Health creates welfare
– the role of the health system in Norwegian society
Health creates welfare – the role of the health system in Norwegian society
Trends in the health sector, 2008

Published: May 2008

Responsible for publication: Director General Bjørn-Inge Larsen, Directorate of Health

Editorial Steering Group: Deputy Director General Bjørn Guldvog (Chair), Division Director Frode Forland,
Division Director Ellinor B. Major, Division Director Olav Valen Sløtterbrek, Division Director Hans Petter Aarseth,
Division Director Bård Olesen and Division Director Knut-Inge Klepp

Editor: Arne-Petter Sanne
Assistant Editor: Jon Bakkerud

Editorial staff: Per Kristian Andersen, Tor Claudi, Vegard Nore, Hege Sletsjøe, Kjartan Sælensminde,
Stig Erik Sørheim, Tone Poullson Torgersen and Nina Wavik Ytterstad

Editorial Board: Geir Sverre Braut, Norwegian Board of Health Supervision; John-Arne Røttingen, Norwegian Knowledge Centre for the Health Services; Camilla Stoltenberg, Norwegian Institute of Public Health, Odd Arild Haugen and Harald Siem, Directorate of Health.

Contributors: Erik Nord, Øivind Næss, Norwegian Institute of Public Health; Bjørn Rishovd Rund, Asker & Bærum Hospital Health Authority; Torleif Ruud, Akershus University Hospital, Fred Schroyen, Norwegian School of Economics and Business Administration; Dag Thelle, University of Oslo, Jan Olav Johannessen, Stavanger University Hospital, Jon Bakkerud, Olov Belander, Tor Claudi, Øyvind Giaeër, Bente Hatling, Linda Haugan, Odd Arild Haugen, Ole Bjørn Herland, Lars Johansson, Rakel Jonassen, Rita Lill Lindbak, Kaja Lund-Iversen, Torgeir Lovig, Hilde Mork, Thorstein Ouren, Arne-Petter Sanne, Ole-Trygve Stigen, Janne Strandrud, Kjartan Sælensminde, Tone Poullson Torgersen, Kåre Tønnesen, all from the Directorate of Health.

Postal address: Directorate of Health, Postboks 7000,
St Olavs plass, N-0130 Oslo, Norway
Street address: Universitetsgaten 2, Oslo, Norway
Telephone: +47 81 020 050 Fax: +47 24 16 30 01
www.shdir.no

Ordering number: IS-1545E

The report may be ordered from:
Norwegian Directorate of Health,
Printed Matter Distribution Centre
E-mail: trykksak@shdir.no

Telephone: +47 24 16 33 68 Fax: +47 24 16 33 69
When ordering, please state ordering number: IS-1545

Graphic design: Tank Design
Printer: Zoom Grafisk
Production: This report was printed in a Swan-labelled production on 120 g Amber Graphic/250 g Arctic Silk

In compiling the present report, the Directorate of Health has used copy from various external contributors, on occasion in edited form. As the author, the Director has sole responsibility for the contents of the report.
Preface

The present report, “Health creates welfare – the role of the health system in Norwegian society”, is the most recent in a series of reports on trends in the health sector from the Directorate of Health.

This year’s report on the trends is somewhat different to its predecessors in the series. The report for 2008 is a systematic description and review of the Norwegian health system based on the World Health Organisation’s definitions of functions and goals for health systems. The report also provides insights into and discusses the links between the health system, health and welfare in society.

With this report, the Directorate of Health seeks to:
- introduce the health system concept
- demonstrate correlations between the health system, health and increased prosperity
- draw attention to a number of main challenges in the Norwegian health system
- raise awareness of and generate greater interest in the health system debate in Norway
- contribute a Norwegian perspective to the international health system debate

With the report series, the Directorate aims to contribute new insights into the health and care domain in order thereby to drive improvements and initiate changes where they are needed. In this way, the report is intended to support the Directorate’s role as an executive agency of the Ministry of Health and Care Services. Part of our remit is to monitor developments in the health system from a general societal perspective. This also enables us to identify challenges and the need for innovation and reform in our own domain and those of other authorities.

The report is aimed primarily at decision-makers, managers and other interested parties at different levels of the Norwegian health system. It is hoped that others with an interest in general health issues, such as journalists, researchers and educators will also find it useful.

This publication was made possible by the well-founded and expert work of staff at the Directorate of Health, with assistance and input from the Norwegian Knowledge Centre for the Health Services, the Norwegian Institute of Public Health and the Norwegian Board of Health Supervision together with specialist medical environments in diabetes care and mental health care. We would like to convey special thanks to Dag Telle and Øyvind Naess for their contributions to Chapter 2, Fred Schroyen for Chapter 3 and Torleif Ruud, Jan Olav Johannessen and Bjørn Rishovd Rund for Chapter 4. With the agreement of these external contributors, the editorial staff has adapted and compiled their material into a unified report, thereby making the contents the sole responsibility of the Directorate of Health.

The publication of the report is timed to coincide with the 2008 Health Conference in Oslo, and will be presented internationally at the WHO Regional Office for Europe’s Ministerial conference on the theme of health systems to be held in Tallin, Estonia in June 2008.

Bjørn-Inge Larsen
Director General

Bjørn Guldvog
Deputy Director General
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>3</td>
</tr>
<tr>
<td>Summary and main message</td>
<td>6</td>
</tr>
<tr>
<td>Introduction</td>
<td>10</td>
</tr>
<tr>
<td><strong>1 The Norwegian health system</strong></td>
<td>14</td>
</tr>
<tr>
<td>1.1 Definition of a health system</td>
<td>16</td>
</tr>
<tr>
<td>1.2 WHO goals and functions for a health system</td>
<td>16</td>
</tr>
<tr>
<td>1.3 Functions in the Norwegian health system</td>
<td>18</td>
</tr>
<tr>
<td>1.3.1 Service delivery</td>
<td>18</td>
</tr>
<tr>
<td>1.3.2 Generation of resources</td>
<td>29</td>
</tr>
<tr>
<td>1.3.3 Establishment and refinement of financing systems</td>
<td>30</td>
</tr>
<tr>
<td>1.3.4 Stewardship through governance, steering and coordination</td>
<td>34</td>
</tr>
<tr>
<td>1.4 Goals for the Norwegian health system</td>
<td>36</td>
</tr>
<tr>
<td><strong>2 The health system’s capacity to improve public health</strong></td>
<td>38</td>
</tr>
<tr>
<td>2.1 Life expectancy is increasing</td>
<td>40</td>
</tr>
<tr>
<td>2.2 The health system’s contribution to the good health of the population</td>
<td>41</td>
</tr>
<tr>
<td>2.3 How other factors affect the health of the population</td>
<td>50</td>
</tr>
<tr>
<td>2.3.1 Education and health</td>
<td>50</td>
</tr>
<tr>
<td>2.3.2 Work and health</td>
<td>53</td>
</tr>
<tr>
<td>2.3.3 Material and social living conditions</td>
<td>57</td>
</tr>
<tr>
<td>2.3.4 Behaviour affects health</td>
<td>59</td>
</tr>
<tr>
<td>2.4 The health system’s responsibility for cross-sectoral public health work</td>
<td>64</td>
</tr>
<tr>
<td><strong>3 How health creates prosperity and welfare</strong></td>
<td>68</td>
</tr>
<tr>
<td>3.1 Health, prosperity, welfare — an introduction</td>
<td>70</td>
</tr>
<tr>
<td>3.2 The relationship between health, growth, prosperity and welfare</td>
<td>75</td>
</tr>
<tr>
<td>3.3 Investing in health</td>
<td>79</td>
</tr>
<tr>
<td>3.4 Good health means increased prosperity</td>
<td>84</td>
</tr>
</tbody>
</table>

---

4 Health creates welfare
4  Chronic conditions – a special challenge

4.1 Chronic conditions illustrate challenges facing the health system
   4.1.1 The challenges in Norway
   4.1.2 The global challenges
   4.1.3 Comorbidity – the challenges increase

4.2 Diabetes and schizophrenia – two examples

4.3 Diabetes – worrying trend
   4.3.1 Diagnosis
   4.3.2 Prevention
   4.3.3 Treatment
   4.3.4 Economic consequences
   4.3.5 Two cases – different treatment, development and outcome
   4.3.6 Diabetes and challenges for the health system

4.4 Schizophrenia – a complex disorder
   4.4.1 Development, causes and comorbidity
   4.4.2 Investigation
   4.4.3 Forms of treatment which have a documented effect
   4.4.4 Preventing and revealing the development of psychosis
   4.4.5 Costs
   4.4.6 Two cases – different outcome, with first-time psychosis
   4.4.7 The remission phase and the first years
   4.4.8 User participation
   4.4.9 Long-term illness and treatment
   4.4.10 Schizophrenia and challenges for the health system

4.5 Ensuring good treatment
   Model: How to meet the challenges facing chronic care?

Bibliography/references

86
88
89
90
90
91
92
93
95
97
100
101
104
106
107
109
109
111
113
114
118
121
121
122
124
126
128
Internationally, the Norwegian health system ranks among the best in the world. Our health system serves to allow many of us to enjoy a long life, and to live well.

The World Health Organisation’s goals for an effective health system are:
• Good and equally distributed health
• Responsiveness to patients’ needs
• Financial protection

Measured by infant mortality, life expectancy and other health metrics, the Norwegian population enjoys good health. The welfare society’s task is to ensure the equal distribution of health services.

A large number of well-organised user organisations is conducive to widespread user awareness and involvement. The aim is for patients to be heard and for their perspective to be appreciated. Good communication is a precondition for effective treatment of patients and attainment of the goal of responsiveness.

Norway is among the countries with the largest public financing of health services. The Norwegian financing and national insurance schemes go a long way in providing financial protection in the face of needs for health services, nursing and care.

It is crucial to build on the strengths of the Norwegian system, while homing in on the weaknesses and challenges that also exist.

According to the World Health Organisation, a health system includes all actors, organisations, institutions and resources with the potential for promoting health in a society. A system is taken to mean a whole composed of parts and the connections between them – organised in order to achieve common objectives.

The goals of a health system are achieved through:
• service delivery
• generation of resources
• establishment and refinement of financing systems
• stewardship through steering and governance at all levels

By studying the health system, we gain a tool for analysing how the resources that are allocated to improving public health are actually used. It is important to look at how the various functions in the system work individually and in combination, and the extent to which defined objectives are achieved.

The Norwegian health system is instrumental in improving people’s health. However, it is not possible to draw a clear-cut distinction between the contribution of prevention versus treatment. Education, income, employment and health behaviour also influence people’s health.

The good health of the population is conducive to economic growth and increased prosperity. Prosperity provides the means for strengthening the health system and

---

1 See Chapter 1.
thereby improves public health. Prosperity also provides a means of improving welfare. Vast resources are used in the health sector. To be able to evaluate the benefit of how health sector resources are used in future, the effects on health of both preventive measures and treatments must be documented.

One of the goals of the health system is to achieve good and equitable distribution of health by raising up the most disadvantaged members of society. At the same time, the system must adapt continually to changes in the pattern of disease. One of the great challenges faced is currently the prevalence of chronic diseases in the population. In this report, this is illustrated by directing special attention at patients with diabetes and schizophrenia. Such patients have a need for long-term and coordinated services as regards prevention, treatment and rehabilitation alike. In order to support coordination in the health sector and cooperation with other sectors, there is a need for greater attention to coherent management and governance including financing schemes, the distribution of resources and service delivery.

The 2008 trend report – “Health creates welfare – the role of the health system in Norwegian society” carries the following main messages:

- **Primary health care must be improved**

Primary health care must be the foundation for the Norwegian health system.

In terms of tasks and responsibilities, there is currently a need to intensify and target efforts in primary health care. Discounting nursing and care, less than fifteen per cent of total health service expenditure and less than a quarter of the expenditure on specialist health care is spent on primary health care. This expenditure ratio has been relatively stable in recent decades. At the same time, health service expenditure has doubled over the same period. Since 1990, the number of medical full-time equivalents has increased by

---

### Health system functions

- Service delivery
- Generation of resources (investment and training)
- Establishment and refinement of financing systems
- Stewardship through steering and governance at all levels

### Health system goals

- Good health (level and equality)
- Responsiveness (to people’s non-medical expectations)
- Financial protection (and equitable distribution of health expenditure)


---

2 See Chapter 3.
42 per cent in primary health care and by 93 per cent in specialist health care. The share for primary medical care has fallen from 35 to 28 per cent over the same period.

The largest group of patients is made up of people with one or more chronic diseases or disorders. The prediction is that this group is set to increase in size and place further demands on the health system as regards quantity and quality among both elderly and young patients. The demographic trend for increasing numbers of elderly persons and fewer persons of working age will intensify this challenge in relation to both medical and nursing professionals in primary health care in the years ahead. It is important to establish good services at the lowest effective level of care. There is currently a shortage of capacity within the regular general practitioner scheme, the result of which is a quality deficiency throughout the health service in interaction with other parts of the service.

In the nursing and care services, the health authorities have already implemented important measures to meet the challenges. As set out in Report to the Storting no. 25 (2005–2006) on future challenges in care, nursing and care services must be given priority in respect of capacity, quality and competence building.

Discounting nursing and care, primary health care faces many of the same challenges. Good preventive health work starts with good maternity care. Prevention and health-promotion work aimed at children and young people must be given priority in order to stem the increase in patients with chronic diseases and to ensure good health for the future. Patients need coordinated primary health care. The district medical officer’s role as a medicoprofessional advisor must be strengthened. The role of the regular general practitioner in practical interaction between different municipal support services and between levels in the health service, including the role of gatekeeper, is crucial.

Taking primary health care as its point of departure, the Directorate of Health recommends a detailed review of the capacity of the health system to cater for patients with chronic diseases, complex disorders and long-term needs.

- Public health work must be given priority
The health system is highly significant for public health, but health is also produced within, and in collaboration with, sectors other than the health sector. Education, employment, living conditions and health behaviour also influence the social distribution of health. Considerable social disparities in health persist even in Norway. A key role for the health authorities – as steward of the health system – is to drive cross-sectoral cooperation in order to promote good health and prevent disease for the whole population, irrespective of social status.

The extent to which the health authorities themselves should play a leading role in cross-sectoral work should be assessed in respect of two factors: 1) knowledge of causes and effective measures and 2) whether the health system itself exercises control over the measures to be implemented. It can be helpful to consider three approaches to this: through a role as leader;
as primus motor and negotiator or as primus motor and partner.

The Directorate of Health regards it as essential to ascertain which instruments, including financial instruments, incentivise cross-sectoral partnerships in public health work.

The demographic trend must be taken seriously

Over the coming decades, the relationship between age groups in the population is set to change appreciably. The potential support ratio (PSR), that is, the number of people of working age per one older person aged 67 will be reduced considerably. At present in Norway, there are around 5 people of working age per pensioner. In thirty years there will be around 2.5. This means that there will be half as many to provide services, including nursing and care, to the same number of elderly persons. The patient group with chronic disorders is growing. In addition, nursing and care is highly labour-intensive. In order to deal with this challenge without draining support capacity from the health systems of other countries, it is important, and in line with Report to the Storting No. 1 (2006–2007), that we cover national needs with our own national labour. This makes great demands on how we use resources and plan our education and training capacity.

Two interministerial working groups have recently been appointed to examine over the course of 2008 how Norway can meet the demographic challenge while being responsible internationally.

How then are we to enable our health system to prioritise resources, influence other sectors and meet the demographic challenge outlined above? There are no ready answers to this question. However, one important success criterion is a robust stewardship function. As stewards of the health system, the democratically elected leaders and the health authorities must exercise coherent governance, including dependable priority-setting and coordination at all levels.

In order to ensure coherent governance, there is a need for good decision-making support: representative analyses based on reliable data and information.

Much information is available on the health service in Norway. Statistics Norway, the Norwegian Board of Health Supervision, the Directorate of Health, the Regional Health Authorities, the Norwegian Register of Patients, other medical registers, individual hospitals and municipalities are just some of the bodies that have data available. The 2007 follow-up report to the National Strategy for Quality Improvement in Health and Social Services (2007–2015) on translating the vision into action recommends that data registration and collection be coordinated. The Ministry of Health and Care Services, the Directorate of Health and the Norwegian Institute of Public Health have the joint aim of turning data into useful information. The coordination of these types of projects is important in ensuring that the information they yield is as accurate and coherent as possible as a decision-support and governance tool.

***

3 See Chapter 1.
Introduction

A number of factors contribute to health: education, physical activity, food and drink, income and road safety, indoor climate, external environment, place of abode, health services and preventive measures. Individual choices and political priorities influence these factors. A great many of them influence each other – both within and outside of the Norwegian health system.

But what constitutes a health system? What are its functions, and how do the different functions interact? What goals exist for a health system? What effect does the health system have on public health? How do the health system and public health contribute to the prosperity of society? Which elements of the system could be improved?

We believe these are vital questions, yet there are no ready answers available. Our aim for this report is not to provide exhaustive answers, but to attempt to go some way towards resolving these issues.

Why introduce the health system concept?
We are already familiar with the terms health service and health sector. Why then introduce a new term that apparently denotes more or less the same concept? A health system however is a more comprehensive term than either service or sector. It also comprises interfaces with other sectors. In addition, the system concept introduced here defines the different functions and goals of a system, based on WHO definitions.

The health system approach thus offers a useful tool for achieving an oversight of all the elements of society that influence public health – as opposed to only the design of health policy and health services. This serves to shed light on correlations within and between sectors, to point up strengths and weaknesses in service provision and between the different elements of the health system.

World Health Report 2000, “Health Systems: Improving Performance” presented the following main conclusions concerning national health systems:

- Responsibility for a country’s health system lies with government. The responsible management of the well-being of the population – stewardship – is the very essence of good government. The health of people is a national priority.
- Health systems should not only improve people’s health, but protect them against the financial costs of illness.
- Many health ministries focus on the public sector often disregarding the – frequently much larger – private finance and provision of care. A growing challenge is for governments to harness the energies of the private and voluntary sectors in improving health systems while offsetting the failures of private markets.
- Stewardship is ultimately concerned with oversight of the entire system, avoiding tunnel vision and the turning of a blind eye to a system’s failings.

World Health Report 2000 also indicated the importance of addressing bottlenecks and fai-
lures in order to continually improve the health system. In order to achieve this as effectively as possible, control must be exercised at the national level, based on priorities laid down in comprehensive national health plans.

**Scope for improvement**

Although Norway has a relatively effective health system, there is scope for improvement – as is revealed by the National Health Plan and previous reports from the Directorate of Health. Better priority-setting in the health and care sector, increased cooperation between sectors and the need for a oversight of and interaction with the health sector in order to guarantee the best possible provisions for patients and users are key factors in achieving optimum efficiency for the health system.

Chapter 1 introduces the health system as a concept, its constituent elements, its functions and the goals which the system is to contribute to achieving. We also describe these functions and refer to the goal for-

---

**Figure 0.1** Correlation between the health system, health and prosperity.

Source: Based on material from WHO Euro

The figure illustrates that the health system influences the population’s health. Furthermore, the population’s health influences the prosperity of the nation. Prosperity in turn is the foundation for creation of a robust health system. The figure is also used to convey that the resources a country uses for health should be regarded as an investment rather than as an expense. A population that enjoys good health contributes to increased prosperity. The health system, health and prosperity, severally and individually, have the potential to improve quality of life.
mulations in the Norwegian system. The Norwegian health system consists by and large of public-sector service providers, and is publicly financed through taxes. We do not discuss other models involving private-sector providers or other forms of financing such as insurance-based systems.

Chapter 2 looks at the health system as one out of several key health determinants and seeks to illustrate the effect of the system on the population’s health. Here we ask: Does the health system contribute to improved public health? To what extent do other factors influence people’s health?

Chapter 3 deals with the correlation between people’s state of health and increased prosperity in society, together with the correlation between a country’s prosperity and its health system. Here we ask: What is the correlation between health and prosperity? How does improved health create a basis for improved economic growth? Is there a connection between the health system and increased prosperity? To what extent is the Norwegian health system laying the foundation for the Norwegian welfare society?

Chapter 4 analyses segments of the Norwegian health system and areas with potential for improvement. Here we present patient case histories for two groups of chronic disorders: patients with diabetes type 2 and patients diagnosed with schizophrenia. Examining these patient groups allows us to examine different stages in patient care, including the interaction between service levels and cooperation with other sectors. This then allows us to reveal and illustrate failings in the system.

Why have we chosen people with chronic illnesses to illustrate failings in the system? We often rate the effectiveness of the health service in terms of a single diagnosis — and often at only a single level of administration. People with chronic illness and especially those in the two groups selected here — diabetes patients and schizophrenics are often diagnosed with multiple conditions. Moreover, they are dependent on the interaction of different parts of the system — and cooperation with other sectors. This is the reason for selecting people with chronic illnesses.

The report is not an exhaustive account of the challenges associated with the health system. The choice of examples from individual groups of chronically ill persons imposes an obvious limitation. However, we believe that the report elucidates key challenges and potentials in the Norwegian health system.

“Stewardship is ultimately concerned with oversight of the entire system, avoiding tunnel vision and the turning of a blind eye to a system’s failings.”
“Environmental, poverty and health issues are having a deep impact on our perception of reality and on how domestic and foreign policies are formulated. The scope of the challenges in all these three areas and the links between them require new political analysis and bold action.

My main message to you is that we can achieve real results if we can break through the boundaries between different sectors.

We see a need to communicate beyond the domains of health ministers, medical institutions and the medical establishment as a whole.”

Minister of Foreign Affairs Jonas Gahr Støre, State of the Planet Conference, New York, 27 March 2008
When readers of the British Medical Journal (BMJ) were asked to vote on a shortlist of the greatest medical advances since the BMJ was first published in 1840, first place went to public sanitation and an understanding of the value of clean water provision and the removal of refuse and sewage. Although the BMJ readership may not necessarily be absolute arbiters, this would seem to indicate that public health is dependent on an integrated and broad perspective with coordinated health interventions in several areas of society.

«Politics is nothing but medicine writ large»
Rudolf Virchow (1821–1902) – German doctor, politician, anthropologist and public health activist. Credited with the founding of social medicine.
1.1 Definition of a health system

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (2).

A system (from the Greek: organised whole) is a set or assemblage of objects or components that are associated or intended to interact according to some scheme or plan. In sociology and political science, the system concept is applied to describe relationships that are more permanent than social patterns or structures, yet not necessarily as immutable as certain systems governed by nature (3).

The World Health Organization (WHO) defined a health system in its World Health Report 2000 as including: “all the activities whose primary purpose is to promote, restore or maintain health.” This definition has since been refined and amplified: “Being more specific, a system needs to be understood as an arrangement of parts and their interconnections that come together for a purpose. Consequently a health system is defined as the ensemble of all organizations, institutions and resources that are devoted to producing health actions – these being defined as “any effort, whether in personal health care, public health services or through inter-sectoral initiatives, whose primary purpose is to improve health”. The definition is endorsed by the World Bank, and is included in WHO EURO’s report “Next phase of the WHO Regional Office for Europe’s Country Strategy: Strengthening health systems” (5).

1.2 WHO goals and functions for a health system

WHO defines three main goals for the ideal health system, attributing to it four fundamental functions

- Good health

The goal of good health embraces both the level of the state of health and the equitable distribution of good health in the population.
Figure 1.1 System, sector, service, other sectors. The health system comprises the health care sector and health authorities and health services (prevention, primary health care and specialist health care) and exists for people. In addition, the health system concept comprises cooperation with other sectors that also affect public health. The other sectors have been selected as examples. Source: Directorate of Health, 2008

- **Responsiveness**
  The goal of responsiveness means the ability to listen, to be receptive to necessary changes and to change course, including in response to the patients’ non-medical expectations. The patient is an important partner.

- **Financial protection**
  This goal entails that everyone is to have equal access, in financial terms, to necessary health assistance. No matter how much a patient demands, no out-of-pocket expense or other form of financial outlay shall have the effect of restricting demand if a genuine need exists.

The four essential functions of a health system are:
- service delivery
- generation of resources
- establishment and refinement of financing systems
- stewardship through governance, steering and coordination. In Norway, the health authorities are the stewards of the health system.

The following seeks to place the Norwegian health system, insofar as it is possible, within the WHO model. WHO bases its description
on theory, while our description of the Norwegian system by and large reflects its actual structure. A systematic analysis of the divergences between the WHO model and the actual Norwegian conditions is not presented in this report. (See Fig. 1.2)

1.3 Functions in the Norwegian health system

1.3.1 Service delivery
The most important function of the health system is to provide services in both prevention and treatment. The Norwegian health system provides such services through its specialist and primary health care, in addition to the more wide-ranging public health work comprising monitoring, supervision, prevention and control of diseases, together with health promotion activities. One key task for the health system is also to ensure that the services are accessible to those who require them.

Public health work
Public health work consists of interventions tailored to the health of the population at national level and comprises a number of activities and services aimed at all or parts of the population. The national state of health varies between the sexes, social classes, ethnic groups and geographical regions. This imposes exacting requirements on the organisation of public health work. In accordance with “The Challenge of the Gradient” (7) and Report no. 20 to the Storting (2006–2007) National strategy to reduce social inequalities in health (8), the Directorate of Health has a special focus on reducing social health differences. The health of any population is affected by the conditions under which people live (see

Figure 1.2 Based on definitions in “Next phase of the WHO Regional Office for Europe’s Country Strategy: Strengthening health systems”, WHO, 2005
Figure 1.3). Their options for keeping physically active will, for example, be improved by designated footpaths in their neighbourhood, and bicycle lanes. Such framework conditions are influenced by a large number of social sectors at different levels, and these sectors must continually make choices in respect of the priority given to interventions within each sector that to a greater or lesser degree are health promoting.

The main factors affecting the health of the individual include accidents, stress, nutrition, physical activity, substance abuse, tobacco dependency and social networks. These factors are in turn impacted by underlying determinants such as education, living conditions, occupational health and safety, employment and external environmental factors such as air pollution, noise, environmental toxins, etc. Although the health system does not per se control these factors, by virtue of its stewardship role, it has a responsibility for initiating cooperation with other sectors (see 1.3.4 for a discussion of stewardship).

From a health system perspective, creating conditions conducive to maintaining personal health is defined as a societal obligation. For centuries, the health sector has been assigned and has assumed a wider responsibility beyond that of merely treating patients. Two main approaches have been, and remain, important:

First, the health system has offered preventive health services to inhibit or limit the incidence of diseases. Vaccination and various types of screening are typical intervention areas of crucial importance.

Second, the health system impacts other social sectors. A hundred years ago, the most important interventions were clean drinking water and other sanitary measures. Today, individual factors such as a lack of social networks, and lifestyle choices, are increasingly significant. Nonetheless, the health system’s responsibility for ensuring that health factors are taken into account in decisions in other social sectors still prevails. The National Health Plan for Norway (2007–2010) emphasises
that, within the health sector, national and municipal authorities are responsible for:

- monitoring the health situation and spread of disease, and the factors that influence these
- developing knowledge about causal relationships and contributing to the development of methods and intersectoral tools
- helping to ensure that society as a whole is working effectively to protect and promote health

This responsibility applies at all levels of society. But Norwegian legislation emphasises that the main responsibility is lodged with the municipal level. At both regional and national levels, the lodging of public health work is determined by political and economic priorities and decisions. In order to achieve predictability beyond a single budgetary year, the Directorate of Health emphasises the importance of incorporating public health work in county and municipal master plans, respectively (10). The Helse i plan (Health in Master Plans) project, seeks to apply the Norwegian Planning and Building Act as an instrument for coordination of health factor concerns in societal planning. Similarly, at the national level, the various ‘master plans’ serve to promote continuity and a long-term focus.

The health sector’s organisation of public health work is constantly changing. To some extent, this may be seen to be linked to changes in the particular challenges posed by public health.

In 2002, the Directorate of Health was established in order to achieve a more coherent approach to public health work; as a dynamic change agent vis-à-vis other ministries and sectors, providing impetus for the implementation of national public health policy. The Norwegian Food Safety Authority plays a similar role in health care administration in respect of food safety, and the Norwegian Radiation Protection Authority in respect of radiation hazards. The Norwegian Institute of Public Health and the Norwegian Institute for Alcohol and Drug Research are important research and analysis environments within the central health administration, with a keen focus on public health issues.

Responsibility for public health work is distributed among a number of actors at county level. One such, the county governor, the government official representing the senior civil authority in a county, has responsibility, in addition to monitoring and supervisory duties, for implementing national public health drives and for acting as a primus motor for public health work at county and municipal level. The Norwegian Food Safety Authority has a similar responsibility for food safety. There are a total of 7 regional knowledge centres on alcohol and drug-related issues, and these are responsible vis-à-vis the municipalities in their region for following up on alcohol and drug dependency prevention work.

**Example of cross-sectoral planning:**

The Helse i plan (Health in Master Plans) project, seeks to apply the Norwegian Planning and Building Act as an instrument for coordination of health factor concerns in societal planning.
In White Paper no. 16 (2002-2003) Prescriptions for a Healthier Norway (11), the Norwegian county administration, as regional development actors and as regional planning authorities, were urged to become prime movers in regional and local public health work. Cooperation with regional governmental organisations, including the regional health authorities, the university colleges and universities, voluntary organisations and the private sector has been operationalised through so-called “partnerships for public health”. One key aim of these was to give impetus to work on a community basis, embedded in local democracy. As of 2007, all the counties and more than half of the municipalities are included in this initiative.

One crucial element in overall public health work is the municipal level. At this level also, the work has to be coordinated across sectors and include initiatives for schools, culture and community development. In order to achieve this, it is essential that the municipal health service is an active proponent and primus motor.

**Primary health care**

The Alma Ata Declaration of 1978 (12) concerning primary health care is founded on the ideal of health as a fundamental human
right, and can be said to have given greater prominence to primary health care. The declaration placed great emphasis on what the users of health care services themselves were saying; that health care services should be designed to give all people affordable access to them. The users of the services were not to be regarded as objects, but as important discussion and cooperation partners. Those with the greatest need were to be given assistance, regardless of their rank and general status in society. These principles have also been key to efforts to develop effective primary health care in Norway. Internationally, the Alma Ata Declaration has received renewed attention in connection with its 30th anniversary.

In keeping with the established system of municipal autonomy in Norway, the Municipal Health Services Act of 19 November 1982 instructs the municipalities to establish a number of health services, including: general medical services (including the regular general practitioner RGP scheme), out-of-hours medical care, physiotherapy service, health visiting service, domiciliary nursing service, midwifery service and nursing homes.

Under the Municipal Health Services Act (Sections 1–2), “Through its health service, the municipality shall promote public health and well-being and good social and environmental conditions, and seek to prevent and to treat illness, injuries and physical defects. It shall spread information concerning and increase interest in what individuals themselves and the general public can do to promote their own well-being and health and public health”. Primary health care is the foundation of the Norwegian health system. The Act specifies the following duties above all others (Sections 1–3): environmental health protection; family health services; schools health services and informative activities. These are followed by duties such as diagnosis, treatment and medical rehabilitation. This then was the essential structure of the Norwegian health system conceived by the legislators; with a focus on health promotion and disease prevention measures throughout society, in both the public and the private sector.

The care services consist of institutional care services and domiciliary nursing and care services. In 2005, these services accounted for 110,000 man-years of work, of

“The users of the services were not to be regarded as objects, but as important discussion and cooperation partners.”

Alma Ata Declaration, 1978

Activity in the RGP scheme

According to a NAV – Norwegian Labour and Welfare Organisation report from April 2007 on activities at general medical practices, in 2006, the regular GP (RGP) scheme undertook almost 11.6 million ordinary consultations and more than 92,000 domiciliary visits. Out-of-hours medical care, which is closely linked with the RGP scheme, undertook an additional 1.3 million ordinary consultations and 97,000 domiciliary visits. This gives a total of approx. 13 million consultations of various types within the municipal health services (13).
Activity trend in nursing and care services 2002-2006

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Places in institutions</td>
<td>42,319</td>
<td>41,718</td>
<td>41,402</td>
<td>41,027</td>
<td>41,078</td>
</tr>
<tr>
<td>Residents of institutions</td>
<td>41,635</td>
<td>41,013</td>
<td>40,985</td>
<td>40,719</td>
<td>40,537</td>
</tr>
<tr>
<td>Recipients of home care services</td>
<td>162,112</td>
<td>161,094</td>
<td>163,415</td>
<td>164,623</td>
<td>171,226</td>
</tr>
</tbody>
</table>

Table 1.1 While there has been an increase of around six per cent in the number of persons receiving home care services, there has been a negligible decline in the number of places and residents in institutions. Source: Statistics Norway

Upgraded hospitals

Trials in Trondheim indicate that upgraded hospitals are better at treating geriatric patients with multiple co-existing conditions than the highly specialised hospital departments (14).

which half were performed in the domiciliary care institutions and approximately 200,000 users received home care services. Over the past 20 years, the municipalities have been charged with larger undertakings that were formerly lodged with the specialist health services. In addition, the specialist health services have changed, with hospital admissions now reduced and much of the treatment provided as outpatient care.

These changes entail high competency requirements owing to the need for follow-up and after-care from the municipal health and care services. Expenditure on care services accounts for approximately one third of municipal budgets. The Government’s objective is to establish 10,000 new man-years of work by the year 2015, and to extend professional competencies.

In most municipalities, the district medical officer is employed on a part-time basis as the municipality’s medicoprofessional adviser, and is charged with duties primarily in environmental health protection, in preventing the spread of infectious disease and in health-related emergency preparedness.

Most nursing homes offer long-stay places, short-stay places and sheltered tenancies. Persons admitted to a nursing home are often severely afflicted by multiple co-existing diseases and the requirements for medical supervision and 24-hour nursing care are comprehensive. Approximately 80 per cent of nursing-home residents have advanced dementia.

Municipal residential care housing units are placed at the disposal of the municipalities for nursing and care purposes. These are assigned to persons with varying needs for health and care services. Those who are assigned a unit sign a tenancy agreement, pay rent and retain the same rights they would hold as residents in their own homes. The tenant then receives...
home care services as required. The general medical care service for these municipal care tenants is provided by the regular general practitioner (RGP). The aim is for all citizens to manage to live in adapted accommodation, and to receive individualised services, even in greatly ailing health.

Domiciliary care services have evolved rapidly over the last 25 years, and currently account for around half of the total annual man-hours performed by the care services. The number of users has been reduced, but the measures instituted for those users have become more comprehensive in terms of both nursing and medical care.

The municipality is required to offer pregnant women maternity care via the local maternal and child health centre, and to arrange for midwifery services. The maternal and child health centres and schools health services are to have routines in place for cooperation with the RGPs (Section 2–1 of the Municipal Health Services Act).

The maternal and child health centres and schools health services are free-of-charge and readily accessible, low-threshold provisions that play a key role in disease-prevention and health-promotion programmes for pregnant women, children and the under-20s. The follow-up provided by health visitors through home visits and health checks provides good contact and ensures good cooperation between the health service and parents. The maternal and child health centres are greatly appreciated by citizens, and have resulted in highly successful child vaccination programmes. The frequent and close contact these centres maintain with children, young people and their parents provides a unique basis for following up and cooperating on the conditions under which children are raised. It offers a means of preventing and detecting disease, disabilities and neglect. It is well documented that the benefits of health promotion and prevention work are significant as compared with the costs of later interventions.

The municipalities have not prioritised interventions at schools to the same extent. In Report no. 20 to the Storting (2006–2007) National strategy to reduce social inequalities in health (8), the Government states its support for enhancement and improvements to the schools health service in order to reduce social inequalities.

Besides the schools health service, by law, the under-20s are to have access to a youth health centre service. At both schools and youth health centres, children and adolescents, individually and in groups, are provided with free advice and counselling on mental, physical and social health problems. In 2005, 70 per cent of the municipalities were running youth health centres. This represented a strong increase since year 2000 when only 40 per cent of the municipalities were offering such services. Those lacking
youth health centre provisions are the less well-populated municipalities.

‘Familiens hus’ is a community-based family centre aimed at parents and children. Core activities include the local family health centre including maternity care and an open nursery school. In addition, staff at the centre usually include a family counsellor, child welfare officer, a representative of PPT – the pedagogical and psychological advisory service, and a psychologist. ‘Familiens hus’ is based on existing municipal programmes, and the object is to provide an integrated and coordinated service facility for children, adolescents and their families.

The Escalation Plan for Mental Health Care and restructuring of the mental health care services with District Psychiatric Centres have strengthened work on mental health care. A recently conducted survey published in 2006 (15) indicates that 90 per cent of the 271 municipalities that completed the survey questionnaire are engaged in mental health care activities within a separate unit or dedicated service.

In the other services, the extent to which they are under municipal supervision varies. The general medical services are a municipal responsibility in spite of the fact that GPs are largely self-employed. They receive a per capita subsidy for their practice from the municipality but are accorded extensive scope of action.

All residents of a municipality have the right to be attended to by a regular general practitioner (RGP) through the RGP scheme established on 1 June 2001. 92% of RGPs own their own practice, and have employer liability for their staff.

Financing is secured through partial fee-for-service payments from patients, reimbursements from the state and a practice grant from the municipality. To date, RGP reporting on their service provision to the municipality is not widespread. The municipality can require an RGP to engage in public-sector general medical duties for up to 7.5 hours/week. This might include providing medical care at nursing homes, maternal and child health centres, the schools health service or prisons health service. This entitles RGPs to a proportional reduction in the patients on their books. The municipalities organise emergency medical care during surgery hours and an out-of-hours service outside surgery hours (i.e. after 4.00 pm) RGPs are responsible for covering their own out-of-hours duty sessions. Nowadays, half of all out-of-hours duty sessions are however covered by locums.

The municipality is required to provide all persons residing permanently or staying temporarily in the municipality with health care services as defined in the Municipal Health Services Act, irrespective of age, diagnosis, finances, social status or other circumstances.

Physiotherapists are either permanently employed by the municipality or have a practice contract with the municipality. Curative physiotherapy services are state-subsidised. The municipality receives a fixed-pay subsidy from the state as compensation for the curative treatment provided by permanently employed physiotherapists. Private-practice physiotherapists with a municipal practice grant invoice the state for treatment sessions qualifying for reimbursement. Physiotherapists with a practice contract provide treatment at their own premises to individuals and groups. Municipally employed phy-
siotherapists tend to give priority to users in need of rehabilitation therapy, house-bound elderly persons, nursing home residents and children and adolescents with habilitation needs, in addition to preventive work.

Dental health care

Dental health care consists of the public-sector dental health service under the county administration, and a private sector. The public sector is required to make provisions for outreach prevention and treatment for priority groups in the population as laid down in the Dental Health Services Act. This is financed by public-sector funding.

Certain patient groups with defined oral cavity diagnoses and conditions qualify for reimbursement of all or part of their dental treatment through the national insurance scheme.

Three-quarters of all dentists work in the private sector. There is a free right of establishment and free fee-setting in the private dentistry sector. Reimbursements from the national insurance scheme make up a small proportion of the basic income earned by general dentists.

Norwegian dental health care has a tradition for preventive work, and the commonest oral diseases can to a great extent be prevented by correct diet and oral hygiene. Combined with factors such as the increase in the standard of living and level of education in the population, Norwegian dental health care initiatives in the field of health promotion have served to improve oral health. Many of the factors that predispose people to general disease, such as inappropriate diet, smoking and stress, can also result in disease in the teeth and surrounding tissue. It is therefore important for prevention in the field of dentistry to be integrated with general public health work, and for the dental health services to continue to provide individual clinic-based consultations.

Specialist health care

In 1975, the county authorities took over responsibility for running hospitals. County health plans were then drawn up for the segments of the health service for which the county authorities were now responsible. As of 2002, the hospitals have been organised

---

**Table 1.2** The table illustrates the activity trend in Norwegian specialist health care overall in the last five years. Bed days/bed-occupancy days increased by around 4 per cent, while outpatients’ consultations and day treatment saw a heavy increase of 28 per cent and 19 per cent, respectively. Source: Statistics Norway/Norwegian Patient Register

1 The main source is data from the Norwegian Patient Register (NPR). In addition, Statistics Norway obtained figures for outpatient consultations at private hospitals without a public-sector service contract for 2002 and 2003 of 34,679 and 34,792 consultations, respectively. Figures were not obtained for 2004.

2 No data are available on the number of discharges from institutions providing specialist multidisciplinary drug and alcohol detoxification and rehabilitation for 2004.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed days/bed-occupancy days in 1,000s</td>
<td>6,918</td>
<td>6,920</td>
<td>7,220</td>
<td>7,286</td>
<td>7,127</td>
</tr>
<tr>
<td>Outpatient consultations in 1,000s¹</td>
<td>3,993</td>
<td>4,378</td>
<td>4,568</td>
<td>4,848</td>
<td>5,101</td>
</tr>
<tr>
<td>Day treatment/daytime occupancy in 1,000s</td>
<td>584</td>
<td>263</td>
<td>2,648</td>
<td>679</td>
<td>693</td>
</tr>
</tbody>
</table>

---
Figure 1.5 Overview of the organisational structure of the regional health authorities, the health enterprises and the hospitals. Source: Ministry of Health and Care Services

as state-owned health enterprises.

The state ownership and authority structure is based on a combination of national policy design, general governance and empowerment of the hospitals. Specialist health care is to be subject to overarching policy, professionally run and characterised by transparency and involvement. The reform was to entail a comprehensive reform of organisation and responsibilities, with a clear division of remits and roles to permit continued political control. Equally, the aim was to create conditions conducive to the autonomy of the operating enterprises.

Through special regulatory documents issued annually by the Ministry of Health and Care Services to the regional health authorities, and meetings with the authorities, health-policy steering notices, grants and conditions applicable to allocations are communicated.

The ownership division of the Ministry of Health and Care Services exercises corporate governance, while the Minister of Health and Care Services constitutes the annual general meeting. Both the four regional health authorities and the local health enterprises have the status of their own legal personality, with their own boards. These boards have comprehensive and supreme responsibility as supervisory, strategy-laying and decision-making bodies.

The specialist health service is charged with diagnosis, treatment and patient follow-up. The specialist health service deals with the health service undertakings that require expertise and resources beyond the capability of the municipal health service. The regional health authorities have a special responsibility for ensuring that the specialist health services are engaged in teaching and medical research.

A unified hospital structure with effective
distribution of duties and functions between hospitals, supplemented by district medical centres, wards, psychiatric centres and contract specialists is designed to provide patients with comprehensive specialist health care. The overall public-sector specialist health care provision also includes the private-sector commercial hospitals through contracts with the regional health authorities. The volume of private-sector services retained is exceedingly modest, and in practice there is no difference for patients whether they receive treatment from a public-sector health authority or a private hospital providing treatment under contract.

The public-sector specialist health service is organised into 32 health enterprises in 4 health regions (see Figure 1.5). The specialist health service comprises general and psychiatric hospitals, outpatients’ departments and treatment centres, training and rehabilitation institutions, institutions for specialist multidisciplinary drug and alcohol detoxification and rehabilitation, learning and mastery centres for the chronically ill, prehospital services, private practice specialists and laboratory and radiology services.

The teaching hospitals especially, but also a few other hospitals, have been designated as providers of highly specialised services — as national medical knowledge centres and country-wide functions. The national knowledge centres are required to undertake research, competence building and knowledge dissemination to the whole of the Norwegian health service. The country-wide functions have been established for diseases affecting only a small group of patients, but which require advanced specialist expertise and particularly costly medicotechnical equipment.

Access to emergency facilities is essential for the nation’s safety and security. The emergency medical chain comprises the emergency health communication system, municipal out-of-hours medical care, the ambulance services (air, land, sea rescue) and the hospital accident and emergency departments.

“Human Resources for Health is the human face of any health system”

Lincoln C. Chen, Chair of GHWA, Kampala, March 2008

Private practitioners exist within both primary health care and specialist health care. Their activities range from basic surgery to complex nursing and care services. However, they are all subject to the authorities’ supervision.

Emergency preparedness

The emergency preparedness system in Norway is regulated according to the so-called sector responsibility principle whereby each designated organisation is responsible for emergency planning and dealing with emergencies in the domain for which they are responsible. For any crisis to be handled at national level, the response will be coordinated by the Government’s crisis committee, which consists of the secretaries general of the five most important ministries for purposes of emergency preparedness, including the Ministry of Health and Care Services.
Table 1.3 The above table illustrates the trend in resource inputs measured in physician man-years in primary health care and specialist care in the period 1990 to 2006. While the total of physician man-years in specialist health care has almost doubled, the increase in municipal medical care was just under 40 per cent. In this period, the percentage of man-years of care provided by primary care physicians went down by around six percentage points. Source: Statistics Norway

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal medical care</td>
<td>3,016</td>
<td>3,809</td>
<td>4,151</td>
<td>4,281</td>
<td>42%</td>
</tr>
<tr>
<td>Specialist health care</td>
<td>5,722</td>
<td>9,289</td>
<td>9,716</td>
<td>11,040</td>
<td>93%</td>
</tr>
<tr>
<td>Primary care physician</td>
<td>34,5%</td>
<td>29,0%</td>
<td>29,9%</td>
<td>27,9%</td>
<td></td>
</tr>
</tbody>
</table>

The ministry that is most affected will be the executive ministry and will supervise the crisis response, assisted by the other affected ministries. The top-level national health and social affairs emergency plan describes the division of responsibilities and roles among various actors in the sector and sets out guidelines for notification and reporting. The Directorate of Health is mandated to perform executive coordination of the emergency response in Ministry of Health and Care Services domains. The municipalities and regional health authorities have a statutory obligation to draw up emergency plans for their population catchment area.

1.3.2 Generation of resources

The provision of services requires resources and productive inputs. The right investments in essential areas – whether in expertise or infrastructure – are a prerequisite for meeting targets in the health system.

The challenge associated with resources and productive inputs is to achieve a unified plan for generating productive inputs and their mutual distribution in step with new knowledge, technology and methods. This means:

- health professionals in the right place, with sound qualifications and the right expertise mix
- buildings in appropriate locations and necessary investments in equipment and infrastructure
- ensuring reliable, available medicines and correctly used medical equipment

Health professionals are the backbone of any health system – including that of Norway.

RGP scheme costs

In 2006, the aggregate of reimbursements and part fee-for-service payments for the regular GP (RGP) scheme and out-of-hours care amounted to approx. NOK 4.5 billion, of which NOK 3.9 billion was for the RGP scheme. In addition to this, GPs receive a subsidy for each patient on their books. This brings the total cost to just over NOK 6 billion.
They must be well trained, placed at the right location and together make up the right skills profile for performing their assigned tasks. Payroll costs account for more than 60 per cent of the Norwegian health budget. In order to meet demand, cooperation between the health authorities and education and training authorities is vital. Through good governance and wide-ranging cooperation, it is the responsibility of the health authorities to make projections of the scale of demand and to communicate this to the education and training sector, which must then ensure that this demand is met.

Infrastructure such as buildings and installations must be fit-for-purpose in order for health professionals to be able to perform their duties. With the exception of Akershus University Hospital under the South-Eastern Norway Regional Health Authority and St. Olavs Hospital under the Central Norway Regional Health Authority, most of the Norwegian health service building stock was constructed between 1890 and 1910 and in the 1970s and 1980s when treatment methods and medical equipment were quite unlike contemporary standards. A coherent plan and strategy for bringing infrastructure into line with contemporary methods and equipment is the responsibility of the health service administration.

Medical equipment and medicinal products are a prerequisite for the ability of health professionals to perform their duties. It is the responsibility of the health authorities to ensure that the population has access to safe medicines at affordable prices. The instruments available to them are regulatory measures, price-setting policy and reimbursement schemes.

Research into medicinal products, medical equipment and medical techniques is a crucial resource in any health system. The system overseers, that is, the health administration, must facilitate and stimulate research.

1.3.3 Establishment and refinement of financing systems
The financing system must provide adequate financing and good financial incentives for providing everyone with access to preventive programmes, medical treatment, nursing and care services. A good financing system fulfils the objective of financial protection. An efficient financing system ensures that any individual or household need not suffer financial problems in the event of illness.

The financing system determines how funds are mobilised and how they are distributed. Like other functions in the health system, the financing system must underpin the overarching system objectives, that is, good and equitable distribution of health care; responsiveness and financial equity.

The financing system comprises the following:

- Collection of taxes
- Consolidation of revenues
- Allocation of financial resources between services
- Procurement of health services
- Formulation of policy on entitlement to subsidies/benefits/reimbursements

Health creates welfare: The Norwegian health system
The commonest challenges in financing a health system are:

- stable and predictable financing allocations to the system
- ensuring that the level and distribution of funds facilitate the production and the provision of such services as have been prioritised
- set the level of fee-for-service such that no one requiring the services is denied access for financial reasons.

In a Norwegian context, and compared with the situation in a number of other countries, these challenges may seem negligible. The Norwegian welfare state is well developed and the financing system is an important

---

**Figure 1.6 Financing flowchart.** The figure shows payment flows between the public/patients and service providers at different levels.

part of it. Nonetheless, we often hear of financing that fails to materialise, services that are discontinued and facilities that cease to function.

The Norwegian health system is funded primarily through taxes and transfers from the state. There is no earmarked health tax and no correlation between individual health risk and costs (with the exception of capped fee-for-service payments). The national insurance scheme guarantees the population of the right to health, care and nursing services in addition to a retirement and disability pension. Among other things, this means free treatment, including medicines at public-sector hospitals. The partial fee-for-service is payable for consultations with RGP’s and specialists, for outpatient care and for certain medications, along with transportation.

The state, counties and municipalities tax citizens, and these tax revenues combined with transfers from the state are what fund Norwegian primary health care. The state-owned regional health authorities, which provide specialist health care, are financed through state transfers (16).

One challenge for Norwegian primary health care is posed by the great intermunicipal differences in revenue and health expenditure, since one of the fundamental principles is the equal right to health care irrespective of place of residence. In order to facilitate this, a revenue equalisation system has been introduced for municipalities and county administrations. This equalisation is effected on the basis of demographics such as the number of inhabitants, population density and age composition.

Since 1997, when activity-based funding was introduced, somatic activity in the hospitals (since 2002 the regional health authorities) has been financed largely by block grants, but also by a variable fraction of activity-based funding. Mental health care is covered in its entirety by block grants, although the Directorate of Health is also investigating the possibility of activity-based funding for components of this activity. The block grant is allocated according to many of the same principles as the transfers to the
municipalities, such as demographic data.

In principle, patients have to pay the full cost of treatment from private-sector service providers. However, in recent years, agreements have been made between the regional health authorities and private-sector providers to provide health care to the population on a par with public-sector service providers. This practice was established to reduce waiting lists, and varies according to demand and the particular government in power.

The figure above shows the trend in resource consumption in the last decade, by specialist health care, primary health care, nursing and care services and other services, including preventive programmes, all of which have basically doubled over the period. Aggregate figures for prevention alone were
not available, but OECD figures indicate that in recent years a stable two per cent per annum of public health care expenditure was spent on prevention. This is somewhat less than in Germany, Finland and Denmark, but slightly higher than in France. We believe that these OECD figures are subject to some uncertainty (17).

1.3.4 Stewardship through governance, steering and coordination

Stewardship in the form of governance, steering and coordination is the responsibility of the health authorities and is intended to ensure coherent management of the health system.

More specifically, the health authorities exercise stewardship over the health system in the sense that they set parameters, enforce laws and rules and stake out a strategic direction for all actors involved.

Stewardship also entails formulating health policy, initiating cross-sectoral cooperation, regulating service provision, securing resources and an efficient financing system, monitoring, and the application of knowledge for health system improvements.

Some of the most important organisational and structural challenges of health system stewardship and governance are:

- to balance the many needs, competing expectations, other determinant factors and requirements, while simultaneously ensuring coordination and cohesion in order to maintain overall perspective and fulfil the principal objectives
- to set clear-cut policy-based priorities, often based on recommendations from the National council for quality improvement and prioritizing in the health services, while keeping in mind the 'bigger picture' of the greater good for society, and getting service providers to implement these priorities
- to ensure that political decisions are made on a well-informed basis
- to undertake the necessary adjustments to prices, education and training capacity, licences and authorisations

The Directorate of Health is an executive directorate and competent authority in the public health and social affairs domain. It is subordinate to, and supervised by, the Ministry of Health and Care Services. The Directorate of Health exercises the role of improving the health of the entire nation through integrated and targeted work across services, sectors and administrative levels. The Directorate advises central and local government authorities, the
health enterprises, voluntary organisations and the general public, and performs tasks associated with quality improvement and priority-setting in the health service. The Directorate’s performances are informed by its role as a sub-ministerial agency, administrator of regulations and executive in the field of health policy.

The Norwegian Institute of Public Health is dedicated to improving the nation’s state of health and quality of life by procuring knowledge, researching factors that impact health, monitoring the national state of health and providing advice and services to authorities, health services and the general public.

The Norwegian Board of Health Supervision supervises and audits health services and social services to ensure conformance with the nation’s need for services and society’s requirements from those services. The Board performs incident-related supervision involving deficiencies in the health services and cases where action is to be taken in respect of health practitioners or health service enterprises.

The Norwegian Medicines Agency, the Norwegian Radiation Protection authority, the Norwegian Scientific Committee for Food

Key responsibilities of the health authorities

Irrespective of the differences in health systems, their tasks are to resolve the challenges of formulating, evaluating and reforming the organisations and the institutions responsible for the system’s four functions:

- Service delivery
- Generation of resources and productive inputs
- Establishment and refinement of financing systems
- Stewardship through governance, steering and coordination

This is the stewardship role of the health authorities (18).

System development

Over the last few decades, a number of administrative interventions have been instrumental in developing the Norwegian health system. These include:

- The Hospitals Act, 1966
- The Municipal Health Services Act, 1984
- The introduction of activity based funding, 1997
- The Escalation Plan for Mental Health Care, 1999–2008
- The Health Personnel Act, 2000
- The Patients’ Rights Act, 2000
- The Mental Health Care Act, 2000
- The Regular General Practitioner (RGP) Scheme, 2001
- The Hospitals Reform, 2002
- The National Health Plan for Norway, 2007–2010
Safety and NPE - The Norwegian System of Compensation to Patients are other important bodies in the central health administration.

The state has delegated to the county governor the responsibility for ensuring equal framework conditions through regulations and financial frameworks. The state is also responsible for supervision and audit.

“The Norwegian Board of Health Supervision supervises and audits health services and social services to ensure conformance with the nation’s needs and society’s requirements.”

The municipalities are responsible for providing satisfactory and appropriate health and social services for all those requiring them, irrespective of age or diagnosis.

The health authorities have a responsibility as stewards of the health system, and also overall responsibility for ensuring that health issues are provided for in other sectors of society. Other sectors of society have an independent responsibility for contributing to the goal of good health. In order to ensure that the health system functions smoothly and achieves its objectives, it is necessary for the health sector to cooperate with other sectors such as the social services sector, transport sector and education sector to ensure that the nation’s health is properly provided for. Another key task for the health services administration is to ensure that policies formulated and implemented in other sectors do not present a risk to human health and do not undermine what is perhaps the most important perspective in our health service — that is, the equality perspective. This is discussed in detail in Chapter 2.

1.4 Goals for the Norwegian health system

The Norwegian health authorities have formulated goals in the National Strategy for Quality Improvement in Health and Social Services and the National Health Plan for Norway (2007–2010).

The aim of the National Strategy for Quality Improvement in Health and Social Services is to have services that (19):

- are safe and secure
- are effective
- are coordinated and integrated
- involve users and allow them to have influence
- utilise resources appropriately
- are available and equally distributed

The six pillars of the National Health Plan for Norway (2007–2010) are (9):

- cohesion and interaction
- democracy and legitimacy
- proximity and security
- stronger user role
- professionalism and quality
- work and health

The six pillars of the Health Plan and the goals set out in the Strategy for Quality are
in keeping with, and support, the World Health Organisation’s three main goals for health systems.

- **Good health**
The WHO goal of good health embodies both the level of health in the population and the distribution of health services. This main goal embraces safe, secure, effective, coordinated, integrated, available and equally distributed services, as prescribed by the Strategy for Quality. The goal of good health implicitly comprises these pillars of the Health Plan: cohesion, interaction, professionalism and quality, together with work and health.

- **Responsiveness**
The WHO goal of responsiveness refers to the ability to adjust course and to be receptive to necessary changes, based on the patients’ expectations, especially as regards perceived quality. How is the quality of health care perceived? Does the patient/user feel properly provided for? Are patient expectations met? Is the user involved and listened to? This main WHO goal is covered by the goals of the Strategy for Quality which prescribes user involvement and influence, democracy, legitimacy, proximity, safety and security, together with the Health Plan’s provision for a stronger user role.

- **Financial protection**
This WHO goal entails that everyone is to have equal access, in financial terms, to necessary health assistance. This is based on fundamental human rights, and the right to equal access to services. No matter how much a patient demands, no out-of-pocket expense or other form of financial outlay (medicines, medical aids) shall have the effect of restricting demand if a genuine need exists.

This WHO goal is reflected in the appropriate utilisation of resources and equal distribution of services laid down by the Strategy for Quality. Proximity and safety and security in the Health Plan also tie in with this main WHO goal.

***

Over the past few decades, the health systems of different countries have been evaluated by various institutions and organisations, including the OECD. Norway comes out of these evaluations extremely well. It would appear that the Norwegian health system to a great extent achieves the main goals of good health, responsiveness and financial protection. It is crucial to build on the strengths of the Norwegian system, while homing in on the weaknesses and challenges that also exist.

Employing a system perspective is one means of seeking to identify those elements of the system and their correlations that hold the greatest improvement potential. This will facilitate coherent analysis and assessment of fundamental structures in the system, which in turn will be instrumental in ensuring that decisions and measures have the intended effect. Our description in Chapter 4 of segments of care for persons with chronic conditions in Norway, seeks to employ this kind of perspective.
For every fifth year that has passed in recent decades, the Norwegian population has gained a year of extended life expectancy. Those with a higher education and higher income gain a larger share of this improvement than those with shorter education and lower income. Improved access to effective health care influenced the mortality rate in the 1980s and 1990s. Employment, education and lifestyle are other key determinants.

“When it comes to teenagers, school-related factors are more significant for their subjective well-being than familial relationships, parental health and own health”.
Messages in this chapter

• From the 1970s onwards especially, the health system has been instrumental in prolonging life expectancy.
• The health system influences the national mortality rate, but it is not possible to draw a clear distinction between the contribution of prevention and that of treatment.
• Social inequality in preventable or treatable morbidity implies a potential for reducing social inequality in mortality.
• Education, employment, living conditions and lifestyle choices affect health. Cross-sectoral efforts to influence these factors are a management, control and stewardship responsibility in the health system. For example: improved social inclusion in schools will contribute to improved public health.
• The health sector uses huge resources in improving public health, but we do not know enough about exactly what health benefits these resources provide. To be able to evaluate the benefit of how health sector resources are used in future, the effects on health of both preventive measures and treatments must be measured. This also applies to other sectors.
• Analyses of avoidable deaths can reveal social inequalities and other weaknesses in the system which can, in turn, be analysed in depth to identify improvement potentials.

2.1 Life expectancy is increasing

For every fifth year that has passed in recent decades, the Norwegian population has gained a year, on average, of extended life expectancy. However, we know that social inequalities in life expectancy in this period have also increased. Those with the most resources in the form of education and income have benefited from a greater share of the increase in life expectancy than those with a shorter education and lower income. The same applies to other health metrics such as mental health (1) and self-perceived health (2).

A growing body of research demonstrates that improvements in access to effective health care had a measurable impact on reduced mortality in the 1980s and 1990s (3).

A large number of studies from different countries reveal systematic differences in avoidable deaths between population groups – for example between men and women, between ethnic groups and socio-economic groups (4). These studies indicate that economic and social factors influence the quality of both health care and health. Assessing temporal trends in avoidable deaths or making comparative studies across countries is a productive method of assessing the availability and quality of services in the broadest sense. However, the answers yielded by this method do not mean that the
main causes in the differences in avoidable mortality are to be found in health care or traditional policy. Differences in morbidity and mortality are attributable to a wide range of influential factors such as differences in living conditions and unequal distribution of resources conducive to a healthy lifestyle.

Among factors extraneous to the health system, health behaviour is readily available for research, which is why this is one of the fields we know a good deal about. Each year, cardiovascular disease and cancer are responsible for 40 per cent and 25 per cent, respectively, of all deaths in Norway. The World Health Organisation (WHO) estimates that 8 in 10 cases of coronary heart disease, 9 in 10 cases of diabetes type 2 and more than 3 in 10 cancer cases could be prevented by changes in diet, physical activity and smoking habits. Risk factors such as hypertension, obesity, physical inactivity and habits relating to alcohol, diet and smoking are therefore key causes of disease and death in Europe. Diabetes will be discussed in more detail in Chapter 4.

These risk factors in turn have their underlying causes. Behaviour follows distinct social patterns and is to a great extent influenced by factors such as education, employment, income and social resources. At the same time, these factors have an independent influence on health. In this chapter, besides examining how the health system affects health, we will be setting out how health behaviour, education, employment and living conditions influence public health.

2.2 The health system’s contribution to the good health of the population

Discussion of the health sector’s contribution to health versus that of other sectors may seem contrived. Health problems essentially arise outside of the health service, but once they have arisen, we need a health service to treat them. It is inconceivable that health promotion and disease prevention efforts by other sectors could be so successful that the health sector could be dispensed with.

 Nonetheless, since the 1970s, there has been ongoing debate concerning the importance of health care for public health. Critics such as Thomas McKeown, Archie Cochrane and Ivan Illich argued that health care played very little part in the health of populations, and that its effects were undocumented and to some extent harmful (5–7). However, McKeown’s arguments were essentially retrospective. Based on the mortality and birth rates in England and Wales up to the 20th century (7, 8), he asserted that the slow population growth prior to the 19th century was attributable to a lack of food, and that subsequently, improved nutrition helped to bring about a population increase. The decline in mortality associated with infectious diseases in Western Europe in the 19th and 20th centuries was a result of improved resistance to infectious diseases because nutri-
tional status had now improved. McKeown maintained that improved hygiene and sanitary measures were of limited significance in this context. The historian Simon Szreter has since criticised McKeown’s hypothesis (9, 10). He asserts that it is imprecise to refer to economic development and “improvements in general living conditions” in this context. From a historical perspective, changes in public health are linked to many different factors that may involve social reforms and interventions (11). Szreter also argues that McKeown’s interpretation of the data is dubious and swayed by a presupposition of the limited value of medical care.

Today there is a general consensus that curative medical interventions indeed played a limited role in the decline in mortality pre-1970. But given the rapid technological advances in medicine that have occurred since that era, it is more than doubtful whether this could still be the case. Morbidity and mortality patterns at population level are constantly changing and it is therefore uncertain whether any generalised explanation of causes can be posited across past eras (12).

**Traits in the demographic trend in Norway**

Figures 2.1–2.3 show the trend in life expectancy in Norway during selected periods from 1860 to 2006. We have examined three ages; birth (0 years), youth (20 years) and 60-year-olds in order to demonstrate the trend over a 140-year period. Here we will be looking closely at the two sexes and the extent to which they followed the same trend.

At the turn of the last century, there was scarcely any difference in life expectancy at birth between the sexes (Figure 2.1). Thirty years earlier, life expectancy for women was approximately 3 years longer, but men caught up later. Over the 20th century, the pattern changed. Life expectancy in women

![Figure 2.1. Life expectancy at birth for selected periods, women and men in Norway. Source: Statistics Norway](image-url)
increased more rapidly than in men and the gap between them increased almost from 0 years at the start of the 20th century to well over 6 years in the 1990s. Not until we reach the twenty-first century do we find a trend towards greater parity. For twenty-year-olds, the difference in life expectancy between the two sexes is slightly less than at birth (Figure 2.2). This reflects the fact that infant mortality and mortality in the first few years of life is
higher among boys than girls. Once again, we find that the disparities increase over the twentieth century until they even out at the turn of the century. In Figure 2.3 we see that the difference in 60-year-old-men’s disfavour is quite modest in the 1800s, and at the turn of the previous century the difference is only a year in extended life expectancy. This difference prevailed until the 1950s, but then changed dramatically, with the difference increasing to almost five years by the end of the century. A closer look at the statistics reveals that men over 40 years of age enjoyed longest life expectancy in 1951–55. We then see a fall lasting almost 40 years until the difference between men and women again begins to diminish. In 2006, there is still more than three years’ difference in 60-year-old men’s and women’s life expectancy.

This discrepancy, which separates Norwegian adult males and females so markedly in the latter half of the previous century, reoccurs in a figure published in Science a few years ago (Figure 2.4) (13). This includes life expectancy at birth for men and women based on statistics from a number of industrialised nations covering the period 1840 to 2000. The trend is almost straight-line, with just two deviations in the 20th century. One of these occurs in 1919–20 when the curve dips sharply, and the second shows a levelling off in men from 1950 to 1980, after which the increase resumes at the same rate as before. The two deviations in the previous century represent the influenza epidemic of 1918 and the epidemic incidence of coronary heart disease in men over 40 especially. In many countries, this started simultaneously in the late 1950s. Everywhere, there were impacts on life expectancy, albeit they were somewhat variable. The striking feature of the curve in Figure 2.4 is that the increase appears constant if we disregard these two dramatic dips. The rate of increase is 0.3 years per annum, meaning that life expectancy is increasing just as much now as it was 100 years ago. This constant increase is surprising since one would expect life expectancy to level off as it reached a kind of “limit”; but perhaps no such limit exists? Or is that limit considerably higher than was previously believed?

The answer to this obviously belongs in the realm of the future, but some indication of that upper limit may be gleaned from a comparison of different countries. Some nations are clearly in the lead, and biologically it is conceivable that we all (globally) should be able, all things being equal, to achieve the same longevity as the best international ‘performers’. A comparison of this kind brings us to our nearest neighbours, but also to countries far remote from Norway in terms of both geography and culture. If we go back to 1845, life expectancy in Sweden was 45 years for women, and we may assume that Sweden at that time was among the nations of the world with the best living conditions. More than 150 years ago, life expectancy in Sweden was 39 years for men, and we may assume that Sweden at that time was among the nations of the world with the best living conditions.
years later, the longest lived in the world are Japanese women, with a life expectancy of 85 years. Until 1950, the improvement in life expectancy was by and large the result of a decreasing mortality rate among younger age groups. After 1950, the increase in the survival rate of the over-65s especially pushed up the average life expectancy. In 1950, a Japanese woman of 65 could expect to live a further 13 years. By year 2000, this had increased to 22 years.

Another way of looking at this is that the probability that she would survive to 100 years of age was 1 in 1,000 in 1950, as opposed to 1 in 20 in year 2000. This example from Japan indicates a great potential for improvement in life expectancy, and we assume that the level attained in Japan is also applicable to other countries. In Japan, two major causes of death changed over the course of the latter half of the twentieth century: stomach cancer and cerebrovascular disease (stroke). The strong decrease in the incidence of both groups of disease has been a contributory factor in extended life expectancy in the elderly. This then begs the question of how large a share of this decrease is due to health care measures and how large a share is attributable to factors beyond the domain of the health system.
“Specific health services within a health system may serve as determinants of public health in line with other factors such as health behaviour and factors in the physical and social environment. In principle, all causal factors will tend to intervene at different stages over the natural course of a disease.”

Avoidable death
Finding sound methods for rating the success with which a health system improves public health presents something of a challenge owing to the complexity of the underlying, contributory factors. One might posit that causes of death for which effective treatment is available might serve as indicators of the effectiveness of a health system at national level. This may then be employed in comparing different population groups defined in terms of their geographical or social affinities. This approach will offer an indication of health system deficiencies, but not necessarily tell us anything where the health system fails most. In the 1970s, a team of researchers at Harvard University, led by Rutstein, presented an approach whereby causes of death that could be avoided through effective and timely treatment were classed together under the concept of avoidable mortality (14). Since the 1970s, a number of researchers have used this term and produced lists of avoidable mortality” (3).

One problem of this concept is that, since it was originally introduced, a number of differing versions of lists of current causes of death have been put forward. This makes it more difficult to distinguish and apply avoidable mortality as a uniform concept in systematic reviews of the literature. Also, which causes of death are definitively avoidable is open to debate. Another problem is interpretation of disease progression, which is affected by advances in treatment and other factors. It may be difficult to distinguish these from each other, especially in studying trends. Gastric ulcer for example is currently a condition that can be treated by effective medication. The decrease in mortality we have seen is however attributable less to medical treatment and more to a decrease in morbidity due to the reduced risk of bacterial infection from Helicobacter pylori (15). Over time, the reasons for a decrease in mortality will therefore differ. The same problem is likely to present itself in the case of hypertension and cerebrovascular disease (causing stroke), where the decrease in the mortality rate for haemorrhagic stroke since 1950 can scarcely be linked to improved medical care, and certainly not pre-1970 (16). After that period, anti-hypertensive drugs will have played a far greater role in decreased mortality. This illustrates the importance of being very precise about which period of time mortality data are interpreted for.

Specific health services within a health system may serve as determinants of public health in line with other factors such as health behaviour and factors in the physical and social environment. In principle, all causal factors will tend to intervene at different stages over the natural course of a disease. It
is conceivable that the nature of the course of a disease prior to diagnosis, treatment and prognosis depends, at both the individual and system levels, on a number of factors at different levels of the health system (3). Access to effective treatment will depend on factors such as: patient waiting lists, level of fee-for-service, referral practices, continuous follow-up and the type of treatment. At system level, where we measure mortality for example, the relative significance of the health system and other environmental factors (such as diet) varies from one disease to the next. For example, we currently have effective treatment for testicular cancer, such that any variation in mortality will therefore be an indicator of failure in the health system. For coronary heart disease, the picture is more complex because the mortality rate for this condition can be linked to both morbidity and medical care (survival).

Attempts have been made to divide the lists of avoidable mortality into causes of death that are amenable to medical intervention and those that are preventable. For different diseases, this kind of delimitation is only to a variable extent feasible and meaningful. This is due not only to the fact that prevention is standard medical practice in the form of treatment for hypertension and cholesterol-lowering drugs. As we have seen for diseases such as gastric ulcer and cardiovascular disease, the distinction between medical intervention and prevention is often blurred.

**An example: cardiovascular mortality**

The dramatic change in life expectancy witnessed in the latter half of the previous century in Norway is attributable largely to the epidemic incidence of coronary disease. The post-war era saw the advent of rapidly increasing cardiovascular disease mortality in the industrialised world, with the exception of Japan. From the 1970s, the trend takes a more favourable turn. This started in the USA perhaps as early as in the late 1960s and then spread to Europe, Australia and New Zealand. A major international survey was conducted to investigate the extent to which this decrease in mortality was ascribable to a genuine decrease in morbidity, coding changes in mortality statistics or to increased survival rates. The survey was initiated under WHO auspices under the acronym MONICA (MONItoring trends and determinants in CArdiovascular disease) (17). MONICA demonstrated significant national differences in attack rates (new cases of the disease and reinfarctions) and changes in mortality. At the time, estimates attributed two-thirds of the decrease in mortality to a decrease in attack rates and a third to improved survival rates. In other words, falling mortality was due to a decrease in both new cases and reinfarctions, as well as improved survival.

The fall in new cases can be attributed to a change in the incidence in the population of causal factors. The changes in known risk factors such as smoking, elevated serum cholesterol level and hypertension accounted for 46 per cent of the fall in attack rates in men and 19 per cent in women. The fall in the number of fatal cases cannot to the same extent be ascribed to changes in these factors. The quality of medical treatment was associated both with the decrease in attack rates and mortality. A full 72 per cent of the decrease in mortality in men and 56 per
cent in women was attributable to the use of state-of-the-art, documented medical and surgical interventions.

From the mid-1980s to the mid-1990s, emergency thrombolytic treatment was introduced together with acetylsalicylic acid, ACE inhibitors and systematic treatment with beta-blockers during hospitalisation. Surgical interventions (cardiac (bypass) surgery, coronary angioplasty) saw an appreciable increase. Of those that die, two-thirds die before reaching hospital, and the majority of those that die in hospital do so within 24 hours. How then can improvements in medical care account for the decrease in mortality? Treatment with acetylsalicylic acid, beta-blockers, ACE inhibitors and statins following acute myocardial infarction (heart attack) results in fewer reinfarctions and deaths. Surgical interventions for coronary disease reduce the risk of fatal and perhaps all non-fatal myocardial infarctions. There is thus much to indicate that medical/surgical interventions have been decisive factors in the fall in cardiovascular mortality since the mid-1980s.

This example describes a specific disease group, but corresponding analyses are possible for several of the major causes of death.

Social inequality and the distribution of health benefits

International studies on socio-economic variations demonstrate consistently that those with limited socio-economic resources have an increased risk of dying of causes amenable to primary health care (4, 19–24). The studies vary somewhat in terms of where and in which period they were conducted, and the type of study design on which they are based. Differing indicators of socio-economic resources have been employed. In a study from Finland covering the period 1980–1986, people in the lowest occupational class had a 5.8 times higher risk of dying from amenable causes than those in the highest occupational class (21). A Swedish study from 1986–1990 however indicates a minor and non-significant variation between those with a manual and non-manual occupation. However, persons outside the labour market were 3.1 to 7.5 times more at risk of dying from these amenable causes (24).

A study from the Netherlands and England/Wales examined the change between socio-economic groups over the period from 1930 to 1980 (25). In England/Wales, mortality from causes amenable to primary health care decreased more rapidly than mortality attributable to all causes, and this decrease was greatest in higher socio-economic groups. One conclusion would be that health care contributed to an increase in social inequality in mortality.

Two Norwegian studies of recent date investigate social inequality and avoidable death (4, 19). One advantage of these is that they comprise the entire Norwegian population (aged between 25 and 74 years) and should therefore be representative. In one of these studies, Hem et al. revealed the risk of death from amenable causes to be 1.5 to 1.6 times higher in groups who had completed only basic schooling compared with those who had received higher (tertiary) education (19). A comparison of amenable with non-amenable causes of death revealed equally great socio-economic differences. In the other
study, causes of death were grouped into indicators of medical treatment (29 diseases), health policy (lung cancer, cirrhosis of the liver and motor vehicle accidents), ischaemic heart disease and other non-amenable diseases (4). In this study an adjustment was also made for registered disability, marital status, unemployment, immigration status and household income. Distinct educational gradients were found between five educational categories. In the adjusted analyses, for those with the shortest education, the risk of dying from diseases amenable to health care was 1 to 4 times higher. For diseases defined as indicators of health policy, the differentials were considerably higher with a 2 to 4 times higher risk in those with the shortest education. The Norwegian studies indicate, using more recent domestic data, that the health service contributes to socio-economic inequality in health.

In Norway, the research has addressed only to a limited extent whether social status is significant for the quality of medical care and subsequent disease progression. One exception however is worthy of note: Øystein Kravdal’s study of cancer-patient survival (26). He found that there are social differences in survival of different, common types of cancer. For individuals with education beyond upper secondary level, the mortality rate is lower than for those in the same patient-category with a lower-level education, even taking into account the severity of the disease. The chances of survival are further improved if we look at individuals with master-level education, who can expect to live more than a year longer after diagnosis than those with only lower-secondary education.

Kravdal points out that the data available to him offered no clear indication of whether differences in host factors such as the co-existence of other diseases, immune response level and lifestyle, or differences in treatment were the main determinants of the survival differentials.

Avoidable death – changes in time and space
Mortality from causes amenable to health care has decreased significantly in the majority of Western nations. The trend has been for a larger decrease in these causes of death than for other causes. The decrease in amenable causes per annum varies from one country to the next but is at 0.1–7.1 per cent (3). Particular attention has been devoted to the major changes in Eastern Europe in the 1990s because they are regarded as especially informative in that they constitute “natural experiments”. One comparison of East and West Germany found a marked acceleration in the annual decrease, from 0.8–1.5 per cent to 3.4–4.9 per cent after German reunification (27). No corresponding results were obtained for Poland, which was interpreted as an indication that health care reforms progressed more slowly there. A study from Russia found a substantial increase in mortality in the 1990s (28). In a very recent study comparing changes from the period 1997/98 to 2002/03 in a number of Western countries, including Norway, the USA was shown to have had only a slight improvement over this period (29). This was associated with the lack of universal design in the American health system. The percentage fall in mortality in the country
was relatively greater for causes of death amenable to health care. The countries were ranked by their percentage fall in mortality, and Norway was among the best for men and at the middle of the tree for women.

2.3 How other factors affect the health of the population

2.3.1 Education and health

When seeking to determine which measures promote health in a developing country, one of the obvious answers is: investment in education. Education for women has resulted in considerably improved health conditions for both adults and children in least developed countries (30). In Norway, the health authorities are committed to seeing daily physical activity, fresh fruit and anti-smoking programmes become part-and-parcel of school life. This then is a measure that contributes to improvements in public health. Because schools are arenas that receive all children and adolescents, these measures will be instrumental in reducing social inequalities in health generally.

In the time ahead, there is a need to direct greater attention at the schools sector’s own objectives for schools and the influence they can exert on health. The concept here is of an inclusive school, where children learn and develop into “useful and independent human beings”, capable of overcoming the challenges that might arise in an increasingly complex existence, at work, in their social life and leisure (Section 1–2, Education Act).

A great deal of research has been done on the links between schools and health. The field is complex and the research is fragmented and carried out by different disciplines. Jon Ivar Elstad of the NOVA research institute was commissioned by the Directorate of Health to carry out a systematic review of preferentially recent Nordic

![Figure 2.5: Mortality rate by longest education attained. Men and women aged 45–64. Deaths per 100,000 per annum. Source: Statistics Norway](image)
“Education affects the individual’s living conditions throughout the course of his or her life, and hence determines what health risk factors or health-promoting conditions that individual is exposed to.”

research in the field presented in the report "Education and health inequalities. Issues and research findings" (our translation of the Norwegian title). The present chapter is based extensively on this report which is due to be published during 2008.

**Education and adult health**

The relationship between education and health is obvious. In the adult segment of the population especially, health is closely linked statistically with the length of people’s education.

The question is then how we may explain these immediately apparent statistical correlations. We can distinguish between three main types of explanation, the first two of which are that education is an important factor and an indirect determinant of health.

*The first main type of explanation* concerns how education affects the individual’s living conditions throughout the course of his or her life, and hence determines what negative health impacts or health-promoting conditions that individual is exposed to. Alternatively, we might say that the significance of education is channelled via factors that exist in a causal chain between education and health, and which exert their effect over time. In that sense, education is an indirect health determinant. Education has for example a great influence on the individual’s career.

In 2005, 76 per cent of those who had received tertiary education, held managerial or academic positions, while just 3 per cent were in manual occupations (men and women; the data for this and below is for age 35–60). Of those with basic schooling as their highest educational attainment, 9 per cent were managers/academics and 49 per cent had manual occupations. The differences in occupation are also associated with inequalities in working environment and job security, and short education entails a greater risk of unemployment and disablement (31).

Both health-related lifestyle and working conditions emerge as intermediate explanatory factors. These factors and other unfortunate health conditions such as a lower standard of living and adversities in life are compounded by shorter education, which may have the effect of intensifying negative health impacts.

*The second main type of explanation* is that education is instrumental in developing mental resources, which influence the individual’s health potential. This embodies a more direct impact from education on health through personal and mental abilities. Education is a form of lasting human capital that instils the ability to seek out information, to assess and synthesise that information and to develop new ideas and apply what is learnt constructively and independently of any scientific or academic discipline (32–36).
The individual’s capacity for mastery is reinforced. Several studies find that education varies according to self-perceived control. A Norwegian study from 2002 (37) found that elements of the educational impact on mental health are mediated through a sense of control, even after adjustment for social support, income and employment status. An American study demonstrated that self-perceived control is a mediating factor even when adjustments were made for work, income and financial problems, social support and health lifestyle (36).

It may be the case that these psychological resources work in such a way that positive learning experiences gained through education strengthen the individual’s mastery resources, improving the ability to tackle stress. Health has a great deal to do with the surplus mental energy needed for dealing with the demands of everyday life. Psychological resources and sense of control may also serve to maintain balance in the body’s physiological and hormonal systems, which in turn provide resistance to disease. In this way, studies indicate that psychological resources developed during education influence health. But there are also studies that find only a limited correlation between education and psychological resources.

A third explanation of the correlation between education and adult health is that the correlation is not a causal connection as such, but rather that health-related circumstances in childhood influence both health in adulthood and the level of education attained by the individual. Several studies have attempted to determine whether social inequality among adults is attributable above all to circumstances in their adult life or whether variations in circumstances in childhood were determinants for health inequalities many decades into the future. A number of Finnish studies (38–41) demonstrate, as a main pattern, that the social inequalities to which adults are exposed have an independent and significant impact on adult health.

In parallel with this, circumstances in childhood also influence adult health. Health status as an adult varies directly depending on family background and the circumstances under which children are raised. A comprehensive study from England and Wales (42) found what it refers to as a causal ‘pathway’ between education and health, but first and foremost an indirect effect which was mediated through sense of control, health lifestyle and own social class at the age of 33. In addition, illness and truancy at age 16 had independent impacts on the health of a 42 year-old. The study also found that education was related both to paternal social class and to the results of aptitude tests at age 7. Other studies also demonstrate a covariation between aptitude testing and educational progress. However, IQ test scores are in themselves partly the result of education and intellectual stimulation (43–45), which then contributes to this covariation.

A number of circumstances in early childhood may have a direct correlation with health in adulthood. However, none of those studies which identify such connections, negates research findings that education has a separate causal connection with subsequent health and health dispa-
rities in adults. Some of the sources of adult health are established at an early age, while others are shaped by the level of educational attainment. However, education in itself and the ballast it provides nonetheless make a significant contribution to the processes that are health-promoting in later years of life.

**Length of education**
The links between education and health raise the question of whether the aim should be to ensure the longest possible education of the population. Researchers who have investigated this find that more than anything it is the significance of having completed a fully rounded course of education that appears to carry health benefits. For those that have already scaled the heights of the education hierarchy, there may not necessarily be more to be gained from additional education. The effect of extended education would appear to be greatest among those with the shortest education (46). In particular, dropping out of school before a basic minimum of education has been received appears to have a negative impact on health (47).

**The significance of schooling for the psychosomatic health of children and adolescents**
Besides being a source of health in adult life, for children and adolescents school is a ‘workplace’ and a factor of significance for their psychosomatic health. When it comes to teenagers, studies indicate that school-related factors are more significant for their subjective well-being than background variables such as familial relationships, parental health and own health. Here we are referring to factors such as self-perceived stress over school work, tangible aspects relating to the school and classroom, class disruption/rowdiness, sense of being well-adjusted to school, perceived bullying, support from teachers and sense of respect and fairness at school.

**2.3.2 Work and health**
For the majority, holding down a job is an advantage that adds to increased quality of life. Working life is an arena in which we put our resources and abilities to best use, and become part of a ‘community’. Work may act as a buffer against poverty, crime and ill health.

Work as a health determinant has two dimensions: one of these concerns workplace conditions and occupational health and safety impacts. The other dimensions concern the degree of affinity with working life. Individuals whose participation in the labour market is tenuous or non-existent are consistently in a poorer state of health than the rest of the population.

Education, occupation and income are the most important indicators of social inequality in respect of physical and mental health and mortality. In studies of social inequality in health, education, occupation and income constitute core indicators in ratings of social standing. In order to reduce inequalities in health, a more inclusive working life and a healthy working environment for all employees will be vital measures.

The Norwegian government’s labour market policy is founded on two overarching political objectives: a levelling of living conditions and the preservation and further development of the welfare society. These
objectives have implications for health in terms of the distribution of health in the population.

**Occupational health and safety**
Where work is the cause of impaired health, this means that conditions at work are in some way or another linked to the affliction. The terms used are mechanical and/or psychosocial risk exposure. It is well documented that psychological, social and organisational factors in the working environment are of great significance for health. The Norwegian Labour Inspection Authority receives annual reports on work-related sickness absences, and believes there is good reason to assert that many people suffer chronic ill-health due to their working environment. The main conditions that may be linked to workplace factors are strain injuries and mental disorders. The ‘traditional’ physical-chemical problems also still exist, but it is the psychosocial workplace factors that present the biggest challenge in efforts to prevent work-related complaints and exclusion (49).

This is connected with trends in modern working life characterised by increased globalisation, which in turn results in intensifying competition and adaptation. In addition, technological progress has created new forms of work and more individualised employment. These factors may give rise to new types of work-induced stress disorders than have traditionally been associated with work-related health problems.

A number of studies deal with the occupational psychosocial environment and modern workplace characteristics that affect our health. These types of studies are usually based on two types of models: “demand-control” and “effort-reward”.

The demand-control model was launched in 1970 by Karasek. According to this model, employees experience negative stress if the demands made regarding performance of a task are not countered by sufficient perceived control in the person performing the task. Subsequent research added social support as a third dimension in this model; good social support at the workplace can act as a buffer against stress resulting from low autonomy and control – and high demands of the job.

In 1986, Siegrist launched the effort-reward model, which is founded on the concept of social reciprocity or interpersonal exchange relationships. Social reciprocity forms the basis for (work) contracts which describe obligations or actions that must be performed in return for an adequate reward. Any imbalance between effort put in and benefit gained, such as pay, career opportunities and recognition, elicits negative emotions and stress responses.

Studies have been carried out to indicate that the degree of work exposure varies depending on the individual’s standing at work. A low degree of co-determination and control together with low reward, which,
“The Swedish public health survey from 2007 demonstrates a clear link between exclusion from working life and a high degree of self-perceived mental and psychosomatic afflictions.”

according to the two main models, account for work-related stress and disease, appear to follow a social gradient (50).

The Swedish SHEEP study, which is cited in the Norwegian Institute of Public Health’s report on social inequalities in health, found that 30 per cent of the risk differential for coronary heart disease between blue collar and white collar workers was attributable to low job control (52).

But not enough is known about how different factors in contemporary working life more specifically affect health, sickness absences, capacity for work and motivation. The majority of epidemiological studies in this field show a strong correlation or covariation between the incidence of disease and the particular characteristics of an employment situation, for example, low control and type 2 diabetes, job insecurity and coronary heart disease, shift work and gastrointestinal complaints (53). There is a need for studies to look more closely at possible causal connections and mechanisms underlying this covariation. The National Institute of Occupational Health (STAMI) is currently conducting a prospective, longitudinal study that will provide greater insights into factors with direct health impacts.

Employment and health
It is well known that exclusion from working life has major consequences for both health and mortality. Studies carried out in Norway indicate that a life spent on social security accelerates deterioration of health. The studies investigated health impacts in the form of increased mortality following redundancies and transition to disability pension, and found significant correlations (54).

A life led outside of the labour market will in most cases have negative impacts on our mental health, as a result of unmet psychosocial needs and financial worries. It has also been documented that work and employment-incentive schemes promote renewed quality of life in people with a mental affliction. A research summary in the field of employment and mental health reveals, among other things, a strong link between perceived poor quality of life among individuals with mood disorders and a lack of employment (55).

Social inequalities in health are reflected in the composition of the recipients of health-related social security benefits. Persons with a low income and short education are overrepresented among those with long term illness, vocational disability and those who receive disability benefit. Research into sickness absences and recipients of social security offers a clear indication that exclusion mechanisms on the labour market are unequally distributed in social terms. A recent study examines the connection between sickness absences and social
standing among young adults. The study concerned itself with prolonged sickness absences due to musculoskeletal disorders, and a strong link was found between social standing and absenteeism. Social standing in adult life was not the only factor, since inequalities in early-life were other social determinants (56). However, the mere fact of exclusion from working life is detrimental to health in itself. This then affects far more than the most marginalised groups. A British study shows that people who have been unemployed and then gain employment again report improved self-esteem and physical and mental health (57). The Swedish public health survey from 2007 demonstrates a clear link between exclusion from working life and a high degree of self-perceived mental and psychosomatic afflictions (58).

A weak affinity for working life and long-term exclusion from the labour market is one of the root causes of poverty. Several studies document that poverty has great health impacts. By mapping the functional capacity of long-term recipients of social security, it emerged that this group reported poorer physical and mental health than recipients of a disability pension (59).

### Labour market policy in Norway

Although the Norwegian employment rate is high in an international context, we are still one of the countries in the OECD area with the largest proportion of people excluded from the labour market due to disease or disability (60). This has entailed large-scale reforms in the labour and welfare sector in recent years. The labour market policy pursued in Norway has great implications for health and for how society provides for, produces and distributes health.

Some key political measures in recent
years include the reform of the Norwegian Labour and Welfare Organisation; the agreement on a more inclusive working life (IA agreement) and special drives to reduce sickness absences and get people back to work. Successful measures such as these make a valuable contribution to public health.

2.3.3 Material and social living conditions

Countless studies and the statistics available point to a clear correlation between income and health. Public health improves steadily as income improves, as illustrated by the figure below.

There are several reasons to account for this concave relationship between income and health – one found in the majority of countries (61). Firstly, personal finances affect health more or less directly through various forms of health-giving consumption. Good finances also improve access to healthy homes, recreation, healthy eating and health services. The academic term for this is usually causality: the direct causal connection between income and health.

Another explanation for the connection between income and health is what is termed ‘selection’: poor health produces low income. For example, a person who retires from employment on grounds of health to live on a disability pension, will, because of the structure of this pension, end up on a reduced income.

A third explanation for the connection between income and health is that they share the same underlying cause. For example: occupations involving serious occupational health strain are also often low-wage occupations. In this instance there is no direct causal connection between income and health, but the occupation affects both factors.

A fourth possible explanation for the income-health connection is the so-called income-inequality hypothesis, as described in the section on psychosomastics and social capital below.

It is difficult to establish the relative significance of these different mechanisms for the connection between income and health. Research in this area has only to a limited extent addressed the temporal dimension and the relationship between income and health from a course-of-life perspective. The relatively few longitudinal studies of income and health that exist (62) indicate, among things, that

- income over time is more significant for health than income at a specific time.
- income level means more than income change.
- sustained low income is more significant than low-income episodes.
- a reduction in income is of greater significance than an increase in income.

Housing and the residential environment

The home and its standard have obvious effects on health, even if the specific causal mechanisms vary from one instance to the next. Hygiene standards, damp and other physical indoor climate factors will often be immediate links between the housing situation and health, but these are factors for which reliable statistics are essentially lacking. We can however assume that basic housing-standard indicators such as whether the home is owned or rented, its spaci-
ousness and similar factors offer a pointer to
direct health-specific factors.

The standard of dwellings in Norway has
improved consistently in recent decades. The
Census of Population and Housing 2001
revealed that there were fewer people and
more rooms per dwelling unit than ever
before (63). The 2004 survey of living condi-
tions found that homes are increasingly
more spacious, but that this trend applies
primarily to those who already had spa-
cious homes (64). 97 per cent of Norwegian
private households had their own bathroom
and lavatory and 99 per cent had their own
kitchen or kitchenette. At the same time,
there is some indication of increasing socio-
economic segregation on the housing market.
Young householders, city-dwellers and single
parents are less likely now to own their own
home than in the early 1990s. The research
agency SINTEF estimated that in 2005, there
were 5,500 homeless persons in Norway; an
increase of 300 since 2003 (65).

Besides the standard of dwellings, their
location is also of great significance for
health. The quality of drinking water and air
quality, noise, traffic and infrastructure and
proximity to recreation areas are factors that
have a more or less direct, physical health
impact. In addition to these are a number of
psychosocial factors relating to social con-
tacts, resources and networks. In Statistics
Norway’s survey of living conditions for 2004,
4–5 per cent of the population stated that
they were distressed by different types of air
pollution, while a slightly higher fraction, 5–7
per cent, were distressed by different types
of noise. 33 per cent stated that they lived
in neighbourhoods with traffic hazards for
young children (64). Around 80 per cent of
the population had a garden or private plot,
and an equally large fraction had access to
countryside recreation areas. According to
regional municipal statistics (KOSTRA) for
2006, 99 per cent of inhabitants connected
to municipal waterworks were supplied with
hygienically satisfactory water quality (66).

The quality of the home environment –
like the standard of housing – varies more or
less with the personal finances of the popu-
lation. The standard of the neighbourhood,
which includes factors such as traffic impacts
and recreational options – undoubtedly
affects housing prices, which means that hou-
seholds with good finances are better placed
to buy into a good residential environment.

Social living conditions and
social capital

Income and housing make up key com-
ponents of the material resources that
are significant for good health and its
distribution in the population. Another
important group of health determinants
are the social and psychosocial resources
possessed by the individual. The concept of
social capital seeks to encompass a number
of such resources in order to make them
quantifiable and accessible to research. The
concept of social capital includes facts such

"Studies from other countries
also indicate that the link between
income inequality and health is
"mediated" by social capital."
as trust, social norms and their enforcement, social networks characterised by reciprocity and a commitment to the common good (67). The concept can be applied at several levels: individual, community or organisation, nation or society at large. A distinction is also commonly drawn between different types of social capital: strong bonds – which exist between people with the same background and social identity; weak bridges – between people with different social backgrounds; and ladders – to people higher up in rank or status systems. According to the theory of social capital, bonds are important for coping, bridges are important for making progress, and ladders are important for climbing (59).

The correlations between social capital and health are multifaceted and act in both directions. One much-discussed theory – the so-called income-inequality hypothesis – links social capital to the scale of income disparities in a society: the greater the differences in income, the lesser the social capital. Income inequality per se will thus disfavour public health, and a society with great income inequalities will suffer poorer average health than a society with minor differences in income. For Norway there are research findings to suggest that this theory has some basis in fact. A comparison of mortality and income inequality in Norwegian residential regions in the 1990s shows that low-income groups especially have lower mortality in regions where income inequality is relatively low (68). The extent to which this is due to higher social capital or other factors, such as higher prioritisation of collective welfare measures in egalitarian communities, is uncertain.

In Norway, relatively few attempts have been made to study the health impacts of social capital specifically. One study from Oslo found a relatively strong link between social capital (measured in terms of generalised trust/distrust and participation in voluntary organisations) and self-assessed health, but the link between them could by and large be explained statistically by contextual factors such as level of income and education and income inequality (69). Studies from other countries also indicate that the link between income inequality and health is “mediated” by social capital (70).

More generally, there is a large body of research, both national and international, to describe different psychosocial risk factors for ill health. One review (71) concludes, among other things, that the following risk factors associated with social networks appear to be particularly significant:

- social isolation
- lack of social participation
- lack of social support
- dysfunctional family life
- abuse and violence

2.3.4 Behaviour affects health

Lifestyle has enormous influence on morbidity and mortality. Tobacco consumption, diet, alcohol consumption and physical activity in the population are closely connected with health and the incidence of cardiovascular disease, different types of cancer and type 2 diabetes, as well as weight problems/obesity. Cardiovascular disease and cancer are responsible for 35 and 26 per cent respectively of all annual deaths in Norway.
WHO estimates that 8 in 10 cases of coronary heart disease, 9 in 10 cases of type 2 diabetes and more than 3 in 10 cases of cancer can be prevented through changes in diet, physical activity and smoking habits (73). Risk factors such as hypertension, obesity and physical inactivity – patterns associated with drinking, diet and smoking are the primary causes of disease and death in Europe.

An 11-year follow-up study among 20,000 men and women aged 45–79 reveals that for the group with four favourable health behaviours: non-smoking, physical activity, moderate alcohol intake and high intake of fruit and vegetables, the risk of dying was reduced four times over, compared with the group that had unfavourable health behaviours (74). This equates to survival by an additional 14 years. The Interheart study demonstrated that risk factors for coronary heart disease are the same worldwide, and that 90 of cases can be predicted through nine amenable risk factors. There was a strong correlation between the risk of coronary heart disease and the level of blood lipids and how much the subject smoked. The other risk factors were diabetes, hypertension, abdominal obesity, psychosocial factors, low intake of fruit and vegetables, physical inactivity and alcohol intake (75).

In England and Wales, mortality from coronary heart disease fell by 54 per cent between 1981 and 2000 (76). It is estimated that two-thirds of the reduction in coronary deaths are attributable to changes in smoking habits, serum cholesterol and hypertension. Most of this reduction (81 per cent) was assumed to be due to primary prevention in the population, and 19 per cent as a result of secondary prevention among patients with heart disease. Differences in lifestyle and the incidence of the above-mentioned risk factors also account for a substantial proportion of the social differences in mortality from coronary heart disease in Norway (77), Sweden (78) and several other countries (79).

**Tobacco and health**

The number of smoking-related deaths in Norway is estimated by the Norwegian Institute of Public Health to be approximately 6,700 deaths in 2003 (16% of all deaths) (80). For the under 75s, around 2,500 deaths were due to smoking (19% of all deaths in this age group). The percentage of deaths attributable to smoking was higher for men than for women. Deaths from smoking represented approximately 72,500 lost potential life-years, of which 46,000 were due to deaths between the ages of 35 and 74. Based on 25-year follow-up data from Norwegian county surveys, the percentage of deaths in the age-group 40–70 years is

“Tobacco consumption, physical activity and diet follow distinct social patterns in the population. Generally, we can say that groups with higher socio-economic status have lifestyles more conducive to sound health than groups with lower socio-economic status.”
attributable to smoking; 40 per cent among men and 26 per cent among women.

Tobacco consumption is the one factor that is possible to prevent, and is perhaps the greatest health determinant of all (81). Unlike cancers and COPD, for cardiovascular disease, the health benefit of smoking cessation is gained immediately. In other words, smoking cessation contributes to a reduction in health risk in the short term also.

Alcohol and health
Alcohol is one of the leading risk factors for disease in Europe (73). It is also one of the main causes of death among young people aged 15-29. Alcohol is linked to more than 60 different diseases and afflictions including cancer, cardiovascular disease, mental illness and foetal damage (82). Besides damage to health, alcohol is associated with harmful social effects, not least for children in families with alcohol problems, and other relatives.

Alcohol-related harm in the population is linked to both drinking patterns and total alcohol consumption. A high intake of alcohol over time is a risk factor for chronic diseases and alcoholism. Occasional high intake of alcohol is a risk factor for a number of acute injuries such as those resulting from car accidents and physical assault.

Nutrition and health
There is convincing documentation that dietary composition affects a number of risk factors and can reduce the morbidity and mortality rates ensuing from the prevailing diseases (83–86). It has been documented for instance that reduced intake of saturated fats and trans fats and increased consumption of fruit and vegetables (via reduced serum cholesterol) accounts for much of the fall in mortality from coronary heart disease among Norwegians over the last 40 years (87). Essentially, these findings confirm previous research and support official dietary advice and drives to promote healthy eating in the population. It remains important to promote reduced intake of fat, especially saturated and trans fats, reduced intake of sugar and salt, together with increased consumption of fruit and vegetables, wholegrain foods and fish, especially fatty fish, in the population. Moreover, there is reliable scientific evidence that dietary changes are significant in the treatment and secondary prevention of the same diet-related chronic diseases.

Physical activity and health
There is much to indicate that contemporary society generally has a lower level of physical activity than formerly. This is due not to the fact that we take less exercise than in the past, but rather that our everyday activity is reduced. A low level of physical activity and poor physical condition are independent risk factors for health. In a report from 2002, WHO estimated that 6–7 per cent of all deaths in the Western World were attributable to physical inactivity (88). People who are physically inactive stand to live 3–8 years longer if they become physically active. The gain in life expectancy depends on factors such

“There is now compelling evidence that physical activity should be prescribed in the treatment of a number of diagnoses and conditions.”
as how old they are when they change their habits and the amount of physical activity, while a dose-response relationship is also clearly apparent (73, 89). There is now compelling evidence that physical activity should be prescribed in the treatment of a number of diagnoses and conditions (90, 91). We also know that GP advice to patients concerning physical activity can have a very positive effect on activity habits. One review of the literature indicates that advising patients in everyday clinical practice results in patients, depending on the particular intervention, increasing their activity level by 12–50 per cent at least 6 months after the advice was given (92). This indicates great potential for making the health service more proactive as regards giving advice on physical activity.

**Structural instruments – reducing social inequalities in health**

Tobacco consumption, physical activity and diet follow distinct social patterns in the population. Generally, we can say that groups with higher socio-economic status have lifestyles more conducive to sound health than groups with lower socio-economic status. These differences describe a gradient through the population (93).

Differences in lifestyle contribute to social differences in health. In order to reduce the social health differences, there is a need to employ instruments that make it easier for everyone to adopt a healthy lifestyle. Structural instruments have greater impact on public health at national level than instruments aimed primarily at individuals.

![Figure 2.7 Percentage of daily smokers, by level of education, ages 16–74, three-year sliding average. Source: Statistics Norway](image)

![Figure 2.8 Percentage of persons with obesity is reduced with increasing length of education among both men and women. Source: Swedish National Institute of Public Health, Health Surveys 2000–2008](image)
Normative instruments such as statutes, regulations and guidelines/recommendations are important in this work, and the greatest effect is achieved by utilising and combining several types of instruments in multiple arenas concurrently. Kindergartens, schools, workplaces, local neighbourhoods and health institutions are major societal arenas in which it is important to foster a sound lifestyle (94). These are arenas in which large segments of the population go about their daily life, and where health initiatives can reach all tiers of society. However, it is important to combine these structural instruments with educational instruments. The following provides examples of structural instruments.

### Pricing instrument

Pricing is regarded as one of the most effective instruments in reducing both alcohol and tobacco consumption. WHO refers to the fact that raising the retail price of tobacco products is a particularly effective deterrent for adolescents and people on low-incomes, and that the positive effects outweigh any negative ones. A Norwegian estimate indicates that a 10 per cent increase in the retail price results in a fall of around 5 per cent in total tobacco use, even allowing for cross-border trade (95). Similarly, the price of food and drink influences our consumption patterns, and influences the composition of our diet (96).

### Good availability and framework conditions are conducive to healthy choices

Access to healthy food is essential in promoting healthy eating in the population. The use of ‘healthy-choice’ labelling on foods will make it easier for people to opt for healthy foods at the time of purchase. Healthy-choice labelling is also a proven means of encouraging the food industry to develop products of high nutritional value (97). Access to countryside, green zones, pedestrian and cycle paths are key to daily physical activity.

As regards tobacco and alcohol, the lower age limit is the most commonly used instrument for restricting access, together with the pricing instrument. Access to alcohol is regulated in Norway through Vinmonopolet – the government-owned alcoholic beverage retailer with the sole authorisation to sell beer, wine and spirits, together with the licensing policy applicable to bars and restaurants. The ban on smoking in public places has a positive effect on health. Powerful health warnings on product packaging affect absolutely everyone in the target group, and large warning posters with illustrations are effective irrespective of language.
2.4 The health system’s responsibility for cross-sectoral public health work

Notably from the 1970s and onwards, the Norwegian health system has been an important producer of health. Moreover, we have seen that welfare in the form of education, work, living conditions and opportunities for leading a healthy lifestyle is critical for public health.

One key role for the steward of the health system is therefore to act as a strong advocate for cross-sectoral cooperation to promote good health and prevent disease. As we have seen in Chapter 1, this is an important element in the health system’s main governance, supervisory and stewardship function at national, regional and local levels.

At local level, the municipality shall, through its health services, oversee public health status and the factors that impact on health. On the basis of this role as overseer,
local health actors are to be instrumental in ensuring that health concerns are provided for by other sectors (Section 1–4, Municipal Health Services Act). The health system at the regional and national levels has a corresponding responsibility for acting as a primus motor.

The extent to which the health system itself should play a leading role in cross-sectoral work depends on the issue at hand, and should be assessed in respect of two factors: 1) knowledge of causes and effective measures and 2) whether the health system itself exercises control over the measures to be implemented. It can be helpful to consider three approaches to this:

Firstly, we have situations in which the health system itself has a well-defined leadership role. This would include situations where the system itself has established best practices concerning effective measures and where the system has control over those measures. One example of this would be group-based preventive work under the auspices of municipal preventive health services, such as maternal and child health centres and schools health services.

Secondly, we have situations in which the health system is familiar with effective measures, but in which we do not exercise control over those measures. Examples of this would be the introduction of school fruit or physical activity in schools. In such circumstances, the health system should assume the role of primus motor and negotiator.

Thirdly, we have situations in which the health system has some insight, and is able to refer to undesirable health consequences of measures in other sectors, but where the system itself does not exercise control over the measures or know precisely how such measures should be designed. Examples of this would include social inclusion in schools or working life. In this situation, the health system should assume a role as primus motor and partner with the sector concerned.

**Raising awareness of root causes – the social health determinants**

The schools sector is an example of a sector in which the health system must necessarily be a strong advocate and partner. Investment in a schools health service of a high standard and which possesses sufficient capacity is also a key investment in health improvements and reduced social inequalities in health. We know that it is important for public health work to implement health promotion measures in schools such as physical activity, school fruit, anti-bullying programmes, measures against smoking etc. But from a health system perspective, it is also crucial that we raise awareness of underlying health determinants. That schooling in itself is inclusive is a key factor.

Although we have seen in this chapter...
Since learning and education are health determinants, inequalities in education and learning will thus be determinative of inequalities in health.

“Since learning and education are health determinants, inequalities in education and learning will thus be determinative of inequalities in health.”

...
regional public health work to be delineated more closely, and extended. The Directorate of Health welcomes the county authorities’ move to assume this responsibility.

Several processes are ongoing to strengthen the efforts and proactive role of the municipal health services in disease-prevention work.

- Our report *Trends in the health and social sector 2007* emphasised the need to strengthen the municipal health service’s focus on these tasks. The district medical officer function is currently under review with the aim of strengthening socio-medical expertise in the municipalities. A report from the Directorate of Health is due for publication by spring 2008.

- The schools health service has an important function as a low-threshold provision for youth. The limited capacity of this service is well documented; see for example Report to the Storting no. 20 (2006–2007) National strategy to reduce social inequalities in health.

- Through inspection reports and other channels, information has emerged concerning the challenges posed by environmental health protection. A review of this function has consequently been instigated. One of the primary aims will be to achieve a better overview of the functionality of the regulations, and of the expertise and capacity of the environmental health protection service. A report from the Directorate of Health is due in summer 2008.

- Since 2004, local partnerships for public health have been established, with designated public health coordinators in more than half of the country’s municipalities (102). This has been developed through a state incentive programme. At the same time, economic limitations prevent the inclusion of additional municipalities wishing to join the programme.

A considerable challenge in the health system is to strengthen the capacity of these structures to be “service providers” in the future. This is important firstly in order for the health service to maintain its focus on prevention, and secondly in order for the service to sustain its role as primus motor in the cross-sectoral work.

The Directorate of Health regards it as necessary to undertake close scrutiny of the regulations and financing models that ensure that the health system is empowered to give priority to performance of the aforementioned role. At present, these roles are underperformed, and there is a demonstrable need to inject added impetus in the form of capacity and expertise.

The report indicates that disease prevention yields benefits for society, and the Directorate of Health consequently emphasises the need to strengthen prevention and public health work considerably.
3 How health creates prosperity and welfare

Good health provides the basis for prosperity and vice versa. Prosperity alone however is not a sufficient basis for quality of life and welfare. The health sector uses huge resources, but we do not know enough about exactly what health benefits these resources provide. To be able to evaluate the benefit of how health sector resources are used in future, the effects on health of both preventive measures and treatments must be measured.

“Investing in health is a driving force in the economy in the same way as investing in education and infrastructure.”
The message of this chapter

- Good health provides the basis for economic prosperity and vice versa. Prosperity alone however is not a sufficient basis for quality of life and welfare. Indicators of health must concern themselves with quality of life if they are to be used as a measure of welfare.
- A vital yardstick is what benefits various measures might bring in the form of life expectancy and quality of life. We will therefore use quality-adjusted life years (QALYs and/or DALYs) as indicators of trends in health.
- The health sector uses huge resources, but we do not know enough about exactly what health benefits these resources provide. To be able to evaluate the benefit of how health sector resources are used in future, the effects on health of both preventive measures and treatments must be measured.
- Prognoses indicate that the future will bring opportunities for improved treatments, but also increased costs. From a socio-economic point of view, and also in terms of welfare, it will be increasingly important to decide when to prevent and when to treat.
- To provide the best possible basis for making decisions on future challenges, economic analyses will be needed which contain explicit assessments of health status, not only in terms of measures implemented in the health sector but in other social sectors as well.

3.1 Health, prosperity, welfare – an introduction

Chapter 2 focused on factors which promote health. In this chapter we shall be addressing how health contributes to economic prosperity, growth and welfare. Viewed together, Chapters 2 and 3 offer a picture of the health system’s contribution to the socio-economic variables which can be used to measure prosperity, growth and welfare. The observations made in this chapter are based on an economic approach.

To begin with, we should state our reservations about how much it is possible to document on this theme. It is also important to note that the variables we wish to correlate are not absolute, that they are difficult to measure and that it is largely indicators of health, prosperity and welfare which will be presented. That these variables are not unambiguous and that there are complex causal relationships between them is also stressed in the international literature on the subject.

Health – objective and subjective indicators

Health is a quantity which can be difficult to measure. Indicators of health status are used both in relation to the individual (micro level) and the population as a whole (macro level). For example, the UN’s Human Development Report 2007/2008 (1) uses life expectancy at birth as the indicator of “a long and healthy life”, with Norway ranked among the best countries to live in according to the so-called
corresponding to quality of life (measured on a scale of 0 to 100%). The corresponding QALY measurement (“quality-adjusted life years”) may be seen as the number of years of full quality of life which may be achieved during a lifetime and which can be extended through the use of health improvement measures. For example, an 80-year lifespan, which includes some injury and illness and shows some decline in quality of life in the later years, might consist of 70 years of more or less full quality of life and 10 years of varying degrees of reduction. This example could be described as producing a total of 77 QALYs and 3 DALYs.

The quality of a person’s life is of course impossible to quantify exactly. It is however necessary to find out how various health measures affect different aspects of our lives, such as pain or physical ability. To provide the best basis for deciding what should take priority, we also need to understand how the sum of the different dimensions affects the individual’s condition as a whole, often referred to as quality of life. Quality of life can be measured in various ways. The method used to assess quality of life is to measure people’s preferences for various states of health, described in terms of different dimensions. These would include conditions such as mobility, physical ability, physical pain and mental health. This last includes perceived anxiety and depression, as well as positive mental states which can often be summed up as “happiness”. Over the last twenty years a whole new science has emerged around the measurement of happiness, and more and more metrics are being developed to operationalise and quantify our quality of life, contentment and happiness.
Prosperity – more possibilities

Prosperity and economic growth are variables which are easier to measure than health. Indicators of trends in prosperity would include personal and household income and Gross Domestic Product (GDP). These express people’s purchasing power and thereby their consumption capacity, as well as their actual consumption of goods and services. The UN (1) for example uses GDP per capita as the indicator of “a decent standard of living”. This type of indicator presents averages, but indicators of how income is distributed are also presented by the UN (1). This gives an indication of social inequalities in various countries and the so-called Gini index shows that Norway is among those countries of the world with the lowest income inequality.

When we look at prosperity in relation to health and welfare, we must also consider the short term versus the long term and how indicators of prosperity may be assessed in the light of what is popularly called “sustainability”. We can obviously question whether GDP is a good indicator of desired growth. In the context of health and the way the health service treats disease or injury, we can take the consequences of road accidents as an example. Repairing a car, whether due to poor maintenance/prevention or to damage/accident, is included in GDP. In just the same way, injury and illness which are treated by the health service will also increase GDP. So even though we would prefer to avoid expending resources on car repairs, injuries and illness, they are included in GDP and used as an indicator of economic growth.

Neither is income an unambiguous indicator of “positive growth”, in the short or the long term. Whether or not income can provide a better quality of life, which for most people means more than just increased prosperity and consumption, depends on how it is used. What kind of goods and services we demand and consume makes a difference too. Buying clothes and then taking them to second-hand shops or throwing them away unused, for example, would not be considered sustainable consumption. Buying goods and services which contribute to local and/or global pollution can also cause long-term health damage and reduce quality of life, which again are not consistent with sustainability. Since GDP includes both consumption we would rather avoid and also consumption whose external effects are not reflected in the price, it would be difficult to maintain that GDP is an unambiguous and sustainable indicator of growth. For reasons such as these, it is better to look at Net

From GDP as indicator to a quality of life index?

How far can we go – from GDP as an indicator of prosperity to using an index of quality of life in various areas of society? The “Canadian index of wellbeing” (CIW) is based on core values such as justice, equality, diversity, inclusion, economic security, health, security, democracy and sustainability. CIW will attempt to monitor social development in areas such as standard of living, health, environment, education, time use, civic engagement and access to art and culture (13).

72 Health creates welfare: How health creates prosperity and welfare
But what about the **quality** of health care, the **effect** of interventions on people’s health and the **use of resources** in the health services? These are central to any socio-economic assessment. If we are to perceive that the health services are making a contribution to our welfare, then exactly what services are being delivered and how much of society’s resources are applied to health are not matters of indifference. And what about the concept of **security**? If we feel secure in the belief that we will actually get the treatment we need from the health services, will that in itself help to achieve good physical and mental health? And what happens if we do not feel confident that we will receive good care and health provision when we get older? Should this dimension of security in our perception of welfare become part of our subjective assessment of quality of life, as measured by the QALY methodology? And can we then connect the quality of life dimension of the concept of health with the concept of welfare? Trygghetsrapporten 2006 (17), an analysis of security and insecurity in Norwegians, concludes that security and contentment are important factors in measuring welfare in society.

**Welfare – difficult to measure**

Welfare is difficult to define. What is certain however is that welfare is more than just prosperity and growth. Economic prosperity is conducive to welfare, but is not a sufficient basis in itself. If we attempt to clarify the concept of welfare and what we associate with it, we might start by looking at what benefits to welfare the Norwegian welfare state takes care of. The aim of the system we have in Norway is equal access to core social benefits such as health, education, social security and social services. We believe that equal rights, equitable distribution of resources and a safety net to ensure the inclusion of those who for various reasons “fall out” of the system are seen as central to welfare considerations, regardless of cultural background. When it comes to what equitable distribution actually means in practice and what the public health service should offer, opinions may differ in the population. To some extent there are also political differences of opinion in this area too.

But what about the **quality** of health care, the **effect** of interventions on people’s health and the **use of resources** in the health services? These are central to any socio-economic assessment. If we are to perceive that the health services are making a contribution to our welfare, then exactly what services are being delivered and how much of society’s resources are applied to health are not matters of indifference. And what about the concept of **security**? If we feel secure in the belief that we will actually get the treatment we need from the health services, will that in itself help to achieve good physical and mental health? And what happens if we do not feel confident that we will receive good care and health provision when we get older? Should this dimension of security in our perception of welfare become part of our subjective assessment of quality of life, as measured by the QALY methodology? And can we then connect the quality of life dimension of the concept of health with the concept of welfare? Trygghetsrapporten 2006 (17), an analysis of security and insecurity in Norwegians, concludes that security and contentment are important factors in measuring welfare in society.

At a more general level, we could ask whether it is even **possible** to measure “everything”, and indeed whether we **should** measure “everything”. If we attempt to do so, might we risk losing certain values? Does welfare also have an ethical dimension, and can this actually be measured? Such general questions are relevant for determining how far it is possible to measure a country’s level of welfare and thereby the possibility of taking decisions which might produce the desired improvements in social welfare.
Health is a vital dimension of welfare and the concepts of health and welfare also have ethical dimensions. For example, when deciding on end-of-life care and treatment, ethical considerations such as "dignity" come into play. QALY analyses do not measure the effect only of life-prolonging interventions but also of quality-of-life-improving ones. Relieving pain in the final phase of life, for example, might provide considerable improvement in quality of life. Part of the care and treatment given may well be based on an ethical decision, but their effects can still be measured in terms of the quality of life improvements such intervention brings. And if we conclude that socio-economic, QALY-based analyses are only part of the basis for decision making and that these should be supplemented by assessments of distribution (18) or by including distribution in a cost-value analysis (19), in practice these are both approaches to the deontological ethics. Socio-economic analyses can therefore no longer be criticised for being solely based on utilitarianism (20). Regardless of whether interventions are informed by ethics or other considerations, it is the opinion of the Directorate that economic analyses can form part of the decision-making process when prioritising health measures.

How can health-related effects on welfare, measured in the form of QALYs for example, be attributed a monetary value in economic analyses? How should we handle the loss of production in a society, when injury, illness or death affects that part of the population which is potentially employable? Questions of this type are central to the theme of this chapter: how health contributes to financial prosperity, growth and welfare. We can observe some resistance in the health sector to using economic analyses. Doubtless this stems partly from the view that people are more than productive factors – a fear that considerations of welfare, such as the intrinsic value of good health, will not carry enough weight. In economic analyses made in the transport sector in Norway, however, loss of life and health related to road accidents is given an explicit monetary value (21). The socio-economic loss resulting from a death, for example, has been determined as NOK 26.5 million at 2005 values. This is made up of welfare losses (i.e. the value of lost years of good health) of 67%, loss of production of 32% and medical, material and administrative costs of less than 1%. The corresponding figures for a person who is seriously injured in a road accident are NOK 6.0 million, 49%, 41% and 10% respectively. In other words, welfare-related losses are heavily weighted in this type of socio-economic analysis.

**QALYs as decision-support in priority-setting**

QALYs are a measurement of health benefits which take into account changes to both the length and the quality of life. Using QALYs...
shown that the health system, education, work, living conditions and opportunities for healthy behaviour all contribute to good health. In other words, empirical conclusions confirm economic theory that increased income can indirectly benefit public health. But those in good health are also better positioned to join the labour market and improve their income than are those in poor health. So economic theory indicates that causality can also go in the other direction; that good public health can bring about improved prosperity, and the empirical conclusions for this will be presented in the next section.

So what are the causal relationships between health and welfare? When we look at how to understand and define these concepts, there appears to be a certain amount of overlap between them. So it would not be unreasonable to suppose that causal relationships can go both ways here too. Chung and Muntaner (27) have shown that a welfare state based on the Nordic model gives better health (as indicated by reduced infant mortality and percentage of children with low birth weight) than the regimes of other OECD countries. Thus the basic political organisation of the welfare state can have a significant effect on public health.

3.2 The relationship between health, growth, prosperity and welfare

Theoretical and empirical relationships between health, prosperity and economic growth in so-called high income countries.
have been documented in the EU report *The contribution of health to the economy in the European Union* (28). This is a follow-up to the report *Macroeconomics and Health: Investing in Health for Economic Development* from the World Health Organisation (29) which studied the corresponding relationships in low and middle income countries. Three Swedish studies have also recently been made, which have been presented in the Swedish National Institute of Public Health’s report *Hälsans betydelse för individens och samhällets ekonomiska utveckling* (30). We are not aware of any Norwegian empirical studies on this theme. The main findings from the EU (28) and the Swedish Institute (30) are presented here because we believe the picture they present is representative of the relationships here in Norway.

**The theoretical framework – Human Capital**

The theoretical framework which forms the basis for the EU approach (28) is based on Grossman (31). This describes how health affects people’s capacity for work over the course of time and how this in turn becomes a factor affecting the production of goods and services. Grossman’s model is in turn an elaboration on Becker’s (30) human capital model, with particular focus on health. Grossman distinguishes between health as a consumer good and as an investment good. As a consumer good, health increases welfare because we derive the direct benefit of having good health and quality of life. As an investment good, good health means fewer days lost to illness, thus increasing the number of days available for both work and leisure. Health is not only demanded by, but also produced by individuals. In Grossman’s model, the individual is assumed to start out with a given “stock” of health. This “depreciates” over time as we age, but the individual can invest in maintaining and improving health. People’s health is affected by conditions such as genes, environment, education, income, lifestyle and health schemes. In this model, the demand for health care derives from the demand for health.

In the EU (28) a schematic model derived from Bloom et al. (33) is used to illustrate the relationship between health and economic growth. This proposes that good health affects economic development, at both individual and national level, through:

i) higher productivity  
ii) increased labour force  
iii) better skills achieved through higher education and training  
iv) increased savings, which can be used for investment in both physical and intellectual capital.

“As soon as we get over a certain level of prosperity, which most European countries had reached in 1970, growth in GDP stops giving any better quality of life”

Since the quality of basic data varies, as do the health indicators and measurements used for economic growth and prosperity, the task of getting these relationships documented can be difficult.

The costs of illness are just part of the picture

The EU (28) points out that there are a great many studies which focus on what illness costs society in the form of treatment costs and lost production. This has been shown, for example, for cardiovascular disease, mental disorders, obesity, diabetes, and tobacco and alcohol related illnesses. The EU (28) believes however that these have limited interest for those who wish to study the relationship between health, economic prosperity and growth.

Studies of the costs related to individual illnesses can tell us something about the volume of resources used in the health service and which may be lost at any given time due to the illness in question preventing people from being part of the labour market. However such studies cannot be used to tell us what savings might be achieved in the future if the illness could be prevented by a vaccine or some other measure. The reason for this can be found in arguments of the “we’re all going to die” type and that if we “remove” one illness group we will contract some other form of illness later in life. So it does not mean that the health service will use fewer resources to treat us. Consequently, for such analyses to be correct, they must be based on expected treatment costs and possible production losses for the life duration of an average individual (34). To tell us anything about welfare in the perspective of society as a whole, the analyses must also include how many life years might be gained by postponing fatal illness and what quality of life these years might offer (35-38).

EU (28) for example points to the WHO estimate of the number of life years with full quality of life (measured in DALYs) which are lost in various regions due to accidents, non-infectious diseases and infectious diseases respectively.

“If we cure one illness, then people will die from a different one. That’s how it is, because we’re all going to die.”

Lawrence Summers, professor and former US Secretary of the Treasury in his opening address at the Skagen Conference 2008.

The significance of health at the individual and household level

The EU (28) refers to the many empirical studies into the relationship between health and the participation of the individual in the labour market. The results of these indicate that poor health reduces wage levels and income, available employment for persons with poor health, available employment for the families of persons with poor health and age at retirement. However, it is difficult to estimate the extent of these effects from the studies available. Empirical studies into how health affects education and saving in high income countries are limited and more are being called for.
The significance of health at the macro level
When it comes to studies of how public health affects the macro economy, that is to say the entire country’s economic development (indicated by GDP), the EU (28) refers first to historical studies with data from previous centuries. These conclude that a great deal of present day welfare is the result of health improvements during the period in question. Other studies, which have compared differences in economic growth between rich and poor countries, also show a consistent picture in which health (indicated by life expectancy and mortality) has a positive correlation with economic growth. However, studies of the effect of health on growth which are based solely on data from high income countries do not show such consistent results. This may be explained by the health indicators employed failing adequately to capture the health differences between high income countries.

Three Swedish studies
Since few Norwegian studies exist, it may be of interest to draw on the three Swedish studies presented by FHI – the Swedish National Institute of Public Health (30). The first of these takes an individual perspective and shows that a person who becomes ill will have smaller pay rises, reduced income and a greater risk of becoming unemployed. Similar effects are found for the ill person’s spouse or partner. The second study takes a macro perspective. This shows that Swedish municipalities with a population which can be characterised as having relatively poor public health will also display poorer economic development than municipalities with better public health. It concludes therefore that good health is a vital factor for regional economic development. The third study takes a historical perspective. This concludes that improved public health has been an important driving force for economic development for the last 200 years. The overall assessment of the FHI studies (30) is that health should be discussed as a driving force for economic development in the same way as education and infrastructure. In summarising these studies, FHI (39) concludes, as did the EU (28), that health is significant for economic growth, but that more studies are needed in order to document these relationships for high income countries.

Health and welfare
As the EU (28) points out, we know that GDP is an insufficient measure of welfare and that the aim of economic activity is the maximisation of welfare, not the production of goods. Most studies of the effect of health on welfare are based on data from the USA. If we assume that non-market goods such as quality of life should also be included and that so-called welfare effects are also assigned a monetary value in health economy analyses, then, extending the economic relationships documented in EU (28), it becomes even clearer that health has a significant socio-economic value.

Theme for further research and investigation
Health and economic growth or prosperity appear to be variables which are “self-reinforcing” in certain conditions, in the sense
that once they have entered into a virtuous circle, both better health and increased prosperity or growth will develop. These are referred to as “feedback loops” (28) and it will be important to learn more about them. If these effects are self-reinforcing, it could be argued that it matters little whether better public health has a greater significance for economic growth or vice versa. On the other hand, it could be argued that it is vital to know what levels of health and prosperity or growth are necessary in order that they may reinforce each other. In other words, identifying what are the necessary and sufficient conditions for development to go in the desired direction.

Health, economic growth or prosperity and welfare are also variables which can have both a quantitative and a qualitative dimension and their constituent parts can be difficult to identify and measure. The data required to study the relationships between them have proved to be difficult to obtain. So finding out which indicators will capture what we want to measure will be a vital theme for further studies.

3.3 Investing in health

How many resources are spent on the Norwegian health sector compared with other countries? Are resources being efficiently applied in relation to what we get back in the form of better health? How should health improvements and the quality of services be measured? If the goal is better health, measured in terms of increased life expectancy and improved quality of life, for example, could we obtain better returns by utilising the resources differently? It is questions such as these we are interested in finding the answers to and which are discussed here. How far it is actually possible to provide satisfactory answers is another question altogether.

**GDP and health expenditure per capita**

Health expenditure in Norway has doubled in less than ten years and public funding represented 84 per cent of the total health expenditure of NOK 186 billion in 2006. This represents 8.6 per cent of GDP. Figures 3.1 and 3.2, which present the OECD’s figures for health expenditure, show that, compared with other countries, Norway is highly placed in terms of both GDP per capita and total health expenditure per capita.

**Increased health expenditure, but health gains difficult to measure**

OECD figures (Figure 3.3) show a great increase in health expenditure in Norway over the last fifteen years, seen both in isolation and in comparison with other countries (2). Does this increase in resources in the health sector have any effect in terms

“The richer we become, the greater the consumption of health services. We go to the doctor more often and we want higher quality of services.”

of better health? And if it does, how should that be measured? The figures for increase in life expectancy (table 3.1), for example, show that, despite using fewer resources, Sweden has a higher life expectancy than Norway. And despite a smaller increase in resources, Finland has increased life expectancy by more than Norway has.

Of course it may be argued that there are many other conditions which also affect life expectancy in a country (see Chapter 2). Similarly, there are other indicators than life expectancy which could be used to measure the effect on health of the use of resources. Perhaps in Norway we have been more concerned with quality of life improvements and other health effects which are more difficult to measure, for example, effects on mental health, palliative and other forms of care etc. One might also question whether increased spending in the health sector sometimes goes to other things than improving public health. Perhaps standards in Norwegian hospitals are higher than in other countries. Or perhaps it is as Hartwig (40) maintains, that increased investment in the health sectors of OECD countries has financed wage rises more than increased productivity and that this effect has been more pronounced in Norway than in neighbouring countries. There are many unanswered questions here, but without an explicit assessment of the standard of the health service and of people’s quality of life it is difficult to conclude that
is that the health sector is labour intensive. Since labour-saving technology is increasing productivity in the rest of the economy, and since wage levels in the health sector will follow general trends, expenditure on health services will steadily grow. The third reason is change in the structure of the population. Life expectancy is increasing and an ever greater proportion of our population is over 70. And when we consider that health expenditure on a Norwegian aged 75 to 79 is almost three times as high as on a Norwegian aged 50 to 64, it is obvious that this will have dramatic consequences for health expenditure overall.

Schroyen (44) maintains that health expenditure grows faster than GDP. For Norway we find an income elasticity of 1.9 over the period from 1970 to 2003. That means that health expenditure is growing almost twice as fast as GDP. Schroyen points to three reasons for this. The first is that health is what economists call a luxury good. The richer we become, the greater the consumption of health services. We demand a greater quantity and we demand services of higher quality. This is rational and reflects that we are prosperous enough to cover basic material needs and wish to use resources to achieve a good, long life in healthy surroundings. The second reason is that the health sector is labour intensive. Since labour-saving technology is increasing productivity in the rest of the economy, and since wage levels in the health sector will follow general trends, expenditure on health services will steadily grow. The third reason is change in the structure of the population. Life expectancy is increasing and an ever greater proportion of our population is over 70. And when we consider that health expenditure on a Norwegian aged 75 to 79 is almost three times as high as on a Norwegian aged 50 to 64, it is obvious that this will have dramatic consequences for health expenditure overall.

Schroyen also refers to a projection of health expenditure from Kotlikoff and Hagist (45). This shows that, without structural measures, demographic trends will cause health expenditure to increase from about 8% of GDP to 25% of GDP over 40 years. Is such a development in treatment costs desirable? Or would perhaps prevention give people a better quality of life, and be preferable in socio-economic terms?

Figure 3.3 Trends in health expenditure per capita for Finland, Denmark, Norway and Sweden (USD adjusted for price differences). Source: OECD Health Data 2007
Council of Ministers believes obesity is costing Norway NOK 6 to 7 billion a year, or 0.5 to 1 per cent of GDP. A comprehensive WHO report on obesity concludes that there is no doubt that the prevention of obesity would be economically beneficial in both the short and long terms (47).

Several international studies have concluded that tobacco-related preventive measures are cost effective, compared with both other preventive measures and health service measures (48-50). In Sweden it is estimated that health service expenditure and production losses due to smoking, including sick leave, early retirement and premature death, are about SEK 26 billion a year (51) – and Norway has a higher proportion of smokers than Sweden.

WHO estimates show that if 400,000 Norwegians cycled 4 kilometres every other day, Norway would save 125 million euros a year (52). Similar estimates from Denmark indicate that the Danish health service could save DKK 3.1 billion, 100,000 hospital admissions and 3.1 million days of absence from work if more Danes became physically active (53). Other estimates show that physical inactivity costs Sweden SEK 6 billion

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>74.9</td>
<td>75.3</td>
<td>76.9</td>
<td>77.9</td>
<td>+3.0 years</td>
</tr>
<tr>
<td>Norway</td>
<td>76.6</td>
<td>77.8</td>
<td>78.7</td>
<td>80.1</td>
<td>+3.5 years</td>
</tr>
<tr>
<td>Sweden</td>
<td>77.6</td>
<td>78.8</td>
<td>79.7</td>
<td>80.6</td>
<td>+3.0 years</td>
</tr>
<tr>
<td>Finland</td>
<td>74.9</td>
<td>76.5</td>
<td>77.6</td>
<td>78.9</td>
<td>+4.0 years</td>
</tr>
</tbody>
</table>

Table 3.1 Trends in average life expectancy for the populations of Denmark, Norway, Sweden and Finland. Source: OECD Health Data 2007.

Treatment versus prevention – evaluation of measures

Figures from Statistics Norway indicate that only 2.7 per cent of health expenditure was on preventive measures (and health administration) in 2006, although we might query whether Statistics Norway’s figures are representative of what we wish to measure and how prevention is defined. It is also fair to say that resources are going towards health promoting and preventive measures in other sectors, such as environmental and road safety measures in the transport sector. But there are no figures available to show how much is being spent on health-related measures in other sectors. Basic data may be difficult to compile, but from the point of view of society in general it would certainly be of interest to find out if we could get better returns on investment in health by preventing rather than treating, not just in the health sector but in other sectors as well.

Preventable illness and obesity create enormous costs for society. Expenditure is directly related to treatment and social security, but also involves indirect costs in the form of lost productivity in industry and losses for the individual concerned. The Nordic
a year (54). Given that levels of activity are similar in the Nordic countries, we must assume that the Norwegian health system has the potential for similar savings.

The Norwegian Directorate of Health (18) provides examples of economic analyses which show that they can be a useful tool in providing a systematic overview of positive and negative effects of potential health-promoting or preventive measures. They also show how economically beneficial preventive measures can be when welfare considerations are included and a coherent social perspective is taken.

As an example, footpaths and cycle paths may be justified from a health perspective through increased physical activity, from an environmental perspective through reducing car usage, from a transport perspective through reducing traffic jams and improving traffic flow, and from an educational perspective through making the journey to school safer. How such a cost-benefit analysis might be made is shown in a report from the Institute of Transport Economics (55), and Handbook 140 from the Norwegian Public Roads Administration (21) shows how unit prices for the health effects of physical activity can be implemented in the road sector’s impact-analysis methodology.

In a similar way, introducing school meals, or other investments in schools which would benefit all children, might be justified from the point of view of health, social conditions/inequality and improving conditions for well-being, teaching and learning. The Norwegian Directorate of Health (56) shows how the health effects of providing fruit and vegetables in school can be included in economic assessments. Unlike the two previous examples, measures against legionella infection are mainly justified from a health perspective, but these measures must be carried out in businesses and organisations outside the health sector, which means they are yet another example of how studies of health impacts can extend across several sectors (57).

But we do not need to bring in other social sectors to illustrate that a comprehensive economic analysis is the correct basis to adopt. This is also important for making decisions about use of resources in the health sector. Mobile X-ray services for nursing home patients is an example of the kind of measure which might not be “profitable” from the narrow perspective of the organisation providing the service, but which, from a general social perspective and taking into account the welfare effects for the patients, can be economically beneficial (58).

The Norwegian Institute of Public Health’s new study into preventing depression (59) is another example. This concludes that depression is the mental affliction which causes the greatest welfare and economic costs and shows how socio-economic savings can be achieved through prevention.

**Increased prosperity as a result of “gradient change”**

The work the Norwegian Directorate of Health has carried out on social inequality in health has shown that there is a clear gradient in which people with poor education and low income also have poorer health (60). Mackenbach et al. (61) demonstrate what health benefits a levelling out of social
inequality in health can give in the form of longevity and increased quality of life in the EU. They use an estimate of 77,000 euros per lost life year and come to the conclusion that the economic welfare gains of levelling out health differences in the EU would correspond to 9 per cent of GDP. On top of this, production gains and reduced expenditure by the health service would add another 2 to 3 per cent of GDP. How great such potential gains might be in Norway is difficult to estimate. But even though, according to the UN (1), we have less income inequality in Norway than in other countries and therefore perhaps a lower potential than the EU countries, Elstad et al. (62) show that, if the risk of death in all groups had been the same as for those with higher education, 43,000 of the 104,000 deaths which actually occurred between 1994 and 2003 would have been avoided. The number of life years lost because of these deaths is not stated, but there is good reason to suppose that a gradient change in Norway might also yield great socio-economic gains.

3.4 Good health means increased prosperity

Good health brings economic prosperity, but what about quality of life?

Both the EU report The contribution of health to the economy in the European Union and the Swedish National Institute of Public Health’s report Hälsans betydelse för individens och samhällets ekonomiska utveckling show that indicators such as life expectancy and employment levels tend to indicate a positive relationship between health and economic prosperity and growth. These reports conclude that investment in health may be looked on as a driving force in the economy in the same way as investment in education and infrastructure. However they also conclude that there is a lack of understanding and knowledge when it comes to the relationship between health and prosperity/welfare.

Health expenditure in Norway has doubled in less than ten years and public funding represented 84 per cent of the total health expenditure of NOK 186 billion in 2006. How much extra health we got for this increase and whether we might have got even more if the money had been spent on other measures is difficult to estimate. In this kind of perspective, knowing when it would be economically beneficial to prevent illness rather than treat it will be important for the ability to control, and ensure the effectiveness of, future use of resources in the health sector. Knowledge of the opportunities for preventing and treating illness will be central to enabling people to take up employment – and thereby to enabling the welfare state to maintain good social security and pension schemes for those who really need them.

If we are to make progress on this theme, it will be essential for economic analyses to take an overall and long-term perspective across all sectors. It is vital to recognise that measures in all sectors of society, and not just prevention and treatment measures in the health sector, can bring benefits in the form of better health. When taking an overall social perspective, it is vital to recognise
that the costs of illness also include loss of quality of life, not just the economic costs of treatment and loss of production due to absences. Quality of life is an intrinsic value that comes with good health and which has parallels with the non-material concepts of welfare and sustainability, and no necessary relationship with material prosperity and economic growth. Even though health improvements, measured by indicators such as life expectancy, can produce increased material prosperity, it does not necessarily follow that they will also result in better quality of life or increased welfare.

**The effect of actions should be measured**

To be able to determine whether an area of activity is progressing in the right direction, we need to measure it by the yardsticks which are central to the activity. The Directorate of Health believes that in the health sector the effect of any measure – whether prevention or treatment – is so vital that it must be measured. The most important yardstick in our area of responsibility is what benefits the measure might produce in the form of improvements to the length and the quality of life. The Directorate understands that this kind of impact measurement is difficult, but we believe that this is the way forward. Because if we do not know what effects a particular measure has, then we have no way of knowing what returns we are getting on the resources being invested in the health sector. It would be difficult, for example, to assess whether the resources are best applied to the health sector, or whether they might have been better used in a different social sector.

**How do we ensure a trend towards better quality of life and increased welfare?**

In this chapter on health and prosperity/welfare, we have documented that the trend in so-called high income countries has been for public health (indicated by increased life expectancy for example) to improve and for material prosperity (indicated by increased GDP for example) to increase – that there has been economic growth. We also believe we have established that better public health brings increased prosperity and growth, and vice versa. But the strength of these causal relationships has not been sufficiently documented. Neither has it been sufficiently documented what significance economic prosperity has for people's quality of life and welfare.

To ensure that measures taken in all social sectors yield results in the form of better quality of life and increased welfare, we will aim to ensure that this is measured. The Directorate of Health has therefore recommended, pursuant to the white paper on public health (63), that health effects in the form of QALYs should be included in all economic analyses in all social sectors (18). The Directorate is also coordinating the ongoing work of devising guidelines for the systematic application of economic analyses when determining priorities in the health sector. When such guidelines are in place they will provide vital input for the work of the National Council for Quality and Prioritising in the Health Service towards a more all-encompassing approach to issues relating to quality and priorities in the health service.
4 Chronic conditions – a special challenge for the health system

People with chronic conditions often have multiple diagnoses and they have complex and long-term needs. Both diabetes and schizophrenia patients are dependent on interaction between various parts of the health system and collaboration between health care and other sectors, in order to receive a suitable response.

“The biggest gains come from prevention. Effective prevention demands collaboration.”
4.1 Chronic conditions illustrate challenges facing the health system

The health system should respond to very many different needs. We often hear about instances of deficient treatment, treatment units under pressure or the needs of the patients not being fully covered by a single diagnosis or perhaps when seen only from a single level of administration. On the other hand, seeing how the health system meets the needs of patients with complex and long-term needs could give an insight into the problems the system faces.

Because people are living ever longer, patients with chronic conditions have gradually become the biggest group of patients in the health system – a paradoxical consequence of positive social trends and developments in medicine and health care. Some of those who are threatened or affected by illness will discover another face of the highly specialised and compartmentalised health service. Working methods and rhythms and methods of maintaining contact are largely based on the traditions of a time when acute medicine and episodic consultations solved the most important problems. But this is often poorly suited to patients with a need for lifetime treatment. Chronic patients may need care provisions from a variety of points throughout the whole gamut of the system and many of them represent a very complex...
challenges. They need continuity and coordination. We know that both nationally and internationally this patient group has already become the largest. It will come to dominate the disease profile of all nations to an ever greater extent.

The challenge presented by an increasing number of chronic patients is not a uniquely Norwegian phenomenon. There is a great deal of international research and experimentation in this area. The experience and analytical methods of other systems will be useful, even if there is no evidence-based turnkey solution. Even if we should arrive at comparable analyses and wish to do the same as other countries, we cannot transfer experience directly from one health system to another. But a review of selected material and literature can probably be used to glean important criteria and better solutions, which must be adapted to our context.

**4.1.1 The challenges in Norway**

We do not know how many Norwegians have chronic conditions, but the number has been estimated at about 1 million (5). This is on a par with Denmark, which recently estimated a figure of between 1 and 1.5 million (6).

We must underline that such figures cover a wide range of degrees of severity. Even though many people may by definition have a chronic illness, far from all of them feel ill. The population must not be morbidified (7). Self-reported health from the Health Survey 1995 shows that many people themselves report having good to moderate health, even though they simultaneously report diagnoses of chronic illness.

**Chronic conditions**

According to the WHO, chronic conditions are health problems which require years or decades of treatment and follow-up. This means that the group of chronic conditions is very comprehensive and complex and contains many different diagnoses and combinations of diagnoses. Biological reasons and treatment methods provide no basis for a common designation. There are many views on how chronic conditions should be defined. The questions surrounding use of concepts and definitions show no sign of being resolved (1-4).

Expected future trends (8):

- The prognosis for demographic development gives reason to believe that there will be many more elderly people. Not only that, but also more of the very oldest. The number of people aged 80+ will increase about 2.5 times by 2050. The good news is we expect the elderly to be healthier, with a continuing reduction in illness. Even so, these figures will mean a considerable challenge for the health system.

- It is estimated that the manpower requirement in nursing and care will double over the coming decades from the current level of 110,000 FTEs (full-time equivalents).

- For the largest diagnosis groups we can expect a certain amount of change in the disease panorama over the years to come. The number of dementia patients will increase by 50 per cent by 2050 because
of increasing age and few immediate signs of a breakthrough in treatment.

- Mortality in cardiovascular diseases is being reduced. The question is whether this trend will continue or whether the development of type 2 diabetes will lead to a fresh increase.
- In Norway we have seen the incidence of diabetes treble over the last 30 years.
- Chronic obstructive pulmonary disease (COPD) will continue to rise, partly due to smoking.

4.1.2 The global challenges
Many countries and organisations agree that we are facing a global increase in chronic conditions of epidemic proportions. This development has been seen first in the west, but less developed countries are facing a similar process. According to the WHO (1), The World Bank (9) and the European Observatory on Health Care Systems and Policy (10):

- The disease profile has changed in all countries. Chronic patients are now the largest group.
- The health systems have not adapted to take better care of this growing group.
- Prevention and treatment of chronic conditions is possible, but is not being sufficiently exploited.
- It will not be enough to do more of the same things we are doing today.
- Perhaps the greatest challenge facing the world’s health systems this century will be how we can develop effective methods of responding to the growing burden of chronic disease (11).

The international organisations are putting forward, using differing formulations, two complementary aims for public policy in this area (9).

- “First and foremost prevent chronic disease with all vigour” and by this means contribute to healthy old age and avoid early deaths (12; 13).
- At the same time, prepare the health services for the great challenges they will face as a consequence of new demographic and epidemiological trends.

4.1.3 Comorbidity – the challenges increase
It is not only the increasing incidence of chronic conditions which is increasing the burden of disease and thereby the total challenge. The increasing complexity of the pattern of disease is becoming an ever greater burden on patients, health system and society.

An increasing number of patients with chronic conditions have multiple co-existing conditions (comorbidity). One reason for this is the increased average age of the patients (14). It is not only the oldest patients who suffer from several simultaneous diseases. Simultaneous diagnosis of several diseases occurs frequently among all age groups (15).

It is estimated that in the USA 24 per cent of patients with chronic illnesses have three or more diagnoses (16). The complexity for patients with comorbidity increases in that it can represent reduced physical ability and quality of life. Multiple diagnoses also make administering self-treatment a more demanding task (17). One particular challenge is that activity to control one disease can
4.2 Diabetes and schizophrenia – two examples

Discussing the ability of the health system to meet the needs of the population is not easy. One possible approach is to focus on making another worse. The incidence of psychiatric symptoms increases with the increasing number of simultaneous diseases (18).

For the medical profession, the challenge is that, in the case of several simultaneous diseases, neither clinical decision-making procedures nor treatment processes will be standardised or routine (16). Such disease patterns represent a special challenge for the health system. Expertise, patient focus, coordination, continuity, information flow and clarity about common goals and means all transgress the day-to-day professional boundaries.

Choice of medication presents a problem in finding the best overall effect without the various medications having a negative effect on each other (20). The basis for evidence is becoming ever thinner, partly because trials of new medications are rarely performed on patients with several simultaneous diseases and partly because the oldest users are often excluded from random studies for single diagnoses. It may be easily understood therefore that comorbidity presents problems not just with regard to treatment but also in measuring effects (21).

Comorbidity often presents as both psychiatric and somatic conditions. The psychological problems increase when the patient has several somatic diseases at the same time (22). There is reason to believe that mental conditions presenting with somatic conditions receive insufficient attention and are undertreated. Similarly there is not enough focus on preventing and treating somatic cases when the primary diagnosis is psychiatric.

Costs

The costs to the health system of chronic illness are great. Denmark has estimated that 70-80% of health service costs are related to chronic illness. There is no known similar assessment for Norway.

When assessing hospital costs it has been usual to look at the degree of severity in the condition of patients with a single acute diagnosis in relation to discharge figures from a large population.

Another approach to understanding hospital costs is linked to the complexity of the patient’s condition. The number of co-existing chronic conditions has been used as a simple yardstick of complexity. A nationwide survey carried out in the USA provides the basis for a supposition that over 60% of the costs at a hospital may be related to patients with three or more chronic conditions. Within this group, costs increase with the number of chronic illnesses.

As will be shown in the presentations of schizophrenia and diabetes later in this chapter, the costs connected with these diagnoses are very high (23-27).
Schizophrenia is one of the more profound psychiatric diseases and illustrates the effects a serious mental illness can have on patient, family, various sections of the treatment services and society. There is reason to believe that the quality of the treatment of this disease can also tell us something about the treatment being offered for other serious mental conditions.

4.3 Diabetes – worrying trend

The global development of diabetes, especially type 2 diabetes, has been a worrying trend over recent decades. In Norway we have seen the number of cases treble over the last 30 years; in developing countries the increase is even greater. This has mainly been caused by changing lifestyles: changes of diet, less physical activity and increasing obesity. WHO regards this as a global pandemic and is urging increased efforts on prevention. But there are strong indications that the diabetes epidemic will continue.

Facts about diabetes

Diabetes (diabetes mellitus) is a chronic metabolic disorder caused by defective insulin reaction, defective insulin effect or a combination of the two.

- It is marked by high blood-sugar level and disturbances to carbohydrate, fat and protein metabolism.
- In total about 265,000 Norwegians have diabetes: about 25,000 with type 1 diabetes, about 120,000 with known type 2 diabetes and a similar number with undiagnosed type 2 diabetes.
In Norway there has been a significant reduction in cardiovascular mortality over the last 30 years. However the worry is that the epidemic of diabetes and obesity will reverse this trend, as is beginning to happen in the USA. Studies in Oslo and Nord-Trøndelag show that the weight increase in the population is occurring faster than anticipated; the same is true of the increase in diabetes (29). Since type 2 diabetes represents the greatest potential problem and is also preventable, we have chosen to concentrate on type 2 diabetes.

4.3.1 Diagnosis
It is believed that approximately half the people in Norway with diabetes remain...
An active search is vital

The diagnosis of diabetes and impaired glucose tolerance is mainly the responsibility of primary health care.

Since type 2 diabetes develops relatively slowly, the greater part of the population will visit their general practitioner during the period of “pre-diabetes” or impaired glucose tolerance. The general practitioner therefore has an excellent opportunity to identify both persons with diabetes and those at high risk, but such examinations have never been done systematically. It is therefore vital to get the general practitioners actively searching for these patients. Routines for this “case-finding” should therefore be devised for general practitioners.

The new national clinical guidelines for diabetes which will come into effect in autumn 2008 stress that GPs should analyse the blood sugar of those with increased risk of diabetes every 2 to 3 years. The implementation of the new guidelines will be vital in improving the diagnosis of diabetes and the treatment of persons who are known to have diabetes.

Contact with the general practitioner

Figures from NAV show that 74% of the population were in contact with municipal health care in 2006. 72% of the women and 59% of the men attended at least one consultation with their general practitioner. Consultation frequency increases with age (34).

Interaction between primary and specialist health care

Patients admitted to hospital with serious cardiovascular diseases in particular show a significantly above average incidence of diabetes and impaired glucose tolerance. If hospitals systematically investigate this in the relevant patient groups, the follow-up may be handed over to the general practitioners – something which should be explicitly stipulated in the discharge notes. The same applies to carrying out a new glucose tolerance test 2 to 3 months after giving birth for women who
Ensuring optimum diagnosis

- Universal and goal-oriented implementation of the new national guidelines for diabetes is vital. This applies to all parts of the guidelines – screening, treatment and interaction between levels.
- Implementation of strategies directed at the general population, preferably based on the experience of other countries, to direct attention towards those with a high risk of diabetes.

Studies from Finland (35) and the USA (36) show that a change of lifestyle among those with impaired glucose tolerance can prevent or delay the onset of type 2 diabetes. Changing an established unhealthy lifestyle is difficult. Those who took part in the studies mentioned above received a massive amount of follow-up. The patients received their own structured exercise programme and were followed up on by clinical nutrition physiologists seven times during the first year and every 3 months thereafter.

**User participation programme**

One programme described in the studies from Finland and the USA is not currently available for people who have had gestational diabetes. This will require effective interaction between specialist and primary health care.

**User participation in diagnosis**

Involving the individual in discovering diabetes may have a certain effect. At the same time, discovering that one is at high risk of disease may be a problem for some. In those cases where there are no measures to prevent or delay the development of disease, the benefit would be doubtful. Where treatments or other measures (such as help in changing lifestyle and/or structured programmes at municipal level) exist which might affect progression of disease, the effect on the individual of revealing the risk will vary. Those who succeed in changing their lifestyle will derive greater benefit from knowing of the risk than those who do not.

4.3.2 Prevention

When screening for diabetes we might expect to find as many people with impaired glucose tolerance as with diabetes. Just under 10 per cent of these would develop diabetes every year.

Fysak

Fysak is a programme which is intended to build models for the systematic use of appropriate physical activity in preventive and health-promoting activities, primarily in municipal health care.
There is no fixed financing for these projects and their organisational links with the municipalities vary. In many places the only exercise offered is at exercise studios or similar and involves payment by the individual. The opportunity to change one’s lifestyle may therefore also depend on the financial resources of the individual – which in turn can result in social inequality in health.

Interaction between municipal and specialist health care

In some places collaboration between municipal health services and the hospitals is poor, in other places it is entirely non-existent. In a questionnaire from the Directorate of Health in 2006, none of the hospitals stated that they had any structured collaboration with Fysak/healthy lifestyle centres. Neither did the hospitals respond that they had any regular collaboration with general practitioners on strategies for changing lifestyles. Some rehabilitation institutions under the regional health authorities previously had structured residence for patients with obesity, metabolic syndrome and diabetes.

Collaboration between the health sector and other sectors

Diabetes is affected by lifestyle. Other sectors, such as school, transport, housing, municipal planning and employment, therefore play a considerable role in influencing people’s daily habits, level of physical activity and health. The Mo-Ro project in Oslo showed that changes of lifestyle can be achieved with strategies directed towards the general population (37).

A focus on health in the areas named could play a significant role in preventing a
chronic disorder such as type 2 diabetes. As the health system is defined (see Chapter 1) it is the health sector’s responsibility to ensure collaboration across various sectors.

4.3.3 Treatment
Most people with type 1 diabetes go for check-ups in the specialist health service, whilst people with type 2 diabetes mainly go for check-ups with their general practitioners. A Norwegian study of general practice in 2005 shows that diabetes treatment has improved (38). In principle the treatment of type 2 diabetes and cardiovascular risk factors is the task of the general practitioner, but too few of the patients are regularly examined to reveal any complications of the eyes, feet and kidneys. Optimum treatment for all persons with diabetes is still a long way off.

The present guidelines recommend that primary health care should refer patients to specialist health care when treatment goals are not reached. There are no nationwide data to help us ascertain to what extent this is being done.

A review by Regional Health Authority – Northern Norway in 2006 showed considerable differences between the different hospitals with regard to the organisation and scope of diabetes treatment. A study of all regional health authorities by the Directorate of Health in 2007 showed that there was no structured collaboration between the hospitals and primary health care in some parts of the country. No data was available from the health authorities regarding the scope and quality of diabetes treatment.

It is therefore difficult to assess whether

Electronic diabetes case records

- Electronic diabetes case records suited to the system used in primary health care (NOKLUS/Norwegian Diabetes Register for Adults) already exist.
- The system is little used and should be made better known to those who work in primary health care. A tariff for completing annual checks combined with reporting data to the Norwegian Diabetes Register for Adults would be a possible instrument for improving the quality of diabetes care in primary health care.
- Implementing the NOKLUS diabetes case record in the regional health authorities and reporting in to the Norwegian Diabetes Register for Adults will become important in the years to come in order to acquire the necessary data on the incidence, prevalence, complications, treatment quality and mortality of diabetes.
The intensive treatment was very convincing. After seven years of follow-up they found a 20 per cent absolute risk reduction for combined heart disease and death. A similar Norwegian study showed that an intensive programme of treatment at a medical outpatient clinic led to improvement in the risk of cardiovascular diseases (40). This means that early intervention and optimum treatment of risk factors for cardiovascular diseases, hyperglycaemia and any later complications of diabetes will lead to fewer complications and reduced morbidity and mortality (41, 42).

More recent data seem to indicate that improved treatment has reduced the high incidence of mortality from diabetes described earlier. This is a further argument for improving the quality of treatment of blood sugar, lipids and blood pressure.

**The role of specialist health care**

Diabetes may involve complications affecting kidneys, eyes, nerves and feet. These are mainly connected with poor blood-sugar regulation, but it has also gradually become clear that blood pressure plays a significant role in the development and aggravation of these complications. Optimum blood sugar and blood pressure treatment is therefore important in preventing such complications from either occurring or being aggravated. This will require good collaboration routines between the general practitioners and specialist health care.

**User participation**

Diabetes is a condition in which user participation is particularly important. It is the
user’s own ability to live with and treat the condition, which is the key factor for successful treatment. The various contacts in the health service largely function as consultants who give advice to patients on how to live with their diabetes.

These various contacts should have a common understanding of treatment goals and strategies. An electronic diabetes case record which can provide printouts of treatment goals and results achieved can be a vital element in this collaboration. It can also function as a travelling record between the different levels of the health service.

Educating patients is important. Learning and management centres play a vital role in educating people with diabetes. These cannot replace, but may be a supplement to, the education and discussions which must be part of the normal health care consultations.

Ensuring optimum treatment

- There is a need for greater knowledge about the scope and quality of treatment in the health authorities, so as to be able to propose measures for improvement both within the authorities and between levels.
- The implementation of the new national clinical guidelines for diabetes must have a coherent focus, have power and be directed towards general practitioners and regional health authorities, and especially the medical departments. It would be beneficial to see this in context with other measures. We should strive towards collaboration with user organisations.
- The use of electronic diabetes case records will be an important instrument for ensuring good quality in diabetes treatment.
- Devising routines for local collaboration between levels of health care to improve treatment and achieve better use of resources is important. The practice coordinators and diabetes teams should play a central role in this work. Local collaboration between user-managed motivation groups and health care is a vital resource.
- Involving people with diabetes in treatment and creating a common understanding of treatment strategies and objectives is essential. Good, clear communication prepared in collaboration with the user organisations is important. Appropriate electronic diabetes case records which include treatment goals and results achieved and which allow a printout for the user are important.
- Extending programmes for educating people with diabetes should be considered.
If the disease is poorly treated, the patient will develop complications earlier, which will tend to increase treatment costs. On the other hand, complications will unfortunately shorten the patient’s life, which will tend to reduce treatment costs. It is therefore not a clear-cut case that good diabetes treatment will reduce total treatment costs (see discussion of a one-sided focus on treatment costs in Chapter 3). On the other hand such treatment will defer the treatment costs. In economic analyses, time plays a vital role and the longer costs are deferred the less significant they become (i.e. the costs are less weighted). The main argument for good diabetes treatment is of course that the patient retains a good quality of life for longer and lives longer. In this way it contributes to increased welfare. (see Chapters 3 and 1).

Cost effective treatment and prevention

There are no known clinical studies which might prove or disprove whether good diabetes treatment reduces the total costs of diabetes. We must therefore simulate the progress of patients in groups with good and less good treatment. In this way gains in life years and costs may be estimated. An American study which has done this shows that good diabetes treatment is cost effective (45). Treatment costs are generally higher in the USA than in Norway. If good diabetes treatment in Norway actually has lower costs and greater effect than in the USA, then such treatment would also be cost effective in Norway.

It is extremely probable that prevention and the good, early treatment of diabetes
and other risk factors are cost effective for society, whilst also reducing the risk of illness and complications for the individual patient. It is important to remember in this context that reduced costs of type 2 diabetes are also included in cost-benefit analyses, which show that footpaths and cycle paths provide very good socio-economic benefits (46). The prevention of lifestyle disease through measures introduced in other sectors of society is also important to consider in a total social perspective.

4.3.5 Two cases – different treatment, development and outcome

Depending on how the health system responds to a patient, the same disease may develop differently. To illustrate the progress of type 2 diabetes and the effect of early intervention, we describe below two imaginary, but realistic, parallel cases. Basically it is the same patient who receives different health care: early diagnosis, adequate preventive strategies and optimum treatment from an early stage of the illness, compared with poor follow-up and intervention until the illness has become serious.

The treatment effect outlined is based on established treatment principles and their effect, in the case of both primary prevention with patient 2 and secondary prevention with patient 1. All measures and interventions relate to present day knowledge.

Hans is a previously healthy, 45 year old man, moderately overweight with stomach starting to bulge, who smokes 20 cigarettes a day. His father has had a heart attack and died of heart disease at the age of 68; his mother has type 2 diabetes.

Hans visits the doctor because of an injury at work. The doctor only examines his arm, but asks, because of his big stomach, about family and cardiovascular illness. He learns of the parents’ histories of illness and takes a blood sugar test, which is just on the edge of being too high. An appointment is made for an examination with diabetes in mind. The result of this shows impaired glucose tolerance (IGT). Blood pressure is a little high as is cholesterol level.

The doctor takes a great deal of time to motivate the patient and gives him advice about changing his lifestyle, about diet and losing weight, giving up smoking and taking more exercise.

A check-up six months later reveals that lifestyle changes have been made, he is eating less fat and sugar and has lost a little weight, but he still smokes. Blood pressure is a little lower, but still too high. Fasting blood sugar is normal. During a new motivational discussion the doctor puts special emphasis on giving up smoking. They go through a fixed programme for motivation towards giving up smoking. At the next scheduled check-up a year later, he has stopped smoking, takes regular exercise at an exercise centre, has stable weight and is in good shape. Blood pressure has gone down further and is now nearly normal. The cholesterol level is lower. Once again they discuss lifestyle, agree that there is now no need for treatment with medicines and set up a schedule of annual check-ups.

For the next five years, Hans goes to his general practitioner for his annual check-ups. Blood pressure, blood sugar and cholesterol are stable. He is still exercising and cycles to work when the weather is reasonable, but he still needs some motivation to keep up the
exercise. He feels healthy and in good shape.

After a further year, blood sugar has risen and type 2 diabetes is revealed. The long-term test (HbA1c) is a little high. After discussing the situation thoroughly, patient and doctor agree that there are still gains to be made from lifestyle changes, particularly regarding diet. They opt for this rather than starting on blood-sugar-reducing medication, but agree that this is probably only a postponement. They agree a schedule of check-ups every three months.

For the next seven years Hans goes for his check-ups with the doctor every 3-4 months. To begin with the situation is stable. He is exercising regularly. Weight, blood sugar and blood pressure are unchanged and there is no sign of kidney, nerve or eye complications. Later the blood sugar begins to rise, even though no lifestyle changes have occurred.

Patient and doctor see this as a progression of the disease in itself and begin blood-sugar-reducing tablets. Because of the family history of cardiovascular disease, they also start treatment with Albyl-E and cholesterol-lowering tablets.

The following may have contributed to things going well:

1. The general practitioner was actively searching for diabetes because the patient was in a high-risk group.
2. The general practitioner revealed impaired glucose tolerance (“pre-diabetes”) and a high risk of cardiovascular disease.
3. The patient received good early advice about the benefits of a change of
4. The patient understood the necessity for lifestyle changes and accepted responsibility for carrying them out.
5. Regular follow-up with the patient to motivate him towards continuing with the appropriate lifestyle and to look for any signs of deterioration.
6. Early start on treatment of blood sugar with medication when this became necessary.
7. Early start on treatment of high blood pressure and high cholesterol.
8. Regular check-ups with ophthalmologist.

Lars is a previously healthy, 45 year old man, moderately overweight with stomach starting to bulge who smokes 20 cigarettes a day. His father has had a heart attack and died of heart disease at the age of 68; his mother has type 2 diabetes.

He visits his general practitioner because of an injury at work. He is signed off sick for two weeks and advised to take it easy. The doctor does not react to his obvious obesity and makes no further queries about a family history of lifestyle diseases. No appointment for a further check-up.

After a year he visits the doctor again because of muscle pains. He is signed off sick for a short period and given pain-relieving tablets. No discussion about his smoking habits or lifestyle.

Over the next seven years he makes occasional visits to the doctor. Because his weight has obviously increased, the doctor tells him to lose weight and give up smoking. Lars is not interested in taking this advice. After a while
albumin. He increases the dose of blood-sugar and blood-pressure reducing medication. The first check-up with the ophthalmologist reveals fairly serious eye complications and he receives laser treatment. He still goes to his general practitioner for check ups, but also goes to occasional consultations with specialist health care with a view to regulating blood pressure and blood sugar. The blood pressure treatment is gradually further increased and blood pressure is almost normalised, but he still has increased urine albumin.

The cholesterol readings are fine, but the eye complications deteriorate in spite of repeated laser treatments.

Over the next few years blood pressure increases again and the first signs of kidney failure are seen. Dialysis and transplantation are discussed with a nephrologist as possible future options. After a while Lars also suffers impaired feeling in his feet and a diabetic neuropathy is diagnosed. He receives repeated laser treatments and eventually suffers some sight impairment. Increasing blood sugar has led to him starting to use insulin. Exertion causes more shortage of breath but no chest pains. Lars is referred for a new heart examination but dies suddenly before this.

The following may have contributed to things going badly:

1. The general practitioner did not inquire into and thereby reveal the increased risk of diabetes and cardiovascular disease
2. The patient had no opportunity to decide for himself whether lifestyle changes were appropriate or not
3 Diabetes and its associated risk of cardiovascular disease was still not revealed during subsequent visits to the general practitioner.
4 When the patient had a heart attack the disease was so advanced that even optimum treatment and good collaboration between different levels of health care were less effective.
5 He did not receive the necessary help in changing his lifestyle even after the illness had manifested itself.

In the normal course of events, persons with impaired glucose tolerance and later diabetes will be somewhere in between these two case histories. With regard to patient 1 however, we might be tempted to ask: Could the follow-up and treatment have been even better? Could the municipality have offered anything further? Could the employer have been involved and what about Hans’ children? Nevertheless, not all primary and secondary prevention is as successful as it was for Hans (patient 1) and disease does not always develop as seriously as it did for Lars (patient 2).

4.3.6 Diabetes and challenges for the health system
The case histories above illustrate that treatment is often demanding and extensive once the condition has developed and that a structured collaboration between the various parts of the health system is necessary in order to limit the development of serious complications. They also clearly show the great significance of early diagnosis, disclosure of risk factors and change of lifestyle.

These cases also indicate the need for better routines for tracking people at high risk and for providing help in changing lifestyles once they have been tracked down. Early intervention with known risk factors such as hypertension, elevated cholesterol and poor regulation of diabetes also reduces the risk of diabetic complications involving the kidneys, eyes and nerves and of cardiovascular disease in people with diabetes, as well as premature death.

These examples underline that user participation and collaboration between doctor and patient, as well as family and employer, in addition to activity programmes at municipal level, are essential to success in preventing or delaying the onset of serious illness.

Many of the causes of the diabetes “epidemic” lie outside the health service’s primary area of responsibility and influence. There are strong indications that the biggest gains are to be derived from prevention. Effective prevention requires effective collaboration within health care and with other sectors. The necessary changes in lifestyle also require input from sectors other than health care.

The case histories above show the significance early diagnosis, disclosure of risk factors and change of lifestyle can have for the achievement of the health system’s overall goal of good health. User participation and collaboration between doctor and patient are vital if we are to achieve the goal of responsiveness.

The knowledge and expertise required to implement optimum treatment of established diabetes are available. Turning theory into practice is a challenge which makes great
demands on the individual health professional, but first and foremost on the health system, including overall priorities, organisation and interaction between the different levels of health care. The outcome for the patient will depend on both the programme of services he or she receives from the health service and the patient’s own efforts to influence his or her situation.

Seen in the context of the health system’s goals of good health, responsiveness and financial protection (Chapter 1), the example of diabetes points out a number of main issues. These are set out below against the health system’s functions: service provision, resources, finance and governance.

Providing the right services for diabetes is assured by:

- early diagnosis and treatment (general practitioner’s responsibility), identifying people with impaired glucose tolerance “pre-diabetes” and disclosing diabetes among people who are not aware they have the disease
- early intervention in blood sugar level and other risk factors, which can prevent or delay the onset of both diabetes itself and late complications and cardiovascular disease
- better education of patients, for example through learning and disease management courses

The effective utilisation of resources depends on:

- better training of health personnel, especially primary and municipal health care
- establishing an efficient diabetes team at every hospital
- developing and using electronic diabetes case records in specialist and primary health care and making these an essential tool both for optimum treatment and for documenting essential data about diabetes (incidence, prevalence, treatment quality, morbidity and mortality). In the longer term, the case records could also be important in the interaction between patient and health care and perhaps also between the various levels of health care.
- the health sector ensuring that necessary knowledge and data about scope and quality of treatment, especially in hospitals, is available
- developing municipal and nationwide low threshold programmes to help people in high-risk groups to change their lifestyles. This will demand close collaboration between general practitioner and chiefly municipal health care.

A good financing system requires:

- that the costs of setting up a programme in all municipalities which could help people in high-risk groups to change their lifestyles should be seen in context with other central health strategies for cardiovascular disease, obesity, stroke, cancer, physical activity, diet and social inequality in health
- that exercise and changing lifestyle should not be dependent on the financial circumstances of the individual

Good overall management and governance is characterised by:

- the development of interaction between
Symptoms

The essential symptom of all psychotic disorders is that the ability to test reality is diminished. Schizophrenia is also characterised by “twisted” ways of interpreting the world around (delusions, serious misunderstandings), thought patterns and sensual effects. The level of cognitive function is normally reduced in relation to pre-illness level and this affects learning, memory, sensing and motor abilities. The disturbance often means that the more basal functions which allow us to perceive ourselves as unique individuals, our self-perception, are other than normal.

Schizophrenia is characterised by three main types of symptoms. We speak of positive symptoms when the condition is marked by something “which comes in addition” to a person’s normal sensing and interpretation of his or her surroundings. Unreal sensory perceptions (hallucinations) may affect all senses – hearing, smell, sight and touch. Delusions are serious misunderstandings which sit so firmly that the patient cannot convince him or herself that they are wrong.

Thought and emotional disturbances are the second type of symptom.

The third main group of symptoms and indications are the so-called negative symptoms. These symptoms are characteristic in the development of chronic schizophrenia and really mean that “something which was there before has gone”. The negative symptoms may be difficult to distinguish from the onset of depression (post-psychotic depression) or from the side effects of especially the “old” types of anti-psychotic medication.

4.4 Schizophrenia – a complex disorder

The word schizophrenia itself comes from the Greek and means “fragmented mind”. This concept came into use in 1911 to describe the way in which a patient developing this disorder would suffer a comprehensive breakdown of mental processes. Schizophrenia represents a great challenge for the health system. It involves extensive and long-term suffering for those who develop the disorder and for their families.

The concept of schizophrenia is still controversial. Schizophrenia is a syndrome, that is to say a diagnosis based on a collection of signs and symptoms and not a clearly defined condition. The various diagnostic systems are based on a description of symptoms and signs and are not concerned with presumed cause.
Incidence
The number of new cases of schizophrenia a year (incidence) varies between 10 and 40 per 100,000 in different studies. Based on Norwegian studies we can estimate just under 20 new cases a year in Norway’s major cities and probably somewhat less in rural districts. For the country as a whole this adds up to about 1,000 new cases of schizophrenia a year. It is uncertain whether the incidence of schizophrenia is rising, stable or falling. A small proportion of patients develop schizophrenia before the age of 18. Experience shows that early onset is linked to a poorer prognosis and therefore a greater challenge for the health services. About 40,000 people in Norway will suffer from schizophrenia at some point in their lives. Not all of these will need continuous treatment. It is estimated that at any one time about 7,500 people have a schizophrenic condition which requires treatment.

4.4.1 Development, causes and comorbidity
Today more experts consider the serious functional psychoses to be dynamic processes which develop in stages, with schizophrenia as the most serious and in some cases the final stage (functional here means non-organic, i.e. no biological cause of the condition can be demonstrated.) Almost all psychoses are preceded by “normal” symptoms and signs such as depression, anxiety, social isolation etc. In modern psychiatric research and clinical practice it is vital to be able to define which stage of a disorder one is dealing with.

From a dynamic perspective, psychosis is regarded as the collapse of psychological coping strategies or psychological defence mechanisms. There is normally continuity between so-called “normality” and the development of psychotic disturbances. The transition is marked by agitation, anxiety and depression. The near-psychotic individual creates his or her own explanations so as to be able to handle the painful disturbance which occurs with these experiences — experiences to which the patient is unable to bring the critical assessment which normally integrates the inner and the outer world. For example a patient may become convinced that there is an evil person or organisation controlling his or her thoughts and at whom the anger he or she feels can be directed. Sometimes in the pre-psychotic phase this process can be arrested by means of positive, supportive events and relationships. If the process continues, unreal sensual effects (such as hearing hallucinations) can be considerable, as a sign that the ability to separate thinking and sensing is more disturbed, until the ability to test reality no longer functions. This transition into psychosis normally occurs slowly, over months or years, although in a few cases it can occur more suddenly. In most cases the affected person will have had substantial and increasingly severe episodes of depression and anxiety, perhaps for several years, before sliding into psychosis.

Case histories of schizophrenia vary. About 25 per cent have just one episode, whilst another 25 per cent have a chronic, life-long disorder. The remaining 50 per cent lie somewhere in between these two extremes (47). Because the disorder is sometimes chronic in nature, the impression may be formed that the patient group is too large to
be able to be fully reached with treatment which might give the patient a “normal” life or — preferably — a return to full health. The treatment services may develop a kind of defeatism, which is actually based on a lack of proper knowledge of the extent of the disorder and the results of treatment. At worst, this kind of lack of knowledge among health care administrators may lead to misguided prioritisation of available resources and a lack of proper organisation of services being offered.

Possible causes
The stress-vulnerability model (48) integrates the psychological models with possible biological models for explaining susceptibility to the development of psychosis. A low threshold for psychotic breakdown may be due to either biological or psychological conditions, or both together.

The causes of schizophrenia have not been determined. The relationship between heredity and environment is the subject of intensive research, including genetic markers, factors in pregnancy and at birth, and factors of a physical and psychological nature. Recent research claims that environment is of significance. Growing up in cities, migration and drug use all seem to be risk factors. No clear correlation has been found between the incidence of schizophrenia and social class, but the prognosis is poorer for patients from lower social classes. This is probably because it takes longer for this group to begin treatment.

Comorbidity
Patients with a diagnosis of schizophrenia often fulfil the diagnostic criteria for other psychiatric disorders. As many as 48 per cent of patients with schizophrenia have one or more other psychiatric conditions. The most common are compulsive disorders (29%), depressions (27%), panic disorders and post traumatic stress disorder (40%) (49).

In the mental health field a great deal of attention has been given to “double diagnoses” in which the patient has both a serious mental disorder and serious drug or alcohol problems. This is an increasing problem for health services throughout the western world. When it comes to schizophrenia, the lifetime incidence of simultaneous substance abuse varies between 15 and 45 per cent for narcotics and 20 and 50 per cent for alcohol. The wide variation is due largely to age and place of residence. Addictive substance abuse is revealed in about 20 per cent of patients with first-time psychoses and appears to have increased over the past decade. Areas which have a system in place for the early detection and treatment of first-time psychoses can help to reduce this substance abuse by about 50 per cent after one year.

Individuals with schizophrenia have a 4 to 5 times higher risk of substance abuse than the rest of the population. The sequence of cause is still the subject of debate; it is unclear whether substance abuse increases the risk of becoming psychotic or whether psychosis increases the risk of substance abuse. In recent years the question of whether narcotic substances could trigger a latent psychotic disorder in individuals with increased susceptibility to the development of psychoses has been much discussed. A preliminary answer is that centrally stimulating substances appear to result in increased
sensitivity and repeated use increases the unfortunate effects of the narcotic substance. It has been shown for methamphetamine and cannabis especially that repeated use can trigger schizophrenia-like episodes which may last for several weeks and finally result in a drug-induced schizophrenia, which becomes a permanent condition regardless of whether or not substance abuse continues (50).

The treatment of patients with substance abuse and a serious mental disorder presents a great challenge, and the combination also makes these patients more prone to serious medical complications. They often require emergency hospital admission and are poor at following up treatment which has been initiated. The mental health service has often lacked the competence to investigate and treat the substance abuse, whilst the institutions and services specialising in substance abuse have often lacked the competence to investigate and treat serious mental conditions. These patients need good investigation and treatment of both mental and drug related conditions.

There is also an increased incidence of somatic conditions such as ulcerative colitis, cardiovascular disease and diabetes, but somewhat lower for lung cancer. Cardiovascular diseases, intestinal diseases, endocrine disturbances and respiratory diseases contribute to a higher mortality among schizophrenics than among the non-afflicted population.

**Risk of suicide**
Between 4 and 13 per cent of people who receive a diagnosis of schizophrenia commit suicide and between 25 and 50 per cent make one or more suicide attempts. A meta-analysis from 1966 to 2003 found that 4.9 per cent of schizophrenics commit suicide, usually linked to onset of the condition. Several risk factors for suicide with schizophrenia have been identified. The most important are first illness episode, previous suicide attempts, depression, drug abuse and men (51). The TIPS study (early detection and treatment of psychosis) clearly shows that the risk of suicide is substantially reduced if there is a system for early detection and treatment (52).

**4.4.2 Investigation**
With schizophrenia a broad investigation is always important because there may be a need for several different measures from various services. To ensure the best possible quality of diagnosis, there is increasing use of structured interviews in which a discussion with the patient goes through the various symptoms and their development. Investigation also includes somatic examinations, relevant blood tests, MR/CT of the brain, systematic assessment of the severity of symptoms and problems with the aid of a questionnaire for the patient and rating scales to be completed by those investigating the patient and a review of social and practical function, life situation and social network. A neuropsychological investigation should be included as standard.

**4.4.3 Forms of treatment which have a documented effect**
Treatment should as far as possible be founded on evidence-based elements. There is comprehensive research literature in this field which shows that there is empirical evi-
whilst the effect on negative symptoms is often better for the newer medications. By reducing problems and afflictions, medications can also help the patient to make better use of his or her own abilities and resources and to manage better.

Most people who have a diagnosis of schizophrenia take antipsychotic medication and in some cases also other forms of psychopharmacae. In treating young people and people with first-time psychosis it is especially important to be careful with dosage, to reduce side effects and avoid patients stopping their medication. Research into first-time psychoses in recent years has clearly demonstrated that one can and must reduce dosage compared with earlier practice. A trusting relationship between patient and the person administering treatment can help ensure that the patient keeps taking the medication, and therefore also helps improve the effect.

The psychoeducative approach
The psychoeducative (knowledge-conveying) approach to treating patients with schizophrenia has its basis in family therapy and cognitive techniques (53). Members of the patient’s family are here brought in as active partners in treatment. Both patient and family are taught about the disease and how it can be handled in a positive way. Psychoeducative work with families may be offered to individual families or to multi-family groups. The teaching helps to establish a common language and a common understanding of what psychosis is. Family work of this kind is as effective as medicinal treatment, but has not yet been...
predict which patients these are, it may be desirable to give such an opportunity to patients where we believe it may work.

Environment therapy and what form it takes play a vital role, both in residential care and in the treatment environment the patient is offered in the municipalities. We know that certain environmental characteristics have a useful effect, while others can be adverse. This is particularly important in the light of recent trends, with the municipal services having the main responsibility for long-term environment therapy. This also makes new demands of our strategies for competence building and in the long term it will tend to blur the boundary between first and second line services. In Norway we now have ten years’ experience with a 2-year local education programme in which professionals from both mental health care in the municipalities and the specialised mental health service together receive education and guidance in treating patients with schizophrenia and other serious mental disorders.

The use of music therapy as a supplement to other treatment has also been shown to sometimes improve the patient’s condition (59) and is an example of a type of approach which can work in ways other than the traditional forms of treatment.

### 4.4.4 Preventing and revealing the development of psychosis

Health-promoting and preventive work which hinders the development of schizophrenia or other serious mental disorders is mainly done
by agencies other than the health services. Everything which may have a beneficial effect on growing up or on adult life may have significance. School and employment are important arenas for developing affinities and personal resources. What teachers and employers do to develop a good environment and encourage situations which promote accomplishment and counteract disease can therefore have great significance.

Knowledge of what promotes good mental health and prevents the development of mental disorders is therefore important among the general public — among family, friends and work colleagues, and among those who work in schools or as managers in employment (see also chapter 2).

It is important to try to ensure that people who develop, or who are in danger of developing, a psychosis receive an examination and treatment quickly. The period of untreated psychosis from first sign of psychosis until adequate treatment is administered is most often between one and two years in the western world (60). Together with a previous prodromal phase (earliest/pre-illness phase) of a year on average, this means that young people who develop a psychosis often go untreated for two to three years (61). Large-scale information campaigns could reduce the period of untreated psychosis in a community from years to a few weeks or months. Early treatment of untreated psychosis for a limited period appears to give a better prognosis and reduce the risk of suicide. The Norwegian-Danish-American TIPS research project has made a considerable contribution to new and vital knowledge in this area (62).

School has an important role in discovering the possible development of psychosis in young people at an early stage. This applies especially to upper secondary schools, university colleges and universities, since it is in these age groups that schizophrenia and other psychoses often first appear. Teachers and advisers must learn to recognise the early signs of the potential development of psychosis and take them seriously. Teachers are often the first to notice that something about an individual student “isn’t right” and they often see it before the family. The school health service, general practitioner and municipal mental health workers can be brought in and liaise contact with the team working in early psychosis treatment in the mental health service. In Norway the Directorate of Health and the Ministry of Education have established systems for this through the “Mental Health in Schools” programme.

According to research, information programmes are a necessary prerequisite for achieving early recognition of psychoses among young people in a community. Such programmes must be devised in close cooperation with user organisations. Relevant target groups for these information strategies are the general public, patients and their families, schools (advisers, class teachers and students), general practitioners, municipal psychologists, public health nurses and social services, the specialist health service, field workers in the municipalities, psychiatric youth team (PUT) and others (63).

The health services first enter the picture when someone feels themselves to be ill or in danger of becoming ill. The health services can therefore mainly contribute to secondary
Based on the knowledge that illness costs relating to treatment and lost production must be seen in a lifetime perspective, it is by no means certain that such costs may be reduced by treating individual illnesses (see Chapter 3). The economic welfare effects in the form of life years with better quality gained will in any case be considerable if serious illness which affects young people can be treated.

Systematic estimates in Australia of what is achieved through current health programmes have concluded that they are removing 13 per cent of the total consequences of schizophrenia in society. With optimum treatment based on what is known of treatment methods with documented effects, their estimate is that 22 per cent of the consequences — almost twice as many — could be removed. It appears that the more consistent use of documented forms of treatment could give a substantial gain. At the same time it should be pointed out that these estimates also indicate that 60 per cent of the consequences of mental disorders cannot be removed with the methods of treatment we have today.

A system of treatment which combines the treatment elements which are currently proved to be effective has been shown to be the most cost effective, including for patients with long-term illness (67). With the reduction in the numbers of long-stay beds in psychiatric hospitals it will eventually only be patients with an acute need for treatment left in them. Discharging such patients will often be more resource-intensive than keeping them in institutions, since many of them will require round-the-clock attention even though they are living prevention by limiting or reducing the consequences of illness. But they can also help to spread knowledge of what promotes health and prevents illness. The central authorities, local authorities and regional health authorities should also focus on information and anti-stigma strategies.

4.4.5 Costs
Schizophrenia involves large costs for society. This is largely because schizophrenia often appears early, often severely impairs function and is long-lasting. The most common age for the illness to appear is in the early 20s. In many cases the disorder is lifelong, requiring support for subsistence, housing and employment. Most patients will need both primary and specialist health care during long periods of their lives. Two and a half per cent of the country’s recipients of disability benefit have a diagnosis of schizophrenia and only about 30 per cent of all those with schizophrenia are in normal employment.

In its report “The global burden of disease” the World Health Organisation concludes that unipolar depression, alcohol misuse, bipolar disorder, schizophrenia and compulsive disorders are among the ten most frequent causes of disability in the world as a whole (64). On average in the western world, 1 per cent of gross domestic product is spent on the treatment, care and support of people with a diagnosis of schizophrenia.

In 1994 an estimate of the direct and indirect costs for this group of patients was made in Norway. This showed that the total costs represented almost NOK 4 billion a year (65). Converted to today’s level of costs and prices, this would mean about 7 billion a year.
in apartments outside institutions (68). It may nevertheless be correct to use resources so that these patients can live outside institutions, because for most of them this will give a better quality of life (69).

4.4.6 Two cases – different outcome, with first-time psychosis

Per is now 33 and it is 10 years since he had the worst experience of his life. He was studying abroad and on a study trip to a third country his friends noticed that he was becoming withdrawn and moody. After he returned, his studies started going badly, he seemed distrustful and he neglected his personal hygiene. After three months the college notified his family, who immediately took Per home. The family’s general practitioner, who had known Per since he was born, suspected that Per was psychotic, even though he denied having any mental afflic-
tions. He was immediately admitted for observation, against his will, and within a few days was displaying obvious signs of a paranoid psychotic disorder. Per was offered psychotherapy, but refused medicinal treatment. The family attended family discussions. After a few weeks he was discharged, but the psychotherapy and family discussions continued for about a year. Since then he has been healthy and he has completed his higher education.

The following factors may have contributed to things going well:

• Per’s psychosis was discovered relatively early, so that it had been untreated for only three months.
• College and family acted quickly and the family doctor, who knew Per previously, acted quickly (no “wait and see” attitude)
• Per began a good course of treatment quickly, because the hospital had a place, because effective forms of treatment were used and there was continuity in the follow up. The family was also offered the chance to play an active role in the treatment.

Kari is 26 now and has been mentally ill since she was about 13. Now, later on, she can explain that she really began to drop out of school work around the age of 13, with increasing truancy, difficulties in concentrating, inner agitation, feelings of melancholy and a sense of being “on the outside”. She began to hang around with “dubious” friends and experimented with hash and alcohol. She was seen as a problem pupil at school and it was a relief for the teachers when she finally dropped out of school for good. Her parents were desperate but could not control her. The child welfare authorities were also involved but Kari “sneaked off”. The family had no regular contact with a doctor.

Kari tried taking a general course at upper secondary school, but soon dropped out of this too. Around this time she began to hear faint voices; the voices were silenced when she used hash. She could still live at home, but came and went as she wanted, turned night into day, was untidy and neglected her personal hygiene. She became more and more aggressive towards her parents and others who tried to “talk her round”. Finally an uncle took things in hand and got her to the doctor on call. The doctor
Kari’s mental disorder was complex and difficult to treat because she took drugs, because she lacked motivation and recognition of her mental disorder and need for treatment and thereby also refused medicinal treatment and never attended a psychosocial intervention programme.

From research over the last 10 to 15 years we have learned much about the importance of what the health system does when a person becomes psychotic for the first time. The main issue is how early we discover that a person is psychotic or on the way to becoming psychotic, how this is investigated and what kind of treatment is given.

Investigation and treatment in a specialised mental health service
All patients with first-time psychosis should be examined and treated at units of the mental health service which have the necessary competence in such examination and treatment.

The initial treatment is normally received as an in-patient. But where outpatient or mobile teams are in place for early intervention in psychosis, it has been shown that about a third of patients can be treated without being admitted (70).

The purpose of admitting the patient is normally twofold:
• to gain control over and secure the situation for patient and family
• to establish a good treatment situation and relationship with those providing

The following factors may have contributed to this negative development:
• Kari’s psychosis was discovered late so that it had been untreated for over four years. The school did not notice that something was seriously wrong. The family did not notice or was not able to see that something was wrong, the general practitioner system did not pick up on her problems and the doctor on call did not know her.
• Kari did not start on adequate treatment because the mental health service did not have the capability to see what this was and to make a diagnosis, there was a lack of treatment capacity, a lack of adequate treatment being offered to her, and the family was never given the opportunity to take

...
the treatment, which can then form a basis for long-term outpatient or mobile treatment.

Since it is the cognitive (thought process) disturbances and negative symptoms which cause the most damage to the functional abilities of patients with schizophrenia, the aim has been to develop forms of treatment which directly address these.

The initiation of medicinal treatment should occur in close collaboration with, and under the close supervision of, competent medical professionals, but not necessarily as an inpatient. With first-time psychosis one must administer the lowest possible dose so as to limit side-effects and because these patients do not normally need as high a dose as patients with recurring psychoses.

The stay as an inpatient should occur in an environment designed for people with psychoses, with environmental therapy and a ward atmosphere which is conducive to the healing process. The environment should be characterised by security, structure, order and supervision (71). An insecure environment can worsen the condition of psychotic patients.

Treatment should also include measures to reduce stress and increase support based on an overall assessment of the patient’s individual needs. The aim is that through treatment the patient will learn to know him or herself and his or her own pattern of reactions, as well as what can lead to increased stress and the danger of triggering further psychotic episodes.

All patients with first-time psychosis should be offered psychological treatment in the form of cognitive therapy and a psychoeducative approach. Norwegian studies indicate that about half accept it and about half the families join multi-family groups where this is offered (72).

During the first contact for treatment, whether as an in- or outpatient, the patient should be offered the opportunity of having an

Ensuring optimum early intervention with first-time psychosis

- All regional health authorities should consider setting up specialist teams for examining and treating patients with psychosis or the danger of developing psychosis.
- All those with first-time psychosis or suspected psychosis should receive a systematic examination including diagnostic interview, neurocognitive testing and other examinations in accordance with the recommendations of the clinical guidelines.
- All those with first-time psychosis should be offered psychological treatment.
- Anti-psychotic medicinal treatment for first time psychosis should be with newer medications and with the lowest possible effective dose, adjusted on the basis of blood tests.
- All patients and their closest families should be offered support and psychoeducative programmes.
All municipalities have teams or specialists who follow up on patients with schizophrenia or other serious mental disorders in the home setting and in the local community. Often it is these who also have the main responsibility for coordinating collaboration, a supervisory group if there is one and the devising of an individual plan for the collective course of action for the patient. In some municipalities psychologists are stationed at mental health units. It is desirable that these should have special expertise in the mental health of young people and collaborate closely with general practitioners and other municipal health services.

Most people with schizophrenia will require long-term treatment and follow-up, from primary health care and other municipal and local services. The municipality, district psychiatric centre (DPS) and hospital psychiatric services must work together from the time the patient first begins treatment, with a view to long-term follow-up over several years.

The municipality must also work with NAV (the Norwegian Labour and Welfare Organisation) and other agencies to actively help in finding suitable employment or education. School plays an important role in helping to provide a good social and learning environment when the person who has been undergoing treatment is ready to return to an educational setting. School nurses, the Paedagogical Psychological Service (PPT) and the student health service at university can also contribute.

For patients who are in employment, the employer’s role is important in ensuring a suitable work situation, with collaboration and individual plan of treatments to suit his or her own needs. This should occur with the close collaboration of all parties involved – patient, family, mental health service, municipality and possibly also employer or place of study.

With first-time psychosis, we have results from Stavanger and Ullevål which indicate that it is possible to achieve remission (return to health) in about 80 per cent of cases in the course of a two-year period (73).

Support and follow-up from municipal and other services

The general practitioner has an important role in the treatment and follow-up of patients with first-time psychosis or at risk of psychosis. Somatic conditions may form part of the picture and for many patients the stigma of contacting the doctor may be less than of contacting the mental health service. Both following up on medicinal treatment and writing doctor’s certificates which may release various kinds of support can be among the duties of the general practitioner, and the general practitioner will also be a vital person in the collaboration to provide a collective course of action by the health services and other types of services. Norwegian studies show great variations in how well general practitioners follow up patients with serious mental disorders like schizophrenia (74).

Few young people are in regular contact with their general practitioners. Not all municipalities have a good system for the general practitioner’s participation in the follow-up and treatment of serious mental disorders. Psychologists in the municipality can provide psychological expertise in the continuing treatment and follow-up provided by the municipality.

All municipalities have teams or specialists who follow up on patients with schizophrenia or other serious mental disorders in the home setting and in the local community. Often it is these who also have the main responsibility for coordinating collaboration, a supervisory group if there is one and the devising of an individual plan for the collective course of action for the patient. In some municipalities psychologists are stationed at mental health units. It is desirable that these should have special expertise in the mental health of young people and collaborate closely with general practitioners and other municipal health services.

Most people with schizophrenia will require long-term treatment and follow-up, from primary health care and other municipal and local services. The municipality, district psychiatric centre (DPS) and hospital psychiatric services must work together from the time the patient first begins treatment, with a view to long-term follow-up over several years.

The municipality must also work with NAV (the Norwegian Labour and Welfare Organisation) and other agencies to actively help in finding suitable employment or education. School plays an important role in helping to provide a good social and learning environment when the person who has been undergoing treatment is ready to return to an educational setting. School nurses, the Paedagogical Psychological Service (PPT) and the student health service at university can also contribute.

For patients who are in employment, the employer’s role is important in ensuring a suitable work situation, with collaboration and individual plan of treatments to suit his or her own needs. This should occur with the close collaboration of all parties involved – patient, family, mental health service, municipality and possibly also employer or place of study.
necessary support, for the person who returns to work after being signed off sick or admitted for first-time psychosis.

The main responsibility for maintaining and revising the individual plan (IP) for the collective course of action for the patient lies with the municipality.

4.4.7 The remission phase and the first years
Both Kari and Per will require long-term treatment and follow-up. Research indicates that after first-time psychosis one should be prepared to continue treatment for up to five years if necessary and not just two years or less, as is often the practice. For some patients recovery may only come after many years.

Kari and Per have different treatment needs. For Per one year’s follow-up as a psychiatric outpatient, with the emphasis on psychotherapy, is enough. He is motivated to follow the treatment and receive help; he is scared by what he has been through and will do everything he can to prevent it from happening again.

Kari needs long-term help from a range of services, with the emphasis on support and care in the community. She is not very motivated towards receiving treatment and the most important thing is to keep her drug-free, so that she avoids new episodes of psychosis. We know that on average each new episode will be longer than the last, which means it will become more difficult to come out of the psychosis each time.

The treatment and support measures are outlined above. The most important thing is to tailor these to the patient’s individual needs. In Kari’s case there will also be the question of the possible need for coercive treatment. Schizophrenia is a life-destroying condition for many of those who are affected, in terms of both quality of life and mortality.

In Kari’s case the DPS must also be involved and will take over responsibility for treatment from the hospital specialist unit. The programme of treatment and care must be devised in close collaboration with the municipal health services. Outpatient or mobile teams at the DPS must be involved in the ongoing follow-up. In the event of new crises, the team will be able to attend and to support the municipal apparatus.

Treatment in the mental health service
The job of the mental health service does not end when the patient is out of the first-time psychosis. There is a strong likelihood of further psychotic periods and treatment and follow-up must therefore continue for several years under the same principles as described above. Recurring psychotic episodes will mean new phases of disorder and impaired function, with consequences for the patient’s social life.

After a patient has come out of psychosis and has been discharged from institutional care, there should also be continuing treatment from the mental health service, which has specialised competence for this. Densely populated areas often have their own specialist team. In other places this will probably need to be at outpatient departments and with teams at district psychiatric centres or hospitals. In this case it is important that those working on this have the necessary expertise.
Specialist health care should have a special programme of treatment for those patients who do not come out of first-time psychoses within a few months. Such special programmes hardly exist in Norway, which is a weakness.

When an inpatient is discharged, it is important to secure the transfer of contact, so that the patient does not drop out of treatment and follow-up, thus risking relapse and a possible readmission. It has been shown that if contact is established between the patient and the persons with whom he or she will continue treatment before discharge from the institution, then the risk of subsequently dropping out of treatment is greatly reduced. The Norwegian Board of Health Supervision has repeatedly reported failure on this point in many parts of the country.

Ensuring optimum treatment in the first years

- When an in-patient is discharged from hospital, it is important to secure the transfer of contact, so that the patient does not drop out of treatment.
- Treatment should consist of both medicinal and psychological methods (psycho-educative approach, cognitive therapy/training).
- Every patient with first-time psychosis should be followed up over several years, even where things are going well. This reduces the risk of new psychotic episodes developing.
- Close collaboration should be established and maintained between the services the patient needs, so that the patient has a coordinated programme suited to his or her own needs.
- Every patient’s treatment should be handled in the long term by one person, to ensure continuity and to enable the development of a relationship of trust between patient and professional.
- All patients and their closest families should be offered support and psycho-educative programmes, preferably in multi-family groups if indicated by the situation.
- Patients who are not out of psychosis in three months should be offered a programme of treatment for patients who have not shown adequate improvement with standard treatment.
- Health care should collaborate with school/employer in providing a suitable situation at the place of education or employment.
- Municipal services should follow up on the patient’s home situation and offer adequate support with housing, finance, leisure and other practical and social conditions.
- An individual plan must be devised in which the patient, family and relevant services all participate. This should be coordinated by the municipality, possibly with a coordinator from a supervisory group.
Dedicated psychosis teams
Increasingly, the district psychiatric centres (DPS) now have their own psychosis teams which can treat and follow up on patients with schizophrenia and other serious mental conditions over an extended period outside institutions. These teams base much of their practice on experience of assertive community treatment (ACT), but do not usually provide such a comprehensive and close follow-up. ACT is an effective form of psychosocial treatment for the worst-afflicted schizophrenia patients, who would otherwise have spent long periods inside institutions (75). The mobile team can follow up with patients at home or elsewhere, if necessary several times a day and round the clock when needed. The team covers most treatment needs and ensures coordination with other services. ACT has the best effect when the model is followed in full.

The ACT model has also been further developed for integrated treatment of both psychosis and drug problems where serious mental disorders and serious drug abuse are present in combination. In Norway, an ACT team has been started up with support from the Directorate of Health. This has been organised as a three-year project and will be evaluated.

Relapse and new psychoses
Many patients with schizophrenia suffer relapses with new psychotic episodes, often leading to readmission. A somewhat higher dose of anti-psychotic medication than for the first-time psychosis and admission will often then be required, but otherwise the same principles as outlined above for institutional treatment still apply.

Some patients with schizophrenia are admitted during a psychotic episode against their will. The reason this occurs is to safeguard the patient, to protect others or to ensure the course of treatment which is considered necessary. The risk of coerced admission is significantly higher for patients with schizophrenia than for other diagnosis groups (76). There is an action plan for reduced and quality-assured use of coercion, which implements a number of measures to reduce the extent of coercion.

Ensuring optimum long-term treatment

- Patients with schizophrenia should be offered treatment and follow-up over many years, if necessary for the rest of their lives.
- The patient, mental health care and the municipal health and social services must regularly assess whether the patient is receiving the necessary help in relation to his or her needs and opportunities.
- The system of long-term contact with a single person should continue for life or as long as the patient wishes it or still shows signs that the illness is not over.
- The patient’s somatic health should be followed up along with their mental health to limit the extent and consequences of side-effects and co-existing somatic illness.
- Work or other meaningful employment, suited to the patient’s wishes, possibilities and needs, should be facilitated.
4.4.8 User participation
All good mental health care has the patient and family in focus and the goal of all psychiatric or psychological treatment is to enable the patient to regain full responsibility for his or her own life and development. Increasing emphasis is now being placed on enabling the patient, as a user of the health services, to have a greater influence on his or her own treatment and also on giving families the help and support they need.

Patients and families as users should also be able to participate in those fora in which decisions are made on priorities and further development of the health services, both in primary health care and the mental health service.

Increased user participation is a central goal of the Escalation Plan for Mental Health (1999-2008). In line with these intentions, a number of different programmes have been established which are run and managed by the users themselves. Some examples of this are patient mentors with user experience, Fountain House, user-managed centres, support groups and crisis line services. These schemes should be supported and further developed.

4.4.9 Long-term illness and treatment
Most people with a diagnosis of schizophrenia will need periodic or continuous treatment and help over many years, perhaps for the rest of their lives. Both treatment from the mental health service and support and help from municipal services must be continuously adapted to the patient’s individual needs, which may vary and change over time. Even though for many people positive symptoms will diminish over time, there is a risk that cognitive and social problems will reduce the opportunity for living as the patient would wish. At present there is insufficient knowledge about the extent to which better treatment of first-time psychosis and during ensuing years offers increased long-term benefits.

We also know too little at present about the results of treatment of schizophrenia in treatment institutions in Norway. The regional health authorities should collaborate with national health authorities in introducing the compulsory measurement of results, in accordance with internationally recognised, consensus-based measurements, such as percentage of patients with first-time psychosis who achieve remission within one year. The duration of untreated psychosis (DUP) is a great challenge for health policy because a long DUP means a poorer prognosis. DUP is used as an indicator of quality in mental health care. A major survey of acute psy-

---

Effective measures

One of the most effective measures for countering the stigmatisation of people with schizophrenia is to find them a form of employment which they can manage (78). This means a great deal for identity and self-respect, it gives them a role other than that of patient, gives them a place to meet others and gives them something to talk to others about. This is one of the most important areas in which one can provide something significantly different from what is being done today.
previously rendered passive in psychiatric institutions are now becoming passive long-term patients in the community, with a danger of stigmatisation and social isolation. One method for counteracting this might be to undertake regular assessments in which the patient, mental health care, primary health care and municipal services together discuss needs and a programme for avoiding the patient being “forgotten” and new possibilities overlooked.

There are a number of examples where even patients who have been in institutions for many years and are passive can achieve great changes in their lives from an active treatment programme over months or years. Seen in the context of the health system’s goals of good health, responsiveness and financial protection (Chapter 1) the example of schizophrenia points out a number of challenges. We have tried to set these out below against the health system’s functions: service provision, resources, finance and governance.

4.4.10 Schizophrenia and challenges for the health system
Coordination and continuity among the combined services for persons with schizophrenia is very important because they need so many kinds of help over a long period. In the health services today this works very unevenly, especially across different types of services.

The use of supervisory groups and individual plans is part of the authorities’ strategy for achieving better coordination. Even so, their use varies greatly. It is important to document to what extent these methods are being actively used to achieve well-coordinated treatment and to what extent they are used because they are defined as mandatory. The crisis plan and its effect are seen as being important, but again this is not well enough documented.

There is a danger that patients who were psychiatric treatment programmes and case histories has shown that about one in four patients admitted to acute psychiatric departments have schizophrenia and about one in four have serious drug problems (77).

According to a review carried out in mental health care and in institutions specialising in substance abuse disorders, patients with schizophrenia and serious drug-abuse problems are mainly treated in the mental health services and rarely in institutions specialising in substance abuse disorders. But it may be that some patients with serious mental disorders have been under-diagnosed in institutions specialising in substance abuse disorders because such diagnostic competence may be less than in the mental health service.

Good service provision with schizophrenia:

- Features of good quality in the treatment being offered include the offer of psychological treatment (psychoeducative approaches, cognitive therapy/training) for first-time psychosis, systematic investigation in line with the recommendations in clinical guidelines and follow-up over many years to reduce the danger of new psychotic episodes. In the case of first-time psychosis, anti-psychotic medicinal treatment should be given using newer medications and the lowest possible effective dose.
• Long-term follow up: Patients with schizophrenia should be offered treatment and follow-up over a long period, if necessary for the rest of their lives. As far as possible, treatment should involve contact with one person over a long period.
• Multidisciplinarity: The patient’s somatic health should be followed up along with their mental health to limit the consequences of side-effects and simultaneous somatic illness or drug abuse.
• User participation: The patient, mental health care and the municipal health and social services should regularly assess whether the patient is receiving the necessary help in relation to his or her needs and opportunities. Patients and families should receive support and psychoeducative programmes, preferably in the form of multi-family groups.

Resources which could strengthen treatment programmes for schizophrenia patients include:
• specialised teams in all regional health authorities for examining and treating patients with first time psychosis or the risk of psychosis. This service should be easily available, with a low threshold and a rapid response.
• access to both medicinal and psychological treatment.
• special treatment programmes available to patients who are not out of psychosis in three months.
• municipal services which follow up on patients in their home situation and offer support with housing, finance, leisure and other practical and social conditions.
• individual plans in which the patient, family and services involved all participate under the supervision of a coordinator in any supervisory group
• better documentation about how supervisory group and individual plan function as a tool for achieving a well-coordinated programme.

A good financing system requires:
• the necessary knowledge about what effects the various ways of financing mental health care and other health services have for patients with schizophrenia.

Good overall management and governance supports:
• good collaboration between services to ensure a coordinated programme which is tailored to the patient’s needs.
• collaboration between health care and school/employer in providing a setting at the place of education or employment which is in line with the patient’s wishes, possibilities and needs.
• good follow-up on discharge from hospital and transfer of subsequent treatment to prevent the patient dropping out of treatment.
• more consistent use of treatment programmes which combine treatment elements of documented effectiveness. It has been shown that such treatment programmes can be cost effective, even for patients with long-term illness.
• regular information programmes about the signs of early psychosis and about where one can seek help for such symptoms.
4.5 Ensuring good treatment

One of the biggest challenges for the Norwegian health system is to ensure good treatment for people with long-term and complex conditions. The prediction is that this group will grow and will present the health service with ever greater requirements in terms of quantity and quality, for both older and younger patients.

How the Norwegian health system addresses these patients can give us an insight into the basic challenges facing the system. In Chapter 4 we have looked at two chronic conditions: diabetes and schizophrenia. These examples can illustrate some opportunities and some challenges in how the health system is meeting the needs of patients.

Delivering comprehensive and coherent services

To achieve the goal of good health and the ability to meet expectations, there is a need for primary health care to be organised and staffed so as to equip it to prevent, discover and treat illness as early as possible.

Resources

Over the coming decades the need for health and care professionals will increase substantially as the relationship between different age groups changes. The capacity to support the elderly, that is to say the relationship between the economically active age group and the group aged over 67, will be substantially reduced. Half as many people will be available to provide services, nursing and care for twice as many people. Nursing and care are also very labour intensive.

To meet this challenge without reducing the capabilities of other countries’ health systems, it is important, and also in line with Report to the Storting No. 1 (2006–2007), that national needs should be met as far as possible from national manpower resources. This makes great demands on how resources are used and how educational capacity is developed.

Better education of health professionals, with special emphasis on the ability to think in terms of the big picture, to see the patient as a whole and to collaborate within the service, between service levels and with other sectors, is vital. This also includes following up on the patient’s home

“For some people mental afflictions lead to long-term sick leave and registered disability – problems which might not perhaps have developed if they had received help in time. Work and activity are good medicines. They do something for people’s self respect and self confidence.”

situation, leisure, employment and social conditions. Efficient and properly composed investigation and treatment teams, with complementary professional competence, could better meet the needs of patients with various chronic conditions.

**Financing system**
From an overall perspective it could be said that the Norwegian system is largely based on intervention late in the course of the individual illness and to a lesser extent organised towards prevention and following up on patients with long-term and complex conditions.

To further develop the health system’s ability to accommodate patients with chronic conditions, more knowledge is needed about what effect various economic instruments and forms of financing have on this group.

**Overall management and interaction**
Patients with chronic conditions need long-term and coordinated services from many sectors – for prevention, disclosing illness, treatment and rehabilitation. Long-term and coordinated collaboration across the various sectors is necessary and should be strengthened.

Politicians and national health authorities have an overall responsibility to enable the municipalities and regional health authorities to develop good routines for interaction — and thereby ensure follow-up of patients at all levels. The national framework agreement on interaction in health and care which was concluded by the Norwegian Association of Local and Regional Authorities (KS) and the Ministry of Health and Care Services in June 2007 is an example of how this can be done.

In order to reduce the incidence of chronic conditions, preventive work must be strengthened as an integral part of general practice.

To reach treatment targets for physical ability and quality of life for patients with chronic conditions, demands will be made of all affected parties: interaction between professionals and the administration levels, continuity in the course of treatment, the application of updated expertise and active and informed patients who are motivated to take an active part in their own care.

In spite of great efforts and a costly treatment apparatus, there is still a long way to go before these characteristics are sufficient for our health system’s ability to accommodate patients with chronic conditions and for reaching realistic goals.

The main goal of the health system is to achieve good and fairly distributed health. Health can contribute to welfare, prosperity and quality of life. We need to gather and use currently available knowledge so as to systematically improve both preventive work and treatment in the Norwegian health system.

The Directorate of Health recommends that we now specifically investigate the health system’s ability to accommodate patients with chronic conditions, complex conditions and long-term needs.
How to meet the challenges facing chronic care?  
- a possible model

Internationally several models for how a health system can provide services to patients with chronic conditions are being applied or experimented with.

There are many models. Here we shall briefly introduce one of them, “The Chronic Care Model”, which was developed by Ed H. Wagner and colleagues at the McColl Institute in Seattle, USA. The model has been practised in various countries and organisations for several years. As a conceptual model, it has proved widely useful. It is used as an analytical tool for organising health programmes because it has made clear the special need for an active focus on and knowledge about the interaction between patient and system.

The model emphasises six components of a primary health based organisation (27, 29). They overlap to some extent. They must work closely together in a structured way.

- **Community, resources and policy** have a place in the model to mobilise the resources which are necessary for the patients, both inside and outside the health sector.

**Figure 4.1** The figure shows the complex input on which the health system’s programmes for patients with chronic diseases are based. The aim is to reduce the development of the disease and to enable the patient, as far as possible, to manage his or her own condition in collaboration with the interdisciplinary efforts of the health systems.  

• **The way the health system organises** the provision of services must ensure the continual development of quality and also tailor the work being done across sector boundaries.

• Provision must be made for **self-management**, to strengthen the patient’s opportunity and ability to manage his or her own illness and take the correct decisions.

• **Delivery system design** should ensure effective treatment and support for self-care and define the responsibilities of various health workers.

• **Support in decision making**, for example evidence-based clinical guidelines, should ensure that clinical treatment is in line with clinical evidence and the patient’s own preferences.

• **Clinical information systems** ensure the availability of both population and patient data to support effective action. Should be used to help the patient follow the course of treatment by actively giving the patient support and planned follow-up through consultations.

In Nolte and McKee’s book *Caring for people with chronic conditions: A health system perspective* (10) it is shown that individual or multiple components of the model lead to better treatment quality and clinical results and better use of resources. It is less clear whether this is a consequence of using the model in its entirety or whether the same beneficial results could be obtained by only applying some of them (80).

Notwithstanding these results, it is not immediately clear how the model could be applied to our health system. But it is interesting to see what attempts Denmark has made and what experience they have after becoming inspired by the model.

For some years Denmark has been building up parts of a national strategy for treating the chronically ill (81). It springs from the government’s public health plan 1999–2008, which chose in particular to combat 8 prevailing diseases. In 2004 the Danish version of *The Chronic Care Model* was introduced. The model was used as the basis for a strengthening and structuring of primary health care and to strengthen collaboration between the first and second line services (82). Some important experience from using the Danish model:

• Strengthening professional content, coordination and integration: Developing patient progress programmes and decision-making tools for the major chronic conditions.

• Informed and active patient: Extensive collaboration in developing the patient’s ability to take responsibility for his or her own health, supported by specific educational and self-care programmes (the Stanford model).

• Proactive role of the doctor as leader of an interdisciplinary team in primary health care: Support system for active and well-informed follow-up of the patient. Focus on rehabilitation and capturing patients who drop out of the treatment apparatus for various reasons.

• Preventive work in primary health care too: Tariff for preventive work as part of the clinic (83) as an incentive for early intervention. Starting a register of treatment of chronic illnesses as an aid to stratification of patients. That is to say preventive work as part of consultation, early intervention with risk (84).

The goals of the model are to increase the quality of what the health service offers and to reduce total costs in the health service. Use of the model has not been formally evaluated. *Could this nevertheless be a means of approaching the system challenges in Norwegian chronic care?*
Bibliography

Chapter 1 – The Norwegian health system

16. Johnsen JR. Health systems in transitions:
Chapter 2 – The health system’s capacity to improve public health

1. Rognerud M. Data from health survey 2002 (not published).
18. Bunker JP. The role of medical care in contributing to health improvements within societies. International Journal of Epidemiology


60. Arbeid, velferd og inkludering. St.meld. nr. 9


Chapter 3: How health creates prosperity and welfare


Chapter 4: Chronic conditions: – a special challenge for the health system


9. Adeyi O, Smith O, Robles S. Public policy and the challenge of chronic noncommunicable...


18. Engum A. Depression and anxiety: their relations to thyroid dysfunction and diabetes in a large epidemiological study (PhD thesis) Trondheim: Norwegian University of Science and Technology, Faculty of Medicine, Department of Neuroscience; 2006.


29. Midtjylland K. HUNT – Foreløpige data (person- 


30. Roper NA, Biluos RW, Kelly WF, Unwin NC, 

   Connolly VM. Excess mortality in a popu- 

   lation with diabetes and the impact of 

   material deprivation: longitudinal, population 


31. Claudi T, Midtjylland K, Holmen J, Fougner K, 

   Krüger Ø, Wiseth R. Cardiovascular disease 

   and risk factors in persons with type 2 

   diabetes diagnosed in a large population 

   screening: The Nord-Trøndelag Diabetes 

   Study, Norway. Journal of Internal Medicine 


32. Johansen OE, Birkeland KI, Brustad E, Aaser 

   E, Lindahl AK, Midha R, et al. Undiagnosed 

   dysglycaemia and inflammation in cardiovas- 

   cular disease. European Journal of Clinical 

   Investigation 2006;36(8):544–51.

33. Claudi T, Cooper JG, Midtjylland K, Daee C, 

   Furuseth K, Hanssen KF. NSAMs handlings- 

   program for diabetes 2005 [website]. Oslo: 

   Norsk selskap for allmennmedisin [updated 


   nsamdiabetes.no/

34. Nossen JP. Hva foregår på legekontorene? 

   Konsultasjons-statistikk for 2006. Oslo: 

   Norwegian Labour and Welfare Organisation; 


   www.nav.no/binary/805363647/file

35. Tuomilehto J, Lindström J, Eriksson JG, Velle 

   TT, Hämäläinen H, Illanne-Parikka P, et al. 

   Prevention of type 2 diabetes mellitus by 

   changes in lifestyle among subjects with 

   impaired glucose tolerance. New England 


36. Diabetes Prevention Program Research 

   Group. Reduction in the incidence of type 

   2 diabetes with lifestyle intervention or 

   Metformin. New England Journal of Medicine 

   2002;346(6):393–403.

37. Jenum AK. A public health approach to the 

   prevention of type 2 diabetes and cardio- 

   vascular disease: background, methods and 

   results of the «Romsås in motion» community- 

   based intervention study [Dr. Med. thesis]. 

   Oslo: Faculty of Medicine, University of Oslo 

   Unipub; 2006. Unipubavhandlinger no. 384.

38. Claudi T, Cooper J, Husken MF, Michaelsen 

   T, Harboe K, Ingskog W, et al. Risikoin- 

   tervensjon ved diabetes i allmennpakraks. 

   Tidsskrift for Den norske lægeforening 


   HH, Pedersen O. Multifactorial intervention 

   and cardiovascular disease in patients with 

   type 2 diabetes. New England Journal of 


40. Johansen OE, Gullestad L, Blassaad KS, Orvik 

   E, Birkeland KI. Effects of structured hospital- 

   based care compared with standard care 

   for Type 2 diabetes – The Asker and Baerum 

   Cardiovascular Diabetes Study, a randomized 


41. Tight blood pressure control and risk of 

   macrovascular and microvascular compli- 

   cations in type 2 diabetes: UKPDS 38. UK 

   Prospective Diabetes Study Group. BMJ 


42. Stettler C, Allemann S, Juni P, Cull CA, 

   Holman RR, Egger M, et al. Glycemic control 

   and macrovascular disease in types 1 and 

   2 diabetes mellitus: meta-analysis of ran- 

   domized trials. American Heart Journal 


43. Fysisk aktivitet og helse: anbefalinger. Oslo: 

   Directorate of Health; 2000. Available from: 

   www.shdir.no

44. Frøysnes BT, Steen H. Diabetes mellitus: økt 

   risiko for høy sykepengeutbetaling? [post- 

   graduate thesis, Faculty of Medicine, NTNU]. 

   Trondheim: NTNU; 2008.

45. Huang ES, Zhang Q, Brown SES, Drum ML, 

   Meltzer DO, Chin MH. The Cost-Effectiveness 

   of Improving Diabetes Care in U.S. Federally 

   Qualified Community Health Centers. Health 


46. Sælensminde K. Gang- og sykkelvegnettverk 

   i norske byer: nytte- kostnadsanalyser 

   inkludert helseeffekter og eksterne kostnader
63. Johannessen JO. An early detection and intervention system for untreated first episode psychosis: reduction of duration of untreated psychosis (DUP), recruitment through early detection teams (DTs), and two-year course and outcome in first-episode psychosis patients (FEP) [PhD thesis]. Oslo: Faculty of Medicine, University of Oslo Unipub; 2007. Available from: wo.uio.no/as/WebObjects/theses.woa/wa/these?WORKID=62654


82. Danish Health Act of 2005. Available to download (in Danish) from: www.retsinformation.dk/

