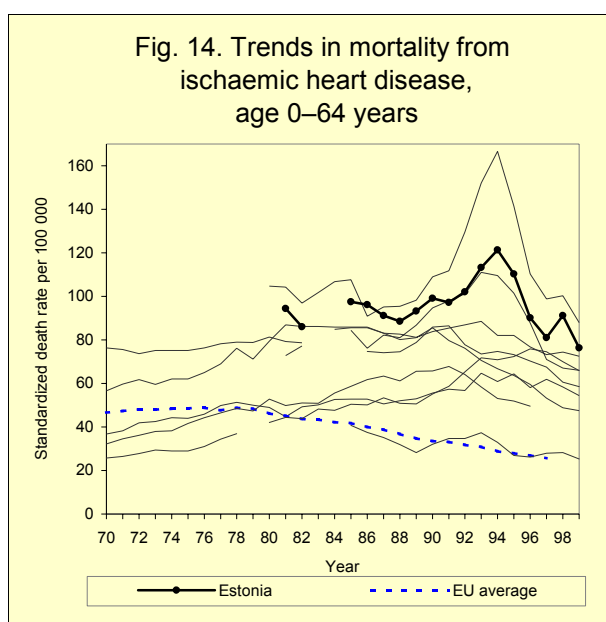
As for total mortality from cardiovascular diseases among population aged 0–64 years, Estonia has high SDRs for ischaemic heart disease (Fig. 14) and for cerebrovascular diseases (Fig. 15). In addition, the increase between 1987 and 1994 as well as the difference between Estonia and the EU were comparable to those observed for total mortality from cardiovascular diseases.

**Cancer**

This section provides comparative data on total cancer mortality. More detailed data on breast cancer and cervical cancer among

women are presented in the section on women’s health, whereas that on cancer of the trachea, bronchus and lung is presented in the section on smoking.

The SDR for cancer among the Estonian male population aged 0–64 years has been above the average of the reference countries, but a decline from a high point in 1991 has brought the rate below the reference countries average for the first time in 1999. Although it is still a third higher than the EU rate (Fig. 16, 17).





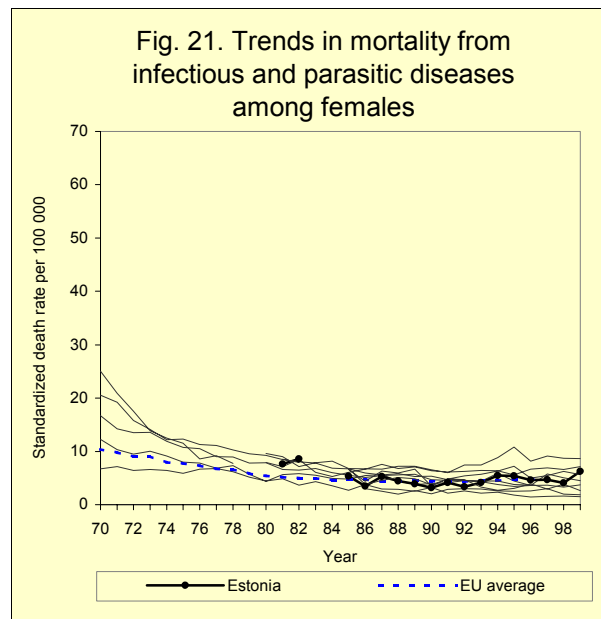
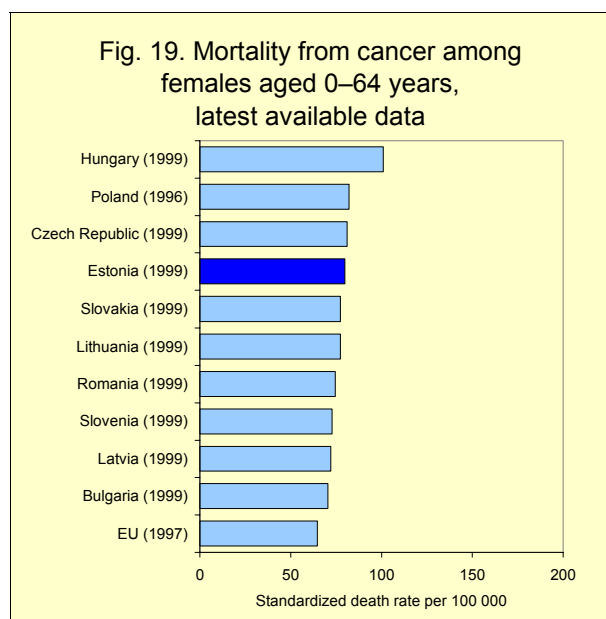
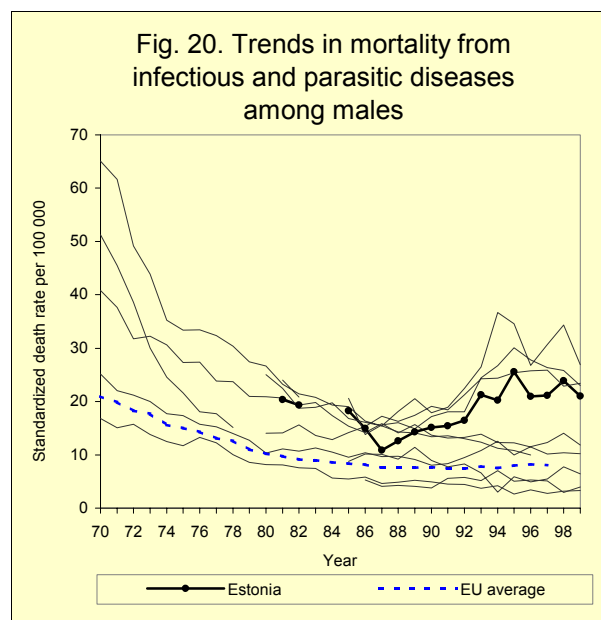
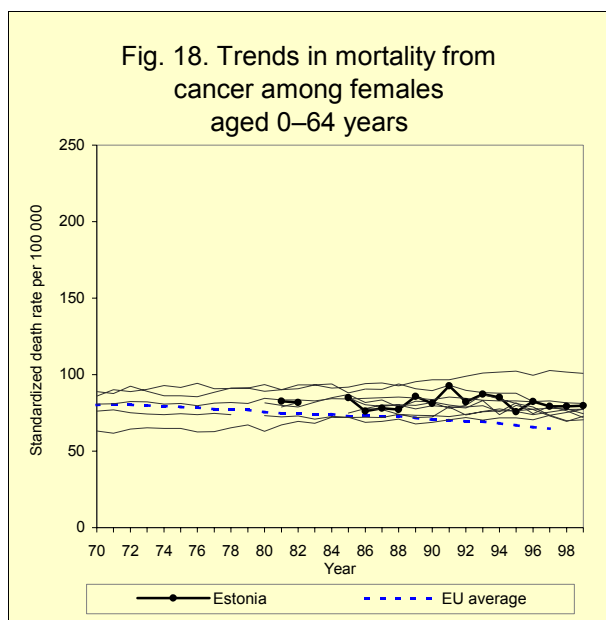
The Estonian SDR for cancer in women aged 0–64 years remained above the average of the reference countries, and the rate has been relatively stable since the mid-1980s. The most recent mortality rate is almost a fifth higher than the EU average (Fig. 18, 19).

**Other natural causes of death**

The SDR for infectious and parasitic diseases dropped very sharply both in the reference countries and in the EU during the 1970s and the early 1980s, but the decrease stabilized or the SDR even started to increase in several countries after that. Since the latter part of the

1980s, the Estonian SDR has increased by more than 50%, and the current rate is more than double the EU rate. This increase was mainly caused by the increasing mortality due to tuberculosis among men. The SDR for women is generally lower, and has fluctuated during the 1990s, but without the clear increase experienced by men (Fig. 20, 21).

Since the 1980s, Estonia has had one of the lowest SDRs among the reference countries for diseases of the respiratory system, with a rate that has remained 30–40% below the EU rate (Fig. 22).



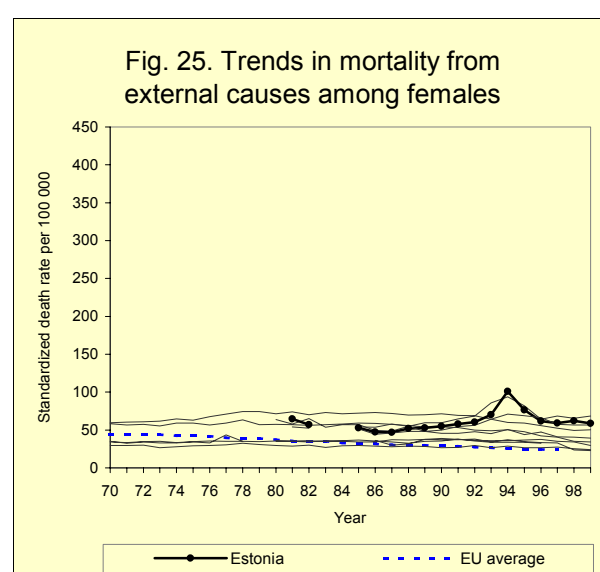
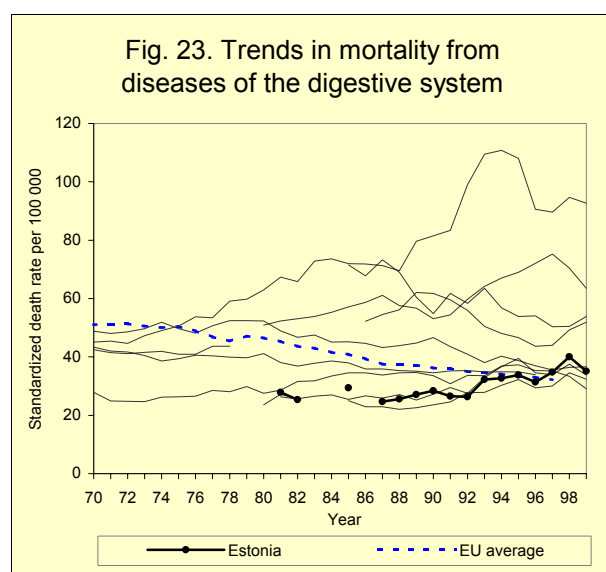
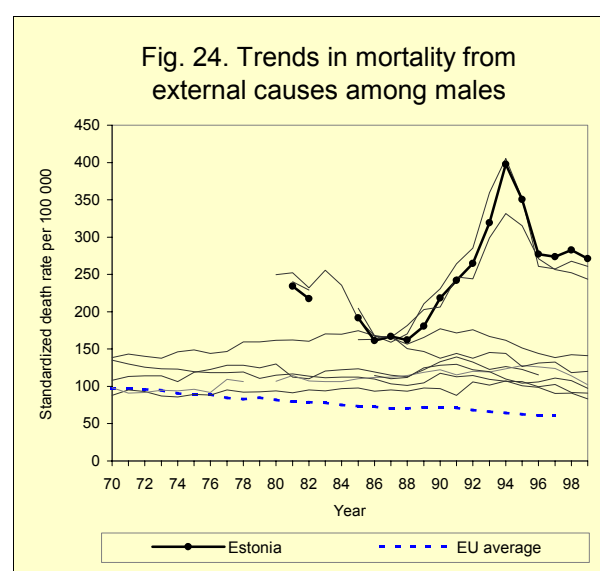
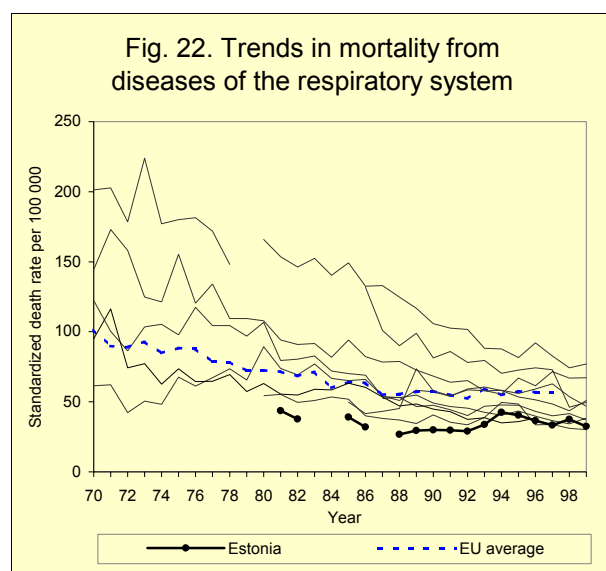
The Estonian SDR for diseases of the digestive system was one of the lowest among the reference countries, even below the EU rate in the 1980s. However, this positive trend ended in 1987, and the SDR has increased by more than 40% since then, with a significant proportion due to alcoholic liver disease. Mortality is now higher than the EU average (Fig. 23).

### External causes of death and injuries

External causes of death and injuries covers all deaths caused by accidents, injuries, poisoning and other environmental circumstances or events such as violent acts (homicide) and suicide.

The SDR for external causes, injuries and poisoning for men was already high in all the Baltic states in the early 1980s, but the SDR declined significantly – by 31% in Estonia – in the mid-1980s due to the restrictive alcohol policy initiated by Mikhail Gorbachov. After this decline, however, the SDR started to increase, and it more than doubled between 1987 and 1994. Even though the rate has fallen by more than a third since then, the Estonian SDR was the highest among the reference countries in 1991, more than four times the EU average (Fig. 24).

Women have notably lower SDRs for external causes in general. In 1999, the Estonian rate for men was more than four times the rate for



women. Before the mid-1980s, the female SDR for external causes in Estonia was close to the average of the reference countries, but it started to increase at the same time as the male rate. The proportional changes – first a notable increase and then a significant decrease – were as large for women as for men. In 1999, Estonia had the second highest female SDR for external causes, more than double the EU rate. (Fig. 25).

The SDR for homicide and purposeful injuries in Estonia was already high in the early 1980s, but it continued to increase very rapidly in the late 1980s and the early 1990s from 6 to 28 per 100 000 population. Even though the most recent rate has declined to 16 per 100 000 population, it is the highest among the reference countries, more than 15 times the EU rate. The homicide rate is higher for men (26 per 100 000 men) than for women (8 per 100 000 women) and both rates are the highest of the reference countries. Younger age groups have higher homicide rates than the older ones. Among the age group 15–34, up to 15% of all deaths were caused by homicides in Estonia in the early 1990s. Even though this percentage has fallen by 10% since then, it is still substantially higher than in the EU (2%).

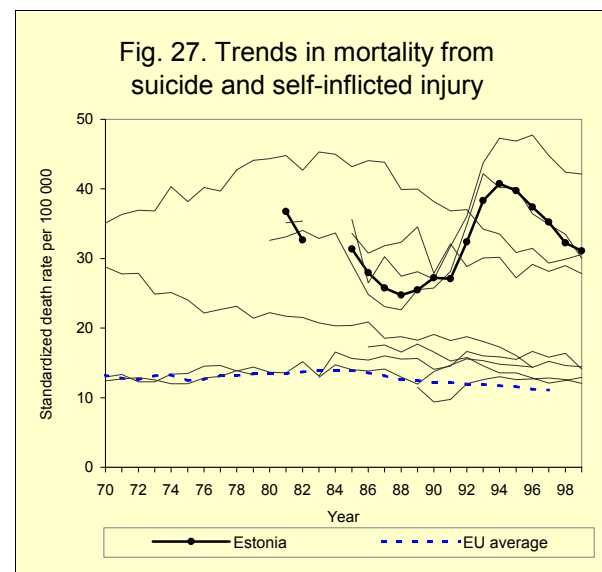
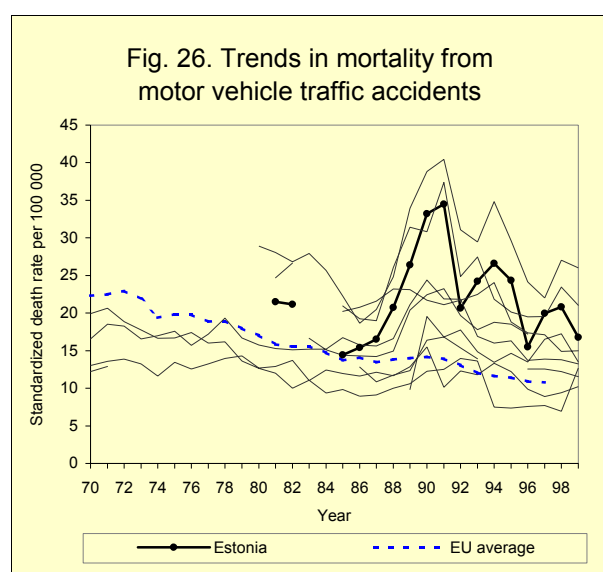
The SDR for motor vehicle traffic accidents in Estonia equalled the EU rate in the mid-1980s, but increased rapidly from 15 to 35 per 100 000 population (Fig. 26). Male mortality due to motor vehicle traffic accidents in

Estonia have been consistently higher than the female rate, four times in 1999. Even though the rate has declined to 17 per 100 000 population since then, it is still among the highest in the reference countries, more than 50% higher than the EU rate (11/100 000). One reason for the improved traffic safety is the National traffic accident prevention programme, which started in 1996. After one year, the number of traffic accidents had decreased by 20%, the number of persons killed in these accidents by 36% and the number of persons injured in these accident by 20% (*Ministry of Social Affairs of Estonia, 1997*).

### Mental health

Although mental and psychosocial wellbeing are important aspects of health-related quality of life, too little information is usually available to allow these important dimensions of the population's health to be described reliably. Suicide rates can be used as a surrogate indicator of the overall level of mental health.

The Estonian SDR for suicide and self-inflicted injury declined in the 1980s. After 1990, however, the suicide rate increased from 27 to 41 per 100 000 population in 1994. The suicide rate decreased to 35 per 100 000 in 1997 and further to 31 per 100 000 in 1999 (Fig. 27), but these rates were still the fourth highest in the WHO European Region after Lithuania, the Russian Federation and Belarus.



While the Estonian suicide rate for men increased by 65% between 1990 and 1994, the increase for women was only 5%. Men have the second highest suicide rate in the reference countries, but the most recent suicide rate for women was near to the average of the reference countries. This gender difference was one of the greatest among the reference countries, and in 1999, the Estonian male rate was 5.5 times the female rate.

Between 1994 and 1999, the number of registered mental and behavioural diseases increased from 52 300 to 67 100. New cases increased from 15 400 to 22 100, a 50% increase in the incidence rate from 10.3 to 15.3 per 1000 population. The most frequent causes of mental disorders are neurotic, stress-related and somatoform disorders (18%), schizophrenia, schizotypal and delusional disorders (16%), and disorders caused by psychoactive substances (15%). Among the newly registered cases the neurotic, stress-related and somatoform disorders are more frequent, representing 29% of all new cases. There are marked gender differences in the type of new cases, with 31% of new male cases being caused by psychoactive substances, and 40% of new female cases being neurotic, stress-related and somatoform disorders (*Ministry of Social Affairs of Estonia, 2000a*).

### Infectious diseases

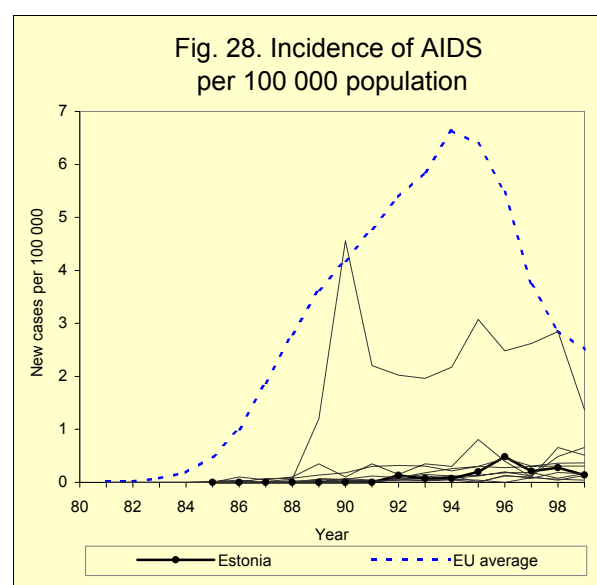
The acquired immune deficiency syndrome (AIDS) is caused by the human immunodeficiency virus (HIV), which can be transmitted in three ways: sexual transmission; transfusing infected blood or blood products or using non-sterile injection equipment; or from mother to child. The incubation period between initial HIV infection and developing AIDS is about 10 years or more. The number of notified cases of AIDS is rising in central and eastern Europe, although more people have been diagnosed with AIDS in western and northern Europe.

The first HIV infection in Estonia was discovered in 1988 and the first AIDS case in 1992. There were between one and seven new cases of AIDS each year from 1992 to 2000. The incidence of AIDS was 0.1 per 100 000 popu-

lation in 1999, which equalled the median of the reference countries, well below the incidence in the EU (2.5/100 000) (Fig. 28). The main transmission routes in Estonia were homosexual (74%) and heterosexual contacts (26%), which were both less frequent in the reference countries excluding Romania (44% and 18%, respectively) than in Estonia. No cases of transmissions from mother to child, or from blood products have been reported. Over the period 1988–1999, there were between one and eleven new cases of HIV infection each year. In 2000, there was an explosive increase to 390 new HIV infections, mostly among drug addicts (*European Centre for the Epidemiological Monitoring of AIDS, 2000; Ministry of Social Affairs of Estonia, 2000a*).

The Estonian incidence of tuberculosis was one of the lowest among the reference countries in the 1980s, and approached the EU rate. The positive trend stopped in 1990, and since then the incidence of tuberculosis has increased from 21 to 45 per 100 000 population in 1999. This was near the average of the reference countries and more than a third lower than in the other Baltic states, but almost three times the EU rate (Fig. 29).

The Estonian incidence of syphilis was high, but declined in the early 1980s, and reached the EU level later in the decade. This declining trend ended in the 1990s, and the incidence of syphilis increased from 3.3 to 75.4 per 100 000 population by 1997, even though the incidence



decreased to 58.3 per 100 000 population in 1999. Excluding the newly independent states, Latvia is the only country in the WHO European region, which has a higher incidence than Estonia. The incidence rate in the EU is less than 2% of the Estonian one (Fig. 30). Compared with other European countries, the incidence rates of gonococcal infection have also been high in Estonia. Despite a steady fall from a high point in 1993 of 233 per 100 000 population to 79 per 100 000 population in 1999, this remains more than ten times the EU average.

The incidence of viral hepatitis in Estonia peaked in 1993 and 1998. Also epidemics of mumps (1993), rubella (1993), pertussis (1993 and 1997–1999), tetanus (1995) and malaria

(1995) have been reported for Estonia, but there has been no major epidemic of diphtheria, as in several countries of the former Soviet Union, including Estonia's neighbours.

### Long-term illness and disability

The prevalence of long-term illness and disability is an important indicator of a population's health status and health-related quality of life. Those countries which do provide data are difficult to compare because of differences in definitions, data collection methods and in national legislation on disease-related social benefits (where disability statistics are based upon those receiving such benefits).

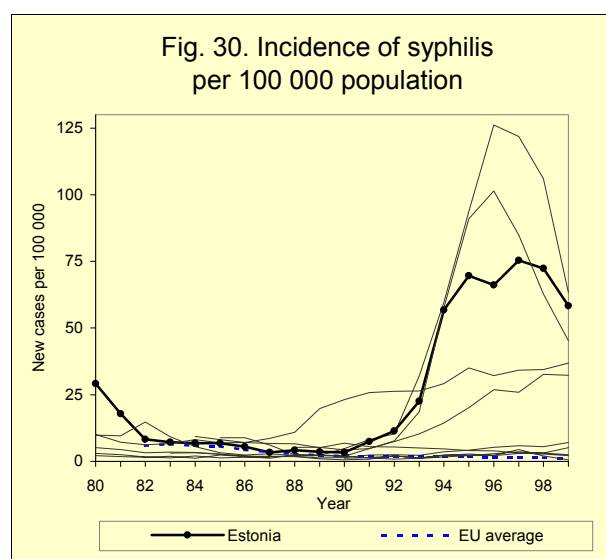
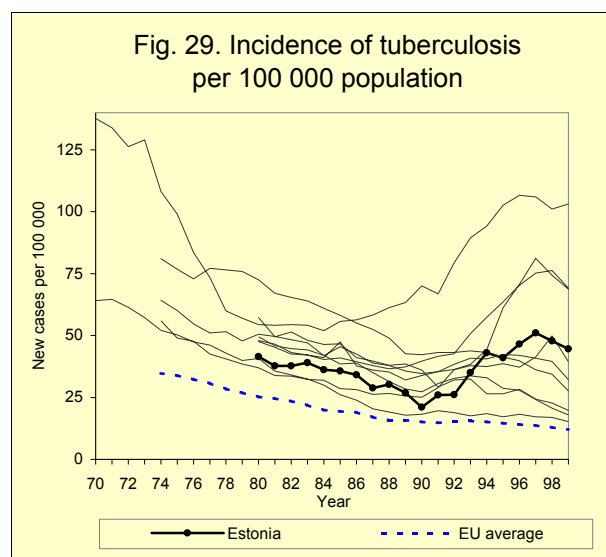
In Estonia, the total number of people with a registered disability increased from 49 000 to almost 59 000 between 1993 and 1997. Every year more than 9000 persons receive a certification of disability, mostly due to diseases of the circulatory system (29% of all cases) and malignant tumours (15%). Large regional differences can be observed in the number of new registrations, but there is no obvious explanation for these differences (*Pölluste, 1998*).

### Self-assessed health

Data are also not routinely available on the proportion of the population assessing their own health positively. Among the reference countries, seven of the countries had some national level data with Bulgaria having the largest proportion of adult respondents assessing their health as being good (62%) and Latvia the least (26%). The large observed variation may be caused by the differences in study settings, in data collection or by cultural differences.

There is, however, some indication that the proportion of Estonians with a positive assessment of their health has increased, from 25% in 1990 to 35% in 1998, in one series of studies. Despite this increase, the 1998 figures are significantly lower than those from Latvia (43%) or Lithuania (42%), and very much lower than Finland (64%) (*Kasmel et al., 1999*).

In all countries, men assessed their health as being good more often than women did. In Es-





tonia, this gender difference was observed in all age groups below 65 years according to a survey performed in 1994. However, the Estonian difference was the smallest among the reference countries: 38% of men and 34% of women assessed their health as good.

### Health of children and adolescents

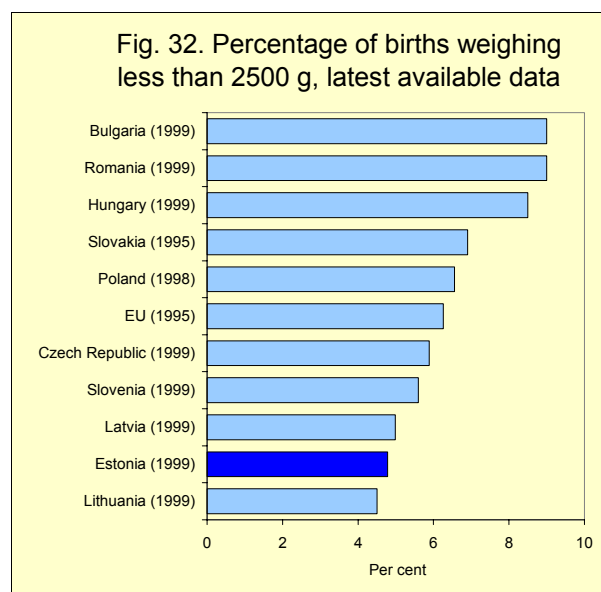
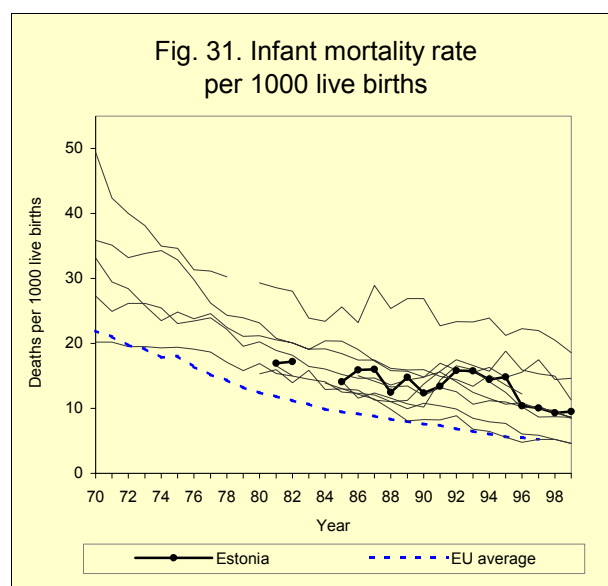
The infant mortality rate decreased in almost all the reference countries between 1985 and 1999. The Estonian infant mortality rate declined by a third from 14.1 to 9.5 per 1000 live births during this period, and it is clearly below the average of the reference countries, though still behind the EU rate (5.2 per 1000 live births in 1997). Because of changed definition from 1992, figures for previous years are probably underestimated by about 10% (Fig. 31).

One reason for the decline in the infant mortality rate is the improved perinatal mortality. Mortality during the early neonatal period (until seven days after the birth) decreased from 9.7 to 4.1 per 1000 newborns between 1992 and 1997. The decline was largest (79%) in those hospitals providing tertiary care (*Tellmann et al., 1999*), which suggests that the improved availability of appropriate equipment and technology may be one of the causes for the declining mortality rates.

The main causes of infant mortality in Estonia generally follow the pattern in western Europe,

with the most frequent cause being malformations and perinatal conditions, which cause 82% of all infant deaths in the EU. The third most common cause is sudden infant death syndrome (11%), whereas external causes, infectious and parasitic diseases and diseases of the respiratory system are responsible for 2–3% of death. The same pattern can be found in Estonia, where the main causes of death are related to perinatal conditions and malformations (79%). Deaths due to external causes are more common in Estonia (7%) than in the EU, but infectious and parasitic diseases are no more common than in the EU (3%). Sudden infant death syndrome (2%) is diagnosed less than in the EU, but some cases may be classified under diseases of the respiratory system (9%).

The proportion of the children that weighed less than 2500 grams has often been used as an indicator for newborn health and perinatal care. In the EU, 6.3% of all children were of low-birth weight in 1995. This proportion was on average higher in the reference countries (7.3%), but Estonia had a lower proportion (4.8%) in 1999 (Fig. 32). In fact, the Estonian figure is one of the lowest among the reference countries, and comparable to those countries in the WHO European region with the best perinatal outcomes, for example the Nordic countries.



Breast-feeding has become more common in Estonia during the 1990s. While 42% of newborn children were breast-fed until the age of three months and 16% until the age of six months in 1993, these proportions had increased to 60% and 36% six years later.

Children in most of the reference countries have good immunisation coverage. According to the latest data from Estonia (1999), an immunisation coverage of 99% or more was reported for tuberculosis, but the coverage for diphtheria, measles, mumps, poliomyelitis, pertussis, rubella and tetanus varied between 90% and 92%, below the average of the reference countries.

In general, children's oral health has improved in the reference countries in the 1990s like in the EU. In Estonia, the DMFT-index (the number of decayed, missing or filled teeth) was 4.1 in 1988 and 1990, which was near the average of the reference countries, but this decreased to 2.7 in 1997. This was the second lowest figure among the reference countries after Slovenia according to the latest available data.

Children with disabilities and others who experience difficulty in learning are often marginalized within or even excluded from school systems. In the countries of central and eastern Europe, the dominance of a traditional medicalized approach resulted in such children being educated in separate special institutions. In the 1990s, most of the ten reference countries had moved towards integrating these children in the normal school system, even though progress was slowed by economic problems (*Ainscow & Haile-Giorgis, 1998*).

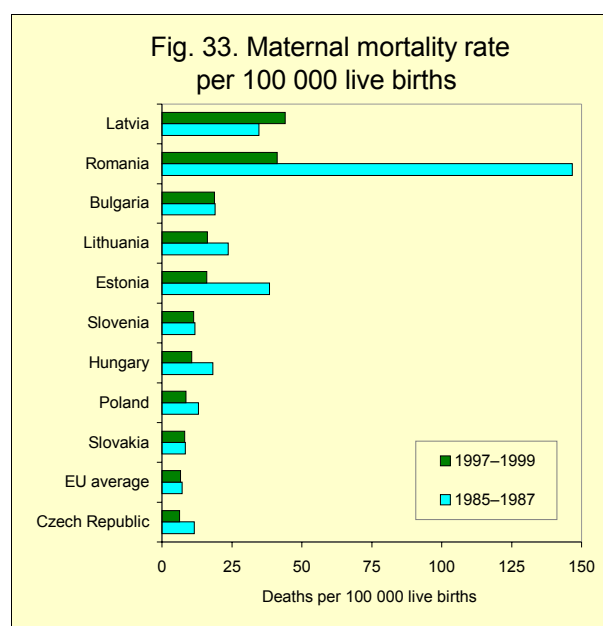
One of the few routinely available indicators for adolescents' sexual health and behaviour is the rate of teenage childbirth, which can reflect social factors as well as access to and use of contraception. In 1999, the birth rate per 1000 women aged 15–19 years was 26, which equalled the average of the reference countries, but which remained much higher than the EU average of 8 per 1000 (*Council of Europe, 2000*). The birth rate in this age group has been declining in all the reference countries since 1980. In Estonia this decrease was 42%.

## Women's health

Women as a group live longer than men and have lower mortality rates for all the main causes of death. For example in Estonia, the SDR for cancer in the age group 0–64 was 37% lower for women than for men in 1999. The gender difference was even larger for the SDR for diseases of the circulatory system, since the female rate was 69% lower than the male rate. However, women have higher reported rates of morbidity and utilization of health care services (especially around childbirth), and they can be more affected by social welfare policies than men.

Since the 1980s, the maternal mortality rate has declined noticeably in almost all the reference countries. In Estonia, this decline was one of the largest among the reference countries, from 38.5 to 16.0 per 100 000 live births between the mid-1980s and the late 1990s. Despite this improvement, it is still near the average of the reference countries (17.3 per 100 000) and almost three times the EU average of 6.6 per 100 000 live births (Fig. 33).

In the countries of central and eastern Europe and in the newly independent states, induced abortion was commonly used as a contraceptive method due to lack of modern



Data for Poland is 1985–1987 and 1994–1996.

Data for EU average is 1985–1987 and 1995–1997.



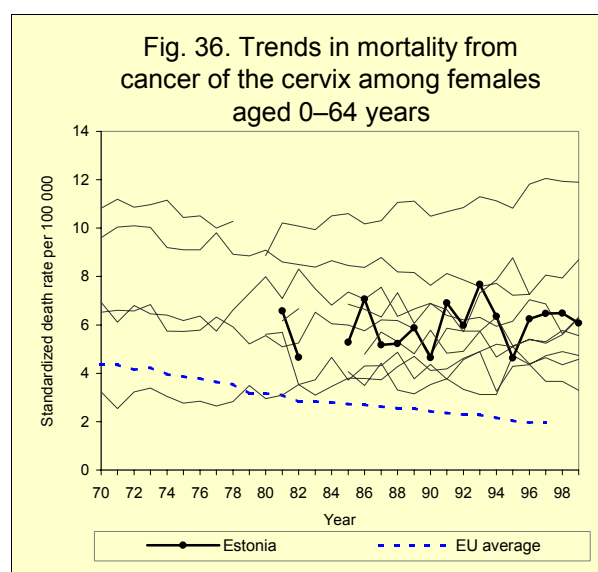
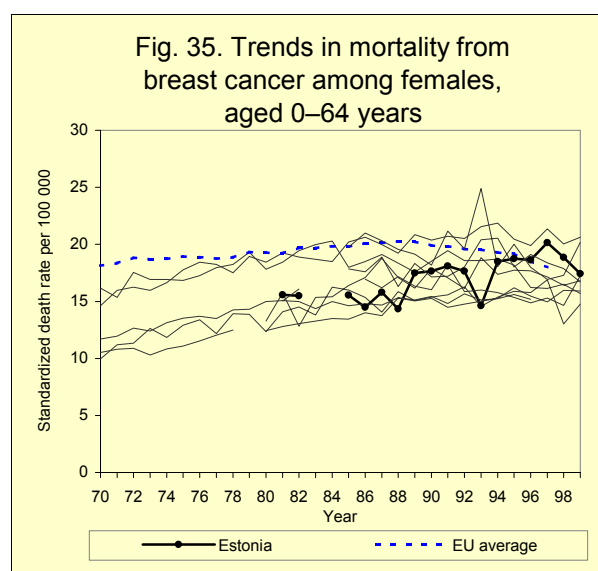
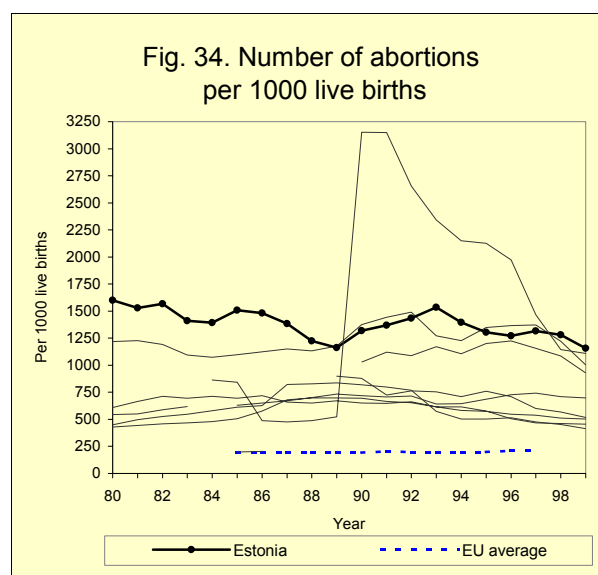
contraceptives. Estonia had some 35 000 induced abortions per year in the 1980s, and the induced abortion rate per 1000 live births was the highest among the reference countries. The annual number of abortions halved from 29 400 in 1990 to 14 500 in 1999. However, the proportional decline in the number of live births has been as large, so the Estonian number of induced abortions per 1000 live births has remained at the same high level, which was the highest among the reference countries in 1999 (Fig. 34).

Modern contraception has become more common in Estonia. The use of oral contraception increased from 4% to 15% among women aged 15–49 years between 1992 and 1999. At the same time, however, the use of intra-uterine contraceptive devices has decreased from 21% to 17% of women in the same age group (*Ministry of Social Affairs of Estonia, 2000a*).

The SDR for cancer of the female breast in Estonia was relatively low in the 1980s, but it had since increased by a fifth and reached the EU average. In the mid-1990s, Estonia had one of the highest rates among the reference countries (Fig. 35).

The Estonian SDR for cancer of the cervix has increased since the 1980s, and the most recent rate is near to the average of the reference countries. Since the EU rate is declining, the difference between Estonia and the EU has become larger, and the Estonian rate is now more than three times the EU rate (Fig. 36). Although examinations for cervical cancer are carried out, Estonian women are not screened regularly and awareness of this cancer is low (*WHO Regional Office for Europe, 2000b*).

Violence against women has received limited attention as a public health issue. Data on the incidence and type of such violence are lacking. The SDR for homicide and purposeful injury for women can be used as a surrogate indicator. The Estonian female SDR for homicide has increased, and the rate of 1999 (7.8 per 100 000 women) was the highest among the reference countries, much higher than the EU rate (0.6 per 100 000 women in 1999).



## LIFESTYLES

Among the factors (including genetics and the physical and social environments) influencing health, behaviour substantially affects the health and wellbeing of each individual and the population. Lifestyle patterns such as nutritional habits, physical activity and smoking or heavy alcohol consumption together with the prevalence of such risk factors as elevated blood pressure, high serum cholesterol or overweight influence premature mortality, especially from cardiovascular diseases and cancers. These diseases are the main causes of death in Europe. Unhealthy behaviour also contributes to a wide range of other chronic illnesses and thus affects the quality of life in general.

Lifestyle, however, is also influenced by behavioural patterns common to a person's social group and by more general socioeconomic conditions. Evidence is growing that, at least in most western European countries, improvements in lifestyles have largely been confined to the more socially and economically privileged population groups, who are better placed to adopt health-promoting changes in behaviour (*WHO Regional Office for Europe, 1993 and 1999b*).

### Tobacco consumption

The prevalence of smoking among the population aged 15 years or more is high in Estonia, 42% of men and 20% of women smoked regularly in 1998 (Fig. 37). Smoking rose from 1990 to a peak in 1994 (52% among men and 24% among women), prior to returning to 1990 levels (*Kasmel et al., 1999*).

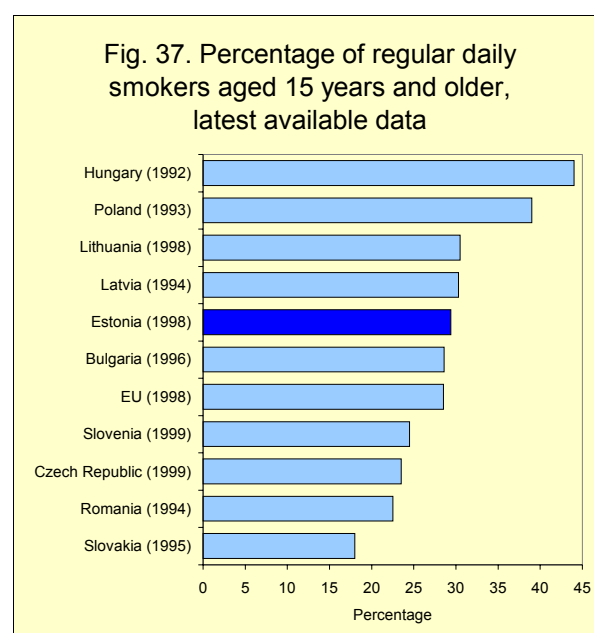
In the Baltic Nutrition and Health Survey in 1997, only 36% of men and 62% of women in Estonia reported themselves as non-smokers. In total 54% of men and 24% of women reported regular daily smoking. The Estonian percentage of regular smokers among men was at the same level as in Latvia and in Lithuania, but more Estonian women smoked than Latvians and Lithuanians (11% and 8%, respec-

tively) (*WHO Regional Office for Europe, 1999a*).

A postal questionnaire survey, performed in all the Baltic states in 1998, confirmed the high smoking prevalence among men (42%). Methodological differences make direct comparison with the study performed a year earlier difficult. The differences among women, however, were much smaller in this study: Estonia 20%, Latvia 19% and Lithuania 13% (*Kasmel et al., 1999*).

Older age groups were less likely to smoke daily. In Estonia, 43% of men aged 50–64 years and 13% of women in the same age group were regular smokers, while the proportions were 61% and 29% in the age group of 35–49 years. (*WHO Regional Office for Europe, 1999a*).

According to a school questionnaire survey performed in 1997–1998, 24% of boys, but only 12% of girls aged 15 smoked at least once a week. These were among the lowest prevalences in the seven reference countries participating in this survey. However, smoking among young people has become more frequent in Estonia in the 1990s, especially



among girls (*WHO Regional Office for Europe, 1997 and 2000a*). There is also evidence for increasing smoking among the young from the Estonian School-Children Behaviour Study (1991, 1994, 1998). The prevalence of daily smoking among students aged 15 years has been increasing: for boys from 10% in 1991 to 17% in 1998 and for girls from 2% to 8% over the same period (*Kepler et al., 1999*). There is, however, also support for impression that consumption is still relatively low, with 15 year olds in Estonia having the fourth lowest smoking prevalence among the 27 countries taking part in a cross-national WHO study (*WHO Regional Office for Europe, 2000a*).

The annual consumption of cigarettes in Estonia was some 2000 cigarettes per person in the late 1980s. In the early 1990s, this figure decreased and remained around 1500 cigarettes, which was one of the lowest figures among the reference countries, even below the EU average of 1580 cigarettes. Increased black market sale or increased import of tobacco products may, however, explain some of this observed decline in the consumption.

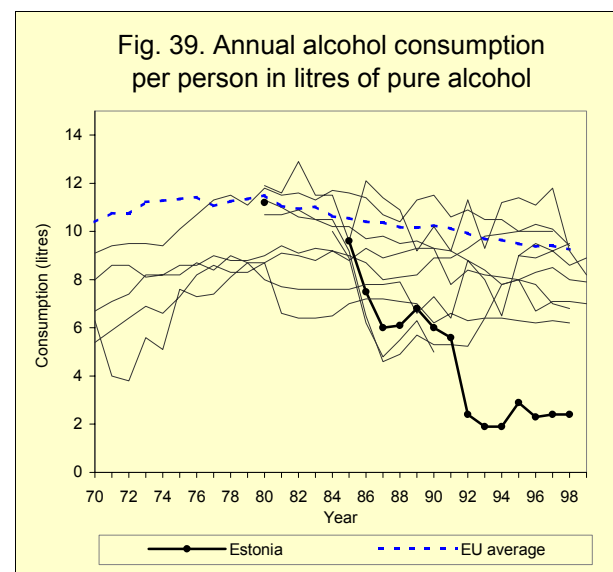
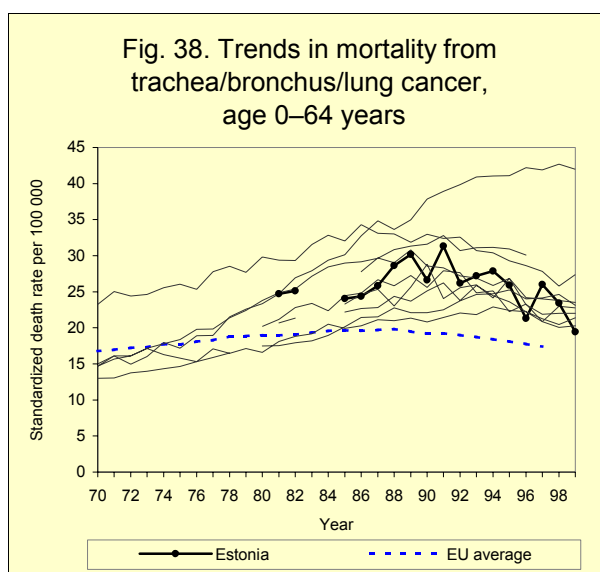
Mortality for trachea, bronchus and lung cancer can be used as an indicator to measure the trends and country positions related to the deaths caused by smoking. During the 1980s, the Estonian SDR for these causes increased, but a decrease started in the early 1990s and accelerated in the late 1990s (Fig. 38). The

most recent rate for men has decreased clearly below the level of the mid-1980s, while the rate for women has increased slightly. This has reduced the gender difference, which, however, is still large in Estonia: the SDR for men being almost eight times higher than that for women, which reflects the higher prevalence of smoking amongst men. Compared to the EU rate, the Estonian rate is one third higher for men, but one third lower for women.

### Alcohol consumption

The registered alcohol consumption (according to sales data) in Estonia has decreased since the mid-1980s by 75% from 9.6 to 2.4 litres of pure alcohol per person in 1998 (Fig. 39). The sharp drop in 1991/92 may indicate changes in recording of alcohol sales. Some 45% of the total consumption is estimated to be illegal alcohol, some not meeting quality requirements or safety standards (*WHO Regional Office for Europe, 1997*). The actual average consumption is probably much higher. In 1995, consumption per adult was reported to be 12.6 litres (*UNDP, 1997*). From 1997, the sales data indicate a slight increase in the consumption of beer and wine in Estonia, while the consumption of spirits remained at the same level (*Produktschap voor Gedistilleerde Dranken, 2000*).

In the Baltic Nutrition and Health Survey the intake of alcohol was estimated to be 24 grams per day for men aged 19–64 and 4 grams for



women in the same age group, which were much higher than in the other Baltic states, especially for males. In total 11% of Estonian men and 23% women reported that they never drink spirits. The percentages were in general higher for consumption of wine (31% of men and 22% of women) and beer (21% and 52%). Daily use of beer was reported by 12.6% of men, while daily use of wine (0.8%) or spirits (2.8%) was more uncommon. For women, the daily use of beer, wine and spirits was rarer than for men (1.5%, 0.5% and 0.3%, respectively) (*WHO Regional Office for Europe, 1999a*).

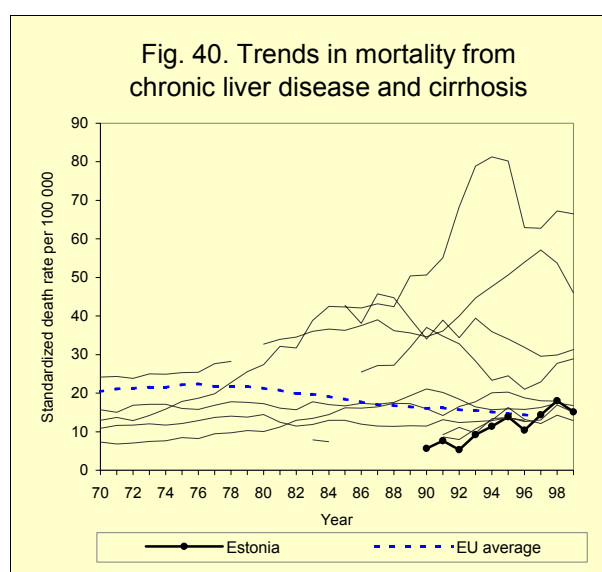
Heavy drinking – defined by intake of 80 grams of alcohol per day or more – was reported by 9.3% of men and 0.5% of women. Taking into account only those who reported alcohol drinking during the study week, these percentages increased to 12.1% and 1.2%, respectively. The proportion of heavy drinkers in Estonia was the highest among the three Baltic states (*WHO Regional Office for Europe, 1999a*).

According to another study, drinking strong alcohol at least once a week did not differ significantly between men in Estonia (31%), Finland (29%), and Latvia (32%), but was somewhat lower in Lithuania (27%). Among women, the drinking of strong alcohol at least twice a month was similar in Estonia (31%), Finland (29%), and Lithuania (30%), but was

somewhat higher in Latvia (36%) (*Kasmel et al., 1999*). This suggests that the differences between these Baltic states in alcohol consumption may be smaller than the previous, interview-based study.

A school questionnaire survey performed in 1997–1998 reported that 10% of girls, but almost 21% of boys aged 15 years drank alcohol at least once a week. These percentages were among the lowest in the 23 countries or regions participating in the survey, but significantly higher than the prevalences – 5% for girls and 15% for boys – four years earlier (*WHO Regional Office for Europe, 1997 and 2000a*).

The number of deaths from chronic liver disease and cirrhosis can be used to estimate the harmful effect of long-term alcohol consumption. The Estonian SDR for chronic liver disease and cirrhosis was the lowest among the reference countries in the early 1990s, less than one third of the EU level. Since then, however, the Estonian rate has increased more than three-fold, and is now higher than the declining EU rate. Estonia has also lost its position as the reference country with the lowest SDR for chronic liver disease and cirrhosis (Fig. 40). The trend has been similar for both sexes in all the reference countries, with men having a higher mortality risk than women. In Estonia, the SDR for men was more than double the female rate.



### Illicit drug use

Comparable data on drug use are rare. In general, the reference countries have reported increased drug use in the 1990s, even though the level is still lower than in the EU.

Cannabis is the most widely used illicit drug: some 2000 people – 0.2% of the population aged 15 years and over – were estimated to use it in 1993. In the same year, there were some 1000 users of opiate, 600 users of solvents and 300 users of amphetamines. The number of registered users of heroin has increased in the 1990s, this is especially true for injected heroin. The use of cocaine was reported to be low. A survey among adolescents aged 16 years in education reported that 7% of the



respondents had experienced drugs. The number of drug-related crimes has increased slightly in the 1990s (*WHO Regional Office for Europe, 1997*).

According to the 1995 ESPAD-survey (European School Survey Report on alcohol and other drug use among 15 to 16-year-old), 10% of boys and 5% of girls had used cannabis at least once, which were the highest proportions among the reference countries (*Hibell et al., 1997*). By 1999, the total percentage had increased to 13%. In addition 11% of boys and 7% of girls reported use of other drugs than cannabis. Both percentages equalled the average of the reference countries (*Hibell et al., 2000*).

### Nutrition

Nutritional habits are rooted in cultural traditions and food production. Nevertheless, in recent decades changes have occurred with increasing globalization, as global food markets have opened up, transport has become more rapid and more efficient techniques for conserving food have been developed. These factors together with increased mobility and increases in purchasing power are some of the reasons why the historically different nutrition patterns in Europe appear to converge.

The historical differences in western Europe between the northern and southern dietary patterns are confirmed by data relating to the amount of food available (national food balance sheets) in each country collected since the 1960s by the Food and Agriculture Organization (FAO) of the United Nations.<sup>4</sup> Typical of northern Europe is a high availability of saturated fat and a low availability of fruit and vegetables. This pattern is reversed in southern Europe.

<sup>4</sup> The rapid increase in international trade accelerated in 1994, when food was incorporated into international free trade agreements (the GATT Uruguay Round). This has affected the reliability of national food statistics, making international comparisons more difficult.

The FAO data for Estonia is only from 1990 but suggests that Estonia follows the southern pattern with low availability of sugar and animal fat and a high availability of cereals. However, it follows a northern pattern with low availability of fruits and vegetables, although the availability of fruits and vegetables has increased in the 1990s (*Ministry of Social Affairs of Estonia, 1997*). In addition, even the increased availability figures for fruits and vegetables may underestimate the actual situation, since home-grown fruits and vegetables may not be recorded.

The Baltic Nutrition and Health Surveys were conducted in all three Baltic states during the summer 1997. Representative samples of 3000 respondents were taken among the population aged 19–64 years, and the response rate in Estonia was 67.3%. The survey indicated low consumption of vegetables, a tendency for eating less regularly, a high prevalence of smokers and heavy drinkers, but also the lowest intake of total energy as well as fat and the lowest prevalence of overweight and obesity among the three Baltic states (*WHO Regional Office for Europe, 1999a*). In addition, use of butter on bread has fallen from 90% in 1990 to 27% in 1996 and the use of vegetable oils for cooking has increased from 21% in 1990 to 84% in 1998. The consumption of vegetables at least three times a week has also increased from 30% in 1990 to almost 50% by 1998 (*Kasmel et al., 1999*).

In Estonia, only 42% of men and 53% of women reported that they eat raw, fresh, boiled or stewed vegetables at least six times a week, which was the lowest percentage among the Baltic states. In total, 4% of men and 3% of women reported that they never ate vegetables. These percentages were higher (8% and 5%, respectively) for the consumption of raw or fresh vegetables.

Regular eating times were reported by only 22% of men and by 30% of women. This was slightly higher than in Lithuania, but regular eating times were much more common in Latvia, where more than half of respondents reported regular eating times. Eating between main meals was quite common, only every

tenth respondent in Estonia reported that they never snacked. The percentage of respondents who reported that they were always snacking was, however, low (5% for men and 4% for women). Estonian snacking habits equaled those of Lithuanians with Latvians reported less snacking (*WHO Regional Office for Europe, 1999a*).

The crude intake of energy was 2278 calories for Estonian men and 1640 calories for women, which were the lowest among the three Baltic states. The intake of fat was also the lowest in Estonia: 95 grams per day for men (equaling 37% of total energy) and 69 grams per day for women (36%). The intake of fat was 29% higher in Latvia and more than 40% higher in Lithuania compared to the Estonian intake. The average intake of protein, most vitamins and mineral elements met the recommended dietary allowances. Fats provided too high a proportion of daily energy intake, carbohydrates and polyunsaturated fatty acids on the other hands formed a too low part of a daily energy intake. The diet was low in vitamin D and calcium due to low consumption of milk and dairy products (*WHO Regional Office for Europe, 1999a*). Despite these problems, eating habits have become healthier in the 1990s: for example the use of animal fats, salt and sugar has decreased (*Kasmel et al., 1999*).

The average proportion of energy derived from overall fat confirmed a relatively low contribution of animal fats. At the national level, this proportion in Estonia is estimated to be 32%, which is slightly more than the average of the reference countries (29%), but significantly lower than in the EU (39%).

A Healthy Nutrition Action Plan is being prepared for Estonia. This plan draws on studies of consumption that include self-produced or food received free of charge by the consumer. These data indicate that consumption of dairy produce, vegetables and fruits are lower than recommended by Estonian nutritional standards, whilst consumption of sugar (particularly sweets), fat overall, and meat are higher. A recent trend has been a move from butter to cheaper margarine and vegetable oils. The

Plan proposes six areas for action – nutritional research, accessibility of food, food for local consumption, food safety, nutrition of specific population groups (women of childbearing age, children and the elderly), and the nutritional contribution to specific health problems.

### Physical activity

As physical activity in daily life and at work declines, exercise in leisure time becomes more important in maintaining an activity level beneficial to health. According to Estonian data from 1997, 34% of men and 21% of women reported moderate and 8% of men and 2% of women heavy manual occupational physical activity. Hard training or competitive sport was reported by 5% of men and 2% of women, jogging or recreational sports by 16% of men and 13% of women, and walking, bicycling or other light activities by 33% of men and 44% of women. Physically active people had in general higher education and income, and physical activity undertaken decreased with age (*WHO Regional Office for Europe, 1999a*).

In total, low physical activity during leisure time was reported by 46% of men and 41% of women aged 19–64 years, while 16% of men and 13% of women reported high or very high physical activity. Even though the percentage of respondents reporting low physical activity were the lowest in Estonia for both sexes, high or very high physical activity was as common among Estonian men as in Lithuania (21%), while the Estonian women (15%) had a substantially lower percentage than the Lithuanian women (21%). Up to 70% of Estonian men and 79% of Estonian women reported that they never participated in regular physical activity to work up a sweat (*WHO Regional Office for Europe, 1999a*).

### Overweight

Overweight and obesity are commonly assessed with the body mass index (BMI), calculated as weight in kilograms/(height in metres)<sup>2</sup>.

According to the 1992 CINDI-programme (Countrywide Integrated Noncommunicable Disease Intervention), the mean BMI among Estonians was 24.9 for males and 25.3 for females aged 25–64 years (the normal range being 20 to 25). Overall, 47% of male and 55% of female respondents aged 35–64 years had a BMI which exceeded 25 and thus indicated overweight or obesity. (WHO CINDI Programme, unpublished data).

According to the Baltic Nutrition and Health Survey, the mean BMI in Estonia was 25.1 for men and 23.3 for women. In total, 32% of Estonian men aged 19–64 years were overweight (BMI more than 25, but less than 30) and 10% obese (BMI more than 30). There were fewer overweight (24%) and obese (6%) Estonian women. The percentage of overweight and obesity increased with age: among the population aged 50 years or more, 53% of men and 63% of women were overweight or obese, and within these 13% of men and 16% of women were obese. Rural women and women with only primary education had a higher average BMI than urban women and women with university education. There was no difference in the average BMI by rural or urban residence among men, but men with a university education had a higher average BMI than men with only primary education (*WHO Regional Office for Europe, 1999a*).

Among the three Baltic states, Estonians had the lowest average BMIs and the lowest prevalence for overweight and obesity for both sexes and all age groups (19–34 years, 35–49 years and 50–64 years) excluding men in the youngest age group, which had the highest prevalence of obesity (8%, compared to 4% in Latvia and 6% in Lithuania) (*WHO Regional Office for Europe, 1999a*). According to a health behaviour study, the proportion of

people with a BMI of 14–19 (underweight) had increased from 4.4% (1990) to 10.4% (1998) and a BMI of 20–24 (normal weight) had increased from 38.6% in 1990 to 49.3% in 1998 (*Kasmel et al., 1999*).

### High blood pressure

A systolic blood pressure exceeding 160 mmHg and diastolic pressure exceeding 95 mmHg are considered as levels where treatment is indicated to reduce the risk of cardiovascular disease. According to the 1992 CINDI-programme 36% of men and 31% of women aged 35–64 years had high blood pressure in Estonia. When using lower threshold levels (140 mmHg and 95 mmHg), in total 57% of men and 47% of women in the same age group had high blood pressure. With both definitions, Estonia had one of the highest percentages for high blood pressure among the five reference countries with comparable data (WHO CINDI Programme, unpublished data). The latest (1992–94) of a series of surveys of residents of Tallinn aged 30–54 found that 43% of men and 27% of women had blood pressures over 140/90, and only 5% of those with hypertension had their blood pressure under control, indicating the importance of arterial hypertension for cardiovascular health in the capital (*Voloz et al, 1996*).

### High cholesterol

A cholesterol level over 250 mg/dl places the individual at significantly increased risk of cardiovascular diseases. In Estonia, 30% of men and 31% of women aged 35–64 years had such a high value. These percentages were among the highest in the reference countries with comparable data (WHO CINDI Programme, unpublished data).



## ENVIRONMENT AND HEALTH

Environmental conditions affect humans through short-term and long-term exposure to noxious factors. In the long term the main objective is to promote sustainable development compatible with good health, and especially to protect the food chain (water, agricultural products) from the effects of harmful substances. Short-term environmental protection means avoiding or at least reducing potentially harmful situations, bearing in mind that people are not exposed equally to adverse environmental conditions and not all people and social groups are equally vulnerable to them. Thus, children, pregnant women, elderly people and ill people are more likely to be affected by polluted air or contaminated food. Also, specific population groups tend to experience more adverse environmental conditions. Low income, for instance, is often associated with exposure to environmental hazards at work (noxious substances and risk of accidents) and poor housing conditions (such as crowding, air pollution and noise). These situations may affect health and wellbeing either directly by causing discomfort and stress, or indirectly by giving rise to unhealthy coping behaviour such as the use of drugs or heavy drinking.

The increased recognition of the importance of the effects of the environment on health and the need for intersectoral action at all levels has been demonstrated by the development and implementation by nearly all European countries of national environment and health action plans (NEHAP). The NEHAP of Estonia was drafted within the Ministry of Social Affairs of Estonia by over 30 well-known Estonian scientists, professionals and other specialists in particular fields. The Action Plan is the first programme in Estonia to summarise all environmental factors critical to health, together with their impact on human health and targets for their improvement. The Government of Estonia approved the NEHAP in June 1999 (*Estonian NEHAP, 1998*).

### Microbial foodborne diseases

The number of microbial foodborne outbreaks and the number of people who have suffered from these diseases can be used to indicate the quality of food and its production, even though some of the observed variation can be caused by differences in definitions and data-collection methods. According to the most recent data, the variation between the reference countries is large (from less than one people affected by microbial foodborne outbreaks per 100 000 population in Estonia to 585 per 100 000 in the Czech Republic in 1999). Estonian data showed a noticeable decrease from 40 per 100 000 population between 1990 and 1999, which may reflect problems in registration or a real reduction.

Since the 1970s, the number of shigellosis victims has declined from 5000 to around 500, but the number of salmonellosis victims has increased from fewer than 500 to nearly 1000. Most often outbreaks occur in institutions, especially in those caring for pre-school children. The main known sources of shigellosis are food contaminated in public restaurants and canteens (27%), as well as cottage cheese (25%) and milk (24%) contaminated in the factory. For salmonellosis outbreaks, the main sources identified are meat products (25%), mayonnaise (23%) and confectionery (22%) (*Pölluste, 1998*).

### Air quality, drinking water and waste

Table 2. Emission of selected air pollutants in kg per person in Estonia, in the reference countries and in the EU in 1995

|                  | Estonia | Reference countries | EU countries |
|------------------|---------|---------------------|--------------|
| Sulphur dioxide  | 79.9    | 68.3                | 31.5         |
| Nitrogen dioxide | 28.4    | 25.3                | 32.4         |
| Ammonia          | ...     | 10.7                | 9.4          |
| Carbon monoxide  | 145.0   | 99.1                | 119.3        |
| Carbon dioxide   | 13 677  | 7555                | 8499         |
| Methane*         | 70.7    | 56.5                | 61.4         |

\* 1997

Estonia had higher emissions of carbon dioxide than any other reference or EU country excluding Luxembourg. This is true, even though the total emission of carbon dioxide fell by a quarter between 1992 and 1995 (*United Nations Economic Commission for Europe, 1999*) due to reductions in the number of industrial enterprises and more effective methods of emission control (*Ministry of Social Affairs of Estonia, 1997*). The main polluters in Estonia are the energy industry (64%), building material industry (13%) and oil-shale chemistry (5%) (*Põlluste, 1998*).

Estonia has a sufficient supply of drinking water. Overall, 35% of all drinking water comes from surface water, 37% from deep wells and the rest from other wells. The quality of water depends to a large extent on the hydrogeological conditions of the water catchment area, as ground water is produced by the filtration of rain through the layers of the deposit (*Põlluste, 1998*).

### Housing

The average estimated size of dwellings in Estonia is 54 m<sup>2</sup>, which is the same as the average of the reference countries, but smaller than the EU average (89 m<sup>2</sup>). In 1995, 81% of Estonian dwellings were owner-occupied. This was among the highest percentage in the reference countries and was higher than all the EU countries (*United Nations Economic Commission for Europe, 1999*). The majority of households are in multi-apartment buildings, and 27% in detached or semi-detached houses (*Ministry of Social Affairs of Estonia, 2000b*).

One aspect of the quality of housing is the proportion of the population with connection to water and with access to hygienic sewage disposal. According to data from 1996, 92% of Estonians had a water connection. This was among the highest proportions among the reference countries (*United Nations Economic Commission for Europe, 1999*). Local statistics reported that 92% of the people living in urban areas and 64% of the people living in rural areas had connection to sewage disposal. It has been estimated that 29% of Estonian households have no bath or shower. (*Põlluste, 1998*).

Thirty per cent of dwellings are rated by the residents as 'cold' or 'difficult to heat', and 26% as 'damp'. Other common problems include noise from other residents, the hallway or water pipes (45%), and traffic noise (45%). In addition, 41% complain of pollution from road dust or exhaust fumes (*Ministry of Social Affairs of Estonia, 2000b*).

Whereas housing conditions, such as quality, location and infrastructure, affect people's health and wellbeing, lack of housing is even more crucial. Homeless people are more vulnerable to health problems, such as malnutrition, infectious diseases and psychosocial stress caused by solitude and insecurity, than the rest of the population. Whereas data on the quality of housing (albeit not always comparable) are increasingly becoming available, reliable data on homelessness are lacking.

### Occupational health and safety

Exposure to health hazards at the workplace is still an important cause of ill health and death. However, information about exposure in terms of the type, frequency and intensity of hazards and the number of workplaces or people affected is not always available and comparable data are scarce.

The rates of injuries from work-related accidents per 100 000 population varied substantially among the reference countries, which suggests that the figures may describe different phenomena in the countries. Nevertheless, the number of such injuries has declined in all reference countries by an average of 51%, from 592 to 292 per 100 000 population between 1985 and 1999. This decline was smaller (26%) in Estonia.

The data on deaths from work-related accidents may be more comparable than the data on injuries. The number of deaths has decreased in all reference countries indicating improvements in occupational safety. Between 1985 and 1999, the number of deaths in work-related accidents decreased from 3.8 to 1.8 per 100 000 population in the reference countries (a decrease of 53%). In Estonia, the total number of deaths from work-related accidents increased from 54 in 1987 to 96 in 1990, but de-

clined after that to 47 in 1999. If this obvious peak was ignored and only the trend from 1987 to 1999 was studied, the decrease in Estonia was one of the smallest among the reference countries. Due to changes in reporting in the mid 1980's, the increases and the percentage decline may be artificial. The current Estonian figure, however, remains one of the highest among the whole WHO European region, more than double the EU level (1.6 per 100 000, a decrease of 28% since 1985). Work accidents are often inadequately investigated, and thus, underreporting may occur making even the current high rate an underestimation (*Põlluste, 1998*).

The number of new cases of occupational diseases increased from 135 to 198 between 1990 and 1997. In spite of this increase, this corresponds to only 2.8 cases per 10 000 workers. Statistics are known to be incomplete, since only cases occurring to a worker with a labour contract can be registered, excluding self-

employed workers and farmers from the statistics (*Põlluste, 1998*).

In 1996, almost 4200 enterprises with 229 200 workers were inspected in order to evaluate different occupational risk factors. Of all inspected workers 21% were exposed to physical, 19% to chemical, 6% to physiological and 0.7% to biological and other risk factors. The main chemical risk factors were industrial aerosols (48% of all cases) and compounds of sulphur, nitrogen and natural oil (21%), and the main physical risk factors were noise (34%), vibration (16%) and radiation (7%) (*Põlluste, 1998*).

In 1997, the State Labour Inspection checked 3800 enterprises with 226 600 workers. More than 10% of the workers had abnormal working conditions and 7% of all workers had health damaging working conditions (*Põlluste, 1998*).

## HEALTH CARE SYSTEM<sup>5</sup>

### Health care reform

By the beginning of the 20<sup>th</sup> century, Estonia had the necessary foundation for the development of a health care system appropriate to the needs of the population. The system was decentralized, and health care services were provided at the local level. Outpatient care was carried out mostly by private physicians. There were a variety of hospitals (state-owned, municipal and private) as well as specialized care institutes, such as mother and child clinics, tuberculosis dispensaries and sanatoriums. Around 1920, the activities of sickness funds expanded. The number of physicians also increased and professional societies were founded.

During the Soviet era after the Second World War, the former developments of the health care system were interrupted. The Semashenko system of centralised control was introduced: health care was funded from the state budget and controlled by the government through central planning. An excessive hospital network – much too great for the population – was

developed in Estonia because of strategic military interests of the Soviet Union. All citizens had free access to health services which were provided by government employees. No private sector was allowed.

Before political independence was regained, health care reforms were being planned. One of the main aim was to decentralize the health care delivery system. This included appointing county doctors, whose responsibility is to organize and supervise county level health care. The public health network was also decentralised.

Another aim of the health care reform was to create an insurance-based health care system. The Health Insurance Law established a mandatory system of health insurance for all employees, the self-employed, farmers and their dependants. Coverage is also provided for pensioners, full-time students, pregnant women and other clearly defined groups. For some special groups, such as registered unemployed and military servants, the social tax is paid by

Table 3. Health care resources in Estonia and in the reference countries (1999 or latest available)

|  | <b>Estonia</b>          | Reference countries | Minimum           | Maximum |
|--|-------------------------|---------------------|-------------------|---------|
| Hospital beds per 100 000 population                 | <b>718</b>              | 716                 | 555               | 938     |
| Physicians per 100 000 population                    | <b>307</b>              | 265                 | 191               | 394     |
| Hospital admissions per 100 population               | <b>19.6</b>             | 18.1                | 13.8 <sup>a</sup> | 25.4    |
| Average length of hospital stay in days              | <b>10.3<sup>a</sup></b> | 10.3                | 9.0               | 11.9    |
| Total health care expenditure as a percentage of GDP | <b>6.9</b>              | 5.6                 | 2.6 <sup>a</sup>  | 7.7     |
| <sup>a</sup> 1998                                    |                         |                     |                   |         |

<sup>5</sup> If not indicated otherwise, this section is largely based on *Health care systems in transition. Estonia (WHO Regional Office for Europe, 2000c)*.

the state. Entitlement to health care insurance is based on residence, not citizenship. In the 1990s, the number of Estonian residents without health care coverage was estimated to be between 40 000 and 70 000 (representing 3%–5% of total population), mostly illegal residents and those not paying the insurance tax (often the self-employed). By 1999, this percentage had increased to between 5% and 8%.

The major reasons driving health care reforms were: the need to decentralize health care financing, to establish a correlation between health care expenditure and the national economy, to reduce the over-capacity of the hospital network, and to establish a basis for increasing personal responsibility for health care costs.

The health care reforms during the 1990s have introduced statutory health insurance, administrative decentralisation to county level and devolution of power to the newly elected local governments. In 1993, the formerly separate Ministries of Health, Social Welfare and Labour were merged as one Ministry of Social Affairs, which has the responsibility for health and social services, policy development, planning and data collection. In addition, the purchasing and provision of health care services have been separated and the public health system has been reoriented.

In the late 1990s, there were plans to introduce new, major changes in the health care sector. These included a decrease in the number of sickness funds to a single fund with 3–5 regional funds. Many changes were introduced by the Estonian Sick Fund Law, which came into effect on 1 January 2001. Also the final decisions on the patient right legislation, which has been discussed for several years, should be made. Further decentralisation is planned. In addition, the extent of the national health insurance and the proportions between it and other budget resources have been discussed. There seems to be a preference for increasing the proportion covered by insurance, but no official decisions have been made yet.

### **Organizational structure**

Health care at local level – primary and secondary care and control of public health needs – is organized individually or jointly by the Municipality or Town Councils and by the Municipal Physician.

Organisational reform has largely been completed, but the system is not yet operating effectively. The local level has not taken full responsibility for planning and organizing health care services. Reasons for this delay are that some of the municipalities are too small, planning skills are scarce and in some cases there is still a tendency to wait for solutions and commands from higher levels of government.

### **Health care finance and expenditure**

Estonian health insurance covers those paying contributions, those who have their contributions paid for them and a range of vulnerable groups (those aged under 18 years, full-time students, retired people, pregnant women, those registered as unemployed, and other clearly defined groups). At the end of 1999, 1.3 million Estonians were covered, leaving an estimated 5–8% of the population without cover. Insurance covers most medical services, except services not deemed essential (e.g. cosmetic surgery and alternative therapy).

Until the end of 2000, the Estonian system was based on a central sick fund and 17 regional sick funds. The central sick fund organized, coordinated and supervised the activities of the regional funds. The number of regional sick funds was criticised to be far too high. People usually choose their sick fund according to their residence. From the beginning of 2001, insurance is managed by the Estonian Health Insurance Fund and its seven local departments. Sickness funds do not compete for members.

A second source of health care finance is general taxation (10.9% of expenditure), from state (8.7%) and municipal budgets (2.2%). The state budget covers those without insurance (emergency care only), as well as ambulance services medical appliances and prostheses for the disabled, and public prevention pro-



grammes, such as those for young people, AIDS and tuberculosis.

A third source of finance is out-of-pocket payments (14.8%). The recent trend has been to increase funding from such payments and from general taxation, due to the growth of the pharmaceutical market and private providers (*Ministry of Social Affairs of Estonia, 2000c*).

The private sector started to develop in 1990 and has grown continuously. The private sector complements the public services, providing out-patient care, some special hospitals, rehabilitation facilities, most pharmacies (except those in hospitals), and most dental care. Private health insurance is permitted, but it is not possible to opt out of the health insurance system.

International comparisons of health care expenditure are extremely difficult because the definitions underlying health statistics as well as accounting practices vary from one country to another. The following data on health care expenditure should therefore be used with caution, as the boundaries of what constitutes health care can vary substantially between countries.

According to data from 1998, the proportion of health expenditure of total GDP was below the

EU average of 8.5% in all the reference countries. The Estonian proportion of health expenditure (6.9%) was higher than the average of the reference countries (5.6%) (Fig. 41).

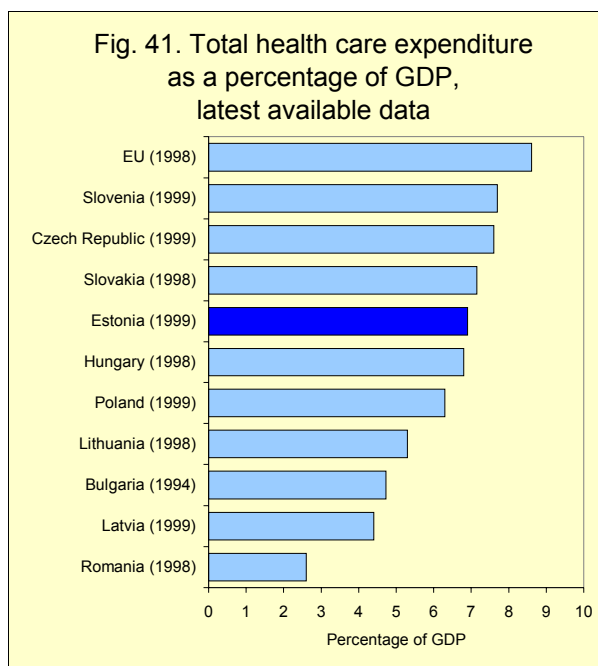
Data on health care expenditure adjusted in purchase power parity (PPP) from 1998 showed that the average of the reference countries (US \$480) is one third of the EU average (US \$1848). Expenditure in Estonia (US \$453) was slightly below the average of the reference countries.

### Primary health care

Until 1998, primary health care services were mainly provided by ambulatory centres, which were typically staffed by a district internist and a paediatrician, assisted by auxiliary nurses and owned by the municipality. This system had many problems. First, the work of primary care practitioners carried low prestige among the medical profession and the general public. Second, ambulatory care facilities were poor and lacked equipment. Third, the average earnings of public sector health professionals were low compared to professions with similar status, which caused poor motivation and low effectiveness and quality of care. In addition, patients used to by-pass primary health care and go directly to specialists.

A family practitioner system was introduced in Estonia in the early 1990s to gradually replace the old ambulatory care system. Family practitioners are required to provide 24-hour continuity of care and to act as gatekeepers to other health care services. Further reforms were announced in 1997, which included the selection of family practitioners for practices in the regions, the registration of population to them, and the development of a new financing and direct contracting methods with the sickness funds.

As a first step in cost-sharing, a small visit-fee of 5 kroons was introduced in 1995, but large population groups – retired people, disabled people and children – were later exempted from the fee due to political pressure.



## Secondary and tertiary care

Secondary ambulatory care services are provided by specialists based in polyclinics, in hospital outpatient departments or in their own practices. The care providers have contracts with sickness funds, and they are paid by the fee-for-service method up to a limit defined in the contract. Most of the specialists work within the public sector, but there is a more developed private sector in dentistry, gynaecology, urology, otorhinolaryngology and ophthalmology. Private providers may also have contracts with sickness funds. Patients will cover the difference between the official price list and the actual costs charged by the private care provider.

There is inadequate capacity for long-term care, and acute hospitals provide care for patients for up to 60 days with a special agreement.

There are three different kinds of hospitals. The lowest level of hospitals is the municipal level with an average of 40–60 beds for internal medicine services and long-term care. The second level consists of county hospitals, owned and run by municipalities. These hospitals have 180–200 beds, and they provide a variety of specialized care, usually internal medicine, surgery, orthopaedics, obstetrics and gynaecology, paediatrics, neurology, ophthalmology, psychiatry and dermatology. There are a number of third level hospitals in the two largest towns, Tallinn (four specialized hospitals) and Tartu (medical clinics at the University Medical Faculty). These hospitals provide both highly specialized services and provide secondary level hospital care for their regions. In 1996, five of the 83 hospitals were private, the others being owned by the state or the municipalities.

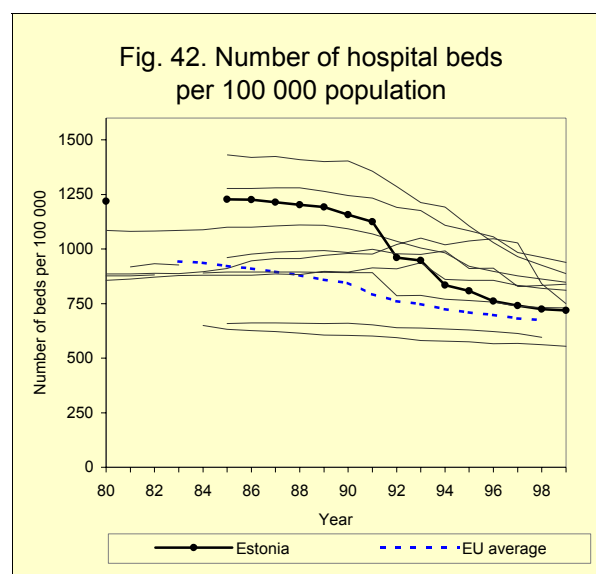
Hospitals are accountable to two parties: to the sickness funds for the health care services, which they provide, and to the hospital owners (mostly municipalities) for financial management. Hospitals are financed from the public health insurance system through contracts with the sickness funds. The unit of calculation of prices of inpatient services is the bed-day, including examinations, diagnosis, nursing,

pharmaceuticals and food. Additional procedures, operations, laboratory tests or physiotherapy will be added to the sick fund bill. The range, volume and service prices are negotiated at the beginning of the year between regional (local) departments of the insurance funds and hospitals, after consulting local government health care divisions.

The imbalance between primary care, hospital care and community care has resulted in high health care costs. The number of hospital beds has fallen significantly from 19 000 in the late 1980s to 10 500 in 1998, but there is still excess capacity. Some of the closed hospitals have been converted to primary care centres providing ambulatory care, and others are operating as long-term nursing homes.

The number of hospital beds per 100 000 population has decreased in almost all the reference countries since 1985, most in Estonia, in total by 40%. The Estonian figure of 1999 (718/100 000) equalled the average of the reference countries (716/100 000 in 1999), but it remained higher than the EU average (674/100 000 in 1998) (Fig. 42).

The number of inpatient admissions also varies significantly among the reference countries from 13.8 to 25.4 admissions per 100 population in 1999. The Estonian rate has decreased from 21.1 to 19.6 since 1985, but remains above the EU average (18.1/100 in 1998) (Fig. 43).





The average length of hospital stay has decreased in all the reference countries since the 1980s. In 1985, the average length of stay in Estonia (18.2 days) was much higher than in the reference countries (13.4 days) or than in the EU (15.1 days). The decline in the Estonian average has been the largest among the reference countries, and the average length of hospital stay was the same in Estonia (10.3 days in 1998), in the reference countries (10.3 days in 1999) and in the EU (10.2 days in 1997) (Fig. 44). In 1999, the average length of stay fell still further to 9.9 days.

There are large differences in the reported number of outpatient contacts among the reference countries with a variation from 4.9 to 16.4 annual contacts per person in 1999. Since 1985, the figure in Estonia has decreased from 9.6 to 6.3 contacts, below the average of the reference countries (8.0 contacts in 1999).

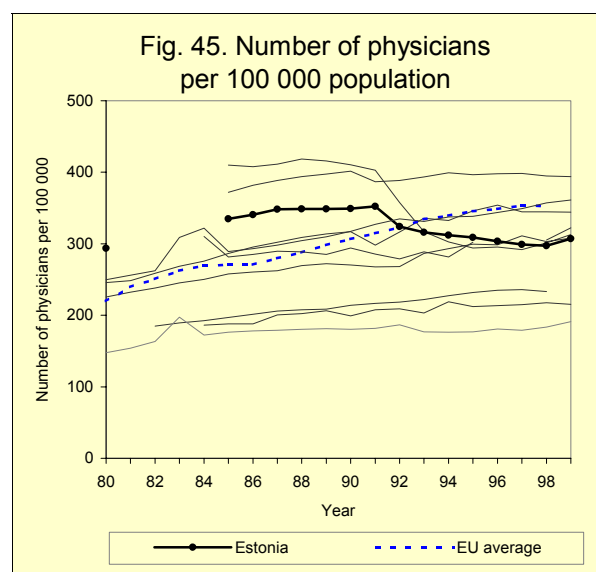
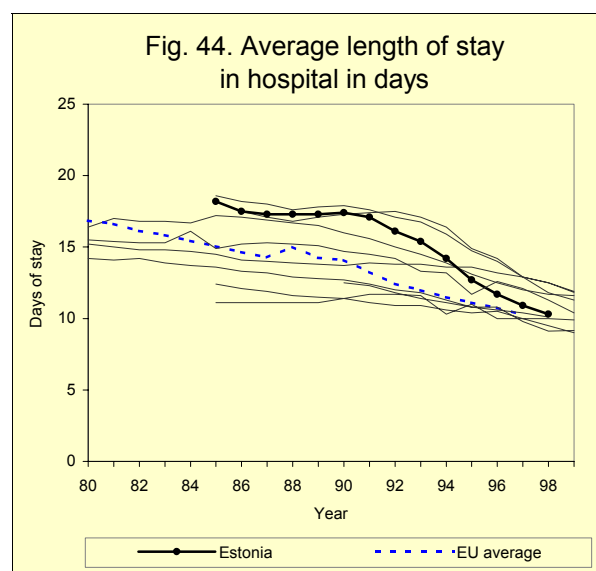
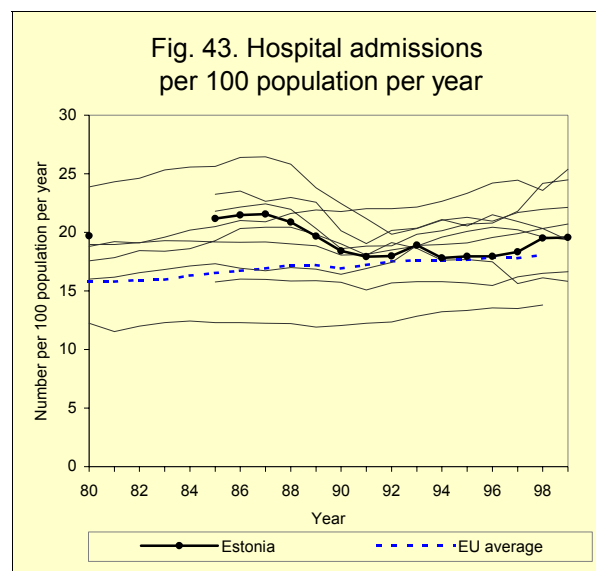
### Pharmaceuticals and pharmacies

In 1998, there were eight licensed manufacturers of pharmaceuticals. Wholesale dealers are all private. There are 250 retail pharmacies, of which 235 are private, 13 owned by municipalities and two owned by the University of Tartu.

Since 1993, Estonia has had a reimbursement system for drugs purchased in pharmacies. It is based on a national and WHO-developed positive list of essential drugs. Certain drugs will be 100% or 90% reimbursed over the sum of 20 kroons. All prescribed drugs, which are not included in the positive list are 50% reimbursed for prescriptions costing between 50 and 200 kroons. As a rule, vitamin and mineral supplements and herbal remedies are not reimbursed. In general, out-of-pocket payment has increased during the last years.

### Human resources

The number of physicians in Estonia (307/100 000 population in 1999) is higher than the average of the reference countries (265/100 000 in 1999), but lower than the EU average (353/100 000 in 1998) (Fig. 45).



Since the mid-1980s the number of dentists per 100 000 population in Estonia has increased by more than 50%, which was the largest increase among the reference countries. In 1999, Estonia had 70.2 dentists per 100 000 population, which was the highest figure among the reference countries (average 45.3/100 000 in 1999), equalling the EU average (68.6/100 000 in 1998).

The number of pharmacists has also increased since the mid-1980s in Estonia. In 1999, there were 55.8 pharmacists per 100 000 population, one of the highest figure among the reference

countries (average 35.9/100 000 in 1999), but still much below the EU average (81.7/100 000 in 1998).

The number of nurses in Estonia (616/100 000 in 1999) was higher than the average of the reference countries (572/100 000 in 1999). The number of midwives was higher in almost all the reference countries (average 48.1/100 000 in 1999) than in the EU (average 19.5/100 000 in 1997), but in Estonia the number of midwives has decreased significantly and it is now relatively low (38.4/100 000 in 1999).

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## GLOSSARY

**Incidence rate:** the number of new cases of a disease occurring in a population per 100 000 people during a specified period (usually 1 year).

**Infant mortality rate:** the yearly number of deaths of children aged less than 1 year per 1000 live births.

**Life expectancy at birth:** an estimate of the average number of years a newborn child can expect to live provided that the prevailing age-specific patterns of mortality at the time of birth were to stay the same throughout the child's life.

**Prevalence rate:** the total number of people in a population who have a disease or any other attribute at a given time or during a specified period per 100 000 of that population.

**Purchasing power parity (PPP):** a standardized measure of the purchasing power of a country's currency, based on a comparison of the number of units of that currency required to purchase the same representative basket of goods and services in a reference country and its currency (usually US dollars). The EU uses the purchasing power standard to measure this.

**Standardized death rate (SDR):** a death rate (usually per 100 000 population) adjusted to the age structure of a standard European population.

**Total fertility rate:** the average number of children that would be born alive per woman during her lifetime if she were to bear children at each age in accordance with prevailing age-specific birth rates.