Health Care Systems in Transition

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Iceland

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Foreword

The Health Care Systems in Transition (HiT) profiles are country-based reports that provide an analytical description of a health care system and of reform initiatives in progress or under development. The HiTs are a key element of the work of the European Observatory on Health Systems and Policies.

HiTs seek to provide relevant comparative information to support policy-makers and analysts in the development of health care systems in Europe. The HiT profiles are building blocks that can be used:

- to learn in detail about different approaches to the organization, financing and delivery of health services;
- to describe the process, content and implementation of health care reform programmes;
- to highlight challenges and areas that require more in-depth analysis; and
- to provide a tool for the dissemination of information on health care systems and the exchange of experiences of reform strategies between policy-makers and analysts in different countries.

The HiT profiles are produced by country experts in collaboration with the Observatory's research directors and staff. In order to facilitate comparisons between countries, the profiles are based on a template, which is revised periodically. The template provides the detailed guidelines and specific questions, definitions and examples needed to compile a HiT. This guidance is intended to be flexible to allow authors to take account of their national context.

Compiling the HiT profiles poses a number of methodological problems. In many countries, there is relatively little information available on the health care system and the impact of reforms. Due to the lack of a uniform data source,

quantitative data on health services are based on a number of different sources, including the WHO Regional Office for Europe health for all database, Organisation for Economic Cooperation and Development (OECD) Health Data and data from the World Bank. Data collection methods and definitions sometimes vary, but typically are consistent within each separate series.

The HiT profiles provide a source of descriptive information on health care systems. They can be used to inform policy-makers about experiences in other countries that may be relevant to their own national situation. They can also be used to inform comparative analysis of health care systems. This series is an ongoing initiative: material is updated at regular intervals. Comments and suggestions for the further development and improvement of the HiT profiles are most welcome and can be sent to observatory@who.dk. HiTs, HiT summaries and a glossary of terms used in the HiTs are available on the Observatory's website at www.observatory.dk.

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The current series of Health Care Systems in Transition profiles has been prepared by the research directors and staff of the European Observatory on Health Systems and Policies. The European Observatory on Health Systems and Policies is a partnership between the WHO Regional Office for Europe, the Governments of Greece, Norway and Spain, the European Investment

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The Observatory team working on the HiT profiles is led by Josep Figueras, Head of the Secretariat, and research directors Martin McKee, Elias Mossialos and Richard Saltman. Technical coordination is led by Susanne Grosse-Tebbe.

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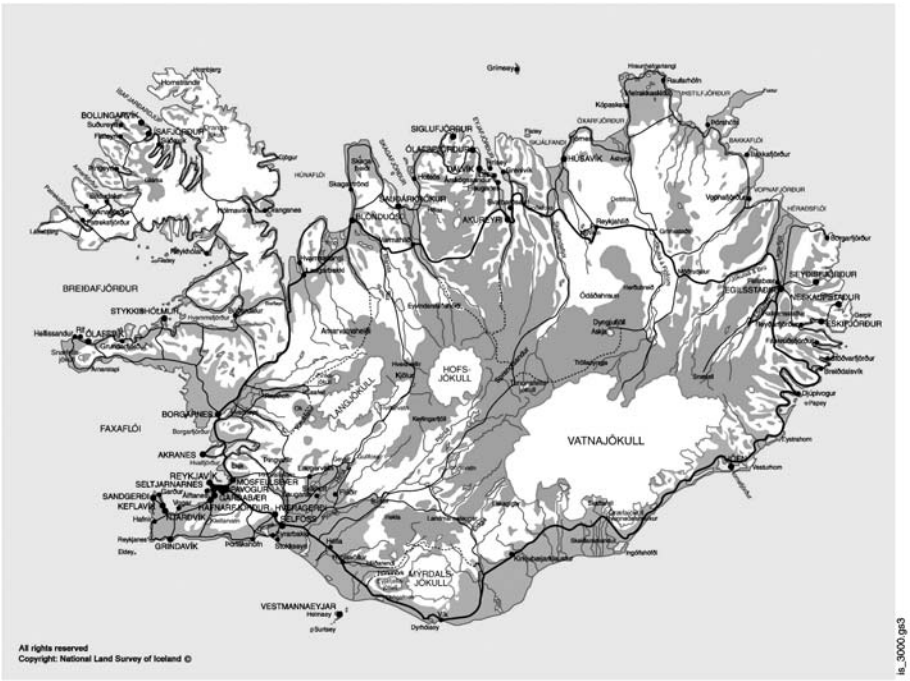
Introduction and historical background

Introductory overview

Iceland is an island in the north Atlantic Ocean, northwest of the British Isles. An area of 103 000 km^2 makes it somewhat larger than Portugal or Hungary. With 288 000 inhabitants in 2002, it is the most sparsely populated country in Europe, averaging 2.8 inhabitants per km^2. Of the surface area, 63% is wasteland, more than 11% glaciers and 2.5% lakes. Only about 22% is covered by vegetation. The population is limited to a narrow coastal belt, valleys and lowland plains mostly in the south and south-west. About 180 000 people live in and around the capital of Reykjavík on the southwest coast. Because of the Gulf Stream, Iceland enjoys a warmer climate than its northerly location would indicate, with average July temperatures of 10.6 ºC and average January temperatures just below freezing.

Iceland was settled by the Norse during the late 9th and 10th centuries, though new research shows that approximately 20–25% of the founding males had Gaelic ancestry (at least some of whom were "Westmen", or Irish slaves). The majority of the original females are thought to have come from the British Isles during the time of settlement. At the end of the settlement period, the population is estimated to have numbered approximately 30 000. There was minimal immigration for the next 10 or 11 centuries. Two epidemics, of plague in the 15th century and smallpox in the early 18th century, reduced the population significantly. The fallout from a volcanic eruption in 1875 devastated the Icelandic economy and caused widespread famine. Over the next quarter century, 20% of the island's population emigrated, mostly to Canada and the United States.

Fig. 1 Map of Iceland[1]



Source: National Land Survey of Iceland.

Independent for its first 300 years, Iceland was subsequently ruled by Norway, starting in 1262, and when the Danish and Norwegian monarchies were united in 1383, Iceland came under Danish rule. Denmark granted it limited home rule and a new constitution in 1874 and complete home rule in 1904. With the Act of Union in 1918, Iceland became a sovereign state in a monarchical union with Denmark. Full independence was attained in 1944.

[1] The maps presented in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the European Observatory on Health Systems and Policies or its partners concerning the legal status of any country, territory, city or area or of its authorities or concerning the delimitations of its frontiers or boundaries.

Iceland has a written constitution, adopted in 1944, when the republic was established. Iceland is a parliamentary democracy with a prime minister and a cabinet. A president is elected by direct vote for a term of four years, with no limit on re-election. Legislative power is vested in the parliament, the Althingi. Parliamentary elections are held every four years. The present government was elected in May 2003. Of the 63 members of parliament, the Independence Party, a right-wing party that for a long time has been Iceland's largest, has 22 members. It rules in a coalition government with the Progressive Party (centre), which has 12 members. The opposition parties include the Social-Democratic Alliance, with 20 members in parliament, the Left–Green Movement with 5 members and the Liberal Party with 4.

Total population with the number and percentage of people 65 and over during the last century is shown in Table 1. The percentage of the elderly has been growing steadily, from 6.8% at the beginning of the 20th century to 11.7% in 2002. The 2002 figure was still lower than for any other member of the Organisation for Economic Co-operation and Development (OECD) except Ireland and Slovakia, where it was 11.2% and 11.4% respectively. In the other Nordic countries, it ranged from 14.8% in Denmark to 17.3% in Sweden.

Table 1. Icelanders 65 years of age and older 1901 – 2000

Year	Population	65 years and older	Per cent
1901	78 470	5 325	6.8
1930	108 861	8 301	7.6
1960	175 680	14 380	8.2
1990	255 866	27 387	10.7
2002	288 471	33 791	11.7

Source: Social and Health Statistics 1991–2000. Statistics Iceland 2003.

Life expectancy at birth has increased from 60.0 years for women in 1921–1930 to 82.2 years in 2000–2002. During the same period, the life expectancy for men has increased from 56.2 to 78.2 years, the highest in the world. Icelandic women also had the longest life expectancy in the world some years ago, but are now in the ninth place. The difference in life expectancy between men and women is less in Iceland, where it is four years, than in most European countries, where it is usually 6 or 7 years.

Statistics Iceland has recently published a new population forecast for 2003 to 2042: Icelanders are expected to number 300 000 late in 2007, a little less than 330 000 in 2020 and over 350 000 in 2040. The population's young age structure reflects the country's relatively high total fertility rate,

though it has decreased somewhat in recent years, from 2.16 in 1986–1990 to 2.08 in 2000. The old age dependency ratio, defined as the proportion of those 65 and older to those between 15 and 64, was 18% in 2000, compared to averages of 22% for the European Union (EU) and 19% for the United States. As in other western countries, the population of Iceland is ageing, but at a relatively slower pace than in most other developed countries. In 1960, only 8.2% of the population was 65 years and older, but 11.7% in 2002 (see Table 1). This percentage is projected to be approximately 19% of the total population in 2030.

The native language, Icelandic, is a North Germanic language. Literacy has been universal in Iceland since the end of the 18th century. In 1907, school attendance was made obligatory for all children aged 10–14 years. Before the age of 10, children were generally taught at home. In 1946, compulsory school attendance was extended, and at present it covers the ages between 6 and 16. Those who continue their education go to either various specialized schools or secondary schools. The main university is the University of Iceland, currently with about 8000 students. University enrolment has increased considerably in recent years, to 65% in 2000, compared to an average 60% in OECD countries. Roughly 25% of the university degrees held by Icelanders have been obtained in other countries. The vast majority of the population belongs to the state-supported Evangelical Lutheran church (86.5%).

Only a century ago, Iceland was one of the poorest countries in Europe, and a large proportion of the population lived near the subsistence level. During the last century, economic growth was high. In 1945–2001, the average annual increase in the gross domestic product (GDP) was 4.0%, and the annual increase in GDP per capita was 2.7%. In recent years the economy of Iceland has experienced one of the highest average growth rates in GDP among the OECD countries, and between 1996 and 2000, economic growth averaged 4.8%. Currently, the GDP per capita is one of the highest in Europe (30 250 current US $ in 2001).

The total labour participation rate is high in Iceland. In 2000 it was 83.5%, or 88% among men and 79% among women. It was lowest among women in the oldest age group, 55–74 years (52%). Unemployment has been negligible (close to or less than 2%) for a long time, except for a few years around 1995. In recent years, the fishing industry has been unable to recruit native workers, relying instead upon the immigration of foreign workers, especially to the fishing villages. While the total share of foreign citizens was 3.4% of the population in 2001, in the north-western part of the country one out of ten inhabitants are now of foreign origin. There are also an increasing number of foreign citizens working in health services,

mostly as unskilled workers. Ethnic tension has been scarce in the country, possibly because foreigners have not been competing for jobs with native Icelanders. Agriculture was for a long time the main occupation of Icelanders. At the beginning of the 20th century, two thirds of the labour force was in agriculture. Only 3.9% of the workforce is employed in this sector today, and it accounts for only 1.5% of GDP. The first decade of the twentieth century was characterized by the advent of fisheries. The fishing limits were gradually expanded from 3 miles in 1901 to 200 miles in 1976. The fishing industry's share of export earnings is high, but it has been decreasing in recent decades, and its contribution to GDP declined from 17% in 1980 to 12.4% in 2002. In 2002, only about 3.4% of the labour force was employed in fishing, and only a little more in the fish processing industry. Industries other than the fishing industry employ around one fifth of the workforce. Mechanization of the fishing fleet and overinvestment in the fishing industry have led to overfishing during recent decades, despite the imposition of fishing quotas since 1984. The purpose was to reduce overfishing and increase efficiency, but economists estimate that the fishing fleet is still at least 25% too large. Mechanization of agriculture has also led to overproduction of agricultural products. As there is little scope for increasing the utilization of other natural resources, hydroelectric and geothermal power production has intensified, and aluminium and ferrosilicon are now important export products. However, the largest increase has been in service industries such as tourism and in human-capital intensive activities such as information technology and biotechnology. Today, services are by far the largest occupational category, employing a little less than 70% of the workforce.

In 2002, a total of 75% of Iceland's exports were to countries within the European Economic Area (EEA) (including 19% to Germany and 18% to the United Kingdom), while 5% went to other European countries and 11% to the United States. Iceland imports mainly machinery, equipment, petroleum products, foodstuffs and textiles. Its main import partners are the EEA countries, accounting for 61% of imports (Germany 10%, Denmark 9%, Norway 9%), and the United States, with 11%.

Iceland became a member of the United Nations in 1946, the North Atlantic Treaty Organisation (NATO) in 1949, the Council of Europe in 1950 and the Nordic Council in 1952. The country joined the General Agreement on Tariffs and Trade (GATT) in 1964 and the European Free Trade Association (EFTA) in 1970. An agreement on establishing a free trade zone between the EFTA countries and the EU took effect in 1994 (European Economic Area, EEA).

Historical background

The development of the health care system in Iceland is summarized in Table 2. The first Icelandic medical doctor was appointed by the Danish king in 1760. He was Icelandic by nationality and educated in Denmark. His residency was at Seltjarnarnes, close to the town of Reykjavík (which later became the capital of Iceland). His official title was *Landlaeknir,* which means national physician, a title still held by the country's Medical Director of Health. According to this first doctor's job description, he was to practise medicine and teach at least four young men to practise medicine, as well as teaching midwives. He also established the first pharmacy, which he ran during the first years until a pharmacist established himself at the same place. Iceland at that time had approximately 30 000 inhabitants. The country was large, horses were the only form of transport on land, the country was mountainous and none of the rivers had bridges. Bearing this in mind and the fact that he had mostly ineffectual medicines, primitive instruments, a rudimentary knowledge of the epidemiology and pathogenesis of diseases and a low salary, it is not surprising that he also went fishing to help earn his living. In 1766, two more doctors were appointed, one as a medical officer for the western part of the country and one for the north. A fourth medical officer was appointed in 1772. In 1850, there were eight medical districts in the country. In 1875, the number was 20, and at the turn of the century 42. In 1904, there was one doctor for every 1750 inhabitants. By the time when Iceland gained its independence in 1944, there were 50 medical districts. Only a few of them had more than one doctor.

The first hospital in Iceland, not counting leprosy hospitals, was established in Reykjavík in 1866 with 14 beds. It was considered inconvenient that the main ballroom in Reykjavík was on the floor below. This supply of beds was far beyond the demand, reflecting both a nation unaccustomed to such services and a lack of the ability to pay for them, rather than a lack of need. The next hospital was erected in the town of Akureyri in the northern district in 1873. A hospital has been there ever since. In 1874, there were 30 hospital beds in the whole of the country, or one per 2400 inhabitants. A medical school, established in 1876, became part of the University of Iceland when the latter was established in 1911. In 1944 there were about 50 "hospitals" with 1300 beds, but most of the hospitals outside Reykjavík were actually nursing homes with a few beds for active medical treatment. In Reykjavík, the main hospitals in the 20th century were St. Joseph's Hospital, established in 1902 by Catholic missionaries; Landspítali, established as a university clinic in 1930; and

the Reykjavík Municipal Hospital, established in 1967. The gradual merger of these three hospitals into one large state-owned university hospital, Landspítali University Hospital, is described in later sections. The first psychiatric hospital, Kleppur, was established in the outskirts of Reykjavík in 1907, and it later became an integrated part of Landspítali.

After 1890, public health in Iceland improved considerably. Mortality, especially infant mortality, decreased substantially around this time, with a resulting increase in the number of inhabitants. A nursing society, Likn ("Mercy"), was established in Reykjavík in 1915. This charity became the leading public health organization in the capital during the following decades. It arranged maternal and child health clinics and initiated information campaigns and screening activity for tuberculosis. Nursing care was provided free of charge in poor people's homes and arrangements were made to send children from the town to the countryside to enjoy clean air and healthy food. In 1921, a special act on the prevention of tuberculosis was passed, and in 1944, a special act on preventive health care for mothers and children. In 1956, the preventive services initiated by Líkn were assumed by the Reykjavík Centre for Preventive Health Care (Heilsuverndarstodin).

In the beginning of the twentieth century, health insurance funds were established throughout the country, and in 1936 they were confirmed by law and became part of the welfare system. The insured contributed a fixed amount to municipal health insurance funds. Those persons with an income above a certain amount per year were not obliged to take part in the health insurance fund. If they wanted to do so, they had to pay a double share. Besides the contributions from the insured, the state and the municipalities each paid 25% of the total cost. The insurance funds paid the whole cost of patient visits to general practitioners and three fourths of the cost if the patient wanted to consult another doctor. They paid all drug costs at hospitals and three fourths of the drug costs outside hospitals. They paid for a stay in certain hospitals, up to 32 weeks per year for a continuous stay, but not for more than 26 weeks for the same illness. A special law defined the responsibility of the state to pay for the chronically ill and disabled. This arrangement continued more or less unchanged until 1972. By that time, many considered the flat contribution to the health insurance funds unfair, and the cost of the health care system was rapidly increasing. The health insurance funds continued after 1972, but they became tax funded, drawing about 80% of their funding from the state and 20% from the local government. In this way, the importance of the health insurance funds diminished. Their role in the financing of health care became much smaller because of changes in the financing of hospitals and health care centres (described below). In January 1989, they were totally abolished, and their

Table 2. Health care system: historical background and recent reform trends

1760	The first Icelandic medical officer appointed by the Danish king
1769	Synodal resolution on visits of priests to the sick and supplementary income
1794	First state subsidies to poor patients in the form of free medicines distributed by doctors up to a certain amount
1810	Smallpox vaccinations become obligatory
1866	The first Hospital, with 14 beds, established in Reykjavik
1873	The first general hospital outside Reykjavik (Akureyri in the north) Medical school established
1894	The first specialist (ophthalmologist) opens practice
1902	St. Joseph's hospital, established by catholic missionaries
1903	First Tuberculosis Prevention Act
1905	The first state subsidies for poor people in hospitals
1907	A psychiatric hospital (Kleppur) established
1909	Foundation of the Reykjavik Medical Association
1910	The first sanatorium for patients with tuberculosis (Vifilsstadir)
1911	The medical school becomes part of the newly established University of Iceland
1914	The first X-ray device
1915	The nursing society (Mercy) begins preventive activities and home nursing
1918	The first disease laboratory at the University The Icelandic Medical Association established
1919	The Icelandic Nursing Association and the Icelandic Midwifes Association established
1921	A comprehensive Tuberculosis Prevention Act with free hospital care of patients with that disease Act on minimal resting time on Icelandic trawlers
1923	Act on Sexually Transmitted Diseases
1928	The Icelandic Accident Prevention Society established
1930	Landspitali established as a University hospital
1931	The Icelandic School of Nursing established in 1931
1936	The State Social Security Institution established Act on Health Insurance Funds
1938	Act allowing operations on people to induce infertility in appropriate cases
1942	Act on a General Medical Council
1944	Act on Preventive Health Care for Mothers and Children
1955	Act on Specialists´ Visits to Remote Places
1962	Act on Public Disaster Protection
1963	Act on Sales of Pharmaceutical Products
1964	The Icelandic Cancer Society starts regular screening against cancer of the cervix
1967	The Reykjavik Municipal Hospital established
1971	Act on social security
1973	Department of Nursing established within the Faculty of Medicine at the University of Iceland
1974	Nursing Act The Narcotics Act

1975 Act on Counselling on Sex and Reproduction, and on Induced Abortions and Operations to Induce Infertility

1977 The largest hospital, Landspitali, gets a fixed budgetary system instead of payment per bed-day, other hospitals to follow

1978 Act on a Nutrition Council

1979 Act on the rights of labourers to terms of notice and payment during absence because of disease and accidents

1980 Act on Working Environment, Health and Safety in the Workplace

1984 Act on a Service and Rehabilitation Centre for the Visually Impaired

1987 The Cancer Society starts regular breast cancer screening with mammography

1988 The Physicians Act
Local Government Act

1989 Health insurance funds abolished and their responsibilities taken over by the State Social Security Institution

1990 The Health Care Act
Act on Registration and Treatment of Personal Affairs, replaced in 2002 by Act on Personal Protection and Treatment of Personal Affairs

1991 The Local Authorities Social Service Act

1996 The Health Minister appoints a commission with the aim of proposing priorities within the health care system

Act deregulating the pharmacological sector abolishing restrictions regarding ownership, number and location of pharmacies, announcements of over-the-counter drugs etc.
Resignation of almost all GPs, because of dissatisfaction with working conditions and payment
Act on Artificial Insemination
The Information Act (in public service)
The Reykjavik Hospital established by merging the Municipal Hospital and St. Joseph's Hospital. It was run by Reykjavik City until 1999, when the state took over the management

1997 Act on Althingi Ombudsman
Act on the Rights of Patients
Act on prevention against snow avalanches and landslides

1998 New act on Communicable Diseases, among other things establishing the office of the State epidemiologist
Act on Alcohol and Drug Prevention Council
Act on Alcohol
Act on Hygiene and Pollution Prevention

1999 Act on the Affairs of the Elderly

2000 Merging of The Reykjavik hospital and Landspitali into Landspitali – University Hospital, owned by the state
Act on Patient Insurance
Act on Biobanks

2001 Act on Medical devices
Law on Biobanks, setting a framework for the collection, keeping, handling and utilization of biological samples from human beings
Second Health Care Plan (up to year 2010) for Iceland, applying problem-oriented approach and benchmarking, accepted by the Parliament
Amendments of the Tobacco Prevention Act

2002	Regional Medical Councils and the Regional Medical Officers, and division into 8 area abolished Act on Patient Insurance, including a compulsory insurance for all health staff Child Protection Act
2003	Act on Radiation Protection Changes in the Health Care Act, allowing centralized databanks of drugs for health authorities Act on a Public Health Institute Act repealing the local steering committees of Health Care Centres and Hospitals other than the University Hospital All nursing homes to be paid on a per diem basis according to the so-called RAI system.

responsibilities were assumed by the State Social Security Institution (SSSI) as congruent with health insurance in the social security system.

Health status

Health records are well kept in Iceland and sometimes date back as far as a century or more. Health care statistics have been published annually since 1896.

Today, Icelanders enjoy good health status as measured by conventional indicators, such as life expectancy, number of disability-free years and self-reported health and quality of life. Life expectancy, as already mentioned, is among the highest in the world. Perinatal mortality during 1996–2000 was 5.7 deaths per 1000 births, and infant mortality was as low as 3.5 deaths in the first year of life per 1000 live births, a figure among the lowest in the world. Maternal mortality is virtually nonexistent.

Lifestyle factors

The nutritional value of food in Iceland improved significantly during the last century, and it now comes closer in most respects to the targets set by the Icelandic Nutrition Council. Surveys in 1990 and 2002 show a decrease in the daily intake of fat, mainly due to less consumption of margarine and non-skimmed milk, and an increase in consumption of fruits (39%) and vegetables (15%). There is a clear social gradient, with those who have better education or higher incomes eating more vegetables. On the negative side, it should be mentioned that the country's consumption of fish per person has diminished by 43% during this period and is now only slightly above many other European countries. Icelanders also have the doubtful honour of holding the world record in the consumption of sugar per capita. It has increased steadily during recent decades, especially the consumption of sugar from soft drinks. Obesity is an increasing problem in Iceland, especially among children.

In a recent study, body mass index was found to have increased considerably between 1938 and 1998 among 9-year-olds.*(1)* The proportion of overweight children has increased from a few per cent in 1938 to around 20% in 1998, and the proportion of obese children has increased from less than 1% to approximately 6%. There has been a similar development among adults. In 1994, approximately 60% of women and 70% of men aged 45–64 years were either overweight or obese.*(2)*

Regular surveys on the number of daily smokers in Iceland have shown favourable results in recent decades. In 1985, approximately 43% of men and 37% of women smoked on a daily basis, but in 2001 the figures were 26.5% and 24.6% respectively. Daily smoking among pupils in the 10th grade (who are about 15 years old) has declined steadily according to yearly surveys, from 23% in 1998 to 14% in 2002. Iceland has been among the most restrictive countries towards tobacco, enacting control measures such as a ban on tobacco advertising and regulating the use of tobacco in public places. The fundamental principle of the Tobacco Act is that everyone has the right not to have to breathe air polluted by others' tobacco smoke and that this right shall be respected. The act has gradually been made more restrictive with new amendments since it came into force in 1984. According to the Tobacco Act, at least 0.9% of gross tobacco sales must be allocated to tobacco prevention.

Consumption of alcoholic beverages in litres of alcohol per inhabitant is lower than in the other Nordic countries, with the exception of Norway. During the 1990s, alcoholic consumption diminished until 1993, when it was 4.7 litres of alcohol per person aged l5 years and over, but since then it rose steadily, reaching 6.3 litres per person in 2002. In spite of the relatively low total alcohol consumption, alcoholism has been a major concern in Iceland because of the habit of binge drinking of hard liquor. However, there has been a more favourable drinking pattern in recent years. In 1993, hard liquor comprised half of the total alcohol consumed, but in 2002, only one fourth. Surveys among pupils in the 10th grade have also shown a reduction in the percentage of those who consumed any alcohol during the preceding 30 days, from 42% in 1998 to 26% in 2002.

Primary prevention

In Iceland, there is a special emphasis on mother and child health care. The birth rate is higher than in other countries in Europe, and Icelandic mothers deliver their first baby at a younger age. Teenage pregnancy seems to be more socially acceptable in Iceland than in many other countries. The large group of young lone mothers is of concern, despite the fact that the proportion of very young mothers has been falling in recent years. The

total fertility rate in Iceland was 2.0 in 2001, or close to replacement level, but in 1960 each woman delivered close to 4 children during her reproductive years. Abortion rates are similar to or somewhat lower than other Nordic countries, but they have been on the increase in recent years.

An expectant mother visits a doctor and/or a midwife 10–12 times during her pregnancy. She receives information on pregnancy, birth and breastfeeding, and the expectant parents are offered prenatal classes. All pregnant women are offered ultrasound at 18 weeks of pregnancy. Women at higher risk for chromosomal abnormalities are offered ultrasound at 12 weeks of pregnancy for measuring nuchal translucency.

A child's health care begins with home visits by a nurse during the first 6 weeks, and then regular visits at a health care centre up to the age of five, for vaccinations and examinations by a doctor or nurse. Much emphasis is laid on informing and educating parents about child rearing.

As mentioned above, the Reykjavík Centre for Preventive Health Care (Heilsuverndarstodin) was erected in 1956. It still exists, but with the establishment of preventive services at health care centres in Reykjavík and throughout the country, these services have been increasingly decentralized in recent decades. The Centre for Preventive Health Care still acts as a national coordinating centre for maternal and child health. It also hosts organizations which carry out important preventive activities, such as the Council for Dental Prevention, a clinic for sexual counselling, a clinic for preventive care in the workplace, a tuberculosis prevention clinic as well as the joint administration of the health care centres in Reykjavík.

The health care centres are responsible for providing health prevention services at the primary schools in their area. The emphasis in recent years has been shifting from routine physical check-ups and measurement of height and weight to actively involving children in issues such as nutrition, smoking, drug abuse, accidents, sex and relationships.

Secondary prevention

The uptake of routine vaccines, such as diphtheria, whooping cough, tetanus, mumps, rubella, measles and poliomyelitis, is approximately 95%. Poliomyelitis has not been encountered since 1963. Diphtheria has been eliminated, tetanus has not been seen for decades, and whooping cough is seldom seen. Typhus is no longer seen in Iceland. Many young doctors have never encountered measles, mumps or rubella. Bacillus Calmette-Guérin (BCG) vaccination has never been routinely used in Iceland; tuberculin testing is used for screening against tuberculosis. Only a few diagnoses of tuberculosis are made every year, mostly among immigrants. Children have been vaccinated against

Haemophilus influenzae type b (Hib) since 1989 and no new cases of this type of meningitis have occurred since. Vaccination against meningococci C was introduced in 2002, as the incidence of this type of meningitis has been high in recent years. Ninety percent of all children from 2 to 18 were vaccinated during 2002–2003.

The Icelandic Cancer Society, a non-profit nongovernmental organization (NGO), is in charge of screening against cancer of the cervix, according to a service contract with the Ministry of Health and Social Security. This screening started in 1964. During the first years of the screening, all women from 25 to 69 years of age were invited to participate every two or three years. In 1988, the age limit was lowered to 20 years and the interval was fixed to two years. Two thirds of the screening activity is performed at Cancer Society facilities, and while the rest is conducted by private gynaecologists and general practitioners, the Cancer Society still has the responsibility for organizing the screening. The three-year attendance rate for the 25–69 age group was 79% in 1994, declining to 76% in 2001.

Since 1987, the Cancer Society has also been in charge of regular breast cancer screening by mammography for women aged 40–69. The two-year attendance rate has been lower than for cervical screening, with 62% for breast screening and (for the same age group) 68% for cervical screening in 2001.

Major diseases

Cardiovascular diseases are the most frequent cause of death in Iceland. According to research findings from the WHO Monitor Trends in Cardiovascular Disease (MONICA) Project, a multinational study in the 25- to 74-year-old age group, the myocardial infarction (MI) incidence and death rates have declined substantially in Iceland in recent decades among both men and women. Among men, the incidence declined during 1981–1998 by 40% and the death rate by 57%. The corresponding figures for women were 34% and 51%, respectively. The decline was most marked in the lower age groups, especially for men. Case fatality for myocardial infarction in Iceland is among the lowest for all countries in the MONICA study. The conclusion, after analysing these figures, is that the recent decline in MI mortality for Icelanders less than 75 is due to a 40% reduction in both incidence and recurrence and to a reduction in case fatality by 20%.*(3)* The number of deaths from stroke has also diminished steadily since 1950, by 50% for men and 60% for women.

A national cancer registry contains information on cancer diagnoses in Iceland since 1955. It is one of the few such registries containing information on a whole nation. It is operated by the Icelandic Cancer Society on behalf

of the Directorate of Health. About 1000 cases of cancer are diagnosed annually in Iceland. The most commonly affected organs are the prostate for men and the breast for women, closely followed by the lung for both sexes. The incidence of some cancers has increased in Iceland in recent years, such as cancer of the lung, colon and prostate. The largest increase has been for melanoma of the skin, which has doubled during a single decade. In women younger than 40 it is now the most common cancer. The incidence of cancer of the cervix has declined by 67% and the mortality rate by 75% during the first 35 years of regular screening of the cervix.

The annual incidence of cancer is predicted to rise to over 1600 by the year 2020, or approximately 70% as compared with the years 1993–1997, according to a forecast made in 2002.*(4)* The relative increase is larger than in the other Nordic countries because of the later "greying" of the population in Iceland. From 1993–1997 to 2018–2020, it is estimated that the number of males in the population will increase by 23%, but that the incidence of cancer will increase much more, or 82%, and a 62% increase is expected in the annual number of female cases. The largest number of cases is due to changes in the population's age structure. Only between 5 and 10% are related to increased cancer risk. Because of the decrease in smoking among men, the age-standardized risk reduction for lung cancer is forecast to be 35% for this same period, but changes in the age structure will more than outweigh this favourable development, and the absolute number of deaths from lung cancer among men will increase by 39%. The annual number of cancer of the prostate is projected to increase by 130%. The only expected decrease in cancer incidence between the two periods is for cancer of the cervix in females and Hodgkin´s disease in males. The survival rate for cancer has improved considerably. The relative survival (the survival experience of a defined patient group as percentage of the survival of those at the same age and sex in the general population) five years after diagnosis of cancer was 20% for Icelandic males who were diagnosed with cancer during 1956–1960 but had become 56% for males diagnosed in 1993–1997. For females the respective figures are 27% and 63%.

Type 1 diabetes is much less common in Iceland than in the other Nordic countries.*(5)* The prevalence was 14 per 100 000 children 14 years and younger in 1999, as compared to 50 per 100 000 in Finland, where it is most prevalent. However, the prevalence has been rising in Iceland as in other countries during recent decades. Figures for type 2 are less reliable, but even here, the prevalence seems to be less in Iceland than in the neighbouring countries and relatively stable. Of special interest is the low incidence of blindness from diabetic retinopathy in Iceland after preventive activities were introduced in 1980.

In the beginning of 2002, the total number of registered HIV-positive individuals was 154. Of this number, 53 had been diagnosed with AIDS and 36 had died of the disease. The yearly incidence of HIV has been increasing since 1993, but the yearly increase of AIDS has decreased during this period, especially since 1996 when new drug treatment started. In recent years, most people diagnosed as HIV-positive are heterosexual.

In the 1990s, the Reykjavík metropolitan area took part in the European Community Respiratory Health Survey (ECRHS), an extensive study of geographical differences in asthma and atopy among young adults (aged 20–44) in 22 countries and 48 sites.*(6)* The study revealed wide variations in the incidence of asthma, bronchial hyper-responsiveness and other respiratory symptoms in different countries and geographical areas. The prevalence of asthma and atopy was highest in the English-speaking countries (>40%) and lowest in Iceland (24%). The reasons for this are still speculative, but interestingly, the prevalence for younger individuals in the Icelandic sample was higher among those who had not lived in urban areas during their childhood. This finding suggests increasing asthma and allergy problems in Iceland in the future.

Data on the prevalence of the more serious rheumatic diseases are sparse in Iceland. The prevalence of pervasive musculoskeletal pain was found to be relatively high in people between 18 and 79 years old in two areas of Iceland, especially among women.*(7)* Long working hours and stressful living conditions are possible explanations, as Icelandic women work more outside the home and have more children than women in the neighbouring countries.

Helgason followed all Icelanders born between 1895 and 1987, excluding those who died before 1 December 1910, with respect to psychiatric diseases up to the age of 87.*(8)* From this study, he concluded that the risk that a 14-year-old had of suffering from psychiatric disease before age 61 was 32.5% for a male and 35.3% for a female. A similar study of Swedes showed slightly higher figures for males but much higher figures for females (71.6%).*(9)* The risk of schizophrenia for Icelanders born in 1960 (0.7%) is similar to the risk for those born 1895–1897 (0.85%). Suicides among young men have caused concern in Iceland. Traditionally the suicide rates for this demographic have been around 14 per 100 000, or approximately the same as in other Nordic countries except Finland, which has always had the highest rates. Around 1990, the figure increased to 61 per 100 000, with the highest rates in the eastern part of the country. A variety of actions were introduced to try to curb this trend, and the figures have now stabilized at a lower level.

Despite a rapidly increasing consumption of sugar among children, especially in soft drinks, the DMF number (the number of decayed, missed and filled teeth) for 12-year-olds has decreased rapidly.*(10)* It is now on a par with other Nordic countries, after being much higher in recent decades. The improvement can probably be attributed to more effective preventive efforts. Fluoride is not added to drinking water in Iceland, but the health care centres are responsible for providing fluoride solution to children aged 6, 12 and 15 every two weeks during the school year. Toothpaste containing fluoride is recommended for all age groups.

Mortality from external causes was much higher in Iceland than the Nordic or EU average in the early 1970s. It declined to average EU levels in the following decades, probably as a result of enhanced road safety and safety at home, but there has again been a worrying increase in very recent years.

On 1 December 2002 the prevalence of all disability pension was 6.2%; full disability pension 5.8% and partial disability pension 0.4%. Mental and behavioural disorders are the most common causes of disability. There has been a marked increase in disability due to these disorders since 1996 probably mainly due to the introduction of a new method of disability evaluation in 1999 and possibly because of increased pressure from the labour market. Disability is more common among women than men, except in the youngest age group. *(11)*

Organizational structure and management

Organizational structure of the health care system

In Iceland, the Minister of Health and Social Security is ultimately responsible for the administration of health services. The organizational structure of the health care system is presented in Fig. 2. The municipalities are responsible for arranging other public services such as primary education.

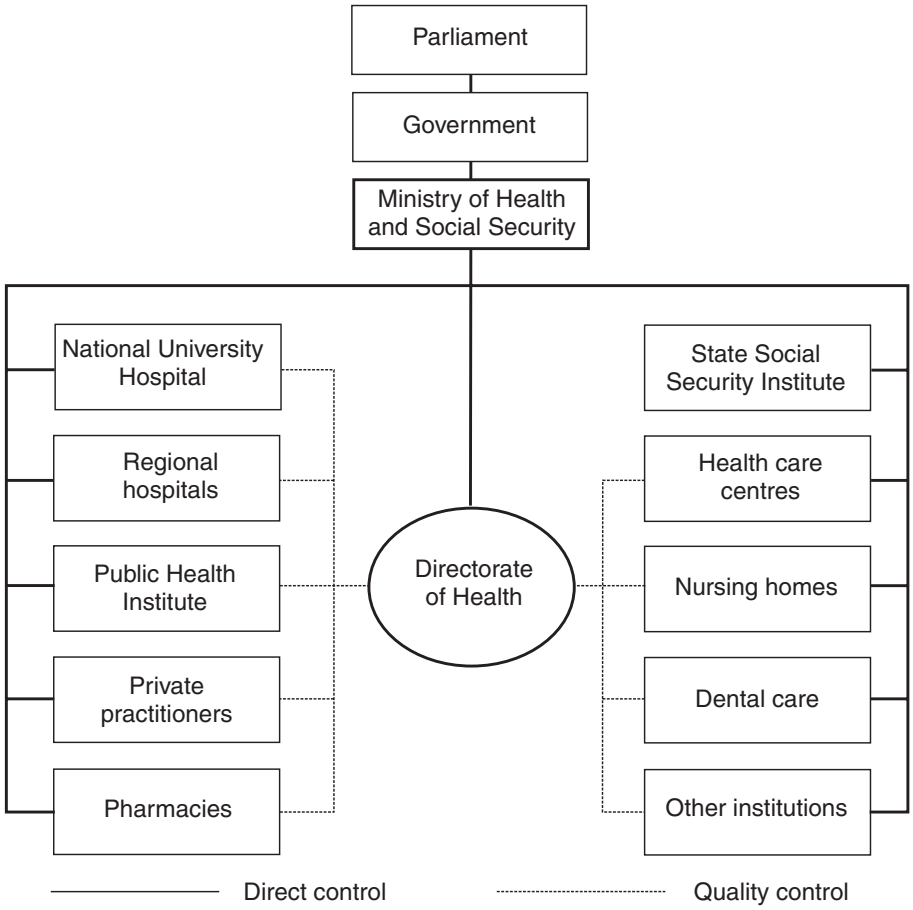
The Ministry of Health and Social Security, led by the Permanent Secretary, is organized into seven departments:

- Department of Finance
- Department of Legal Issues
- Department of Social Security – Legal Issues
- Department of Social Security – Welfare Issues
- Department of Primary Care, Hospitals and Care of the Elderly
- Department of Pharmaceuticals
- Department of Planning and Development.

The seven departments are responsible for the administrative work on the key functions of the health care system and social security that lie within their division, and for guiding and harmonizing actual activities in the health sector.

The Medical Director of Health serves as adviser to the Minister and to the government on everything concerning health. He supervises the activities and the working facilities of health professionals, collects statistical reports and is in charge of the publication of the country's health statistics in cooperation

Fig. 2. Organizational chart of the health care system, 2003



Source: Ministry of Health and Social Security.

with the Ministry of Health and Social Security. The Directorate of Health is obliged to deal with complaints or charges arising from the relations between the general public and the health services. People can also present their complaints to a committee that has no connection to the health authorities and is chaired by a lawyer.

The State Epidemiologist is responsible for infectious disease control and prevention, according to the Act on Communicable Diseases that came into force in 1998. This act also established the office of the State Epidemiologist within the Directorate of Health. The Committee on Communicable Diseases creates policy on measures against communicable diseases, and advises health authorities on measures to prevent their spread.

The State Social Security Institute (SSSI) is charged with the administration of pension insurance, occupational injury insurance and health insurance in accordance with the Act on Social Security. Each branch of insurance has its separate finances and constitutes an independent department within the SSSI. The parliament elects five persons to the Social Security Board (SSB), and the Minister appoints a chair from their number. The SSB supervises the finances, operation and activities of the SSSI. Disputes arising with respect to the basis, conditions or amount of benefits are adjudicated by an independent committee, the Social Security Ruling Committee.

Health care centres throughout the country provide primary care. This arrangement was a major reform of the Health Service Act that came into force in 1974. Before that time, curative health care was provided by general practitioners in individual practices. Remnants of the old system still exist to a small degree in Reykjavík, where some 10 private practitioners provide such care and get paid according to the number of patients on their list as well as fee-for-service. No new private practice agreements for general practitioners have been made for many years. It has been the policy of the health authorities that all primary care will be provided by the health care centres in the future. The reasons behind this policy are mainly that preventive services are considered an important part of primary health care and that primary health care is essentially teamwork, with the doctor only a part of the team.

The state pays the total operating costs of the health care centres as well as accommodation for doctors, nurses and midwives in rural areas and, since 2003, all construction costs. Until that year's change in the law, the state paid 85% of the construction costs, larger maintenance costs and the cost of equipment of health care centres, while local communities paid 15%. The state can contract out the activities of the health care centres, and the first tender for a totally privately run health care centre was launched in the beginning of 2003. The services provided will be the same as in the state-run centres.

Most specialist outpatient care is provided by private practitioners working on their own or rented premises, sometimes in group practice. The private practitioners are the most rapidly growing part of the health care sector regarding volume. They work on a fee-for-service basis negotiated by the medical association and the health authorities. Ambulatory care within hospital care, on the other hand, is less common than in neighbouring countries. Until 1998, outpatient hospital care was also paid for by the SSSI, but since that time it has been paid of the hospitals'

fixed budget, which has increased correspondingly. Many private practitioners work part time as salaried doctors in the hospitals.

Hospitals fall into seven categories according to Icelandic law, but only the first two or three are hospitals in the traditional sense of the word: regional hospitals, hospitals with several departments and so-called general hospitals, with specialists in surgery, medicine or general practice. Many of the general hospitals are now primarily nursing homes, with only a few beds for observation and simple medical treatment. The other categories include nursing homes, rehabilitation institutes, homes for the chronically ill and institutions for the rehabilitation of alcoholics and other drug addicts. Institutions in these categories are mostly owned and run privately but financed by the SSSI or directly by the state. Approximately 94% of rehabilitation services are privately run, as well as 60% of the institutions and services for old people outside acute hospitals. Influential institutions in the field of prevention are also run by private NGOs, such as the Cancer Society and the Icelandic Heart Association, but with considerable public support. The first health institution to be constructed and run by a for-profit enterprise is a very modern nursing home with 90 beds that began operating in 2002. There is no discrimination in access to this nursing home in terms of income or social status, the deciding factor being health status.

Until 2003, the minister appointed steering committees for health care centres and hospitals, with one member nominated by the staff, three members elected by the local municipality and a fifth member without specific recommendation to chair the committee. A change in the Health Services Act in 2003 simplified the administrative structure of these small units and the steering committees were abolished, the argument being that there was no reason to keep the local steering committees after the state had taken over all costs. However, the formal influence of the staff diminished as well because of these changes. The only steering committee that has not been abolished is that of the Landspítali University Hospital. It consists of five members chosen by the parliament, two chosen by the staff and a chair chosen by the Minister of Health and Social Security. At Landspítali University Hospital, the director is assisted by an executive committee composed of a chief finance and information executive, a chief technical executive and a chief executive for research and development as well as a chief medical and a chief nursing executive. In other health care institutions, the executive committee consists of the director, the chief nurse and the chief medical officer.

Planning, regulation and management

The Icelandic health care system can be described as universal, comprehensive and mostly financed by general taxation. The Health Services Act that came into force on 1 January 1974 accorded all citizens of Iceland access to the best health services at any given time for the protection of their mental, physical and social health. It laid the groundwork for the present organization of the health services and defined the structure of the health care centres and the hospital system.

Until 1990, all local health services were defined as joint responsibilities of the state and the municipalities, financed 85% by the state and 15% by the municipalities. Only the main hospital (Landspítali) was run exclusively by the state. In 1991, the state took over both the health care centres and the municipal hospitals. Today the state is responsible for almost all health services and the expenses connected with their daily operations.

The current location and types of the health care centres throughout the country are described in the section "Health care delivery system" below. The original Health Care Act contained a very detailed description of the type, location, activities and administration of the health care centres. Through changes in the Health Services Act in 1996, the Minister was granted the power to make decisions on health care centre mergers, cooperation and changes in uptake areas as he or she considered necessary, without needing to change the law. This was to facilitate merging of health care centres and the creation of larger management units. In 2002, the detailed instructions on the location of the health care centres were completely abolished.

It has for a long time been the policy of the Icelandic health authorities that people's first contact point with the health services should be through the health care centres. For some years prior to 1985, this policy was formalized in a referral system. With increasing number of specialists, however, the system became difficult to apply and there were numerous exceptions. The referral system was therefore abandoned in 1985. It was also argued that it was contradictory to another principle of the Health Care Act, that people shall be free to choose their health care providers.

Much has been achieved in improving the planning and coordination of primary health care and hospital care, for example by defining the role of individual institutions and drawing up service contracts with them. Another example is merging the hospitals in the capital area and merging the uptake areas of various rural health care centres.

Specialists working on a fee-for-service basis in private practice on their own premises are an important part of the Icelandic health care system, but their services are hardly mentioned in the Health Care Act. It follows that their activities are much less regulated than the primary care provided by general practitioners (GPs). GPs have to wait for vacancies and hospital doctors have to compete for the salaried consultant jobs in hospitals. New specialists, on the other hand, can get a contract with the SSSI as soon as they have obtained their licence, without any assessment of how much their services are needed. The SSSI has not developed a policy about which specialists to contract with, and the Competition Law sets some limits on how it could be accomplished.

All new health facilities are subject to approval by the Ministry of Health and Social Security. As described above, this requirement also holds true for the establishment of a private general practice. In recent years, it has been a policy of the Ministry that all new posts in general practice should be within the health care centres and, as mentioned above, there are only a few private GPs in Reykjavík who are still working outside the health care centres.

In 1999, the Ministry issued a plan addressing the issue of health service quality, defining its primary goals in this area and the actions that were needed to achieve these goals. The overall goal was for all health care institutions to use quality control methods and to implement formal quality control methods by 2003. A Quality Council of 11 people from the health services and the Ministry was appointed, as was a Quality Control Manager within the ministry. The assessment work is underway, but no results have been published yet. The Directorate of Health inspects the health services on a regular basis, supervises the work of all health personnel and deals with complaints from the public. A separate division of the Directorate supervises and inspects the use of medical devices in accordance with the European Economic Community (EEC) directives. The Ministry of Health and Social Security issues authorizations for health personnel. In the case of doctors, nurses and certain other health personnel, a consultation process with the Directorate of Health and the University of Iceland is obligatory. Deregistration is most often carried out following an inspection by the Directorate.

The resident assessment instrument (RAI) is used in all nursing homes in Iceland to help insure quality of care.*(12)* The RAI was developed by the United States Health Care Financing Administration. As described below, it is now being used in Iceland for calculating the reimbursement for nursing homes according to not only the number of patients or residents, but also

the case mix. However, it is being used for more than just financial purposes, as it offers numerous benefits to a variety of stakeholders. It has been claimed *(13)* that the main benefit of using the RAI is to improve the quality of care for the frail elderly. The instrument covers the major domains of functional ability and the various psychological, social and environmental determinants of health and wellbeing. Each individual is assessed when admitted, and a treatment plan is developed accordingly. This assessment is then made on a yearly basis or when significant changes in health status become apparent. Four times a year, a shorter version is used to control the quality of the services.

Decentralization and recentralization of the health care system

Historically, the health care system in Iceland has been characterized by the administrative autonomy of individual institutions, in spite of the state's financing of health care. This can be partly explained by the relative isolation of those in the countryside, but the main reason is probably that independent organizations, non-profit societies, health care professions and local communities have all had a strong say in the construction and development of the health care system.

The original idea of the Health Care Act of 1974 was to give local people and their representatives a greater say in the operation and control of local health services. However, the idea of decentralization is difficult to realize in a country with a very small and sparse population that at the same time exhibits a need for increased specialization, strong management units and efficient use of resources. These factors can be considered to be the main reasons for the failure and subsequent abolition of the eight regional health councils and the regional medical officers, as described later in "Content of reform and legislation". The Icelandic health services have in fact seen increasing recentralization in recent decades, as witnessed for example by the fact that the state took over the financial responsibility for health care centres and municipal hospitals from the local authorities in 1990.

Another example is the merger of the hospitals in Reykjavík. Instead of one hospital owned by the state, one hospital owned by the municipality of Reykjavík, and one private Catholic hospital with private doctors on a fee-for-service basis, the area now has a single large state-owned university hospital, Landspítali University Hospital, with almost exclusively salaried

staff. Some of the services, such as catering and laundry, have been contracted out and the laboratories and diagnostic units made more independent, selling their services to the clinical departments. The geriatric and rehabilitation units have also been made more independent in order to counteract the increased centralization. The Ministry of Health and Social Security entered into service contracts with most of the small urban hospitals, stating the financial budget and the services to be provided. If these hospitals can provide the services while using less money than the appropriated amount, they can use the surplus for their own benefit, but any unexplained deficit will be carried over to the next year. The Ministry's tight control of the details in the management of these institutions has relaxed accordingly.

Merging the separate negotiating committees into one general committee, instead of one committee for doctors at health care centres and one for private practitioners, can also be regarded as an act of centralization. All this has been regarded as necessary in order to take better control and to be better equipped to achieve the goals of important policy documents, such as *The Icelandic health care priorities document* and *Health plan through 2010,* and to control the rising costs of the provision of health care.

Health care financing and expenditure

Main system of financing and coverage

The Icelandic health system is characterized by the dominance of the public sector (see Table 3). It is financed 82.9% by the state, either directly from the state budget or indirectly through the State Social Security Institute (SSSI). State tax revenue is derived approximately 30% from personal and corporate income tax, 35% from value added tax (VAT), 10% from social security taxes, 5% from net wealth taxes and the rest from other sources. That portion of health care services that are not tax financed, answering to 17.1% of the total, is almost exclusively financed by direct household payments, primarily the private partial payment of specialist consultations, outpatient operations and dental care, as well as co-payments for pharmaceuticals.

Private health insurance hardly exists in Iceland, and health services provided by employers are very limited. As described above in *Historical background*, this arrangement has continued more or less unchanged for a long time, and

Table 3. Main sources of financing of health services (%), 1980 – 2001

Source of finance	1980	1985	1990	1995	1999	2000	2001
Public	88.2	87.0	86.6	83.9	84.0	83.7	82.9
Taxes	88.2	87.0	86.6	83.9	84.0	83.7	82.9
Statutory insurance	–	–	–	–	–	–	
Private	11.8	13.0	13.4	16.1	16.0	16.3	17.1
Out-of-pocket	11.8	13.0	13.4	16.1	16.0	16.3	17.1
Private insurance	–	–	–	–	–	–	–
Other	–	–	–	–	–	–	–

Source: Organisation for Economic Co-operation and Development, *OECD health data 2003,* 2nd ed., 2003.

there are no plans to change the main system of health care financing and coverage.

According to the Health Services Act and the Act on the Rights of Patients, every citizen has the right to the best health service available at all times. All persons who have been resident in Iceland for at least six months are also entitled to health care. The Minister of Health and Social Security can issue an exemption from the mandatory six-month period of residence. Necessary care in cases of emergency may be paid even when the stipulated waiting period of six months has not elapsed. The Minister can also decide that the SSSI shall pay according to international agreements the costs of medical assistance rendered to foreign nationals staying in Iceland temporarily. The law prohibits discrimination against patients on grounds of gender, religion, beliefs, nationality, race, skin colour, financial status, family relation or other status. Children under the age of 18, including stepchildren and foster children, are covered by their parents' health insurance. Opting out is not possible.

Health care benefits and rationing

Hospitalization is guaranteed for as long as necessary and, except for outpatient cases and very short stay, involves no payment at the point of use. In certain cases, such as for treatment of psoriasis, medical assistance in special institutions rather than hospitalization may be paid for by the SSSI.

If a patient requires hospitalization abroad because the necessary therapy cannot be provided in an Icelandic hospital, the SSSI pays the costs of the hospitalization, as well as the post-hospitalization costs of lodging, drugs and necessary medical assistance. The Minister of Health and Social Security appoints a committee that decides whether these conditions apply and where abroad the insured person is to be hospitalized. If the patient opts for treatment in a more expensive setting, the SSSI pays only the cost that would have been incurred at the place that the committee had chosen.

Health insurance covers general medical assistance provided outside a hospital by a physician with whom the Minister has contracted. Patient co-payments for consultation and laboratory services are determined by a regulation and described in more detail in the section below on out-of-pocket payments.

Children and adolescents under the age of 18 years are entitled to one annual dental check-up free of charge. The health insurance scheme reimburses 75% of the cost of dental treatment for children under the age of 18, except for crowns, bridges and orthodontic treatment, in which case more specific rules

apply. People with chronic illness, old age pensioners and disability pensioners can have their dental costs fully or partially covered. Dental treatment is not subsidized for the rest of the population, except for treatment due to the serious consequences of congenital defects, accidents or illness that the SSSI helps cover. The SSSI pays unavoidable costs of travel by the physician to insured persons who are unable to travel on account of illness, though the patient always pays a certain amount.

The SSSI pays seven eighths of unavoidable costs of transport to a hospital within the country, provided the need for transport is urgent and the state of the patient's health precludes the use of ordinary means of passenger transport. The cost of the first 10 km shall be deducted from the total cost of transport by ambulance, and the cost of transport within a town is not paid by the insurance. The same rules apply regarding the transportation of a patient from the hospital to his home or place of stay when the patient cannot be transported by ordinary means of passenger transport. If attendance is necessary, seven eighths of the attendant's fare is paid by the SSSI, even on a scheduled journey. The cost of travel between hospitals is paid in full by the hospital sending the patient, provided again that the patient is unable to use ordinary means of transport.

Nursing in a patient's home due to serious chronic illness and injuries is paid by the SSSI, which also subsidizes purchase of nutrients and any special diet rendered necessary by physical impairment. It also pays for courses of training or therapy necessitated by serious chronic diseases or accidents and subsidizes the acquisition of any aid apparatus and motor vehicle made necessary by physical impairment.

The health insurance pays per diem sickness benefits if an insured person who is at least 16 and does not receive an old age or invalidity pension becomes totally incapacitated for work, provided he or she stops work and ceases receiving wages. Per diem sickness benefits are not paid for more than a total of 52 weeks in any one period of 24 months. The SSSI may, however, decide that the per diem benefits be paid for a longer period if it is clear that the patient will soon be able to work or that it will soon be possible to determine the degree of disability, temporarily or provisionally. If insured persons are incapacitated for work for at least 21 days, they shall receive per diem sickness benefits as of the 15th day of illness. The waiting period begins on the day when a physician confirms incapacity for work. Per diem benefits for housework in a patient's own home amount to one half of full per diem benefits. Per diem benefits are based on the applicant's work during the two months immediately before becoming incapable of work. According to employment legislation, every employee

has the right to sick pay relative to the time worked for the same employer, up to one year at a time. Per diem sickness benefits will be set off during this period. Along with the sickness benefit allowed by the SSSI, the trade union sickness funds pay compensation in the case of a member's sickness, up to 80% of the last pay cheque for the period of a whole year.

If an insured person abroad requires local medical assistance, the health insurance pays the cost as it would for medical assistance in Iceland. If an insured person abroad in a member state of the European Economic Area (EEA) requires local medical assistance, the health insurance pays the cost in accordance with the rules of the EEA agreement governing social security.

Services of psychologists unaffiliated with an institution are not reimbursed. Neither are opticians' services. Recently, some treatment that was previously subsidized, including some forms of plastic surgery, is now being paid for entirely by the patient. Specific rules also apply to infertility treatment (see *Out-of-pocket payments* in the next section). Individuals must also pay the full cost of the recently introduced refractive laser eye surgery, approximately €3000 (1 € is approximately 85 Icelandic krónur (ISK)).

For treatment not available in Iceland, such as most organ transplants, the patient's physician can apply to the SSSI for reimbursement, for treatment, lodging and travel costs to a foreign country for the patient and an accompanying person. As more treatment facilities are now available in the country, the number of treatments paid for in other countries has decreased in recent years.

Alternative treatment is common. On average, one out of every four Icelanders seeks alternative treatment each year *(14)*, but traditional and alternative medical practices operate independently from each other. Alternative treatment has never been reimbursed in Iceland.

Complementary sources of financing

The only complementary sources of financing in the Icelandic health care system are out-of-pocket payments, amounting to approximately 17% of total health expenditures in recent years (see Table 3). This share was 20% in the beginning of the 1970s, gradually diminishing to just over 10% to 11% in 1978–1983 and then gradually rising again.

Out-of-pocket payments

Approximately 35% of the total out-of-pocket payments are for drugs, a little more for dental care, and around 20% for the patient share of general practitioner (GP) services, specialist services and non-hospital physiotherapy *(15).* By law, preventive health care for mothers and children, as well as school health care, is free of charge in Iceland. Hospital stays are also free of charge, with the exception of outpatient care when the patient does not have to stay overnight. Some procedures are defined as outpatient care even if the patient has to stay overnight in the hospital for some reason. This change in the regulations was necessary because some doctors let patients stay overnight mainly in order to cancel the patient's charge. Nursing home stays cost the elderly up to 1000 euros per month, deducted from their pensions if their pensions are sizeable enough. The SSSI pays the difference, as well as the cost that the resident may not be able to pay because of low pensions. Thus, the elderly do not have to dip into their assets to pay for their care. *(16)*

GP consultations were free of charge during some years before 1991. During the 1990s, people had to pay "admission charges" to the health care centres (and a similar amount to the few private general practitioners in Reykjavík) (see Table 4). From 1993 the patient was charged ISK 600–700 for a GP consultation during normal working hours. However, for old age pensioners, the disabled and children less than 16 (children less than 18 since 1999), the charge was only a third of this amount. Outside normal working hours, the ordinary charge was ISK 1000; for old age pensioners, disabled people and children the charge was ISK 400. This admission charge was regarded as a patient contribution to the operating costs of the health care centres. From 1991, the health care centres were allowed to use 10% of this amount for staff education, developmental work and better working conditions. About half of all health care centres applied to use this money thus.

The charge for home visits within normal working hours by one's own physician is normally ISK 1000; for old age pensioners and disabled people allowance the charge is ISK 400. Outside normal working hours, the ordinary charge for home visits is ISK 1500, while for old age pensioners and disabled people it is ISK 600.

Since 1993 people have been required to pay a fixed amount, as shown in Table 4, plus 40% of the remaining total cost of the specialist consultation or procedure. (Less for old age pensioners and since 1999 for children as well). The special groups now pay only about one third of the fixed amount paid by the general population, and the ceiling for one calendar year for

Table 4A. Out-of-pocket payments in ISK for consultations in general practice, ambulant specialist consultations, and laboratory and X-ray services as well as maximum payments on a yearly basis 1991 – 1999

Service	Year			
	January 1991	March 1993	February 1996	April 1999
GP				
General fee	600	unchanged	700	unchanged
Children	600	200	300	unchanged
O&D	200	unchanged	300	unchanged
Specialists				
General fee	1500	1200+40% of rem	1 400+40% of rem	1400+40% of rem max 5 000
Children	1 500	1200+40% of rem	1 400+40% of rem	500+13% of rem max 5 000
O&D	500	1/3 of gen	500+13% of rem	500+13% of rem max 5 000
Laboratory services				
General fee	600	900	1 000	unchanged
Children	600	900	1 000	300
O&D	200	300	unchanged	unchanged
X-rays				
General fee	600	900	1 000	unchanged
Children	600	900	1 000	300
O&D	200	300	unchanged	unchanged
Maximum per year[a]				
General fee	No	No	12 000	unchanged
Children	No	No	6 000	unchanged
O&D	No	No	3 000	unchanged

Source: State Social Security Institution (SSSI).

Notes: Maxima for children apply collectively to all the children in a family; % = % of total cost per consultation or service; [a] After reaching the annual maximum people pay a very substantially reduced rate according to specific rules, but treatment is not completely free of charge. O&D = old and disabled people. 100 ISK is approximately 1.2 euros.

all these services is now ISK 18 000 for the general population and ISK 6000 for the special groups. The same cost ceiling also applies to the total cost of these services for all the children in a single family. When the cost ceiling has been reached, the insured person receives a rebate card that guarantees much larger reimbursement for the rest of the year, according to certain regulations. These regulations for rebate cards came into effect in 1993. Up to then, a "free card" scheme was in effect.

One detail in the table above is of special interest. In the beginning of 2002, there was a considerable increase in the charges, and the annual cost ceiling was increased from ISK 12 000 to ISK 18 000. The reasons given were that the percentage of the total cost paid by the patient had decreased from 44% in 1997 to 30% in 2001. After few weeks the

Table 4B. Out-of-pocket payments in ISK for consultations in general practice, ambulant specialist consultations, and laboratory and X-ray services as well as maximum payments on a yearly basis 2001 – 2003

Service	Year			
	July 2001	January 2002	February 2002	January 2003
GP				
General fee	unchanged	850	400	500
Children	unchanged	850	400	500
O&D	unchanged	350	200	250
Specialists				
General fee	1 800+40%	2 100+40% of rem	1 600+40% of rem max 18 000	2 100+40% of rem max 18 000
Children	600+13% of rem max 6 000	700+13% of rem max 18 000	500+13% of rem max 18 000	700+13% of rem max 18 000
O&D	600+13% of rem max 6 000	700+13% of rem max 18 000	500+13% of rem max 18 000	700+13% of rem max 18 000
Laboratory services				
General fee	unchanged	unchanged	unchanged	unchanged
Children	unchanged	unchanged	unchanged	unchanged
O&D	unchanged	unchanged	unchanged	unchanged
X-rays				
General fee	1 500+40% of rem max 6 000	1 500+40% of rem max 18 000	unchanged	unchanged
Children	500+13% of rem max 6 000	500+13% of rem max 18 000	unchanged	unchanged
O&D	500+13% of rem max 6 000	500+13% of rem max 18 000	unchanged	unchanged
Maximum per year[a]				
General fee	18 000	unchanged	unchanged	unchanged
Children	unchanged	unchanged	unchanged	unchanged
O&D	4 500	unchanged	unchanged	unchanged

Source: State Social Security Institution (SSSI).
Notes: Maxima for children apply collectively to all the children in a family; % = % of total cost per consultation or service; [a] After reaching the annual maximum people pay a very substantially reduced rate according to specific rules, but treatment is not completely free of charge. O&D = old and disabled people. 100 ISK is approximately 1.2 euros.

government cut all the increased co-payments (but not the ceiling) to levels lower than what they had been before the increase. The reason for these large reductions in patient contributions was that the level of the general price index would have otherwise exceeded the limit agreed to in negotiations between the government and the labour organizations. It is mentioned here in some detail as a reminder of how decisions made elsewhere can affect access to health care.

Co-payment for drugs has developed in a similar way, and it is explained in the section on *Pharmaceuticals*.

Women pay ISK 2500 for cancer screening of breast and cervix, provided that both procedures are done within an interval of less than 3 months. Many trade unions subsidize this cost.

People need a referral from a physician to get a subsidy for physiotherapy. Physiotherapy for an accident is provided free of charge for the patient. Physiotherapy for disease incurs the following rules: the general population pays 50% of the cost for each of the first 24 sessions and 25% thereafter. Children and pensioners pay 25% of the cost for the first 15 sessions, but if more sessions are needed they are free. In addition, people also pay approximately 10 euros for the referral. In some cases, trade union sickness funds pay part of their members' co-payments.

Voluntary health insurance

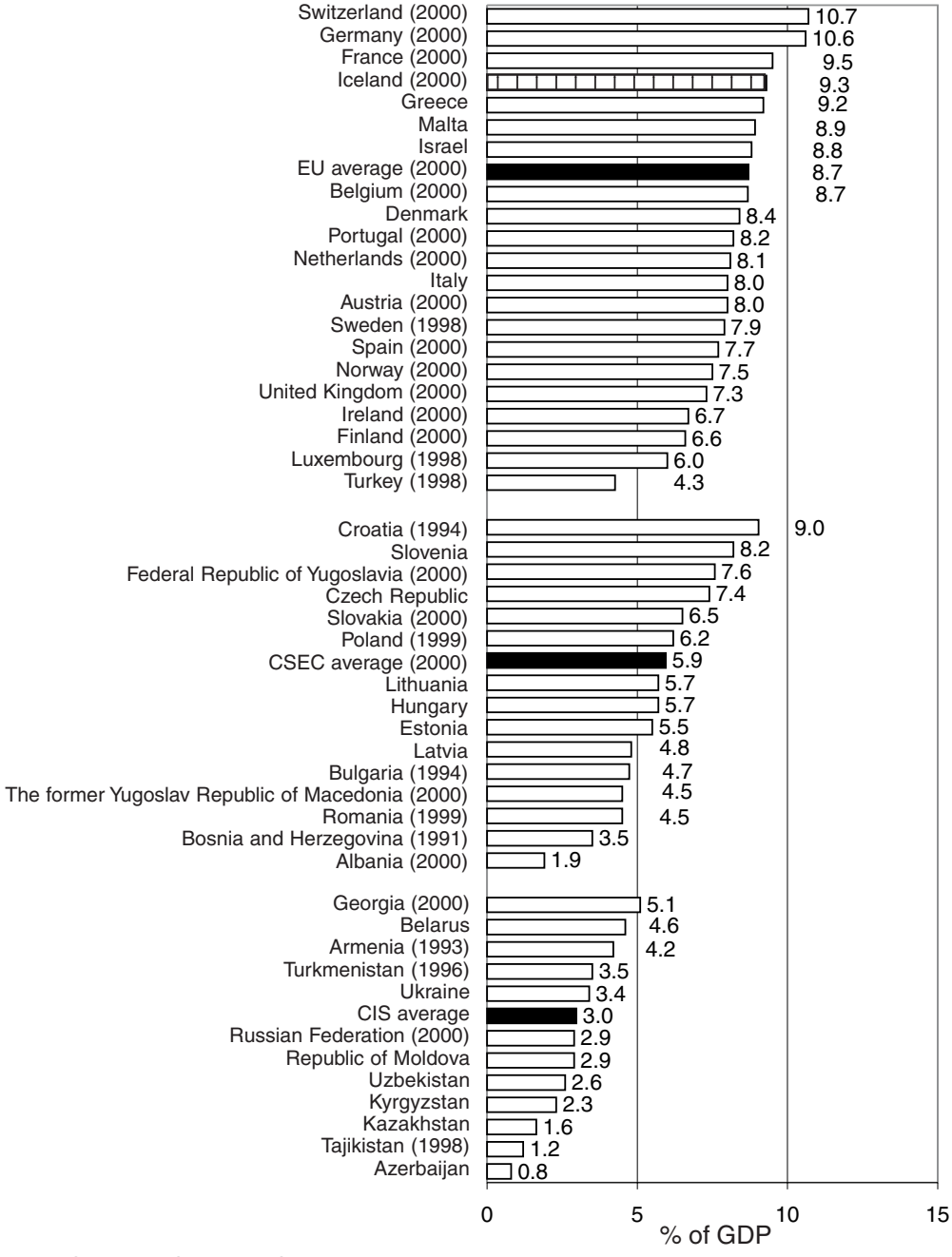
Voluntary health insurance hardly exists in Iceland. It is not prohibited by law, but the Health Care Act states that every citizen is entitled to the best available health service. There has not been any serious discussion on the need for voluntary health insurance in recent years. Debate has centred instead on whether to separate spending on health care from other parts of the state budget and have a separate taxation earmarked for health insurance, thereby splitting the purchase and provision of health care between different agencies.

Health care expenditure

Iceland runs a comparatively expensive health care system. As a percentage of the gross domestic product (GDP), total expenditure on health care has more than doubled between 1970 and 2000 (see Tables 5 and 7). It was 4.0% of GDP in 1970, rising steadily to just over 8% in 1983 and remained remarkably stable at that level until 1997 before reaching a high of 9.5% in 1999. In 2000, Iceland had the fourth highest total health care expenditure, measured as the sum of public and private spending per capita, among the OECD countries, after the United States, Switzerland and Germany, but was second only to Germany in terms of public health care spending. *(16)* The rise in the total health care expenditure per capita in the past 30 years has been almost twice as high in Iceland as in the other OECD countries.

Health care expenditure has increased approximately 5.6 times since 1970 (see Table 5). The population has increased as well during this time, and the

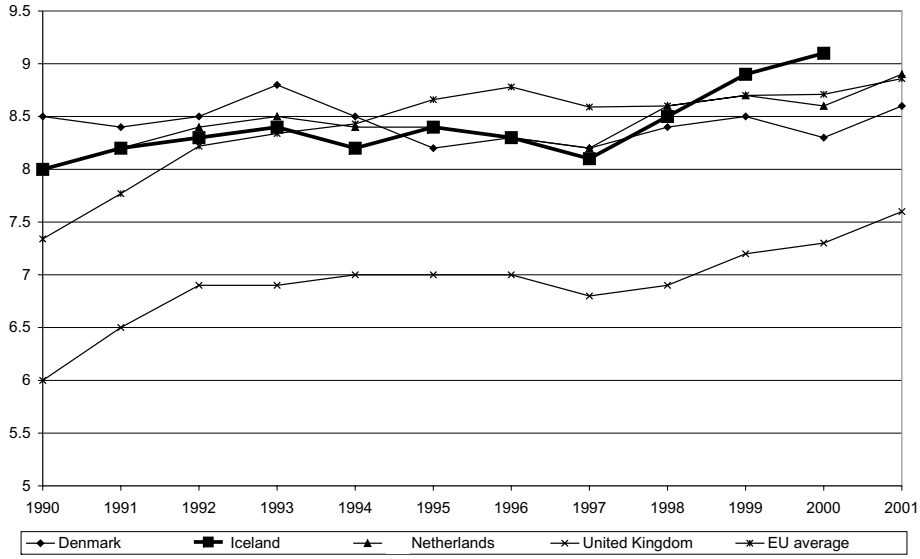
Fig. 3. Total expenditure on health as a % of GDP in the WHO European Region, 2001 or latest available year (in parentheses)



Source: WHO Regional Office for Europe health for all database.

Note: CIS: Commonwealth of independent states; CSEC: Central and south-eastern European countries; EU: European Union.

Fig. 4. Trends in total expenditure on health as a % of GDP in Iceland and selected countries, 1990 – 2001



Source: WHO Regional Office for Europe health for all database.

last column in Table 5 shows that the expenditure per capita has increased less, by a factor of 4.1 in 30 years.

According to WHO HFA data base, total health care expenditure as a proportion of GDP in Iceland in 2000 was 9.3%, which was above the average of 8.7% for the WHO European Region. (Fig. 3).

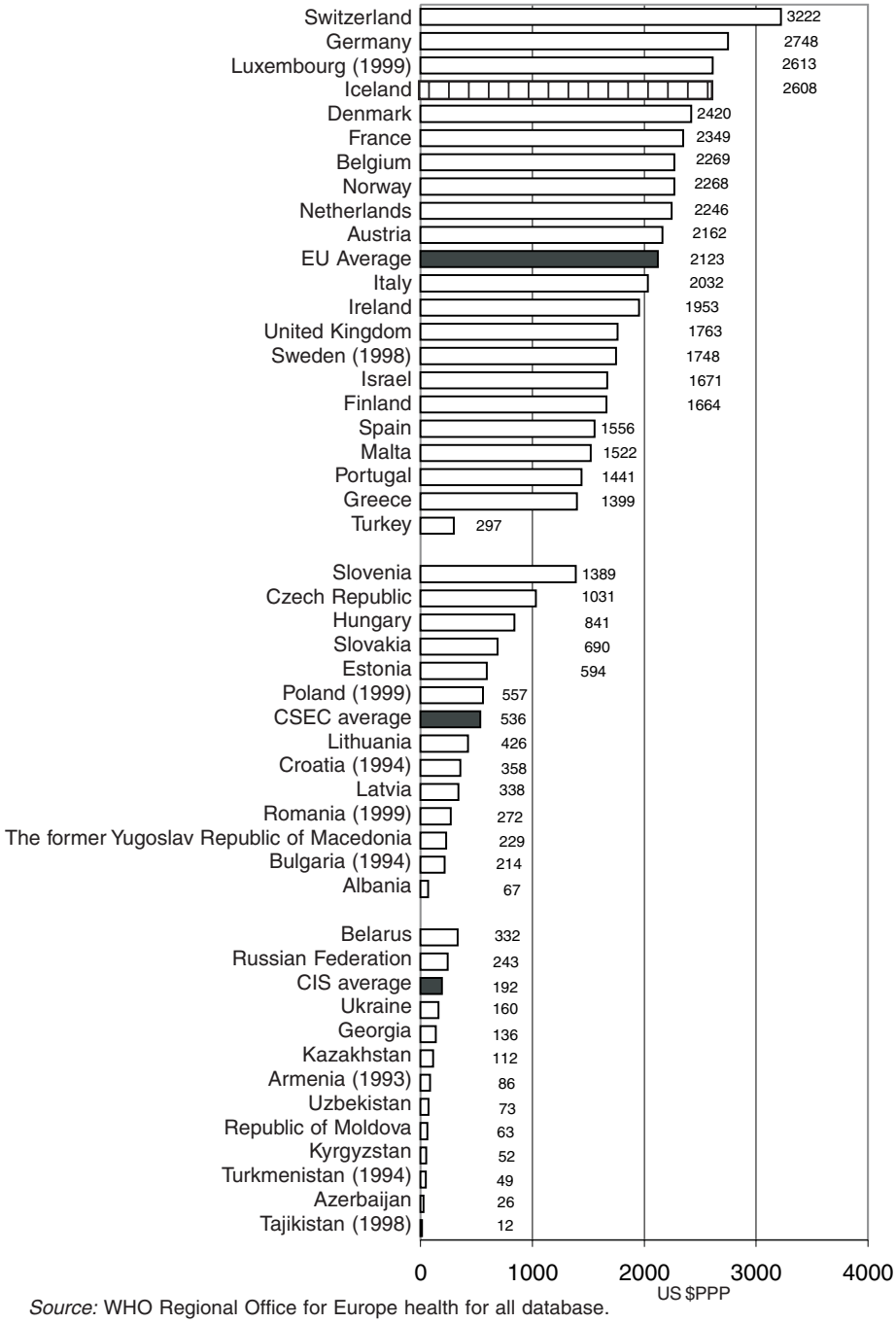
Fig. 4 illustrates the trends in total expenditure on health as a percentage of GDP in Iceland and in other countries.

Table 5. Health care expenditure, 1970 – 2000

Year	Total health care expenditures as % of GDP	Public health care expenditures as % of GDP	Private health care expenditures as % of GDP	Health care expenditure index (1970=100)	Health care expenditure index per capita (1970=100)
1970	4.03	3.20	0.83	100.0	100.0
1975	5.83	5.08	0.75	181.7	170.4
1980	6.19	5.46	0.73	243.0	217.8
1985	7.25	6.31	0.94	342.4	290.0
1990	7.81	6.77	1.05	439.0	352.3
1995	8.25	6.92	1.32	461.4	355.5
2000	9.32	8.63	1.62	558.8	408.5

Source: Felags- og heilbrigdismal 1991–2000. [Social and health statistics 1991–2000.] Statistics Iceland 2003.

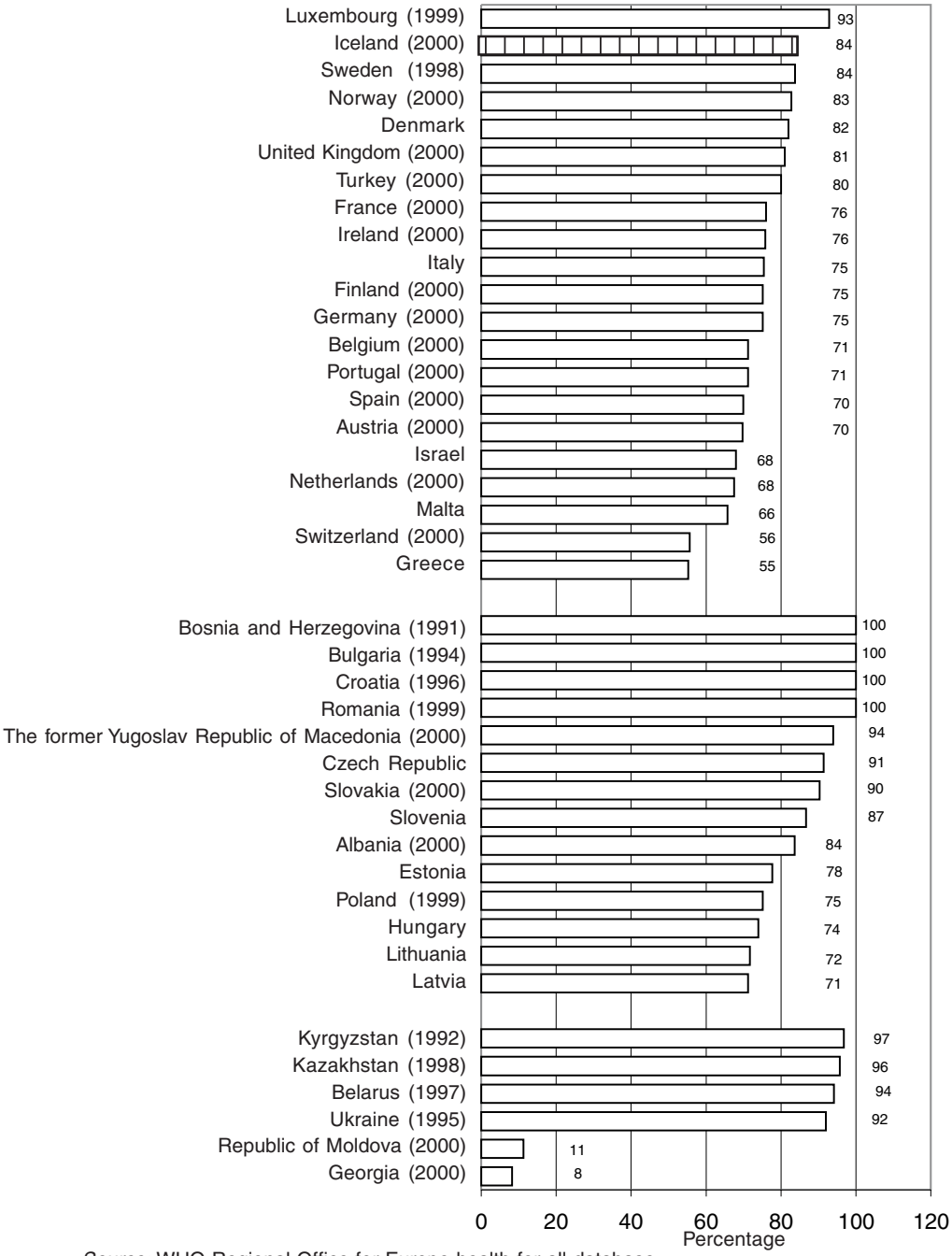
Fig. 5. Health care expenditure in US $PPP per capita in the WHO European Region, 2000 or latest available year (in parentheses)



Source: WHO Regional Office for Europe health for all database.

Note: CIS: Commonwealth of independent states; CSEC: Central and south-eastern European countries; EU: European Union.

Fig. 6. Health care expenditure from public sources as a percentage of total health care expenditure in countries in the WHO European Region, 2001 or latest available year (in parentheses)



Source: WHO Regional Office for Europe health for all database.

If the numbers in Fig. 5 are truly comparable, Iceland is now near the top regarding health care expenditure in US $PPP (United States dollar purchasing power parity) per capita. In the WHO European Region, Iceland ranked fourth after Switzerland, Germany and Luxembourg.

In 2000, the public portion of health care expenditure in Iceland was 84%, as defined by WHO (see Fig. 6 on page 25).

Among the Nordic countries, Iceland expends the largest part of its GDP on health care and Sweden the least. *(17)* Bearing in mind its relatively young population, one can conclude that Iceland has one of the most expensive health care systems in the world. One simple indicator of the health care burden of a country's age structure is to find how many elderly (age 65 and over) there are per 100 economically active inhabitants (age 20–64). This figure is divided by the health care percentage of GDP to make an age-corrected figure that can be used to compare health care spending among different countries. *(18)* According to this method, Iceland is assigned a figure of 0.43 for its age-corrected health spending, while Sweden receives a figure of just 0.26, as shown in Table 6.

It should be noted that this method does not take into consideration the relative number of children in the various countries. Children have higher health care costs than the economically active population, but relatively much less so than the elderly population.

There are probably many explanations for the relatively high cost of health services in Iceland. One is that the figures are somewhat artificial, because some social care for the elderly is counted as health care and because clinical training of health personnel is an inseparable part of the hospital budgets in Iceland. However, with the increasing international standardization of health care costs, these factors are likely to be a small source of error. More significantly, every citizen has a right to the best available health care, according to the Health Care Act, and the expectations of the public are

Table 6. Expenditure on health care in the Nordic countries, age ratio and expenditure corrected for age composition of the population

	Denmark	Finland	Iceland	Norway	Sweden
Health care spending as a percentage of GDP	8.5	6.9	8.7	8.5	7.9
Age ratio (number of 65+ per 100 ind. 20-64)	24.3	21.4	20.3	27.6	30.1
Age-corrected share of spending	0.35	0.32	0.43	0.32	0.26

Source: Herbertsson T et al. Population dynamics and convergence in fertility rates, London, 1999 (Birbeck College Working Papers, No. 21/99).

high. As mentioned earlier, patients are even entitled to go abroad for specialized services that cannot be provided within the country. Many health indicators, for example the very low neonatal and infant mortality rates, indicate that the health services are high quality – and quality health care is expensive. It is also likely to be more expensive to provide specialist services to a small population, especially in a relatively large and sparsely populated country. An example of the disadvantages of providing a service for a small population is the fact that many junior doctors must go to foreign countries for their specialist education, where they constitute a relatively cheap workforce during the most active time of their professional lives, while back in Iceland, much of the work they would otherwise be doing has to be done by better-paid specialists. Others have pointed out that the number and activities of specialists are relatively uncontrolled, and that patients have almost unlimited access to specialist care since GPs have no gatekeeper role.

In 1999, Iceland spent 54% of public health care expenditure on general hospitals, 15% on nursing care and rehabilitation, 15% to care outside of hospitals, 12% for pharmaceuticals and 4% in other categories of health care (see Table 8).

Table 7. Trends in health care expenditure, 1980 – 2000

	1980	1985	1990	1995	1997	1998	1999	2000
Value in current prices (million US $, PPP)	131	229	351	491	543	610	710	733
Value in constant TEH prices 1995 (100 million ISK)	21.3	28.6	35.9	37.3	39.1	42.2	47.1	NA
Value in current prices per capita (US $PPP)	576	947	1 377	1 836	2 002	2 226	2 559	2 605
Share of GDP (%)	6.2	7.3	8.0	8.4	8.2	8.6	9.5	9.3
Public expenditure on health as share of total expenditure on health (%)	88.2	87.0	86.6	83.9	83.1	82.2	83.7	82.7

Source: OECD Health Data 2003, 2nd edition, and Statistics Iceland.

Table 8. Health care expenditure by category as % of total, 1980 – 1999

Total expenditure on	1980	1985	1990	1995	1997	1998	1999
Inpatient care	59.1	56.5	54.8	54.8	54.5	54.5	52.4
Outpatient care	16.9	19.3	22.9	23.3	22.6	22.6	21.0
Pharmaceuticals & other medical non-durables	15.9	16.6	15.7	15.5	16.1	15.3	14.5
Public investment med. fac.	4.4	4.5	3.0	2.4	2.2	2.7	2.6

Source: Organisation for Economic Co-operation and Development, *OECD health data 2003,* 2nd ed., 2003.

Health care delivery system

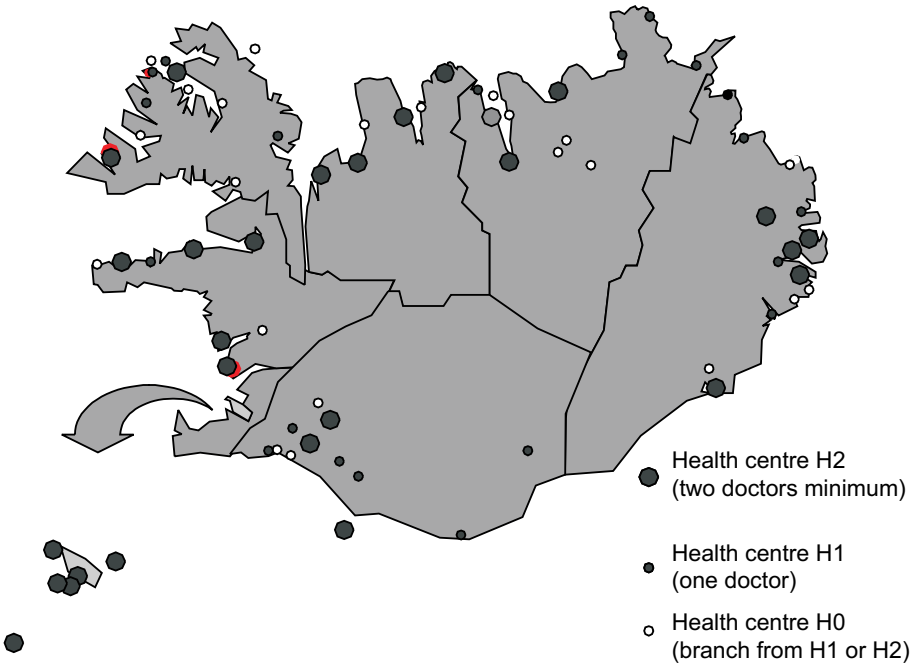
Primary health care and public health services

As defined by Iceland's Health Services Act, primary health care refers to preventive health care measures, as well as any type of medical care performed for the benefit of the healthy and of the sick who are not in hospitals. Health care centres are established in order to provide primary care. Where conditions permit, a health care centre should function in association with a hospital, as a unit thereof and in the same building if possible. The location of health care centres in Iceland is shown in Fig. 7. A health care centre is provided for each designated area of the country, and all inhabitants are entitled to seek medical assistance at the health care centre or clinic most easily accessible to them at any given time.

The first health care centre was constructed some 30 years ago. During the 1970s and early 1980s, the main emphasis was on health care centres in rural and sparsely populated areas. The health care centres are modern and generally well equipped. In the capital area, new health care centres have been established, but there are still some 10 private general practitioners in the Reykjavík area, mostly in group practice.

There are three types of health care centres: category H2, employing at least two physicians (not counting other staff members); category H1, employing one physician; and category H0, employing a nurse or a midwife with facilities for regular consultations by a physician. In 2002, there were 38 health care centres in category H2 and 18 in category H1. The 28 health care centres in category H0 all operate in conjunction with a larger health care centre.

Fig. 7. Location of hospitals and health care centres



Source: Ministry of Health and Social Security of Iceland.

The number of inhabitants per general practitioner (GP) is generally lowest in the most rural H1 centres, where the number of inhabitants in some cases is as low as a few hundred per doctor. For the capital area's 180 thousand inhabitants there are 103 GPs, or a little more than 1700 inhabitants per GP. Over 80% of the GPs are in H2 health care centres. The main income of the doctors in the health care centres is from their salaries, but the few remaining private GPs, who are all situated in Reykjavík, are paid by the State Social Security Institution (SSSI) according to the number of patients on their list. Some of these private practitioners work in group practices.

The Health Services Act requires that following services be provided at each health care centre or in association with it:

- general medical services, nursing services, physiotherapy, occupational therapy, on-call services, home visits and ambulance services;
- laboratory and X-ray services;
- specialized medical services, dental care and medical rehabilitation;

- home nursing;
- preventive health care, including prevention of tuberculosis, accidents, venereal diseases and diseases of the eyes and ears;
- health education;
- maternal care, infant and child care and immunizations;
- mass screening and systematic case finding;
- social work and environmental and occupational health.

Only the largest health care centres can live up to all of these expectations, especially in rural areas. Nursing services are provided at all health care centres. Physiotherapists are employed at many health care centres in rural areas. Each health care centre in the rural areas is supposed to operate a pharmaceutical outlet. It is usually privately owned and run in accordance with the Pharmaceuticals Act. Laboratory services exist to a varying degree, and only a few health care centres have trained laboratory workers. Most health care centres do only the simplest of X-ray work and send other patients to the nearest hospital. The safety of X-ray equipment is supervised by the Icelandic Radiation Protection Institute, and some health care centres send the films electronically for diagnosis by a specialist. Mass screening for cervical cancer has been conducted at the health care centres for more than 25 years, and mammography screening, using mobile units, for several years as well. The screening is carried out or supervised by gynaecologists and radiologists from the Cancer Society in Reykjavík. In some rural areas, ophthalmologists and ear, nose and throat specialists are the only specialists visiting the health care centres on a regular basis.

The health care centres provide on-call services night and day, seven days a week throughout the year. Doctors can coordinate schedules where geographical circumstances allow, but at some H1 health care centres the single doctor is on call day and night most of the year, except when on summer holidays if a locum tenens is available. In Reykjavík and the surrounding areas, the on-call duties have been transferred to a company owned and run by the GPs in the area, in compliance with a service agreement with the Ministry of Health and Social Security. In 1999, the Ministry made an additional agreement with a group of privately practising paediatricians to provide on-call outpatient services for children. It is an exemption from the health authorities' general policy that the first contact with the health services should be through GPs.

Patient transport by air is of great importance in Iceland because of its many sparsely populated areas, long distances and communication difficulties during the winter. Until a few years ago, individual doctors contacted the most

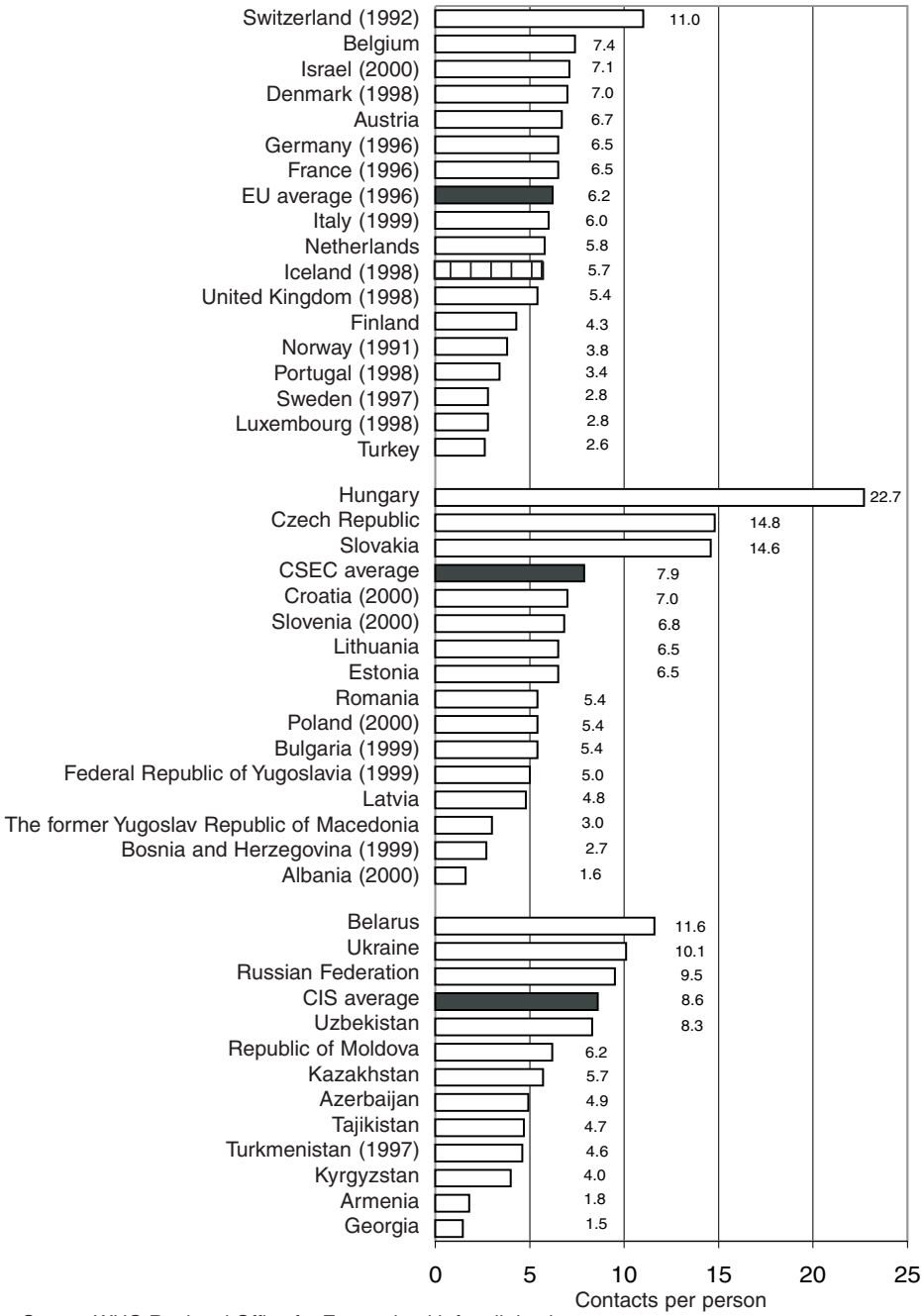
suitable aircraft company without any formal arrangements for the provision of on-call services. Then the Ministry of Health and Social Security contracted out the services. The service for the northern and eastern part of the country is now centred in Akureyri in the north, where the second largest Icelandic hospital is located. The aeroplanes are well equipped. Paramedics and when necessary hospital doctors can accompany the patient when necessary, and the GPs do not have to leave their district. When ordinary aeroplanes cannot be used, the doctors can use the emergency helicopter services provided by the Icelandic coastal services, sometimes with the help of helicopters from the Icelandic NATO base.

A 1998 study by the University of Iceland *(19)* showed that people in general have good access to primary care in acute and subacute cases. A total of 95% of the population lived less than 20 km from the nearest health care centre, and 94% reported that they were able to reach it within 20 minutes. As could be expected, there were considerable differences among the eight health regions: in the capital area and its surroundings, these figures were close to 100%, but in the more sparsely populated regions, the figures were around 80%. Nevertheless, the report showed no significant difference in the mean total of doctor's visits for symptomatic illness among the health districts. The mean number of visits ranged from 2.3 to 3.2 per year per inhabitant when no correction was made for potential confounding factors such as age and sex, let alone differences in education, income or occupation. There were significantly more frequent visits to doctors among the older age groups and women, as could be expected, but there was also an inverse relation between the number of visits and income level. In the same study, people were asked if they had a particular GP they knew by name, a proxy measure for continuity of care. In Reykjavík, around 88% responded positively to this question, but the figure was as low as 60% in some of the rural areas, probably reflecting the high turnover of doctors in these areas. Other research *(20)* has shown that considerable socioeconomic differences exist in the use of health care services, among both adults and children.

From an international perspective, the number of outpatient contacts per person in Iceland is close to the EU average (see Fig. 8). Iceland had 5.7 outpatient contacts per person in the WHO European Region in 1998, while the EU average was 6.2 in 1996.

Almost all dentists in Iceland are private practitioners. There were 280 practising dentists in Iceland in 2000. More than 200 of these live and work in the greater Reykjavík area. Dental surgeries may be rented or owned. Occasionally small communities create incentives to attract or keep a dentist

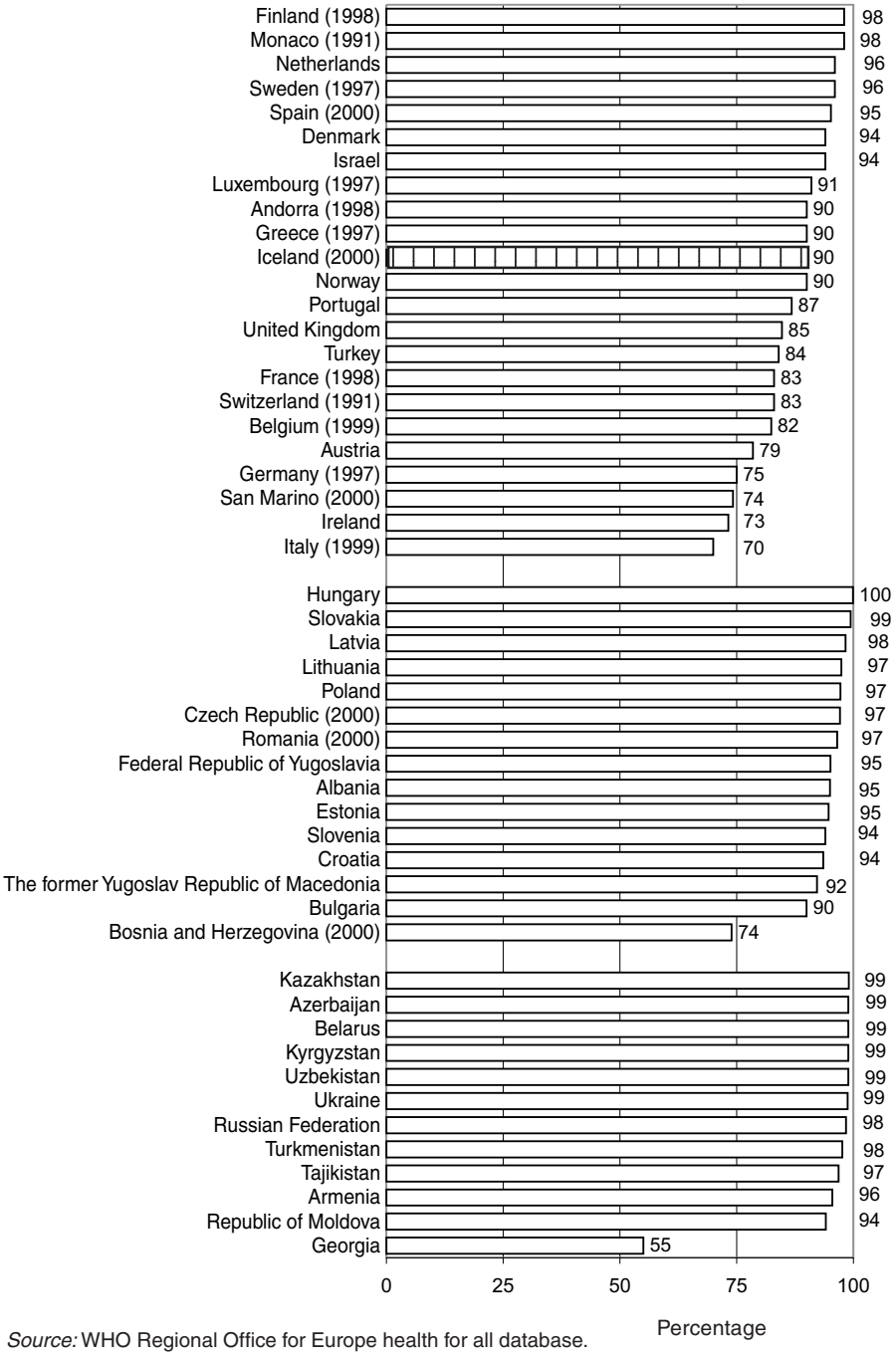
Fig. 8. Outpatient contacts per person in the WHO European Region, 2001 or latest available year (in parentheses)



Source: WHO Regional Office for Europe health for all database.

Note: CIS: Commonwealth of independent states; CSEC: Central and south-eastern European countries; EU: European Union.

Fig. 9. Levels of immunization for measles in the WHO European Region, 2001 or latest available year (in parentheses)



Source: WHO Regional Office for Europe health for all database.

in their area, for example, by providing cheap accommodation or buying the dental equipment and leasing it back to the dentist at a low cost. The former School Dental Service in the capital of Reykjavík was the only public dental service in Iceland. Dental services for school children have now been transferred to private dentists.

Health education and promotion, disease prevention, and public health interventions are all a significant part of Icelandic health care system. Much of the information about public health services in Iceland, such as primary and secondary prevention, lifestyle counselling, and health prevention services at health care centres, has been already provided earlier in this report. Iceland has a very high vaccination rate.

The rest of this section will focus on the institutions in Iceland that provide public health services, working in the areas of occupational health, environmental and food safety, etc.

The Icelandic Medicines Control Agency (IMCA)

The Icelandic Medicines Control Agency is an agency under the Ministry of Health and Social Security. It formally began to operate in November 2000, when the activities of the State Committee on Pharmaceuticals and the State Drug Inspectorate merged into a single agency. The main activities of the IMCA are:

- evaluating applications for marketing authorization for medicinal products and related products;
- issuing, amending, cancelling and revoking marketing authorizations for medicinal products;
- processing applications for authorization to import and sell medicinal products, and supervising imports;
- authorizing clinical and bio-availability trials for medicinal products and supervising them in conformity with good clinical practice;
- pharmacovigilance;
- supervision and inspection of all pharmaceutical activities; and
- monitoring the advertisement and promotion of medicinal products.

The Icelandic Radiation Protection Institute

The Icelandic Radiation Protection Institute is the competent national authority in Iceland with respect to radiation safety. It is charged with organizing radiation protection in the country in accordance with the Radiation

Protection Act (No. 44/2002). The Institute's responsibilities cover ionizing radiation as well as nonionizing radiation. There is no nuclear industry in Iceland, and the main use of ionizing radiation is within the medical field, especially diagnostic radiology and radiation therapy. The Institute issues licenses and undertakes inspection and monitoring of workplaces and of personal radiation exposure. It makes assessments of the collective exposure of the population arising from practices covered by the Radiation Protection Act and of the collective exposure of patients due to medical practices. It also monitors radionuclides in the Icelandic environment and in foodstuffs. It is actively involved in international research and assessments in the field. Education and information are provided to radiation workers, and upon request or as needed to the media, the public and interested parties. As the national authority for radiation safety, the Institute is charged with the radiological aspects of emergency response in Iceland. One of these is the operation of radiation monitoring stations, which are incorporated into international monitoring networks.

Environment and Food Agency

The Environment and Food Agency (EFA) oversees Icelandic food inspection, environmental pollution issues and hazardous substances, performing laboratory analyses in relation to these. It is an agency under administration of the Ministry for the Environment. The Agency's aims are to protect living conditions by promoting a clean environment, healthy habitations and safe products. It inspects food quality and safety, handles product safety issues, monitors environmental quality both on land and at sea, inspects industrial facilities and issues operating licences. EFA seeks to coordinate the Icelandic environmental and food inspection system and to build a cooperative network between authorities in the health and environmental fields. The agency acts as advisor and inspection authority. It is an informational body and aims to educate the general public about the benefits of a clean environment and healthy living standards.

Administration of Occupational Safety and Health in Iceland

The role of the Administration of Occupational Safety and Health in Iceland (AOSH), which is under the Ministry of Social Affairs is to prevent accidents and health damage in the workplace by making sure that the work environment is as safe and healthy as possible, in accordance with current legislation (the Act on Working Environment, Health and Safety in the Workplace). The main purpose of the legislation is to ensure a safe and

healthy work environment in accordance with social and technical development and to provide a basis whereby the workplaces themselves can solve their own work environment problems. The legislation places a certain responsibility on everyone in the workplace, but the widest responsibility rests with the employer, who is responsible for ensuring the greatest possible safety in the workplace, as well as providing good and healthy work conditions. Employees who have complaints concerning working conditions or health and safety in the workplace can contact their safety representative. AOSH performs inspections and sees to it that the legislation and regulations connected with safety, health and working conditions are being followed, and that workplaces are visited according to individual wishes and demands. AOSH also publishes informative materials, runs courses and carries out research on work-related diseases.

The State Diagnostic and Counselling Centre

The State Diagnostic and Counselling Centre is under the Ministry of Social Affairs and headed by a developmental paediatrician. The main objective of the Centre is to evaluate children and adolescents with developmental disabilities, both congenital and acquired, and provide subsequent counselling to parents and caregivers, teachers and therapists at other institutions. Referrals come largely from paediatricians and paediatric hospital departments, as well as health care centres and day care systems. The centre operates a central register of disabled persons in Iceland, which serves as a basis for planning and a source for epidemiological studies.

The Icelandic Low Vision and Rehabilitation Clinic

The Low Vision and Rehabilitation Clinic is a state-owned institution under the administration of the Ministry of Health and Social Security. It supplies miscellaneous services to blind and visually handicapped people in Iceland, who number 1400 of the total population of 286 000. Services include the provision of low vision aids, ocular prostheses, activities of daily life (ADL) training and mobility training.

The National Speech and Hearing Centre

The National Speech and Hearing Centre is another state-owned institution under the administration of the Ministry of Health and Social Security. The Centre's role is to provide services for the deaf, the hard of hearing and those with speech and hearing impediments. The Centre also provides hearing aids and appropriate consultation and training.

Secondary and tertiary care

As described earlier, most specialists in outpatient care work on a fee-for-service basis in private practice on their own premises. There have been several reasons for this development. It is well known that increased medical technology permits more treatment to be performed on an outpatient basis at lower cost, something that was recognized when new agreements with specialists were made in 1998. There is little to hinder a new specialist from obtaining a contract with the SSSI if the doctor is able to attract patients. Increased problems with general practice and longer waiting times for primary care appointments have resulted in some aspects of primary care being taken over by specialists, despite the government's declared goal of having initial patient contact with the health services lie with GPs.

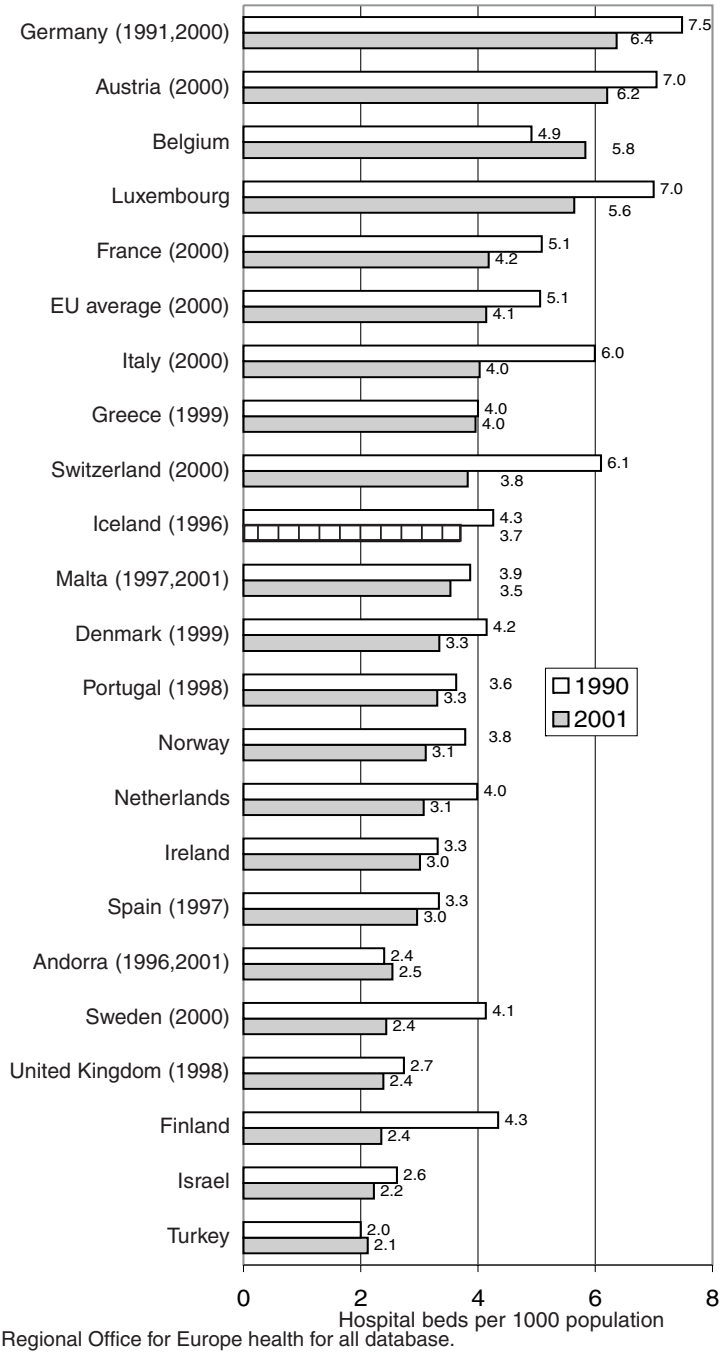
Specialist services in Iceland are almost exclusively located in Reykjavík and neighbouring communities and in Akureyri in the north. According to an old law, ophthalmologists are to visit all parts of the country on a regular basis; this requirement is thought to have had a positive effect, as blindness from treatable eye diseases, such as glaucoma, has diminished considerably in Iceland. Many of the health care centres are visited by specialists in other fields too, such as gynaecologists, paediatricians and ear, nose and throat specialists on a more or less regular basis.

Landspítali University Hospital, with 3900 full-time employees, 950 hospital beds, and 36 400 admissions and 14 000 surgical operations per year, is by far the largest hospital in Iceland. Its total operational costs are around €244 million per year. There are in addition a few hospitals that offer several specialties, and the largest one, in Akureyri in the north, also offers university-level instruction and training in nursing studies. All of these hospitals receive a fixed amount for their running costs.

Typical of Iceland are the many (around 20) institutions scattered around the country and traditionally called hospitals, though some are very small. The activities of these small hospitals have changed during recent decades, mainly because of better communications, increased specialization in the field of medicine, and the demand of people in rural areas for the same quality treatment as the rest of the nation.

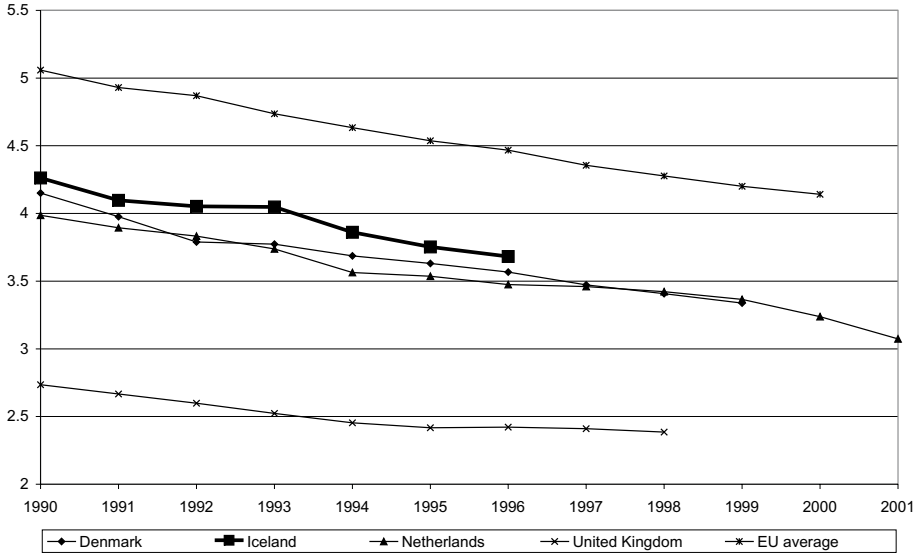
Fig. 10 shows the number of hospital beds in acute hospitals per 1000 population in western Europe. As can be seen, there is a drop in the number of these beds between 1990 and 1996 in Iceland, from 4.3 to 3.7 per 1000. Fig. 10 compares the trend in the number of acute hospital beds in Iceland with other countries as well as with the EU average.

Fig. 10. Hospital beds in acute hospitals per 1000 population in western Europe, 1990 and 2001 or latest available year (in parentheses)



Source: WHO Regional Office for Europe health for all database.
EU: European Union.

Fig. 11. Number of hospital beds in acute hospitals per 1000 population in Iceland and selected countries, 1990–1997



Source: WHO Regional Office for Europe health for all database.

There are about 3500 beds for the elderly in skilled nursing and residential care homes in Iceland, a relatively higher figure than in other Nordic countries. In 1994, the median time that people stayed in these institutions was considerably higher in Iceland than in the other Nordic countries. One reason is that before 1992, there was no professional assessment of the needs of individuals before admission to these institutions. The Nursing Home Pre-Admission Assessment is now mandated by law, and old people are no longer admitted to institutions if other possibilities exist. As a result, the mean length of stay in nursing and residential homes has been reduced from approximately 3.5 years to 3.0 years. There are waiting lists for skilled nursing homes in the Reykjavík area. Such waiting lists do not usually exist outside of Reykjavík.

Social care

The Icelandic welfare system is based on the principle that every citizen is entitled to an acceptable minimum standard of living. In that way, it is

comparable to the systems in the other Nordic countries, but it is generally less generous and payments are characteristically more means-tested (see Table 9). The difference between Iceland and the other Nordic countries can probably be explained in part by a difference in political development.*(21)* Left-wing governments have been the rule in the Nordic countries, but since the Second World War, Iceland has more often had a right-wing government. Public spending on social care (health care excluded) is only 19% of the gross domestic product (GDP) in Iceland, compared to approximately 33% in Sweden, where it is highest. The development of social expenditure in the Nordic countries in the latter half of the twentieth century is shown in the following table. Some of the lower expenditure on social care in Iceland can be explained by the younger population structure in Iceland and by the fact that the unemployment rate has been very

Table 9. Social expenditure in relation to GDP in the Nordic countries, 1950 – 2000

	Iceland	Denmark	Finland	Norway	Sweden
1950	6.2	8.0	7.3	6.3	8.5
1960	7.7	9.8	8.3	9.8	10.9
1970	10.1	17.9	13.6	14.7	17.9
1980	13.5	27.8	21.1	21.1	32.6
1990	16.9	28.7	25.2	26.4	33.3
1995	19.1	32.2	31.6	27.4	34.4
2000	19.6	28.7	25.2	25.3	32.3

Source: Social protection in the Nordic countries 2000, Nordic Social Statistical Committee, 2002.

low. It should be noted that the relative increase in welfare spending has been larger in Iceland during the last decade than in the other countries.

The part played by the family and the social network is important in Iceland. Young people live in their parent's home for a longer time than in the neighbouring countries and there is generally close communication among family members. The participation of nongovernmental organizations in the welfare system, such as the Society for the Disabled, the Icelandic Cancer Society, the Heart Prevention Society and the Society for the Mentally Ill, is also important.

Both of a child's parents have an independent right to *maternity/paternity leave* of up to three months and a joint right to three additional months, which can be taken entirely by one of the parents or divided between them. The amount of benefit is 80% of the gross average salary of the

parent taking the leave. While there is a minimum benefit, there is no upper ceiling on payments. Parents who are studying or without attachment to the labour market have a right to a standard maternity allowance paid over a 9-month period.

Child benefits are paid on the basis of income and capital for children up to the age of 16. The annual amount also depends on the age of the children and whether or not the parents are married, cohabiting or single. The benefits are reduced when taxable income exceeds a certain limit.

The *old age pension system* is composed of a tax-financed public pension scheme and mandatory funded occupational pension schemes, which are mostly run by private pension funds governed jointly by the partners in the labour market. The public pension scheme pays a basic pension from the age of 67 and a means-tested pension from the age of retirement (usually 65–70). The public pension is composed of two main parts and two supplementary parts. First, there is a basic pension amounting to 220 euros per month for an individual pensioner (autumn 1999 figures). The participation rate of older people in the workforce is much higher in Iceland than in any other country. Income reduces the basic pension, which disappears when income reaches approximately 2000 euros per month. Pension payments from pension funds, however, do not reduce the basic pension. Secondly, there is an income-related pension with a maximum of 380 euros per month. This pension disappears when income reaches 1120 euros per month or the pension from pension funds reaches 1260 euros per month. In addition to these two components, there are two income-tested provisions, a one-person household allowance and a low-income supplement. All four benefits together equal the minimum wage, meaning the minimum income guarantee for this first-tier pension.

The second-tier occupational pension funds pay somewhat different capital-funded old age pensions that depend on the recipient's acquired rights. It has been estimated that according to present regulations, a typical general occupational pension fund will pay a pension amounting to 45% to 58% of the earnings of people aged 40 to 60, and that the basic public pension might add another 11%, providing together an income replacement rate of 60% to 70%. The third tier of the pension system consists of voluntary individual pension accounts that are privately provided. The state offers tax benefits to those who sign up to pay into such pension accounts, an opportunity which has given the third tier a great boost in recent years. Employers pay an additional 10% on a contribution of up to 4% of the employee's present pay, and both contributions are exempted from current taxation.

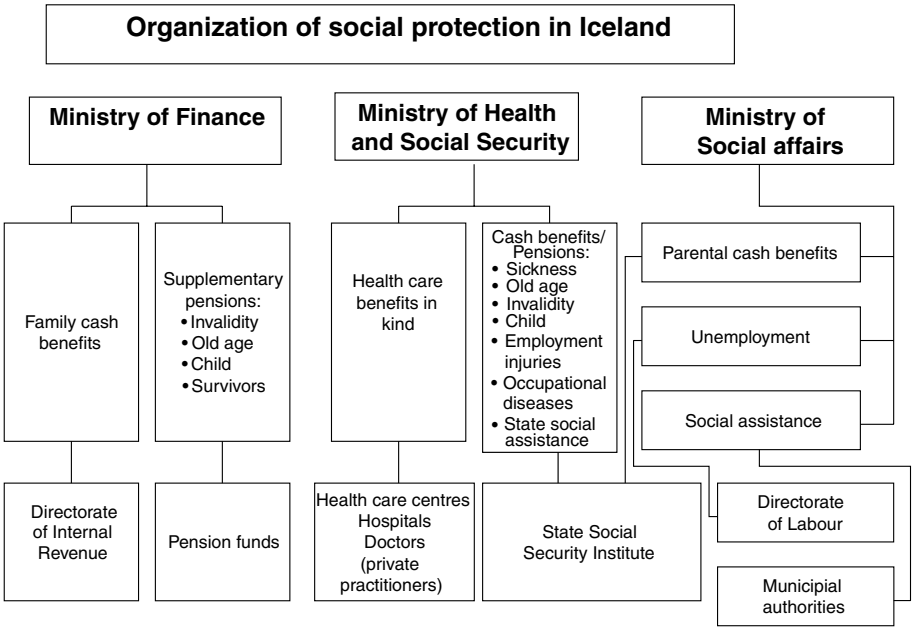
Those who have at least 75% permanent disability as a result of disease, as assessed by the Chief Medical Officer of the SSSI in accordance with a standard based on the consequences of medically recognized diseases or invalidity, are entitled to an *invalidity pension*. It consists of a basic pension and an income supplement, both calculated on the basis of income in accordance with regulations similar to those for the old age pension, except that the invalidity pension is withdrawn if income is above a certain ceiling. The basic invalidity pension is reduced if the annual income of individuals or spouses who are both invalidity pensioners is higher than a certain level. Recipients of an invalidity pension are entitled to a supplement for each child. Those who have lost at least one half of their working capacity, but who suffer from less than 75% permanent disability, may be paid an income-regulated *invalidity allowance*.

Occupational injury insurance covers accidents occurring in the course of work, organized sport participation and some other activities. Those engaged in household work may ensure their entitlement to occupational injury benefits by requesting it on their tax returns at the beginning of each year. Benefits include medical assistance, per diem benefits, invalidity benefits and death grants. Per diem benefits are payable as from and including the eighth day following an injury, provided the injured person has been unable to work for at least 10 days. The per diem benefits are paid until the injured person is able to work or is adjudged to be permanently disabled, but in no case for more than 52 weeks. During this period and for up to two years, the person may be entitled to a convalescence pension which equals the amount of the invalidity pension. The person may also be entitled to per diem benefits from one of the various labour sickness funds.

Other social benefits include occupational injury insurance, death grants and child pensions.

Fig. 12 shows the organization of social protection in Iceland. The state plays a much stronger role than in the other Nordic countries, and there are in fact only two administrative layers, municipal authorities and the state, instead of three as in other Nordic countries. The total expenditure of municipal authorities in 1999 was 27% of all public expenditure in Iceland. It increased from 20% in the early 1990s after primary schools became a municipal responsibility in 1996, but the figure is still considerably less than in the other countries. Iceland is divided into many small local municipalities, which govern their own affairs. Municipalities must carry out the tasks assigned to them by law and work for the common welfare of their resi-

Fig. 12. Organization of social protection



Source: Ministry of Health and Social Security of Iceland.

dents as much as possible, undertaking in addition tasks not assigned to other bodies. The responsibilities of the municipalities are set out in the Local Authorities Social Services Act from 1991. The municipalities are required to guarantee the financial and social security of the inhabitants by improving the living standards of the needy. They are also required to ensure positive developmental opportunities for children and adolescents by taking measures to prevent social problems and to help enable people to live as long as possible in their own homes. The Ministry of Social Affairs is responsible for ensuring that the municipalities offer the services stipulated by law.

Human resources and training

The Icelandic Medical School was founded in 1876. In 1911 it became part of the University of Iceland as that institution's Faculty of Medicine.

In recent years, approximately 40 medical students have been graduated each year. Medical education and training in Iceland is divided into four phases: medical school, basic clinical training, specialist training and continuing education. Basic undergraduate medical education takes six years. Graduation is followed by a 12-month compulsory training programme that includes 9 clinical months in required fields: internal medicine for 4 months, surgery for 2 months and general practice for 3 months. The applicant can choose between several clinics for the remaining 3 months. After successful completion of this programme, the Ministry of Health and Social Security grants the doctor a licence to practise (full registration). Once the doctor has a licence, he/she is entitled to apply to start specialist training, which lasts for a minimum of 4.5 years and is carried out in a salaried position with medical responsibilities. The state recognizes the importance of continuing medical education by granting every medical doctor it employs up to a 15-day paid leave per year for studies within his or her specialty, with full per diem allowances if the doctor goes abroad to study, as most do.

There are 33 recognized specialties and 39 subspecialties in Iceland. Most doctors seek their specialist training abroad, mostly in the Nordic countries and the United States, but also in other countries such as the United Kingdom and the Netherlands. The health authorities do little to influence young doctors' choice of specialty, except with general practice, as described elsewhere.

In the beginning of 2000, the number of doctors younger than 70, which is both the formal and actual retirement age, was 958. The concentration of practising doctors in the population was 3.4 per 1000 inhabitants in 1999, the fifth highest of the Organisation for Economic Co-operation and Development (OECD) countries and, along with Denmark, the highest concentration in the Nordic countries. In 2002, there were additionally 450 Iceland doctors working abroad. Of these, 176 were in Sweden, 109 in the United States and 116 in Norway, according to SNAPS (Samnordisk arbetsgrupp för prognos- och specialutbildningsfrågor), a Nordic working group dealing with forecasting and specialist education for doctors. *(22)* In recent years, the number of Icelandic doctors in Sweden has been decreasing while the number in Norway has been increasing. The majority of Icelandic doctors abroad are in the 30- to 39-year-old age group. Most of these doctors are specializing. This development has generally been seen as positive in the long run, since the health services in Iceland will thus have the opportunity to adopt the best aspects of both GP and specialist traditions, but the trend also has its drawbacks. The young doctors are away from home during some of their

most productive years, and established doctors have to do much of the routine work normally done by doctors in training. Some of these specialists abroad, including most of the ones over 40, can be considered to have emigrated permanently. The size of this group has doubled during a recent six-year period from 100 to 200.

As a part of the European Economic Area (EEA), Iceland has to adhere to EU regulations on maximum working hours. Taken together with the profession's growing percentage of women, these regulations mean that

Table 10. Supply and demand of doctors working full working hours. Alternative A assumes 1.5 % increase per year in the demand for doctors but alternative B assumes that the increase in demand will be 0.5%

Year	Supply	Demand		Oversupply(+) or shortage(-)	
		Alternative A	Alternative B	Alternative A	Alternative B
2005	1 010	1 020	960	-10	50
2010	1 100	1 100	990	0	110
2015	1 160	1 180	1 010	-20	150
2020	1 140				

Source: Den framtida läkararbetsmarknaden i Norden 2002, SNAPS, 2002.

Table 11. Number of specialists in general practice in 1987 and 2001 by age category

Number of specialists in general practice in each age category	1987	2001
30–39	35	14
40–49	23	93
50–59	4	60
60+	2	9

Source: Ministry of Health and Social Security of Iceland.

the increase in the total number of working hours through 2020 will be lower than the increase in doctors. The SNAPS group has made calculations of the supply and demand of doctors in the Nordic countries according to two alternatives. Alternative A assumes that economic growth and continuing medicotechnical development will create an expanding market for physicians. According to this alternative, the annual increase in the demand for doctors in Iceland will be 1.5% (see Table 10). Alternative B assumes that less favourable conditions will allow the number of doctors to grow on a par with population growth, and the annual increase in demand would therefore be only 0.5%. The calculated surplus or shortage is also shown in the table, showing that in the year 2015, there will be a good balance between doctor supply and demand according to alternative A, but a risk of a considerable doctor surplus according to

Table 12. Health personnel per 1000 population, 1985 – 2000, selected years

Health personnel	1985	1990	1995	1996	1997	1998	1999	2000
Physicians	2.59	2.85	3.03	3.12	3.26	3.30	3.36	–
General practitioners	–	0.64	0.64	0.64	0.64	–	–	–
Dentists	0.82	0.90	1.01	1.03	1.05	0.98	0.99	1.01
Pharmacists	0.53	0.54	0.79	0.83	0.84	0.84	–	–
Nurses	7.27	7.83	8.35	8.37	8.41	8.76	8.69	–

Source: WHO Regional Office for Europe health for all database.

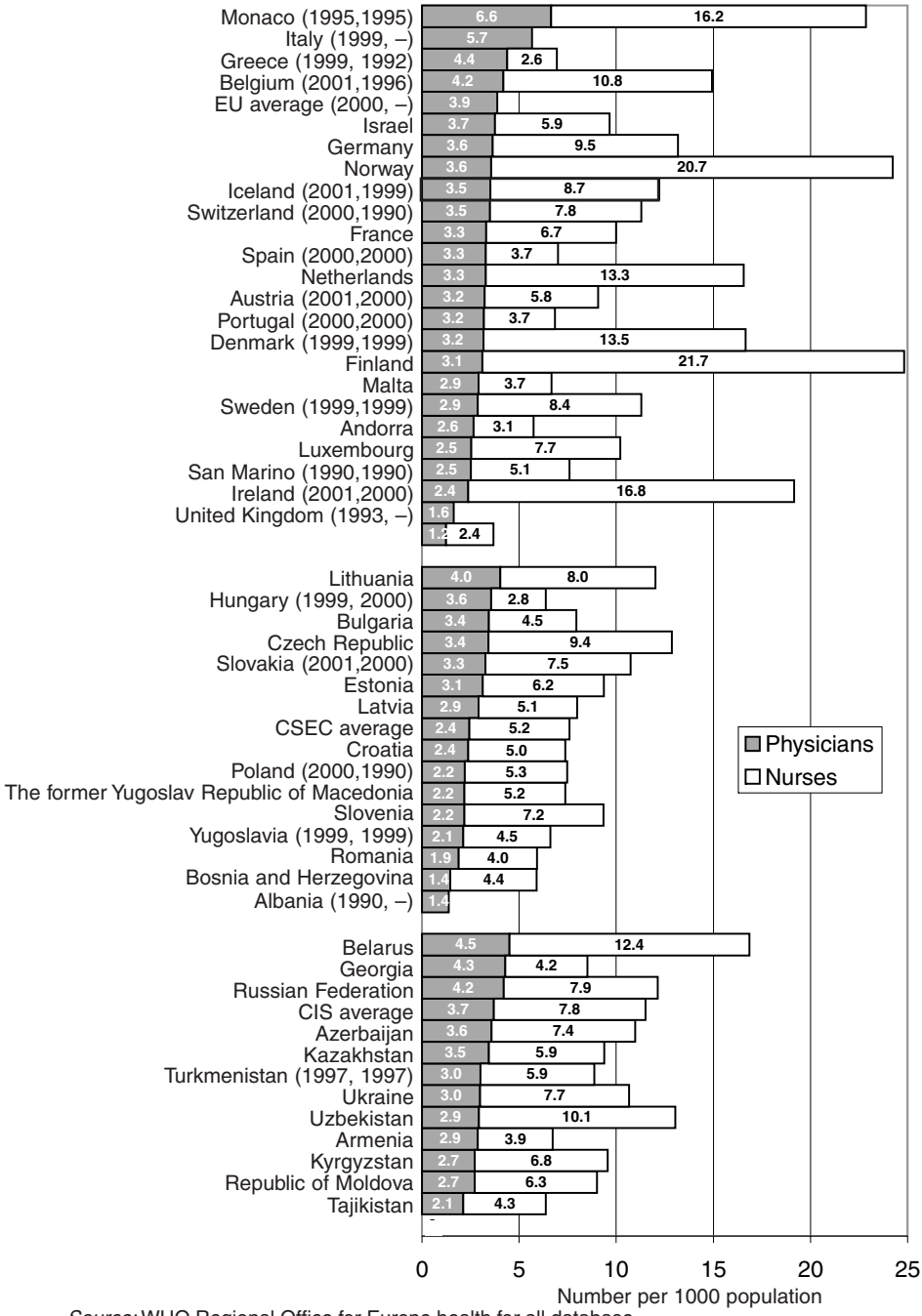
alternative B.

For the time being, the demand and supply of doctors is, on the whole, in good balance. On the other hand, there is a relative shortage of doctors within specialties such as surgery and psychiatry. There has been little new recruitment of specialists in general practice in recent years, which is now a rapidly ageing specialty, as can be seen from Table 11. In Table 12, the development of health care staff is shown from 1985 onward.

The Faculty of Dentistry at the University of Iceland trains six new dentists a year. As described above, dental health has improved considerably in recent years, and some dentists have not been able to work full time. The working conditions of dentists have already been described. There were 278 dentists (204 men and 74 women) in Iceland in 2000. According to the projections of the Icelandic Dental Association *(23)*, there will be 274 dentists in Iceland in 2020.

Nursing as a formal occupational activity developed in Iceland in the latter part of the nineteenth century. Before that time, nursing of the sick and disabled was provided in the home by household members. The Icelandic School of Nursing was established in 1931. A Department of Nursing was established in 1973 within the Faculty of Medicine at the University of Iceland. In the summer of 2000, it became an independent Faculty of Nursing. The Icelandic School of Nursing was closed in 1986, and all nursing education is now at the university level. Approximately 100 nursing students graduate each year, two thirds from the University of Iceland and one third from the University of Akureyri, where the first nurses graduated in 1991. After basic nursing education, which currently leads to a B.Sc. degree, nurses become registered nurses (RNs). In autumn 1993, the University of Iceland started to limit the number of students that can continue studying in the second semester (a *numerus clausus* system). In practice this means that everybody who meets the admission requirements is admitted to the first semester. Those who make the highest grades in the autumn term examinations and pass them all (approximately 100

Fig. 13. Number of physicians and nurses per 1000 population in the WHO European Region, 2000 or latest available year (in parentheses)

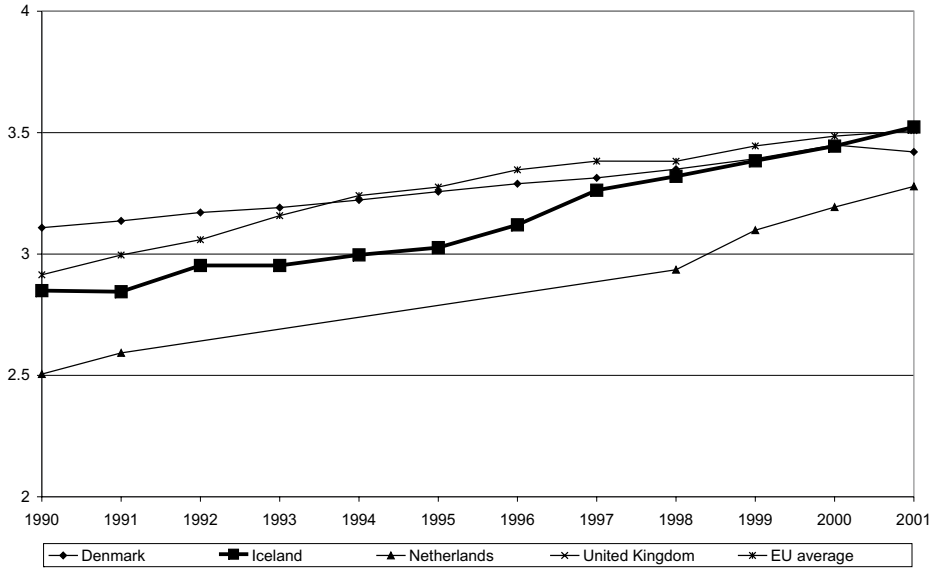


Source: WHO Regional Office for Europe health for all database.

Note: CIS: Commonwealth of independent states; CSEC: Central and south-eastern European countries; EU: European Union.

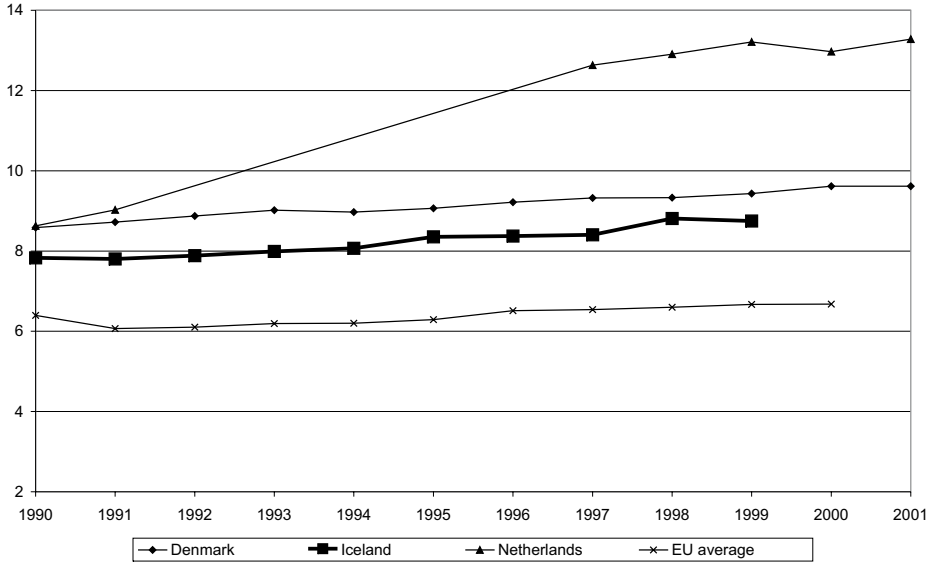
Iceland

Fig. 14. Number of doctors per 1000 population in Iceland and selected countries, 1990 – 2001



Source: WHO Regional Office for Europe health for all database.

Fig. 15. Number of nurses per 1000 population in Iceland and selected countries, 1990 – 2001



Source: WHO Regional Office for Europe health for all database.

from both faculties together) are allowed to continue their studies in the spring term.

Nursing in Iceland is, by law, a self-governing profession. Women account for 98% of nurses, and the median retirement age is 64.2 years. According to health statistics in Nordic Countries in 2001 the number of active qualified nurses per 100 000 inhabitants when calculated as full time equivalents was 600 for Iceland, which is lower than in the other Nordic countries. The corresponding figure for Denmark and Norway was 967 and 984, respectively. The lower figure in Iceland is partially explained by the lower need for nurses in Iceland, due to the smaller proportion of older people in the population and the consequently lesser need for nursing care. Nevertheless, there is a 14% shortage of qualified nurses according to official figures. The largest shortage is 27% in old age institutions, while the shortage in hospitals is 14% and in health care centres 7%. The Icelandic Nurses' Association regards the shortage as somewhat larger. Only 25% of Icelandic nurses work full time (more than 35 hours a week).

A university degree in nursing is needed to enter the two-year midwifery education programme, a restricted intake programme that began in 1996 within the Faculty of Nursing at the University of Iceland. Before that time, midwives were educated in a school of midwifery at one of the hospitals.

Practical nurses (qualified auxiliary nurses or associate nurses) have been educated in Iceland since 1965. They now receive their education in a 3-year programme offered by a number of higher secondary comprehensive schools. In 2000, there were more than 3000 individuals in Iceland who had completed this education. There has been and still is a relative shortage of auxiliary nurses. In 2000, the total number of active auxiliary nurses was around 1000, but there were approximately 370 vacant positions, or 27%. The head nurses estimated the need for additional auxiliary nurses to be much larger, or 860 positions. The largest shortage was in nursing homes and residential care homes for the elderly.

From a regional perspective, there are fewer nurses in Iceland than in neighbouring Norway and Denmark, but slightly more than in Sweden (see Fig. 13).

There are some 30 authorized health occupational categories in Iceland in addition to those already mentioned above. Only a few of them will be mentioned.

Physiotherapy is a licensed health profession in Iceland. It has been taught by the Unit for Physiotherapy at the University of Iceland for 25 years, as a four-year programme leading to a B.Sc. degree. There is a

numerus clausus of 20 students after the first semester. The Association of Icelandic Physiotherapists has about 350 members, of which 300 are active as physiotherapists.

In 1999, there were 55 officially licensed medical massage therapists in Iceland. Since until recently Iceland has not had a school of training in this field, almost all of them have been graduates from foreign institutions, most often in Germany and Canada, as the requirements for licensing are fully met by certain schools in those two countries.

Licensing in occupational therapy is available to those individuals educated at institutions recognized by the World Federation of Occupational Therapists, pending recognition by the Icelandic Occupational Therapy Association (IOTA) and the Icelandic Directorate of Health. A School of Occupational Therapy was established at the University of Akureyri in 1997, and the first graduates entered the profession in 2001. The School offers a 4-year programme leading to a B.Sc. degree. IOTA was founded in 1976. It is both union and professional organization for occupational therapists in Iceland. Its members now number close to 150.

Table 13. Sale and prices for drugs in the Nordic countries in 2001

	Use of pharmaceuticals in DDD per capita	Cost of pharmaceuticals (€ per capita)
Iceland	1 030	546
Denmark	994	304
Finland	1 185	354
Norway	1 117	365
Sweden	1 237	322

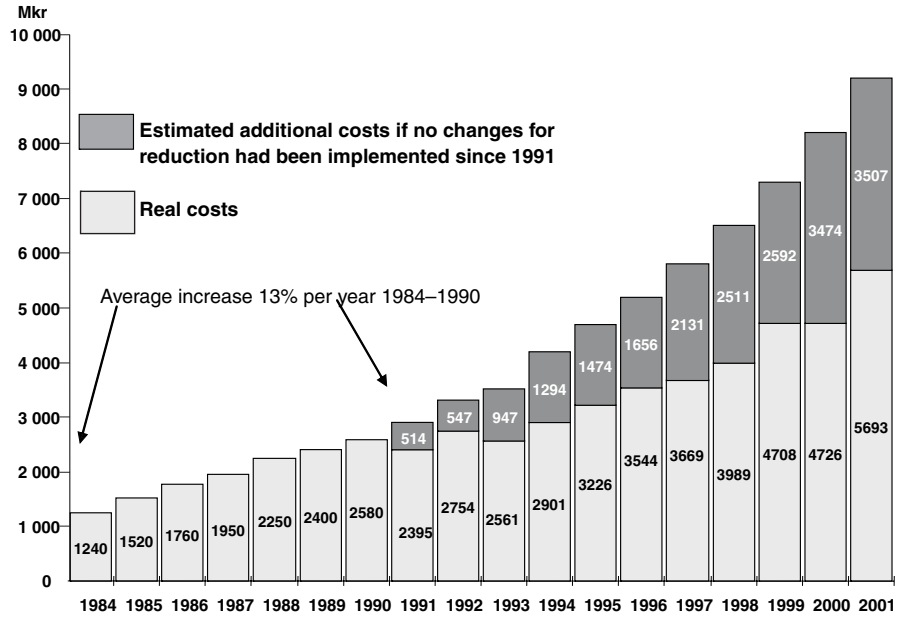
Source: Health statistics in the Nordic countries 2001.

Note. DDD: defined daily dose.

Pharmaceuticals

Icelanders use fewer drugs per capita than do inhabitants of the other Nordic countries measured as the number of defined daily doses (DDDs) per person (see Table 13). (A dose is defined as a drug's daily maintenance dose when used for its main indication in adults.) The DDD is a technical unit of measurement that can be used as a measure of the intensity of pharmaceutical use and does not necessarily reflect the actual dosage

Fig. 16. SSSI share of drug costs, 1984 – 2001, in millions of krónur



Source: Ministry of Health and Social Security.
Note: Figures corrected for inflation. SSSI: State Social Security Institute.

used. The lower use of prescription medicines in Iceland than in other Nordic countries can probably be attributed largely to the younger age structure of the Icelandic population.

However, there has been a steady and continuous rise in the use of prescription drugs during the last decade, from 658 DDDs per person in 1991 to 1030 DDDs per person in 2001, a 57% increase. The biggest rise has been in the sale of drugs for the nervous system, mainly new anti-depressants, but also in the sale of cholesterol-lowering drugs and asthmatic drugs. During the same decade, the cost doubled from ISK 6225 million (about €74.7 million) to ISK 12 976 million (about €156 million).

Table 13 also shows that the drug cost per person is higher in Iceland than in the other Nordic countries despite the lower total use of drugs. Two reasons may explain this difference: the higher wholesale and retail mark-up in Iceland, due to a smaller market with less competition (at least for wholesale drugs), and what may be a tendency among Icelandic doctors

to prescribe new and expensive drugs. This tendency has been observed, for example, in specific studies of selective serotonin reuptake inhibitors (SSRIs).

The Icelandic Medicines Control Agency (IMCA) makes decisions on the registration and deregistration of pharmaceuticals. The Pharmaceutical Committee is an expert committee affiliated with the IMCA. The Minister of Health and Social Security appoints the chair of the committee and, in consultation with the chair, four other members. Another committee, the Pharmaceuticals Pricing Committee, decides the wholesale and retail prices of pharmaceuticals. The Minister appoints three members, one of whom is nominated by the Supreme Court. The Committee is required to keep track of the manufacturing costs and import costs of drugs and decide maximum prices accordingly. Pharmacies compete by providing different services and reductions in the maximum patient share.

Decisions for the reimbursement of new drugs are made by an expert committee made up of three members, one from the Ministry, plus a doctor and a pharmacist appointed by the SSSI.

During the 1980s, there was a steady rise in the cost of drugs the SSSI paid, amounting to an annual increase of approximately 13%, as shown in Fig. 16.

There were three main reasons for this increase:

1. new and more expensive drugs every year
2. price increases for existing drugs
3. increased volume.

Something had to be done to address this trend. Accordingly, in 1991 the SSSI stopped subsidizing the purchase of laxatives, throat and cough medicines, sedatives and sleeping pills, various dermatological preparations and a number of antibiotics. Over-the-counter drugs were no longer subsidized, even when prescribed by a doctor. The main reasons for the savings that Fig. 16 shows for 1991 were lower consumption, the prescription of cheaper drugs in the categories mentioned above and a larger patient share in costs. For subsidized drugs, patients still made fixed payment for all prescriptions (which were limited to a maximum 100 days), but in 1992, the parliament passed a bill permitting a percentage-based payment scheme for drugs. At the end of the year, it was evident that these measures were not sufficient to keep the social security outlays within the budgeted amount for 1993, and the patient share was raised further, from 25% to 32%. The drop in the costs paid by the SSSI between 1992 and 1993 shows clearly in Fig. 16. Generic substitution of pharmaceuticals was introduced in Iceland in the early 1990s as a measure to cap the rising social costs of pharmaceuticals, but in 1995, it was replaced by

a reference price system that is still in force. In recent years, there has been some rise in the cost of drugs from year to year despite various steps taken to curb costs, including reducing the wholesale and retail margins, moving drugs among categories and reducing the maximum prescription length for some drugs from 100 days to 30 days.

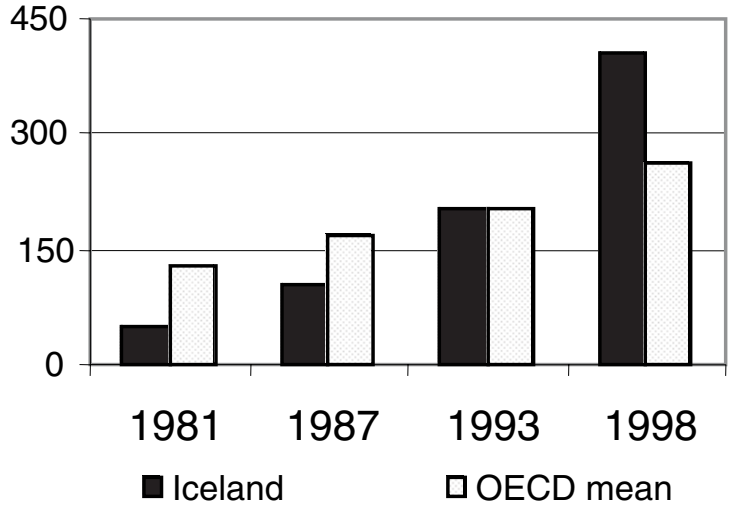
For reimbursement purposes, medicines are now classified into four categories according to the disease targeted and the drug's therapeutic value.

1. Essential medicines used for the treatment of life-threatening and chronic diseases, such as diabetes and cancer: 100% reimbursement.
2. Medicines of great therapeutic value for well defined and chronic diseases, such as hypertension, asthma, psoriasis and depression: largely reimbursed.
3. Medicines of lesser therapeutic value, such as for some arthritic conditions, hormones for menopause etc.: partly reimbursed.
4. Medicines such as antibiotics, tranquillizers and analgesics for treatment of relatively minor or short-lived conditions: not reimbursed.

The patient's co-payment in categories 2 and 3 consists of a flat fee plus a fixed percentage of the remaining amount up to a certain ceiling. Pensioners and disabled patients pay a lower share. Medicines in categories 1, 2 and 3 are on a positive list. Reimbursement is limited to the lowest-priced drug with the same active substance. Products not on the positive list may still be reimbursed in individual cases. Application for reimbursement for nonprescription medicines and over-the-counter products can be made if the product has been specifically prescribed by a doctor for a chronic condition. In some cases, reimbursement for new expensive medicines is limited to prescriptions for certain illnesses, by certain medical specialists or for certain age groups.

The share paid by the patient has been constantly increasing. To take category 2 drugs as an example, in 1995 a person paid ISK 500 and then 12.5% of the remaining costs up to ISK 1500. In 2002, the patient paid ISK 1700 and then 65% of the remaining costs up to a maximum of ISK 3400. Lower prices apply for pensioners and the disabled, but the increases there have been similar. In 2002, the cost share for drugs was 50% for the general population and 25% for pensioners and the disabled. People with low incomes and high pharmaceutical expenses can apply for a reduction card. All pharmaceutical products used in hospitals are subsidized 100% by the hospital budget.

Fig. 17. Number of published scientific research papers in clinical medicine per million inhabitants for Iceland and the mean for 22 OECD countries



Source: OECD: Organisation for Economic Co-operation and Development and Icelandic Research Council, 2003.

There has been considerable effort to promote rational prescribing in recent years. The health authorities have employed a specially trained medical officer in cooperation with the Icelandic Medical Association and the SSSI to emphasize both evidence-based medicine and efficiency in prescribing. This initiative has been well received by the medical profession.

Health care technology, information technology and research

Research and development

The total expenditure on research and development as a percentage of GDP has increased rapidly in Iceland in recent years. During the 1980s it was under 1%, but since then there it has steadily risen to more than 3% of

GDP in 2001, the third highest in the world that year after Sweden and the United States. The greatest increase has been in the medical sciences. The total number of scientific articles involving Icelandic scientists has increased rapidly. Icelanders are now among the nations with the highest number of published articles in the world. Fig. 17 from the Icelandic Research Council, using figures from the ISI Web of Science, gives the number of published scientific research papers in clinical medicine per million inhabitants for Iceland and the mean for 22 OECD countries.

Figures from the National Science Indicators/Institute for Scientific Information *(24)* show that, among OECD member states, the number of citations per scientific paper per million inhabitants within the field of clinical medicine in 1994–1998 was highest in Iceland.

Genetic research and development

The genetics research of common diseases makes use of genetically homogeneous populations. Scientists have realized that Iceland is in many ways well suited for genetic research of common diseases. The population is relatively homogeneous, and immigration has been limited because of the relative isolation of the country through many centuries. It is significant that, since Iceland was colonized 11 centuries ago, there have been some periods of low population due to disease and natural catastrophes. A computerized database of the genealogy of the entire Icelandic nation going centuries back in time is of particular importance.

Of the recent population-based genome companies in Iceland, the largest is deCODE Genetics. Its mission is to use the human genome to acquire new knowledge about health and disease, and to work with pharmaceutical companies and other institutions in the health care industry to utilize this knowledge to develop novel methods of identifying, treating and preventing diseases. In 1998, deCODE Genetics and the pharmaceutical company F. Hoffmann–La Roche signed a joint agreement to conduct research focusing on the discovery of disease genes to facilitate the development of new therapeutic and diagnostic products. In addition, the collaboration also includes a substantial pharmacogenomics component. The deal amounted to more than US $200 million over a five-year period, the largest ever made between a genome company and a pharmaceutical company. The Icelandic government was very supportive of the agreement and viewed it as a major step towards securing an important role for high technology industries in the Icelandic economy.

The main findings with respect to specific diseases have been reached through collecting blood samples for specific research projects with the

informed consent of the people involved. As of mid-2002, one third of the total adult population of Iceland had volunteered blood samples for deCODE's research in one or more of the company's 50 disease projects. This number represents and includes more than 90% of people over the age of 65. This rather noncontroversial part of the company's activities has led to many important scientific results. Despite this success, deCODE Genetics has, as have most other companies in the genetics field, run into trouble in the financial market, and share price is now only a fraction of what it was a few years ago. The problems regarding its most controversial activity, a planned centralized health sector database, are described in the next section.

The Icelandic Genomics Corporation (Urður, Verðandi, Skuld) is another new privately held biopharmaceutical company of interest. It restricts its activities to genetic studies in the field of cancer. By genotyping affected families and analysing the molecular features of patient tumours, the research aims at isolating genes involved in inherited and sporadic cancers. These genes are then to be used as the basis of new diagnostic tests, while at the same time validating the most promising of them as therapeutic targets and screening for drug leads directed against them. The Icelandic Cancer Project is a joint research effort initiated by Icelandic Genomics Corporation and its collaborators, which include the Icelandic Cancer Clinicians Group, Icelandic hospitals and the Icelandic Cancer Society. The scientists have identified several genetic regions of interest, each of which confers an increased risk for many types of cancer, including breast and prostate cancers.

The Health Sector Database

In December 1998, the Icelandic parliament passed the much-debated Act on a Health Sector Database, permitting all medical records for the whole population of Iceland for the past 30 years and more to be gathered in one central database. Contrary to a common misconception, no genetic data will be contained in the Database and no biological samples will be collected. However, genetic association studies could be performed since, subject to criteria put forward by the Data Protection Commission, genealogical data will be entered into the Health Care Database in an encrypted form. The idea of a centralized health sector database was put forward by deCODE Genetics, and this private corporation, as described in the last section, was granted a licence to collect and store medical information data in a single database for use by its scientists. The Database belongs to the national health system and will be managed by the

government, but deCODE has the right to use the data commercially for 12 years.

Iceland is in many ways an ideal place for a database of this kind. As previously mentioned, it has a relatively homogeneous population, a stable national health care system with good and well preserved records, a well educated population with a positive attitude towards scientific research, and a government supportive of the idea of a centralized health sector database. Most Icelanders regard their medical records as a national resource to be used in the best possible way for the advancement of science and for strengthening and diversifying the economy of the country. Genealogy has been popular in the country for many centuries, and extensive genealogical records already exist and can be linked to the information in the Health Sector Database. In cooperation with Icelandic genealogists, deCODE Genetics has recently made available a comprehensive database on the Internet showing the known relationships among all Icelanders from the country's original settlement to this day, called the Book of Icelanders, (http://www.islendingabok.is). Finally, the information will be linked to already existing information derived from biological samples collected with informed consent by deCODE Genetics, as described above.

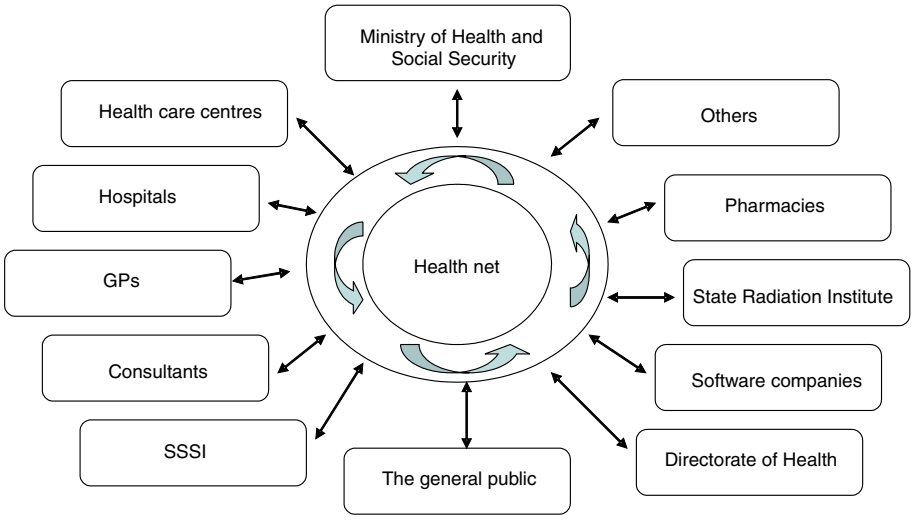
The potential use of the Database for planning, administration and public health purposes is of special interest. It could be used to assess the effects of interventions, both preventive and therapeutic.

The idea of issuing a licence to a private company to create a centralized databank and the idea of presumed consent has created opposition by some groups within the scientific community. Some doctors fear that the Database will impair the doctor–patient confidentiality and oppose having their records transferred to the database. A person may opt out of the Database at any time, but any previously entered data will not be removed. As of May 2002, up to 25 000 individuals had exercised their rights to opt out.

The identification issue is of special concern. Some scientists regard it as disputable whether the information is nonidentifiable in reality. The personal identification number will be encrypted two times and access protected by major access limitations. Abuse of the Database by their licence holder or by anybody else is subject to loss of licence, fines and imprisonment. The National Bioethics Committee and the Data Protection Authority supervise the project. This provides sufficient protection in the eyes of most members of the Icelandic parliament. However, it was suggested in the parliamentary

debate that the health information by itself may suffice for identification, partly because of the small size of the population. Additionally, even if individual information is encrypted, codes can be broken. Some experts who have reviewed the project's privacy measures consider the information in the Database to be personally identifiable and believe it necessary to insist on the generally accepted idea of informed consent in using such information for general scientific purposes. The possible misuse of the

Fig. 18. The Icelandic Health Net



Source: Ministry of Health and Social Security of Iceland, 1997.

information for discriminatory purposes has also been raised by the opponents, who have organized themselves as Mannvernd ("Human Protection"), or the Association of Icelanders for Ethics in Science and Medicine. They believe that this act infringes on human rights, personal privacy, and accepted medical, scientific and commercial standards. The licensee, on the other hand, points out that the company has no interest in identifying individuals in the Database or using information that would identify the people involved. Too much would be at stake for the company

to protect this information, and it is in the interest of the company to follow strict rules and submit to inspection by the Data Protection Authority. The work of deCODE Genetics has the support of a large majority of the Icelandic population because people wish to support research on major diseases, but also because of the resulting financial and human investment in research and scientific activity. Nevertheless, the issue has led to unprecedented debate in the Icelandic media. It should be mentioned that the Database is not yet in operation. The reason given by deCODE is that there still are unresolved issues between the Data Protection Committee and the company on how to run the project.

Electronic health record systems

Electronic health record systems have been introduced to the Icelandic health care system. All health care centres use the same software, and efforts have been made to harmonize electronic records in hospitals and health care centres. The main advantages of electronic health records are the increased possibilities for continuous treatment, easier access to information and speedier information mediation, increased data security, and more efficient use of funds, equipment and human resources. The collection, handling and mediation of information from various institutions must be standardized for electronic medical records to have an advantage over present methods.

The Ministry of Health and Social Security has defined the standards that all electronic health records will have to meet.

Policy statement on the future of information technology

In 1997, the Ministry of Health and Social Security issued a policy statement on the future of information technology in the health care system. The Icelandic Health Net will connect all participants in the country's health services. Numerous component projects and tasks have already been planned, and some are already operating according to a plan agreed in 2000. In 2005, a comprehensive health network will exist as a way of telecommunicating for everyone who needs to exchange patient information electronically, such as hospitals, health care centres and individual health care workers.

The Health Net will be comprised of numerous components, such as admissions and discharges, billing certificates, prescriptions and prescription renewals, requests for laboratory tests and results, consultation requests and replies, and information on ongoing treatment. There will

also be a transfer of information between institutions on the best available treatment and on scientific research. The network will be a virtual net. The Ministry will not run a comprehensive network itself, but it will use the technology of private companies and regulate the mode of communication, security issues, transmission capacity and so on. Instead of defining the structure and the services of the Health Net in detail, the Ministry decided to publicize a broad description of it and develop it through individual projects.

Many projects have already been developed, such as experiments with telemedicine for diagnosis and treatment and Internet registration of accidents, both of which are described in greater detail below, and use of the resident assessment instrument (RAI) for people in nursing care, mentioned previously in *Planning, regulation and management*. Other projects include experiments with electronic prescriptions, the regular submission of information to the Directorate of Health and the State Epidemiologist, and the electronic transmission of bills to the SSSI.

Telemedicine

The first telemedicine project in Iceland started in 1993 with the sending of X-ray pictures from the small hospital in the Westman Islands off the south coast to Landspítali University Hospital. Since then, six hospitals have been connected to Landspítali in Reykjavík and Akureyri Hospital in the north. The Ministry of Health and Social Security has issued a plan for routine telemedicine service as an integral part of the health care services. For the time being, only radiological services and educational meetings are provided on a routine basis, but separate telemedicine projects include ultrasound obstetrical examinations, psychiatric consultations, emergency medicine for those at sea, and pathology using image and text web tools, as well as teaching graduate and educational seminars through videoconferences. Telemedicine is seen as an effort towards providing equal access to health services in the rural parts of the country.

The Icelandic Accident Register

Until now, accidents have been registered by various institutions, such as hospitals, health care centres, the police and insurance companies, but no central registration has existed. The purpose of the new Icelandic Accident Monitoring Project is to provide dynamic information on the etiology of accidents and to serve as a research tool enabling the development of strategic accident prevention, resulting in fewer accidents, increased cooperation and enhanced public risk awareness. Through the collection of accident data in a

centralized databank, the Project will coordinate accident registration nationwide. These data will be subsequently processed and disseminated. In the Icelandic Accident Register certain data, entered in local databanks by those who handle information on injuries and property damage, will be automatically transmitted to, or recorded via web interface in, a centralized databank hosted by the Directorate of Health. Every accident will be issued a unique identification number when it is entered into the database, and that unique number will also be attached to the accident registration in the local databases. Registration of injuries and property damage will be attached to the accident registration itself. The centralized database will include information on date, time, location, type of accident, site, registration date, GPS co-ordinate (if available), car number, social security number, gender, and classification of damage and injury. Due to the sensitivity of some of the data, the Icelandic Data Protection Authority has been consulted throughout the project. All sensitive data, such as social security numbers and car number plates, are encrypted.

Medical devices

The Act on Medical Devices, passed in 2001, applies to the manufacture, marketing, maintenance and use of medical devices and the health authority oversight of such devices. The objective of the Act is to prevent damage to users and to ensure that the production, maintenance and use of medical devices is consistent with the best available professional expertise. A medical device must be labelled pursuant to the medical device rules of the European Union, which are part of the Agreement on the European Economic Area (EEA), or to requirements laid down in agreements that Iceland has entered into with parties outside the EEA. The Directorate of Health maintains a register of enterprises in Iceland that manufacture medical devices. The Directorate is responsible for monitoring the safety of medical devices, and may remove a medical device from the market if the device exhibits dangerous qualities.

Financial resource allocation

Third-party budget setting and resource allocation

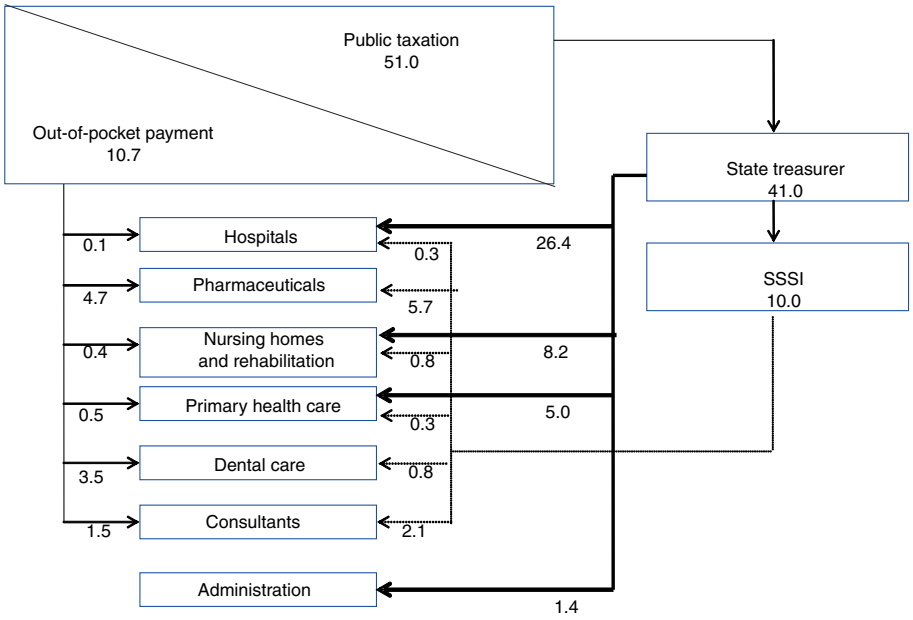
Fig. 19 shows a financial flow chart of the Icelandic health services for 2000. Total health expenditure was ISK 61.7 thousand million. Public taxation of individuals and companies accounts for 82.9% of the total revenue and out-of-pocket payments 17.1%. Of the tax revenue, a little more than four fifths went through the State Treasurer, mostly as the fixed budget for hospitals, nursing homes and rehabilitation, primary health care and administrative expenses. One fifth of the tax revenue flows through the State Social Security Institute (SSSI) on a volume basis, primarily as reimbursement for pharmaceutical costs and for specialist and dentist fees.

Payment of hospitals

Hospitals were paid by the health insurance funds according to the number of bed-days until 1977. Starting in that year, the largest facility, Landspítali University Hospital, was switched to a fixed budgetary system financed directly by national taxation. Other large hospitals were gradually changed over to a similar fixed budgetary system in subsequent years. A new payment system for hospitals is now being prepared, as described in the reform part of this report.

There has been much criticism of the lack of financial incentives for hospitals. The state serves as both provider and purchaser in the acute hospital sector. A purchaser–provider split, already a tradition in the nursing and rehabilitation sector, has often been debated, but so far there has been

Fig. 19. Financial flowchart of the health care system, 2000. Figures refer to billion ISK.



Source: . Ministry of Health and Social Security of Iceland.

little political interest in such a change for the acute sector. Competition is difficult to realize in the acute sector because of the small size of the market and the few and specialized institutions involved.

Until recently, nursing homes in Iceland were financed in three separate ways. Some of them had a fixed budget like the acute hospitals, others received a fixed payment according to a service contract and still others received payment on a per diem basis. In January 2003, all nursing homes began to be paid per diem according to the resident assessment instrument (RAI) system previously mentioned in *Planning, regulation and management*. In this system, each individual is evaluated once a year with regard to the care required. The per diem rate of a nursing home with an RAI value of 1.00 is used as the base rate. To calculate a given facility's per diem, one multiplies 59% of this base per diem by 1.00 and the remainder by the facility's own RAI value. For instance, if the base per diem is ISK 11 000 (about €132), a nursing home with an RAI of 1.05 would receive ISK 11 000 x ((0.59 x 1.00) + (0.41 x 1.05) = ISK 11 325 (about €136).

Payment of health care professionals

Icelandic health care professionals are, as a rule, salaried employees. The main exceptions are medical specialists who provide outpatient care outside of hospitals, dentists and most physiotherapists, who are private practitioners paid by the SSSI on a fee-for-service basis with some out-of-pocket payments from patients. Psychologists are paid directly by patients, without any subsidy from the SSSI. Pharmacists are salaried but paid directly by the private owners of the pharmacies.

Payment of general practitioners (GPs) has changed in recent years. When the health insurance funds described above were abolished in January 1989, health care centre costs became the responsibility of the state, and the employees of the health care centres and local hospitals became state employees. The state took over the operating costs of the health care centres as well as of the hospitals. Before that time, the state had paid the salaries of doctors, nurses, midwives and physiotherapists in the health care centres, but other operating costs were shared between the State Treasury and the local authorities. On top of the salaries from the state, GPs also received fees for services from the SSSI and some payment directly from the patients. For most doctors, especially the more active ones, the fees became an increasing part of their income, and in 1996 the fee-for-service part was 65% of the average GP income in Reykjavík. This way of paying GPs was changed after the resignation of most GPs in 1996. As part of the solution, it was agreed that GPs would not negotiate their income but would instead receive a salary decided by a committee in the same way that salaries are set for senior civil servants. Only a minor part of GP income, mostly for services outside of normal working hours, would be paid by the SSSI (approximately 10% of the total). The new arrangement led to a considerable loss of productivity, as measured by visits per doctor at urban health care centres. The mean loss in productivity from 1997 to 2001 was 18.1%. The GPs began to use more time for each non-acute visit, often spending 20 minutes per patient instead of the 15 minutes they used before the change. Their behaviour began to resemble the average state employee's, with longer lunch breaks and holidays than they took previously. It should be admitted, however, that many GPs were probably overworked under the former system, and that this slowing of the work pace may have enhanced the quality of their services, but such assertions are difficult to measure. What can be measured is that access to the services of GPs in the Reykjavík area worsened, leading to increased dissatisfaction on the part of patients. This development led to a considerable increase in the supply of specialist services, the volume

of which is more difficult to control for reasons explained in other sections of this publication.

Hospital doctors receive a fixed monthly salary. Some doctors who work part-time in hospitals and part-time in private practice on their own premises are paid by the SSSI, but many of them have a part-time salaried post at the hospitals. As of November 2002, no doctor who practises privately is allowed to be employed by the Landspítali University Hospital more than 80% time. After this decision, 43% of the consultants decided to do hospital work only. At the same time, it was decided that a chief physician would not be allowed to hold a simultaneous post outside the hospital unless it was a teaching position at the University.

A total of 342 specialists had a contract with the SSSI in 2001, according to which they were paid a total of ISK 1500 million (approximately €18 million) for 460 thousand visits by 291 thousand individuals.*(25)* During the period 1998–2001, the cost to the SSSI for specialist services increased more than twofold or as much as 133%. Of the increased cost, 42% was due to greater volume of treatment units (each visit or procedure is assigned a number of treatment units), 24% due to the higher price for each treatment unit and 32% because of the lower relative patient share during this period. The reason for increased volume is mainly that it was considered desirable that some operations be performed on an outpatient basis because of the rapid development in medical technology used in private practice outside hospitals. Some of the increase also probably resulted from the difficulties encountered in getting access to GPs, as explained above.

As described elsewhere in this report, a paragraph in the Icelandic competition law can make it complicated for the SSSI not to approve a licence application from a specialist. Controlling how specialists apply the fee schedule has also been hindered by a verdict of the Icelandic Privacy Committee that prohibits even medically qualified employees of the SSSI from inspecting a patient's record without prior consent. Therefore, the only ways to lower these costs are to negotiate the number of treatment units for each procedure and the cost of each unit, and to agree to reduce prices when a certain volume of services has been reached during a single year. From 1998, a ceiling on the number of fully paid units was applied both within individual specialties and for individual doctors. The limit was lower for those specialists who also held a hospital position. This system turned out to be very complicated, and it was difficult for each doctor to know when he or she had reached the limit. The rules were simplified in 2001. The SSSI has now achieved more control over costs than it had before. Out of this amount, a specialist has to pay all the running costs for his or her surgery (rent, secretaries, assistants, supplies etc.).

Anaesthesiologists received the highest average payment from the SSSI in 2001, of ISK 14.1 million (about €170 thousand) per anaesthesiologist, but they also probably have the highest running costs. More recently, a change in the law now means that the Chief Medical Officer of the SSSI can obtain permission to inspect patient records as thought necessary.

Physiotherapists work mostly in private practice, as a rule in urban areas on premises rented from health care institutions, often at a relatively low rate. The reimbursement rules for physiotherapists were changed in 1997. Up to 1997, certain diagnoses were reimbursed fully, and for other treatments the patient co-payment was 40%. Since the change, the rules described in the section on out-of-pocket payments have applied. The co-payment has increased for initial treatment sessions, but the longer a patient needs to be treated, the less he or she has to pay. By 2001, the new rules had led to a 19% increase in the number of patients receiving physiotherapy. During the same period, the number of treatment sessions increased by 36%, SSSI costs by 25% and patient costs by 25%. Physiotherapists point out that there has been an increase in the number of patients in the age groups that are in most need of physiotherapy, that there is an increasing recognition by doctors that physiotherapy is a valuable treatment method, and that more patients are now treated outside of hospital settings.

Health care reforms

Aims and objectives

The health care system in Iceland aims to provide universal access to health care services for its citizens and to maintain the highest possible quality of health care. The main principles guiding the country's health care reforms are outlined in the following documents:

- the text of the laws on health care, such as the Health Services Act, the Physicians Act and the Act on the Rights of Patients;
- *Health plan through 2010,* endorsed by parliament in 2001;
- health policy documents from the Ministry of Health and Social Security, including *The Icelandic health care priorities document* from 1996 and *Quality plan of the Ministry of Health and Social Security* from 1999.

Health for all policy

It was not until 1980 that a comprehensive long-term health plan for Iceland was drafted for the first time. In 1986, it was decided to make a health plan based on Icelandic conditions and the WHO Health for All strategy, but it was not accepted by the parliament until 1991.

The revision of the 1991 Health Plan started in 1996. A national health plan running up to the year 2010 was put forward by the government and adopted by the parliament in 2001. The 2010 Health Plan has a problem-oriented approach, and its development is closely related to that of *Health 21*, WHO's revised health for all strategy. Previous plans had not been as successful as initially expected, possibly because of the lack of any benchmarking or

quantitative measurement of target achievement during the implementation period. A steering committee has been appointed for the latest plan, and it serves a consultation group for its implementation. A report on how the plan proceeds is to be presented annually. The plan as a whole will be revised in 2005.

The 2010 Health Plan is divided into three parts. The first part deals with priority targets, i.e. the WHO European Region targets and Icelandic targets through 2010. The second part addresses the current health status and prospects of Icelandic society and the administration and planning of its health care services. The third part deals with specific fields and the supportive actions needed to secure the quality and development of the health care system. The plan emphasizes prevention in the field of tobacco, alcohol and drug use, as well as for reducing accidents, cardiovascular diseases, cancer and psychiatric diseases. There is a special emphasis on the health of children and young people as well as that of the elderly. For each topic, there is a paragraph on the current situation, the outlook and how to achieve the targets described in the Health Plan. Two to six Icelandic targets and quantitative measurements are defined for each of the 21 European targets. In the field of tobacco use prevention, for example, one of the targets is to reduce the percentage of daily smokers in the age group 18–69 from 27% in 1999 to 15% in 2010. To take an example from another field, the Health Plan aims to reduce the death rate from cardiovascular diseases by 20% among men (from 198 per 100 thousand in 1995 to 158 per 100 thousand in 2110) and by 10% among women (from 76 per 100 thousand to 68 per 100 thousand over the same period).

Content of reform and legislation

Most of the recent reforms to the Icelandic health care system have already been described in previous sections. This section describes in more detail the main reforms: of the central administration, primary health care, the hospital system and the pharmaceutical sector. Some major new laws and policy documents will also be discussed, as well as some other changes related to the health care system.

Simplification of the central administration

The main drawback of the Health Care Act of 1974 was the very detailed and complicated administrative structure of the health care services it laid down. The Act divided the country into eight medical regions, each with a population

of from 10 thousand to around 100 thousand inhabitants. The Minister of Health and Social Security appointed one of each region's active medical doctors as regional medical officer for a five-year term. A regional health council, whose members were nominated locally and appointed by the minister (who would also choose the chair), operated in each region. Each council reported directly to the Ministry. For many years, it was obvious that the system needed considerable simplification. It was accomplished in 2002 by abolishing the middle management level, eliminating the regions, their health councils and their medical officers. Their responsibilities were assumed partly by the Directorate of Health and partly by the executive directors of the health institutions and the chief medical doctors of individual health care centres. In 2003, the local steering committees of the health care centres and hospitals, other than Landspítali University Hospital, were also abolished, and their responsibilities were assumed by the executive directors. As a result of these changes, the director of each health care centre acquired more authority, for example by being responsible for the recruitment of doctors and other personnel.

Another important reform in recent years has been the creation of a single committee, representing the Ministry of Health and Social Security, the Ministry of Finance and the State Social Security Institute (SSSI), to negotiate the payment of health care professionals, as the state is the sole party paying for their services, except for the relatively small patient share. Up until 2001, three different state committees negotiated with health care professionals at the same time. One committee appointed by the Ministry of Health and Social Security dealt with outpatient work in hospitals, one appointed by the SSSI with the price and volume of services offered by private specialists, and a third committee negotiated the salary of hospital employees. Because of the lack of coordination, the doctors were in fact able to decide which services to offer and to what extent, without regard to the overall planning and priorities of the health authorities. The new committee can, in consultation with the Icelandic medical association, agree on regulations addressing the type of services provided in a hospital or an outpatient department and the services that should be provided in specialists' clinics. There is a general agreement that cost–efficiency is best realized by providing as many services as possible without hospital admission. However, an evaluation must be carried out to determine which health services need to be provided in connection with a hospital because of the facilities found there and because of the teaching role played by the hospitals. Despite the necessity of evaluating the cost–efficiency of the services in order to satisfy the needs of the population better, this type of evaluation has not yet been carried out in Iceland. Up to now, it is possible that the financial interests of the

doctors may have played a larger part in decisions than have professional concerns. The Icelandic medical association opposed the change in negotiating the payments and was suspicious that the real intention of the health authorities was to limit the clinical freedom of doctors and restrict private practice.

Reforms of the hospital sector

As mentioned previously the hospitals in Iceland were financed for a long time according to the number of bed-days. This system encouraged, as might be expected, a long average length of stay. It was changed to a fixed budget system in acute care hospitals and later in most nursing homes as well. This fixed budget system has been criticized because of its lack of incentives for increasing or improving services. In recent years, there have been efforts to pay some departments in Landspítali University Hospital according to diagnosis-related groups (DRGs), an American system that groups in-hospital patients in categories with similar resource use. This system can be used both for comparing the hospital performance within a country and between countries, as well as for hospital financing. The grouping is based on diagnoses, procedures performed, age, sex and status at discharge. DRGs have been used for paying hospitals in the United States for many years. For many reasons, not least that a different edition of the *International classification of diseases* was used in the United States, it proved necessary for the Nordic countries to develop their own DRG system. The Ministry of Health and Social Security has participated in the joint Nordic task force for developing the "Nord-DRG" for some years. In Iceland, it has been used on an experimental basis in the gynaecology department of Landspítali University Hospital since 2001, both for monitoring performance from month to month and for distributing money to the department from the overall hospital budget. So far, it has been regarded as successful. Productivity has increased by more than 7% in the gynaecological department, despite no significant change in the budget since this payment system was introduced. Preparations for the use of the DRG system are underway in the surgical, medical and paediatric departments, and other departments will follow. In this way, the Ministry of Health and Social Security will become a better informed buyer of hospital services as early as 2005.

See the section below on reform implementation for discussion of two other important reforms in the hospital sector, the merger of the three major hospitals in Reykjavík and the gradual disappearance of surgical activities from smaller rural hospitals.

Reforms of primary health care

Among the successful health sector reforms are those carried out to fulfil the clauses of the Health Care Act concerning the construction and operation of health care centres. Attractive and well equipped health care centres staffed by competent health care professionals are now operating throughout the country. Compliance with that part of the Act which calls for equal access to health services has thus been well fulfilled with respect to primary health care. There are some differences in access to health care with respect to income level, and geographical differences in access to specialized services is unavoidable because of great variations in population density and the distances involved, a tendency that has become more pronounced with the increase in specialized services. In compensation, the travel of people in the countryside to specialists is subsidized, and trips by specialists into the countryside have been increased. With increased demand for better emergency air services, another important reform was to contract them out in 2003.

Deregulation of the pharmacological sector

On 15 March 1996, landmark legislation on the distribution of drugs came into effect in Iceland. Before that time, the availability of a licence to own and run a pharmacy was announced publicly and then given to one of many competing pharmacists. The state determined the number of pharmacies as well as their geographical location. The licence to own and run a pharmacy was considered a privilege granted to a specific pharmacist by the state. Pharmacists featured regularly on the list of the country's top taxpayers, and a licence almost guaranteed a good lifelong income without much competition and without much concern for efficiency.

According to the new law of 1996, any person can own and run a pharmacy, but he or she has to enter into a contract with a pharmacist who is to be held professionally responsible. The prior regulations on the number and location of pharmacies were abolished. Formally, the licence is subject to approval of the relevant municipal council, but in reality there are no longer any restrictions on the number and location of pharmacies. Pharmacies were now allowed to advertise over-the-counter drugs, and maximum price levels were retained only for prescription drugs. According to the new law, pharmacy owners are obliged to provide consumers and health care professionals with information on pharmaceuticals and to provide pharmaceutical care in cooperation with other health professions, with the overall objective of reducing the risk for diseases and of promoting health.

The Icelandic health care priorities document (1996)

In 1996 the Minister of Health and Social Security appointed a commission charged with proposing priorities for the health care system. The commission consisted of one member from each of the political parties then represented in the parliament, two members appointed by the Icelandic Medical Association, and one each appointed by the Icelandic Nurses' Association, the Icelandic Hospital Federation, the Federation of Health Care Centres, the Icelandic Consumers Association, the Ethical Committee of the University of Iceland and the Icelandic Directorate of Health.

The conclusions of the commission were summarized under three headings: "Ethical actors", "Priorities in health care" and "Management and policy formation".

The *ethical* section emphasizes the fairness of the services and the rights of patients. The health services are to be grounded in the mutual responsibility of all citizens for each other, and they are to be primarily financed by public funds. Respect should be shown for the welfare, dignity, privacy and autonomy of the patient. The document states specifically that the treatment and care of the terminally ill should take into account the wishes of the individual (and/or relatives) concerned.

The *priorities* section states that the priority of individuals to receive health care shall be based on need. Those who by reason of youth, disability or old age cannot speak for themselves shall be ensured the same rights as everyone else. Certain health care activities shall have priority (in descending order of importance):

- the treatment of acute and life-threatening illnesses, whether physical or mental, and of injuries which can lead to serious disability or death;
- preventive health care which has proven effective;
- the treatment of serious long-term illnesses;
- rehabilitation;
- palliative terminal care;
- treatment of less serious injuries, and of acute and long-term illnesses of a less serious nature; and
- other forms of treatment which professional experience has shown to be effective.

This section also calls for the establishment of rules for waiting lists, waiting time and the transfer of patients within the health services. Objective criteria should be applied in all cases, and no patient should be put on a waiting list,

except in situations where there is an acknowledged need for medical assessment or treatment. The maximum waiting time is to be decided with respect to the nature of each instance but shall not exceed 3–6 months. Patients shall always receive health care at the place or level most suited to their individual needs, and health care services shall meet agreed-upon standards of quality. This section also addresses the quality, cost–effectiveness and efficient use of medical technology and human resources.

The section on *management and policy formation* emphasizes a strong core of basic and specialist services, and coordinating the management of health services and their relationship with social services. Overall organization of health care should include three main parts: basic services, regional services (later abolished) and national services, with a clearly defined division of responsibility for health care between the state and regional authorities. This section also states more detailed objectives, such as that there should never be more than a one-hour drive to the nearest basic acute care services. It called for an increased emphasis on preventive medicine and, interestingly, for an increase in specialized outpatient services, which are not mentioned in the Health Services Act.

The Icelandic health care priorities document is remarkable for being the first attempt to address priorities in the country's health services. It continues to be widely used in ongoing policy and quality management discussions in Icelandic health care institutions.

Act on Communicable Diseases (1998)

A new Act on Communicable Diseases came into force in 1998. In accordance with this Act, the Committee on Communicable Diseases develops policy measures to combat communicable diseases and advises health authorities on measures to prevent their spread. The State Epidemiologist is the Committee's secretary. He or she maintains a register of communicable disease to monitor their spread by gathering detailed diagnostic data from research laboratories, hospitals and physicians. The State Epidemiologist is responsible for measures to fight communicable diseases and supervises preventive measures as well, e.g. by promulgating information and educational materials, and publishing guidelines and advice for physicians and others on how to treat these diseases. Official measures against dangerous communicable diseases are put into effect by the State Epidemiologist when a risk exists of an epidemic reaching Iceland, being exported abroad or developing within the country, as well as when an infected individual threatens to spread a communicable disease by his or her actions.

Amendments to the Tobacco Prevention Act (2001)

Iceland has a relatively restrictive tobacco policy. Over the last three decades, tobacco advertising has been banned as well as sale of tobacco to people under the age of 20. Smoking is prohibited in the service areas of institutions, businesses and organizations, where the general public comes or seeks service, as well as in structures where people participate in cultural and social activities. Comprehensive amendments to the Tobacco Prevention Act were passed in August 2001. The amendments apply in particular to the marketing and sale of tobacco and on protection from air pollution from tobacco, and they confirm a person's right to smoke-free air. The rights of children are particularly stipulated. Any person responsible for a child is obligated to block the child's exposure to indirect smoking. Tobacco products at sales outlets may not be displayed to the customers. Only persons who have reached the age of 18 may buy or sell tobacco. Retail sale of tobacco is subject to a special tobacco sales permission. Smoking in restaurants and entertainment establishments is only allowed in delimited spaces. Employers are to see to it that their employees are able to work in a smoke-free environment. National budget appropriations on tobacco use prevention were also increased by amendments to the act in 2001.

Act on Biobanks (2001)

A law regulating biobanks came into force on 1 January 2001. The objective of the law is to establish a framework for the collection, keeping, handling and utilization of biological samples from human beings in such a way that confidentiality is ensured, and the interests of donors of biological samples serve the purpose of science and medicine and are conducive to the public good. Furthermore, the material should not be used if it has been kept for too long.

Act on Patient Insurance (2002)

The Icelandic parliament passed the Act on Patient Insurance in May 2002. The Act includes compulsory insurance for all health staff in Iceland. All publicly employed health personnel are covered by the state, whereas privately employed health personnel must pay for their own insurance. Such insurance will, in defined cases, cover possible mishaps without resort to the courts. The Act on Patient Insurance is similar to legislation in other Nordic countries.

Act on a Public Health Institute (2003)

A new public health institute was established in Iceland according to the provisions of an act passed in spring 2003. It will coordinate the work of several councils and committees that were dealing with specific preventive tasks, such as the Nutrition Council and the Tobacco Prevention Committee, as well taking over some of the tasks of the Directorate of Health. It will suggest new initiatives in the field of public health and act as adviser to the Minister of Health and Social Security on prevention and health promotion. It also will support research in prevention and provide information for health professionals and the public.

Reform implementation

The implementation of changes in the Icelandic health care system has proceeded well in some areas and not as well in others.

Implementation of changes in the central administration

It is obvious that the changes in the central administration described in the previous section could have been regarded as limiting local influence on the provision of health care, and that it could possibly have been a sensitive political issue. However, it was generally understood that some of the stipulated eight health care regions were too small to be able to act as separate units, and that the actual power of the regional councils and the part-time regional medical officers were very limited. In Reykjavík, the regional council had not even met for some years. The change in the law was therefore in fact only a confirmation of the actual practice of recent years. There was little resistance or debate on the change except for some opposition from the Left–Green Movement in the parliament. The party had concluded that the relatively small power of local people over the health care system was being further reduced, especially with the abolition of the public health official positions outside the capital.

Implementation of reforms in the hospital sector

One of the biggest recent reforms was the merging of the hospitals in Reykjavík to increase the efficiency of the hospital sector and enhance the quality of its services. It was expected that the merger would increase efficiency in the long run, primarily because of lower overhead and the eliminated duplication of some services – for instance, urological surgery was provided at all three hospitals. Prior to the merger, these three hospitals took turns being on call for

acute cases, but there was also some division of labour. Despite some conflicts, the hospitals cooperated well in many ways and offered high-quality services to the population.

During the l990s, many proposals were made to merge the hospitals in Reykjavík into one or two larger hospitals, but without success. The system of self-governance that operated at St. Joseph´s hospital seems to have been one of the main obstacles to the merger, as the doctors there were better off financially, and they were also reluctant to give up the somewhat greater freedom they had of organizing their work. However, an increased volume of acute hospital cases and increased specialization proved to be too heavy a burden for such a small unit. In 1992, the first step was taken to simplify the provision of hospital services in the capital area by discontinuing emergency service at the self-governing hospital and letting confining its offerings almost completely to elective surgery. After that, the number of emergency shifts in the capital was converted from three to two, resulting in considerable savings. In the beginning of 1993, the two smaller hospitals signed a declaration of intent to complete a merger. For technical reasons, it was carried out over a period of several years. The last step in the merging of the hospitals was the merger of this "new" hospital with the large state-owned hospital, resulting in one big state-owned university hospital, Landspítali University Hospital.

The merger was implemented more smoothly than many expected. The main obstacles were the opposition of some personnel, especially the doctors. This opposition was probably lessened by an agreement with the University of Iceland that made all hospital specialists in Reykjavík a part of the University hospital, with closer ties to the University and the possibility of obtaining an academic title as lecturers or associate professors, provided that they have a sufficient academic background.

The Icelandic National Audit Office, in cooperation with the National British Audit Office, has recently issued a report, mainly on the financial consequences of the hospital merger. The average length of stay in 2003 is similar as in 1999 (5.2 and 5.3 days respectively for the acute services). There are fewer inpatient days but more day surgery and ambulant services in 2003. Waiting lists seem to be similar in 1999 and 2003, shorter in some specialities and longer in others. The total output of the new hospital is estimated to be similar to the combined output of the two former hospitals. As the staff has been reduced by 6.2% the productivity has increased. The number of administrative staff has been reduced somewhat and there is less overwork (by 20%) and on call services have been combined. However, the main staff savings have been made in the supportive services

and during the same time the payment of the staff has increased considerably, especially among doctors and nurses, outweighing the savings in staff reduction and resulting in increased total expenditure. *(26)* It should be noted that figures produced after the publication of this report have shown considerable improvement regarding waiting lists. The waiting list in general surgery has been shortened from 750 individuals in 2002 to 290 in 2004. The only real waiting list in this field in the beginning of year 2004 was for laparoscopic Nissan fundoplication for gastroesophageal reflux. In the field of orthopedic surgery the waiting list numbered 850 individuals in 2002 (waiting time 12–24 months), 630 in 2003 (waiting time 6–12 months) and 400 in 2004 (waiting time 3–6 months). There are hardly any waiting lists in other clinical fields, except for eye surgery (cataract operations).

The Directorate of Health has already prepared a report on the merger's effects on the staff and their views on its effect on the functioning of the hospital. The results are somewhat mixed, as could be expected from the short length of time that has elapsed since the merger, and from the radical change in working conditions that has led to a loss of job status and privileges for some employees.

As mentioned earlier, there are about 20 very small hospitals in the rural part of Iceland. In recent decades, there has been a slow shift in focus for these institutions. The number of hospitals performing acute operations has decreased from 16 to 7 or 8 in less than 15 years. In 2002, there were 15 institutions where pre-arranged deliveries take place. This number has fallen rapidly in recent decades. Close to 70% of all deliveries now take place in Reykjavík. There has been a tendency in recent years for specialists from nearby hospitals to visit the small hospitals with surgical facilities regularly in order to operate on patients there for a few days each month. In the smallest hospitals, surgical activity has been abandoned altogether. These hospitals serve mainly as convalescent homes for the local people, with a few beds for observation of acutely ill or injured patients and some for the treatment of medical conditions that do not require sophisticated diagnostic or treatment facilities, such as pneumonias or leg ulcers in the elderly. Most of the smaller hospitals employ only general practitioners (GPs), many of whom have a specialist degree in general practice/family medicine. This system of small hospitals has developed slowly and spontaneously over the years for the reasons mentioned elsewhere, including the difficulty of getting qualified specialists to work alone or relatively alone in remote places. It is likely that in the near future, there will only be a few hospitals in Iceland besides Landspítali University Hospital and the

Akureyri Central Hospital, although some of the small hospitals will remain because of the isolation and unpredictable weather conditions in their uptake area.

Implementation of reforms in primary health care

Despite new and well equipped health care centres with general practice specialists and other well educated personnel as well as other improvements in primary health care, it has been difficult to comply with the declared aim of the government that the first contact the patient has with the health services shall be with a GP or a health care centre. This aim has not been pursued realistically, and developments have actually been in the opposite direction. It has been suggested that the government's objectives can be considered contradictory, as they emphasize both the general public's free choice of health care providers and the use of GPs as first contact. In 1995, the Minister of Health and Social Security tried to reintroduce and streamline a new referral system and establish a gatekeeper role for GPs. The old referral system had been abandoned in 1985. The new proposal did not include a ban on seeking direct specialist care, but instituted instead a heavy financial incentive to go first to a GP and higher remuneration for specialists treating referred patients. This attempt at regulating the specialist services was strongly opposed by the specialists and by the Icelandic Medical Association. The GPs' support for the Minister's proposal was weak, as by that time there were too few GPs to handle the expected increase in the flow of patients, some of whom would presumably only want referral to a specialist. The support of the population was also divided, as people considered the choice of care givers to be their right, especially patients with chronic diseases and a close relationship with their specialists. The proposal was made shortly before general elections. This fact and the massive opposition led to withdrawal of the proposal.

Problems in GP services, the dissatisfaction of GPs with the terms of their wages and working conditions and a recent decline in newly qualified GPs led to the resignations of almost all GPs from the health care centres in 1996. The dispute on primary care was resolved in July 1996 with the state's agreement to a reform memorandum consisting of 21 points. Many of these reforms have subsequently been partly or totally implemented, including:

- the erection of new health care centres, particularly in the Reykjavík area, where there has also been an increase in the number of GP posts;
- the creation of a single local health institution in many rural areas through the merging of small hospitals and nursing homes with health care centres;

- successful ongoing experiments with decentralizing the administration of health care and care for the elderly in two "experimental communities", in accordance with a service contract with the state and as part of a larger experimental project;
- the transfer of most mother and child health care services being conducted at the Centre for Preventive Health Care in Reykjavík to individual health care centres in the area;
- the establishment of a new public health institute, as described above;
- experimentation with contracting out the operation of a new health care centre;
- increasing the number of visiting medical consultants in rural areas;
- merging the administration of some rural health care institutions with shared on-call services;
- expanding the role of chief medical officers at the individual health care centres and revising the (now abolished) role of regional medical officers;
- making three months' service at a health care centre during internship obligatory for all medical students in order to get a full medical licence;
- organizing specialist education in general practice into educational blocks (which have proved popular among young doctors); and
- further development of information technology at health care institutions.

Other intended reform suggestions were less successful, such as a new non-obligatory referral system with financial rewards for using the health care centres as the first contact point in the health care system. Other efforts have not been as successful as intended, such as improving the written communications between GPs and specialists who share the care of a patient.

In spite of the relative success of these reforms, the GPs' dissatisfaction did not vanish in the years that followed. The GPs were still dissatisfied with the contrast between themselves and their colleagues who practised privately in other specialties, in both their payment terms and the amount of freedom they had to organize their own work. GPs often complain as well of having to wait sometimes for many years before they have a chance to be employed by a health care centre, at least in the capital area. Specialists, on the other hand, as mentioned earlier, can enter into a contract with the SSSI, open their own clinics and begin to practise as soon as they get their licence, provided that they can attract patients. This situation has contributed to a much greater increase in specialist services than in GP services and bolstered the claim that some specialist work is actually in

the field of primary care. The greater freedom and financial rewards of specialist services has attracted more young doctors to specialist services and resulted in a shortage of GPs, especially in rural areas. The health authorities, on the other hand, have emphasized the multisectoral role of the health care centres and the provision of many services other than those provided by doctors, asserting that GPs in private practice are incompatible with this ideology. At the end of 2002, this dispute was resolved. Individual GPs were offered the choice between two schemes, one a totally salaried scheme and the other a mixture of salary and fees-for-service under certain conditions. At the same time, GPs received a pay rise, calculated by the Ministry to be about 16% to 20%. Both parties seem to be relatively satisfied with the agreement, and a renewed interest in general practice seems to have resulted from this and other recent changes, most notably the above-mentioned educational blocks in general practice.

Implementation of changes in the pharmacological sector

The deregulation of the pharmacological sector, described in the previous section, can be regarded as successfully implemented. The main arguments for the new system were increased efficiency and lower medicine costs. In the first two and a half years after the liberalization of the system, the number of new pharmacies increased by 67% in the capital area but only marginally in rural areas. Some of the old pharmacies closed down as a result of the new law, and others joined into chains. As a result of the intense competition between pharmacies in the form of discounts from the maximum permitted price, the share paid by the patient has been reduced considerably. People are given special offers, sometimes addressed to specific groups such as the elderly or those on disability pensions. In some cases, the patient's share is reduced to zero because of the competition. There are also special services offered, such as home delivery of pharmaceuticals; and other things designed to attract customers. On the whole, the system became more customer-oriented and cheaper for the patient. No studies have been conducted to show how much the co-payments made by patients have been reduced as a result of this competition, but the pharmaceutical factor in the government's consumer price index fell by 20% between March 1997 and December 1998. Of special concern is that this has happened only in urban areas where there is competition. However, the competition seems not to have had much effect on the costs of medicine funded by the public sector, and there is a risk of chain-building in the retail sector that may result in less effective competition and higher prices in the future.

Conclusions

The Icelandic health care system can be regarded as fulfilling its purpose quite satisfactorily, but at a high financial cost in comparison with other countries' systems, provided that the figures showing the cost of the different health care systems can be regarded as comparable. According to the traditional crude indicators used for measuring the health of groups and nations, the population's health is among the best in the world and in line with those of its neighbouring countries. The country's good health is of course not only, or even primarily, the result of the health care system, for it also reflects a generally high standard of living. Yet various investigations have shown that the Icelandic population is generally satisfied with its health care services, and it usually rates the health services higher than most other public services. Preventive services, such as maternal and child health services, school health services and vaccinations, show almost universal coverage. There is some geographical inequality in the use of specialist services, a fact that can be explained by the many sparsely populated rural areas, but closer cooperation between specialist services from the capital area and health care centres in rural areas is now being planned.

In the 1970s, 1980s and 1990s, the health care system underwent several major reforms. Some of these reforms have been prompted by new technology and better communications. In primary care, the previous system, which consisted largely of primary practitioners working alone, has been replaced by a network of well equipped health care centres, which are staffed by specially educated general practitioners (GPs) and nurses, and which in many cases provide other services as well, such as simple

laboratory and X-ray services, dentistry and physiotherapy. Small urban hospitals have been turned into nursing homes, with a few acute beds for simple medical treatment, but no surgical facilities. Specialists from the larger hospitals now serve some of the rural hospitals. There are now only two hospitals outside the capital that provide a wide selection of medical specialties. On-call services in medicine, surgery and gynaecology will probably in the near future only be provided in a few rural towns where it is essential for geographical reasons. Three acute hospitals in the capital have recently been merged into one strong university hospital. An agreement between this hospital (Landspítali University Hospital) and the University of Iceland promises closer future cooperation between these institutions in the fields of research and education.

The formulation of comprehensive health care strategy and policy has often been difficult in Iceland. As in the other Nordic countries, a health ministry was a relatively late development, and the Ministry of Health and Social Security was not established until 1970. Until recently, decentralization and lack of coordination characterized the health care system. Isolation and geographical circumstances can be blamed in part, but it will not serve as the whole explanation, as a lack of coordination was also characteristic of the health services in the capital. It was generally accepted that members of the health professions, especially doctors, should decide on the tasks to be addressed by the health care sector, and that policy-making was neither necessary nor desirable, even if it was accepted in other sectors like education and industry. The transfer of all responsibilities for the health care sector from the communities to the state was a way to achieve better control and coordination of services.

The main challenges for the Icelandic health care system can be summarized as follows.

- The role of all types of health care facilities and institutions needs to be more clearly defined.
- The relationships between general practice and specialist care must be clarified. It is often stated on behalf of the health authorities that primary care should provide patients with their first contact with the health services. It is also declared that people should have the right to go directly to the service providers of their choice. These two aims may appear irreconcilable. It has not recommended that a GP referral should be required in order to consult a specialist, as has been tried in the past. The preferred situation would be a system with higher financial rewards for the specialist and lower co-payments for the patient when the patient is referred by a GP.

- The dissatisfaction of GPs with their position in the health care system is one of the issues that has to be addressed further, especially if any kind of referral system is to be considered. Recruitment of new qualified GPs has been slow, leading to vacant posts, a heavier burden on the remaining GPs and longer waiting times for patient appointments. GPs want to be paid on equal footing with other specialists and have more to say about their working conditions. Recent changes – allowing GPs to choose between two payment schedules, a privately run health care centre and training in general practice within the country – seem to be steps in the right direction.
- There are now at any time approximately 150 long-stay patients at the university hospital blocking expensive beds. Well equipped nursing homes are needed for these patients, releasing the resources of the university hospital.
- Outpatient care in hospitals needs to be strengthened. The current situation, in which even patients coming for follow-up after hospital care are seen by specialists in their private practices, is not acceptable. If not for other reasons, the teaching of medical students and other health care practitioners require such follow-ups to be a routine hospital activity. Out-of-pocket payment for short stay within hospitals should be considered.
- Almost all hospitals overspend and rely upon being reimbursed later. There is no incentive in this system for hospitals to be cost-effective. There are positive ongoing experiments with a diagnosis-related group (DRG) system in some departments of the university hospitals, and they will be used in large parts of the hospital sector in near future. There are some hopes that this system will make the hospitals more efficient and reduce waiting lists.

Health policy has not been high on the political agenda in Iceland until recently. However, this has been changing, and health care will certainly play a bigger role on the political agenda in the years to come. The financing and organization of the health services will certainly be debated, but so will basic policy, such as equality of access, prioritization of services when the possibilities for treatment and care outweigh the funds available, the role of private practitioners and institutions in the provision of services, and the importance of patient choice and whether patients should be able to buy the care they want if they pay the whole cost.

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Administration of Occupational Safety and Health in Iceland
http://www.vinnueftirlit.is

The Book of Icelanders (*Islendingabok)*
http://islendingabok.is

deCODE Genetics
http://www.decode.com

Directorate of Health in Iceland
http://www.landlaeknir.is

Icelandic Dental Association
http://www.tannsi.is

Icelandic Medical Association
http://www.icemed.is

Icelandic Nurses´Association
http://www.hjukrun.is

Icelandic Nutrition Council
http://www.manneldi.is

Landspítali University Hospital
http://www4.landspitali.is

Mannvernd ("Human Protection"): the Association of Icelanders for Ethics in Science and Medicine
http://www.mannvernd.is

Ministry of Health and Social Security in Iceland
http://www.stjr.is/htr

Statistics Iceland
http://www.statice.is

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