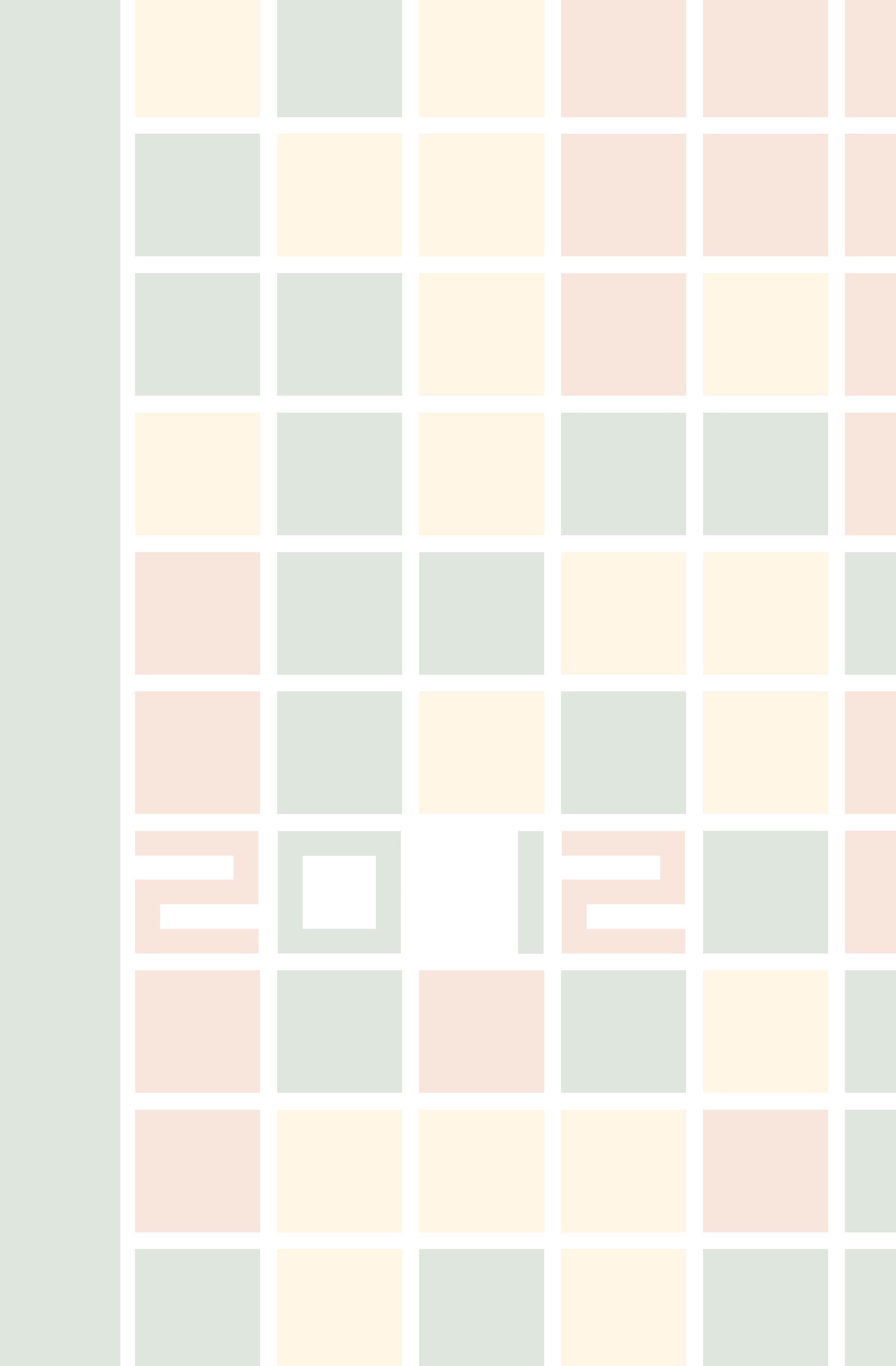
Quality and Efficiency in Swedish Health Care

Regional Comparisons

2012

Swedish Association
of Local Authorities
and Regions

Socialstyrelsen
THE NATIONAL BOARD OF HEALTH AND WELFARE


2012

Quality and Efficiency in Swedish Health Care

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Foreword

This is the seventh report of regional comparisons of healthcare quality and efficiency that the Swedish National Board of Health and Welfare and the Swedish Association of Local Authorities and Regions have published jointly. As was the case previously, the primary purpose of the report is to compare counties, although hospital data are frequently presented.

The steering committee for the Regional Comparisons 2012 project consisted of Bodil Klintberg and Stefan Ackerby from the Swedish Association of Local Authorities and Regions, as well as Mona Heurgren and Marie Lawrence from the Swedish National Board of Health and Welfare.

The members of the joint task force were Thomas Fröjd, Martin Lindblom and Katarina Wiberg Hedman from the Swedish Association of Local Authorities and Regions, as well as Behzad Koucheki, Rickard Ljung and Birgitta Lindelius from the Swedish National Board of Health and Welfare. Anna Sandelin from Registercentrum in the Västra Götaland region and Fredrik Westander, consultant, also participated in the task force. Soffia Gudbjörnsdottir, Staffan Björck and Göran Garellick from Registercentrum in the Västra Götaland region served as experts.

A number of people from both national organisations contributed data for the report and its appendices. External sources of data and documentation, particularly national quality registers, were used for a number of indicators. Special thanks go to representatives of the quality registers, as well as others who contributed information and data to the report.

The project was conducted in dialogue with contacts at each of the 21 county councils.

Lars-Erik Holm

Director-General

Swedish National Board of
Health and Welfare

Håkan Sörman

Executive Director

Swedish Association of Local
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Summary

This is the seventh report in a series entitled *Quality and Efficiency in Swedish Health Care – Regional Comparisons*. Each report covers a wide range of healthcare areas and presents a large number of indicators and comparisons, generally between the various counties of Sweden. The report provides information and data for use in the public debate about the healthcare system and supports efforts by the county councils to analyse, improve and manage the healthcare services they provide.

General observations about changes over time

This year's report presents results for 169 different indicators. The report focuses on national trends for a number of those indicators. While Regional Comparisons is not analytical in nature, the sheer quantity of indicators permits some general observations.

National comparison data from a previous period are available for many of the indicators. Sixty-one per cent of the indicators show an improvement for women and 71 per cent show an improvement for men.

Virtually all of the indicators that reflect survival and mortality reflect a favourable trend. The results are a bit more equivocal when it comes to drugs and medicinal products. The results for some indicators are broken down by the educational level of the patients. Those with the least education have poorer survival rates, higher mortality rates and a greater incidence of avoidable hospitalisation. Another general observation is that gaps in the quality of healthcare services are trending in different directions depending on whether women or men are considered. Both major and minor differences have emerged.

Musculoskeletal conditions – the situation is improving, but not in the entire country

The section on musculoskeletal conditions reflects interventions for major groups of diseases: hip fracture and post-fracture osteoporosis, osteoarthritis of the hip and knee, and rheumatoid arthritis that responds to drug therapy. The results for a number of the indicators are either generally good – for example, implant survival (Indicators 59 and 60) or improving over time. The percentage of hip fracture patients receiving arthroplasty (Indicator 66) has increased, while waiting times for surgery have become shorter (Indicator 65).

Other areas have seen only modest improvements or none at all. Not enough women with post-fracture osteoporosis receive drug therapy (Indicator 69). Although attention has been called to the indicator for several years, no progress has been identified.

Diabetes care – access to data is improving but the results are difficult to interpret

In the wake of growing participation in the National Diabetes Register, access to data about the quality of Swedish diabetes care is very good. Most countries can report process indicators only, whereas Sweden is able to monitor fulfilment of a number of key treatment goals. Because reporting and data have become more comprehensive, interpreting trends over time poses a formidable challenge. The percentage of patients achieving the national goals for blood pressure and LDL cholesterol (Indicators 81 and 83) has increased, while the percentage achieving glucose control goals has stagnated (Indicator 79).

Fewer than half of patients achieve the levels specified in the national guidelines for these three treatment goals. There should be room for improvement, but the percentage of patients who are capable of attaining the treatment goals is difficult to quantify in the absence of formal targets.

Cardiac care – greater focus on preventive measures

The percentage of patients who die after myocardial infarction is a common quality measure (Indicators 87, 88 and 89). This report reconfirms the long-term decrease in the percentage of patients who die after hospitalisation for myocardial infarction. Waiting times for treatment of ST-segment elevation myocardial infarction and certain other areas of emergency care have potential for improvement, (91). The frequency of restenosis of the coronary artery after percutaneous coronary intervention has decreased in recent years (Indicator 96). On another positive note from recent years, heart failure patients are more and more likely to receive the medication recommended in the national guidelines of the Swedish National Board of Health and Welfare (98).

Better goal fulfilment in stroke care, but potential for improvement remains

Goal fulfilment in stroke care is high for a number of process indicators, including treatment at a special stroke unit and administration of a swallow test (Indicators 103 and 105). The percentage of patients receiving thrombolytic therapy has steadily risen, but only a handful of hospitals and counties have reached the level of goal fulfilment specified by the Swedish Stroke Register (Indicator 104). The number of fatalities after stroke has declined over the long term but remained unchanged over the past few years (Indicator 102). The percentage of patients who are independent of others for their personal activities of daily living after stroke has risen somewhat in recent years (Indicator 109).

A comparison between hospitals reveals differences in terms of the percentage of fatalities within 90 days after stroke, even after adjustment for age, gender and level of consciousness on arrival (page 232).

Cancer care – survival rates still improving

Mortality/survival trends for four major types of cancer (Indicators 116, 119, 122, 126) remain favourable over time. Waiting time indicators disclose major differences between the various counties. The median waiting time from receipt of a referral at a specialist clinic until commencement of treatment for malignant head and neck tumours (Indicator 131) was 61 days in 2010/2011, ranging from 37 to 81 days depending on the county. The situation for breast cancer (Indicator 125) is more encouraging. The median waiting time between the initial appointment with a specialist and surgery was 21 days in 2011, varying between 13 and 36 days from county to county.

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Introduction

Background and Purpose

A series of yearly reports entitled *Regional Comparisons* presents indicator-based comparisons of healthcare quality and efficiency among the various counties of Sweden. This, the seventh such report, again compares medical outcomes, patient experience, time-related availability and costs. *Regional Comparisons* is based on available national healthcare statistics. The Swedish National Board of Health and Welfare and the Swedish Association of Local Authorities and Regions conduct the project on a joint basis.

The first goal of the report is to make the publicly financed healthcare system more transparent. Both patients and other citizens are entitled to obtain accurate and complete information about healthcare quality and efficiency. By providing data for public and policy discussions about health care, *Regional Comparisons* improves the prospects for demanding accountability.

The second goal of the report is to advance the cause of healthcare management and control. Both satisfactory and unsatisfactory outcomes, as well as obvious flaws, are identified in a more structured manner. The comparisons spur the county councils to perform in-depth analyses, implement changes and share information. The results presented in Regional Comparisons can serve as the basis for improvement efforts. The county councils also obtain a broader knowledge base from which to monitor and control the healthcare services they provide.

The third goal of the report is to promote quality and availability when it comes to data about healthcare performance and outcomes. When used in published comparisons, such data are under greater pressure to be up-to-date, nationwide and correct. The need for both new and improved data collection is thereby highlighted. This goal is particularly important, given that inadequate data availability and quality significantly limit both comparisons of healthcare quality and the interpretation of outcomes.

Although data are presented per hospital for a number of indicators, the report is neither intended nor designed to support an individual patient's choice of care provider. While most of the comparisons are of interest to patients as well, the presentation would have called for a different form and content to serve that particular purpose.

SWEDEN HAS A DECENTRALISED HEALTHCARE SYSTEM

Twenty county councils and regions and one municipality are responsible for providing their citizens with hospital, primary, psychiatric and other healthcare services. A county council tax supplemented by a government grant is the main means of financing the healthcare system. In addition, small user fees are paid at the point of use. Long-term care for the elderly is financed and organized by the municipalities. Each county council and region is governed by a political assembly, whose representatives are elected for four years in general elections.

The county councils and regions are of different size. With populations between one and two million each, Stockholm, Västra Götaland and Skåne are considerably larger than the rest. Gotland is smallest, with about 60 000 inhabitants. Most of the other regions have populations between 200 000 and 300 000.

Within the framework of national legislation and varying healthcare policy initiatives by the national government, the county councils and regions have substantial decision making powers and obligations to their citizens. The Swedish healthcare system is decentralised. Thus, focusing on the performance of the individual county councils and regions is a logical approach.

Such an effort would have demanded a meticulous, correct analysis of case mix at each hospital and clinic. Data quality, as well as accurate and complete reporting, is integral to ensuring that the comparison do not mislead patients.

Moreover, data need to be more up-to-date and consistently reflective of the various clinics and hospitals if patients are going to make choices based on the report. Clear language and straightforward explanations are also of greater importance in that connection. Finally, many indicators in *Regional Comparisons* concern emergency services, for which patients cannot choose provider in the same way that elective care permits.

Regional Comparisons is one of several sources of information that the Swedish National Board of Health and Welfare and the Swedish Association of Local Authorities and Regions jointly make available to the general public, media, patient associations, county councils, care providers and other organisations. The two organisations also conduct a number of projects on their own that utilise the regional comparisons of healthcare efficiency and quality based on their specific tasks and responsibilities.

Format

The structure of the report has not changed significantly from previous years. The summary at the beginning highlights a few particularly noteworthy results. *Indicators and Sources of Data*, the next section, reviews the ways in which the form and content of the various sets of indicators have changed since the previous report. The section describes the indicator selection process and presents the sources of data on which the comparisons are based.

The section entitled *Reporting Outcomes and Interpreting Comparisons* is important for understanding the significance of the various comparisons. The section discusses both the manner in which the results are presented and a logical approach to making sense out of them. Among the themes central to this section are questions about the meaning of the ranked diagrams, data quality, statistical uncertainty and other challenges that must be addressed before the comparisons can be properly interpreted. The comments accompanying each indicator provide more detailed, specific information.

The presentation of outcomes begins with *Health Care – General Indicators*. Such indicators reflect broad parameters of the healthcare system. The subsequent presentation breaks the indicators down into 12 disease-specific or treatment-based areas, such as gynaecological, diabetes and cardiac care.

Each indicator is described and the results are shown by means of diagrams accompanied by brief explanations. Hospital data and nationwide trends, including supplementary information when appropriate, are presented for each indicator. Outcomes are discussed in terms of county and gender variations, as well as target levels or recommendations in any national guidelines that have been established.

Indicators and Sources of Data

This year's report contains approximately the same number of indicators as the 2011 report. The advantage of having so many indicators is that a wide range of medical conditions and areas of the healthcare system can be reflected. Nevertheless, the indicators do not provide a comprehensive overview of healthcare quality and efficiency. Because data that describe quality are not readily available for many areas of health care, key qualitative variables remain inadequately reported.

In areas for which data are more accessible, only a selection is included. The indicators of cancer care represent a sampling of those that will be included in an evaluation of the national guidelines for a number of types of cancer that the National Board of Health and Welfare has scheduled for publication in spring 2013. The same is true of indicators that quality registers present in recurring reports – only a selection of them are shown here. The selection process has a substantial impact on the reported outcomes of the health care provided by the individual county councils.

For the above reasons, the results are not compiled in a total index of county-by-county quality and efficiency. While the ultimate objective is to reflect the entire healthcare system to the extent possible, the indicators and outcomes should be regarded separately for the most part. Although the overall results cannot be used

INDICATOR SETS

Overall Indicators

Mortality, Avoidable Hospitalisation etc.
Drug Therapy
Confidence and Patient Experience
Availability
Costs

Indicators by Area

Pregnancy, Childbirth and Neonatal Care
Gynaecological Care
Musculoskeletal Disorders
Diabetes Care
Cardiac Care
Stroke Care
Kidney Care
Cancer Care
Psychiatric Care
Surgical Interventions
Intensive Care
Other Care

to judge all of the services provided by an individual county, each indicator points to one or more vital aspects of a particular healthcare area.

The report does not cover sick leave, staff turnover or other caregiver-related factors. The purpose of the comparisons is to shed light on the county councils not as employers, but as administrators of health care, whether provided by public or private organisations.

Although life expectancy and a few other broad indicators are included again this year, *Regional Comparisons* is not strictly concerned with public health at this point. The Swedish National Institute of Public Health, Swedish Association of Local Authorities and Regions, and Swedish National Board of Health and Welfare all publish separate follow-up reports and regional comparisons of public health.

What types of quality and efficiency indicators are presented?

Most of the indicators describe the medical quality of health care. Both outcome and process measures are included, but those that reflect the organisation of health care and other structural concerns are less common. Outcome measures reflect how individual patients fared. A number of them are patient reported outcome measures (PROMs), which are attracting growing interest in Sweden and around the world. See the fact box for more information about these measures.

Process measures, which describe clinical practice, are chosen because they are deemed to have a major impact on results. Some indicators, such as the frequency of Caesarean section, are presented to show variations in clinical practice even though they are difficult to interpret in terms of quality.

One set of indicators looks at how both patients and the general public evaluate contact with, and treatment by, caregivers – including their confidence in the system. Patient assessments of the effectiveness of specific treatment methods are presented under the related group of diseases.

The availability indicators are time-oriented and measure fulfilment of the national care guarantee. Other aspects of availability – such as geographic, language or financial barriers – are not covered.

There are two different kinds of cost and resource utilisation indicators: cost per capita for health care and cost per care event. Cost indicators are most useful when they can be related to other results.

Information from the Swedish Case Costing Database is shown at the hospital level only. Due to the absence of broad comparisons between the hospitals that participate in the database, its quality is difficult to assess. Presenting such data highlights the hospitals that have adopted this advanced diagnostic and patient-based cost reporting method.

WHAT IS AN INDICATOR?

What constitutes a suitable indicator? The following criteria offer some guidance when selecting indicators for *Regional Comparisons:*

- **Quantifiable and available.** An indicator should be quantifiable, well-defined, reflective of available data at the national level and amenable to recurring reporting.
- **Generally accepted and valid.** An indicator should be generally accepted and preferably part of other established sets. It is thereby assumed to be valid – in other words, a good gauge of the healthcare area for which it is intended.
- **Relevant.** An indicator should comprise substantial volumes, costs, considerations or other issues.
- **Amenable to interpretation.** An indicator should be amenable to an evaluative interpretation – whether a high or low value is good or bad should be clearly defined.
- **Capable of being influenced.** It should be possible for the county councils and healthcare system to influence their results.
- **Outcome and process measures.** Both outcome and process measures may be used. Process measures should concern healthcare methods deemed to have a substantial impact on results for the patient.

The report uses some indicators that do not fully meet these criteria. Provisos concerning data quality and other interpretation problems are discussed in the comments accompanying the indicator involved.

Sources of data

The report proceeds from many sources of data. Some of them are briefly described along with the outcomes. A separate publication, which compares participation rates, describes reporting by counties and hospitals to a number of the registers and databases. Similarly, a separate chart presents the sources of data used.

Medical quality indicators are based primarily on Swedish National Board of Health and Welfare registers and national quality registers. Refer to www.socialstyrelsen.se and www.kvalitetsregister.se for information about these registers.

The report used the National Healthcare Survey and National Patient Survey of the Swedish Association of Local Authorities and Regions as sources for indicators concerning confidence and patient experience. The availability and waiting time indicators usually proceed from the national Waiting Times in Health Care database (www.vantetider.se).

Per capita cost data, which were taken from Statistics Sweden's financial information and the Swedish Association of Local Authorities and Regions administrative statistics, were also used along with DRG grouping of the National Patient Register to present cost per care event. Finally, the Swedish Association of Local Authorities and Regions Case Costing Database was used to obtain the costs incurred per hospi-

PATIENT-REPORTED QUALITY

Over the past ten years, both policy makers and researchers have exhibited a growing desire for patients to participate in monitoring the quality of healthcare services. The number of patient-reported indicators in *Regional Comparisons* increases from year to year.

These indicators fall into two main categories: patient reported outcome measures (PROMs) and patient reported experience measures (PREMs).

PROMs are best gauged by combining disease-specific and generic measures. Generic measures refer to general health-related quality of life. Disease-specific measures are just as important as generic ones. The public discussion about PROMs often focuses on health-related quality of life. The advantage of including generic measures is the ability to compare the outcomes of different treatment methods.

Among possible PREMs are information for patients, caregiver respect and consideration, availability, parking accessibility, the quality of hospital food and the functionality of the actual building. Most PREMs are structural and process measures that lack an obvious correlation with the outcome of a treatment regimen.

For a number of reasons, patient-reported variables are more elusive than traditional medical parameters for monitoring quality. PROMs and PREMs are also more complicated to process and interpret statistically. Instead of replacing traditional medical outcome measures, they should be regarded as supplemental information that enables multidimensional evaluation.

PROM and PREM questionnaires should satisfy basic methodological requirements for validity, reliability and sensitivity. Non-participation analyses should be performed, while response rate and missing values should be presented along with the reported outcomes.

tal for specific treatment methods. Refer to www.skl.se for additional information about financial statistics.

The Swedish National Board of Health and Welfare registers and national quality registers contain data about unique individuals and care events. Reporting is mandatory to the Swedish National Board of Health and Welfare registers and voluntary to the national quality registers.

Sources of data about costs, availability and patient experience are not based on individuals in the same sense. The Case Costing database reflects appointments and consultations with caregivers but does not contain Swedish personal ID numbers.

Reporting outcomes and interpreting comparisons

This section describes how the report presents data and structures comparisons. The emphasis is on identifying the factors that readers should be aware of when interpreting the comparisons. The challenge faced by both this report and other publications of comparative, evaluative healthcare data is to popularise complex issues without sacrificing accuracy. Each further simplification demands additional knowledge and skills on the part of the reader when it comes to interpreting information in a discerning manner.

Comparisons of quality and efficiency can contain both misleading static and genuine signals of variations in health care. Whether the static or signals predominate depends on how well the presentation is structured, not to mention the knowledge and ability to handle information that the reader brings to the venture .

Regional Comparisons presents its information in a descriptive manner. The comments that accompany the comparisons are intended to make it easier for readers to interpret the results. The causes of the outcomes are not analysed, and no definitive conclusions are drawn about their consequences. Perceptive interpretation of healthcare data requires general knowledge about the subject, time for analysis and in-depth study – often familiarity with local conditions as well. County and healthcare representatives are in the best position to interpret and evaluate their own outcomes. Any guidelines or reliable knowledge bases that are available in the area should serve as a springboard for local interpretation and discussion.

An indicator is a signpost, not an indisputable fact that can be viewed in one way only. An indicator points to a situation that requires further study, evaluation and possible change. The purpose of *Regional Comparisons* is to erect signposts and nothing more.

How are the indicators presented?

The report presents the outcomes for each indicator as follows, depending on the available data:

- Ranked county-by-county comparisons
- Hospital data by county
- National trends over time

Trends over time. Many indicators show results per county for two periods in order to determine whether there has been improvement or deterioration over time. The later results appear as the main bar in the figure, while the earlier results appear as a shaded bar.

Breakdown by gender and socioeconomic group. The main principle for medical indicators is that data in the printed report are shown for women and men together, while the presentation is broken down by gender when there are extraordinary reasons for doing so. Diagrams broken down by gender are available on the websites of the two organisations whenever such data are available. The outcomes for some indicators are also broken down by educational level.

Municipal or health centre level. A number of indicators are highly relevant at the municipal or health centre level, but such a breakdown is beyond the scope of this report. The presentation of certain indicators, however, includes the gaps between local authorities and between health centres as a means of stressing that they are particularly wide.

Selection of time period. Current data are always preferable and the most germane. How well the healthcare system functioned 50 years ago is of little interest in this connection. Indicators should be designed such that improvements are detected quickly. Favourable outcomes generated by changes to the routines of a hospital or clinic should show up clearly instead of being diluted by previous data.

Data from 2011 are used when available and useful. Longer time periods are more appropriate when it comes to indicators for which there are few cases or events (death, infection, reoperation, etc.). Any other approach would lead to statistical unreliability and random fluctuations from year to year. In other words, the benefits of being up-to-date and accurate must be weighed against each other. Furthermore, some indicators measure long-term effects, such as whether a hip prosthesis is still in place and working after 10 years. Surgery performed a number of years earlier is essential to such comparisons.

Comparisons, including county rankings and descriptions of the indicators

Every indicator is accompanied by a diagram and brief description. Each diagram is a horizontal bar chart on which the counties appear in descending order. The national average is also presented in a separate colour.

Generally speaking, the counties at the top of the diagram have performed best. Occasionally that position may be a sign of overtreatment.

The results for some indicators, such as the frequency of Caesarean section, are difficult to evaluate. The counties are ranked even when data quality is poorer, differences between them are small or statistical unreliability is large.

Even when ranking of the counties can be readily justified (death, complications from health care, etc.), certain factors must be taken into consideration. When outcome measures are presented, demographic health variables or the case mixes of various hospitals constitute one such factor. The populations of the counties are frequently age-standardised to improve comparability. However, no corrections are made for differences in health status or morbidity that do not correlate with age only.

The report identifies differences between the results of the various counties as measured by a series of quality indicators. The variations may be due to superior organisation and administration of health care by certain counties, or to demographic health variables or case mix. The caption or text of the diagram specifies if the indicator has been adjusted for case mix. Most of the indicators have been adjusted for age only or not at all.

Notwithstanding the above provisos, there are good arguments for consistently ranking the counties. Generally speaking, counties that appear at the top of a diagram have achieved the best results. If unreliable data quality or other interpretation problems call such a conclusion into question, the description of the indicator mentions or discusses the issue.

When national guidelines or other recommendations provide a basis for evaluation, the description of the indicators examines whether the overall results satisfy them. While the national guidelines do not normally specify formal targets, such an effort is under way in the area of cancer care. The discussion of an indicator specifies whether a quality register or public policy has set a formal target. The only targets set as a matter of policy are the time constraints in the care guarantee.

Some of the indicators discuss how well Sweden's results stack up against those of other countries – generally speaking, however, comparable quality data are unavailable.

Presenting data for clinics and hospitals

Data for a number of the indicators are presented at the hospital level in connection with the comparisons between counties. The purpose is to highlight major variations and show the contributions of hospitals to county results.

Clinical practice is the level at which concrete improvements can be implemented. Another reason for identifying differences between hospitals is to add perspective to the comparisons between counties, which can otherwise lead to the hasty conclusion that administration of health care by county councils is the crucial variable.

The hospitals are presented by county but not ranked. Evaluating the quality of care provided by individual hospitals is beyond the scope of this report. Except for pure methodological or data quality considerations, the outcomes are neither assessed nor discussed.

Examples from cardiac care – the indicators about non-ST-segment elevation myocardial infarction – illustrate a key aspect of the hospital data. The indicators are good, while variations in severity of disease are dealt with by means of age breakdown and case mix, but participation rates in the quality register differ significantly from hospital to hospital. A hospital may report top-notch results based on only half of the patients who should have been included. Case mix should be considered before comparisons of outcome measures are published.

Generally speaking, the same time periods are used as for comparisons between counties. Confidence intervals are specified to emphasise the uncertainty associated with the possibility that only a few cases have been included. The hospitals are broken down in the same way as in the National Patient Register or the quality register under consideration. Beyond age standardisation in line with the comparison between counties, the data are normally not adjusted for case mix.

The goal is to include hospital data for all indicators whenever relevant. For several reasons, the presentation is incomplete. The representative of a quality register occasionally opposed inclusion of hospital data in the absence of a formal decision to make them public.

The primary purpose of *Regional Comparisons* is to present healthcare outcomes at the county level. A more thorough model for comparing hospitals would require additional processing and preparation. If such data are published, the objectives should be modest and the emphasis placed on the need for hospitals to compare and improve their results over time rather than on evaluation.

The national average is not a yardstick

The diagrams often rank the counties without specifying explicit targets. The national average is highlighted. However, viewing the average as the norm for an acceptable or passable result would be a misconception.

The national average is not the yardstick that should be used when evaluating county results. A county that performs far below average may still be doing well. The most important conclusion in such cases is that the outcomes for all counties are favourable.

The converse is true as well. If the national average is unfavourable relative to individual Swedish hospitals, other countries or potential performance, a county may perform poorly and still end up at the top of the diagram.

If one or more large counties perform poorly, the national average may be far below the median, which may be a better yardstick in such cases. But broader considerations are still needed.

Thus, readers should not assume that the national average or the median represents good or optimum results. The intention is to focus on analysing performance over time or in comparison with other counties in order to identify potential for improvement.

How representative are the quality registers?

Anyone who plans to use data from quality registers should bear in mind that their participation rates vary. Even if all or most hospitals participate, the data may not be representative of the entire patient population in question. County and hospital variations in the percentage of patients reported may affect the final results due to incomplete data. If unreported patients are receiving other types of care or other results, the reported data will turn out to be skewed.

FURTHER MATERIAL AND CONTACT PEOPLE

This report can be downloaded in PDF format from www.skl.se/compare or www.socialstyrelsen.se/publikationer

For information about this report and ongoing work of the joint project *Quality and Efficiency in Swedish Health Care – Regional Comparisons*, write to

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Overall Indicators

This section presents 39 general healthcare indicators under five subsections:

- Mortality, Avoidable Hospitalisation, etc.
- Drug Therapy
- Confidence and Patient Experience
- Availability
- Costs

The indicators in this section are general in the sense that they do not normally refer to specific groups of diseases or types of treatment. Their purpose is not to summarise outcomes in the other areas.

This report presents two of the indicators for the first time. One of them measures the response time of ambulance services. *Regional Comparisons* has barely reflected pre-hospital care in previous years. The other new indicator concerns patient participation in cervical cancer screening. The indicator, which reflects a key element of preventive health care, appeared in earlier reports. We are pleased that we able to present this data once more.

MORTALITY, AVOIDABLE HOSPITALISATION, ETC.

1 Life Expectancy

Life expectancy tracks public health trends. Like infant mortality, it is one of the most common indicators for comparing different countries with each other.

The life expectancy of Swedes born in 2007–2011 was 83.4 for women and 79.4 for men. Thus, the figure has continued to rise gradually for both sexes. The gender gap narrowed slightly from the previous period. For both women and men, life expectancy ranged by no more than approximately two years between the various counties. The differences between the municipalities were large, even in the same counties. The interval between highest and lowest life expectancy was 6 years for women – Båstad (86) and Älvdalen (80) – and 8.4 years for men – Danderyd (83) and Ljusnarsberg (74.6). The greater variation for men than women at the municipal level is consistent with the pattern for avoidable deaths from ischaemic heart disease as presented below.

Sweden has among the highest life expectancies in the world. Only Icelandic, Swiss, Japanese and Australian men have a higher life expectancy than their Swedish counterparts. In the case of women, a few southern European countries also report higher figures than Sweden.

Swedes have one of the highest life expectancies in the world up to the age of 60 for women and 75 for men. After those ages, Swedes have relatively low life expectancies. One major reason is that women began to smoke earlier in Sweden than other countries. The tobacco habits of Swedish women are now approaching those in the rest of Europe. Swedish men already smoke considerably less than the European average.

The difference between the sexes is narrowing after having peaked at 6.2 years in the mid-1970s. Men die more often of injuries, accidents, alcoholism and suicide, as well as cardiovascular disease in old age, and other lifestyle factors. Due primarily to breast cancer, women are more likely to die of cancer up to the age of 60. Well-educated women and men both have higher life expectancies than low-educated.

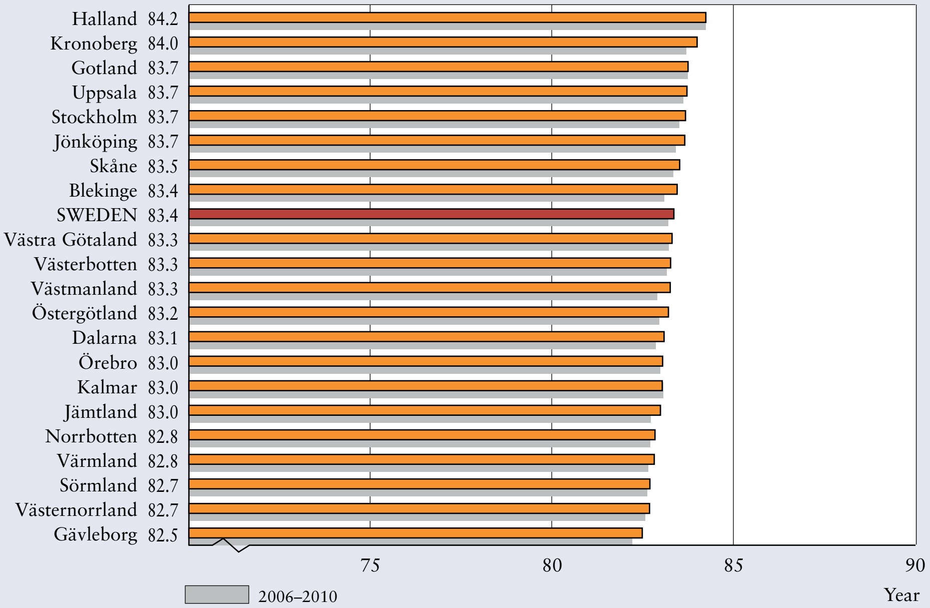


Figure 1
Women

Life expectancy at birth. Children born in Sweden between 2007 and 2011.

Source: Population Statistics – Statistics Sweden

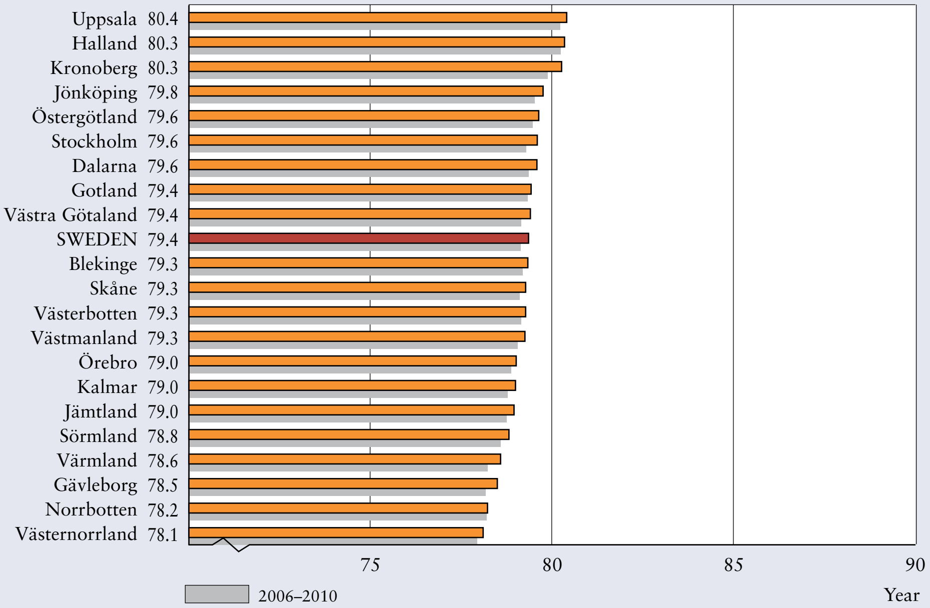


Figure 1
Men

Life expectancy at birth. Children born in Sweden between 2007 and 2011.

Source: Population Statistics – Statistics Sweden

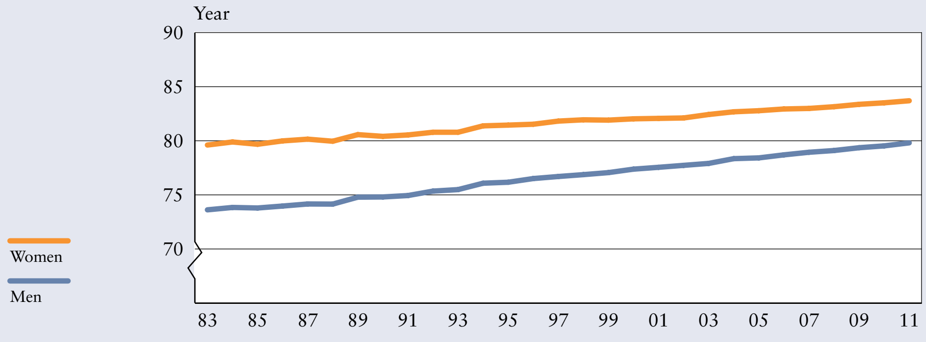
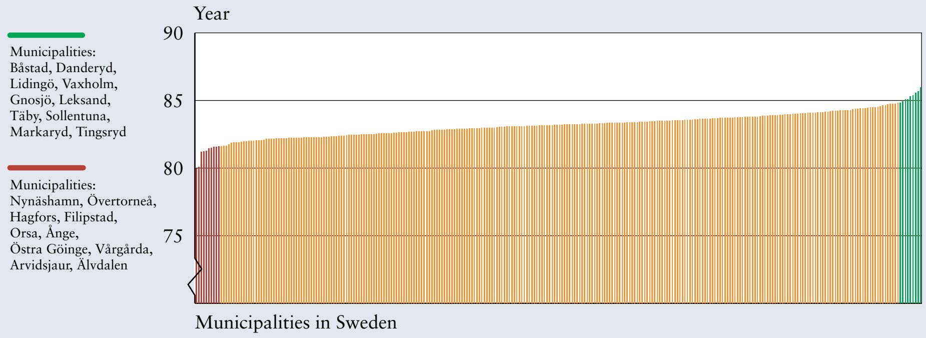


Figure 1
Sweden

Life expectancy at birth.

Source: Population Statistics – Statistics Sweden



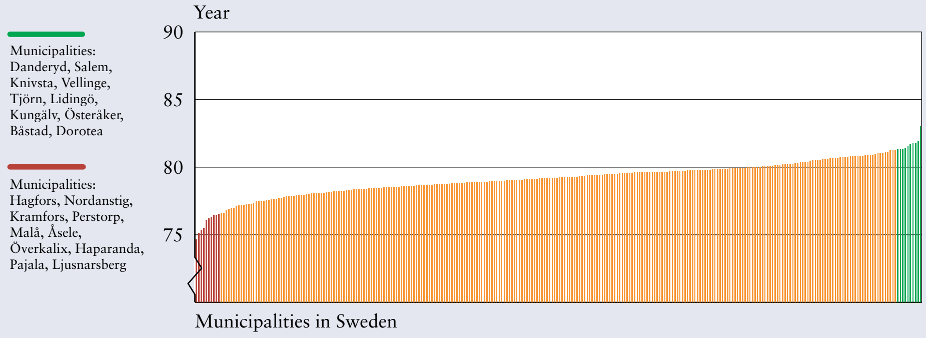
Municipalities:
Båstad, Danderyd,
Lidingö, Vaxholm,
Gnosjö, Leksand,
Täby, Sollentuna,
Markaryd, Tingsryd

Municipalities:
Nynäshamn, Övertorneå,
Hagfors, Filipstad,
Orsa, Ånge,
Östra Göinge, Vårgårda,
Arvidsjaur, Älvdalen

Figure 1A
Women

Life expectancy at birth. Children born in Sweden between 2007 and 2011.

Source: Population Statistics – Statistics Sweden



Municipalities:
Danderyd, Salem,
Knivsta, Vellinge,
Tjörn, Lidingö,
Kungälv, Österåker,
Båstad, Dorotea

Municipalities:
Hagfors, Nordanstig,
Kramfors, Perstorp,
Malå, Åsele,
Överkalix, Haparanda,
Pajala, Ljusnarsberg

Figure 1A
Men

Life expectancy at birth. Children born in Sweden between 2007 and 2011.

Source: Population Statistics – Statistics Sweden

2 Policy-related Avoidable Mortality

Since the mid-1980s, the EU has conducted a project to compare the healthcare systems of the various Member States by means of an avoidable mortality indicator. The objective is to apply existing knowledge about the causes of certain diseases and the efficacy of various treatment methods. The studied population was previously limited to ages 1–74. Given higher life expectancies and more effective treatment methods, the range has been expanded to 79-year-olds.

The avoidable mortality indicators consist of death from a number of selected diagnoses and causes broken down into two groups, the first of which is presented here. The group refers to diagnoses and causes of death that can be affected by broad policy interventions, such as campaigns for smoking cessation and improved alcohol habits. The diagnoses and causes of death included in this indicator are lung cancer, oesophageal cancer, cirrhosis of the liver and motor vehicle accidents. It is one of the Swedish National Board of Health and Welfare monitoring indicators in accordance with Good Health Care.

The actual number of policy-related avoidable deaths for 2008–2011 totalled 14 954, of whom 6 183 were women and 8 771 were men.

Figure 2 shows aggregate county 2008–2011 data for policy-related avoidable mortality among women and men per 100 000 inhabitants. The comparison is age-standardised – in other words, a correction has been made for differences between counties in the age structure of the population. Lung cancer and motor vehicle accidents accounted for the greatest percentage of deaths measured by this indicator. Due to its small population, the results for Gotland were skewed by large random variations.

Policy-related avoidable mortality was considerably lower among women than men. However, there were large variations from county to county. Västerbotten reported the fewest deaths among both women (24.0) and men (33.3), while Sörmland, Västmanland and Stockholm reported the most. Despite variations, the figure was higher for men in all counties.

Figure 2A shows the correlation between policy-related avoidable mortality and educational level. The tendency for education to be increasingly important over time is particularly clear for women but true of men as well.

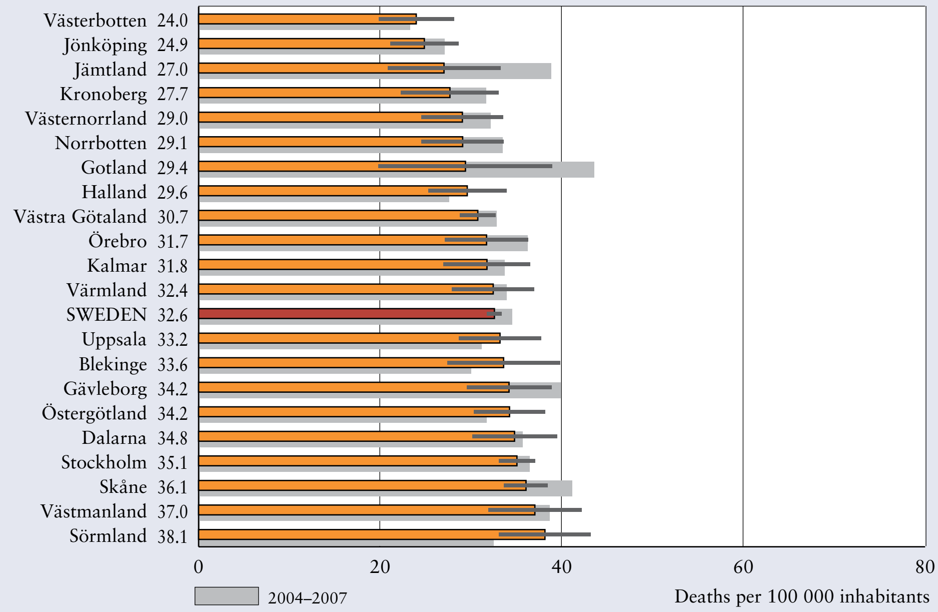


Figure 2
Women

Policy-related avoidable mortality per 100 000 inhabitants age 1–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

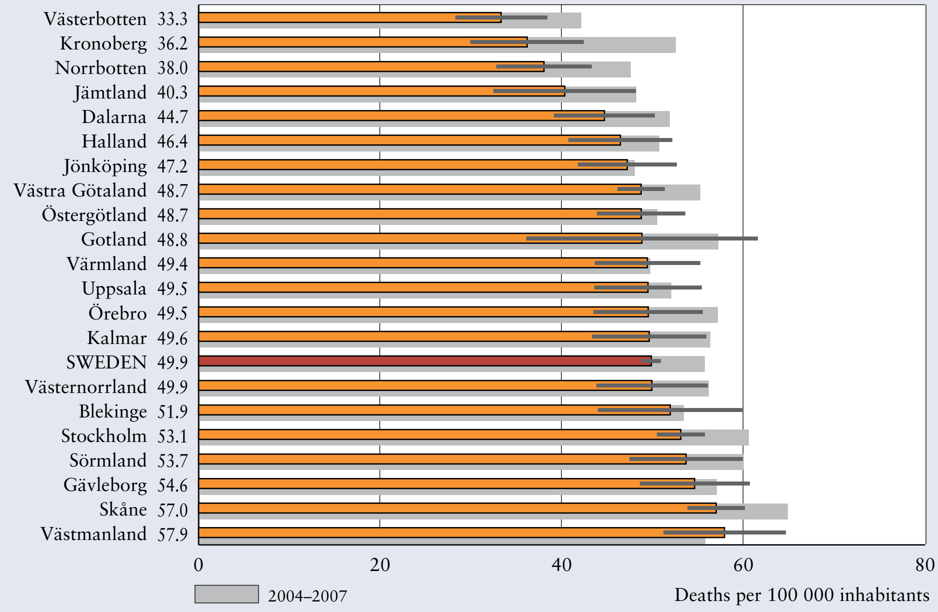


Figure 2
Men

Policy-related avoidable mortality per 100 000 inhabitants age 1–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

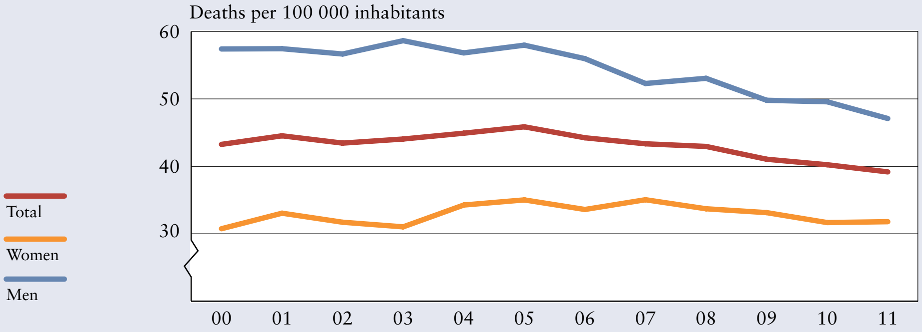


Figure 2
Sweden

Policy-related avoidable mortality per 100 000 inhabitants age 1–79. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

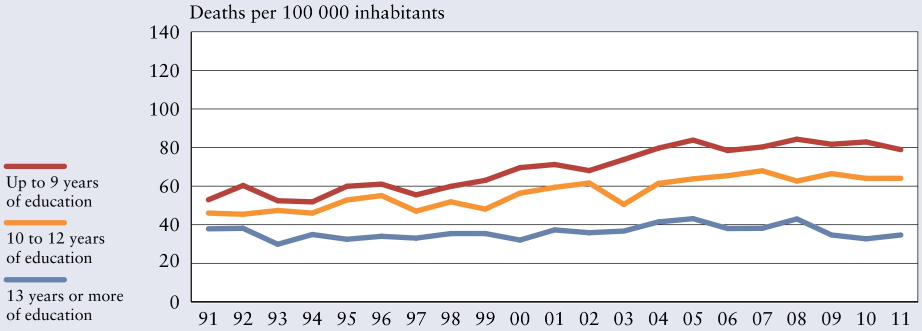


Figure 2A
Women

Policy-related avoidable mortality per 100 000 inhabitants age 35–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

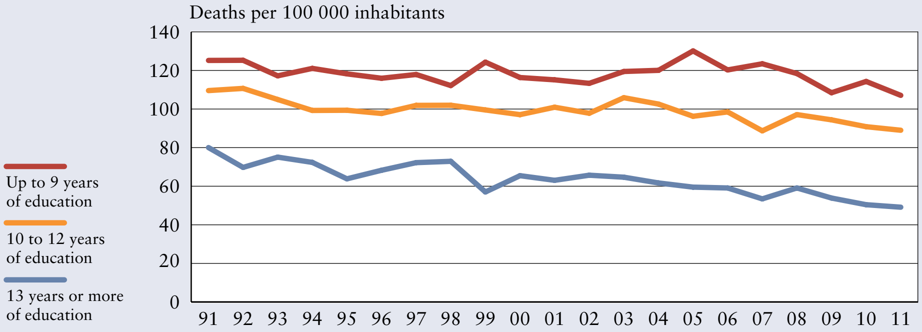


Figure 2A
Men

Policy-related avoidable mortality per 100 000 inhabitants age 35–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

3 Healthcare-related Avoidable Mortality

The second group of avoidable deaths consists of those from diagnoses selected because they were deemed possible to affect with various medical interventions by means of early detection and treatment. It is also one of the Swedish National Board of Health and Welfare monitoring indicators in accordance with Good Health Care. Among the diagnoses included are diabetes, appendicitis, stroke, gallstone disease and cervical cancer.

The actual number of healthcare-related avoidable deaths for 2008–2011 totalled 14 182, of whom 6 100 were women and 8 082 were men. Figure 3 presents the number of deaths per 100 000 inhabitants by county and gender.

Stroke, diabetes and cervical cancer are the diagnoses that had the greatest impact on healthcare-related avoidable mortality. Variations between counties were somewhat larger than for policy-related avoidable mortality.

Generally speaking, healthcare-related avoidable mortality was significantly higher for men than women, but the differences were smaller than in the case of policy-related avoidable mortality. The gender gap varied from county to county.

Partly because the method of assigning diagnostic codes may vary among the counties, the differences in healthcare-related avoidable mortality (particularly from diabetes) should be interpreted with a degree of caution.

No international comparisons have proceeded from an indicator of healthcare-related avoidable mortality identical to the one used in this report. A similar comparison for 1998 among 19 countries found that Sweden had the lowest mortality rates. Sweden ranks poorer in comparisons that include deaths from myocardial infarction.

Figure 3A makes it clear that educational level continues to impact the number of deaths, even though mortality is trending downward.

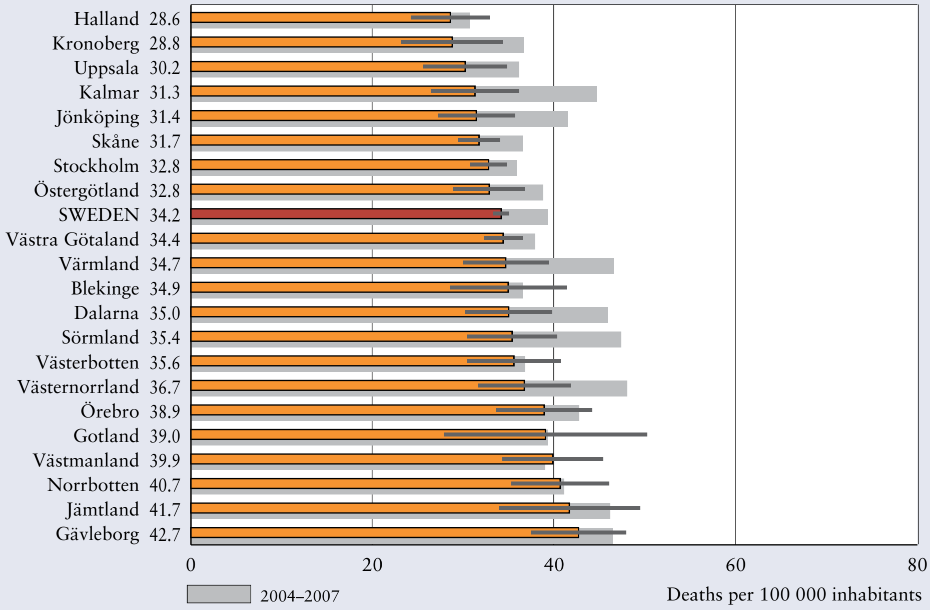


Figure 3
Women

Healthcare-related avoidable mortality per 100 000 inhabitants age 1–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

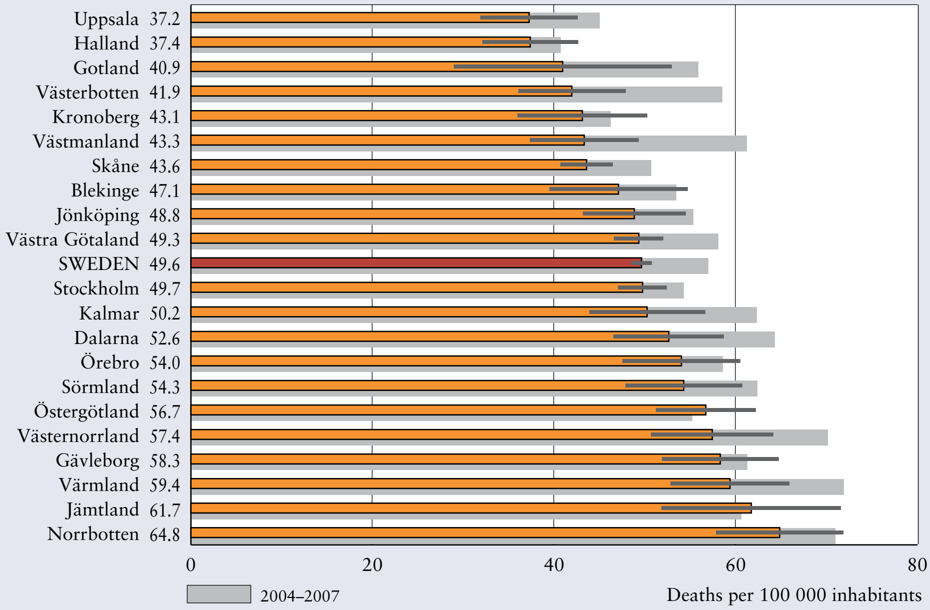


Figure 3
Men

Healthcare-related avoidable mortality per 100 000 inhabitants age 1–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

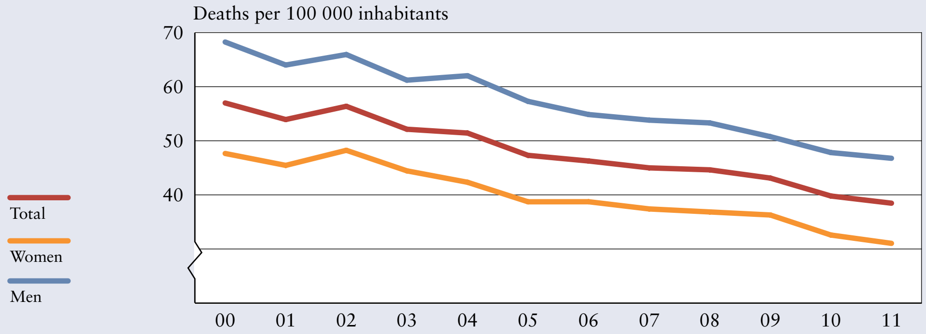


Figure 3
Sweden

Healthcare-related avoidable mortality per 100 000 inhabitants age 1–79. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

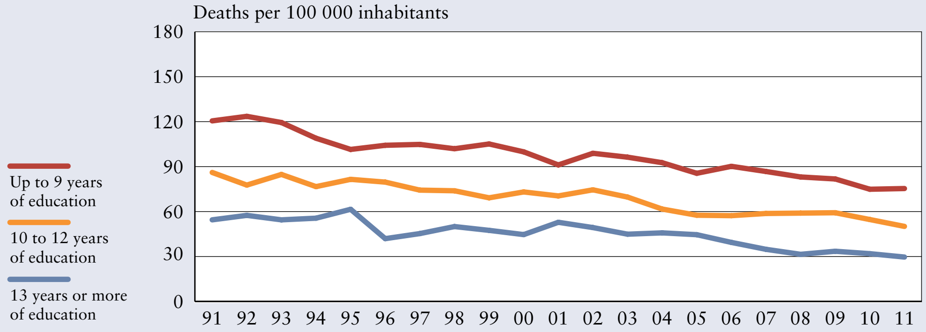


Figure 3A
Women

Healthcare-related avoidable mortality per 100 000 inhabitants age 35–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

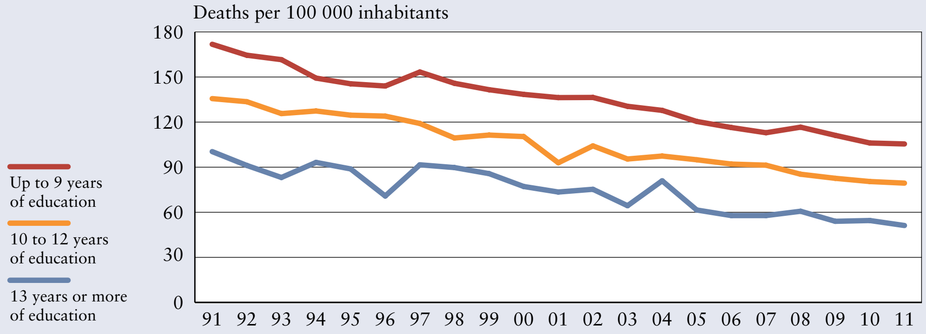


Figure 3A
Men

Healthcare-related avoidable mortality per 100 000 inhabitants age 35–79, 2008–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

4 Avoidable Deaths from Ischaemic Heart Disease

Ischaemic heart disease involves conditions caused by reduced oxygen supply to the heart. Acute myocardial infarction is the predominant cause of death in this category. A total of 14 166 Swedes died in 2011 with the diagnosis of ischaemic heart disease. The number represented 150 people per 100 000 inhabitants.

Deaths from ischaemic heart disease have declined significantly over the past ten years. Adjusted for varying age distributions over time, mortality fell by 40 per cent from 1997 to 2010 – somewhat more steeply for men than women. Nevertheless, men still die disproportionately from ischaemic heart disease. Despite the decrease, almost 17 per cent of all deaths in Sweden are due to the condition. Only tumours, which account for approximately 25 per cent, are more deadly.

The definition of avoidable mortality currently used (see Indicators 2 and 3) does not include any cardiac conditions. But the steep decline in mortality from ischaemic heart disease demonstrates that much of it is avoidable, by means of either medical interventions or living condition and lifestyle changes. International observers have proposed that deaths from ischaemic heart disease be included, at least to a certain extent, in one of the avoidable mortality indicators.

Figure 4 shows avoidable mortality from ischaemic heart disease, age-standardised per 100 000 inhabitants for each county and as a national trend. The data, which were taken from the Cause of Death Register, include deaths prior to the age of 80 in 2010–2011.

Ischaemic heart disease was responsible for a total of 55 avoidable deaths per 100 000 inhabitants in 2010–2011. Approximately 1 304 women and 3 342 men age 1–79 died of avoidable ischaemic heart disease in 2011, but the variations between counties were significant for both sexes in 2010–2011. The trend diagram indicates that avoidable deaths from ischaemic heart disease in the under-80 population declined substantially in 1997–2011.

According to Figure 4A, the figure decreased significantly during the period regardless of educational level. The gaps between men with different educational backgrounds have narrowed in recent years, while the gaps between women were smaller but more persistent.

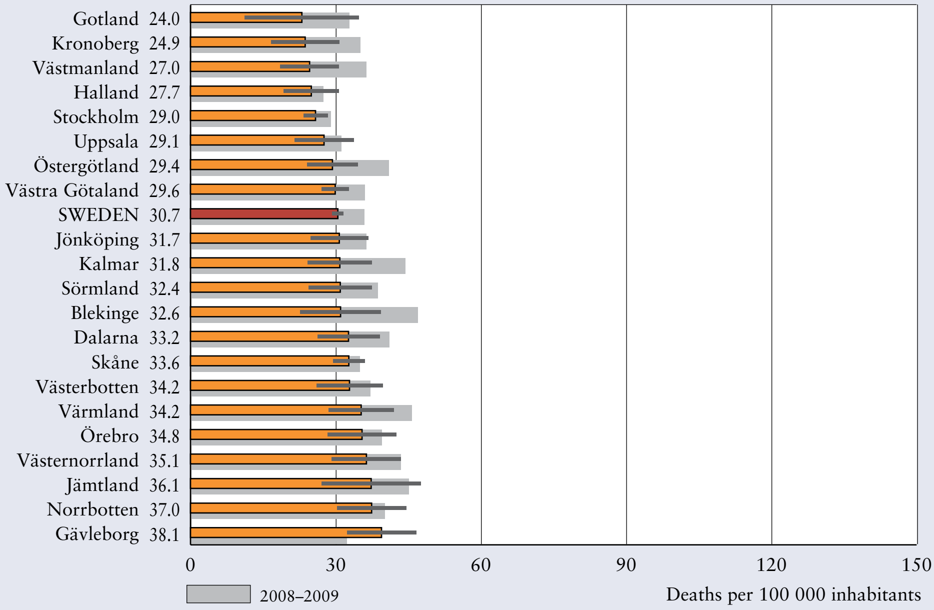


Figure 4
Women

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 1–79, 2010–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

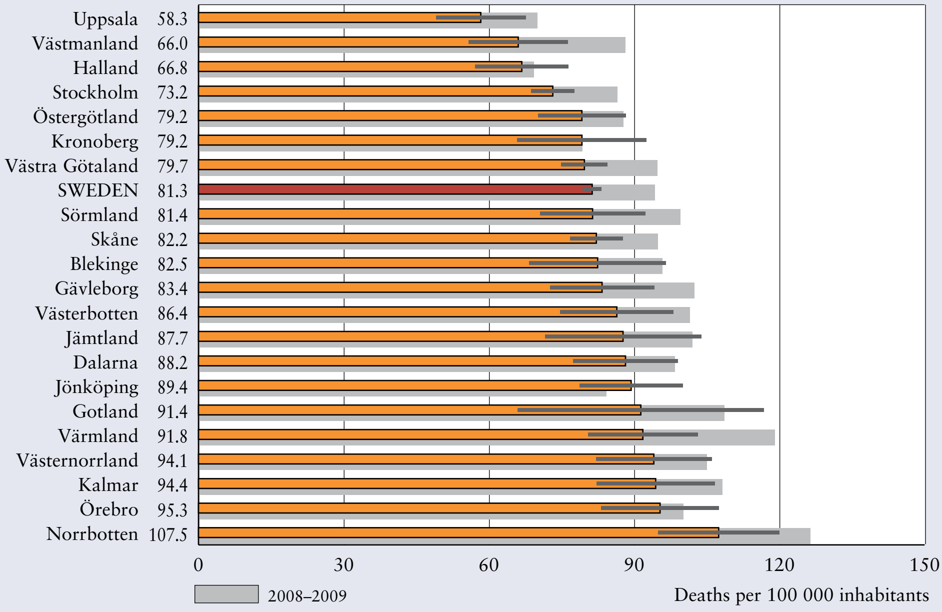


Figure 4
Men

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 1–79, 2010–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

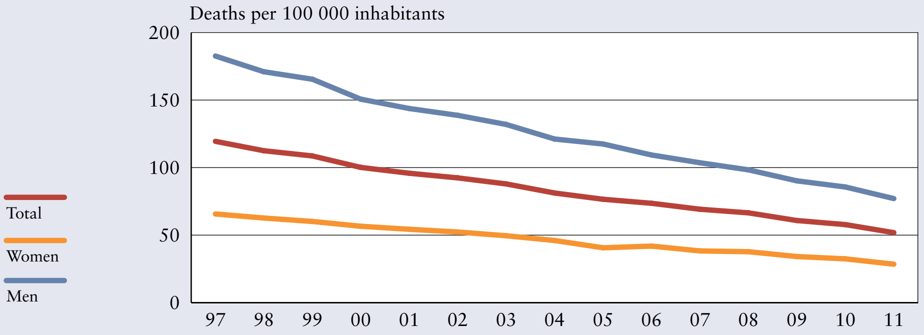


Figure 4
Sweden

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 1–79. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

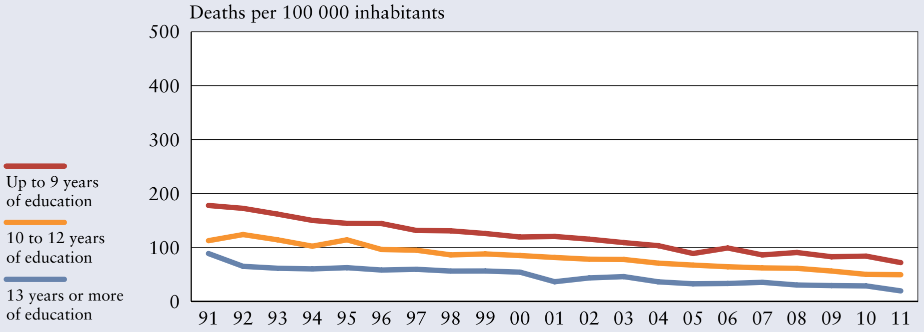


Figure 4A
Women

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 35–79, 2010–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

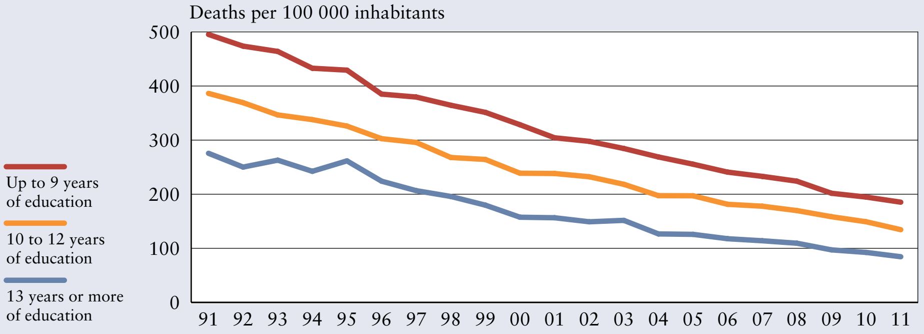


Figure 4A
Men

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 35–79, 2010–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

5 Suicide among the General Population

Theoretically speaking, suicide after contact with the healthcare system is a conceivable indicator for assessing intervention efforts. Given, however, that primary care and non-medical appointments are not included in the health data registers, designing a relevant, reliable indicator at the national level is a daunting challenge.

Sweden has a moderate suicide rate compared to the rest of Europe. Suicide is more common in Denmark and Finland than Sweden. The number of Swedes, particularly men, who commit suicide has been declining since the early 1980s. But men still predominate. A total of 320 women and 779 men committed suicide in 2011. In addition, there were 99 deaths among women and 189 deaths among men with undetermined intent. To obtain a more representative sample, Figure 5 shows the number of suicides per 100 000 inhabitants for 2009–2011. Confirmed suicides totalled just over 12 per 100 000 inhabitants during the period. Including deaths with undetermined intent (see diagram), the number rises to over 15 per 100 000 inhabitants.

Figure 5 shows the number of suicides per 100 000 inhabitants in 2002–2011. Suicides and deaths with undetermined intent totalled 17 493 for the period. The trend was stable for the entire time.

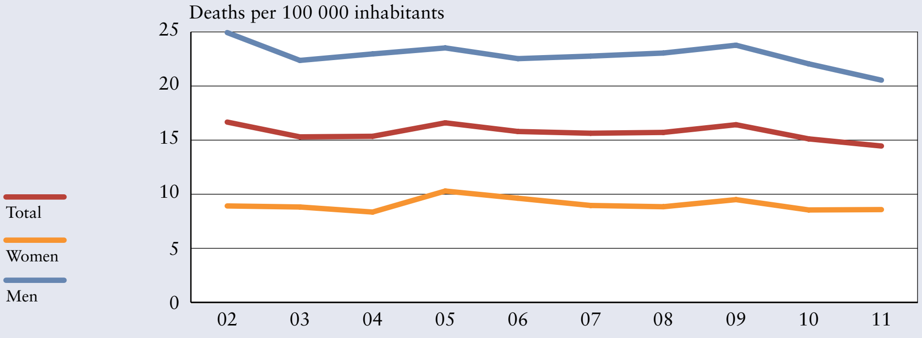


Figure 5
Sweden

Number of suicides and deaths with undetermined intent per 100 000 inhabitants. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

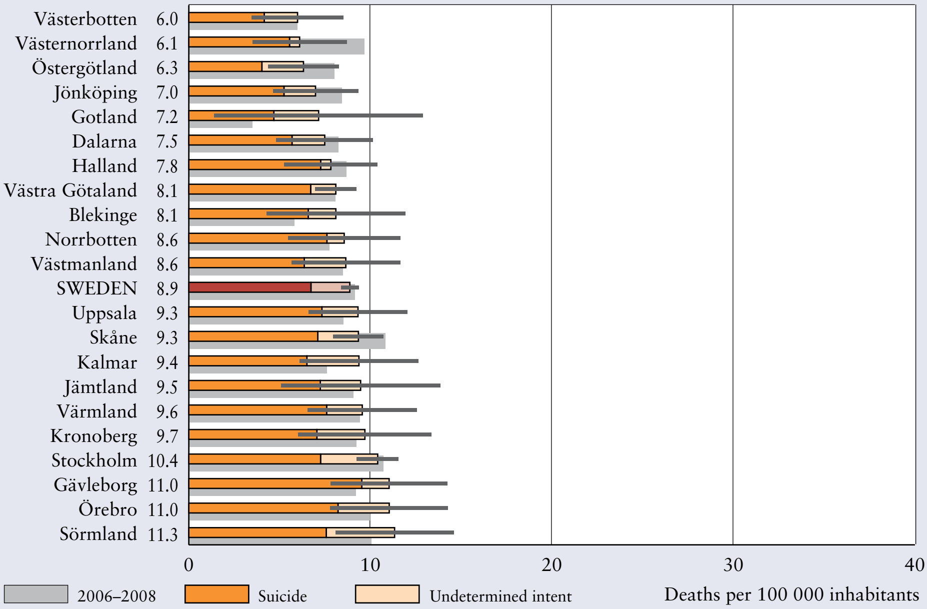


Figure 5
Women

Number of suicides and deaths with undetermined intent per 100 000 inhabitants, 2009–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

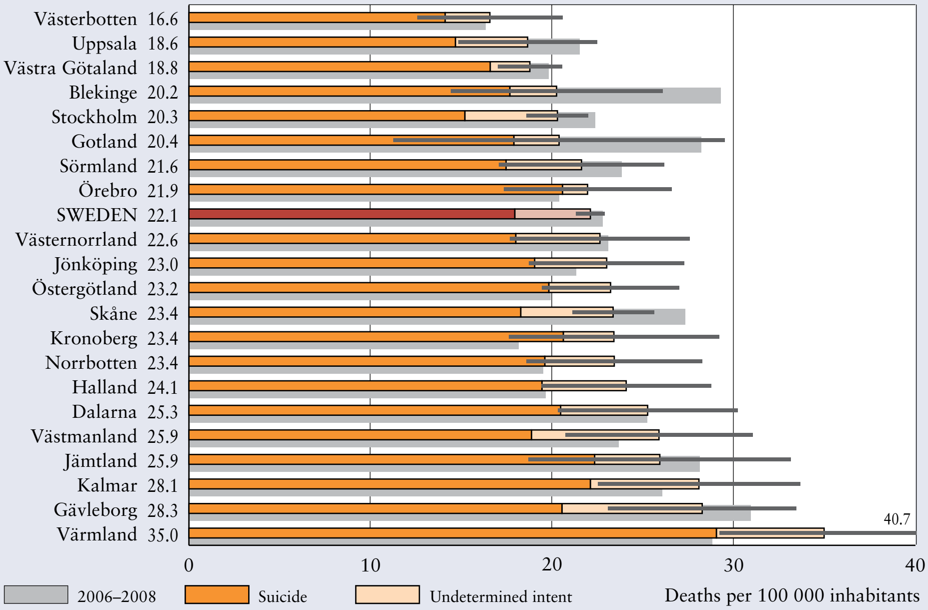


Figure 5
Men

Number of suicides and deaths with undetermined intent per 100 000 inhabitants, 2009–2011. Age-standardised.

Source: Cause of Death Register, National Board of Health and Welfare

6 Ambulance Response Time

Due to technical advances in the field of ambulance services, sophisticated interventions can begin while the patient is on the way to hospital. As a result, many healthcare processes are increasingly efficient and quality is improving. The amount of time it takes for an ambulance to arrive is often crucial if someone is injured or severely ill. SOS Alarm keeps statistics on response time – how long it takes for the ambulance to arrive after the alarm centre has responded. The primary factors that affect response time are related to how the county council structures the ambulance services it provides: number of stations, size of the area covered by each station, etc.

This indicator shows response times for priority 1 alarms, those that involve accidents or life-threatening symptoms according to the regulations of the Swedish National Board of Health and Welfare. All alarm centres throughout the country were covered for the June 2010 – May 2011 period. *Regional Comparisons: Safety and Security*, a previous report by the Swedish Association of Local Authorities and Regions, presented the indicator, but only at the municipal level.

The median response time nationwide was 14 minutes, varying from 12 to 22 minutes depending on the county. Figure 6A shows that the differences from one municipality to another were greater.

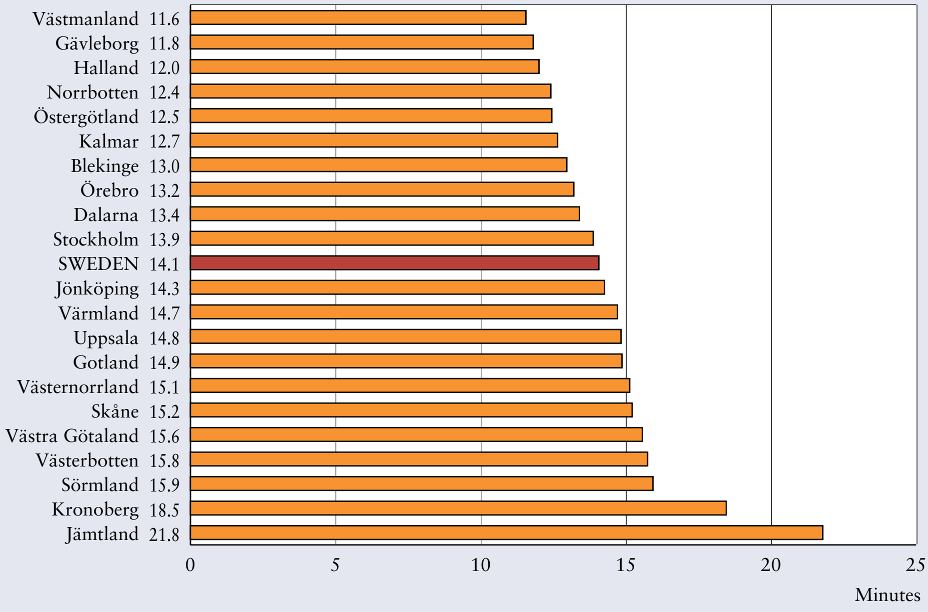


Figure 6 Ambulance response time to priority 1 alarms, June 2010 – May 2011. Median number of minutes.

Source: SOS Alarm

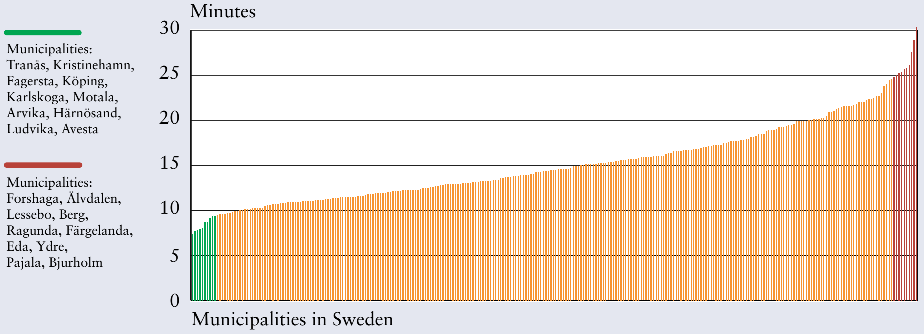


Figure 6A Ambulance response time to priority 1 alarms, June 2010 – May 2011. Median number of minutes.

Source: SOS Alarm

7 Avoidable hospitalisation

This indicator is based on the assumption that unnecessary hospitalisation can generally be avoided if people with the selected conditions or diagnoses receive optimum preventive, primary and other outpatient care.

The avoidable hospitalisation indicator includes a number of selected diagnoses. Some of the diagnoses reflect outpatient treatment of chronic or long-term conditions. The chronic conditions are anaemia, asthma, diabetes, heart failure, hypertension, chronic obstructive pulmonary disease and angina pectoris.

Several acute conditions for which proper treatment within a reasonable period of time should avert hospitalisation are also included: bleeding ulcers, diarrhoea, epileptic seizures, inflammatory diseases of female pelvic organs, pyelitis and ear, nose and throat infection.

Other countries use similar weighted indicators – the English literature often refers to ambulatory care sensitive conditions. There are many versions of the indicator, primarily in terms of the diagnoses to be included. The Swedish National Board of Health and Welfare will conduct an exploratory study to determine whether the indicator can be used for populations such as the sickest elderly.

Figure 7 presents the number of people with avoidable hospitalisations per 100 000 inhabitants in 2011. The actual number was over 113 500. The data are age-standardised. The higher figures for men probably are due to greater incidence of the major diseases included rather than poorer outpatient care.

The results for 2011 are compared with those for 2006, which appear in a shaded parallel bar. For the country as a whole, the number of avoidable hospitalisations declined somewhat during the period.

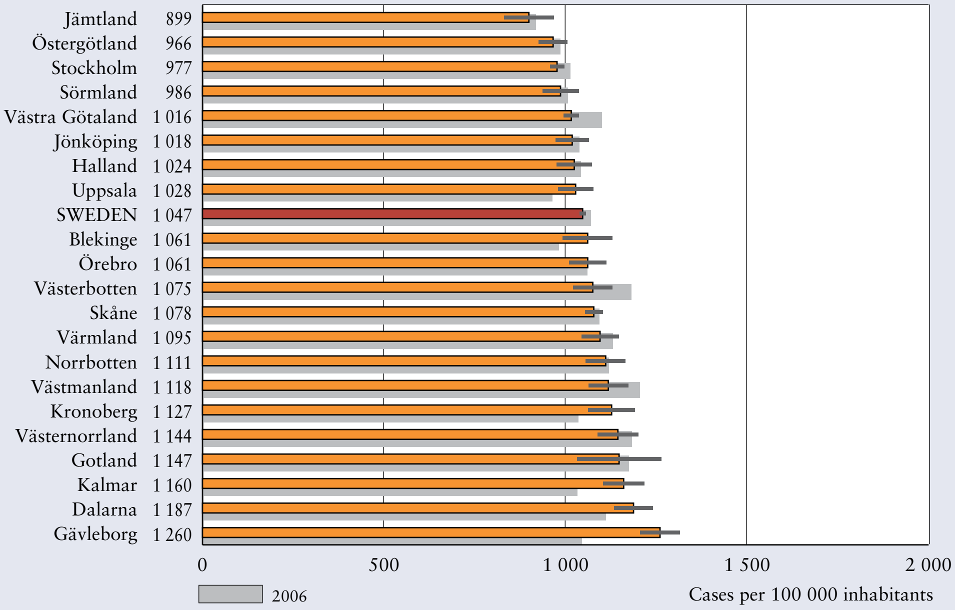


Figure 7
Women

Patients with avoidable hospitalisations per 100 000 inhabitants, 2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

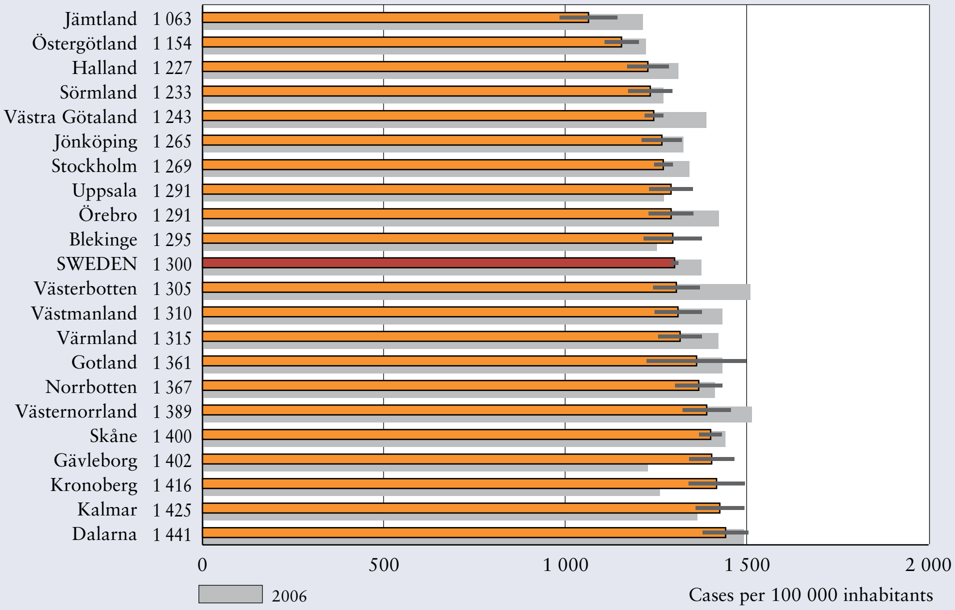


Figure 7
Men

Patients with avoidable hospitalisations per 100 000 inhabitants, 2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

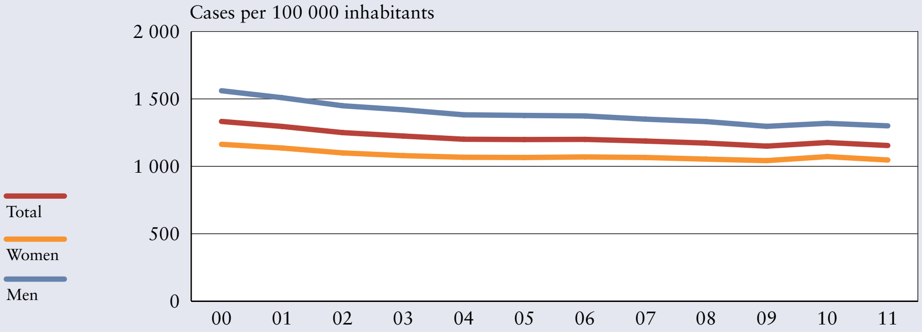


Figure 7
Sweden

Patients with avoidable hospitalisations per 100 000 inhabitants. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

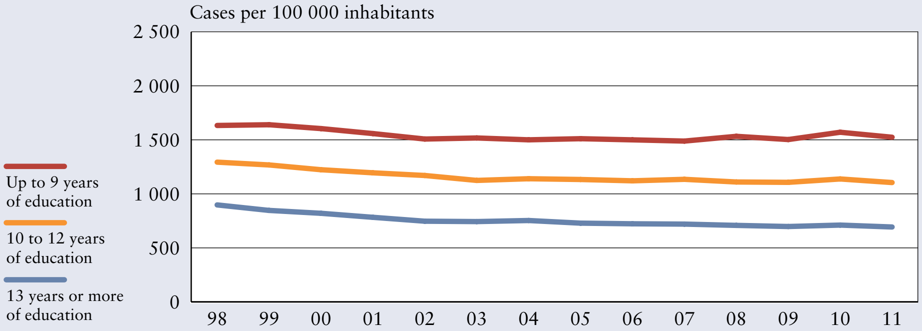


Figure 7A
Women

Patients with avoidable hospitalisations per 100 000 inhabitants age 35–79, 2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

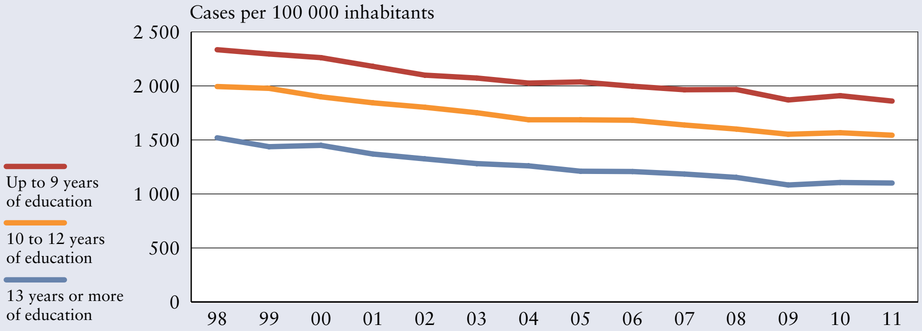


Figure 7A
Men

Patients with avoidable hospitalisations per 100 000 inhabitants age 35–79, 2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

The scope of avoidable hospitalisation is affected by variations between counties in diagnostic methods and reporting, not to mention the incidence of certain diseases. The availability of beds probably plays a role as well. If there are plenty of beds, the threshold for admission is low, and vice versa.

While avoidable hospitalisation will never be totally eliminated, the differences between counties indicate that potential exists for better outpatient care.

Figure 7A shows that the influence of educational level has been stable throughout the years for both women and men.

8 Healthcare Associated Infections

The Swedish National Board of Health and Welfare defines a healthcare associated infection as "any type of infectious condition that a patient develops due to hospitalisation or outpatient care, regardless of whether the immediate cause comes from the healthcare system or the patient, and regardless of whether the condition manifests during or after the period of care." Along with pneumonia, urinary tract, skin and wound infections are the most common healthcare associated infections. Scientific evidence suggests that infections are less likely to spread less if caregivers always follow basic hygiene procedures and apply the proper dress code.

Within the framework of the national project for enhanced patient safety, the counties are devoting extensive effort to implementing the action plans for the prevention of healthcare associated urinary tract infections, postoperative wound infections and infections through central venous catheters. Four national observation studies of compliance with dress codes and basic hygiene procedures have been conducted at both the county and municipal level alongside of point prevalence studies of healthcare associated infections. Compliance with seven requirements was observed: disinfection of the hands before and after close contact with patients, wearing gloves and plastic aprons, short-sleeve uniforms, no rings, watches or bracelets on hands and lower arms, and short or tied-back hair. The results of the observations are based on the number of caregivers who fully complied with the regulations rather than an average value.

All public hospitals, as well as a number of private hospitals that have agreements with county councils, participate in the one-day healthcare associated infection survey that the Swedish Association of Local Authorities and Regions conducts each spring and autumn over a period of two weeks.

The survey proceeds from standardised instructions and a protocol. The data include all patients (almost 20 194 in spring 2012, the ninth survey since the project was launched in 2008) who are in hospital for a medical condition at a specific time.

The indicator reflects the percentage of patients hospitalised for a medical condition who had healthcare associated infections at the time of the survey. This kind of snapshot must be supplemented by repeated surveys to provide a reliable basis for interpreting the situation at each clinic and hospital. Given that patient mix impacts outcomes, comparisons between hospitals should be interpreted cautiously.

Figure 8 compares the results of the survey in spring 2012 with autumn 2011. The overall percentage of patients with healthcare associated infections decreased. Incidence ranged from less than 6 per cent to greater than 13 per cent depending on the country. The higher frequency of healthcare associated infections at regional hospitals affects the outcomes of the counties in which they are located. Supplementary information about compliance with dress codes and basic hygiene procedures are also presented. The data reflect the percentage of observed caregivers who complied with all seven requirements. Although the focus is on inpatient medical care as was the case with healthcare associated infections, the statistics for dress code and hygiene also include primary caregivers and psychiatrists working at hospitals. A total of 27 000 county employees took part in the spring 2012 survey, as opposed to 14 000 in autumn 2010. Doctors accounted for the greatest increase.

Each healthcare associated infection is estimated to extend the period of hospitalisation by an average of four days. In addition to the actual suffering involved, extra beds and other resources are utilised.

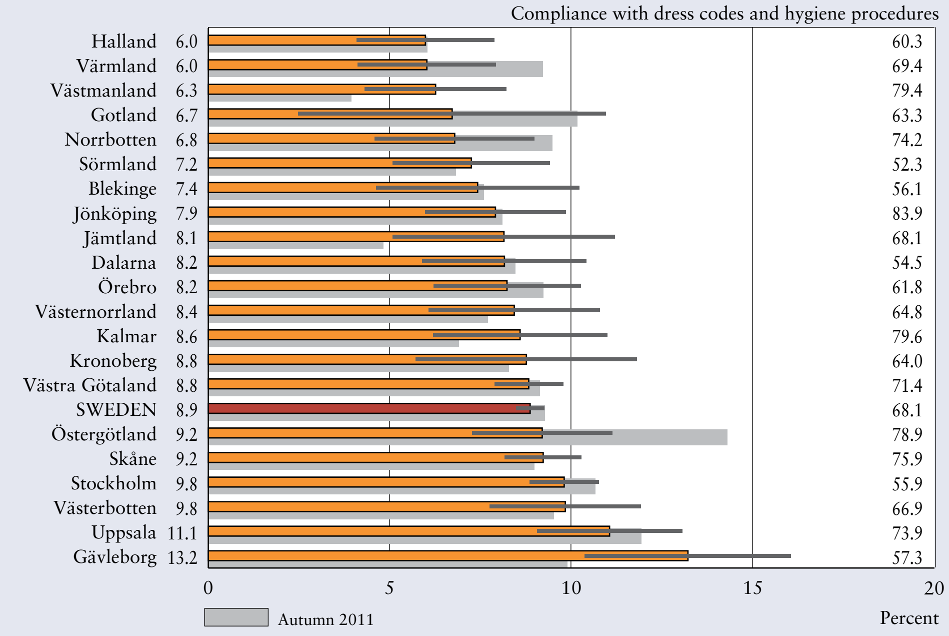


Figure 8 Healthcare associated infections, 15–31 March 2012. Percentage of all patients in inpatient care.

Source: Swedish Association of Local Authorities and Regions

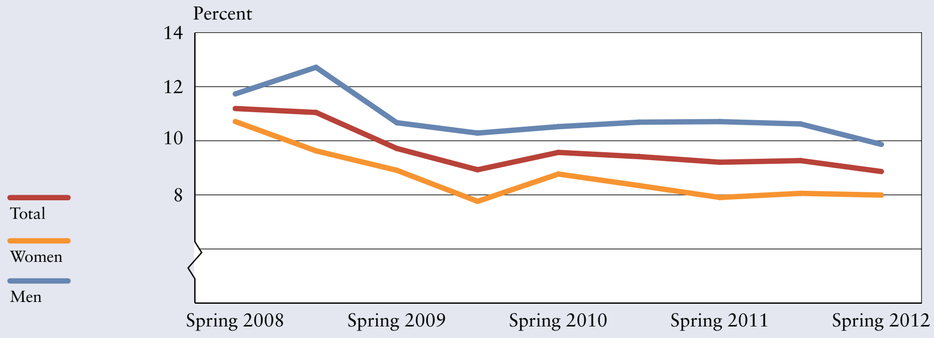


Figure 8
Sweden

Healthcare associated infections.
Percentage of all patients in inpatient care.
Source: Swedish Association of Local Authorities and Regions

9 Vaccination of Children – Measles-Mumps-Rubella (MMR)

Measles, mumps and rubella were once common childhood diseases, each caused by its own virus. While normally harmless, they can lead to complications and even death. While sufficient immunization coverage could eradicate the measles virus, but the infection claimed the lives of 164 000 children – most of them in developing countries – in 2008 according to WHO. According to the Swedish Institute for Infectious Disease Control, European countries reported 34 000 cases of verified measles, 8 of which led to death, to WHO in 2011.

Each of the three diseases is uncommon in Sweden now but occurs among unvaccinated people of all ages. If the vaccination programme were to be terminated or a large enough percentage of the population declined to participate, they would return in full force. To prevent the diseases from regaining a foothold, 90–95 per cent of the population must be immune, either through vaccination or natural infection.

MMR vaccination of 18-month-old infants and 6–8 year-olds has been part of Sweden's routine vaccination programme ever since 1982. MMR vaccine contains live attenuated virus strains, and an injection causes a non-symptomatic or very mild infection. The immune system learns to recognise a virus and develops an immunological memory.

A single dose of MMR vaccine provides immunity against all three diseases in approximately 95 per cent of cases.

MMR vaccination data are kept by the paediatric care system and collected by the Swedish Institute for Infectious Disease Control. Because data for Örebro and Uppsala are taken from individual-based vaccination registers, they are not wholly comparable with the other counties.

Figure 9 Vaccination of children – measles-mumps-rubella (MMR)
Children born in 2009, vaccination status reported in January 2012.
Source: Swedish Institute for Infectious Disease Control

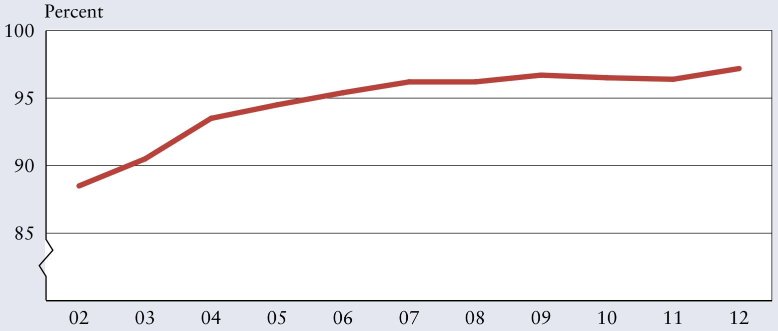


Figure 9
Sweden

Vaccination of children – measles-mumps-rubella (MMR).
Source: Swedish Institute for Infectious Disease Control

Compared to other countries, a large percentage of Swedish children are vaccinated. In January 2012, 97.2 per cent of all children born in 2009 had been vaccinated. The great majority of counties had a vaccination frequency of 97–98 per cent. Some parents choose not to have their children vaccinated, and coverage in some municipalities has fallen below 90 per cent. Thus local outbreaks, particularly of measles, have been reported.

10 Cervical Cancer Screening

Cervical cancer screening aims at prevention by detecting and treating precursors of cervical cancer. Screening is offered to women ages 23–50 every three years and ages 51–60 every five years.

The National Quality Register for Prevention of Cervical Cancer compiles individual-based cervical cancer screening data from all pathological and cytological laboratories in the country. The purpose of the register is to provide an empirical basis for quality assurance and improvement of the national programme for prevention of cervical cancer.

The participation rate – the percentage of women ages 23–50 and 51–60 who have been screened for cervical cancer within the past recommended number of years – is the most important parameter for monitoring the prevention program.

The majority of Swedes who develop cervical cancer have not been screened according to recommendation. Counties with high participation rates generally have lower incidence of cervical cancer than those with low participation rates. The various counties have different strategies for ensuring a high participation rate. The participation rate is generally lower in the big cities and higher in the northern part of the country.

The national participation rate for ages 23–60 was 80 per cent in 2011 (Figure 10). Over the past ten years, the percentage has been fairly constant at about 80 per cent, below the 85 per cent target set by the national cancer plan. Only seven counties met the target in 2012. No general trend from year to year is discernible among the various countries. The participation rate increased in some counties and decreased in others.

Because most Swedish women participate in screening, cervical cancer has been reduced to a modest incidence. In countries without population-based screening programs cervical cancer is among the most common types of cancer, frequently affecting 40–50 year olds.

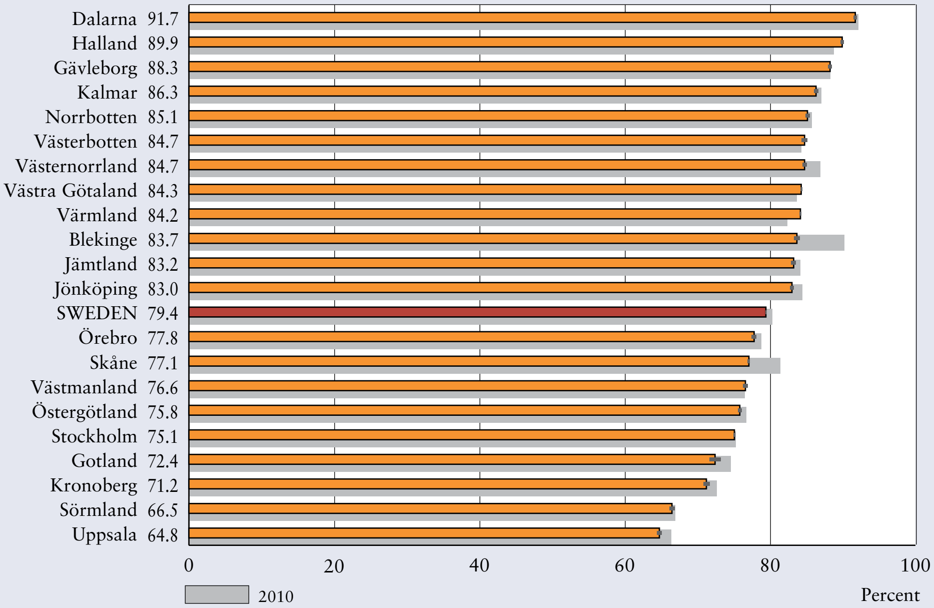


Figure 10 Percentage of women age 23–60 who underwent cervical cancer screening in 2011.

Source: National Quality Register for the Prevention of Cervical Cancer

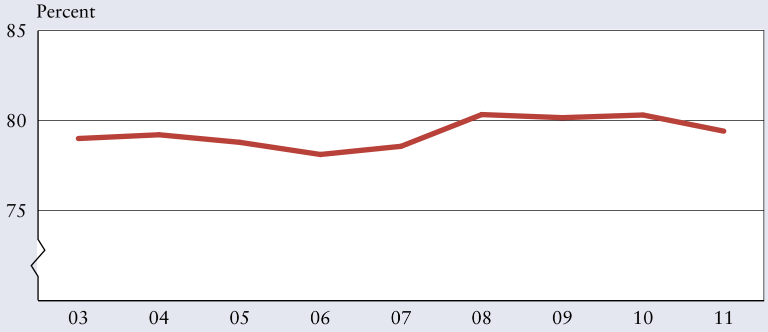


Figure 10 Sweden Percentage of women age 23–60 who underwent cervical cancer screening.

Source: National Quality Register for the Prevention of Cervical Cancer

DRUG THERAPY

11 Polypharmacy – Elderly Who Consume Ten or More Drugs

Polypharmacy refers to the concurrent consumption of multiple drugs. Studies have linked polypharmacy to noncompliance with prescriptions, higher costs, the risk of harmful drug-drug interactions and drug-induced admission to hospital.

The scientific literature often defines polypharmacy as the concurrent consumption of five or more drugs. Some studies of the elderly employ the consumption of ten or more drugs as a measure of excessive polypharmacy. As of 2010, excessive polypharmacy is one of the Swedish National Board of Health and Welfare indicators for good drug therapy in the elderly.

According to Figure 11, 12.3 per cent (more than 60 000) of the elderly nationwide were consuming ten or more drugs on 31 December 2011. Excessive polypharmacy was reported in 13.3 per cent of elderly women and 10.6 per cent of elderly men. The variation between counties was relatively large at 10.2 to 14.4 per cent. The percentage of both women and men consuming ten or more drugs was essentially unchanged from the year before.

The bars are broken down according to whether the patient received the medication through ApoDos or at the prescription counter. The right side of the diagram also shows the outcome for ApoDos and the prescription counter.

A total of 27.8 per cent of ApoDos patients were consuming ten or more drugs, as opposed to 8.8 per cent of those who used the prescription counter. The county variation was significant (31.8 per cent) for both sexes, particularly in the ApoDos group.

All counties have drug storehouses as part of home healthcare services or assisted living facilities that may have an impact on this indicator. Since the consumption of drugs from storehouses is not entered in the Prescribed Drug Register, drug consumption in outpatient care may be underestimated. In most cases, however, these drugs are probably used on a temporary basis, in emergency situations or for short-term care at special facilities. As a result, it is difficult to determine what impact such drug consumption has on the comparison in Figure 11.

Many of the other indicators (including those concerning diabetes, stroke and myocardial infarction) in this report regard a high percentage of patients in drug therapy as a favourable outcome. But a large number of concurrent drug therapies can lead to adverse events. This indicator illustrates the importance of choosing therapies that proceed from an overall assessment of the individual patient's needs.

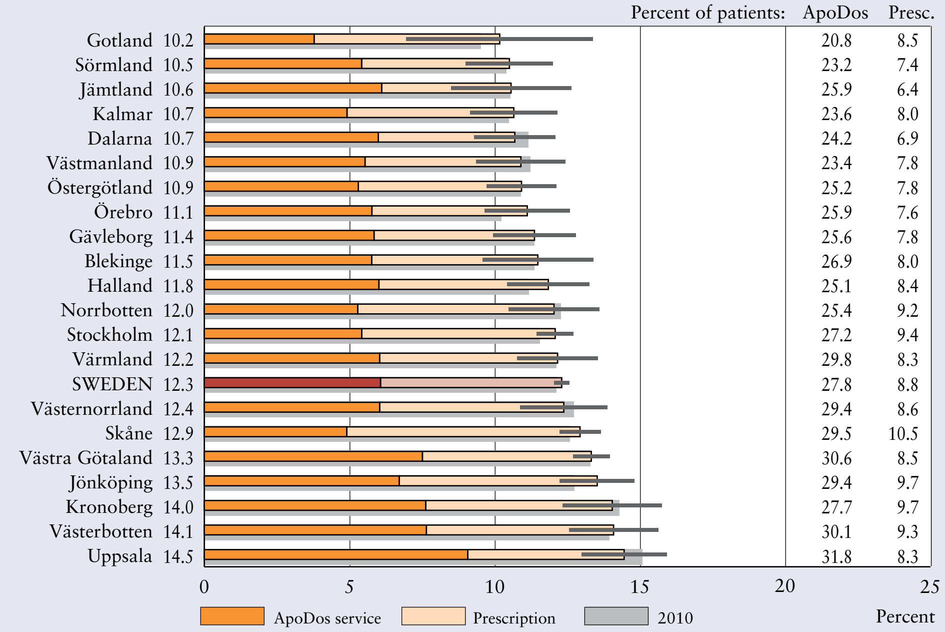


Figure 11 Percentage of people age 80 and older who were consuming ten or more drugs concurrently, 31 December 2011.

Source: Prescribed Drug Register, National Board of Health and Welfare

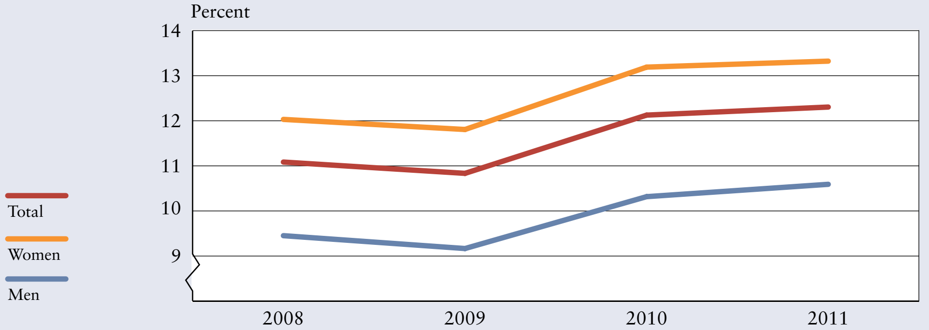


Figure 11 Sweden Percentage of people age 80 and older who were consuming ten or more drugs concurrently.

Source: Prescribed Drug Register, National Board of Health and Welfare

12 Drug-drug Interactions among the Elderly

Class C and D are the clinically relevant drug-drug interactions, i.e., combinations of drugs that can have a significant impact on how each of them acts or is metabolised. According to FASS (the Swedish equivalent of the Physicians' Desk Reference), a Class D interaction "can lead to serious clinical consequences in terms of severe adverse effects or lack of efficacy, or may otherwise be difficult to control with individual doses. Thus, the combination should be avoided." It is one of the Swedish National Board of Health and Welfare indicators for good drug therapy in the elderly.

Figure 12 presents the percentage of patients age 80 and older who were consuming combinations of drugs that posed a risk of Class D interactions on 31 December 2011. The bars are broken down between patients who received their medication through the ApoDos service or at the prescription counter.

The analysis of drug-drug interactions that previously proceeded from the database that furnishes FASS with its data comes from a new source this year: Swedish Finnish Interaction X-referencing (SFINX), now available to the counties that are linked to the Swedish Information Database for Medical Products (SIL). As in previous reports, the analysis covers Class D drug-drug interactions, documentation levels 1–4.

Class D interactions were reported in 2.0 per cent (more than 10 000) of the elderly nationwide. The decline form 2.6 per cent since last year is due to a new source of information for the analysis (see above). No gender differences were detected on a national level.

There has been some discussion to the effect that ApoDos, which offers considerable advantages for some patient populations, makes it easier for people to start on new drugs without a review of their overall consumption. The percentage of elderly who obtained their medications through ApoDos varied from county to county. This is the reason for presenting elderly with these drug combinations separately depending on whether they used ApoDos or the prescription counter. See the right hand side of the diagram. This comparison includes only patients who picked up their medications at the prescription counter, whereas the bar graph comprises the entire patient population. One possible source of error is that the Prescribed Drug Register does not capture the consumption of drugs dispensed from storehouses at assisted living facilities.

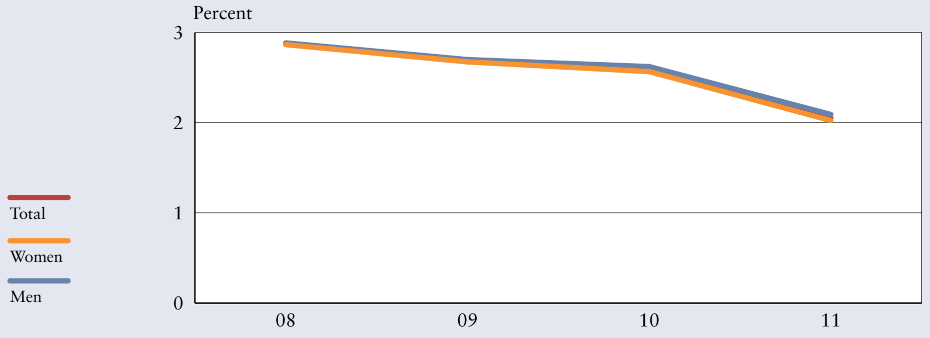


Figure 12
Sweden

Percentage of people age 80 and older who were using drugs that pose the risk of Class D drug-drug interactions.

Source: Prescribed Drug Register, National Board of Health and Welfare

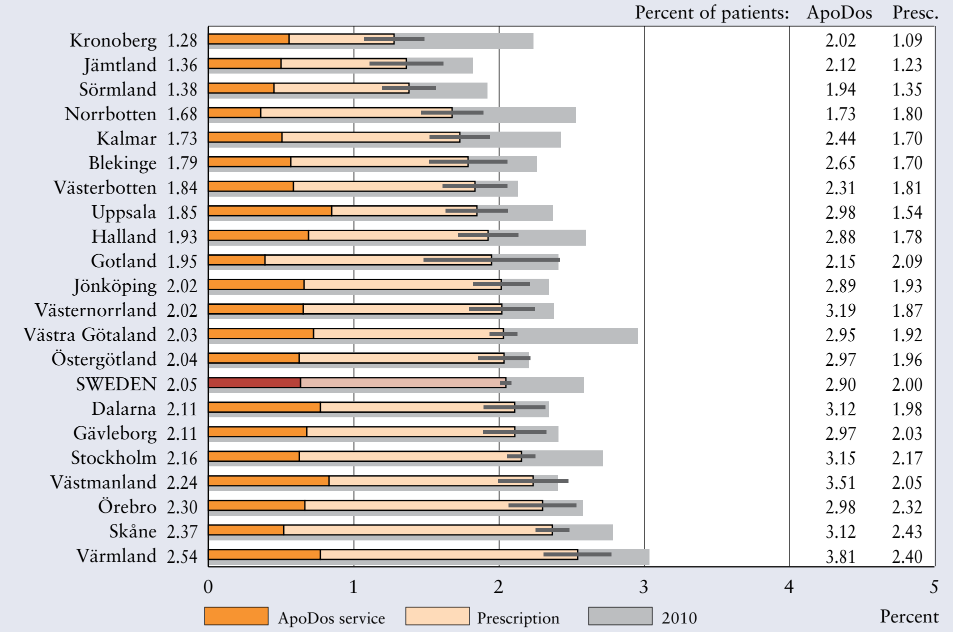


Figure 12 Percentage of people age 80 and older who were using drugs that pose the risk of Class D drug-drug interactions, 31 December 2011.

Source: Prescribed Drug Register, National Board of Health and Welfare

13 Elderly Consuming Drugs that Should Be Avoided

Certain drugs pose a significant risk of adverse effects in the elderly and should therefore be avoided. They are included in *preparations that should be avoided in the absence of special indications*, which is one of the National Board of Health and Welfare indicators for good drug therapy in the elderly. The indicator covers benzodiazepines with long half-lives, drugs with significant anticholinergic effects, tramadol (an analgesic), and propiomazine (a soporific).

Figure 13 presents the percentage of elderly who were consuming at least one of these drugs on 31 December 2011. The bars are broken down between patients who received their medication through the ApoDos service or at the prescription counter: 12.5 per cent of women and 9.5 per cent of men, or almost 57 000 people. The variations between counties were relatively large: 10.4 per cent in Sörmland to 15.3 per cent in Blekinge for women, as well as 7.4 per cent in Sörmland to 11.2 per cent in Jönköping and Blekinge for men. Both women (13.1 per cent) and men (10.0 per cent) were somewhat more likely to consume unsuitable drugs the year before.

A total of 17.0 per cent of ApoDos patients fell into this group, as opposed to 10.8 per cent of patients who picked up their medications at the prescription counter.

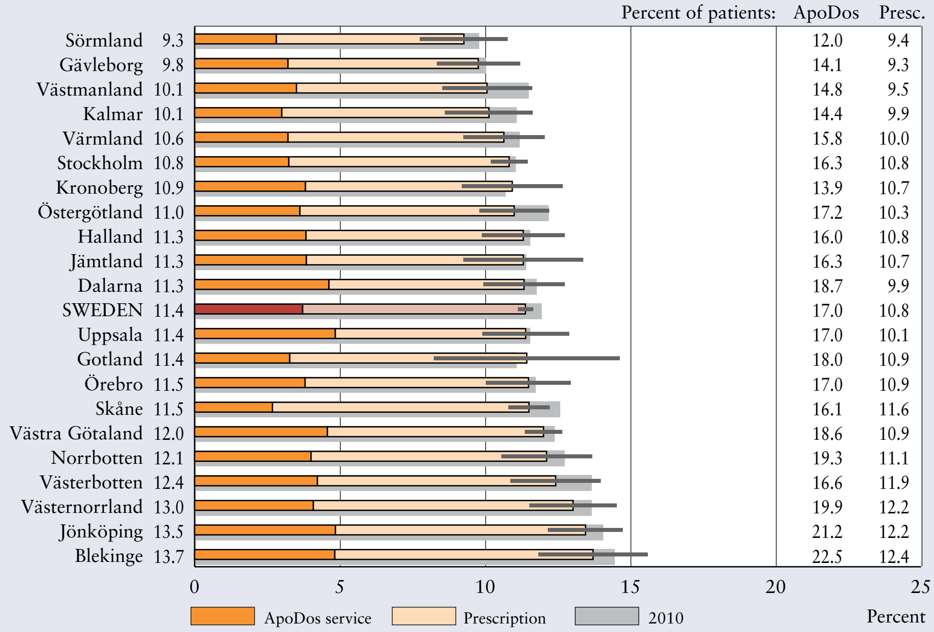


Figure 13 Percentage of age 80 and older in the general population consuming unsuitable drugs, 31 December 2011.

Source: Prescribed Drug Register, National Board of Health and Welfare

14 Occurrence of Antibiotic Therapy

There is a clear correlation between antibiotic consumption in a country and the percentage of resistant bacterial strains. Antibiotic consumption may increase to the point that serious infections can no longer be treated effectively. Antibiotics are prescribed less in Sweden and the rest of Scandinavia than Europe in general.

It is important that they not be used needlessly. One way of reducing unnecessary consumption is to avoid prescribing them right away for mild infections that usually go away on their own. The length of the treatment period also affects total antibiotic pressure. A number of recent studies have found that certain infections, such as those of the female urinary tract, can be treated for shorter periods of time without compromising outcome.

In order to minimise the number of bacteria affected, and thereby the development of resistance and adverse effects, antibiotic treatment should be as narrow as possible. The use of broad-spectrum antibiotics disrupts the body's normal bacterial flora more, which increases the risk of adverse effects and promotes the development of resistance among a number of bacterial strains.

Indicator 14 presents the number of antibiotic prescriptions per 1 000 inhabitants for 2011, along with the percentage of the general population who were treated with antibiotics. The source of data is the Prescribed Drug Register, which is complete

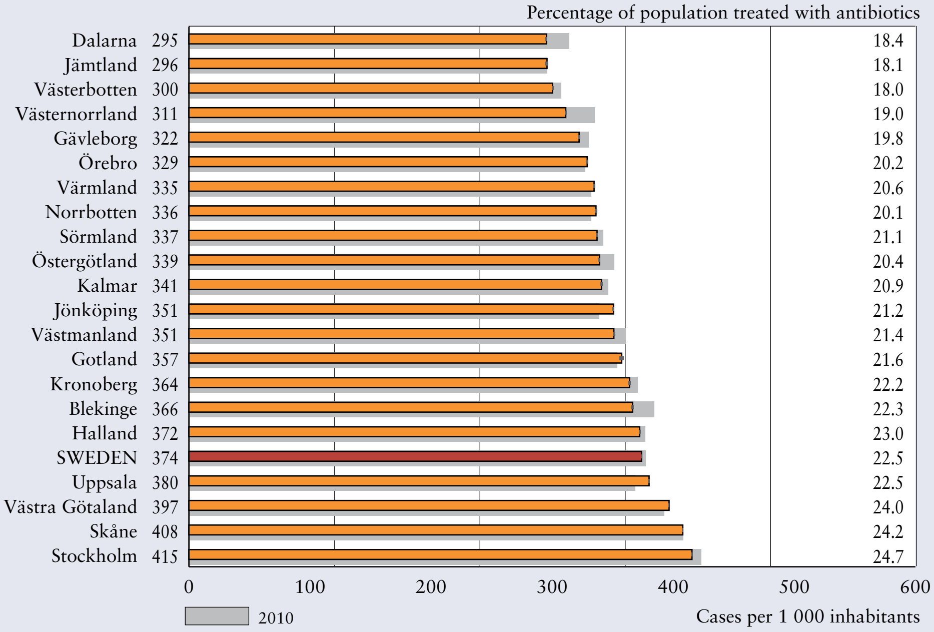


Figure 14 Prescriptions for antibiotics per 1 000 inhabitants, 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare

when it comes to outpatient care but does not include information about the indication. As a result, the indicator is only an approximate reflection of antibiotic consumption.

A total of 374 prescriptions were filled per 1 000 inhabitants, varying from 295 to 415 depending on the county, during the period. The data suggest a marginal decline from the year before. The number of prescriptions filled decreased in all counties between 2007 and 2011. Women consumed considerably more antibiotics than men. Generally speaking, fewer antibiotics were prescribed in northern Sweden than in the metropolitan areas.

The variations between counties were fairly large, probably due to local traditions and cannot be explained by differing medical needs.

While a low percentage of antibiotic prescriptions is desirable, the optimum level is difficult to establish. The Swedish Strategic Programme Against Antibiotic Resistance (Strama) targets a maximum of 250 prescriptions per 1 000 inhabitants each year. No county is currently that low – a substantial nationwide decrease would be required.

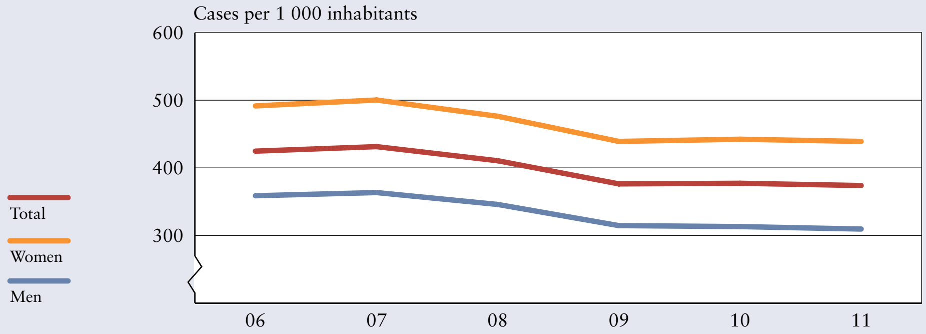


Figure 14
Sweden

Prescriptions for antibiotics per 1 000 inhabitants. Age-standardised.
Source: Prescribed Drug Register, National Board of Health and Welfare

15 Penicillin V in Treatment of Children with Respiratory Antibiotics

Most respiratory infections are due to virus and go away by themselves. Phenoxymethylpenicillin (penicillin V) is the first-line antibiotic therapy for respiratory infection deemed to have been caused by bacteria. It is a narrow-spectrum antibiotic that targets a small number of bacteria and has less of an impact on normal flora.

Figure 15 shows the percentage of children who received penicillin V among those whose first prescription during the period was for one of the antibiotics normally used to treat respiratory infection. The source of data is the Prescribed Drug Register, which has a 100 per cent participation rate but does not include indication. The patient population with respiratory infection was identified instead by means of the particular antibiotic prescribed. A total of 24 per cent of all children age 6 and younger were given some type of antibiotic for respiratory infection in 2011.

Seventy-six per cent of them received penicillin V. Boys were somewhat more likely to be prescribed penicillin V than girls. Nationwide consumption of penicillin V was greater than in 2008. Differences emerged between the various counties: prescription of narrow-spectrum penicillin V ranged from 72 per cent in Stockholm to 85 per cent in Värmland. Children were most likely to receive penicillin if they lived in a metropolitan area.

While no specific target has been set, the counties with the highest percentage of penicillin V use serve as good models of achievable results. Strama recommends that 80 per cent of outpatient antibiotic prescriptions for respiratory infections in children age 6 or younger be for penicillin V.

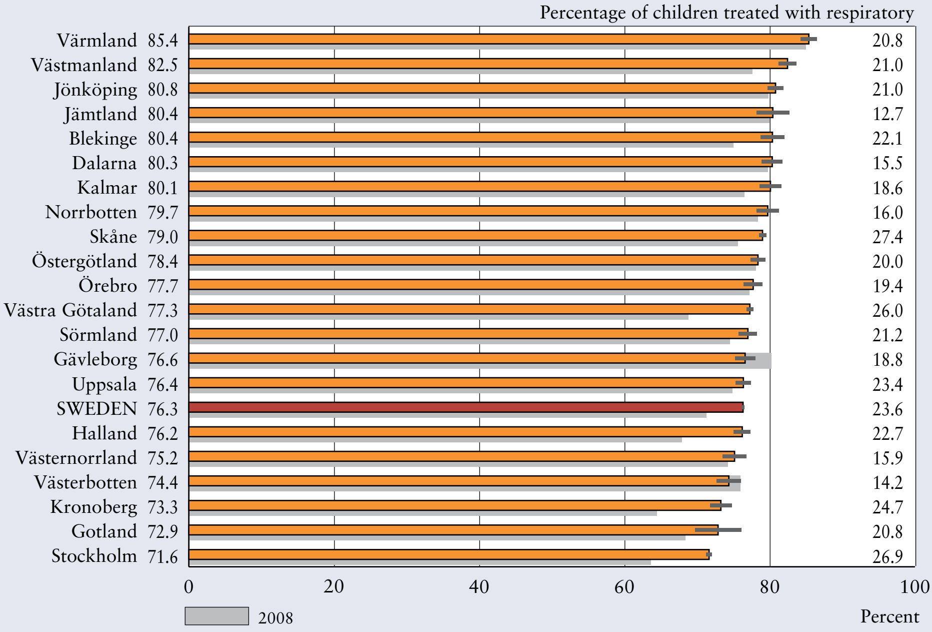


Figure 15 Percentage of patients receiving Penicillin V of all children age 6 and younger treated with respiratory antibiotics, 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare

16 Quinolone Therapy in Treatment of Women with Urinary Tract Antibiotics

Sweden and the other Nordic countries use a greater percentage of narrow-spectrum antibiotics, whereas Eastern and Southern Europe use a high percentage of broad-spectrum antibiotics. The lowest possible prescription of broad-spectrum antibiotics is generally desirable.

Quinolones are a family of broad-spectrum antibiotics that should normally be reserved for serious infections. The target of the Swedish Strategic Programme Against Antibiotic Resistance (Strama) and the Swedish Association of General Practice (SFAM) is that quinolones constitute no more than 10 per cent of all prescriptions for urinary tract infection.

Quinolones as a percentage of all antibiotics prescribed for lower urinary tract infection were compared for women age 18–79 who picked up a subscription for one of a selection of antibiotics in 2011. Almost 42 000 of the more than 318 000 women included in the comparison were prescribed quinolones. Figure 16 demonstrates that all counties were higher than the Strama and SFAM recommendations, varying from 11 per cent to 16 per cent – a small improvement from the year before. Nationwide use has declined significantly from 22 per cent in 2007. All the attention that quinolones for urinary tract infection have attracted in recent years appears to have made an impact.

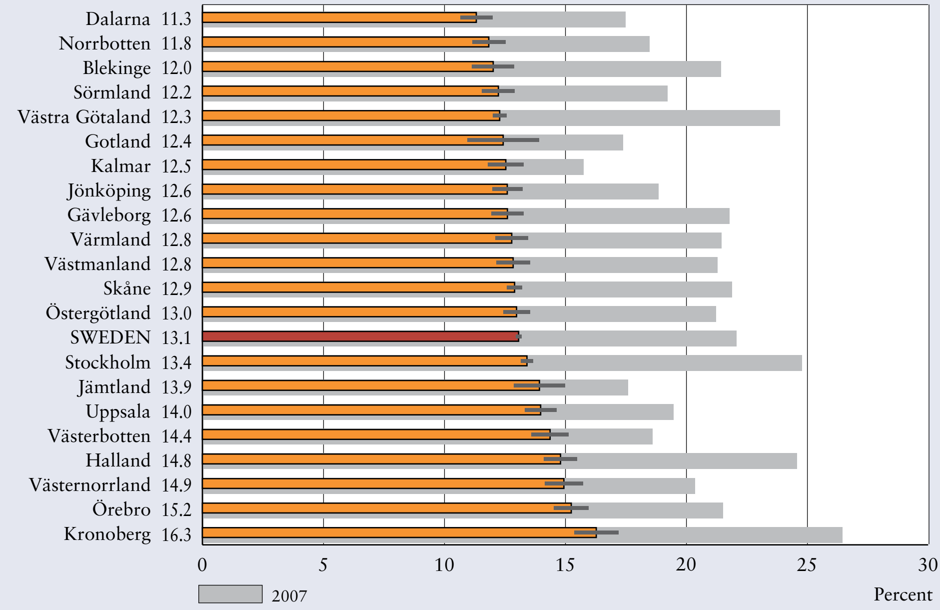


Figure 16
Women

Percentage of patients receiving quinolone therapy of all women, age 18–79, treated with urinary tract antibiotics, 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare

It is not possible to break the drugs down according to the indication for which they were prescribed. Thus, some of the prescriptions may have had other indications than lower urinary tract infection. But such prescriptions should represent a small percentage of the total and are not likely to differ much among the various counties. The analysis has not taken into consideration any differences between counties in the occurrence of resistance.

17 Combination Drugs for Asthma

Asthma and asthmatic bronchitis are common among infants. An estimated 8–10 per cent of school age children and 6–7 per cent of adults have asthma. Possibly because males are born with narrower bronchi in relation to the size of their lungs, they are more likely than females to have asthma as children. The condition is more common, however, in adult women than men. Smoking, which is more frequent among women than men, heightens the risk of developing asthma. Greater air pollution and new patterns of early exposure to microorganisms brought about by urbanisation may have contributed to the higher occurrence of asthma in the past 50 years. Due to the treatment methods now available, hospitalisation for the condition is uncommon among both children and adults.

The Swedish Medical Products Agency's recommended treatment programme for asthma requires that fixed combinations of long-acting beta-2 stimulants and in-

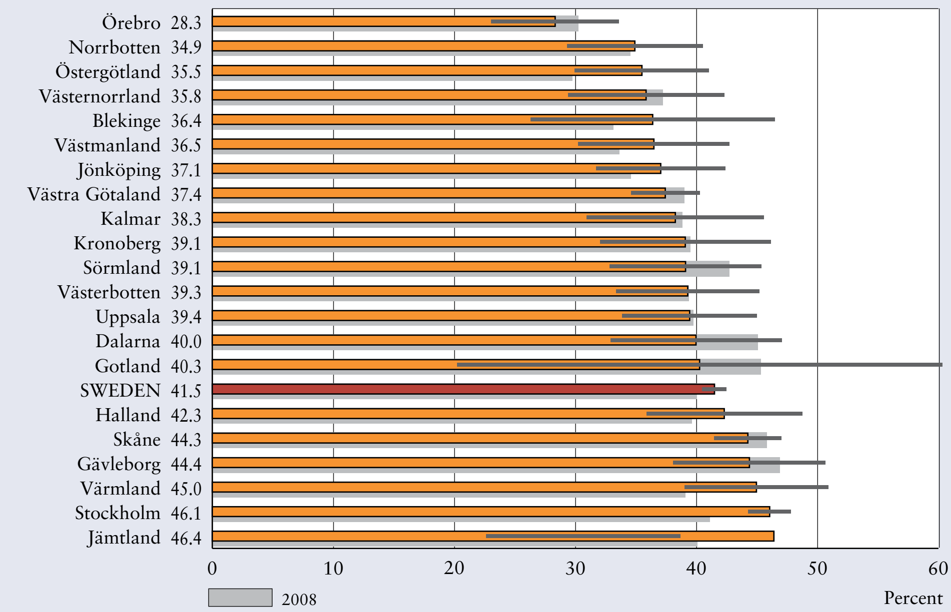


Figure 17 Percentage of new users, age 25–44, of fixed combinations of corticosteroids and long-acting beta-stimulants (LABA) not previously prescribed an anti-asthmatic drug, 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare.

haled steroids be used only for the sake of simplicity following thorough, separate testing of each one. The use of such a combination among adults who have not previously been prescribed inhaled steroids does not lessen the risk of relapse or the need for fast-acting bronchial dilators.

A large percentage of patients who are prescribed asthma drugs do not have the condition, but are elderly and suffer from chronic obstructive pulmonary disease (COPD), normally due to smoking. Because the Prescribed Drug Register has no data on indication, distinguishing asthma from COPD patients is not easy. If only younger people are included, asthmatics predominate.

The indicator reflects the percentage of patients age 25–44 who started on a combination drug and had not tried another asthma drug previously. More than 9 300 people used combination drugs for the first time in 2011. Almost 4 000, or approximately 41 per cent (more than 39 per cent among women and more than 44 per cent among men) of them, had never taken an asthma drug before. No clear change was evident from the year before, and significant differences among the various countries have not yet appeared.

The recommendation of the Swedish Medical Products Agency basically states that all patients who are prescribed combination drugs should have tried another asthma drug first. If there were a high level of compliance, more patients would have done

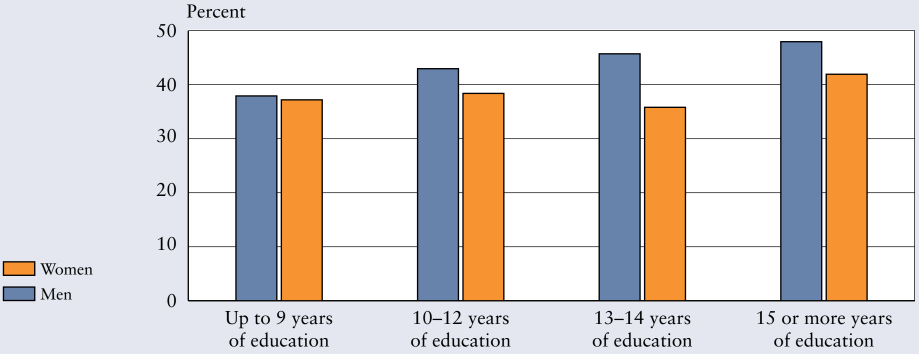


Figure 17A
Sweden

Percentage of new users, age 25–44, of fixed combinations of corticosteroids and long-acting beta-stimulants (LABA) not previously prescribed an anti-asthmatic drug, 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare and Swedish Register of Education, Statistics Sweden

so than is currently the case. It is important to keep in mind, however, that the studied population included some COPD patients and that the use of asthma drugs exhibits a significant seasonal variation.

Figure 17A demonstrates a clear correlation between educational level in men and the percentage who started on a combination drug despite the recommended treatment regimen. The pattern is less evident among women.

18 Compliance in Filling Prescriptions for Antihypertensive Therapy

This indicator is intended to shed light on follow-up and initial care after starting drug therapy. Compliance with drug therapy can illustrate the quality of primary care, specialist outpatient care and pharmacy services, as well as their interaction. One reason that antihypertensive therapy was chosen is that hypertension is a major primary care area. Furthermore, studies have suggested that there is a large potential for improvement when it comes to following treatment regimens with these drugs.

Among the factors that can affect compliance are the fact that hypertension does not usually cause any pronounced symptoms and lasts for the rest of a person's once it develops. Non-compliance may be due to lack of patient comprehension, the inability of the healthcare system to properly introduce and monitor new types of drug therapy or the complexity of the regimen.

Because anithypertensives are also used to treat heart failure, angina pectoris and other conditions, the indicator includes additional patient populations. Antihypertensive therapy after stroke or myocardial infarction is a key method of preventing recurrence of cardiovascular disease even if blood pressure is normal.

Figure 18 shows the percentage of patients starting on antihypertensive therapy in 2010 who were still following the regimen after 12–18 months. The data were taken

Figure 18 Percentage of patients, age 50–79, who continued to receive antihypertensive therapy 12–18 months after picking up their first prescription, 2010.

Source: Prescribed Drug Register, National Board of Health and Welfare.

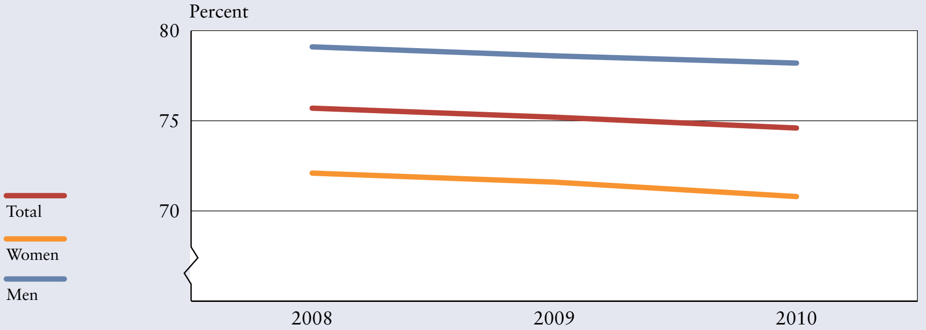


Figure 18 Sweden Percentage of patients, age 50–79, who continued to receive antihypertensive therapy 12–18 months after picking up their first prescription.

Source: Prescribed Drug Register, National Board of Health and Welfare.

from the Prescribed Drug Register. The comparison includes approximately 101 000 patients age 50–79 who first picked up an antihypertensive prescription in 2010. Seventy-one per cent of men and 78 per cent of men nationwide had stayed with the regime after 12–18 months. The results, which are in line with previous reports, suggest a need for improvement – which is wholly feasible in view of the variations between counties that currently exist.

CONFIDENCE AND PATIENT EXPERIENCE

Data on perceptions by the general population concerning availability and reliability are taken from the annual Healthcare Survey. The National Patient Survey provides data regarding patient experience of primary care visits and specialised medical care.

Healthcare Survey

The purpose of the Healthcare Survey is to measure the attitudes, experience, knowledge and expectations of the adult population when it comes to the healthcare system. The rolling survey has been conducted once a year in every county and region since 2001. The content of the survey changed in autumn 2010 and has become more oriented towards the general population. One of the main reasons for the change is that the National Patient Survey now captures data on patient experience.

Perceptions and level of confidence among the general population are a key gauge of healthcare performance. The data presented in this report concern 2011 and are based on telephone interviews with approximately 40 000 randomly selected people.

Comparisons with the results of the Healthcare Survey before 2010 are possible on a limited basis only. Not only have the questions and method changed, but the results are presented in a somewhat different manner now. For example, those who respond "I don't know" or "No answer" are not included in the current presentation, while certain questions concern the past six months instead of the past 12 months.

The Swedish Association of Local Authorities and Regions presents a more comprehensive yearly review of the results. The three selected indicators below are based on questions that respondents were asked whether or not they had been to an appointment within the past six months.

19 Access to Health Care

Figure 19 shows perceptions among members of the general population about their access to health care, regardless of whether or not they have had contact with the system over the past six months.

A total of 80 per cent of people nationwide agreed wholly or in part with the statement, "I have access to the health care I need." The corresponding figure in 2010 was 82 per cent (excluding "I don't know" and "No Answer"). County results varied from 73 to 88 per cent. Eight per cent of the respondents nationwide reported that they did not have access to the health care they needed. The counties varied between 3 and 11 per cent.

Women and men showed marginal differences in their perceived access to health care. The gaps between age groups, however, were considerably wider. People of working age were least likely to state that they had access to the health care they needed, whereas people age 70 and older were most likely.

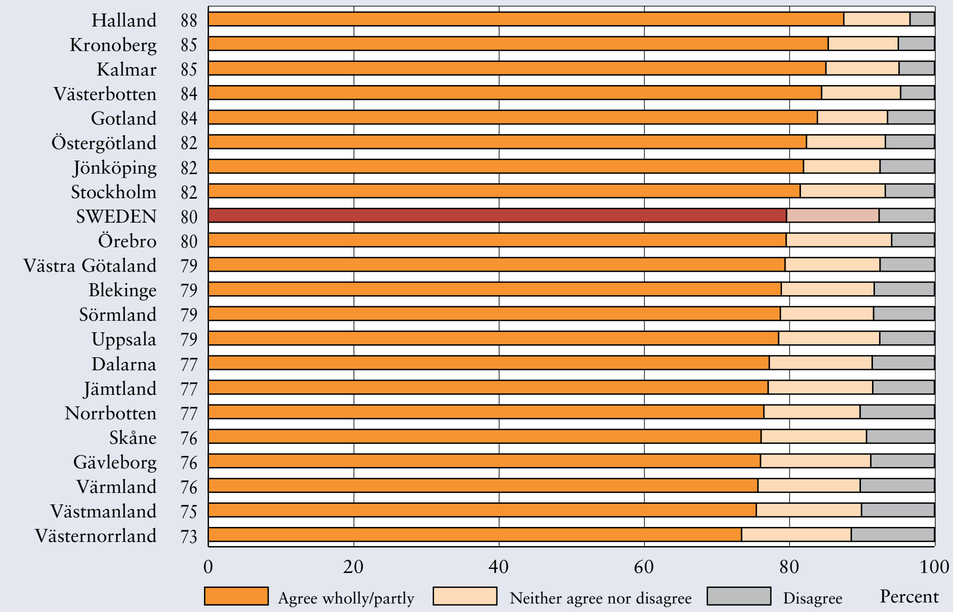


Figure 19 Percentage of the general population reporting that they had access to the health care they needed, 2011.

Source: Health Survey, Swedish Association of Local Authorities and Regions

People born in a non-Nordic country responded less frequently that they had sufficient access to health care than those born in Sweden or another Nordic country. Nevertheless, the variable of general state of health played a greater role. Sixty per cent of the respondents who said that they were in poor or very poor general health felt that they had access to the care they needed. Meanwhile 82 per cent of those reporting good or very good general health had a similarly favourable perception of access to health care.

Twenty-six of the respondents who did not completely go along with the statement that they had access to the care they needed said that shorter waiting times would improve the situation.

20 Confidence in Health Centres

Figure 20 presents general confidence among the population in health centres or clinics. Sixty-four per cent of respondents nationwide had a lot or quite a lot of confidence, the counties varying from 59 to 75 per cent. The corresponding figure in 2010 was 62 per cent (excluding "I Don't Know" and "No Answer").

Twelve per cent of the respondents nationwide had little or very little confidence in health centres or clinics. Confidence was lowest among those who reported that their general health was poor or very poor. Twenty-three per cent of respondents

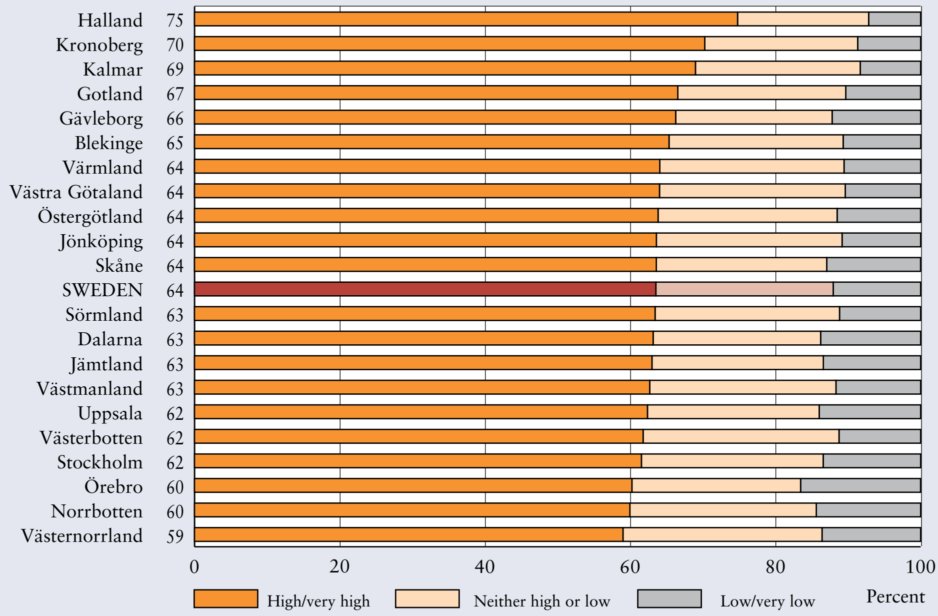


Figure 20 Percentage of the general population with high or very high confidence in primary care, 2011.

Source: Health Survey, Swedish Association of Local Authorities and Regions

in this group said that they had little or very little confidence in health centres or clinics.

People who were 70 years or older had the greatest confidence (75 per cent) in county health centres or clinics. People age 30–39 had the least confidence (54 per cent).

The 4 826 respondents with little or very little confidence were asked why. The three main reasons were, “I don’t get the care I need” (25 per cent), “The doctors have poor skills” (23 per cent) and “The doctors and staff vary from one time to the next” (12 per cent). Nineteen per cent of those who responded to the question said, “None of the above”. The various types of responses in this category have been documented to gain a better understanding and to make possible adjustments in the choices for future surveys.

21 Confidence in Hospitals

Figure 21 presents the confidence of the general population in the hospitals of their county or region. The results are more favourable than for primary care. As was the case in 2010, 71 per cent of respondents nationwide had great or very great confidence in their hospitals. Seven per cent had little confidence.

The variations among counties were large. Eighty-one per cent of the respondents in Örebro reported “quite a bit” or “a great deal” of confidence, as opposed to 55 per

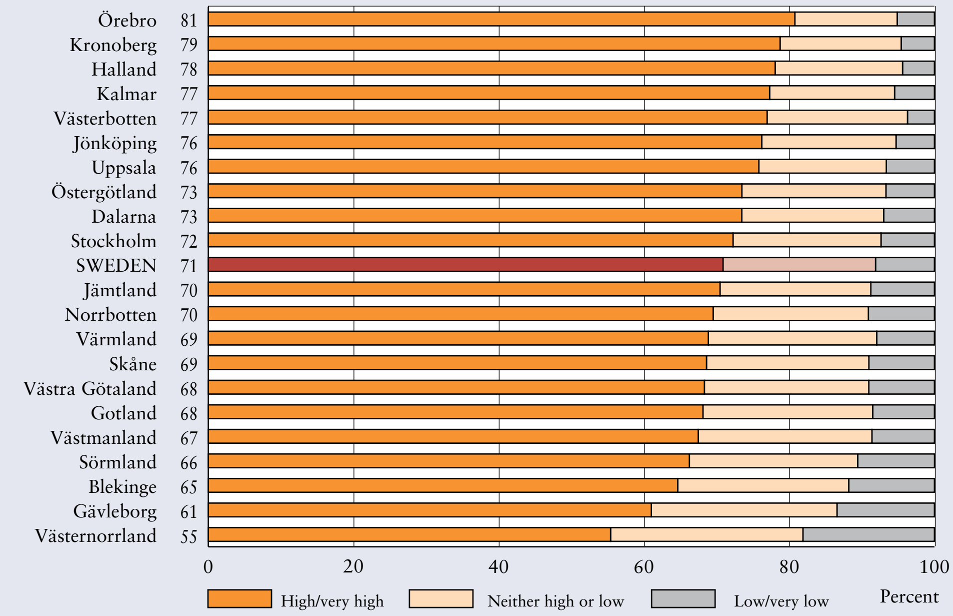


Figure 21 Percentage of the general population who reported having high or very high confidence in hospital care, 2011.

Source: Health Survey, Swedish Association of Local Authorities and Regions

cent in Västernorrland. Seventy-three per cent of men and 69 per cent of women had great confidence. Single respondents with children (61 per cent) and respondents in poor or very poor health (60 per cent) had the least confidence.

Respondents with fairly little or very little confidence in hospitals (3 118) were asked why. The three main reasons were, “I don’t get the care I need” (28 per cent), “The doctors have poor skills” (15 per cent) and “Inadequate treatment” (12 per cent). Twenty-seven per cent of those who answered the question marked ”None of the above”. The types of responses that are received in this category have been documented to gain a better understanding and to make possible adjustments in the choices for future surveys.

National Patient Survey

Primary Care

A National Patient Survey was first conducted for primary care in 2009. Fifteen counties repeated the survey in autumn 2010. All counties participated in September 2011.

More than 248 000 questionnaires were sent to randomly selected patients who had seen a primary care doctor at a health centre or clinic in September. They had the opportunity to describe and rate their experience of the appointment. The questions concerned caregiver respect and consideration, the level of patient participation, the quality of information received, perceived availability and other factors. Approximately 130 000 patients responded to the questionnaire. The national response rate was 54 per cent, varying from 51 to 61 per cent depending on the county. Stockholm had the lowest participation rate and Jämtland had the highest.

Medical care

A National Patient Survey was first conducted for specialist care in spring 2010. The second survey in spring 2012 also focused on inpatient and outpatient medical care, as well as adult psychiatry. This report presents the county-level results for inpatient and outpatient medical care.

Almost 180 000 questionnaires were sent to randomly selected outpatients who had seen a medical specialist. Nearly 80 000 questionnaires were sent to randomly selected patients who had been hospitalised for medical care. Approximately 100 000 outpatients and 45 000 inpatients responded. The corrected response rate was 59 per cent for outpatients and 63 per cent for inpatients.

The results of the survey are available at www.skl.se/nationellpatientenkat. This report shows the results for the country as a whole and per county, as well as for health centres and clinics. The results for health centres and clinics are also available at www.1177.se, Jämför vård (Compare care).

Non-response and variation in case mix

Non-response can affect the results, particularly when comparing health centres and hospital clinics. Studies based on other surveys of the general population shows that socioeconomic status affects the proclivity to respond to questionnaires. Moreover, the response rate is often higher among people born in Sweden than abroad. Previous public health surveys suggest that people with poorer self-rated health are more inclined to respond, whereas those who are elderly or severely ill are less inclined. The National Patient Survey most likely conforms to that pattern.

A reasonable conclusion is that people who are severely ill or worse off socioeconomically account for a disproportionate share of the non-responses. As a result, case mix may skew the comparisons. Health centres and clinics that treat many severely ill patients or serve socially disadvantaged areas presumably have a higher non-response rate, rendering the survey results less reliable.

Previous data from the Healthcare Survey also suggest that people who are in poorer health tend to have less confidence in the healthcare system and are more likely to feel that they do not have access to the care they need. State of health is likely to affect how patients assess their healthcare experiences and thereby the results of surveys.

Patient-reported quality

The diagram presents patient-reported quality as a weighted score both per county and nationwide. The breakdown among the various choices, along with patient-reported quality, are shown for specialist medical care.

Patient-reported quality is a weighted score for a particular question. Responses such as “Not filled in” or “Not applicable” are not omitted when calculating patient-reported quality. Each choice is weighted in relation to its degree of severity. The results for each choice are added together, multiplied by 100 and rounded up to the nearest integer between 0 and 100.

22–24 Caregiver Respect and Consideration, Information and Participation at Primary Care Appointments

Figure 22 shows the results for patient perceptions of respect and consideration among primary caregivers for each county. Caregiver respect and consideration is one of the indicators with the most favourable results nationwide. Patient-reported quality ranged from 88 to 92 among the various counties, generating a national average of 90.

Men were somewhat more likely than women to report that they had been treated with respect and consideration. Patient-reported quality varied from 87 to 91 among

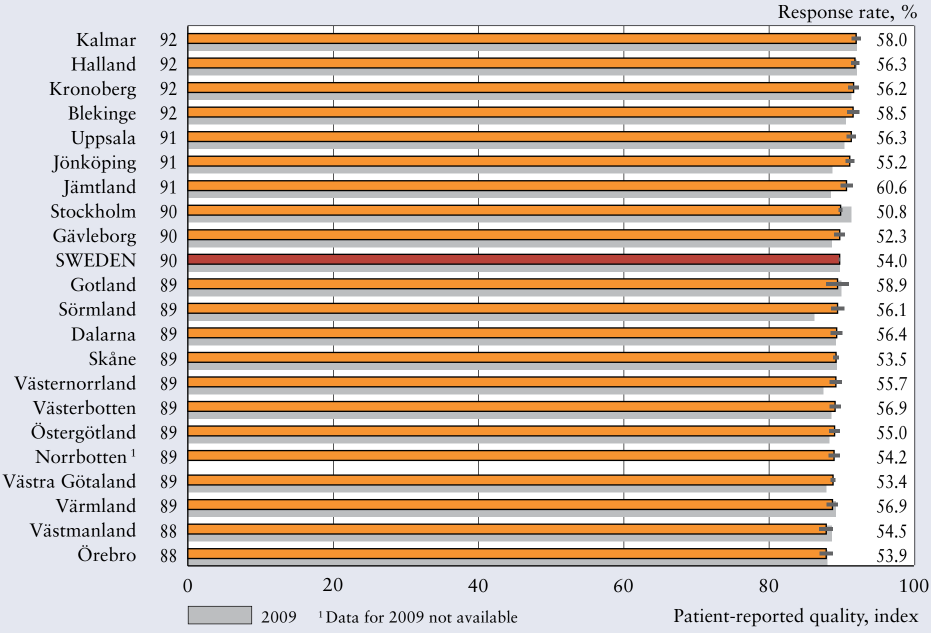


Figure 22 "Did you feel that you were treated respectfully and considerately?" Patient-perceived quality of primary care, 2011.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

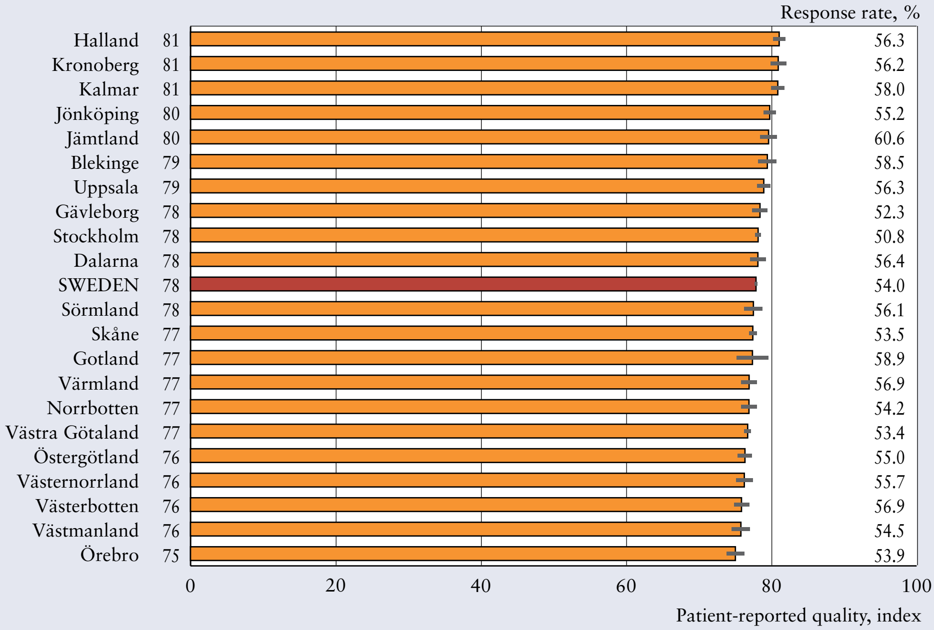


Figure 23 "Did you receive enough information about your condition?" Patient-perceived quality of primary care, 2011.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

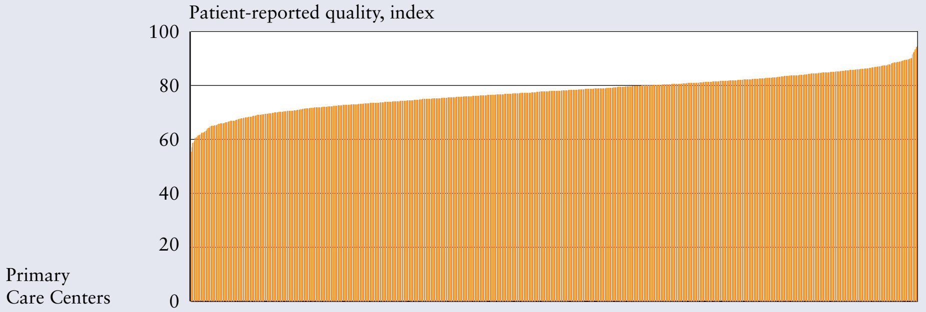


Figure 23A "Did you receive enough information about your condition?" Patient-perceived quality of primary care, 2011.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

women and 89 to 93 among men. The nationwide results were essentially the same as the year before. The gaps widened, however, at the county or health centre level.

Figure 23 shows responses to the question as to whether patients felt that they received sufficient information about their condition. The patient-reported quality was 78 nationwide, ranging from 75 to 81 between the various counties. The score for women was 77, varying from 74 to 80 depending on the county. The score for

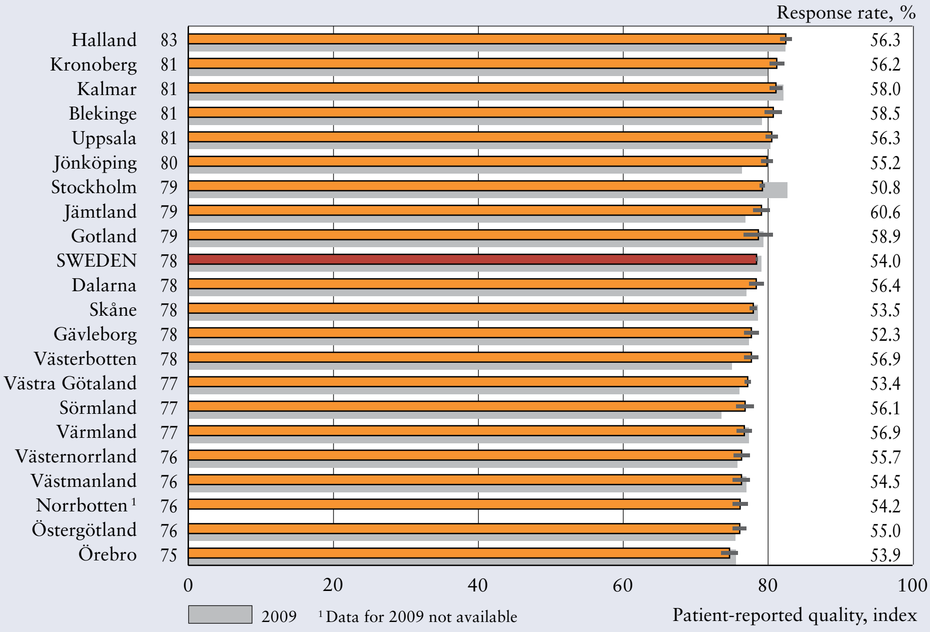


Figure 24 "Did you feel as though you participated in decisions about your care and treatment as much as you wanted?" Patient-perceived quality of primary care, 2011.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

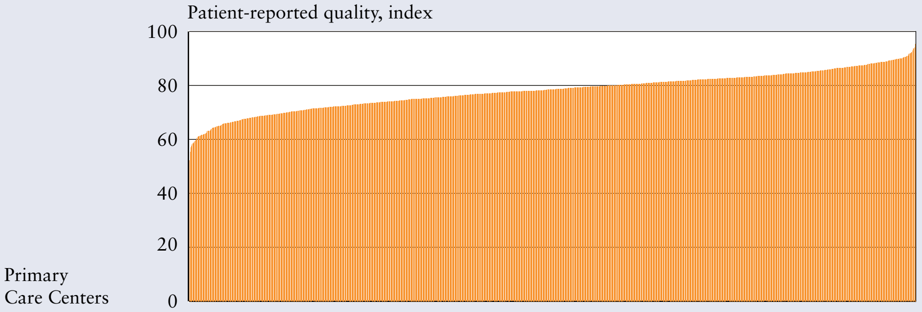


Figure 24A "Did you feel as though you participated in decisions about your care and treatment as much as you wanted?" Patient-perceived quality of primary care, 2011.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

men was somewhat higher at 80, varying between 76 and 83. While the nationwide results were unchanged from the previous year, differences are apparent for individual counties.

Figure 24 shows the results concerning patient-reported participation during doctor's appointments at health centres or clinics The national score for patient-reported quality was 78, ranging from 75 to 83 for the individual counties. The gender differences were marginal.

As might be expected, Figures 23A and 24A demonstrate that the spread is greater among health centres than among counties.

25–27 Caregiver Respect and Consideration, Information and Participation at Specialised Care Appointments

Figure 25 shows the results for patient perceptions of respect and consideration among outpatient medical specialists for each county. Eighty-nine per cent of respondents said, "Yes, totally" when asked whether they had been treated with respect and consideration. The differences among counties were small. Men were somewhat more likely than women to report that they had been treated with respect and consideration.

Figure 26 shows responses to the question as to whether patients felt that they received sufficient information about their condition. Sixty-six per cent of respondents nationwide said, "Yes, totally." Women (63 per cent) were somewhat less satisfied with the amount of information they had received than men (69 per cent). Small differences emerged among the various counties.

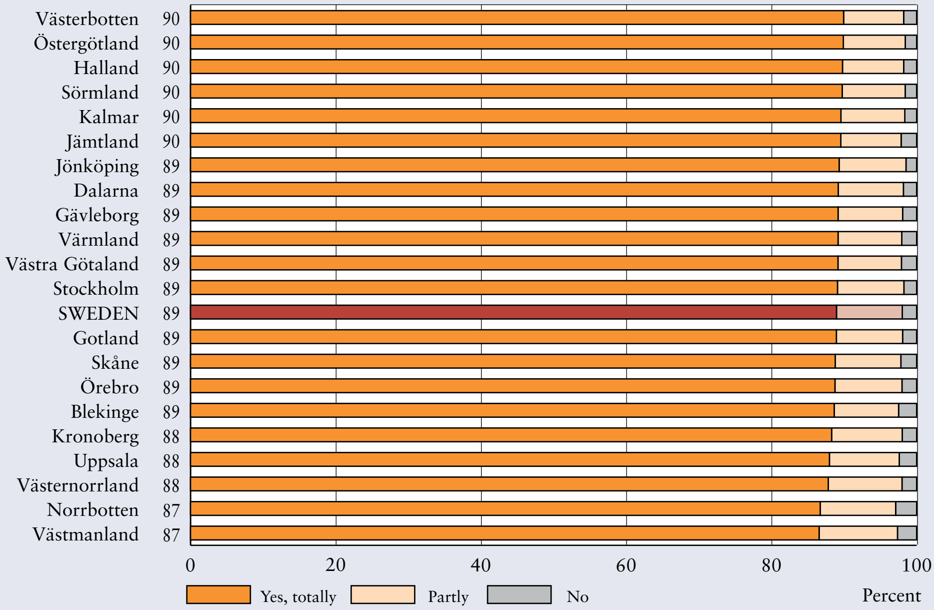


Figure 25 "Did you feel that you were treated respectfully and considerately?" Percentages for the various responses, 2011. Covers appointments in specialised medical care.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

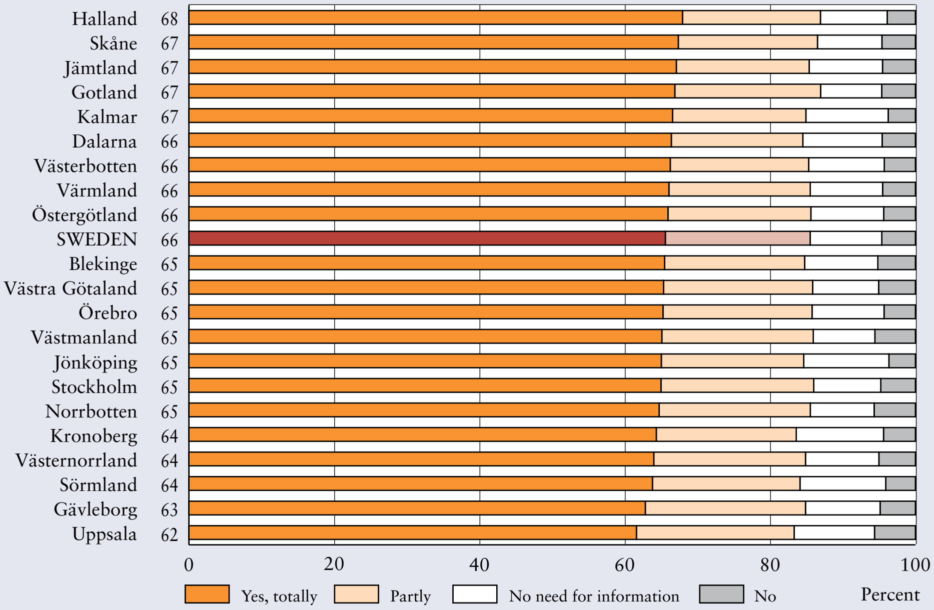


Figure 26 "Did you receive enough information about your condition?" Percentages for the various responses, 2011. Covers appointments in specialised medical care.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

Figure 27 "Did you feel as though you participated in decisions about your care and treatment as much as you wanted?" Percentages for the various responses, 2011. Covers appointments in specialised medical care.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

Figure 27 shows patient perceptions of their participation at outpatient appointments with medical specialists. Sixty-nine per cent of respondents nationwide answered “Yes, totally” when asked whether they participated in care and treatment decisions to the extent that they wanted. The variation between counties was 65–72 per cent. The gender differences were marginal.

28–30 Caregiver Respect and Consideration, Information and Participation during Admission to Hospital

Figure 28 shows the results for patient perceptions of respect and consideration by inpatient medical specialists. Eighty-five per cent of respondents said, “Yes, totally” when asked whether they had been treated with respect and consideration. County results varied from 82 to 88 per cent. Certain gender differences were perceptible, particularly in individual counties. Men were more likely than women to answer in the affirmative.

Figure 29 shows responses to the question as to whether patients hospitalised for specialist medical care felt that they received sufficient information about their condition. Sixty-three of respondents nationwide answered in the affirmative, with modest differences among the various counties. More men (66 per cent) than women (61 per cent) felt that they had received enough information about their condition.

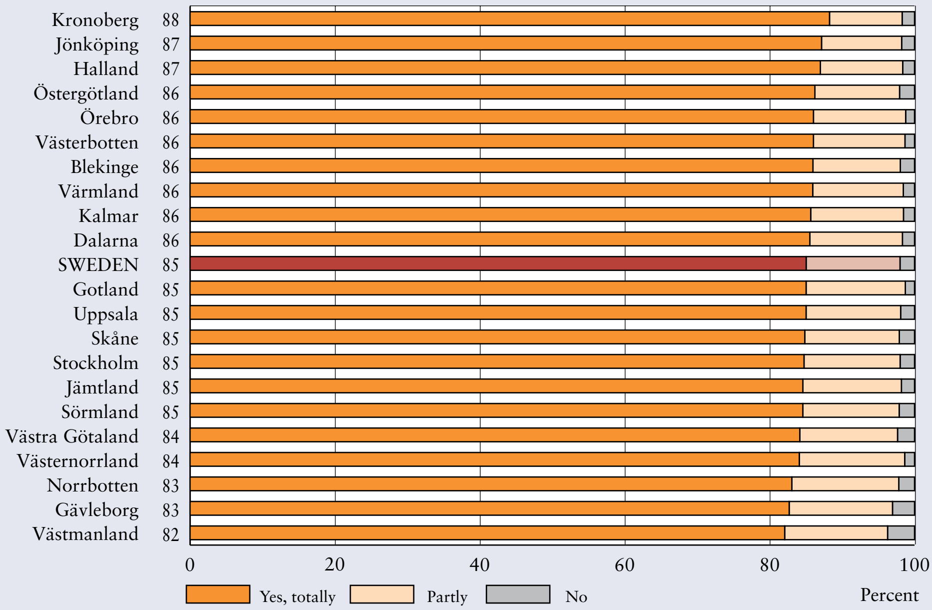


Figure 28 "Did you feel that you were treated respectfully and considerately?" Percentages for the various responses, 2011. Covers specialised medical care.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

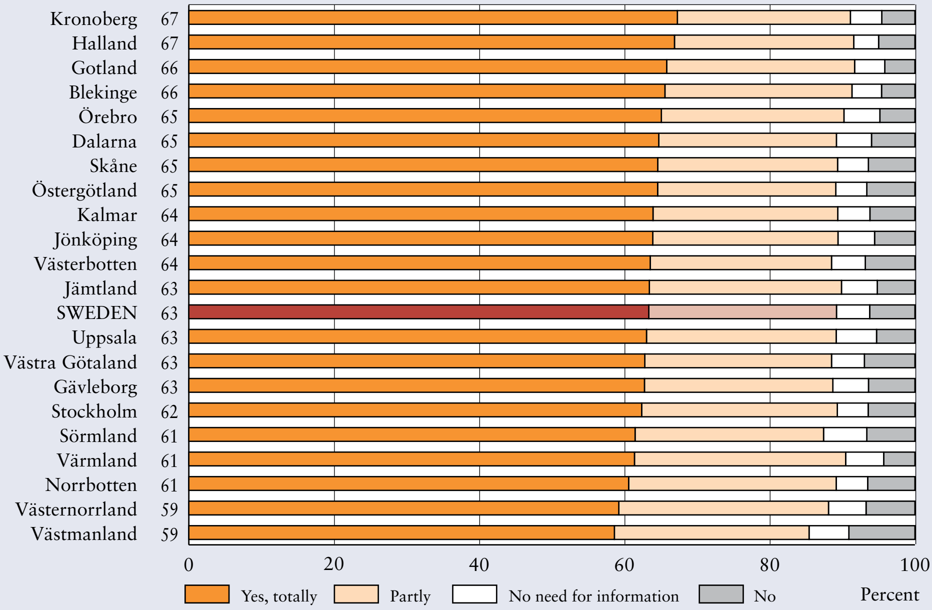


Figure 29 "Did you receive enough information about your condition?" Percentages for the various responses, spring, 2012. Covers specialised medical care.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

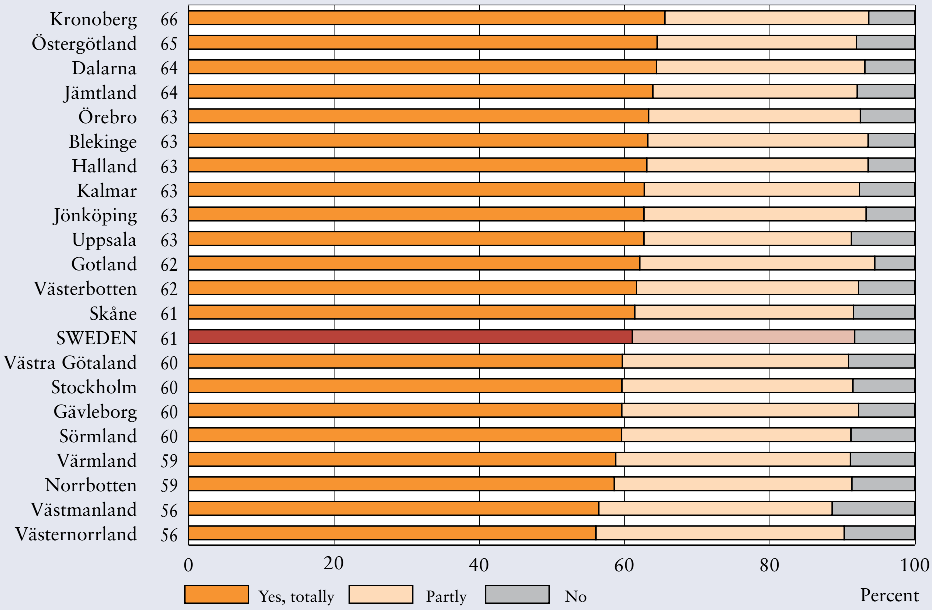


Figure 30 "Did you feel as though you participated in decisions about your care and treatment as much as you wanted?" Percentages for the various responses, spring 2012. Covers specialised medical care.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

Figure 30 shows the results for perceived participation by inpatients in their specialist medical care. The results are lower than for both respect and consideration and amount of information received. Sixty-one per cent of respondents nationwide, with a variation between counties of 10 percentage points, felt that they had participated. Gender differences were small at the national level but exhibited greater variation within and between individual counties.

AVAILABILITY

The *Availability* set of indicators concerns time-related availability. The indicators are related to the national care guarantee, which covers all elective care. The guarantee governs the time frame within which care that authorised caregivers have chosen after assessment, prioritisation and consultation with the patient is to be offered. The guarantee does not affect whether, or what kind of, care is to be provided.

The targets are expressed as 0, 7, 90, 90 – the maximum waiting time in days for various steps in the care process. Appointments and treatment are to initially be offered in the county or region where the patient lives. If the county cannot do so within the specified time frame, the patient is to be given information about seeking care with another provider. The county is to assist with all contact, and the patient is not to be responsible for with extra costs.

A patient should be able to contact primary care the same day (0). They are to have the opportunity to see a primary care doctor within seven days (7). An appointment with a specialist is to be offered within 90 days after the date of the decision (90). An intervention is to be offered within 90 days after being ordered (90).

Availability trends for both primary and specialised care in accordance with the guarantee's time frame are regularly monitored at www.vantetider.se. Monitoring waiting times always poses methodological challenges. For instance, the medical indicators – the criteria for providing a particular kind of treatment – appear to vary considerably throughout Sweden. Thus, some patients who are on the waiting list in a particular county may not be considered for treatment elsewhere.

The source of data on availability and waiting times is the joint national Waiting Times in Health Care Database of the various counties. The national reporting organisation is constantly working on improving the availability and quality of data. The response rate has been very good over the past few years. The National Patient Survey is the source for one indicator of patient perceptions of waiting times in the primary care system.

Three of the indicators presented in this section concern primary care. The others reflect appointments and treatment methods associated with elective specialist care.

31 Appointment with a Primary Care Doctor within Seven Days

Waiting times for an appointment with a primary care doctor are surveyed each March and October. The data are reported through an online system provided by the Swedish Association of Local Authorities and Regions.

The data presented here are from the latest survey on 19–30 March 2012. All health centres and primary care clinics were expected to submit data. A total of 1 089 centres and private general practitioners with healthcare agreements participated in

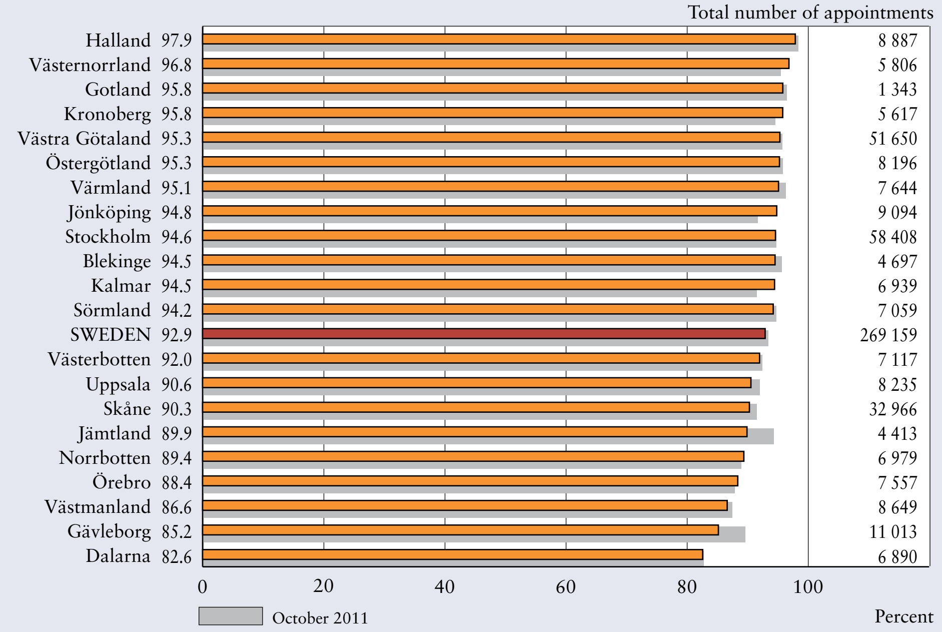


Figure 31 Percentage of patients who were given an appointment with a general practitioner within seven days, March 2012.

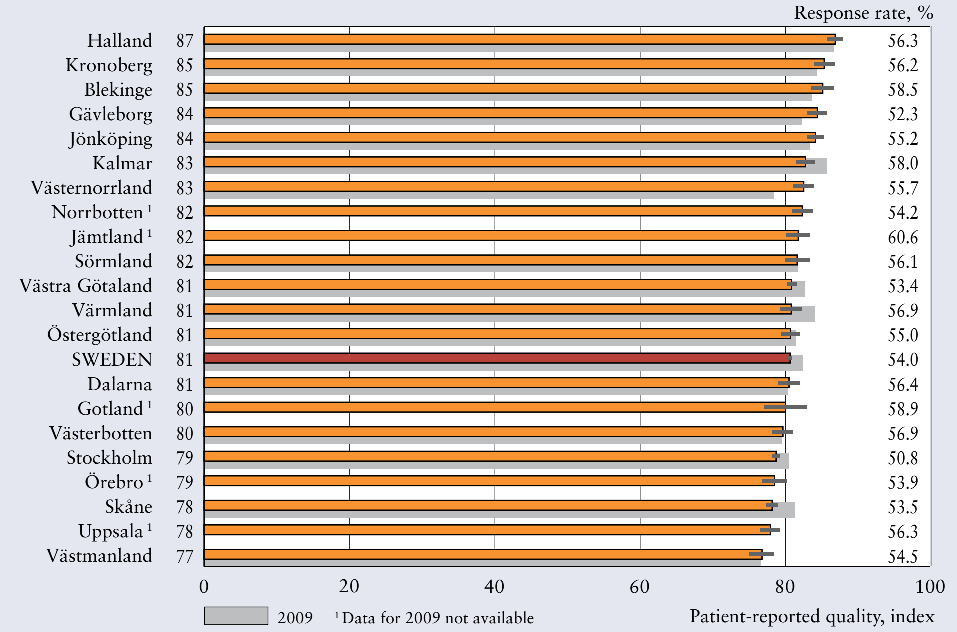
Source: Waiting Times in Health Care Database, Swedish Association of Local Authorities and Regions

the survey. Sixty-eight centres did not. Thus, the overall response rate was 94 per cent. The response rate was 100 per cent in 13 counties and below 90 per cent in two counties. The results are broken down by health centre at www.vantetider.se.

More than 269 000 appointments covered by the national care guarantee were reported. Doctor's appointments for certificates of health or checkups/follow-ups were not included. When reporting waiting times, a health centre could specify whether the patient chose a doctor's appointment beyond the 7-day limit initially offered. Such waiting times are excluded from the presentation.

Figure 31 shows the percentage of patients who were given an appointment with a general practitioner within 7 days (the intention of the care guarantee) during the period. The diagram also presents response rate per county.

The survey reveals that an average of 93 per cent of patients who were covered by the national care guarantee had a doctor's appointment within the time limit. The county variation was 83–98 per cent.



[1] Data for 2009 not available

Figure 32 "How do you feel about the time you had to wait?"
Patient-perceived quality of primary care, 2011.

Source: National Patient Survey, Swedish Association of Local Authorities and Regions

32 Perceived Availability of Appointments at Primary Care Clinics

Figure 32 shows perceptions of the availability of appointments at health centres or clinics. Source: National Patient Survey. A score for patient-reported quality is used to present the results of the question, “How do you feel about the time you had to wait for an appointment?” The patient-reported quality score was 81 nationwide, ranging from 77 in the lowest county to 87 in the highest. No significant gender differences emerged at the national level. The situation was essentially unchanged from the previous year. There was a certain correlation between these results and the follow-up of waiting times in primary care (Indicator 31).

33 Availability of Primary Care by Phone

Availability by phone is surveyed each March and October. The data are reported through an online system provided by the Swedish Association of Local Authorities and Regions. The data presented here are from the latest survey on 1–31 March 2012.

All health centres and primary care clinics with computerised phone systems were expected to submit data. A total of 862 centres and private general practitioners with healthcare agreements participated in the survey. Fifty-one centres did not participate because they had no computerised system, and 241 centres did not report any information. The results are broken down by health centre at www.vantetider.se.

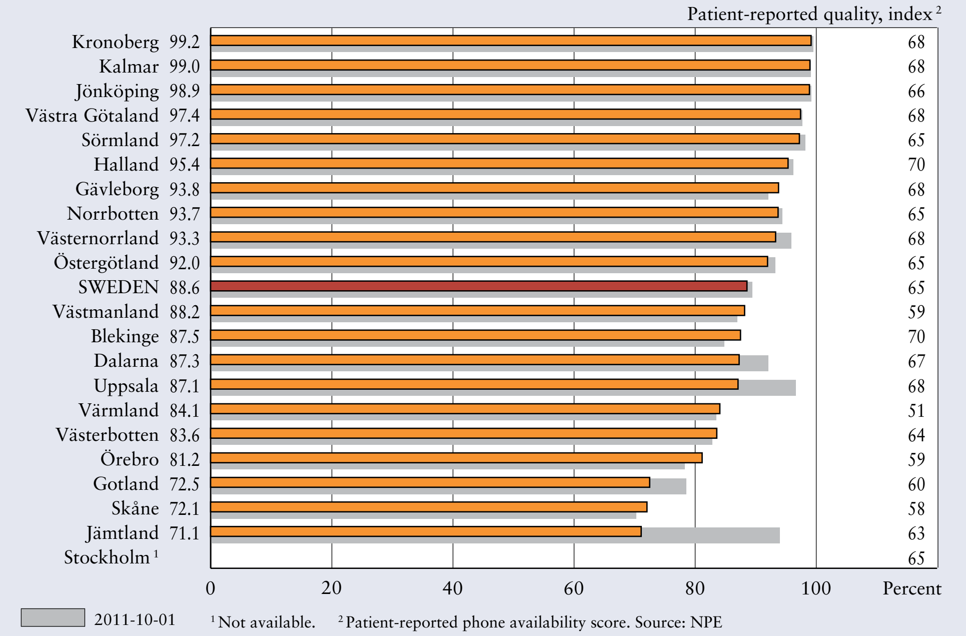


Figure 33 Number of phone calls answered in primary care, March 2012. Only health centres and computerised telephone systems.

Source: Waiting Times in Health Care Database, Swedish Association of Local Authorities and Regions

More than 1 600 000 of 1 800 000 calls were answered, generating telephone availability of 89 per cent. Stockholm is not included in the survey because it has a different measurement method.

Figure 33 shows the percentage of calls answered during the period in accordance with the intention of the care guarantee. The survey indicated that an average of 89 per cent of all calls were answered, ranging from 71 to 99 per cent depending on the county (approximately the same level as October 2011). Värmland demonstrated a particularly large improvement, jumping from 64 per cent in Mach 2011 to 84 per cent in March 2012. Nevertheless, patient-reported phone availability in the county declined from 55 to 51 between the two periods. The national patient-reported quality score for phone availability was 65.

34–35 Specialist Appointment or Surgery within 90 Days

These two indicators are based on information reported to the Waiting Times in Health Care database every month. The data cover the number of people waiting for elective care in some 70 specialist and treatment areas. Waiting patients are defined as those for whom treatment has been decided on, whether or not it has been scheduled.

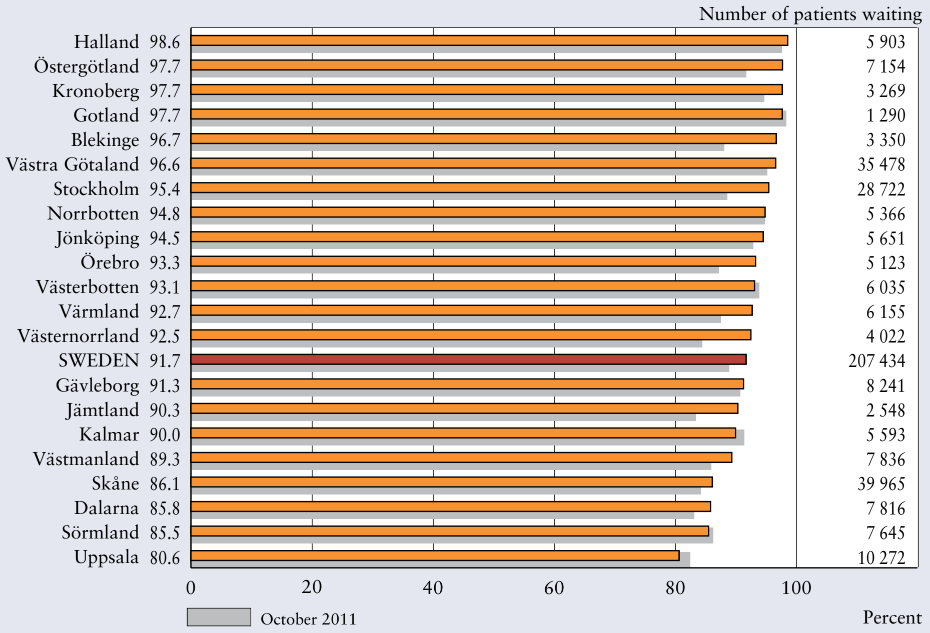


Figure 34 Percentage of patients who waited 90 days or less for appointments with specialists, 31 March 2012.

Source: Waiting Times in Health Care Database, Swedish Association of Local Authorities and Regions

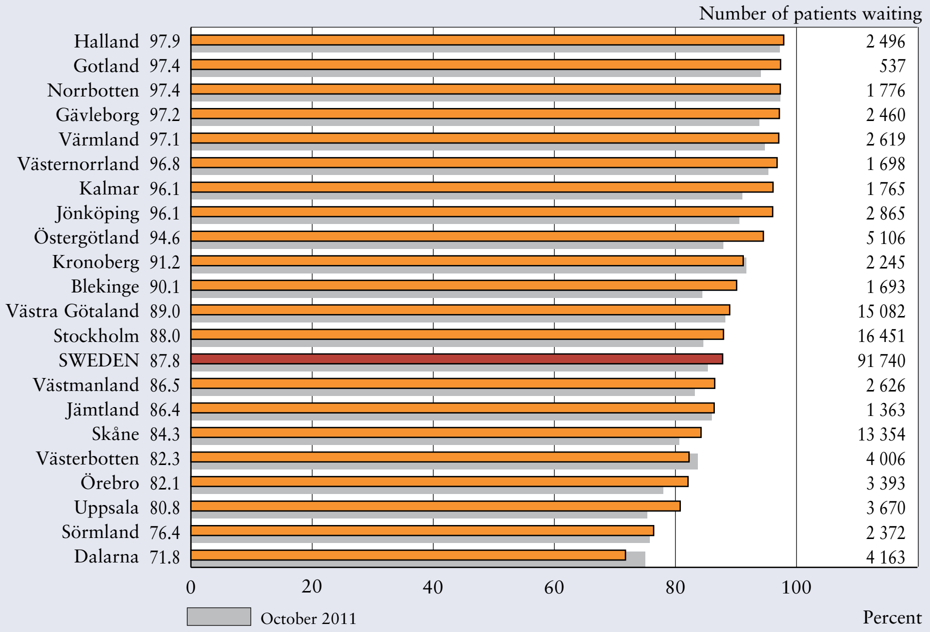


Figure 35 Percentage of patients who waited 90 days or less for surgery in specialist care, 31 March 2012.

Source: Waiting Times in Health Care Database, Swedish Association of Local Authorities and Regions

The total number of patients on waiting or planning lists for appointments with specialists declined from 226 000 in October 2011 to 207 000 in March 2012. An additional 3 400 patients had intentionally been waiting longer than the time limit set by the care guarantee. Meanwhile, the number of patients for whom a decision to treat or operate had been made was down from 94 000 to 91 700. More than 3 000 additional patients had intentionally been waiting for longer than 90 days.

Figure 34 shows that 92 per cent of all patients who were waiting for an appointment in March 2012 had been doing so for 90 days or less. This represents an improvement from approximately 89 per cent in October 2011.

There were 17 counties in which at least 90 per cent of the patients had been waiting for 90 days or less. The other four counties ranged from 81 to 86 per cent. Availability in two counties was somewhat poorer than in October 2011.

According to Figure 35, 88 per cent of patients nationwide had been waiting 90 days or less for surgery or treatment, an increase of 3 percentage points from October 2011. There was a large variation from county to county, anywhere from 72 to 98 per cent.

The number of patients who had waited longer than 90 days for surgery decreased from 12 900 to 9 800 nationwide. The number of patients who had waited longer than 90 days for an appointment with a specialist declined from approximately 23 000 to 14 800.

COSTS

Efficiency is among the overall objectives of the healthcare system. In other words, caregiver expertise, medical equipment, medications and other resources should be used such that they contribute optimally to the goals of good health, high availability, respect for patients and need-based care.

Costs represent the easiest, and usually the only, available yardstick of resource utilisation. Efficiency can be gauged by correlating medical outcomes with healthcare costs. Normally, however, cost data are available at a more aggregate level than outcome measures. Furthermore, the various outcome measures must be weighted together into one indicator before they can be related to costs in a meaningful way. Regional Comparisons does not perform that kind of weighting, but presents several overviews of per capita costs per care event.

Under each of the three formal indicators are additional cost data per county and even per hospital. Costs per care event or DRG point for specific kinds of treatment at hospitals that are able to report such data appear later on in the report.

The sources of the cost data are Statistics Sweden, as well as the statistics and Case Costing Database kept by the Swedish Association of Local Authorities and Regions. The database contains patient-related cost data for specific care events, as well as the methods or interventions used during each event.

Some comparisons for specific treatments have not been published at the hospital level until recent years. Thus, no far-reaching conclusions should be drawn at this point about cost differences between hospitals. Such comparisons are only ostensibly exact. They are equally complex and vulnerable to just as many pitfalls as comparisons of medical quality.

36 Structure-adjusted Healthcare Costs Per Capita

Outcomes or goal fulfilment in relation to resources invested is a gauge of efficiency. Costs, which may be regarded as a quantification of the resources invested to provide healthcare services, is integral to estimating efficiency. Fair and accurate cost comparison require consideration of the varying conditions under which the counties provide healthcare services. Healthcare costs cannot be identical in all counties. The counties are unable to affect age distribution, socioeconomic mix, disease prevalence or certain other structural factors.

A standard healthcare cost is calculated for each county on an annual basis. The standard is based on estimated average healthcare costs for the population, broken down by gender, age and socioeconomic status, as well as the cost of treating certain resource-intensive diagnoses. Differences among the standard costs of various counties are to reflect a number of demographic factors. The structural cost forms the basis of the system of economic equalisation for costs that are beyond the control

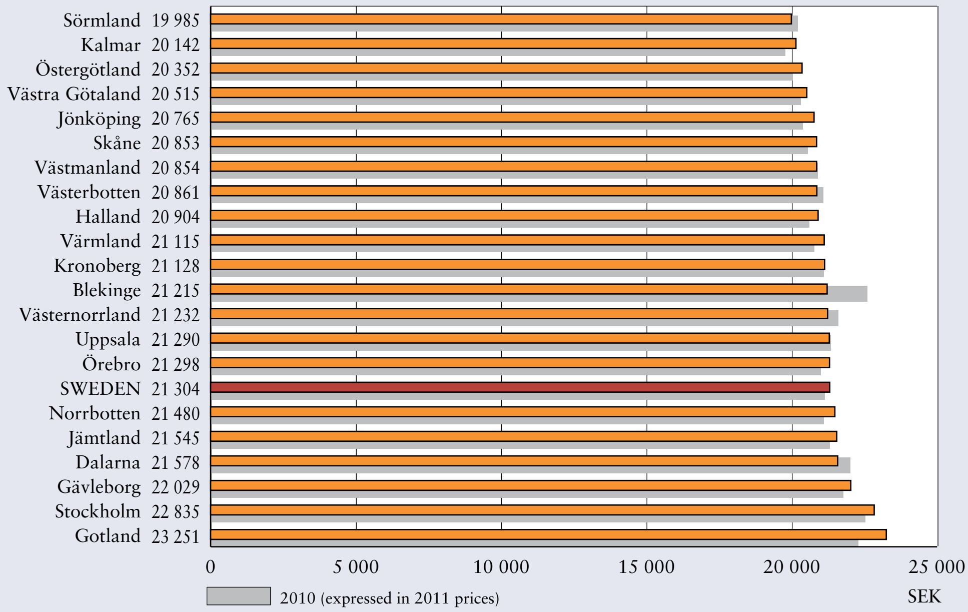


Figure 36 Structure-adjusted healthcare costs per capita, 2011, excluding home health care, dental care and restructuring.

Source: Swedish Association of Local Authorities and Regions and Statistics Sweden

of the counties. A similar model is used to allocate the government drug subsidy to the various counties in a way that reflects structural differences in pharmaceutical costs.

The ratio between a county's standard cost and government drug subsidy per capita and the national average is a measure of the role played by structural factors. The structure-adjusted cost is the quotient of the actual cost and the ratio. It is one of the Swedish National Board of Health and Welfare monitoring indicators in accordance with good health care and presented in Figure 36.

The structure-adjusted cost permits fairer and more correct comparisons between counties. The various components of the system of economic equalisation on which the adjustment is based may change from one year to the next and thus affect results. Longer-term comparisons should proceed from actual net cost only. The fact that the structure-adjusted cost per capita varies from county to county may reflect differing objectives or levels of healthcare efficiency. However, the variation may also be due to factors that counties have little control over but that the system of economic equalisation does not take into account.

Nationwide costs did not change notably between 2010 and 2011. In fixed-price terms per capita, the costs associated with Swedish health care have generally posted only very modest increases over the past ten years.

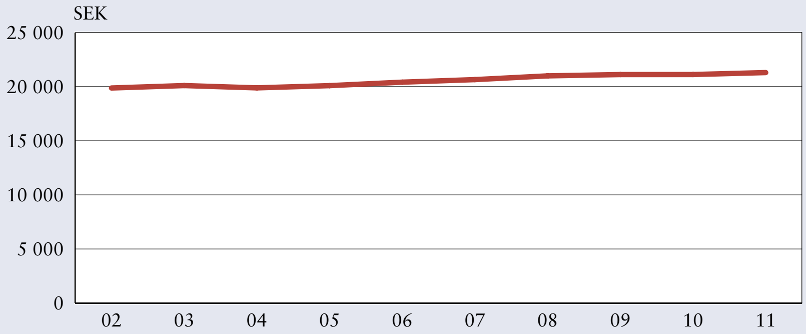


Figure 36
Sweden

Healthcare costs per capita, excluding home health care, dental care and restructuring.

Source: Swedish Association of Local Authorities and Regions and Statistics Sweden

36A Per Capita Healthcare Cost by Type of Care

Actual net cost per capita may be broken down by various types of care. But no adjustments can then be made for structural differences. Nevertheless, comparisons can offer an approximate view of the way that each county allocates its resources. Net costs are those that are financed by county council taxes, general government subsidies and net financial income. Patient fees and earmarked government subsidies are deducted.

With the above exclusions, county healthcare costs averaged SEK 21 304 per capita in 2011. Norrbotten's costs per capita were 11 per cent above average, whereas Östergötland's costs were 7 per cent below average. A comparison with Figure 36 reveals that the Norrbotten results were largely due to structural factors, given that its structure-adjusted cost was close to the national average.

The per capita cost for primary care in 2011 averaged SEK 3 580, corresponding to 17 per cent of total healthcare costs. The variations between counties were fairly large. Geographic conditions affect county costs for primary care. Several sparsely populated counties have inpatient beds in primary care facilities, thereby boosting primary care costs. The cost comparison is also affected by the fact that primary care has different missions from county to county.

Costs for specialised medical care, which accounts for an average of more than half of county healthcare costs, were SEK 11 696 per capita in 2011. Relatively speaking, the cost differences between counties were smaller for specialised medical care than primary care.

The average cost for psychiatric care was SEK 1 982 per capita in 2011. Stockholm had considerably higher costs than other counties. One reason may be that mental illness is more widespread in a metropolitan environment. Drug costs under the

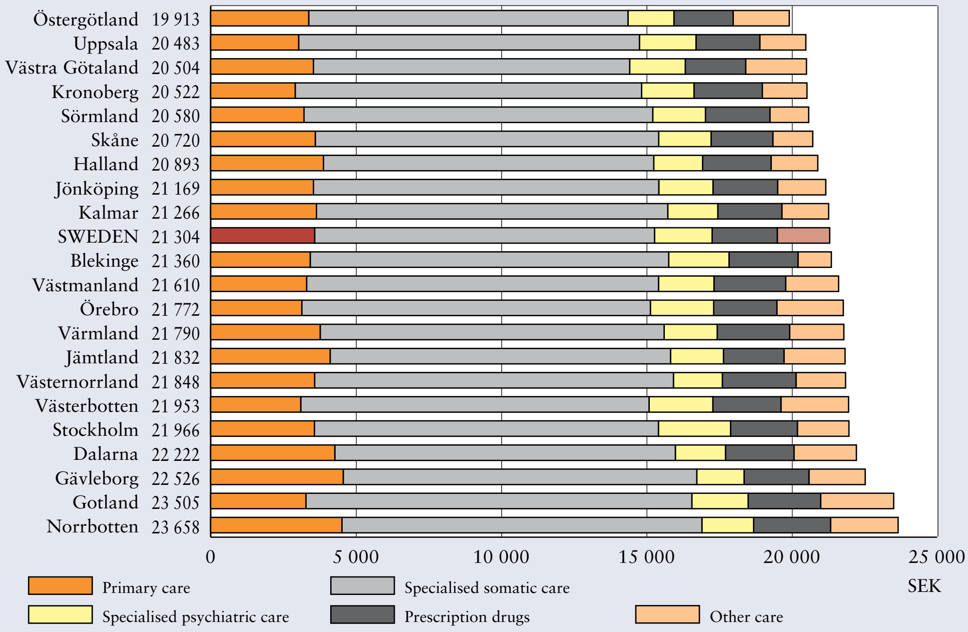


Figure 36A Cost per contact, 2011, excluding home health care, dental care and restructuring.

Source: Swedish Association of Local Authorities and Regions and Statistics Sweden

pharmaceutical benefits scheme totalled SEK 2 242 per capita. See below for a description of adjusted drug costs.

36B Adjusted Drug Cost Per Capita

Drug costs totalled SEK 37 billion in 2011. Prescription drugs accounted for approximately 70 per cent, while hospitals and self-care accounted for most of the rest. Prescription drug costs subsidised by the counties (the benefits cost) rather than paid for by the individual totalled approximately SEK 19 billion or SEK 2 020 per capita in 2011. The amount represents just over 10 per cent – the same as in 2010 – of all healthcare costs borne by the counties.

Among the factors that affect drug costs are an ageing population, higher incidence of conditions such as obesity and mental illness, shifting perceptions of what diseases are treatable, expanded indications for existing medications, more frequent doctor's appointments and rising expectations on the part of patients. A number of factors rein in costs instead. Patent expirations and the introduction of inexpensive generic drugs can have a major impact. Other factors include greater cost consciousness among caregivers and incentives for cost-effective drug consumption.

Figure 36B shows county benefits costs per capita for prescription drugs. The comparison does not include the cost of accessories covered by the benefit, such as spe-

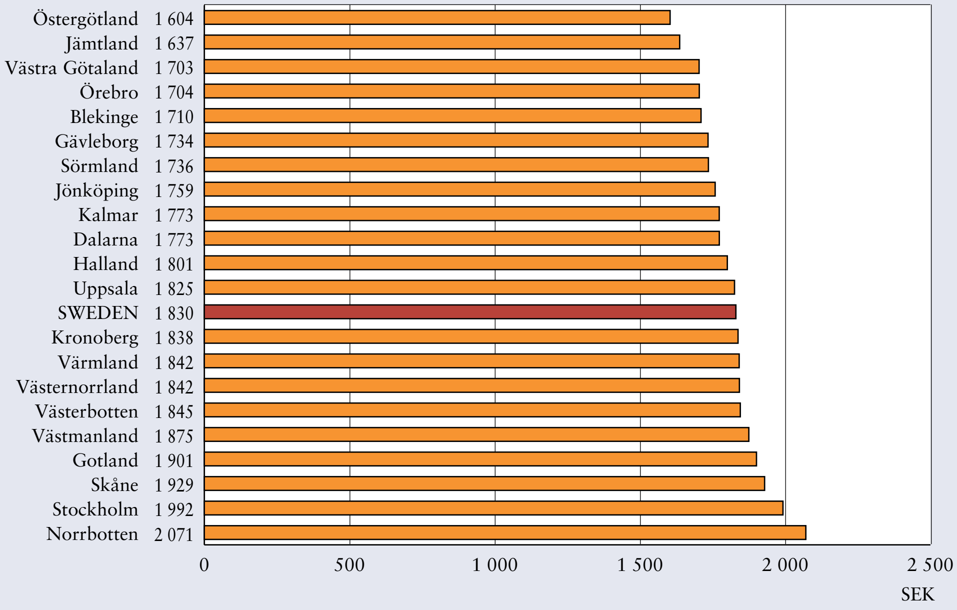


Figure 36B Cost of drugs covered by the pharmaceutical benefits scheme per capita, 2011, pharmaceutical benefit. Adjusted for gender and age.

Source: Prescribed Drug Register, National Board of Health and Welfare

cial nutrition and stoma products, as well as drugs that are ordered for storehouses and are integral to hospital care.

In order to minimise differences due to the transfer of costs from the benefit to administration at hospitals, drugs that vary substantially in terms of prescription or ordering for storehouses at the county level are excluded. Because this factor fluctuates over time, the indicator excludes different medications from one year to the next. The comparison covers approximately 91 per cent of costs for the pharmaceutical benefit scheme.

The cost data are standardised for age and gender. But the fact that no adjustment has been made for variations between the counties in terms of disease incidence may provide one explanation for cost differences.

37 Cost Per Consumed DRG Point

A more direct approach to quantifying costs in order to estimate the productivity of the healthcare system is to relate them to the number of care events instead of to demographic factors as was the case above. Productivity is a narrower concept than efficiency. Productivity is the degree to which the intervention was commensurate, and met the targets associated, with the resources invested.

A fair and accurate tool for quantifying care events must pay attention to the differing resource requirements of various diseases and interventions. The National Patient Register of the Swedish National Board of Health and Welfare contains all care events for specialised medical care. Because diagnostic and age data are included, each appointment and event can be weighted with Diagnosis Related Group (DRG) points. The DRG system classifies individual contacts with the healthcare system based on resource utilisation and the medical issue involved.

Figure 37 shows the cost per DRG point for the specialised medical care that inhabitants of each county received. The cost per DRG point was higher in 2011 than 2010, suggesting that costs rose more steeply than the weighted care events.

The apparent differences between counties in terms of cost per DRG point may reflect methodological problems. The quality of primary classification of various interventions and diagnoses, particularly when it comes to outpatient care, still varies from county to county. An increase in consumed DRG points may be the result of improved hospital reporting to the National Patient Register. The reported benefits of healthcare consumption rise without adding any costs. There are also structural factors that have not been taken into consideration. The DRG system considers county case mix but ignores other factors.

Worth noting is that the indicator refers to cost per consumed DRG point regardless of the county that provides the care. For instance, Gotland's cost per DRG point is affected by the price of healthcare services that it purchases from other counties. This is one of the Swedish National Board of Health and Welfare monitoring indicators in accordance with good health care.

Cost discrepancies among the counties were of approximately the same magnitude when measured this way as when examined on a per capita basis. However, the ranking differs. Kalmar had the lowest cost per DRG point (8 per cent above aver-

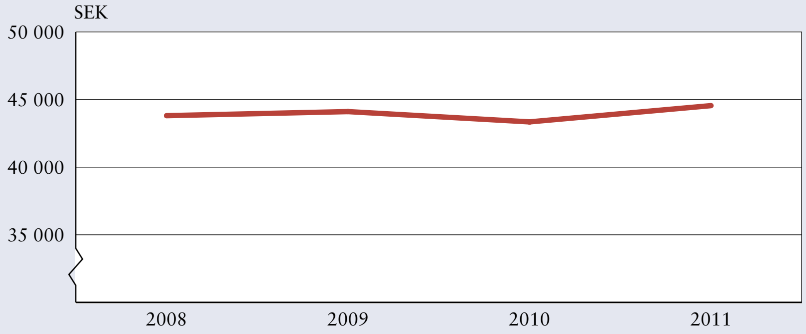


Figure 37
Sweden

Per capita cost per consumed DRG point, excluding home health care, dental care and restructuring. Expressed in 2011 prices.

Source: Swedish Association of Local Authorities and Regions, Statistics Sweden and Patient Register, National Board of Health and Welfare

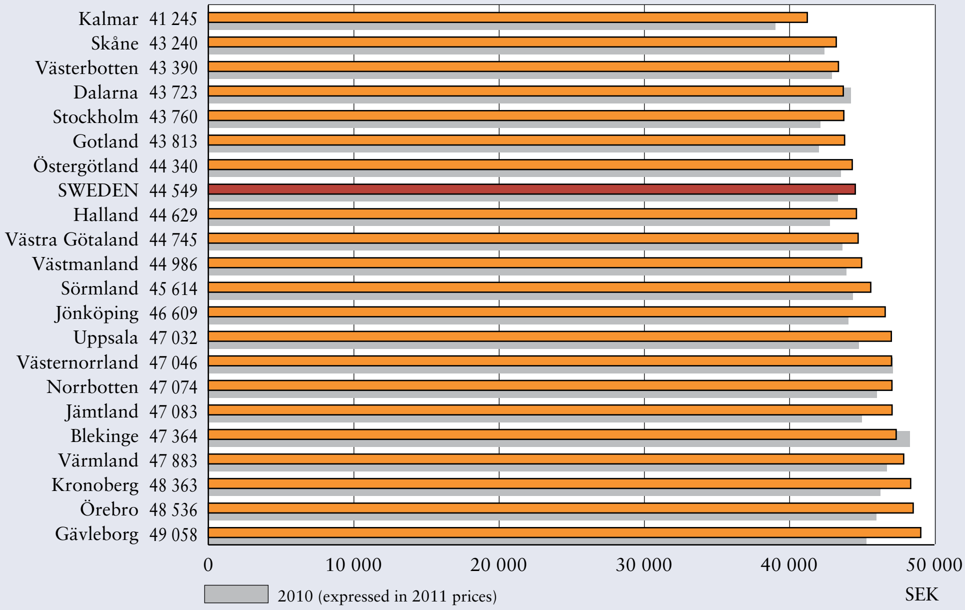


Figure 37 Per capita cost per consumed DRG point, excluding home health care, dental care and restructuring, 2011.

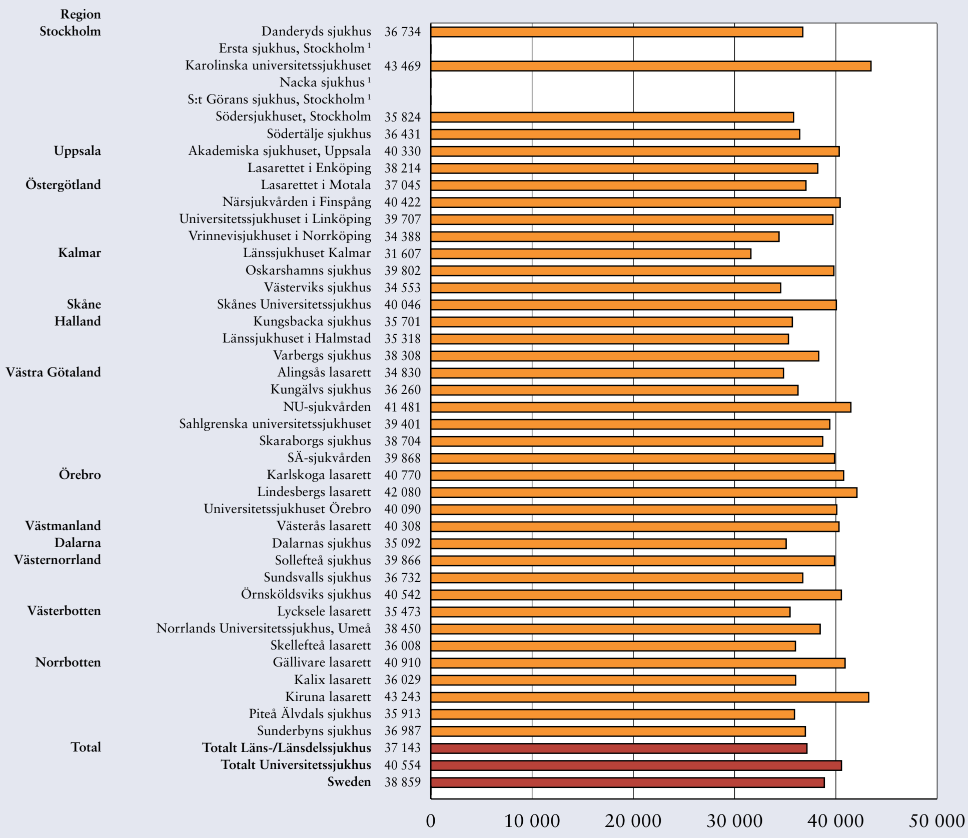
Source: Swedish Association of Local Authorities and Regions, Statistics Sweden and Patient Register, National Board of Health and Welfare

age), i.e., the highest productivity. Stockholm had the lowest cost per care event in terms of DRG points. The reason that the per capita costs of these counties for specialised medical care were not the lowest is that care consumption (DRG points per capita) was relatively high.

38 Cost Per DRG Point Produced

Figure 38 shows costs per care event in 2011 for hospitals that report to the Case Costing Database. The DRG system has been used to weight the value of the events. The cost of an inpatient care event in the Case Costing Database averaged almost SEK 46 822 in 2011. All events, outliers as well, were included. Figure 24A excludes outliers, which reduces the national average to SEK 38 859 per DRG point.

One problem that arises when only costs per inpatient care event are included is that they must be uniformly allocated between outpatient and inpatient care. Otherwise such accounting differences affect productivity estimates. The remainder of the report presents hospitals per county rather than ranking them by outcome.



¹ Reports to the Case Costing Database, but has declined to participate in this report

Figure 38 Cost per DRG point – specialised medical care, 2011.
Hospitals Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

39 Cost Per Contact with the Primary Care System

Primary care lacks a counterpart to DRG points. Appointments with various types of primary caregivers are reported at the national level, but not data on diagnosis, age and the like. Thus, the care events are not amenable to weighting in the same manner as for specialised medical care.

Figure 39 weights contacts with the healthcare system with respect to the type of contact, caregiver and primary care provided. The weighted number of visits is subsequently related to the cost of primary care in each county. This is one of the indicators that the Swedish National Board of Health and Welfare monitors in accordance with good health care.

Cost per contact with the healthcare system can support analyses of primary care costs for a county. For instance, high primary care costs in Norrbotten are largely due to the average cost per contact with the healthcare system, not the quantity of care consumed. But the number of contacts is decisive in Halland, given that the

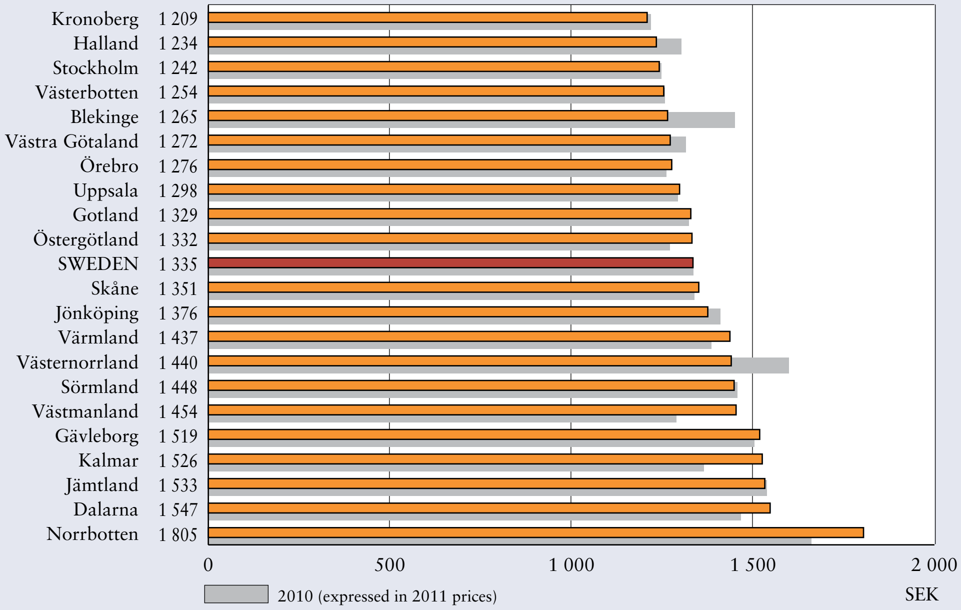


Figure 39 Cost per weighted primary care event in primary care, 2011. Home health care and drugs covered by the pharmaceutical benefits scheme are excluded.

Source: Swedish Association of Local Authorities and Regions

cost per contact is not particularly high while the per capita primary care cost is relatively high.

Given that contacts do not reflect the entire spectrum of primary care interventions, the cost comparison is only approximate. Contacts can also vary over time, generating changes in resource utilisation that the indicator is unable to capture.

Indicators by Area

PREGNANCY, CHILDBIRTH AND NEONATAL CARE

The ten indicators presented below are the same as in last year's report. Two of them have changed. The indicator concerning perineal tear during vaginal delivery has been modified to include primiparas, given that they are at greater risk than multiparas, as well as the significant geographic variations that exist. The indicator for the percentage of Caesarean sections has been modified to follow the Robson classification system.

The abortion indicator is based on Swedish National Board of Health and Welfare statistics. Data for the indicators on pregnancy, childbirth and neonatal care were taken from the Maternal Health Care Register and the Perinatal Quality Register, Neonatology – as well as the Swedish National Board of Health and Welfare Medical Birth Register, which includes virtually all births in Sweden. The Case Costing Database kept by the Swedish Association of Local Authorities and Regions is the source for the indicator on childbirth costs.

The results for some indicators stem from factors that are largely beyond the control of the healthcare system. Correlations with care processes are stronger for other indicators. The results may be affected by varying diagnostic practices at the county and hospital level.

40 Tobacco Use during Pregnancy

Tobacco use was entered in the Medical Birth Register at the time of registration for prenatal care, usually during weeks 8–12 of pregnancy, as well as during weeks 30–32. Smoking in late pregnancy has been entered in the register since 1992. The proportion of women who smoke during early pregnancy declined from more than 31 per cent in 1983 to less than 7 per cent in 2010 – the decrease after 2008 was negligible.

Snuff use was first entered in the register in 1999. The proportion of women who use snuff during early pregnancy rose from 1.1 per cent in 2008 to 1.3 per cent in 2010 (the same as in 2003), while remaining constant at approximately 0.5 per cent in weeks 30–32. Women in the northern counties of Jämtland, Västerbotten, Norrbotten and Västernorrland are overrepresented in these figures.

Smoking is the single biggest preventable risk factor for disease and premature death. Evidence of the harmful effects of tobacco during pregnancy has grown. A number of scientific studies have shown that smoking increases the risk of miscar-

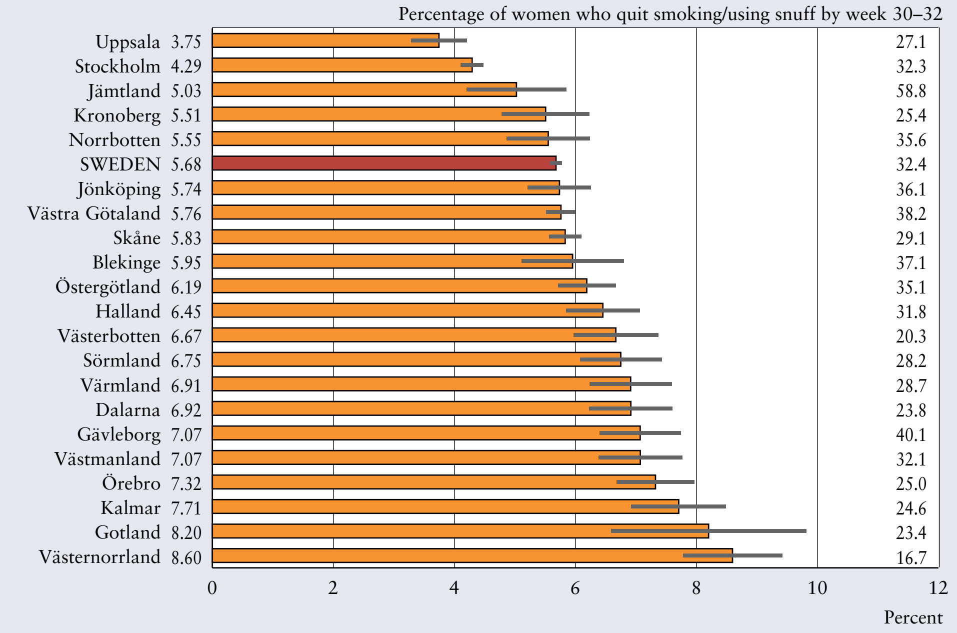


Figure 40 Percentage of women who smoked or used snuff during weeks 30–32 of pregnancy, 2009–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

riage, preterm birth, reduced foetal growth, abruptio placentae, foetal death and sudden infant death syndrome. Smoking is directly correlated with the risks. Foetal health improves as soon as the woman stops smoking.

While the effects of snuff use have not been examined to the same extent, a recent Swedish study showed that it increased the risk of foetal death by 60 per cent.

Figure 40 presents the percentage of women who smoked or used snuff during weeks 30–32 of pregnancy in 2009–2010. The proportion ranged from 3.7 to 8.6 per cent, while the national average was just over 5.0 per cent. Women who had not used tobacco in early pregnancy are also included.

The column on the right side of the diagram shows the percentage of women who quit during the course of pregnancy. The proportion of women who had stopped smoking or using snuff by weeks 30–32 ranged from 16.7 per cent in Västernorrland to 58.8 per cent in Jämtland.

That proportion was higher in counties where relatively few pregnant women had smoked to start with. Women in Uppsala and Stockholm were least likely to use tobacco during weeks 30–32 and after, and a larger percentage had quit after registering at a maternity clinic.

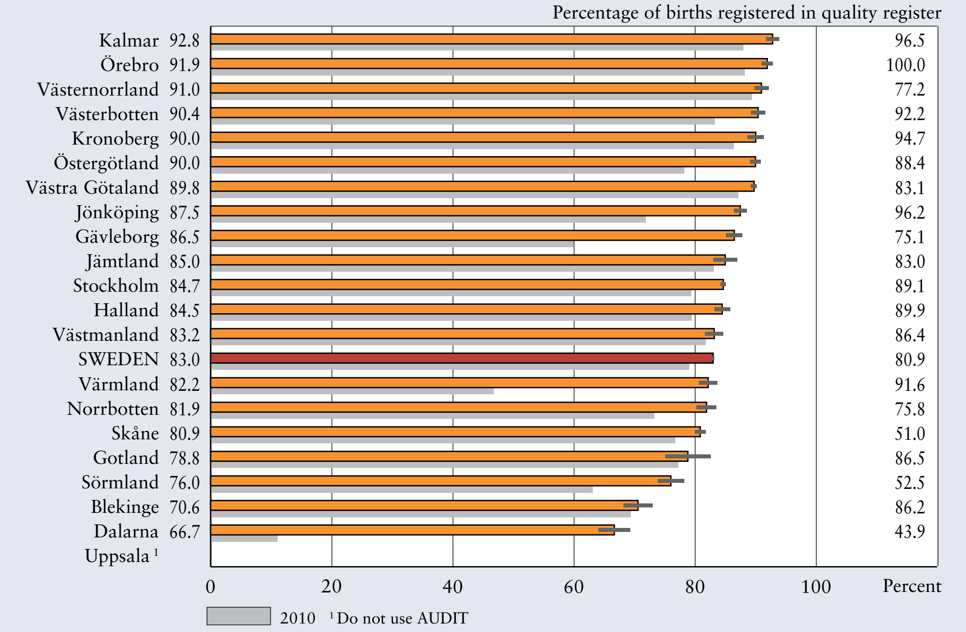


Figure 41 Percentage of patients screened for risky consumption of alcohol during pregnancy and who gave birth during the year, 2011.

Source: Maternal Health Care Register

41 Screening for Risky Consumption of Alcohol during Pregnancy.

Consumption of alcohol during pregnancy can inhibit foetal growth, as well as cause foetal deformities and brain damage, not to mention behavioural disturbances, mental problems and other injuries later on. The risk for miscarriage and low birth weight rise as well. While a clear correlation has been established between the amount of alcohol consumed and the extent of foetal injury, Swedish guidelines recommend pregnant women not to drink alcohol at all given that no safe level has been determined. The proportion of women who reported having consumed alcohol during pregnancy declined from 16 per cent in 2003 to 8 per cent in 2008.

Prenatal clinics use the Alcohol Use Disorders Identification Test (AUDIT) to screen for risky consumption of alcohol based on the woman's habits during the year prior to pregnancy. The goal is for all pregnant women to receive information about the risk of foetal injury and to be offered AUDIT screening. All counties except Uppsala used the test in 2011. AUDIT screening is included in the joint guidelines of the Swedish Society of Obstetrics and Gynaecology and the Swedish Association of Midwives. Registration for screening is reported to the Maternal Health Care Register.

The indicator shows the percentage of pregnant women who had undergone AUDIT screening upon registration in prenatal health care. The comparison is based

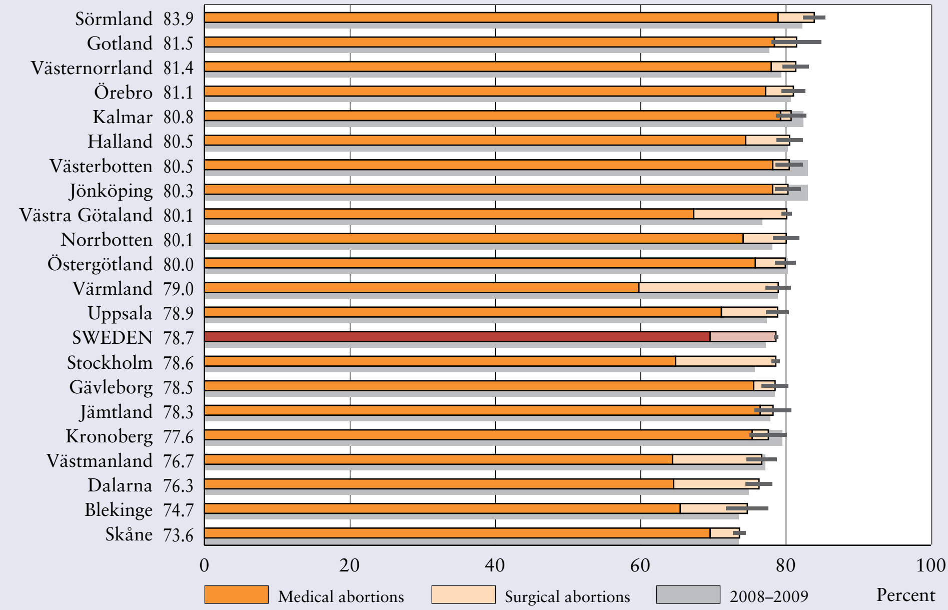


Figure 42 Percentage of induced abortions prior to nine completed weeks of pregnancy, broken down by medical and surgical procedures, 2010–2011. Age-standardised.

Source: Abortion statistics, National Board of Health and Welfare

on data for more than 90 000 women who gave birth in 2011 and were entered in the Maternal Health Care Register. Eighty-three per cent of the women had been screened nationwide, ranging from 67 to 93 per cent depending on the county in which they lived.

The 17 per cent who were not tested had either not been offered the opportunity or had turned it down. Almost 112 000 children were born in Sweden in 2011. The right side of the diagram shows the percentage of births per county for which the woman had been entered in the Maternal Health Care Register.

42 Induced Abortion Prior to Nine Completed Weeks of Pregnancy

A total of 37 696 Swedish women had abortions in 2011, approximately the same number as in 2009. In line with the percentage for the year before, 29 648 abortions in 2011 were performed prior to nine completed pregnancy weeks. Early induced abortion is a safer medical procedure. Although complications are uncommon, the risk increases in the later stages of pregnancy. In other words, waiting times must be kept to a minimum.

Either a medical or surgical abortion can be performed prior to the 9th week of pregnancy. Up to that point, the woman can consult with her doctor and choose the method she prefers as long as there are no medical contraindications. Surgery is most common starting with the 10th week. Thus, short waiting times are vital so that women have the opportunity to make the choice that works best for them.

A medical abortion involves administering two rounds of drugs 2–3 days apart. The first round must be at a general hospital or other clinic. The second round may be at home, assuming that certain criteria have been met. Surgical abortion involves vacuum evacuation of the uterus under local or general anaesthesia.

A medical abortion may be performed immediately after a positive pregnancy test, while a surgical abortion is rarely performed before the 7th week of pregnancy. Use of the medical method has risen in recent years, accounting for 69.6 per cent of all early induced abortions in 2011.

Figure 42 shows the percentage of abortions performed before 9 completed weeks of pregnancy in 2010–2011, broken down by the medical and surgical method. An average of 78.7 per cent of abortions nationwide were performed before the 9th week of pregnancy, varying from 73.6 to 83.9 per cent depending on the county (approximately the same range as the year before). The majority of abortions were medical, but with substantial differences from one county to the next. Counties with the greatest percentage of abortions prior to the 9th week of pregnancy also reported a very high proportion of medical procedures.

43 Foetal Mortality Rate

Intrauterine foetal death is defined as the birth after the 22nd week of pregnancy of a child who is not breathing or showing other vital signs. Prior to July 2008, the threshold was the 28th week of pregnancy. The change was made in conformity with WHO guidelines. For comparison purposes, this indicator continues to use week 28 as the cut-off point.

Foetal death can occur either before or – less commonly – during delivery. Although foetal abnormalities, infections, serious disease in the woman and complications in the placenta and/or umbilical cord are among the causes of foetal death, no obvious reason can be identified in 10–15 per cent of cases.

Approximately 300 stillbirths after the 28th week of pregnancy are reported in Sweden every year. The proportion has declined by more than 50 per cent since 1970. One factor that may cause the number to rise is the increasing age of women at the time of childbirth. Women age 35 and older are at greater risk than those age 20–34. Primiparas run a greater risk of intrauterine foetal death than multiparas.

Smoking and overweight are among the leading known preventable risk factors. Maternity health care should minimise the risk by means of early monitoring and regular check-ups. According to comparisons performed by WHO Europe, Sweden has a very low relative percentage of intrauterine foetal deaths.

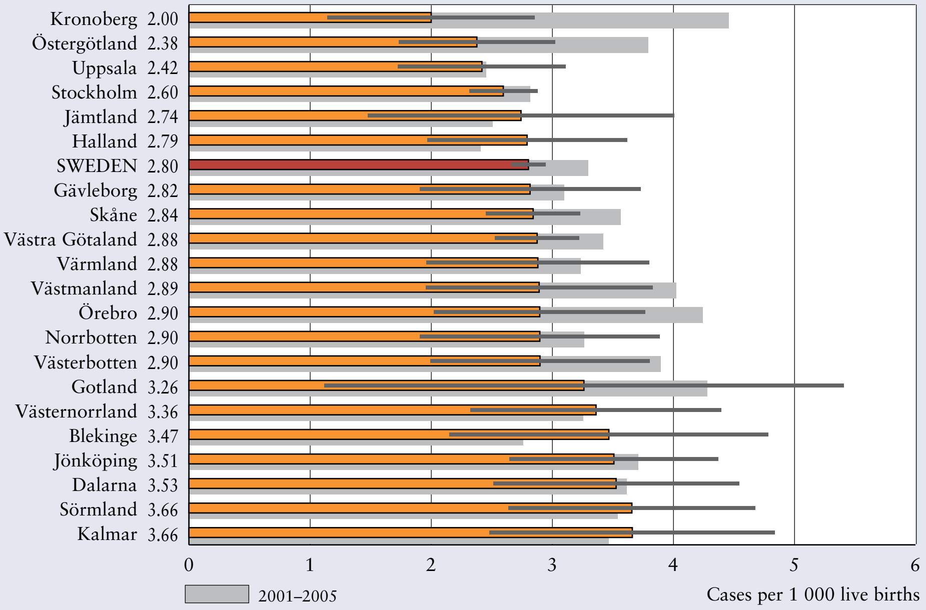


Figure 43 Foetal mortality after the 28th week of pregnancy.
Rate per 1 000 births, 2006–2010. Age-standardised.
Source: Medical Birth Register, National Board of Health and Welfare

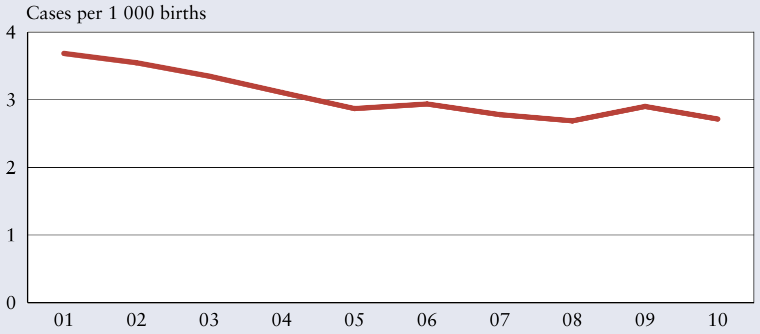


Figure 43
Sweden

Foetal mortality after the 28th week of pregnancy.
Rate per 1 000 births. Age-standardised.
Source: Medical Birth Register, National Board of Health and Welfare

Figure 43 presents the number of foetal deaths after the 28th week of pregnancy per 1 000 births in 2006–2010. The national rate was 2.8. The counties varied from 2.0 to 3.7, a somewhat narrower range than in 2005–2009. A number of counties reported a decrease from the previous period, which is shown by a shaded bar. The diagram demonstrates that statistical uncertainty was high because the actual numbers were very small.

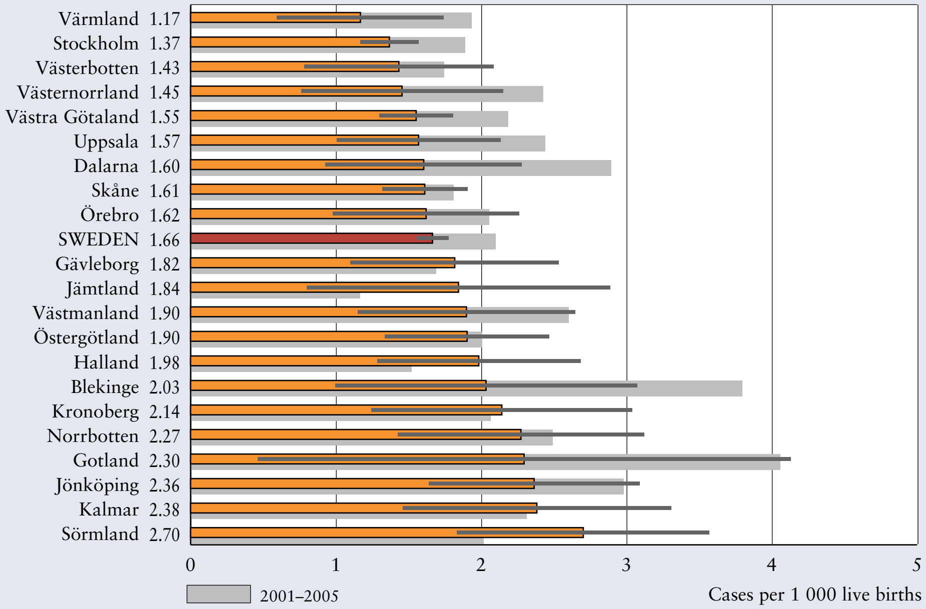


Figure 44 Neonatal mortality rate within 28 days after birth per 1 000 live births, 2006–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

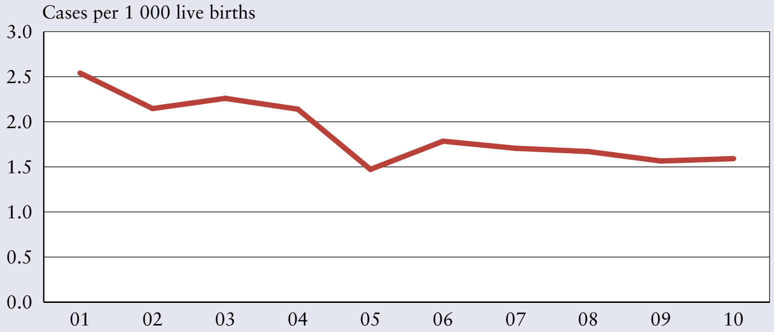
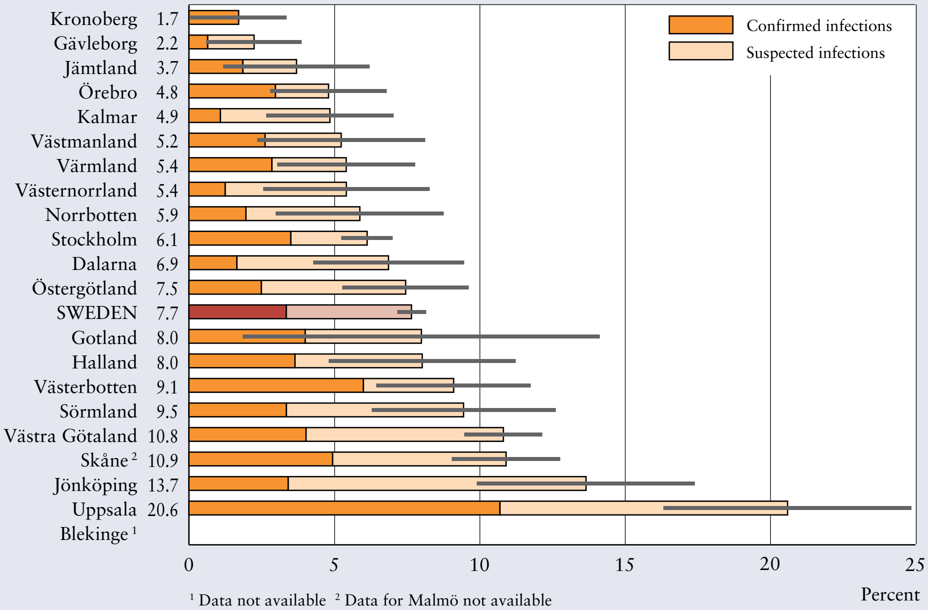


Figure 44 Sweden Neonatal mortality rate within 28 days after birth per 1 000 live births. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

44 Neonatal Mortality

The neonatal mortality rate measures the number of live born infants who die within 28 days after birth. The rate may reflect the quality of both antenatal and neonatal care. The neonatal mortality rate in Sweden declined from approximately 5 per 1,000 live births in the early 1980s to approximately 1.7 per 1 000 live births in the period presented here. The variation between counties was relatively wide



[1] Data not available [2] Data for Malmö not available

Figure 45 Percentage of infants with nosocomial infections among all those receiving neonatal care, 2011.

Source: Perinatal Quality Register, Neonatology

at 1.2–2.7 but narrower than for 2005–2009. Because the actual numbers were very small, there was a great deal of statistical uncertainty.

Sweden has a low neonatal mortality rate compared with other European countries. According to WHO Europe's compilations, Sweden is among the countries that have reported the lowest rates since 2004.

Figure 44 presents the number of neonatal deaths within 28 days after birth per 1 000 live births in 2006–2010. The national rate was 1.7 per 1 000 live births or approximately 180 per year.

45 Nosocomial Infections among Babies Receiving Neonatal Care

Almost 10 per cent of babies nationwide were admitted to a neonatal unit in 2011. Primarily due to the structure of care for neonates with mild, temporary problems, there were major differences between the various counties.

One reason for admission to a neonatal unit might be an infection that can quickly turn into a life-threatening condition. Oxygen deprivation during childbirth may make it more difficult for the baby to adapt to the external environment (maintain body temperature, breathe properly, etc.). Breathing problems and congenital deformities are among the other reasons for admission to a neonatal unit. Preterm births (before the 37th week of pregnancy) account for approximately 40 per cent of all admissions.

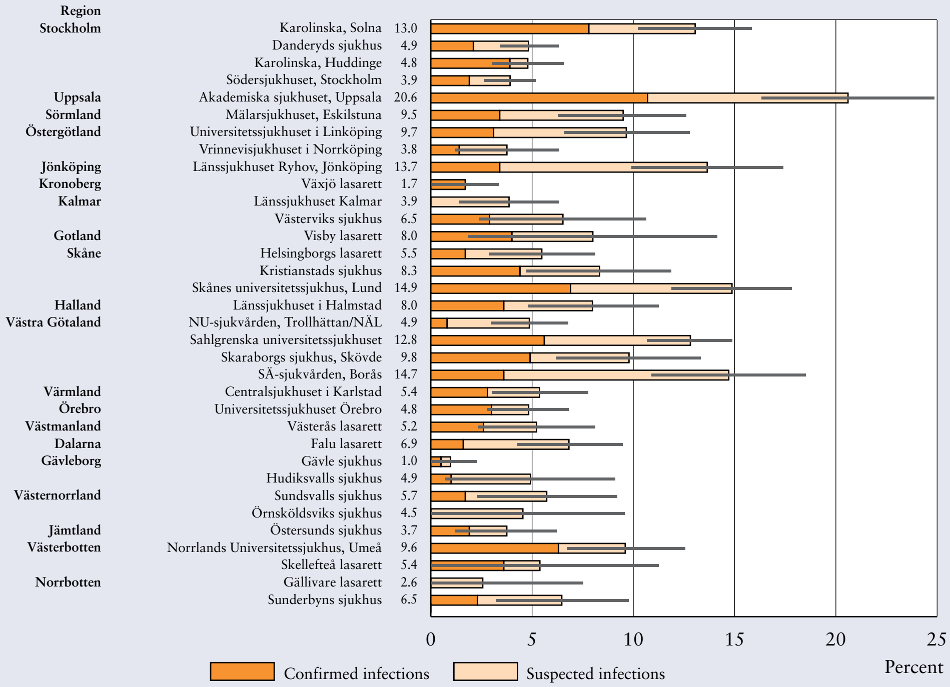


Figure 45
Hospitals

Percentage of infants with nosocomial infections among all those receiving neonatal care, 2011.

Source: Perinatal Quality Register, Neonatology

Data about babies admitted to neonatal units are reported to the Perinatal Quality Register, Neonatology. The register is used to address issues surrounding variations in treatment methods and routines throughout the country, as well as the impact on healthcare outcomes in general and the child's wellbeing later in life in particular. All neonatal wards report to the register. Data are not available, however, for nosocomial infections at two of the units in 2011. The Perinatal Quality Register, Neonatology and Medical Birth Register have been synchronised to ensure that common variables are defined and reported in the same manner.

Figure 45 presents the percentage of babies in neonatal units with suspected or confirmed nosocomial infections. The inclusion criteria are clinically suspected (symptoms and positive lab results) or confirmed infection (evidence of bacteria in the bloodstream) detected in babies at least two days old who had been admitted to a neonatal unit immediately after birth for a reason other than infection. The more than 11 000 babies covered by the comparison are presented according the county in which the hospital was located rather than where the mother was living.

Almost 7 per cent of babies admitted to a neonatal unit nationwide, varying from 1 to more than 20 per cent from county to county, had a suspected or confirmed nosocomial infection in 2011. Although the units were caring for many babies, there was a good deal of statistical uncertainty given the low percentage of infections.

Many different factors can affect the differences among the various units. One such variable is compliance by caregivers with proper hygiene procedures. The larger the staff, the greater the risk of infection. Units that admitted babies with complicated conditions reported a higher incidence of infections. Similarly, units whose routines required them to perform frequent blood cultures reported more positive test results. Non-reporting of data can also affect the outcomes presented. Finally, the quality of the data in the Perinatal Quality Register, Neonatology remains unknown at this point.

46 Percentage of Neonates with Apgar Score below 7

The Apgar score is a system for standardised assessment of the vitality of neonates. The baby's heart rate, breathing, skin colouration, activity and muscle tone, and reflex irritability are rated on a scale of 0–10 at one minute, five minutes and ten minutes after birth. A low Apgar score, normally defined as below 7 at five minutes, may be due to any number of factors. The score reflects any oxygen deprivation that remains or that first appears at that point. Oxygen deprivation may be caused by complications in the placenta or umbilical cord, stunted growth, disease in the mother, uterine inertia, assisted delivery or other childbirth complications, or by anaesthesia or analgesics administered during delivery. Both mortality rates and the risk of serious neurological damage are greater in neonates with low Apgar scores at five minutes.

For the country as a whole, the percentage of babies with Apgar scores lower than 7 at five minutes was just over 1 per cent – or a little more than 1 400 cases per year – in 2006–2010. The proportion ranged from 0.9 to 1.7 per cent depending on the county.

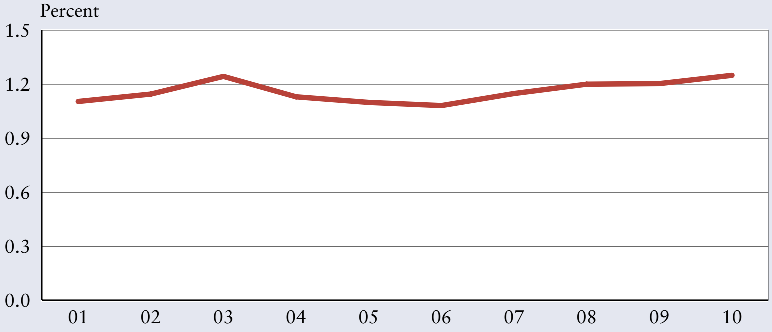


Figure 46
Sweden

Percentage of newborns with Apgar score under 7 at five minutes. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

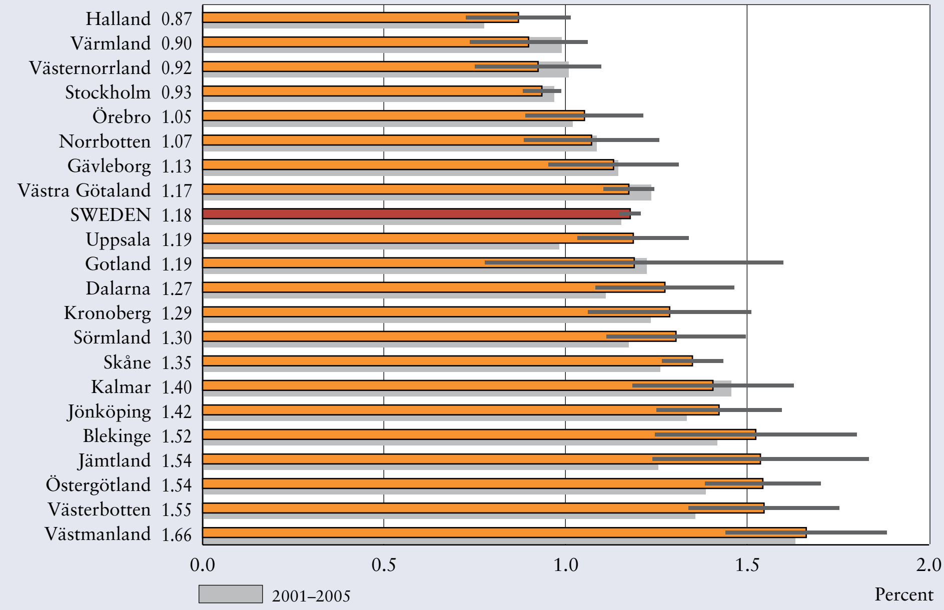


Figure 46 Percentage of newborns with Apgar score under 7 at five minutes, 2006–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

47 Percentage of Third and Fourth Degree Perineal Tears During Vaginal Delivery

Perineal tears during delivery are classified into four degrees. First and second degree perineal tear involves external vulva, vagina and perineal tissue and is usually not serious. Third degree perineal tear also includes all or part of the anal sphincter muscle, and fourth degree perineal tear involves the rectal mucosa as well.

The known risk factors for third and fourth degree perineal tear are that the woman is a primipara, is bearing a large child, has protracted labour or has an assisted delivery (the use of forceps or a ventouse). The maternal birthing position may also affect the degree of perineal tear.

Most perineal tears heal completely and do not cause any permanent harm. But those that remain undetected or are improperly treated can lead to serious health problems. They can impair mental and emotional wellbeing, cause incontinence, affect sexual performance and give rise to fears about becoming pregnant again. Among the potential permanent complications are pain in the perineum, pain during intercourse and faecal incontinence.

Figure 47 presents the percentage of third or fourth degree perineal tears among all vaginal deliveries in 2006–2010. The bars also indicate the breakdown between as-

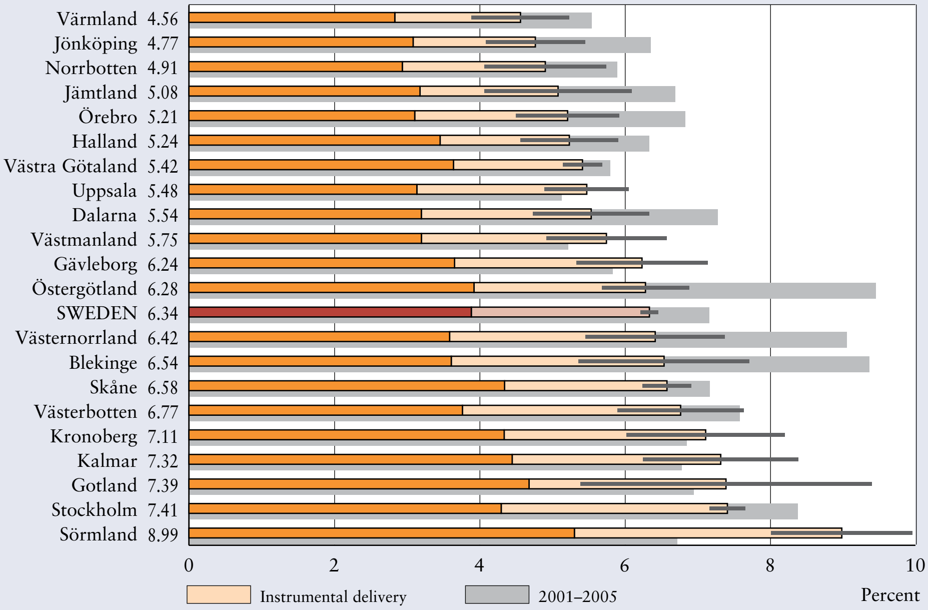


Figure 47 Percentage of third and fourth degree perineal tears during vaginal delivery, 2006–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

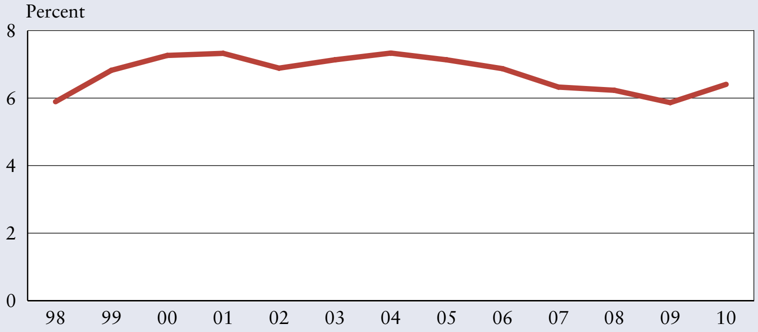


Figure 47 Sweden Percentage of third and fourth degree perineal tears during vaginal delivery. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

sisted and non-assisted deliveries. The shaded bar shows the frequency of third and fourth degree perineal tears in 2001–2005. The analyses include primiparas only.

For the country as a whole, 6.3 per cent of vaginal deliveries among primiparas were accompanied by third or fourth degree perineal tears. The total proportion in 2006–2010 ranged from 4.6 to 9.0 per cent, which translates into approximately 2

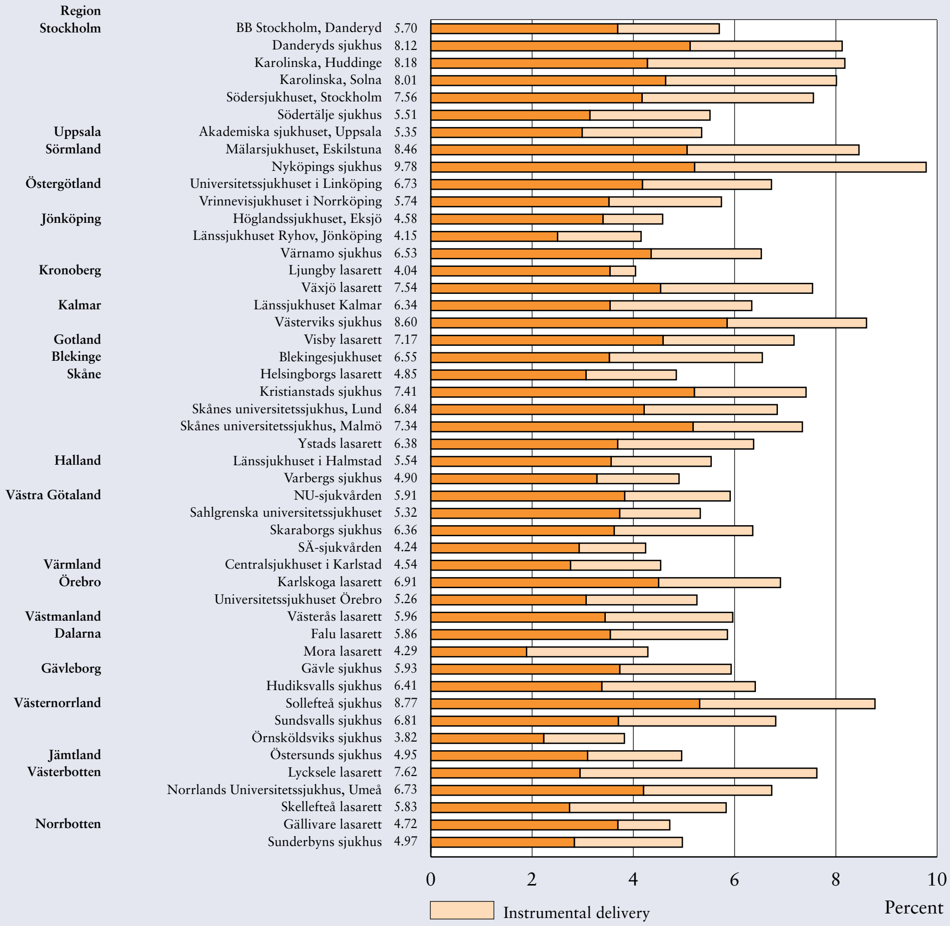


Figure 47
Hospitals

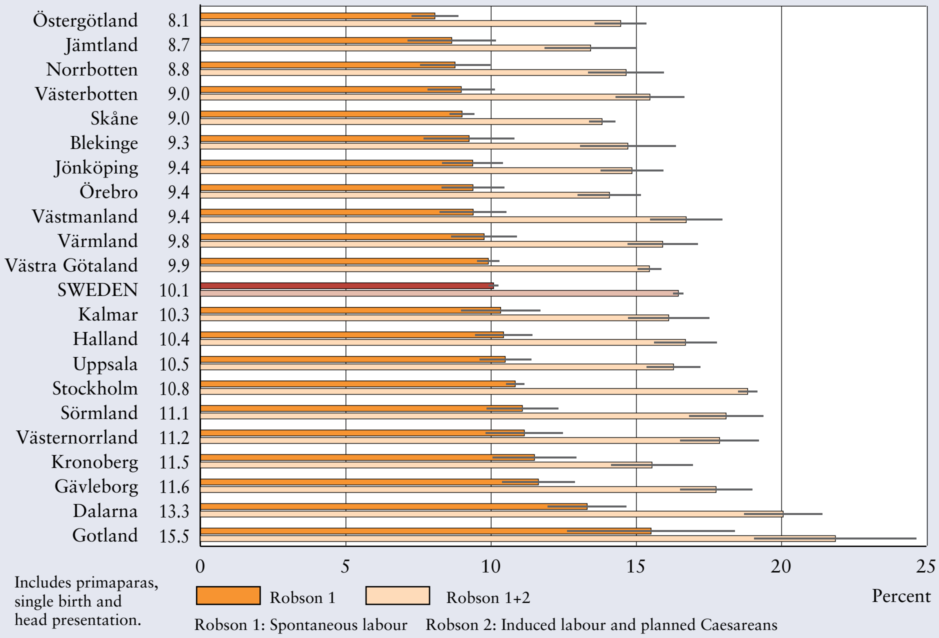
Percentage of third and fourth degree perineal tears during vaginal delivery, 2006–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

500 primiparas every year. The variation among hospitals and counties suggests that the number of third and fourth degree perineal tears can be reduced, which would minimise the occurrence of permanent injury.

48 Caesarean Section among Primiparas

The use of Caesarean section in Sweden is on the rise. Caesareans accounted for 17 per cent of all births in 2010, as opposed to 10.6 per cent in 1990. No international consensus has been established concerning the optimum frequency. Thus, it is not a direct reflection of the quality of prenatal and maternity care. However, greater use of Caesareans increases socioeconomic and healthcare costs for childbirth. The issue is worthy of analysis in light of these cost considerations, as well as variations in clinical practice from one county and hospital to another.



Includes primaparas, single birth and head presentation.

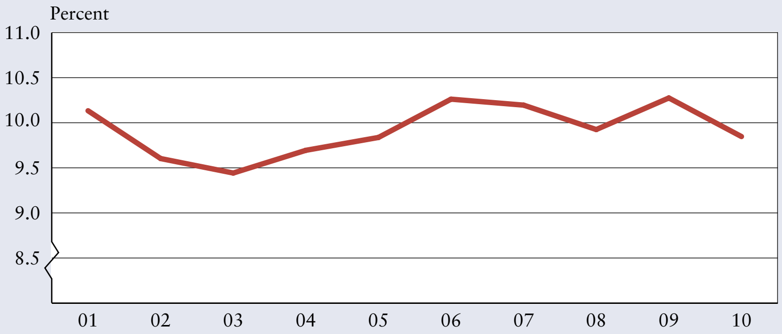
Figure 48 Percentage of Caesarean section in full term (≥ 37 weeks) pregnancy, 2006–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

While nobody is opposed to Caesareans in emergencies, a number of variables must be examined when risk reduction for the foetus is more modest. New complications – such as breech presentation – have been identified in recent years, for which an elective Caesarean prior to labour has been shown to reduce the risks to the foetus. Increasing effectiveness in the identification of risky situations will certainly make Caesareans even more common.

Some published studies have concluded that an elective Caesarean is not wholly risk-free for either the woman or the foetus. Elective Caesareans increase the risk of early breathing difficulties. Women who undergo a Caesarean run a higher risk of profuse bleeding, infection and blood clot formation. However, they are at lower risk of vaginal tear and subsequent urinary incontinence. They also run a higher risk of uterine rupture and problems with placental position the next time they give birth.

Comparisons of the frequency of Caesareans at different hospitals should consider the fact that the procedure is more common among women who are older, shorter than average, smokers or with a high body mass index (BMI). As a result, a hospital's service area or population can affect how often Caesareans are performed. Even though the figures presented in the report are age-standardised, it is important keep in mind that other demographic differences between hospitals may impact the comparisons.

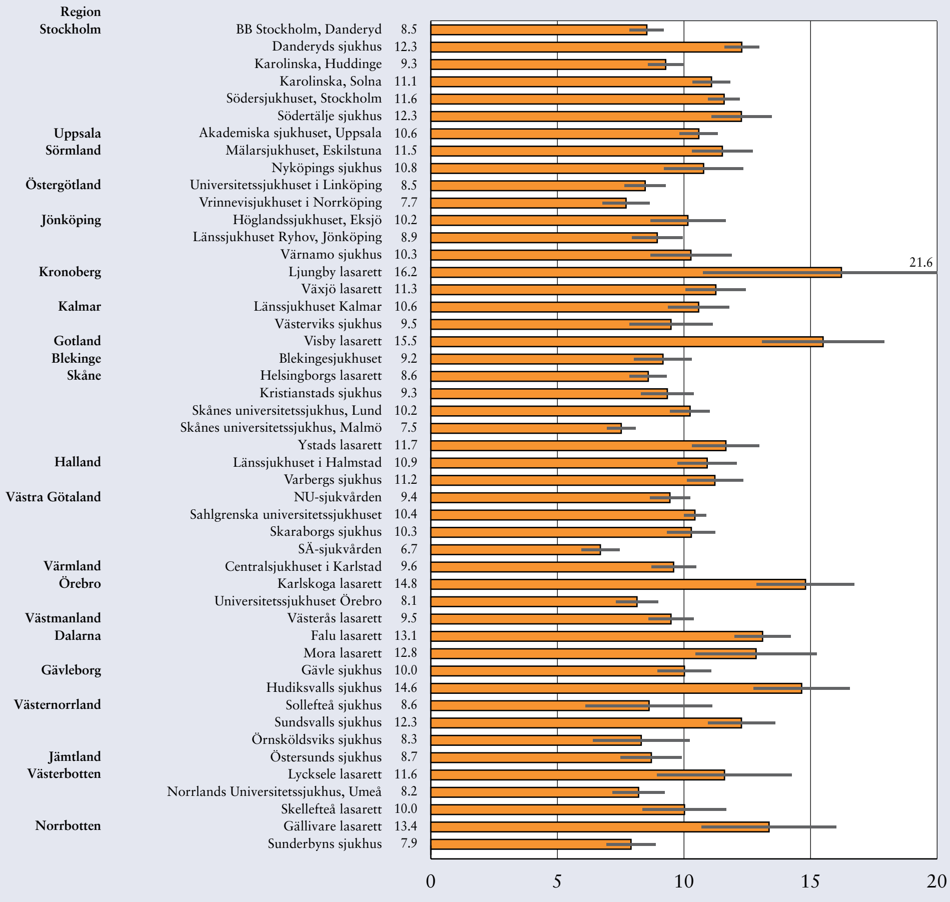


Robson 1 – spontaneous labour, primaparas, single birth and head presentation

Figure 48
Sweden

Percentage of acute Cesarean section in full term (≥ 37 weeks) pregnancy. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare



Robson 1 – spontaneous labour, primaparas, single birth and head presentation

Figure 48
Hospitals

Percentage of Caesarean section in full term (≥ 37 weeks) pregnancy, 2006–2010. Age-standardised.

Source: Medical Birth Register, National Board of Health and Welfare

The comparisons in last year's report were based on a low-risk population only. Because many childbirths were thereby excluded, those that remained may have been unrepresentative of the data that were to be studied. This year's report switched to classification by Robson group, a system that Sweden and many other countries currently use in clinical practice. The first two of the ten Robson groups consist of primiparas with full-term pregnancies, single births and head presentation. Group 1 includes women with spontaneous labour, while Group 2 includes those with induced labour or with Caesareans before contractions begin. Thus, Group 1 provides a basis for determining the frequency of emergency Caesareans, whereas merging Groups 1 and 2 permits an assessment of how often any kind of Caesarean was performed among full-term primiparas with single births and head presentation.

The shorter bar in Figure 48 shows the percentage of Caesareans among women in Robson Group 1, i.e., primiparas with full-term pregnancies (37 weeks or longer), single births, head presentation and spontaneous labour. For more details, see Appendix 1. This is the main category for which Caesareans should be kept to a minimum from a medical point of view.

Caesareans were performed in 10.1 per cent of the births (15 274 deliveries) in 2006–2010. The frequency for 2001–2005 was 9.8 per cent. The longer bar shows the percentage of Caesareans among the same group of primiparas (full-term pregnancies, single birth and head presentation) in a considerably larger population. The group also includes induced labour and elective Caesareans (Robson Group 2). The nationwide frequency of Caesareans for this group was 16.5 per cent in 2006–2010, as opposed to 15.4 per cent in 2001–2005 (not shown in the diagram).

49 Cost per Care Event for Childbirth

A total of 28 hospitals in 13 counties reported childbirth costs to the Swedish Case Costing Database in 2011. The database contains the costs for each delivery and the interventions associated with it, but not check-ups, follow-up appointments or drug consumption in outpatient care – or outliers (in order to show a normal average cost per hospital and partially adjust for variations in case mix).

Figure 49 shows cost per inpatient care event in DRG 370–373 for all deliveries, as well as for Caesarean sections alone. Costs for 80 357 deliveries were reported to the Case Costing Database in 2011. The number of deliveries varied substantially from hospital to hospital. The cost in the database averaged SEK 27 994 (excluded outliers) in 2011. Individual hospitals varied from SEK 21 000 to SEK 33 000.

The differences were not wholly due to period of care, which was between two and just over three days for all hospitals. One variable that affected costs was the percentage of Caesareans, which are particularly resource-intensive because they are performed in operating theatres. Caesareans averaged a little over SEK 48 600, while vaginal deliveries averaged SEK 27 994. Caesareans accounted for 17–43 per

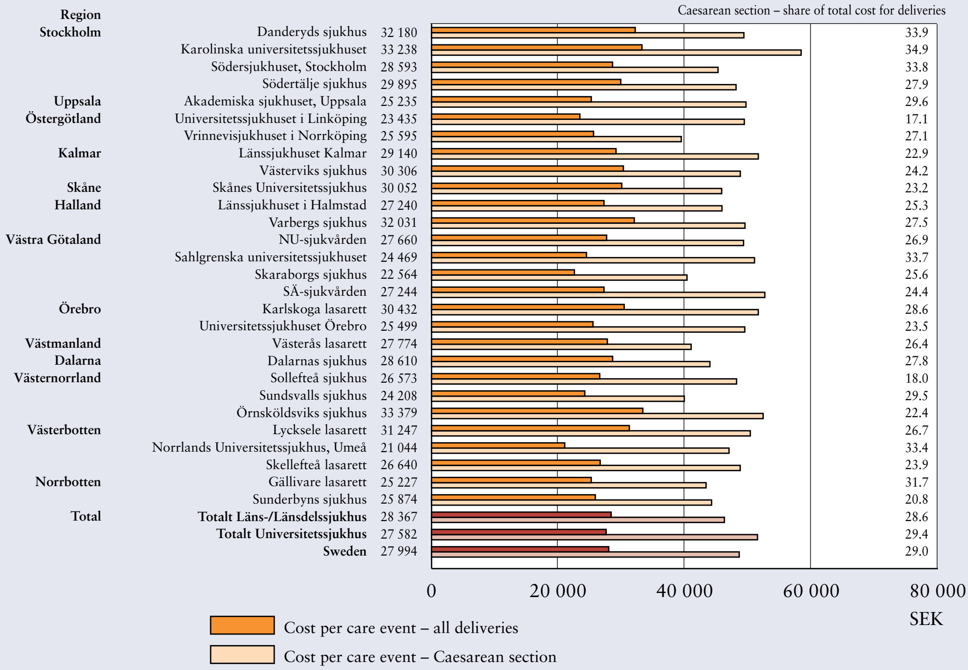


Figure 49
Hospitals

Cost per care event for childbirth, 2010.
Both vaginal delivery and caesarian section.

Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions.

cent of total costs, depending on the hospital. These percentages appear on the right side of the diagram.

Beyond Caesarean frequency and period of hospitalisation, there may be a number of additional factors that contribute to the cost differences associated with all deliveries. How a hospital is staffed is one such factor. Even excluding Caesarean frequency, case mix can have an impact. Not all hospitals perform high-risk deliveries.

Rules have been drawn up for the types of costs to be reported to the Case Costing Database, as well as how they are to be estimated. Nevertheless, any comparisons should consider that calculation methods may differ from one hospital to the next.

GYNAECOLOGICAL CARE

The nine indicators in this set reflect three common gynaecological conditions and associated surgical procedures: hysterectomy, uterine prolapse surgery, and urinary incontinence surgery. Two of the indicators are based on data in the National Patient Register of the Swedish National Board of Health and Welfare. The first indicator concerns adverse events, complication that lead to rehospitalisation after hysterectomy, while the second indicator reflects resource utilisation and shows the percentage of uterine prolapse operations performed in day-case surgery. A third indicator looks at resource utilisation and shows cost per hysterectomy.

The other six indicators concern patient-reported experience of the treatment they have received and are based on data from the National Quality Register for Gynaecological Surgery and the Gynaecology Quality Register. The various indicators reflect postoperative complications and unexpected problems, patient satisfaction, or the extent to which surgery provided symptomatic relief. Questionnaires were sent to patients both two months and one year after surgery.

The National Quality Register for Gynaecological Surgery consists of six independent subregisters covering 90 per cent of the operations performed at 45 (of a possible 57) clinics around the country. Forty-three of the 45 clinics furnished data for regional comparisons. This year's report also includes converted data from 11 clinics in Stockholm, Värmland and Gotland that participate in the Gynaecology Quality Register. Thus, total participation is high. The remarks about the individual indicators contain information about questionnaire response rate.

50 Adverse Events after Hysterectomy

Hysterectomy is a fairly common procedure. As with all surgery, there is a risk of post-operative infection or other complications for which readmission may be required. The percentage of readmissions is a patient safety indicator for gynaecological care. Although individual hospitals cannot be held accountable for all readmissions, the indicator points to their responsibility to prevent infections, plan discharges properly and ensure that primary care is able to take over.

The indicator shows adverse events, defined as readmission of hysterectomy cases unassociated with a cancer diagnosis. The most common reasons for such surgery are benign tumour of the uterus, uterine prolapse and profuse menstrual bleeding for which drug therapy is insufficient. Hysterectomy related to childbirth or injury is not included.

According to the National Patient Register, almost 5 000 hysterectomies have been performed annually for benign indications in recent years. Partially due to new drug therapy options for profuse menstrual bleeding, the number of procedures has declined over the past ten years.

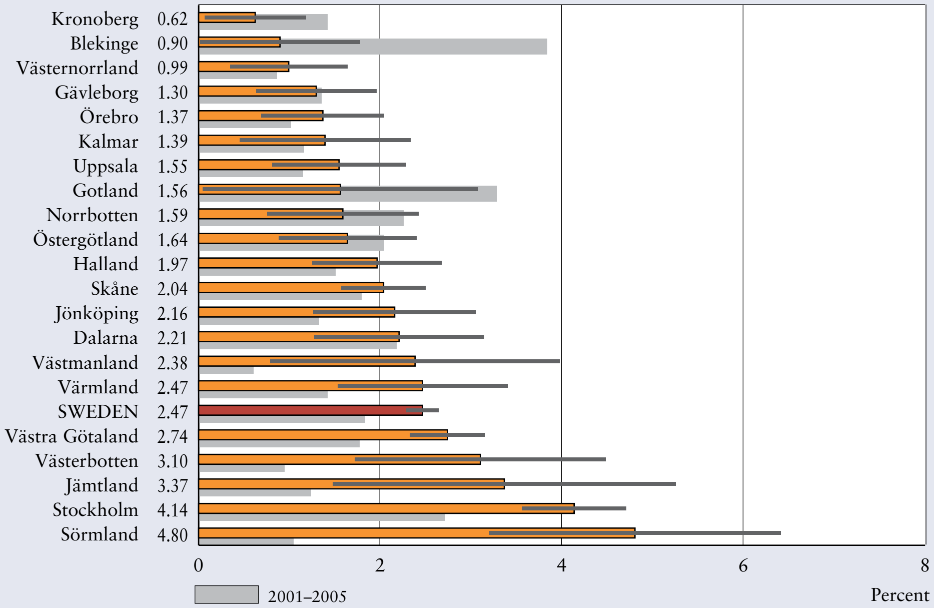


Figure 50 Adverse events after hysterectomy, inpatients age 15–84. 2006–2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

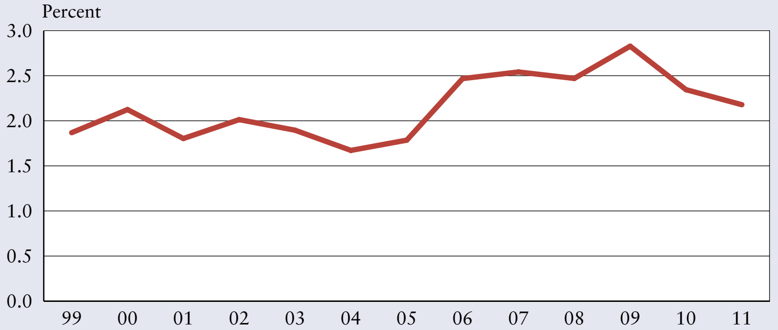


Figure 50 Sweden Adverse events after hysterectomy, inpatients age 15–84. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

More than 29 000 15–84 year-olds operated on in 2006–2011 for benign indications were included. They were followed up for readmission within 28 days due to postoperative infection, ileus, disorders of the urinary organs and difficulty urinating. Postoperative infection accounted for better than 80 per cent of all readmissions.

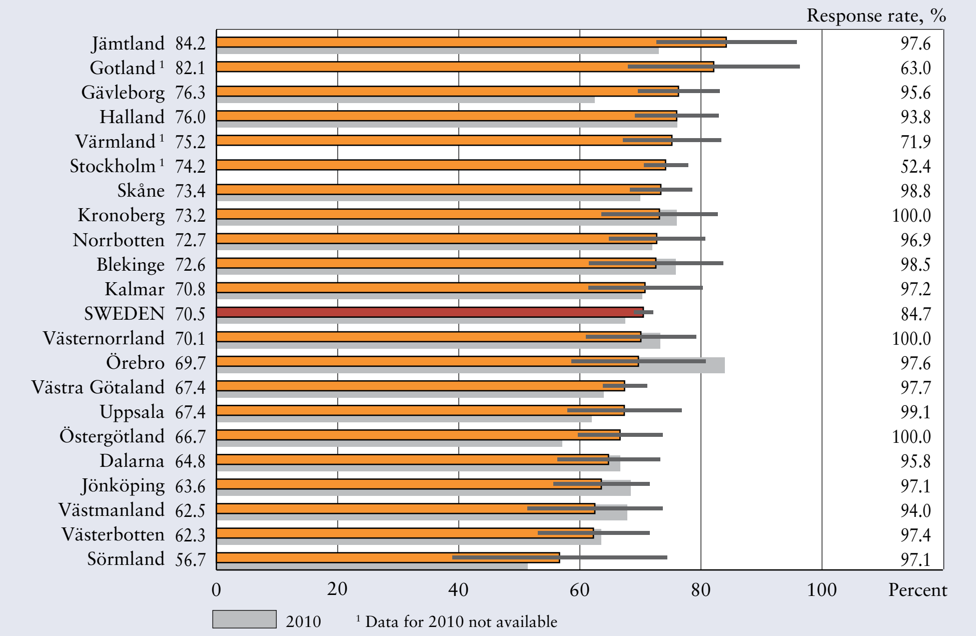


Figure 51 Percentage of patients who reported that they had no complications or adverse events after hysterectomy, 1 September 2010 – 31 August 2011.

Source: National Quality Register for Gynaecological Surgery

A total of 2.5 per cent of hysterectomy cases nationwide were readmitted during the period due to postoperative complications. The counties ranged from approximately 1 to 5 per cent, but many of them had wide confidence intervals. The Canadian Institute of Health Information was the first organisation to formulate and use the indicator. Readmissions in Canada have been 1.0–1.2 per cent over the past few years, somewhat lower than the Swedish outcomes. The proportion ranged from 2.2 to 2.8 per cent depending on the county.

This indicator reflects only complications that led to readmission. The following indicator also includes other self-reported complications.

51 Patient-reported Complications after Hysterectomy

Approximately 8 000 hysterectomies are performed in Sweden every year – another way of putting it is that one-tenth of all Swedish women undergo the procedure at some point in their lives. The indication approximately half of the time is symptomatic, benign discomfort. Given that other countries tend to use broader indications, the surgery is performed relatively rarely in Sweden. Partly due to the particular criteria applied, the number of operations per capita varies widely among Swedish counties.

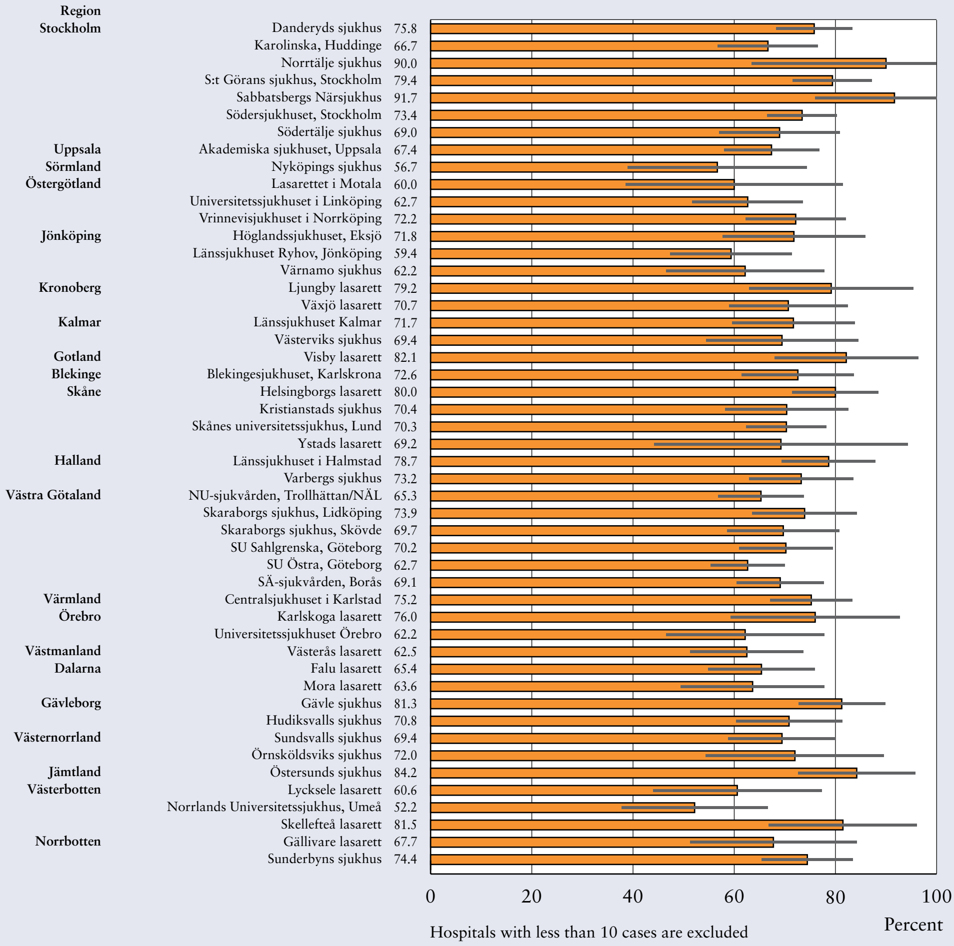


Figure 51
Hospitals

Percentage of patients who reported that they had no complications or adverse events after hysterectomy, 1 September 2010 – 31 August 2011.

Source: National Quality Register for Gynaecological Surgery

Uterine bleeding that does not respond to medication is the most common benign symptom for which hysterectomy is performed. Bleeding is frequently caused by myomas (muscular tumours) of the uterus. Approximately 80 per cent of all women have myomas, generally without experiencing any symptoms. Genital prolapse surgery often includes hysterectomy as well.

Most hysterectomies performed in the early 1990s used a large abdominal incision, assuming that no prolapse was involved. Less invasive methods are more common these days. The vaginal method is the most popular, but laparoscopy is also on the rise. Avoiding a large incision reduces the need for analgesics, shortens the period of hospitalisation and speeds up return to normal activities of daily living.

Follow-up of hysterectomy for benign indications primarily concerns the frequency of complications. Apart from the quality-of-life related problems and symptoms from which patients seek relief, they are basically healthy. Thus, it is particularly important that no serious complications arise. Approximately 3 per cent of patients experience serious complications that require readmission, reoperation and convalescence for more than four weeks.

The indicator presented in this report reflects postoperative complications in a broader sense, including unscheduled care or treatment due to unexpected events, mild infections, wound problems and inadequate information. Hysterectomies that are due to premalignant or malignant conditions or that are performed during uterine prolapse surgery are not included.

Figure 51 shows the percentage of patients who reported complications or unexpected problems, as well as mild symptoms that did not occasion additional care or treatment. The national proportion exceeded 70 per cent, ranging from almost 57 per cent to 84 per cent depending on the county.

Approximately 3 200 of the 4 200 patients responded to the questionnaire sent out two months after surgery. The total response rate was approximately 85 per cent with variations between the two registers and among clinics. For the National Quality Register for Gynaecological Surgery, the rate approached 98 per cent. Patients were assigned to the county in which the clinic was located rather than where they were living.

The results were good compared to other countries, and the frequency of complications was lower than randomised studies have found.

52 Patient Satisfaction after Hysterectomy

The indicator reflects the number of patients who were satisfied or very satisfied with the results of hysterectomy according to a survey one year later. The comparison is based on the responses of the 2 369 patients who filled out the questionnaire. The response rates of the various counties were generally high. Please refer to the diagram. Because the Gynaecology Quality Register does not use this indicator, data are unavailable for Stockholm, Värmland and Gotland.

The average proportion of satisfied or highly satisfied patients averaged 92 per cent nationwide, varying between 86 and 95 per cent from county to county. Essentially all respondents to a preoperative questionnaire stated that they expected to be free of their discomfort after hysterectomy. From that point of view, the results were generally satisfactory.

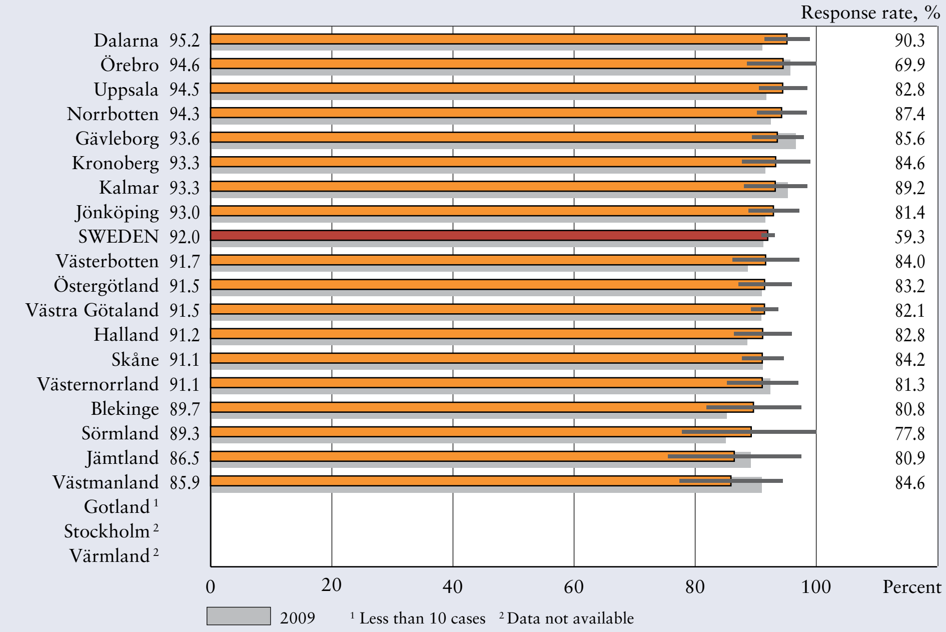


Figure 52 Percentage of patients who reported that they were satisfied or very satisfied with the results one year after hysterectomy, 1 Sept. 2010 – 31 Aug. 2011.

Source: National Quality Register for Gynaecological Surgery

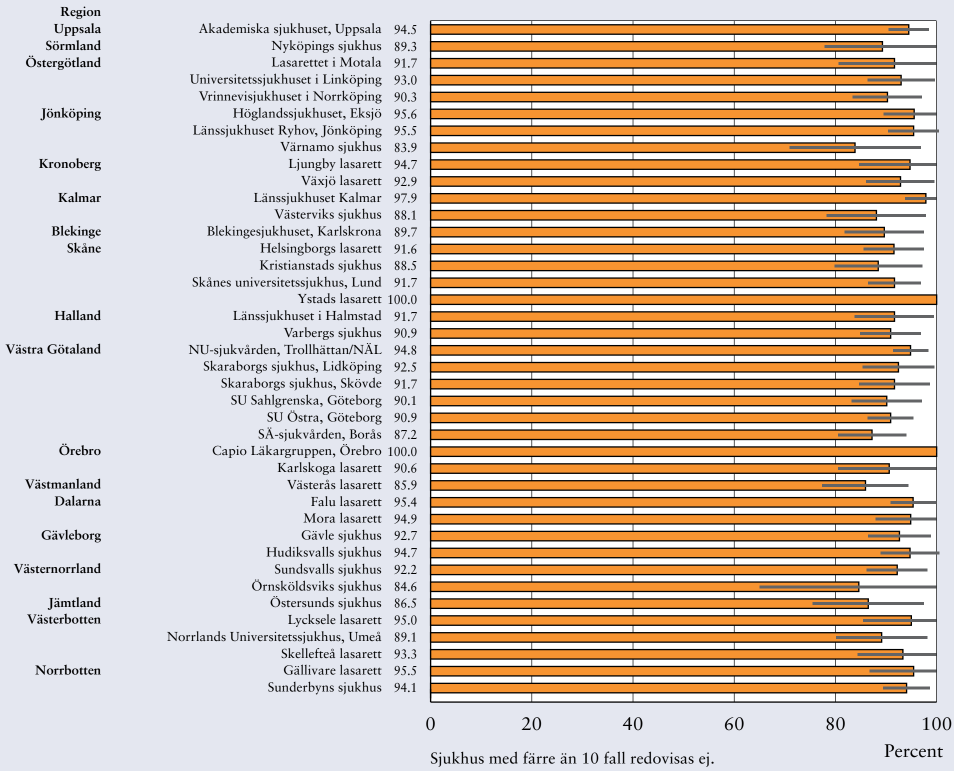


Figure 52 Hospitals Percentage of patients who reported that they were satisfied or very satisfied with the results one year after hysterectomy, 1 Sept. 2010 – 31 Aug. 2011.

Source: National Quality Register for Gynaecological Surgery

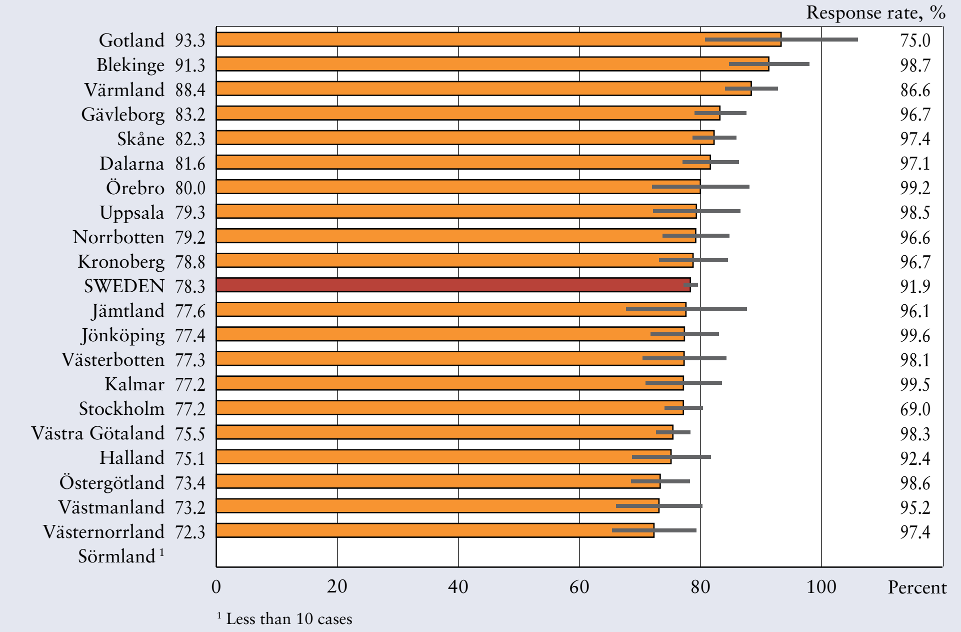


Figure 53 Percentage of patients who reported that they had no complications or adverse events after uterine prolapsed surgery, 1 Sept. 2010 – 31 Aug. 2011.

Source: National Quality Register for Gynaecological Surgery

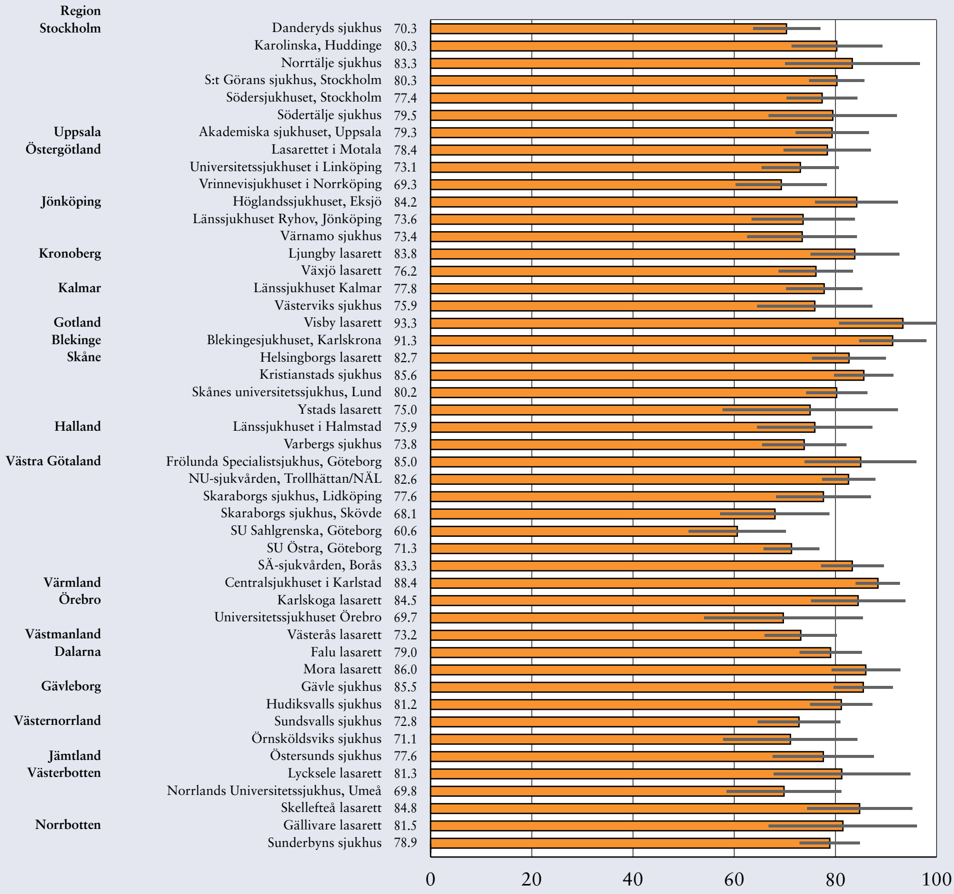
53 Patient-reported Complications after Uterine Prolapse Surgery

Approximately 6 500 Swedes undergo uterine or genital prolapse surgery every year. Prolapse refers to sagging of the uterus or vagina (along with the bladder or intestine) below or outside the vaginal opening. While not normally involving any medical complications, prolapse may cause very annoying symptoms. The purpose of operating is to provide relief, and monitoring of postoperative complications is integral to the results.

This is the first report to present data for both registers. A total of 5 827 prolapse operations were entered in the registers for the 12–month period under consideration.

The indicator shows the percentage of patients who reported having experienced no complications or unexpected problems that occasioned additional care or treatment. The comparison is based on data for 4 853 patients who underwent surgery during the period and responded to the question two months later. The response rate was 92 per cent, though varying among the registers and clinics. Patients were assigned to the county in which the clinic was located rather than where they were living.

Seventy-eight per cent of patients nationwide reported having experienced neither postoperative complications nor unexpected problems. The individual counties ranged from 72 to 93 per cent. Though somewhat greater, the differences among



Hospitals with less than 10 cases are excluded

Figure 53
Hospitals

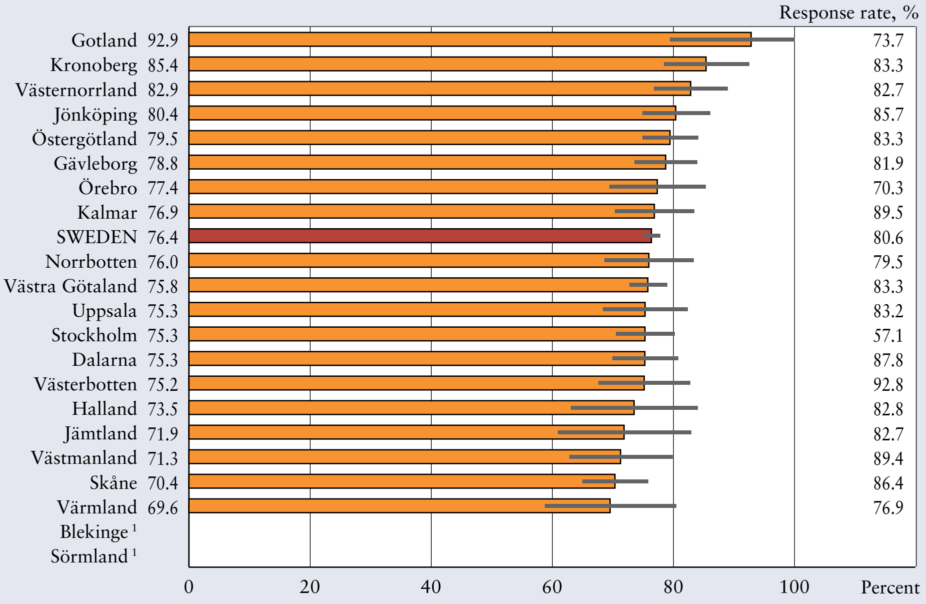
Percentage of patients who reported that they had no complications or adverse events after uterine prolapsed surgery, 1 Sept. 2010 – 31 Aug. 2011.

Source: National Quality Register for Gynaecological Surgery

clinics should be interpreted with scepticism given that no adjustments were made for patient mix.

Prolapse surgery can involve various levels of difficulty, anywhere from a routine day-case procedure to a major challenge without assurance of success. Clinics collaborate on a hierarchical basis: some of them specialise in fast track surgery and stick to relatively simple operations whereas others take referrals in more complicated cases. Thus, case mix is a vital parameter when comparing the results of various clinics.

Information about the normal course of events after surgery presumably has a major impact on patient experience of certain expected symptoms and thereby their response to the question.



[1] Less than 10 cases

Figure 54 Percentage of patients who reported that they never or almost never experienced symptoms one year after uterine prolapse surgery, 1 September 2010 – 31 August 2011.

Source: National Quality Register for Gynaecological Surgery

54 Patient-reported Bulging Sensation after Uterine Prolapse Surgery

The only prolapse-specific symptom is a bulging sensation in the vagina. The effect of prolapse surgery on the bladder, rectum and functional parameters is complex and improvements cannot be guaranteed. That is why the registers present this patient-reported symptom as specified in the questionnaire.

The indicator shows the percentage of patients who reported that they never or almost never experienced symptoms one year after surgery. The comparison is based on data for 3 507 patients who responded to the question out of approximately 4 620 who underwent surgery during the period and were entered in one of the two registers.

The national proportion of patients who never or almost never experienced symptoms exceeded 76 per cent, ranging from almost 70 per cent to more than 93 per cent depending on the county. Accurate comparisons, particularly at the clinic level, require consideration of variations in case mix.

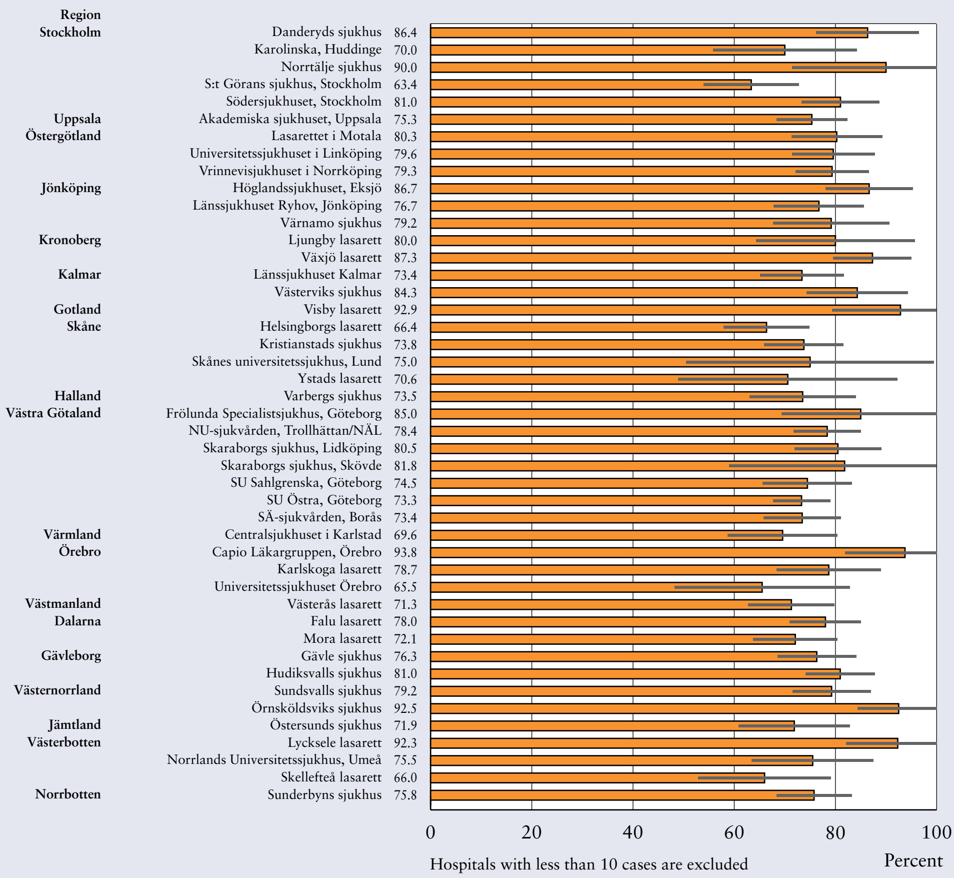


Figure 54
Hospitals

Percentage of patients who reported that they never or almost never experienced symptoms one year after uterine prolapse surgery, 1 September 2010 – 31 August 2011.

Source: National Quality Register for Gynaecological Surgery

55 Patient-reported Complications after Urinary Incontinence Surgery

More than 3 000 Swedish women undergo surgery for urinary incontinence every year. Twenty years ago this almost always involved an abdominal incision. In the early 1990s a new procedure, the TVT, was introduced which has led to minimally invasive surgery and the possibility of day-case interventions. The Incontinence Subregister of The National Quality Register for Gynaecological Surgery plays a key role in evaluating the various types of surgical methods and utilities currently available, as well as analysing and identifying potentially high-risk patients and suitable preoperative assessments.

The goal of incontinence surgery is to make the patient continent or at least significant reduce incontinence. All methods are designed to eliminate or minimise urinary leakage during exertion, coughing and sneezing, stress incontinence, but

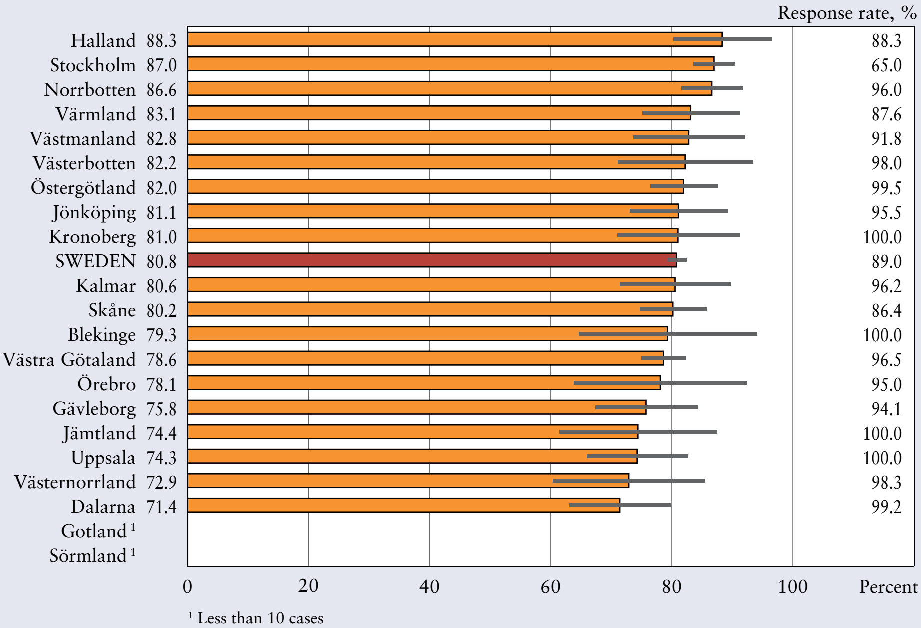


Figure 55 Percentage of patients who reported that they had no complications or adverse events after urinary incontinence surgery, 1 Sept. 2010 – 31 Aug. 2011.

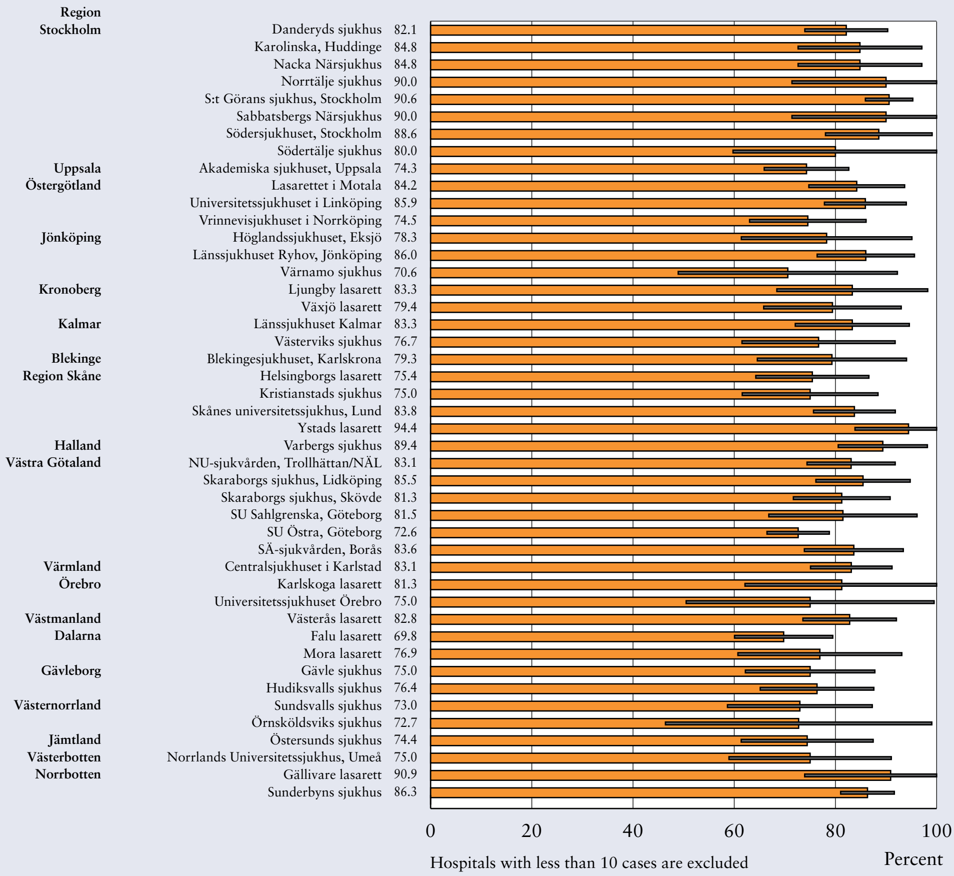
Source: National Quality Register for Gynaecological Surgery

may also have some impact on leakage due to urgency. Poorer results were found in patients with urgency, age over 75 years, previous incontinence or prolapse surgery and BMI greater than 35. More than 80 per cent of patients have at least one of the above risk factors. The fact that the percentage of medium and high-risk patients may vary considerably from clinic to clinic must be considered if accurate comparisons are to be made.

The indicator reflects the number of patients who did not report having experienced complications or unexpected problems within two months after surgery. A total of 2 925 operations were entered in the National Quality Register for Gynaecological Surgery and Gynaecology Quality Register during the 12 months presented here. The response rate for this question was 89 per cent.

Eighty-one per cent of patients nationwide, ranging from 71 to 88 per cent among the various counties, reported that they did not experience any complications or unexpected problems.

Information about the normal course of events after surgery presumably has a major impact on patient experience of certain expected symptoms.



Hospitals with less than 10 cases are excluded

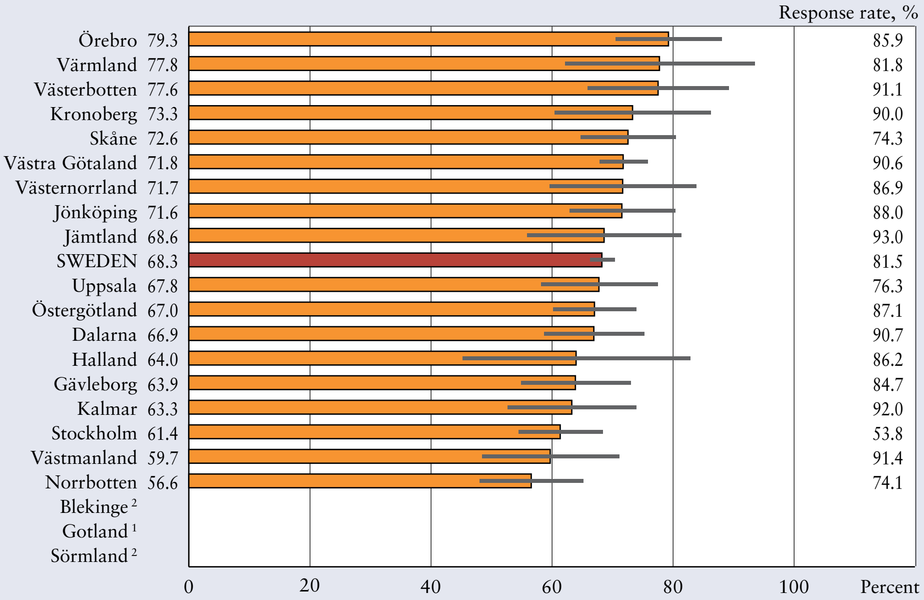
Figure 55
Hospitals

Percentage of patients who reported that they had no complications or adverse events after urinary incontinence surgery, 1 Sept. 2010 – 31 Aug. 2011.

Source: National Quality Register for Gynaecological Surgery

56 Patient-reported Success of Surgery for Urinary Incontinence

The indicator reflects patient assessment of the success of surgery one year later. While the National Quality Register for Gynaecological Surgery also asks patients whether they are satisfied with the operation, this report also proceeds from the Gynaecology Quality Register to show the percentage of patients who say that they are continent a year later. The comparison is based on data for 2 023 patients who underwent surgery and responded to the questionnaire. The response rate was 81 per cent.



[1] Less than 10 cases [2] Data not available

Figure 56 Percentage of women who reported being continent one year after urinary incontinence surgery, 1 September 2010 – 31 August 2011.

Source: National Quality Register for Gynaecological Surgery

Sixty-eight per cent of patients nationwide reported being continent. The counties ranged from 56 per cent all the way to 79 per cent. Differences in the percentage of high-risk patients frustrate comparisons between the various counties and clinics.

This report defines continence in accordance with the relatively strict criteria of the International Continence Society, i.e., involuntary urinary leakage less than once a month. Inclusion of patients with mild incontinence (involuntary urinary leakage less than once a week) would increase the proportion to better than 75 per cent.

The percentage of patients who said that they were satisfied with the operation was considerably higher than that, over all 81 per cent. A reasonable conclusion is that many patients experienced significant relief even though they did not meet the official criteria for continence.

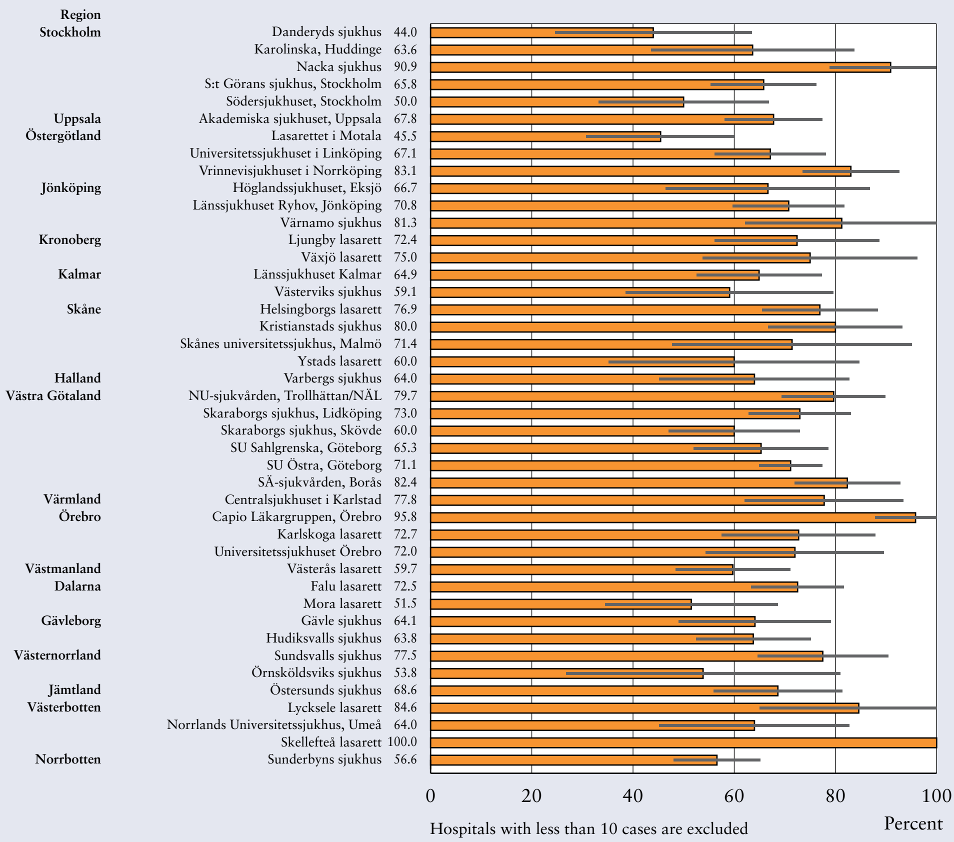


Figure 56
Hospitals

Percentage of women who reported being continent one year after urinary incontinence surgery, 1 September 2010 – 31 August 2011.

Source: National Quality Register for Gynaecological Surgery

57 Uterine Prolapse – Frequency of Day-case Surgery

According to the National Patient Register, approximately 6 600 uterine prolapse operations were performed in 2011. More than 23 000 (almost 35 per cent) were day-case surgery, a somewhat higher proportion than 2009 or 2010. Day-case surgery is appropriate, assuming that postoperative monitoring is available for enough hours and inpatient resources can be called on as needed. The diagnosis of uterine prolapse is broad and can involve very different degrees of severity. Similarly, surgery may be simple, complicated or anything in between. The indicator does not measure quality, but differences in clinical practice that affect resource utilisation.

Severity, as well as age and general condition, all affect the period of hospitalisation and whether or not day-case surgery is a feasible option. As the large variations in the diagram suggest, other factors also have a major impact on the percentage of day-case operations.

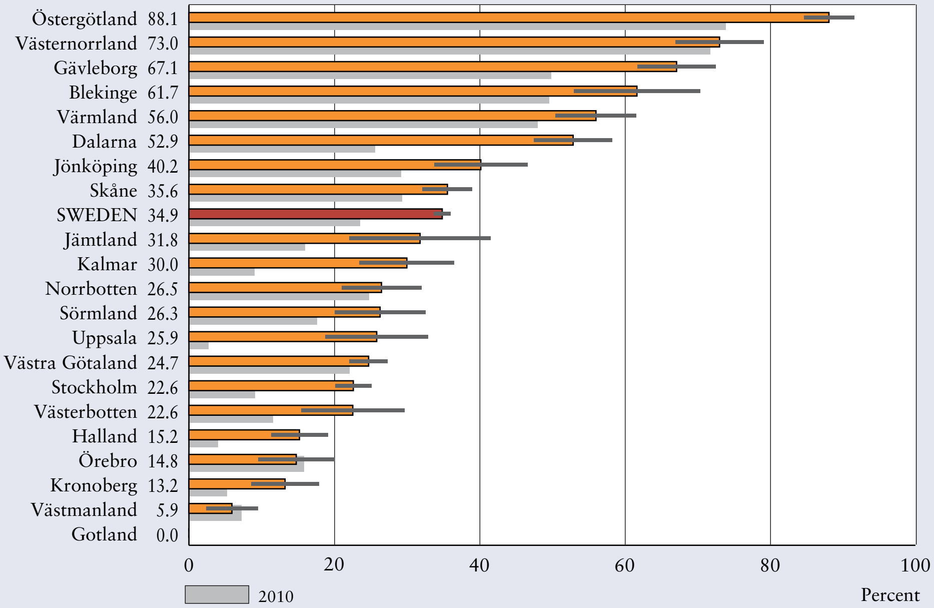


Figure 57 Uterine prolapse – frequency of day-case surgery, 2011.

Source: National Patient Register, National Board of Health and Welfare

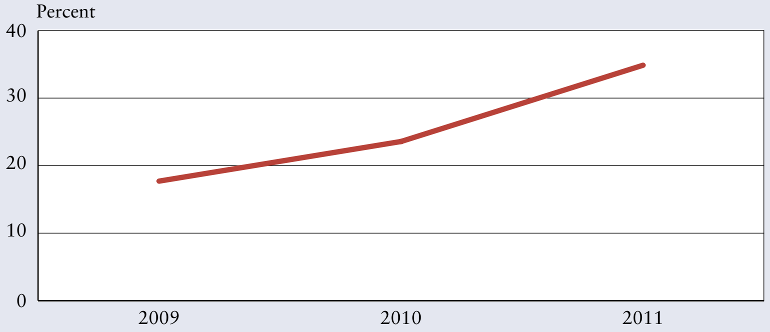


Figure 57 Sweden Uterine prolapse – frequency of day-case surgery.

Source: National Patient Register, National Board of Health and Welfare

Each operation was assigned to the county in which the patient was living rather than where it was performed. There is no evidence to suggest that the general or health status of patients differs radically from county to county.

The variation between counties in the percentage of day-case operations was so pronounced that local tradition and culture undeniably played a significant role.

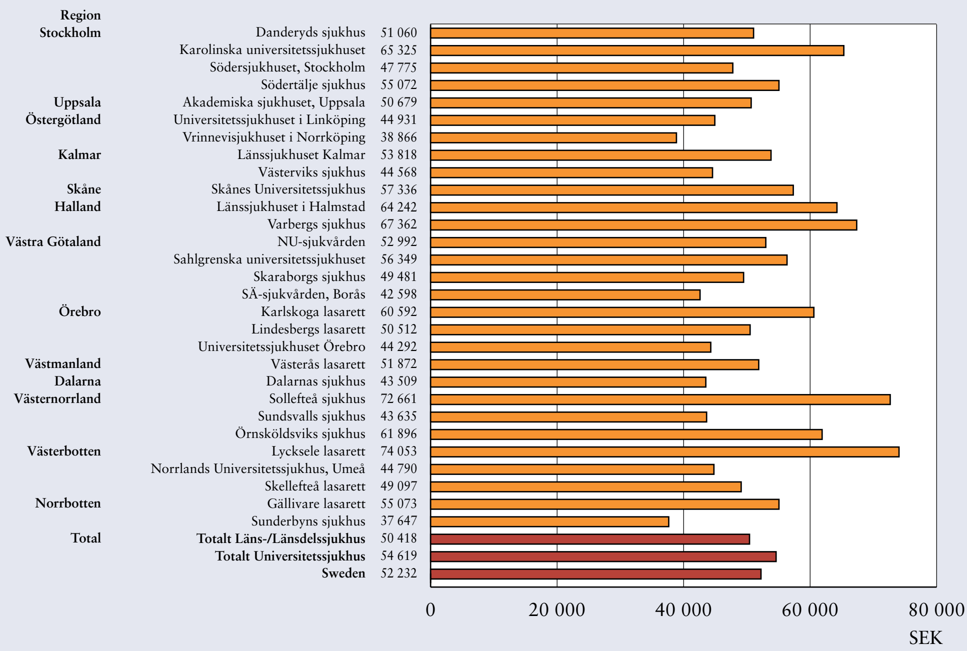


Figure 58
Hospitals

Cost per case for hysterectomy, 2011.

Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

One county performs almost nine out of every ten operations as day-case surgery, whereas other counties hospitalise a large percentage of patients. Counties with a high percentage of inpatient surgery should be able to lower their costs without sacrificing quality.

58 Cost per Care Event for Hysterectomy

A total of 3 583 care events with a procedure code for hysterectomy were reported to the Case Costing Database in 2011. The period of hospitalisation averaged 3 days. Variations between hospitals may be due to case mix, allocation of responsibilities or choice of surgical method.

Figure 58 shows costs per care event for inpatient hysterectomy. The patient population and procedure are the same as those for which adverse events are presented in Figure 50. The cost in the Case Costing Database averaged SEK 52 232 (excluded outliers) in 2011. The costs ranged widely from 38 000 to 74 000 kronor among hospitals with more than ten cases.

A number of variables beyond period of hospitalisation may have contributed to the cost discrepancies: operating time, staff size per bed and hospital, case mix, choice of technology and reporting practices.

MUSCULOSKELETAL DISEASES

Musculoskeletal diseases are the most common cause of pain, reduced working capacity and long-term sick leave, as well as sickness and activity compensation. Given that such conditions account for one-third of all sick leave and illness every year, they are associated with major societal costs. Sick leave due to osteoarthritis alone costs the social insurance system SEK 1.4 billion annually.

According to the WHO Global Burden of Disease study in 2010 osteoarthritis is widespread in all countries. Back pain is the condition causing most disability across the globe, with osteoarthritis showing the greatest increase in the last 20 years.

An estimated 90 000 Swedes have inflammatory joint disease, 60 000 of whom with rheumatoid arthritis – a severe, often chronic, disabling condition that mostly affects women, leading to poorer health-related quality of life and shorter life expectancy.

This set of 20 indicators reflects various areas of orthopaedics and rheumatology. Data for the three rheumatology indicators were obtained from the Swedish Rheumatology Register. The orthopaedics indicators measure costs in addition to medical quality. The sources of data were various orthopaedic national quality registers, the National Patient Register and Prescribed Drug Register of the Swedish National Board of Health and Welfare, and the Case Costing Databases of the Swedish Association of Local Authorities and Regions.

The indicators cover both common and resource-intensive diseases and treatments: knee arthroplasty, hip arthroplasty, hip fracture, knee arthroscopy, spinal surgery and anterior cruciate ligament surgery, as well as drugs to prevent post-fracture osteoporosis and to treat rheumatoid arthritis.

More than 100 000 orthopaedic operations are performed each year. Fracture operations, which are among the most common surgical procedures in Sweden, also belong to this set of indicators. Due to the lack of comprehensive quality registers for other types of fractures, the indicators cover hip operations only.

59 Total Knee Arthroplasty – 10–year Implant Survival

The frequency of osteoarthritis of the knee is relatively low before the age of 50 but starts to rise after that point. Women, especially the elderly, develop the condition a good deal more often than men. Primary knee arthroplasty was performed 12 752 times, while there were 830 reoperations, at 74 clinics in 2011. Almost 60 per cent of the procedures were on women.

The data presented here were taken from the Swedish Knee Arthroplasty Register, which is the oldest national quality register in Sweden and has a completeness of registration of over 95 per cent The register covers all clinics in Sweden that perform knee arthroplasty.

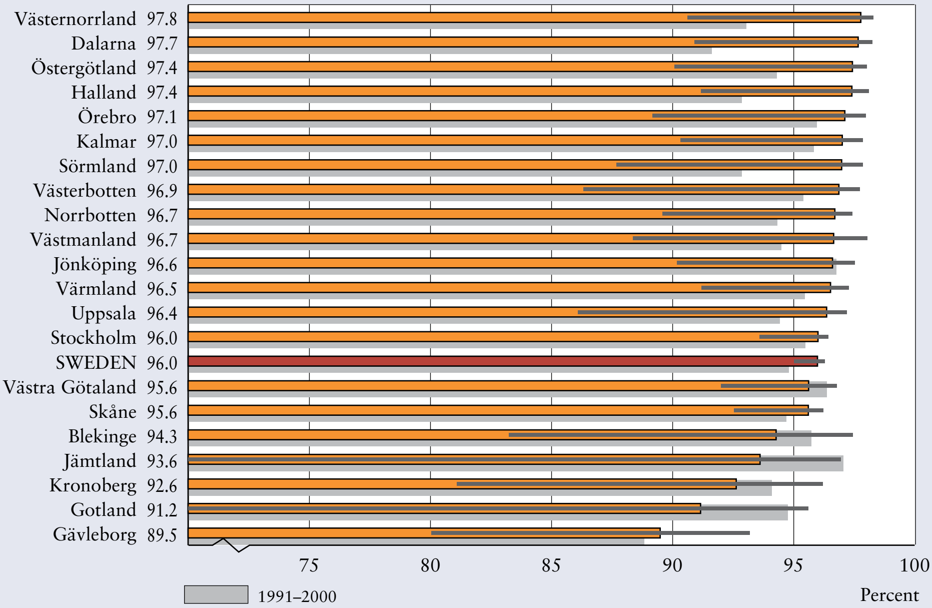


Figure 59 Total knee arthroplasty – 10-year implant survival, 2001–2010.

Source: Swedish Knee Arthroplasty Register

The indicator refers to all total knee arthroplasty procedures performed in 2001–2010 on osteoarthritis patients. Over 86 000 operations were performed during the period. Figure 59 presents the percentage of operations that did not require revision (replacement of some or all components of the prosthesis) within 10 years, regardless of the reason. The analysis, which is based on Kaplan-Meier statistics, examines the number of prostheses per 100 living patients that remained 10 years after surgery. The statistical method includes patients who emigrated from Sweden or died during the observation period. These drop-outs are regarded as having run the same risk of reoperation as the remaining population.

Revision may be due to patient-related factors, as well as an inappropriate choice of prosthesis or surgical method. The nationwide average for the period was 96 per cent for both sexes, while the counties ranged from 89 to 98 per cent. Thus, approximately 4 out of 100 operations required revision within 10 years. The results are based on one particular 10–year period, albeit the most recent, and are not necessarily a wholly accurate reflection of the current situation. Nevertheless, the indicator is important in that it provides valuable information about the long-term effectiveness of a common orthopaedic procedure. Because the frequency of complications is relatively low for both knee and hip arthroplasty, random fluctuations and varying case mixes affect the results. Sweden is a leader when compared to other countries, such as Australia and the rest of Scandinavia, that present similar statistics.

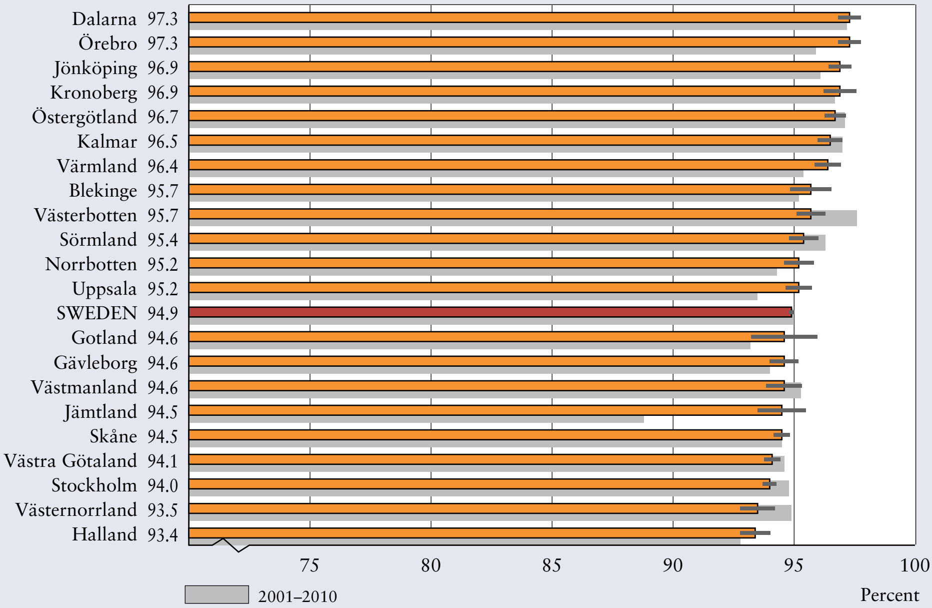


Figure 60 Total hip arthroplasty – 10-year implant survival, 2002–2011.

Source: Swedish Hip Arthroplasty Register

60 Total Hip Arthroplasty – 10–year Implant Survival

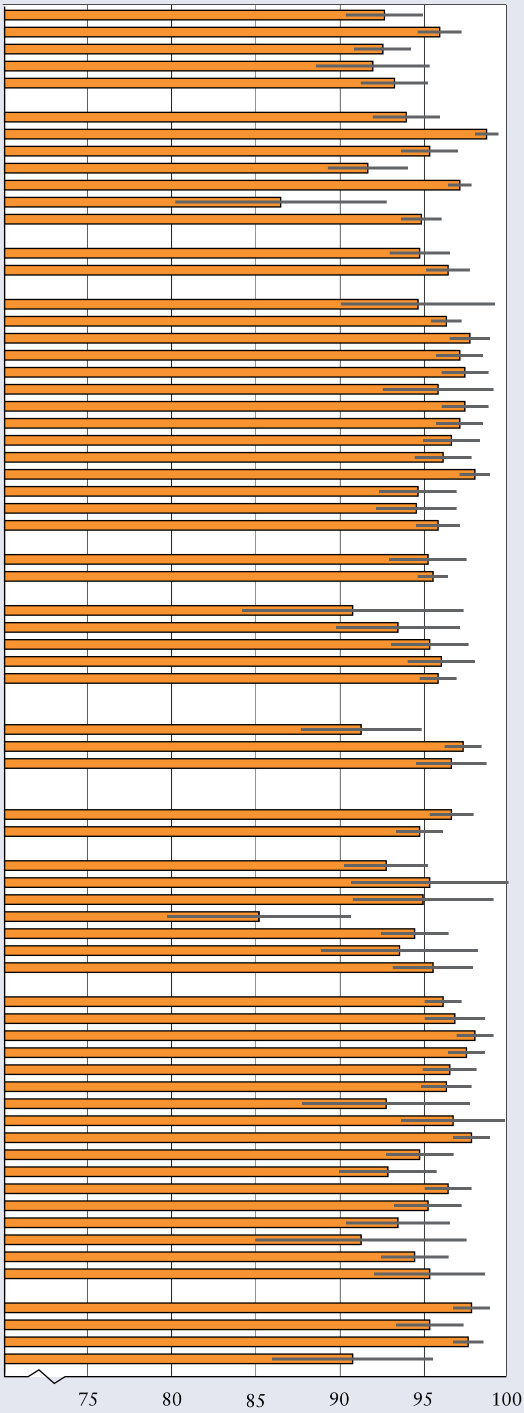
All clinics, both public and private, that provide related services report to the Swedish Hip Arthroplasty Register. A recent comparison with the National Patient Register showed that the register had a completeness of registration of 98 per cent 2011.

A total of 15 951 primary total hip arthroplasty cases were entered in the Hip Arthroplasty Register for 2011, which was in the same neighbourhood as 2009 and 2010. The number has risen substantially over the past ten years. Approximately 60 per cent of the patients were women. A total of 2 193 reoperations, 1 810 of them revisions, were reported in 2011.

Postoperative implant survival (Kaplan-Meier statistics) is a key measure of quality – see the previous indicator. Surgery is regarded as having failed if a prosthesis component had to be replaced or the entire implant removed (revision). The Hip Arthroplasty Register has long followed this quality indicator. These data are based on the more than 142 000 operations performed in 2002–2011. All diagnoses have been included.

The implant survival rate of almost 95 per cent is the highest in the world reported for a 10–year period. For both sexes taken together, county results varied from 93.4 to 97.3 per cent. Women's implants had a 95.7 per cent 10–year survival rate, as opposed to 93.8 per cent for men's. The gender gap was probably due to the fact that

Region		
Stockholm	Danderyds sjukhus	92.7
	Karolinska, Huddinge	96.0
	Karolinska, Solna	92.6
	Norrtälje sjukhus	92.0
	Ortopediska Huset, Stockholm	93.3
	Nacka Närsjukhus[1]	
	S:t Görans sjukhus, Stockholm	94.0
	Sabbatsbergs Närsjukhus	98.8
	Sophiahemmet, Stockholm	95.4
	Löwenströmska sjukhuset	91.7
	Södersjukhuset, Stockholm	97.2
	Södertälje sjukhus	86.5
Uppsala	Akademiska sjukhuset, Uppsala	94.9
	Elisabethsjukhuset, Uppsala[1]	
	Lasarettet i Enköping	94.8
Sörmland	Kullbergska sjukhuset, Katrineholm	96.5
	Mälarsjukhuset, Eskilstuna[1]	
	Nyköpings sjukhus	94.7
Östergötland	Lasarettet i Motala	96.4
	Universitetssjukhuset i Linköping	97.8
	Vrinnevisjukhuset i Norrköping	97.2
Jönköping	Höglandssjukhuset, Eksjö	97.5
	Länssjukhuset Ryhov, Jönköping	95.9
	Värnamo sjukhus	97.5
Kronoberg	Ljungby lasarett	97.2
	Växjö lasarett	96.7
Kalmar	Länssjukhuset Kalmar	96.2
	Oskarshamns sjukhus	98.1
	Västerviks sjukhus	94.7
Gotland	Visby lasarett	94.6
Blekinge	Blekingesjukhuset, Karlshamn	95.9
	Blekingesjukhuset, Karlskrona[1]	
Skåne	Helsingborgs lasarett	95.3
	Hässleholm-Kristianstad	95.6
	Skånes universitetssjukhus, Lund[1]	
	Skånes universitetssjukhus, Malmö	90.8
	Trelleborgs lasarett	93.5
	Ystads lasarett	95.4
	Ängelholms sjukhus	96.1
Halland	Länssjukhuset i Halmstad	95.9
	Movement, Halmstad[1]	
	Spenshults reumatikersjukhus[1]	
	Varbergs sjukhus	91.3
Västra Götaland	Alingsås lasarett	97.4
	Carlanderska, Göteborg	96.7
	Frölunda Specialistsjukhus, Göteborg[1]	
	Gothenburg Medical Center[1]	
	Kungälvs sjukhus	96.7
	NU-sjukvården, Uddevalla	94.8
	Ortho Center IFK-kliniken, Göteborg[1]	
	Skaraborgs sjukhus, Falköping	92.8
	Skaraborgs sjukhus, Lidköping	95.4
	Skaraborgs sjukhus, Skövde	95.0
	SU Mölndal	85.2
	SU Östra, Göteborg	94.5
	SÄ-sjukvården, Borås	93.6
	SÄ-sjukvården, Skene	95.6
Värmland	Arvika sjukhus[1]	
	Centralsjukhuset i Karlstad	96.2
	Torsby sjukhus	96.9
Örebro	Karlskoga lasarett	98.1
	Lindesbergs lasarett	97.6
	Universitetssjukhuset Örebro	96.6
Västmanland	Köpings lasarett	96.4
	Västerås lasarett	92.8
Dalarna	Falu lasarett	96.8
	Mora lasarett	97.9
Gävleborg	Bollnäs sjukhus	94.8
	Gävle sjukhus	92.9
	Hudiksvalls sjukhus	96.5
Västernorrland	Sollefteå sjukhus	95.3
	Sundsvalls sjukhus	93.5
	Örnsköldsviks sjukhus	91.3
Jämtland	Östersunds sjukhus	94.5
Västerbotten	Lycksele lasarett	95.4
	Norrlands Universitetssjukhus, Umeå[1]	
	Skellefteå lasarett	97.9
Norrbotten	Gällivare lasarett	95.4
	Piteå Älvdals sjukhus	97.7
	Sunderbyns sjukhus	90.8



[1] Excluded due to too few cases "at risk" during part of the observation period

Figure 60
Hospitals

Total hip arthroplasty – 10-year implant survival, 2002–2011.

Source: Swedish Hip Arthroplasty Register

men tend to engage in more strenuous physical activity, leading to greater long-term wear on the components of the prosthesis and causing it to loosen.

The 10–year survival rate for hip arthroplasty is a "slow" quality indicator that also describes historical outcomes but reflects long-term complications such as mechanical loosening of the implant. This quality measure is an international standard for all comparative analyses in the area.

The county-by-county comparison includes all patients, who represent a wide range of risk factors and types of hospitals. The location of a clinic, not where the patient was living, formed the basis of the county data. Clinics collaborate to make sure that severe cases are referred to those with specialist expertise. These clinics operate on patients who face greater surgical risks and thereby a higher frequency of complications. Inter-county referrals may have affected results. This report has not made any correction for that contingency.

61 Reoperation within Two Years after Total Hip Arthroplasty

Ten-year survival of hip prosthesis is a central quality variable, but indicators are also needed that can provide quicker feedback to clinics and that can spur them to launch improvement efforts without undue delay.

One faster indicator concerns the percentage of reoperations within two years of initial surgery, regardless of the reason. Reoperation is a broader concept than revision and includes all forms of additional surgery. The short follow-up time primarily reflects early and serious postoperative complications, such as deep infection and revision due to repeated dislocation of the hip prosthesis. Able-bodied patients who are reoperated on due to prosthesis-related infection or dislocation frequently experience poorer final results, costing the healthcare system and society millions of kronor per complication.

Only surgically treated complications are included. Neither infections treated with antibiotics nor dislocations treated non-surgically are reported to the register. If a patient was repeatedly reoperated on for the same complication, only a single complication was reported. Data for patients reoperated on at a clinic other than the primary one are still assigned to the primary clinic.

The percentage of reoperations presented in Figure 61 is based on the more than 58 000 initial procedures performed in 2008–2011. A total of 2.1 per cent (1 098) of all patients nationwide had reoperations within two years. Two counties had reoperation rates of 1 per cent or lower, while four counties were above 2.5 per cent.

There was a small difference in the frequency of complications between women (1.9 per cent) and men (2.4 per cent). At 0.2–5.7 per cent, the variation from hospital to hospital was larger. The breadth of that range renders the indicator more significant in terms of pointing to the need for improvement efforts. The complication

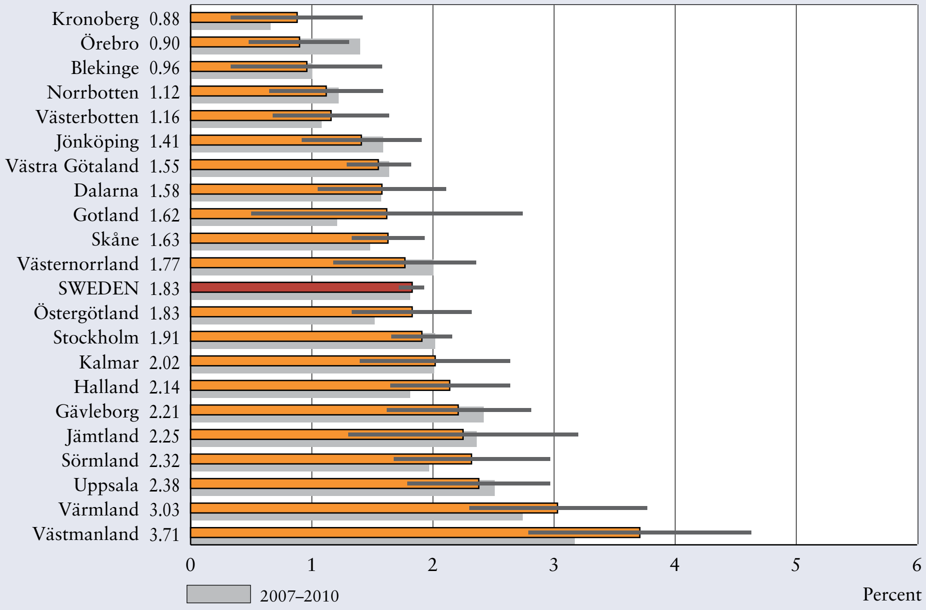


Figure 61 Reoperation within 2 years after total hip arthroplasty, 2008–2011.

Source: Swedish Hip Arthroplasty Register

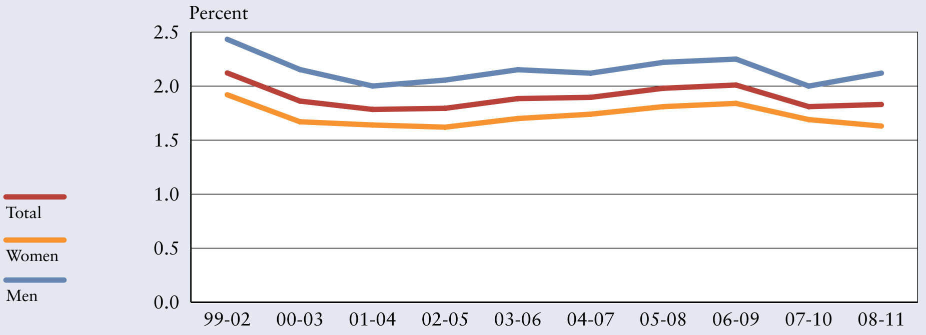


Figure 61 Sweden Reoperation within 2 years after total hip arthroplasty.

Source: Swedish Hip Arthroplasty Register

rates were generally low. Case mix and random fluctuations had a large impact on the results – i.e., whether there are any clear trends, which can only be evaluated over time.

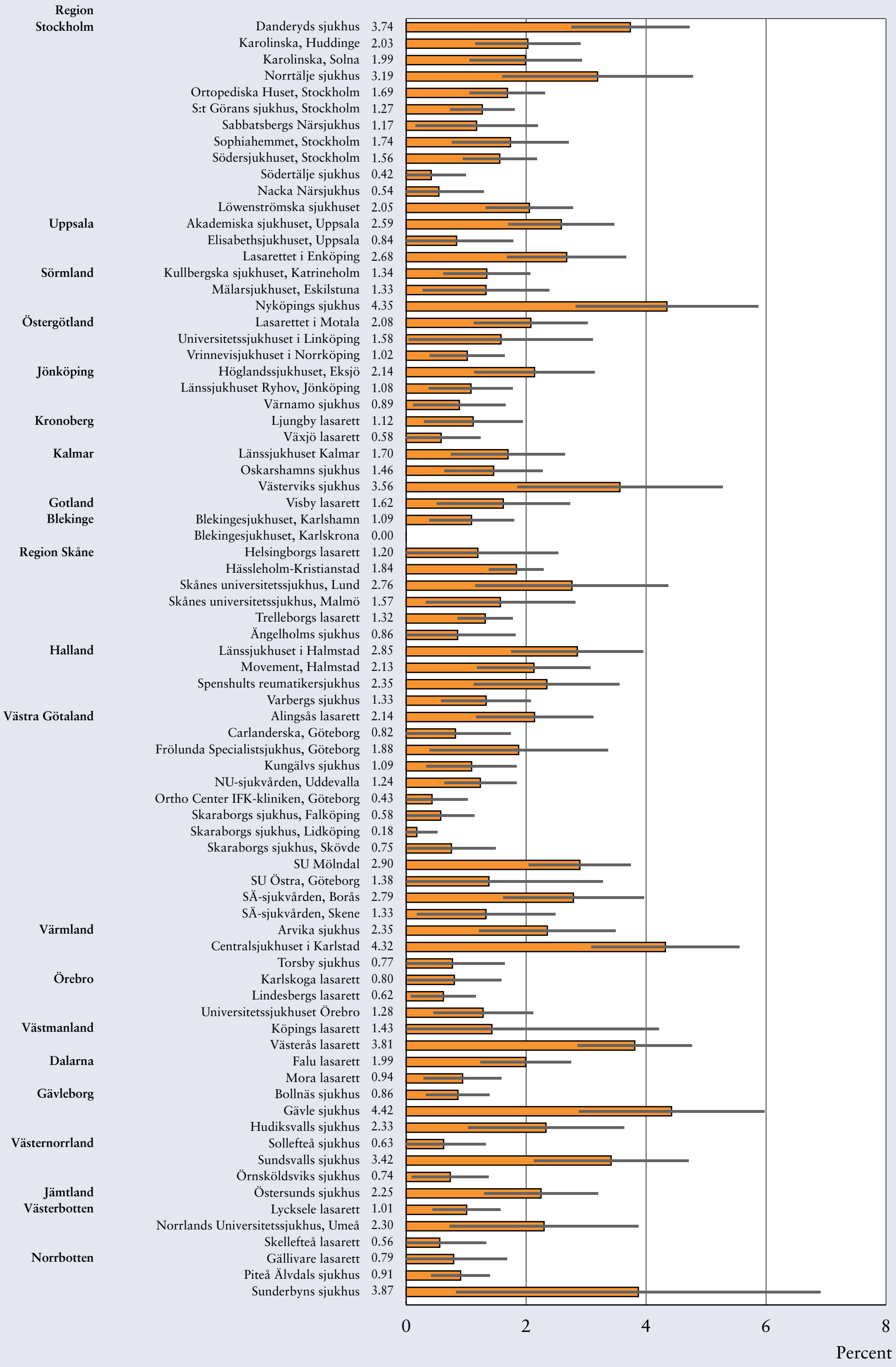


Figure 61
Hospitals

Reoperation within 2 years after total hip arthroplasty, 2008–2011.

Source: Swedish Hip Arthroplasty Register

Expecting that all postoperative complications can be prevented would be unrealistic. In recent years, the national average for reoperation within two years has consistently hovered between 1.6 and 2.1 per cent. Thus, the target for the patient population in question should be no more than 1.8 per cent. As the results of some counties suggest, the frequency of complications can be lower.

62 Adverse Events within 30 Days after Knee and Total Hip Arthroplasty

Approximately 13 000 Swedes receive knee arthroplasty and 16 000 receive total hip arthroplasty every year. Revisions for replacement of the prosthesis are also performed. Such procedures, which normally are elective, constitute a large percentage of non-acute orthopaedic services.

While the procedures are routine these days, they nevertheless represent major surgery that involves risks. Modern anaesthesiology and thorough preoperative medical assessment, as well as anti-infection and antithrombotic therapy, are key to assuring a low frequency of complications and mortality.

Postoperative readmission and death are common international quality indicators.

Readmission and death may be due to local surgery-related, as well as other medical, complications. Readmissions as the result of local complications that required some type of reoperation are reported to the Swedish Knee and Hip Arthroplasty registries. But the registries do not contain other medical complications.

A number of adverse events may be analysed using the National Patient Register as a source. The indicator presented here is part of the effort to design additional broad outcome measures that span a number of different conditions and treatment methods.

Figure 62 shows the frequency of readmission and death within 30 days after knee and hip arthroplasty. The comparison includes more than 78 000 operations performed in 2009–2011. Among the causes chosen for readmission were prosthesis complications, as well as myocardial infarction, angina pectoris, heart failure, stroke and other common cardiovascular diseases. Where the patient lived, not the location of the clinic, formed the basis of county reporting.

A total of 3.2 per cent of operations nationwide were followed by readmission or death within 30 days. Specific prosthesis complications accounted for two-thirds of the readmissions studied. The various counties ranged from 2.2 to 4.9 per cent. Despite a decline in the average period of hospitalisation from approximately ten days in 1998 to less than six days in 2011, the percentage of readmission or death nationwide has trended downward over the past ten years.

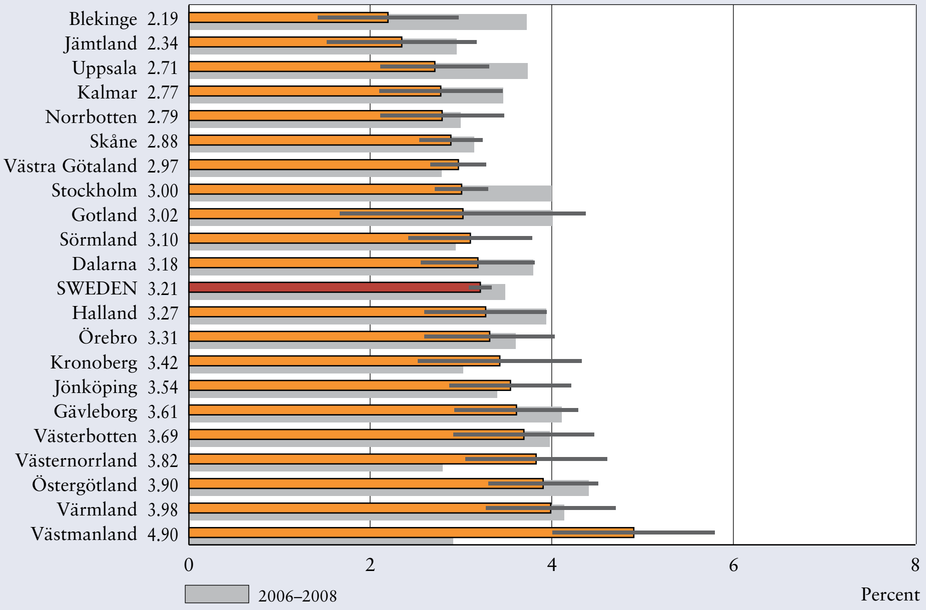


Figure 62 Adverse events within 30 days after knee and total hip arthroplasty, 2009–2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

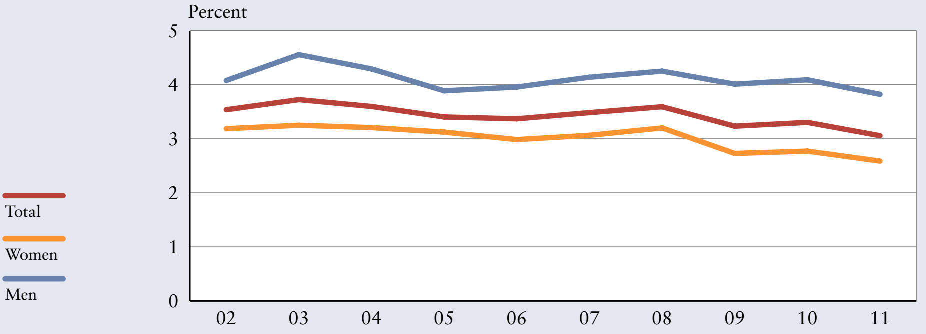


Figure 62
Sweden

Adverse events within 30 days after knee and total hip arthroplasty. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

63 Patient-reported Outcome of Total Hip Arthroplasty

The leading indicators for hip arthroplasty are subjective pain and poor health-related quality of life. Reporting these variables is essential to optimising treatment and quantifying results in multiple dimensions. The Swedish Hip Arthroplasty Register has monitored patient-reported outcome of surgery since 2002. One of

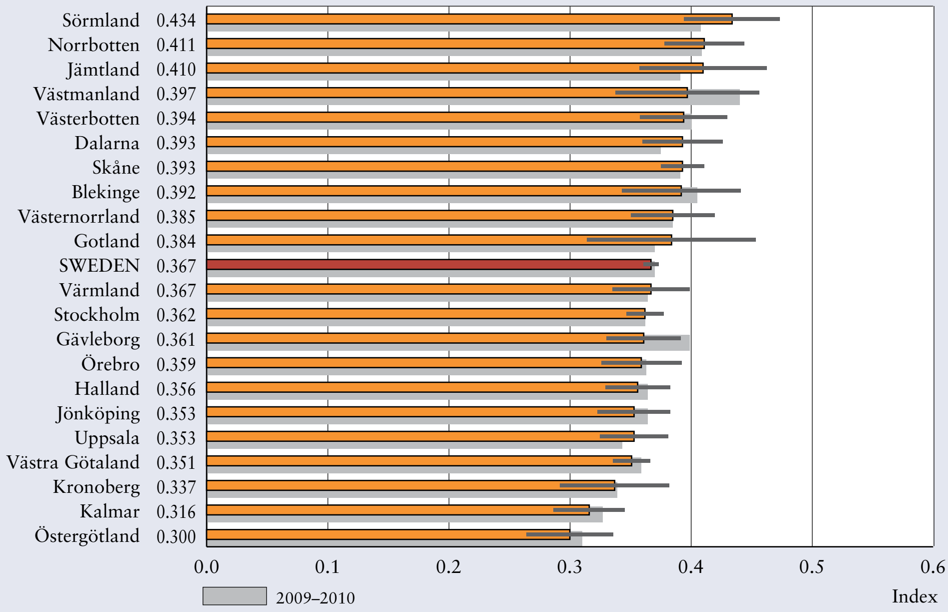


Figure 63 Patient-reported outcome of total hip arthroplasty, 2010–2011. Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

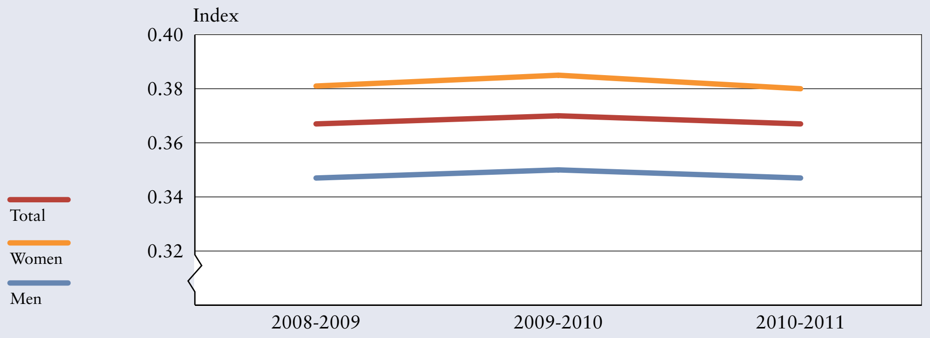


Figure 63 Sweden Patient-reported outcome of total hip arthroplasty. Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

the measures is the EQ-5D instrument, which generates an index score for health-related quality of life.

All patients fill out a 10–question preoperative form. The same form, with an additional question concerning satisfaction, is sent to the patient a year later. The procedure is repeated after six and ten years. Figure 63 shows the difference in EQ-5D score, i.e., the improvement in health-related quality of life, one year after surgery.

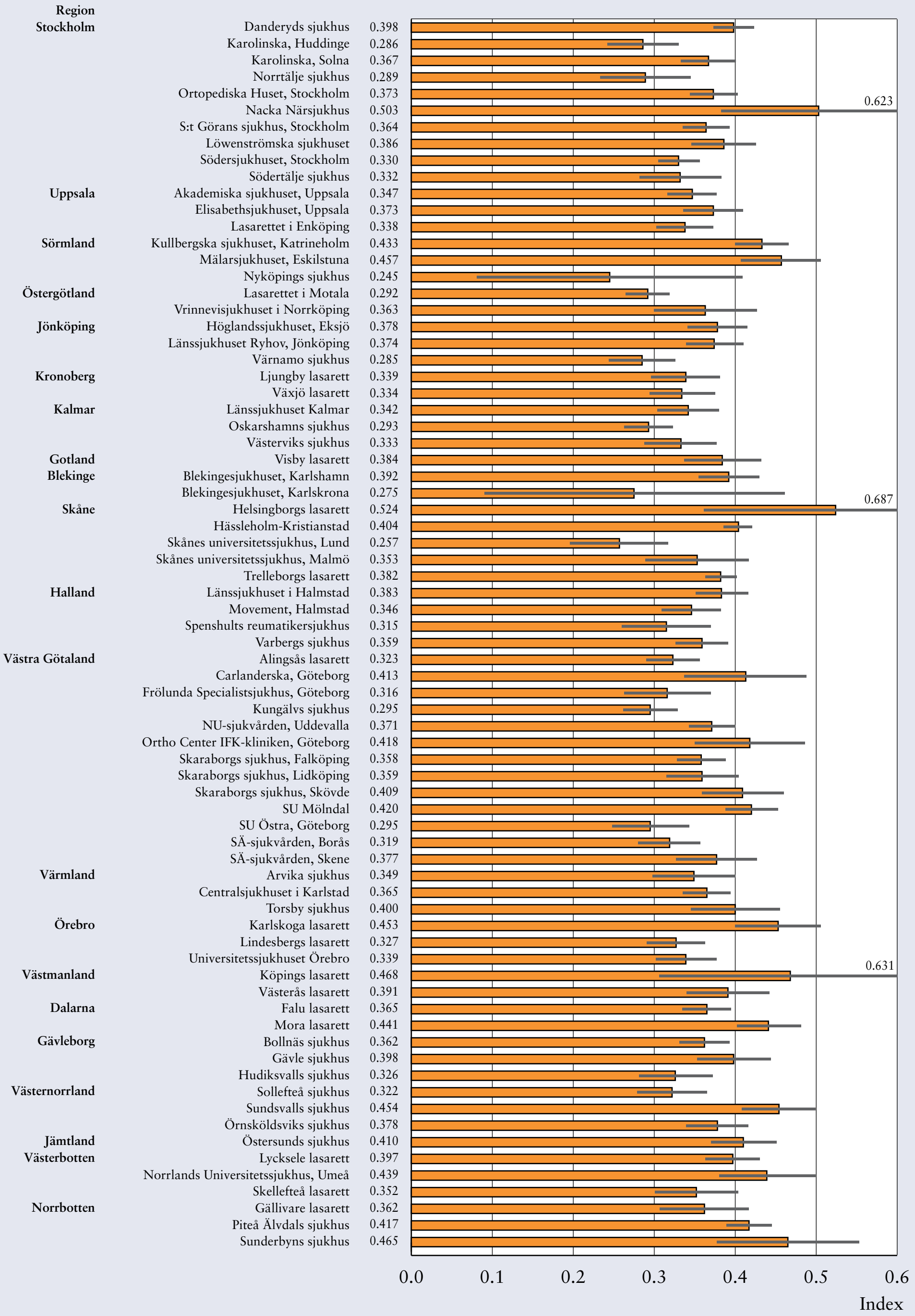


Figure 63
Hospitals

Patient-reported outcome of total hip arthroplasty, 2010–2011. Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

This year's analysis covers surgery performed in 2009–2010 on 23 200 patients, as well as one-year follow-up in 2010–2011. The follow-up included all Swedish clinics that perform total hip arthroplasty. The response rate was 90 per cent.

No strict targets can be set for health-related quality of life, which is dependent on age, comorbidity, gender and a number of other factors in addition to osteoarthritis. Given that the indicator concerns improved health-related quality of life, results are partially adjusted for the other factors. The national average for improvement in the EQ-5D score after one year has held constant at 0.36–0.37 (a reasonable target) from the time that the database contained 200 patients to the current 90 000 patients. A low score may suggest a shift in indication for surgery, while a high score may be a sign that some patients had to wait too long.

As had been the case previously, the variations between counties were large. Counties with low scores should look at the possible impact on the indication for surgery of having had a greater focus on performing more operations. If healthier patients undergo surgery, for instance, the benefits will be lower. Lack of significant improvement in health-related quality of life will probably translate into poor cost-effectiveness when a health economic analysis is performed. While women had lower preoperative health related quality of life than men, their improvement was somewhat greater after one year.

64 Percentage of Patients Who Reported That They Were Satisfied One Year after Total Hip Arthroplasty

The routines of the Swedish Hip Arthroplasty Register for patient-reported outcome include a question about satisfaction at one-year, six-year and ten-year follow-up. The question, which is specific to the condition, asks patients to rate the outcome of surgery on a visual analogue scale (VAS) from 0 (satisfied) to 100 (dissatisfied), but does not inquire as to whether they were satisfied with the respect and consideration that they had been shown. The response rate was better than 90 per cent and all hospitals reported. Patient satisfaction outcomes do not necessarily covary with EQ-5D score (see preceding indicator). Lack of significant improvement in the EQ-5D score may be associated with a high level of satisfaction and vice versa, given that the preoperative score is factored in as well.

A VAS score of 41 or higher is regarded as an expression of uncertainty or dissatisfaction. The indicator shows the percentage of patients who rated the outcome of surgery between 0 and 39. Based on this definition, 86 per cent of patients nationwide reported that they were satisfied with the outcome, varying from 80.6 to 91.1 per cent depending on the county. Fewer than 1 per cent of all surgery was followed by reoperation within the first year. By a small 2 percentage point margin, men were slightly more satisfied than women. There were greater variations from clinic to clinic.

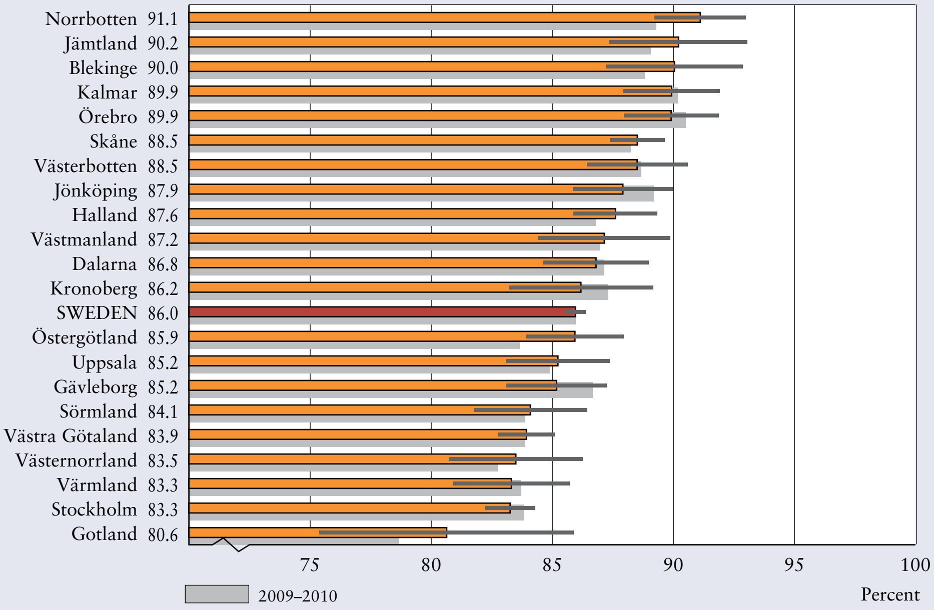


Figure 64 Percentage of patients who reported that they were satisfied one year after hip arthroplasty, 2010–2011.

Source: Swedish Hip Arthroplasty Register

Dissatisfaction among patients who experienced no complications was certainly due to a number of interrelated factors, including dubious indications for surgery, comorbidity, socioeconomic background; country of origin and associated language difficulties, inadequate information about anticipated results and rehabilitation period, and unrealistic expectations.

The analysis and clinical research of the Hip Arthroplasty Register going forward will focus on patients who report being uncertain or dissatisfied with surgical outcomes. The indicator reveals that outcomes reported by this large patient population have a lot of room for improvement with respect to the care process, particularly outside the operating theatre.

65 Waiting Times for Hip Fracture Surgery after Arrival at Hospital

Approximately 18 000 hip fractures are reported every year in Sweden. All patients are taken to an acute care hospital and operated on, although the type of surgery varies. Because a fracture does not pose an immediate threat to the patient's life, there may be a waiting time. Studies have shown that a delay of 24 hours or more increases four-month mortality, even in otherwise healthy patients. The frequency of infection, pressure ulcers, confusion and other complications also rises. Waiting places a physical and mental strain on the patient while extending the period of hospitalisation.

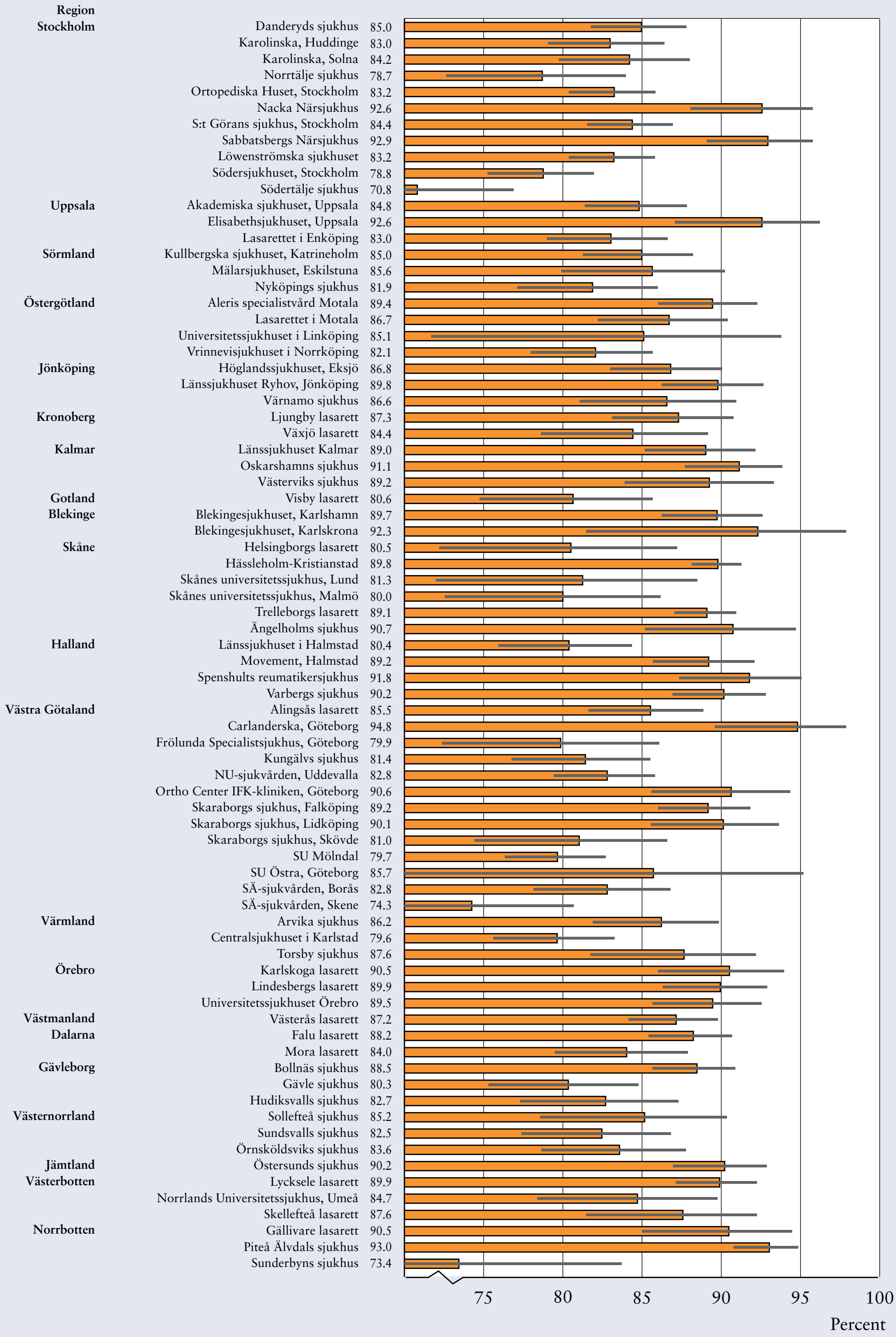


Figure 64
Hospitals

Percentage of patients who reported that they were satisfied one year after hip arthroplasty, 2010–2011.

Source: Swedish Hip Arthroplasty Register

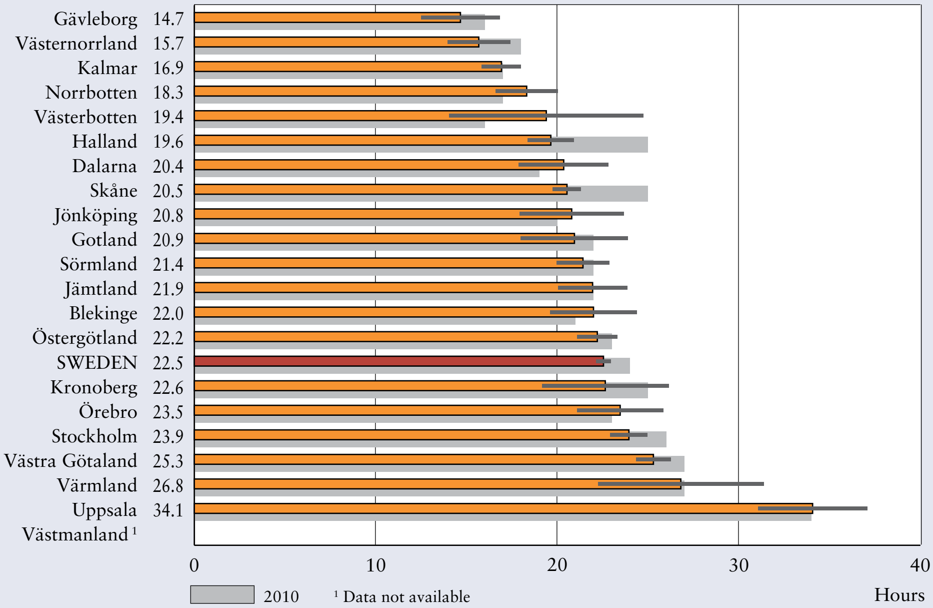


Figure 65 Waiting times for hip fracture surgery after arrival at hospital, 2011.

Source: National Hip Fracture Register

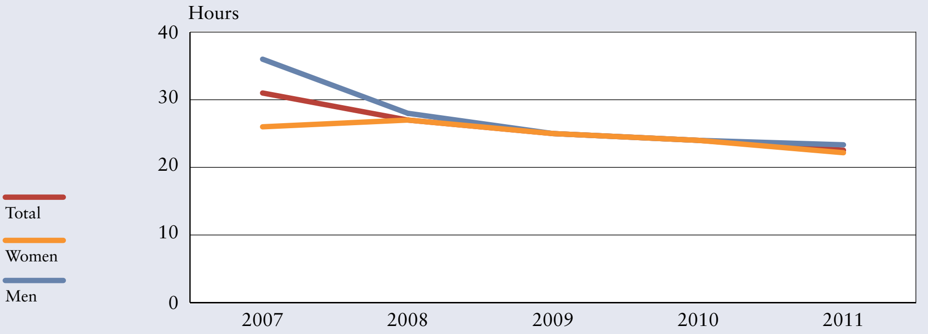


Figure 65 Sweden Waiting times for hip fracture surgery after arrival at hospital.

Source: National Hip Fracture Register

Thus waiting time, which is a manifestation of attitudes and resource utilisation, is a key process indicator. The period between arrival at hospital and commencement of surgery is also a common international quality measure. The source of data is the National Hip Fracture Register, RIKSHÖFT.

The comparison includes patients age 50 and older with non-pathological fracture. Fracture is unusual in younger patients and develops for other reasons. Due to a

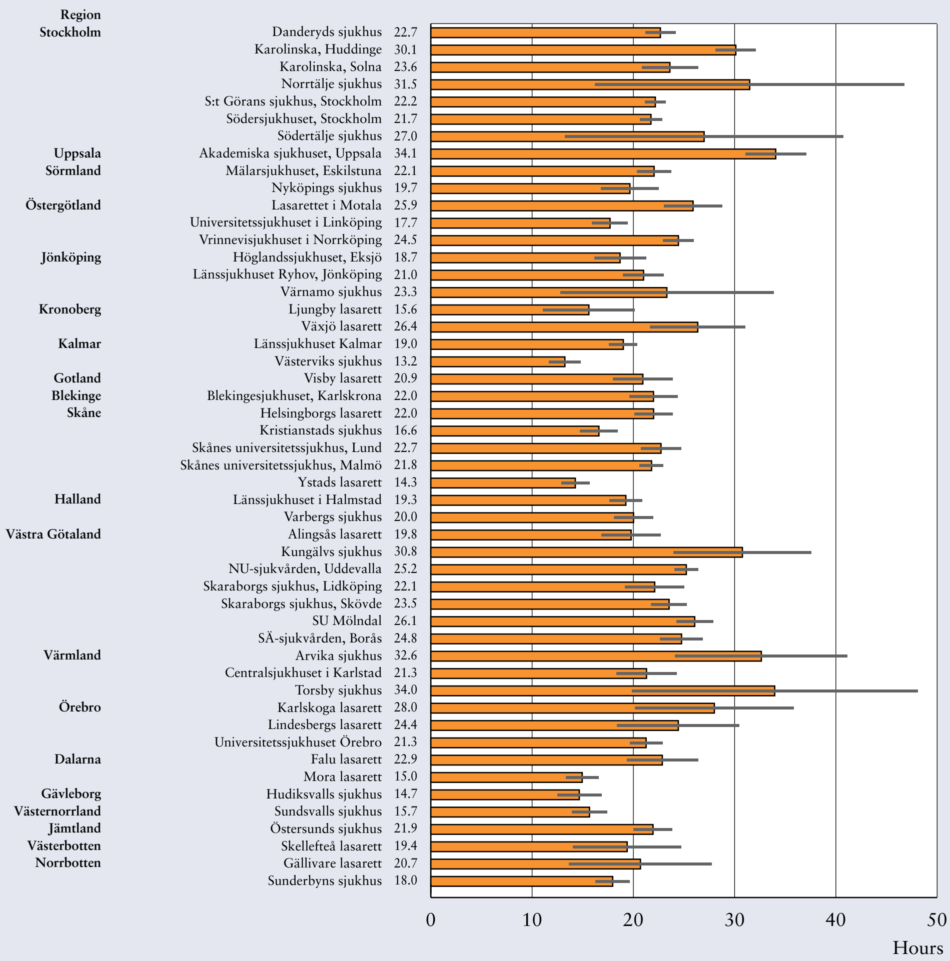


Figure 65
Hospitals

Waiting times for hip fracture surgery after arrival at hospital, 2011.

Source: National Hip Fracture Register

reorganisation of the Swedish orthopaedic care system that involves a breakdown into elective and acute services, only 53 hospitals currently perform hip fracture surgery. The hospital in Örnsköldsvik does not presently report to the Hip Fracture Register. Gävle and Västerås have started. Umeå has not yet furnished any data for 2011. Figure 65 is based on data for 14 704 hip fracture patients.

The average waiting time nationwide was 22.5 hours, ranging from 15 hours in the fastest county to 34 hours in the slowest. The Swedish National Board of Health and Welfare 2003 guidelines recommend that surgery be performed as soon as possible on the day of admission. Some counties average waiting times much longer than 24 hours, which can increase the period of hospitalisation and frequency of complications, given the delicacy of the condition.

The treatment model for dislocated fracture of the neck of the femur has radically altered in Sweden over the past ten years. A growing number of patients receive hip prostheses, placing an additional burden on orthopaedic surgery units. Sixty-four per cent of these patients in 2011 were operated with partial hip arthroplasty, while 14 per cent were total hip arthroplasty. Twenty-six per cent of all hip fracture patients were treated with partial hip arthroplasty and 6 per cent with total hip arthroplasty. Most counties are currently overhauling their routines and optimising their choice of surgical method. Arthroplasty is more resource-intensive than procedures that use screws or pins.

66 Percentage of Femur Fracture Patients Age 65 and Older Who Underwent Hip Arthroplasty

Cervical hip fracture, fracture of the neck of the femur and dislocation were once treated by means of osteosynthesis on a regular basis. The surgery is quick and easy to perform but is associated with a high frequency of complications – the fracture may slip or fail to heal, or the articular head may be lost due to a vascular lesion at the time of fracture.

Various studies have found that the insertion of a hip prosthesis leads to only 10 per cent failure, as opposed to 40–50 per cent after osteosynthesis. Arthroplasty also yields better outcomes for patients with dementia, a particularly vulnerable population.

As a result of these findings, the Swedish treatment model has evolved over the past decade. Between 65 and 75 per cent of cervical hip fracture patients should undergo hip arthroplasty. Hemiarthroplasty is normally used, i.e., the socket is not replaced. But 30–35 per cent of such fractures should still be treated with osteosynthesis, given that they are in younger patients or are not dislocated. Osteosynthesis offers advantages for younger patients. Considering its more limited nature, osteosynthesis may also be indicated when the patient has an acute, life-threatening disease.

Figure 66 shows the percentage of cervical hip fracture patients age 65 or older who were given hip arthroplasty in 2010–2011. The comparison was based on 14 300 cases in the National Patient Register. Age standardisation was performed and only first-time cases were included. Where the patient lived, not the location of the clinic, formed the basis of county reporting.

The nationwide percentage of femur fracture patients who received prostheses has risen from 17 to 63 per cent since 1999. The national average in 2011 was 64 per cent for women and 60 per cent for men. Few counties were over 65 per cent. In other words, potential for improvement remains despite the increases.

Treating 65–70 per cent of all cervical hip fracture patients with prostheses places heavy demands on clinics, including reorganisation of emergency services and requirements for surgical expertise. Another possible reason that some methods

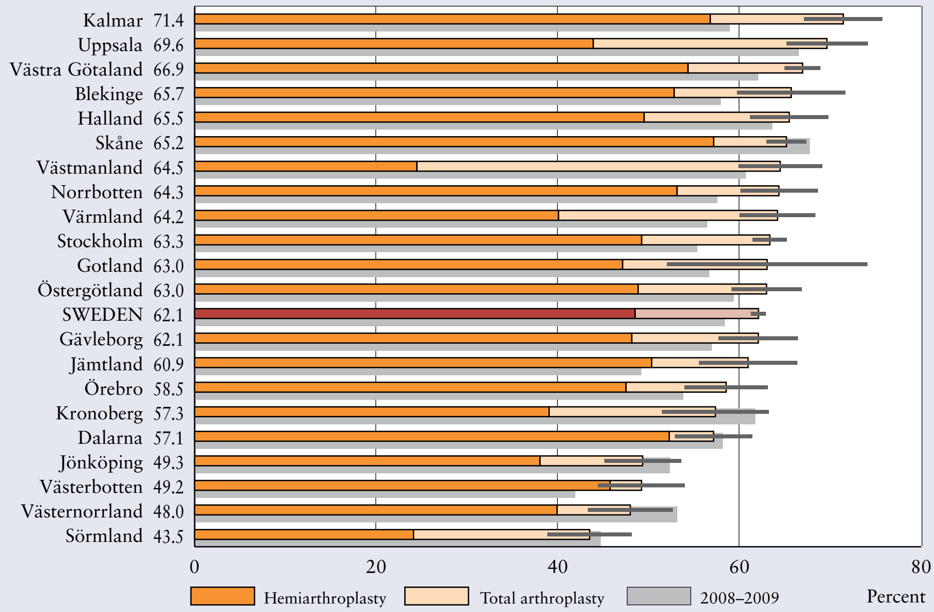


Figure 66 Percentage of femur fracture patients 65 years and older who underwent hip arthroplasty, 2010–2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

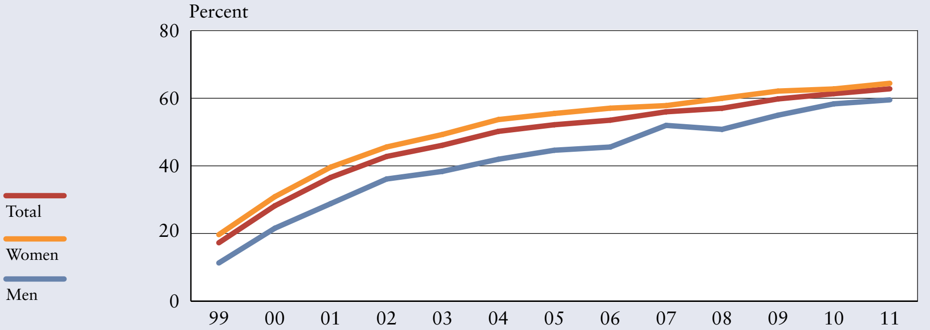


Figure 66 Sweden Percentage of femur fracture patients 65 years and older who underwent hip arthroplasty. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

and clinics are not fully employing the new treatment model is that they feel the costs are too high. Hip arthroplasty requires more time in the operating theatre and greater prosthesis costs, but the considerably lower frequency of reoperation makes up for these initial expenses. Primary hip arthroplasty also ensures less pain, easier rehabilitation and better health-related quality of life. Health economic analyses

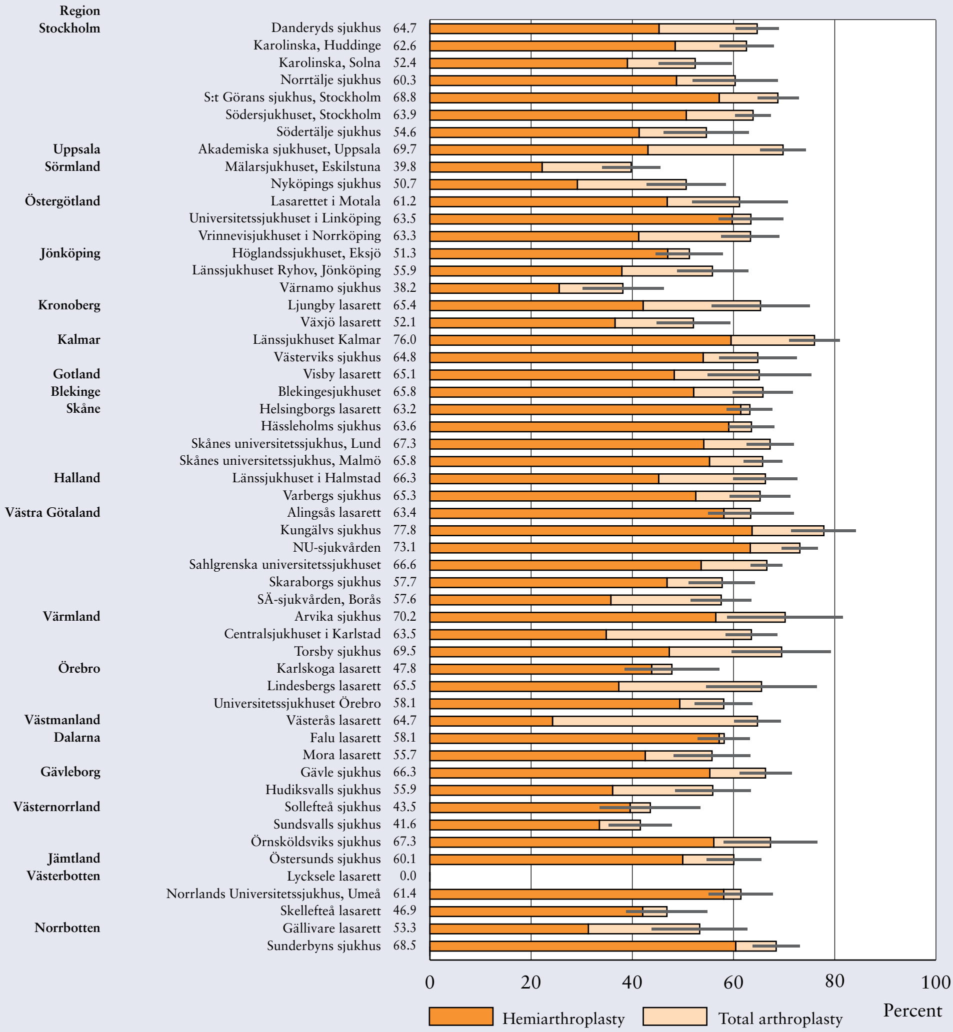


Figure 66
Hospitals

Percentage of femur fracture patients 65 years and older who underwent hip arthroplasty, 2010–2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

that consider these variables have found that the new treatment model considerably improves cost-effectiveness.

67 Hemiarthroplasty – Implant Survival

A decade ago partial hip arthroplasty was performed approximately 300 times a year in Sweden. Due to the growing number of hip fracture patients who undergo the procedure, the number has risen to over 4 500.

The database of the Swedish Hip Arthroplasty Register now includes hemiarthroplasty. The completeness of registration for the method was 96 per cent in 2011. The

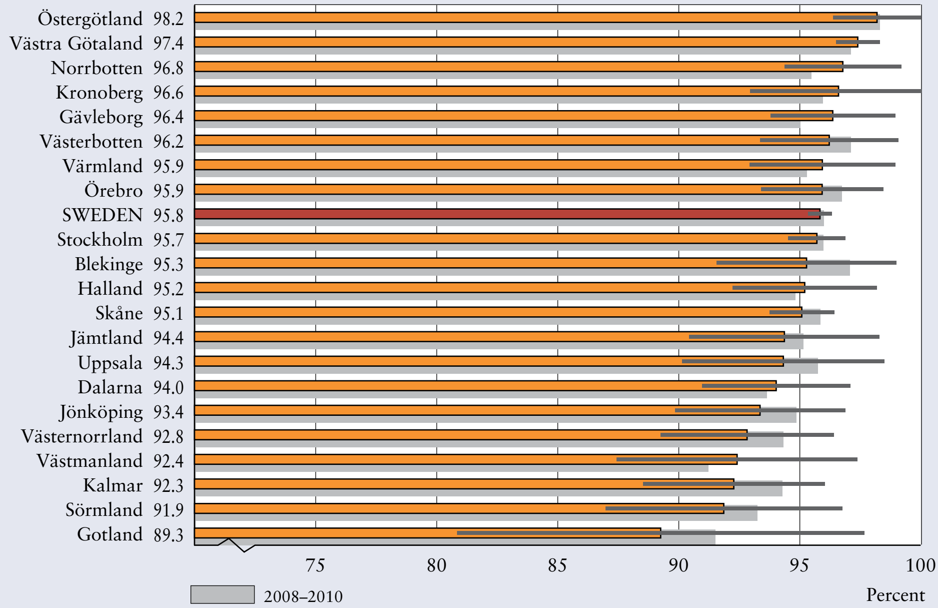


Figure 67 Estimated percentage of patients who were not reoperated on within one year after hemiarthroplasty for femur fracture, 2009–2011.

Source: Swedish Hip Arthroplasty Register

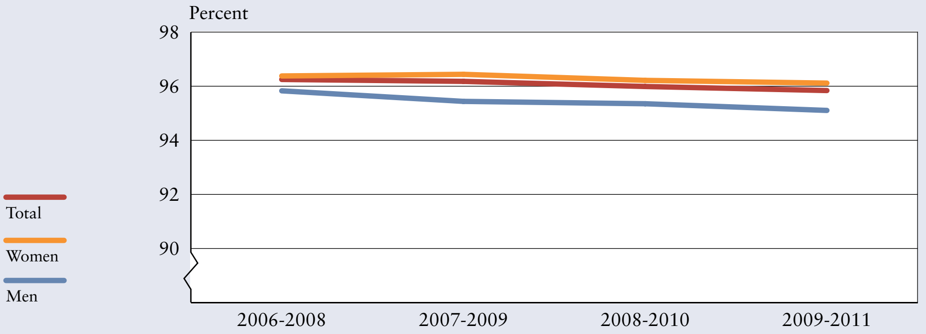


Figure 67 Sweden Estimated percentage of patients who were not reoperated on within one year after hemiarthroplasty for femur fracture.

Source: Swedish Hip Arthroplasty Register

patient population differs considerably from those who undergo total hip arthroplasty: average age of 85 as opposed to 68, considerably greater morbidity and higher one-year mortality.

Given the high risk of complications and 12–month mortality rate of up to 33 per cent, implant survival in accordance with Kaplan-Meier statistics is estimated after

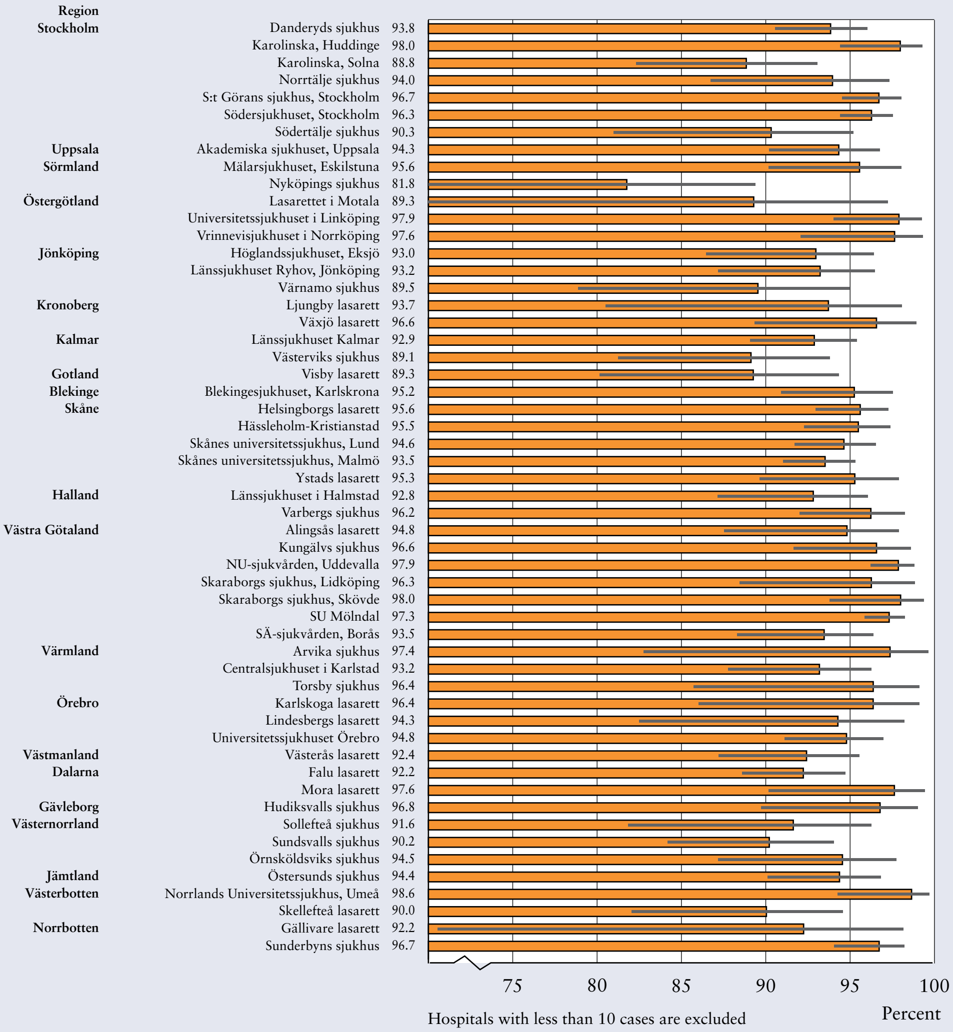


Figure 67
Hospitals

Estimated percentage of patients who were not reoperated on within one year after hemiarthroplasty for femur fracture, 2009–2011.

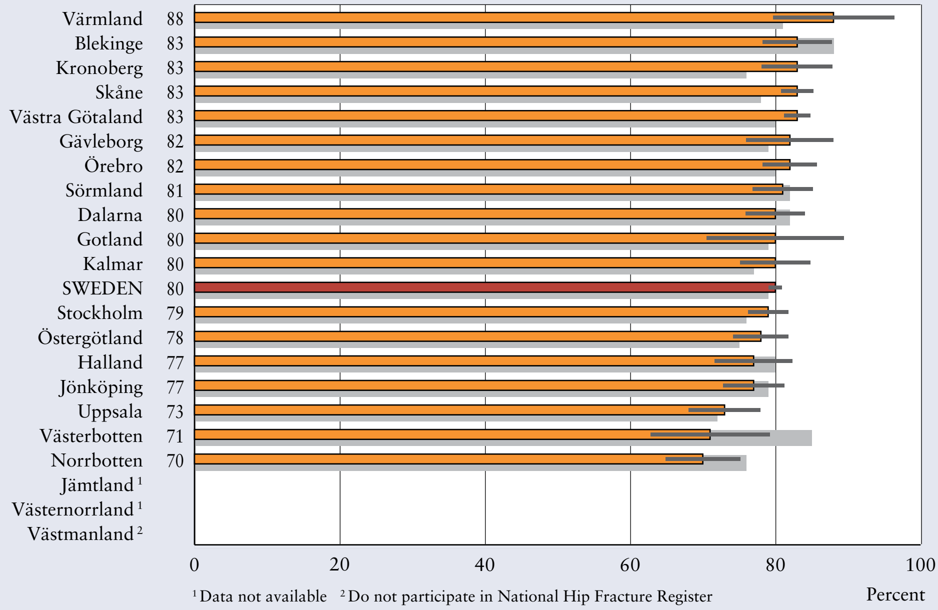
Source: Swedish Hip Arthroplasty Register

only one year. As opposed to the osteoarthritis patients who receive total arthroplasty, this indicator largely reflects the quality of the entire care process.

Implant survival was 96 per cent at the national level, ranging from 89.2 to 98.2 per cent among the various counties. As with total hip arthroplasty, women made out somewhat better than men. The various clinics reported successful outcomes from 75 per cent all the way to 99 per cent.

68 Return to Original Residence Following Hip Fracture Surgery

The percentage of patients who return to their original residence within four months after hip fracture surgery reflects all links in the treatment chain: emergen-



[1] Data not available [2] Do not participate in National Hip Fracture Register

Figure 68 Percentage of patients, age 50 and older, who returned to their original residence within four months after hip fracture surgery, 2010.

Source: National Hip Fracture Register

cy care at the time of surgery, physical activity at the ward and ongoing rehabilitation. The ability of a patient to return to their previous residence is normally a sign that they have recovered most of their pre-fracture functioning. While sporadic rehabilitation resources may initially limit a patient's options, the results generally stabilise within four months.

The indicator shows the percentage of non-pathological fracture patients age 50 and older who returned to their original residence within four months. The comparison is based on the 7 560 (out of 14 704) patients for whom the National Hip Fracture Register, RIKSHÖFT, contained four-month follow-up data in 2011. Patients who died before four months had passed are excluded.

Eighty per cent of patients nationwide returned to their original residence within four months – the individual counties ranged from 70 to 88 per cent. Apart from acute interventions and subsequent rehabilitation, outcomes may have been affected by municipal policies when it comes to offering assisted living facilities or home help services.

69 Drugs to Prevent Post-fracture Osteoporosis

Osteoporosis causes the bones to lose some of their strength. As a result, fractures can occur spontaneously or due to low-energy trauma, such as falls on the same level

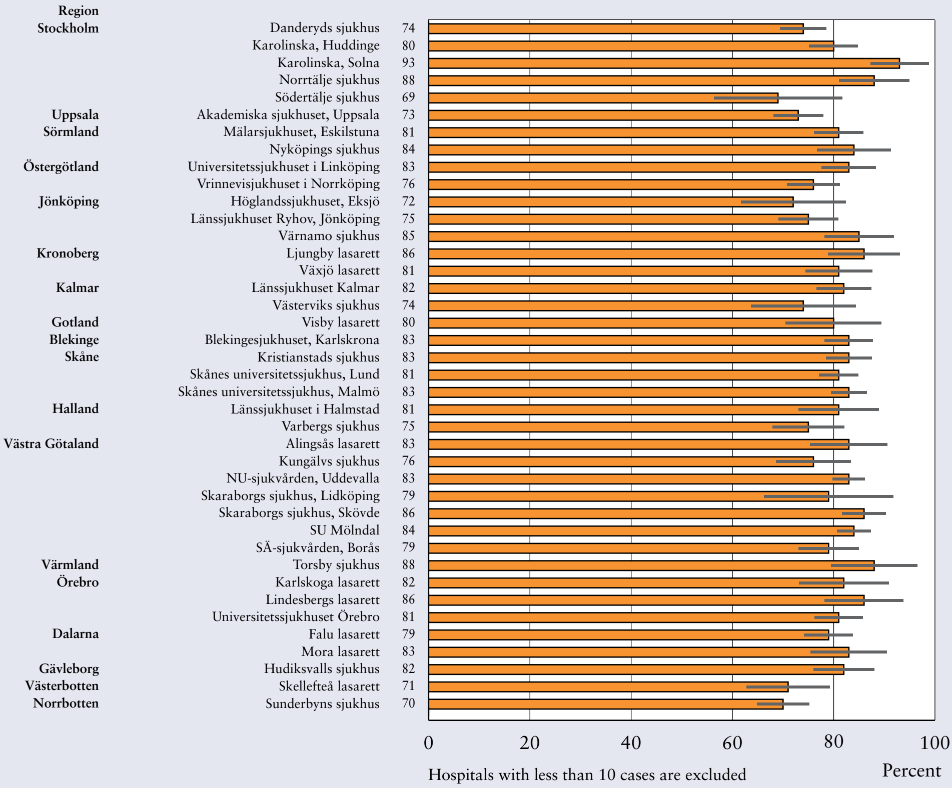


Figure 68
Hospitals

Percentage of patients, age 50 and older, who returned to their original residence within four months after hip fracture surgery, 2010.

Source: National Hip Fracture Register

(slips and trips). Among the common conditions associated with osteoporosis are hip and pelvic fractures, collapsed vertebrae in the breast and lumbar region, certain knee fractures, and fractures of the upper arm (shoulder) and wrist.

Osteoporosis is uncommon before age 50, but the frequency increases rapidly after that point. Most patients are women. More than 30 per cent of 70-year-old women have osteoporosis. Approximately 25 per cent of 65–70 year-old women have had a fracture. They run a greatly elevated risk of having another fracture. Osteoporosis is both underdiagnosed and undertreated.

Therapy with drugs that retard progression of the condition is indicated for many patients. The Swedish Council on Technology Assessment in Health Care (SBU) and the Medical Products Agency have repeatedly found in recent years that drug therapy for elderly with osteoporosis and fractures is well documented and reduces the risk of additional incidents. Thus, it is important to study whether osteoporosis is diagnosed and treated after elderly women receive care for a fracture.

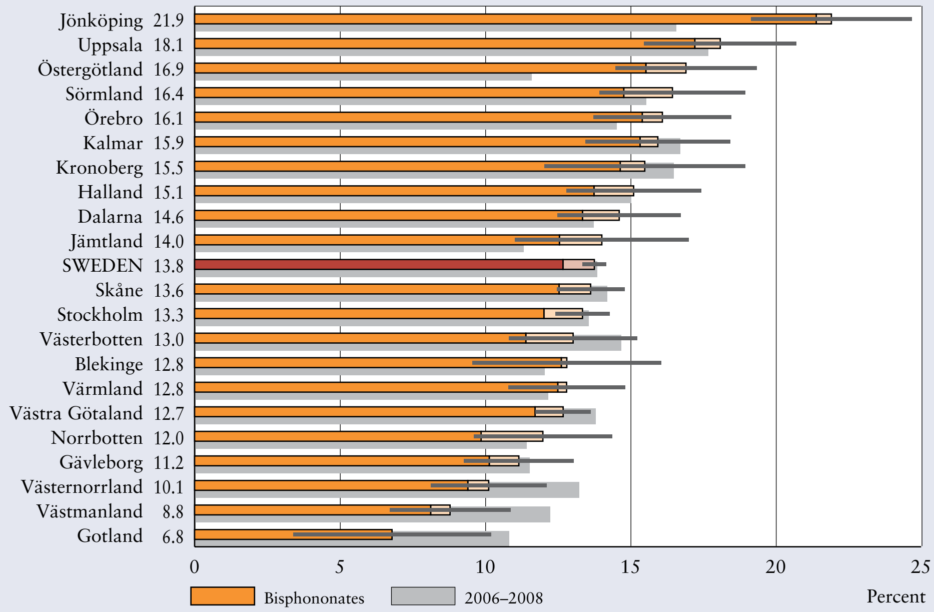


Figure 69
Women

Percentage of women age 50 and older with fractures who received osteoporosis drugs within 6–12 months, January 2009 – June 2011. Age-standardised.

Source: National Patient Register and the Prescribed Drug Register, National Board of Health and Welfare

Data from the National Patient Register and Prescribed Drug Register were used in order to study whether women with fractures received preventive therapy with bisphosphonates or hormones. The follow-up covered 26 800 patients age 50 and older who had been hospitalised for a selection of fractures from January 2009 to June 2011. The prescriptions that they picked up 6–12 months after discharge from hospital were examined.

Figure 69 shows that fewer than 14 per cent of the patients nationwide had been treated. Approximately 12.7 per cent were given bisphosphonates. The various counties ranged from 7 to 22 per cent, suggesting that not all care providers and county councils were equally prepared to absorb and apply the guidelines. The Prescribed Drug Register does not include medications administered by hospitals. Whether a particular county prescribed or administers zoledronic acid or other bisphosphonates affected the results, though to a limited extent only.

Consistent with Medical Products Agency recommendations, fewer than 1 per cent of patients who received drug therapy were given hormones. Hormone therapy should be reserved for post-menopausal patients who are at high risk of fracture and do not tolerate or have contraindications for other drugs that have been approved to prevent osteoporosis.

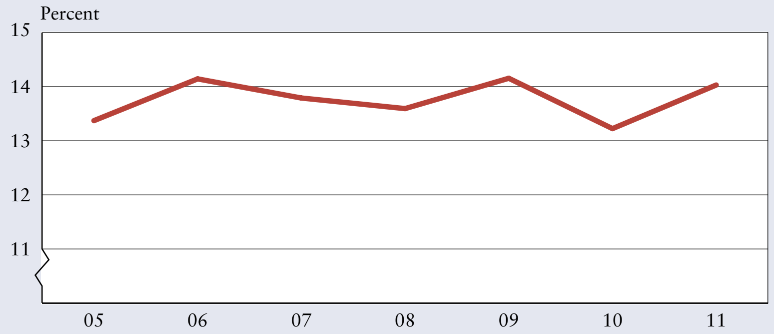


Figure 69
Sweden

Percentage of women age 50 and older with fractures who received osteoporosis drugs within 6–12 months. Age-standardised.

Source: National Patient Register and the Prescribed Drug Register, National Board of Health and Welfare

The Prescribed Drug Register does not show the indication for which various drugs have been selected. Some of the patients probably received hormones not to reduce the risk of fracture but to alleviate symptoms of menopause. If true, the hypothesis would strengthen the case that drugs for the prevention of osteoporosis are generally underprescribed.

While the Swedish National Board of Health and Welfare has not yet issued any recommendations, most scientific studies have concluded that 60–70 of patients should receive some kind of therapy to prevent osteoporosis. In other words, the indicator reflects major potential for improvement throughout the country.

70 Patient-reported Improvement after Spinal Stenosis Surgery

Spinal stenosis is the most common indication for low back surgery in Sweden. Approximately 4 000 patients undergo surgery every year. The average age for onset of the condition is 70, and the most common symptoms are leg pain and weakness, making it difficult to walk. The mechanism of the condition involves narrowing of the spinal canal, which exerts pressure on the nerves leading to the legs.

The initial recommendation is often to wait and see if the symptoms get better. Stenosis rarely exhibits dramatic progress but may produce symptoms that gradually grow in intensity. Investigation with MRI (Magnetic Resonance Imaging) can provide guidance as to the indication of surgery in cases of pronounced pain and walking difficulty.

The purpose of surgery is to eliminate pressure on the nerves in order to alleviate the symptoms. The average patient has experienced problems associated with the stenosis for approximately three years. Surgery is performed on an inpatient basis and the patient stays in the hospital approximately 4-5 days. While sick leave is not a significant economic issue given the age of most patients, the frequency of func-

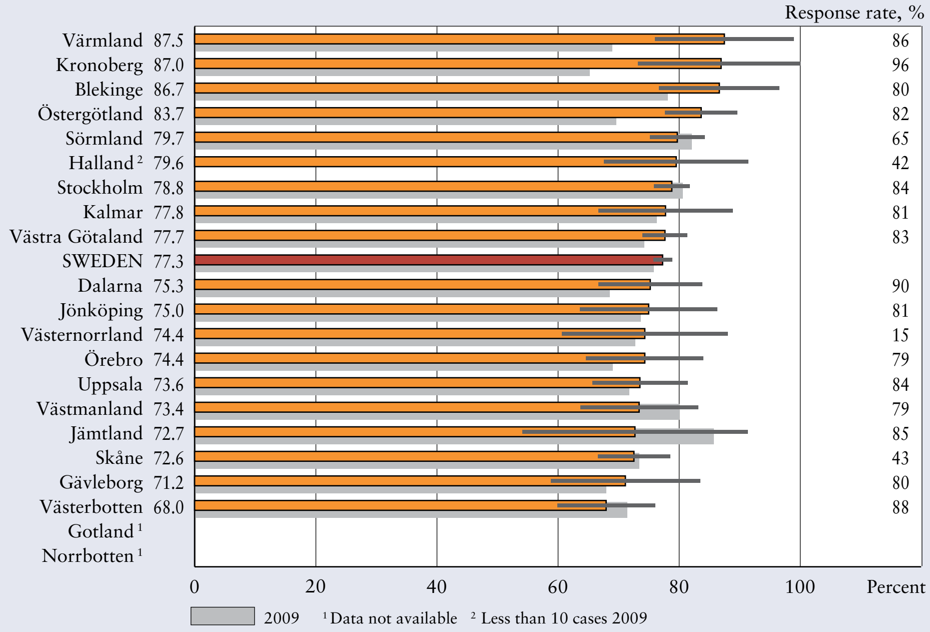


Figure 70 Percentage of patients who reported that the pain in their legs had disappeared completely or was greatly improved one year after spinal stenosis surgery, 2011.

Source: SWESPINE – The National Swedish Register For Lumbar Spine Surgery

tional impairment demands costly interventions by both family members and the healthcare system.

Patient reported change with regard to leg pain and walking range one year after the operation is used to evaluate the results, and the current report presents data on changes (the indicator) with respect to leg pain. We refer to the annual report from the Swedish Spine Register, Swespine, (www.swespine.se), and http://www.4s.nu/pdf/Report_2012_swespine_englishversion.pdf for information about changes in walking range and other functions.

The indicator shows the percentage of patients who reported that the leg pain had disappeared or become much better. The comparison is based on more than 2 700 patients who underwent surgery in 2010 and were followed up on through 2011. Thirty-seven of the forty clinics that performed the procedure in Sweden delivered data to Swespine, which data is used in the current report. A cross check with the National Patient Register, as well as the list of operations kept by the various clinics, suggest that approximately 80 per cent of all surgical procedures performed for spinal stenosis was reported to the Register. The response rate at one-year follow-up was also around 80 per cent. The county breakdown was based on the location of the clinic rather than where the patient was living.

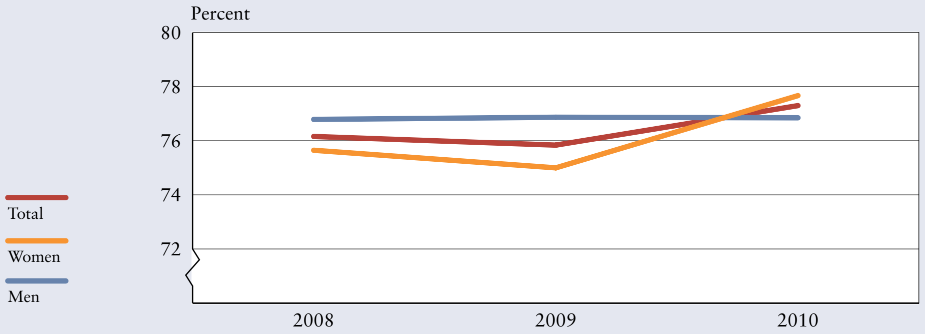
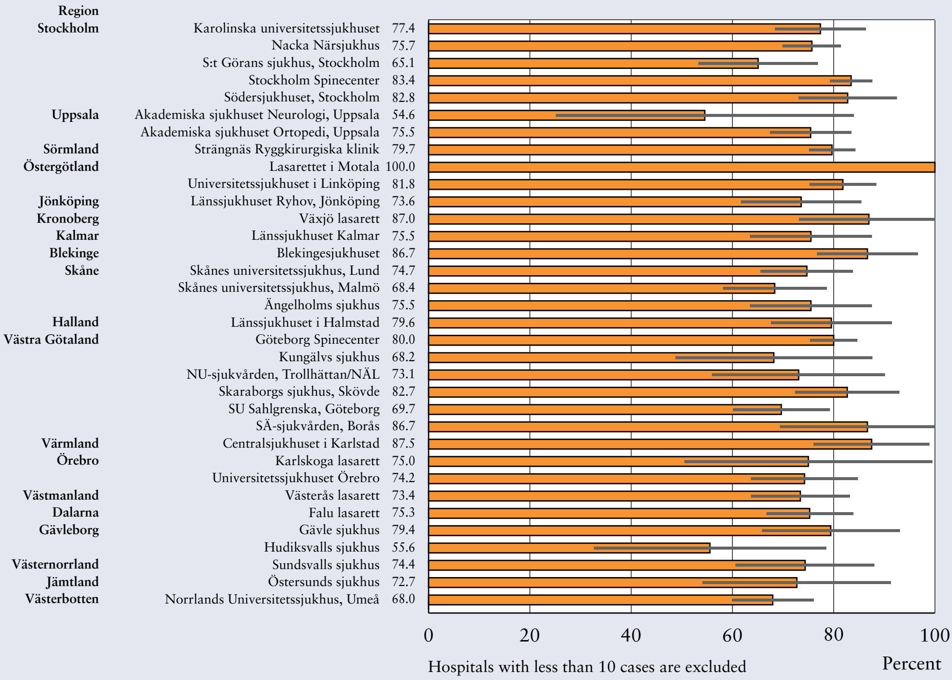


Figure 70
Sweden

Percentage of patients who reported that the pain in their legs had disappeared completely or was greatly improved one year after spinal stenosis surgery.

Source: SWESPINE – The National Swedish Register For Lumbar Spine Surgery



Hospitals with less than 10 cases are excluded

Figure 70
Hospitals

Percentage of patients who reported that the pain in their legs had disappeared completely or was greatly improved one year after spinal stenosis surgery, 2011.

Source: SWESPINE – The National Swedish Register For Lumbar Spine Surgery

Seventy-seven per cent of patients nationwide stated that the pain in their legs had gone away or was much better, varying from 68 to 87 per cent depending on the county. There were no gender differences. The remaining 23 per cent of the patients experienced pain at the same or a more intense level than they had prior to surgery.

The clinics differ somewhat when it comes to case mix. Patients with the kind of comorbidity that can affect treatment are operated on at hospitals with intensive care resources, given that they are in a better position to provide postoperative care in case of complications. A corollary of that trend is that such patients are less likely to undergo surgery at private clinics, and the comparisons between clinics may be affected accordingly.

Being able to identify the patients that are unlikely to improve as the result of surgery is a matter of considerable urgency, and data provided by the Spine Register offers key support to the on-going analytic effort.

71 Patient-reported Improvement after Surgery for Herniated Lumbar Disc

After spinal stenosis, herniated discs in the lumbar spine is the most common reason for spinal surgery, and approximately 2 500 operations are performed in Sweden every year. The most common symptom is sciatica, meaning pain in the leg/legs due to compression or irritation of one of the spinal nerve roots. Patients who experience sciatica suspected to be due to a herniated disc are usually advised to wait for 6–8 weeks and see if the condition gets better (natural course) which it usually does. If the symptoms persist, an MRI is performed and the possibility of surgery is discussed.

The purpose of surgery is to eliminate pressure on one or more nerves in order to alleviate the sciatica. According to register data, most patients have to wait almost a year for surgery despite the recommendation of faster diagnosis and assessment (operation within three months of persisting symptoms). Surgery is usually performed during a 1–3 day hospital stay, but some private clinics also provide day-care services. As with spinal stenosis, the procedure does nothing to reverse the age-related changes in the spinal column that are the basic cause of the condition. Women tend to be experiencing more pain and functional impairment than men by the time they are operated on. Herniated lumbar disc commonly leads to sick leave, as the median age is approximately 40 years.

The indicator shows the percentage of patients who reported one year after surgery that the pain in their legs had disappeared or become much better. The comparison is based on more than 1 300 patients who underwent surgery in 2010 and were followed up on through 2011. The county breakdown was based on the location of the clinic rather than where the patient was living.

More than 89 per cent of the patients nationwide, varying from 58 to 100 per cent depending on the county, stated that the pain had disappeared or was much better. Women and men experienced the same level of relief.

The encouraging results notwithstanding, variation among counties points to the urgency of better identifying patients who are unlikely to benefit from surgery.

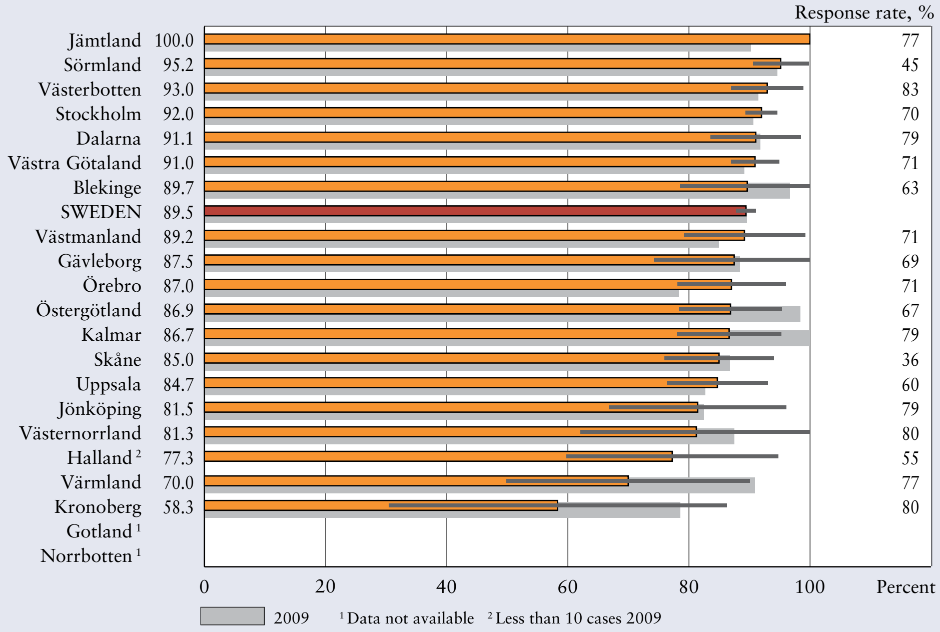


Figure 71

Percentage of patients who reported that the pain in their legs had disappeared completely or was greatly improved one year after spinal stenosis surgery, 2011.

SWESPINE – The National Swedish Register For Lumbar Spine Surgery

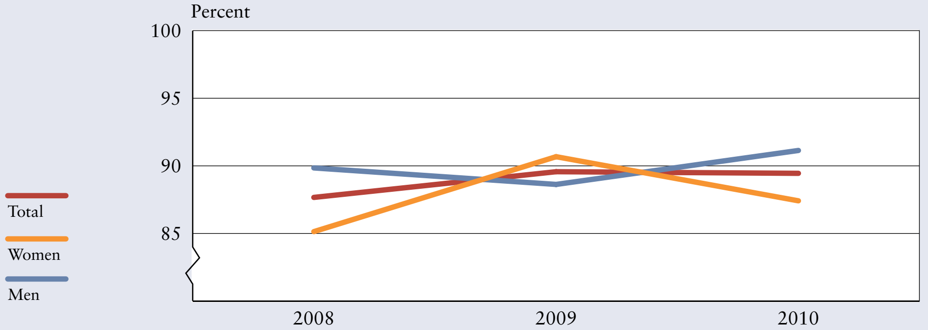
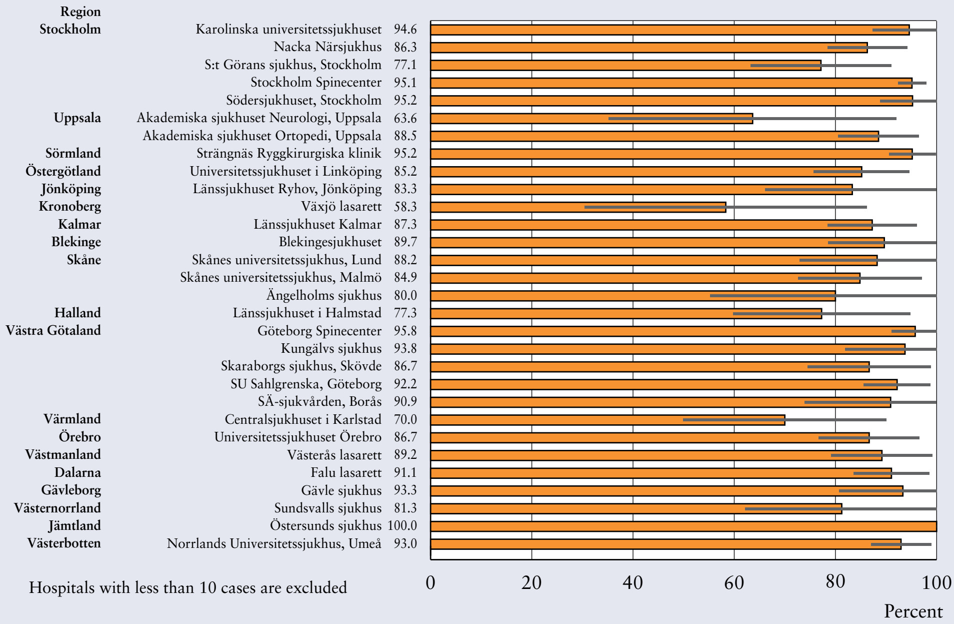


Figure 71
Sweden

Percentage of patients who reported that the pain in their legs had disappeared completely or was greatly improved one year after spinal stenosis surgery.

SWESPINE – The National Swedish Register For Lumbar Spine Surgery

The fact that no adjustment was made for differences in case mix from one clinic to another may have affected the results. Considering that patients who undergo surgery within three months after the onset of pain seem to report better results than others who have to wait longer, the processes – including case mix – involved in the decision to operate deserve further analysis. Clinics that perform relatively few operations tend to have poorer outcome, a phenomenon that will be analysed



Hospitals with less than 10 cases are excluded

Figure 71
Hospitals

Percentage of patients who reported that the pain in their legs had disappeared completely or was greatly improved one year after spinal stenosis surgery, 2011.

SWESPINE – The National Swedish Register For Lumbar Spine Surgery

in greater detail. Interestingly the number of spine operations (all spinal regions and procedures included) per capita is fairly low in Sweden compared with other countries, or just over 100/100 000 citizens

72 Knee Arthroscopy for Osteoarthritis or Degenerative Meniscus Lesion

While primarily a diagnostic measure when introduced in the 1970s, knee arthroscopy soon morphed into a treatment method. The technology was upgraded such that damaged meniscus tissue could be removed by means of the arthroscope. The current scientific consensus in both Sweden and abroad is that the use of knee arthroscopy to relieve the pain of osteoarthritis should be restrictive. A number of well-designed studies have unequivocally demonstrated that arthroscopy that includes removal of meniscus tissue does not relieve pain any more effectively than placebo. The changes to meniscus tissue, which are usually present and are often identified by an MRI as signal disturbances, are better understood as a feature of osteoarthritis than evidence of damage.

Mechanical locking (immobility) of the knee joint is the only, though uncommon, indication for arthroscopy due to degenerative meniscus lesion in patients older than 40. Immobility in the absence of locking is common but difficult to distinguish from osteoarthritis in a clinical setting.

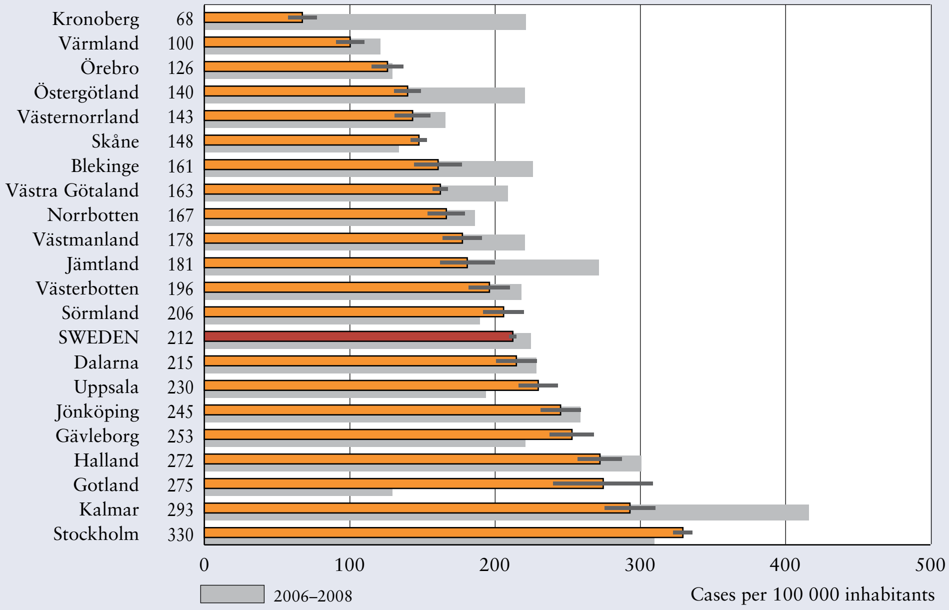


Figure 72 Knee arthroscopy in patients age 40 and older with osteoarthritis or degenerative meniscus lesion per 100 000 inhabitants, 2009–2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

Figure 72 shows the number of knee arthroscopic procedures per 100 000 inhabitants that were performed in 2009–2011, as compared to 2006–2008. The comparison includes only patients age 40 and older who had been diagnosed with osteoarthritis or degenerative meniscus lesion. The age-standardised data, which cover both inpatient and outpatient care, were taken from the National Patient Register. Regardless of where surgery was performed, it was assigned to the county in which the patient was living.

According to the National Patient Register approximately 9 300 arthroscopic procedures were performed on the age 40 and older population in 2011, a decrease of 670 from the year before.

The diagram shows a large variation between counties. The national average was 212 operations per 100 000 inhabitants, with a startling variation from 68 in one county to 330 in another. A total of 175 of every 100 000 women in the general population underwent knee arthroplasty, as opposed to 249 of every 100 000 men. People who had not gone beyond compulsory school were less likely than others to have the surgery.

The number of arthroscopic procedures rose steadily until 2008 but levelled off or dipped in subsequent years. Approximately 48 per cent of the operations performed in 2011 were based on a diagnosis of osteoarthritis. The percentage has declined

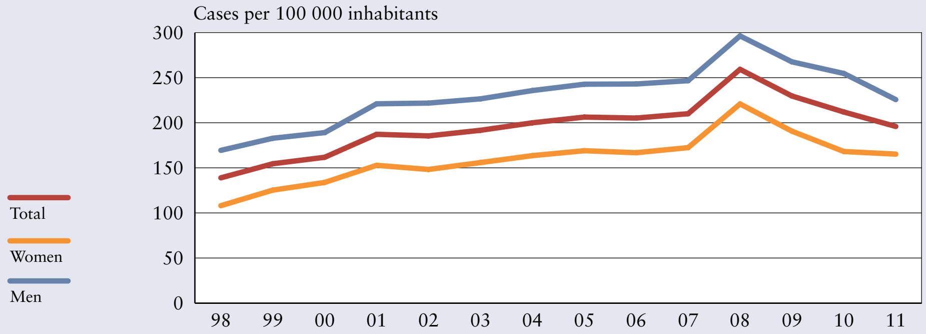


Figure 72
Sweden

Knee arthroscopy in patients age 40 and older with osteoarthritis or degenerative meniscus lesion per 100 000 inhabitants. Age-standardised.
Source: National Patient Register, National Board of Health and Welfare

significantly over time, while the percentage based on degenerative meniscus lesion has increased. More than 50 000 MRIs of the knee have been performed every year. The result may have been overdiagnosis of degenerative meniscus lesion, perhaps increasing the number of arthroscopic procedures for the past 10 years.

An analysis shows that approximately 4 800 of the 9 300 arthroscopic procedures in question were based on the primary diagnosis of osteoarthritis, which is inconsistent with the national musculoskeletal guidelines. The remaining 4 500 operations were performed on the basis of degenerative meniscus lesion. The number of patients diagnosed with degenerative meniscus lesion whose symptoms are primarily due to osteoarthritis remains an open question. A recently published Swedish study suggests that 30 per cent of these patients require arthroscopy after completion of physiotherapeutic rehabilitation.

One source of statistical uncertainty is underreporting to the National Patient Register, particularly with respect to private care providers and outpatient treatment. Thus, the national trend in recent years is difficult to interpret. The decrease in 2011 may be the result of poorer reporting. The number of procedures in counties with large private arthroscopic units may have been underestimated. Underreporting by public clinics is most likely when it comes to outpatient care.

73 Revision Operations after Anterior Cruciate Ligament Surgery (ACL)

Anterior cruciate ligament injury is a serious condition that often prevents young people from performing heavy labour or engaging in strenuous exercise in the absence of proper treatment. The incidence of the ACL injuries is unknown. Recent Swedish studies suggest 80 cases per 100 000 inhabitants (approximately 7 200 people), somewhat higher than previous assessments. For one reason or another, almost half of the people with anterior cruciate ligament injury never undergo surgery.

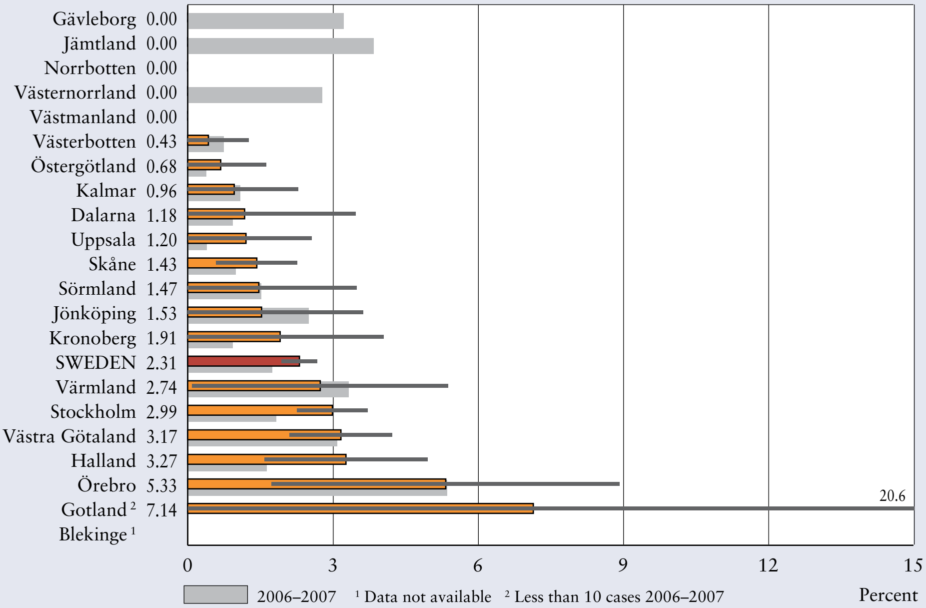


Figure 73 Percentage of revision operations after anterior cruciate ligament surgery, 2008–2009.

Source: Swedish National ACL Register

Regardless of what kind of treatment patients receive at first, studies have found that approximately 50 per cent of them show radiological signs of osteoarthritis of the knee within 10–years after the initial injury. Recent studies have concluded that reoperation is required within several years approximately 20 per cent of the time due to complications, primarily degenerative meniscus lesion, cartilage damage, immobility or failure of the reconstructed cruciate ligament. Revision surgery is likely to produce poorer outcomes than the initial reconstruction. Short-term success has been reported after the initial reconstruction, but only a few studies have had a long follow-up period or compared surgical outcomes with another treatment method in accordance with criteria for randomised clinical studies.

The procedure, which takes about 75 minutes, can be performed as day-case surgery. According to data available from the Case Costing Database, approximately SEK 25 000 in healthcare resources are involved. Six months of physiotherapeutic rehabilitation 2–3 times a week is also required.

The indicator shows the percentage of patients who underwent revision surgery within two years after an initial anterior cruciate ligament reconstruction. Failure of the initial reconstruction to achieve the intended outcome may be due to inferior technique, poor healing conditions or a new accident. Many patients with new cruciate ligament damage are not offered, or choose not to have, a revision operation.

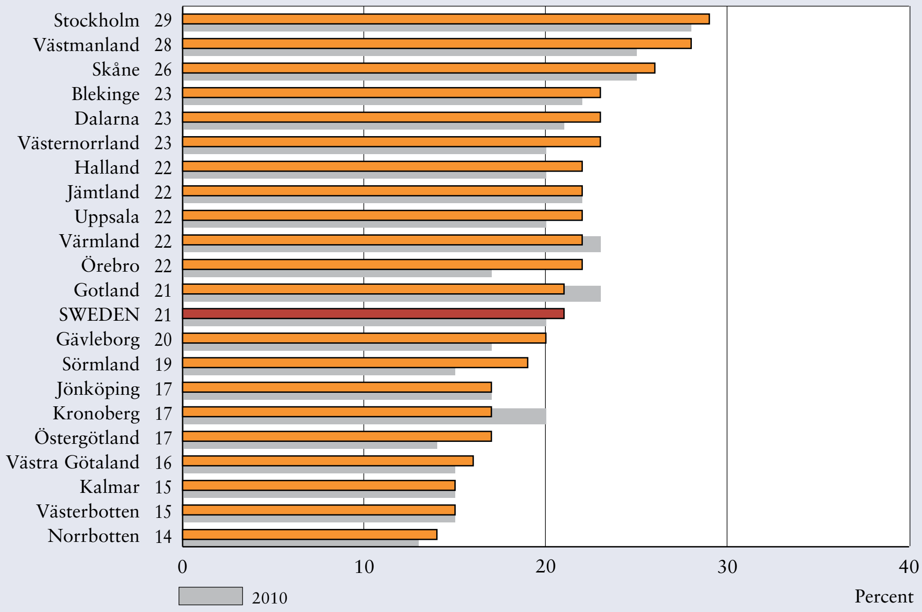


Figure 74 Rheumatoid arthritis – percentage of patients age 18 and older treated with biologic drugs, 1 January 2011.

Source: Swedish Rheumatology Quality Register

The comparison is based on 6 400 patients who underwent surgery in 2008–2009 and were entered in the Swedish National ACL Register. According to the register, it contains approximately 90 per cent of all operations. No patients are excluded and no adjustment is made for the severity of the injury.

The proportion of replacement surgery among both women and men was 2.3 per cent at the national level, ranging from 0.9 to 3.7 per cent among the various counties. The differences between counties may have been due either to the quality of surgical technique and subsequent rehabilitation or to the particular indications for which the procedure was performed. If a clinic or county tends to operate on more severe cases, its outcomes are likely to be poorer.

74 Biologic Drugs for Rheumatoid Arthritis

Biologic drugs, which are administered either as self-injections or intravenous infusions at a rheumatology unit, affect the immune system directly. Because full recovery from chronic inflammatory disease is possible, it is important that these drugs be prescribed to all patients who need them. The medications are associated, however, with risks for significant adverse effects and the drugs cost SEK 70 000–150 000 per year for a single patient. Thus, it is important that patients avoid biologic drugs if they respond well to other types of anti-rheumatic therapy.

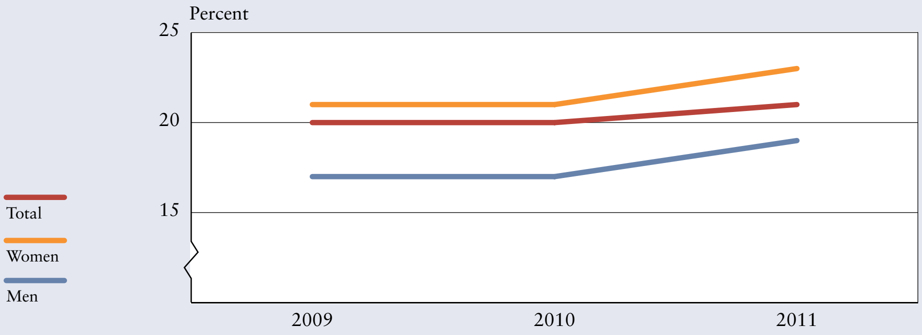


Figure 74
Sweden

Rheumatoid arthritis – percentage of patients age 18 and older treated with biologic drugs.
Source: Swedish Rheumatology Quality Register

With the goal of improving public health, the indicator's first task is to survey the scope of biologic therapy in the various Swedish counties. The indicator reflects the percentage of patients who are taking biologic drugs for chronic rheumatoid arthritis. The sources of data are the Swedish Rheumatology Quality Register, as well as the Prescribed Drug register of the Swedish National Board of Health and Welfare.

Given that biologic drugs are not fully reported to other national registers, the completeness of the Rheumatology Quality Register in this regard cannot be calculated with exactitude. Nevertheless, the Rheumatology Quality Register was compared with the Prescribed Drug Register with respect to two of the prescription biologic drugs entered in the latter register for 2006–2009. Based on the Prescribed Drug Register, the Rheumatology Quality Register had a completeness of registration of approximately 90 per cent. Age, gender and educational variables were the same regardless of whether or not patients had been entered in the Rheumatology Quality Register. Thus, the missing data are unlikely to differ much from those included in the Rheumatology Quality Register, which also contains biologic drugs administered as intravenous drip rather than on a prescription basis.

The estimate of the number of patients receiving biologic drugs was based on a cross-check between the Rheumatology Quality Register on the one hand and the Prescribed Drug Register and National Patient Register of the Swedish National Board of Health and Welfare on the other hand. All patients who had seen a doctor for the diagnosis of rheumatoid arthritis at least twice, including once in 2007–2010, were classified as having the condition at the end of 2010. The idea was to identify patients with chronic rheumatoid arthritis that currently required treatment.

Data reflecting biologic therapy for these patients were obtained from the Rheumatology Quality Register and Prescribed Drug Register. The goal of this indicator is to estimate the percentage of patients with rheumatoid arthritis who were being clinically treated and who received biologic therapy at a particular year's end (31 December). The definitions were adapted to that purpose. Thus, the estimate of the number of patients per county differs from the number of people who had ever been diagnosed with the condition.

The percentage of patients who were receiving biologic therapy ranged from 14 to 29 per cent depending on the county. Considering that the participation rates for the two drugs prescribed for rheumatoid arthritis were high in Stockholm, Skåne and Västra Götaland – the three most populous counties – the considerable difference reported between them (16–29 per cent) is presumably accurate.

Consistent with current scientific studies, 23 per cent of women and 19 per cent of men nationwide were taking biologic drugs.

The ultimate goal of the Rheumatology Quality Register is to promote steady improvements in public health. According to Swedish National Board of Health and Welfare registers, 90 per cent of patients nationwide with rheumatoid arthritis were receiving immunosuppressive therapy. This indicator shows that 21 per cent of all patients with the condition were being given biologic therapy.

The Rheumatology Quality Register is the best place to look for detecting health outcome differences between the various types of therapy. Most patients in the register at this point are taking biologic drugs, with the others receiving other types of anti-rheumatic therapy. An effort is under way to increase the participation rate such that the latter population is more fully included, which will facilitate comparisons between patients on the basis of the therapy that they are receiving.

75 Effect after Commencement of Biologic Drug Therapy

Biologic drugs are prescribed in accordance with national guidelines when other anti-rheumatic therapy fails and the patient has a high disease activity score (DAS28) in the Swedish Rheumatology Register. The score is based on four variables: the number of swollen or tender joints (28), erythrocyte sedimentation rate and patient-reported health. DAS28 is based on an internationally agreed formula that is used in clinical drug trials, as well as in clinical practice to monitor disease activity.

Particularly when new drugs are approved and start to be prescribed on a routine basis, it becomes necessary to perform an overall assessment of the impact on various health variables. This indicator makes it clear that commencement of biologic therapy is followed by a definite improvement in disease activity.

In line with previous reports in this series, disease activity can be quantified as the average improvement for an entire patient population. This year's comparison looks instead at the percentage of patients who experienced improvement among all those who had started on their first biologic therapy. Improvement refers to either low activity (a DAS28 score of 2.6–3.2) or remission (a DAS28 score below 2.6).

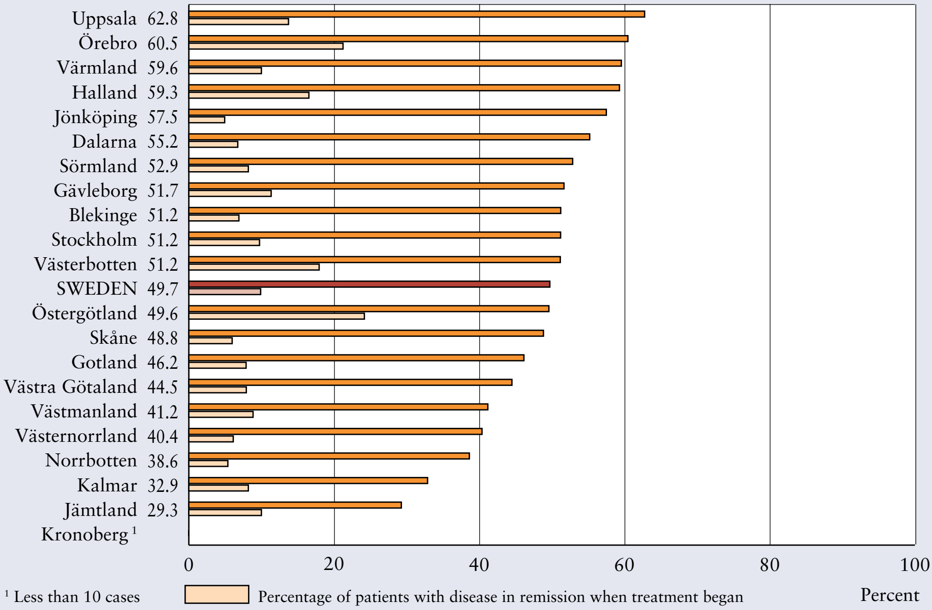


Figure 75 Percentage of rheumatoid arthritis patients with little or no disease activity 4–12 months after commencement of treatment with their first biologic drug, 2009–2011

Source: Swedish Rheumatology Quality Register

Once it has been established that previous treatment was insufficient and a biologic drug has been prescribed, the patient sees a specialist for an assessment of baseline disease activity (high, moderate, low or in full remission). The assessment is subsequently compared with the average observed at follow-up appointments during the next 4–12 months.

Fifty per cent of patients nationwide reached a point where disease activity was low or in full remission, with a variation between counties of 29 to 63 per cent. Forty-eight per cent of women and 56 per cent of men nationwide experienced improvement. Because rheumatoid arthritis primarily afflicts women, the data for much fewer men are associated with statistical uncertainty.

Figure 75 also includes a bar presenting the percentage of patients with little or no disease activity (DAS28 score below 3.2) at commencement of therapy. A reasonable assumption is that the lower the baseline activity, the better the prospects for success.

Expecting that all patients will experience full remission after initial biologic therapy would be unrealistic, particularly when previous anti-rheumatic measures have repeatedly failed. The conclusion is that the great majority of patients can count on definite improvement after initial therapy despite lack of success with a number of previous different traditional approaches. Improvements in DAS28 scores by the most successful counties should serve as a target for the rest of the country, provided that the health potential of the various patient populations is uniform in other respects.

Although a multifaceted yardstick of health, DAS28 is far from all-encompassing. Some patients with a relative low DAS28 score may badly need therapy, while others may have experienced a decided improvement although their score is still above 3.2. The comparative data in the diagram can hint at the relative outcomes of the various counties but does not present a complete picture of the situation.

76 Patient-reported Improvement after Commencement of Biologic Drug Therapy

Patient-reported health is particularly important during the commencement of treatment for rheumatoid arthritis and other chronic diseases. The Swedish Rheumatology Quality Register measures patient-reported health improvement during initial biologic drug therapy with a visual analogue scale (VAS). This indicator makes it clear that the commencement of biologic therapy is followed by a definite improvement in patient-reported health.

Biologic drugs, which are prescribed when other anti-rheumatic therapy fails, have been available in Sweden since 1999. Whenever brand new drugs or treatment methods are approved and introduced, patient-reported health provides vital information, particularly with respect to the impact on routine clinical practice as reflected in quality registers.

Once it has been established that previous treatment was insufficient and biologic drug therapy has commenced, patients report their health during an appointment with a specialist. The assessment is subsequently compared with the average observed at follow-up appointments during the next 4–12 months. Thus, the indicator

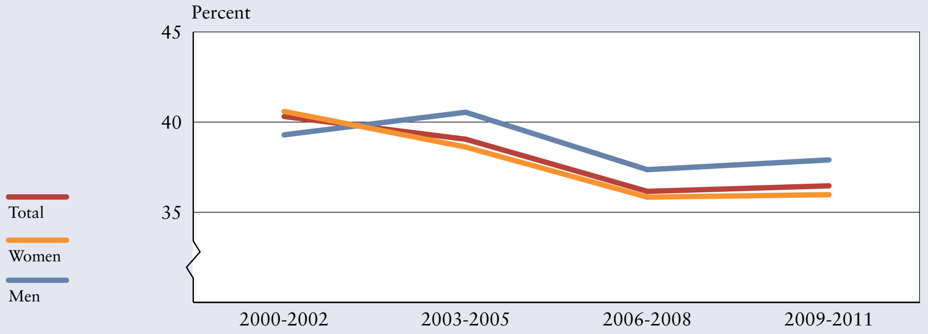


Figure 76
Sweden

Rheumatoid arthritis – patient reported improvement 4–12 months after commencement of treatment with biologic drugs. Measured as the change in the patient's global VAS.

Source: Swedish Rheumatology Quality Register

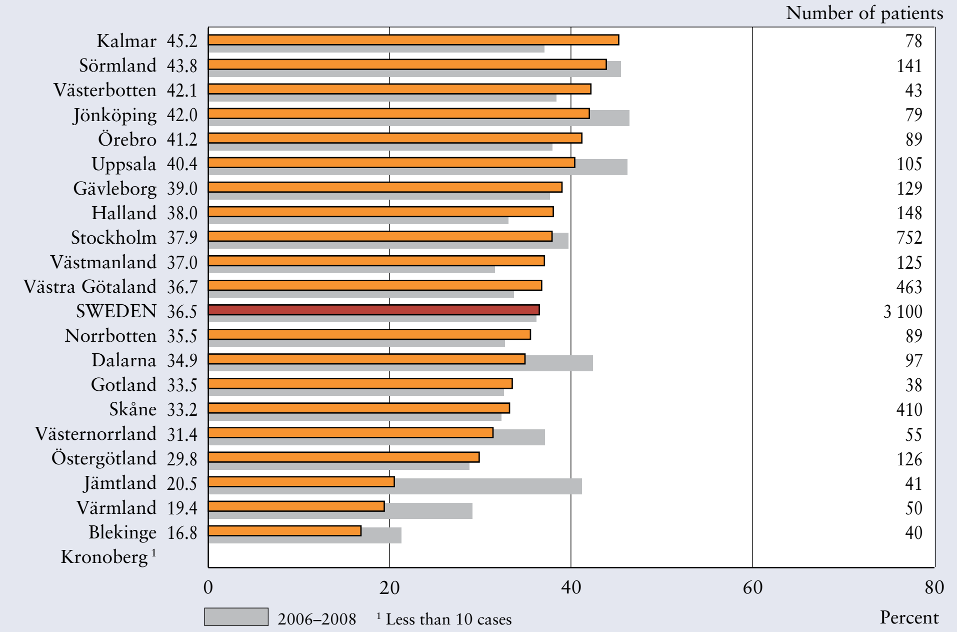


Figure 76 Rheumatoid arthritis – patient reported improvement 4–12 months after commencement of treatment with biologic drugs, 2009–2011. Measured as the change in the patient's global VAS.

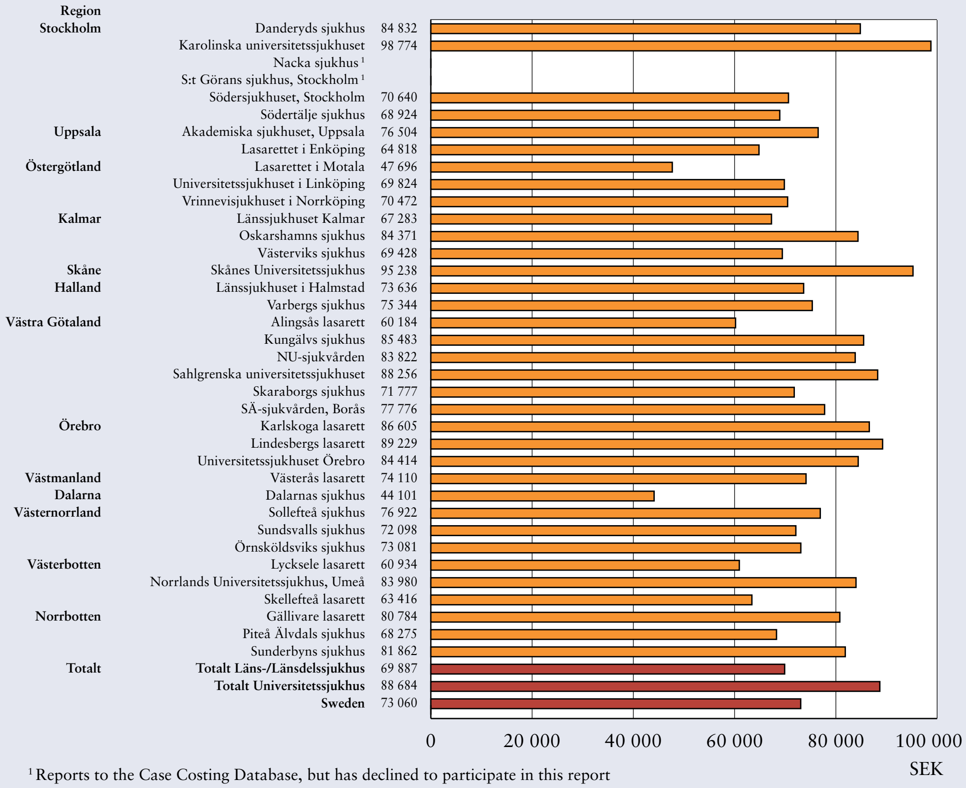
Source: Swedish Rheumatology Quality Register

shows the change in perceived health provided by the therapy. Any improvement is expressed as a percentage.

Expecting that all patients will experience full remission after initial biologic therapy would be unrealistic, particularly when previous anti-rheumatic treatments have failed. Considering that patients vary in terms of the degree of health they are satisfied with, no universal target can be set.

Thirty-six per cent of patients nationwide who started on biologic drugs in 2009–2011 reported an improvement, varying between 17 and 45 per cent from county to county. No significant differences between women (36 per cent) and men (38 per cent) appeared at the national level. The comparison was based on data for approximately 2 300 women and 800 men.

The indicator reveals that many patients can count on improving to the point that much of their experience of being ill will go away during initial biologic therapy. Improvement achieved by the most successful counties can serve as a target for the rest of the country, provided that the health potential of the various patient populations is uniform in other respects.



[1] Reports to the Case Costing Database, but has declined to participate in this report

Figure 77 Cost per inpatient care event for primary total hip arthroplasty, 2011.
Hosptals Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

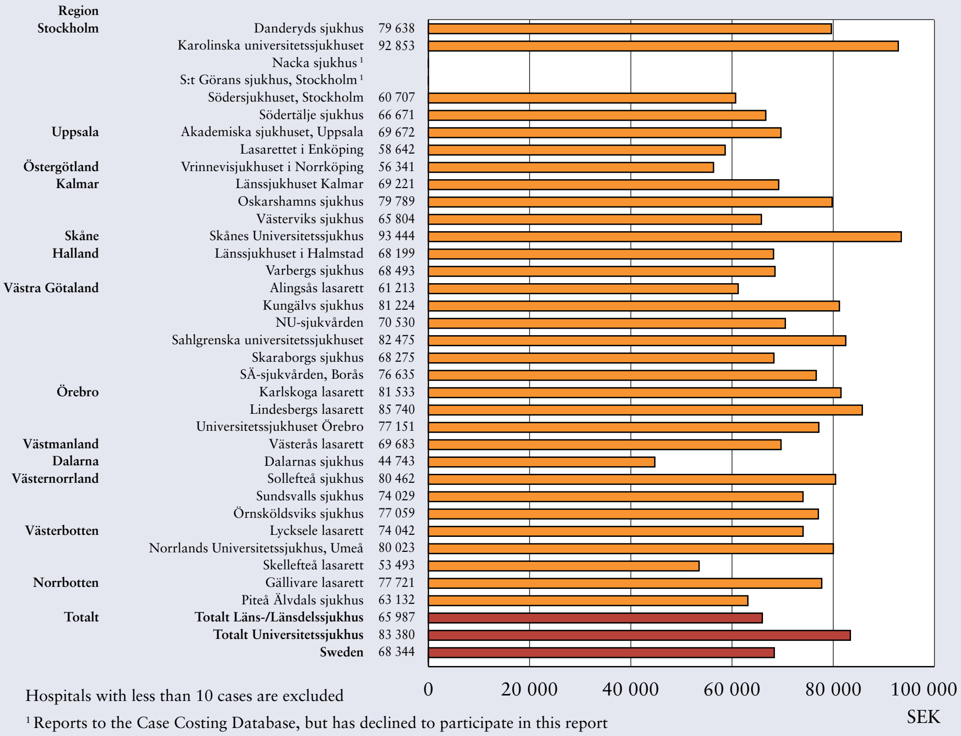
77–78 Cost Per Inpatient Care Event for Primary Total Hip and Knee Arthroplasty

Figures 77 and 78 show costs per inpatient care event for primary total hip and knee arthroplasty.

A total of 8 342, or more than half of all, hip arthroplasty procedures were reported to the Case Costing Database in 2011. All costs for individual care events or associated interventions were included. Costs for follow-up appointments or drug consumption in outpatient care were excluded. Rehabilitation at some hospitals was also excluded, as were outliers.

The cost averaged SEK 73 060 kronor (excluded outliers) in 2011, ranging anywhere from SEK 35 000 kronor all the way to SEK 100 000 depending on the hospital.

Almost 13 000 primary total knee arthroplasty procedures are performed every year. A total of 5 926 care events, almost half of all knee arthroplasty procedures in other words, were reported to the Case Costing Database in 2011. The average cost was



Hospitals with less than 10 cases are excluded

[1] Reports to the Case Costing Database, but has declined to participate in this report

Figure 78 Cost per inpatient care event for primary knee arthroplasty, 2011.
Hospitals Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

SEK 68 344, somewhat lower than for hip arthroplasty. Variations between counties for the two types of surgery were approximately the same.

The average period of hospitalisation for both hip and knee surgery was five days, ranging from three to nine days. The organisational structures of orthopaedic clinics affected the reported average period of hospitalisation. If a second clinic provided postoperative rehabilitation services, then reported cost and the average period of hospitalisation will be lower. In such cases, the actual cost will be higher than in the Case Costing Database. That kind of arrangement is common in Stockholm.

Case mix, general functional ability and morbidity profile also affected cost variations. A clinic may have had very short periods of care and thereby low costs because patients were selectively referred to it. Finally, costs reflect the amount of time spent in the operating theatre and the size of the overall hospital staff. Costs per care event were approximately SEK 17 000 higher at university hospitals than other hospitals.

Rules have been drawn up for the types of costs to be reported to the Case Costing Database, as well as how they are to be estimated. Nevertheless, differences may arise in these respects. and affect reported costs.

DIABETES CARE

Diabetes is a chronic condition that is associated with increased risk of other diseases. An estimated 450 000 Swedes have diabetes. Some 85–90 per cent of them have adult (type 2) diabetes. The rest have juvenile (type 1) diabetes. For most persons with diabetes, primary care constitutes their regular mode of contact with the healthcare system. Other patients, particularly those with type 1 diabetes, generally have contact with medical clinics at hospitals.

Among the potential complications of diabetes are myocardial infarction, angina pectoris, ischaemic stroke, hypertension, lower limb ischaemia and retinopathy. There is strong scientific evidence that diabetic complications can be delayed or prevented, preferably by broadly addressing the risk factors that correlate most strongly with their development. There are a number of well-established quality indicators, along with associated treatment goals, that reflect risk factors. Among them are blood pressure, cholesterol and long-term blood glucose (HbA1c) levels, as well as smoking and obesity.

Seven diabetes care indicators are presented. Six of them are based on data from the Swedish National Diabetes Register or the Quality Register for Children and Adolescents with Diabetes, which is part of it. One indicator proceeds from data in the National Patient Register of the Swedish National Board of Health and Welfare, which issued new national guidelines for diabetes care in 2010. An integral part of the effort was to develop quality indicators that could support systematic follow-up. The indicators presented here are fully consistent with the recommendations of the guidelines and the indicators included in the board's evaluation of diabetes care published in January 2012.

Three indicators concern treatment goals for blood glucose, blood pressure and lipid levels respectively in primary care, and one indicator concerns fulfilment of blood glucose goals among children and adolescents with diabetes. Two indicators are shown for persons with type 1 diabetes, cared for in hospital outpatients clinics and involve treatment goals for blood pressure and glucose levels. Another indicator covers amputations among people with diabetes.

The National Diabetes Register collects data about diabetes care from both medical and primary care clinics. The register estimates the national participation rate for 2011 at 85 per cent, with relatively wide variations between counties. The rate was very good at hospitals and has improved significantly in recent years when it comes to primary care. The diagrams show estimated participation rate by county. Whether reported results are representative of diabetes care in general is less certain when participation rates are low.

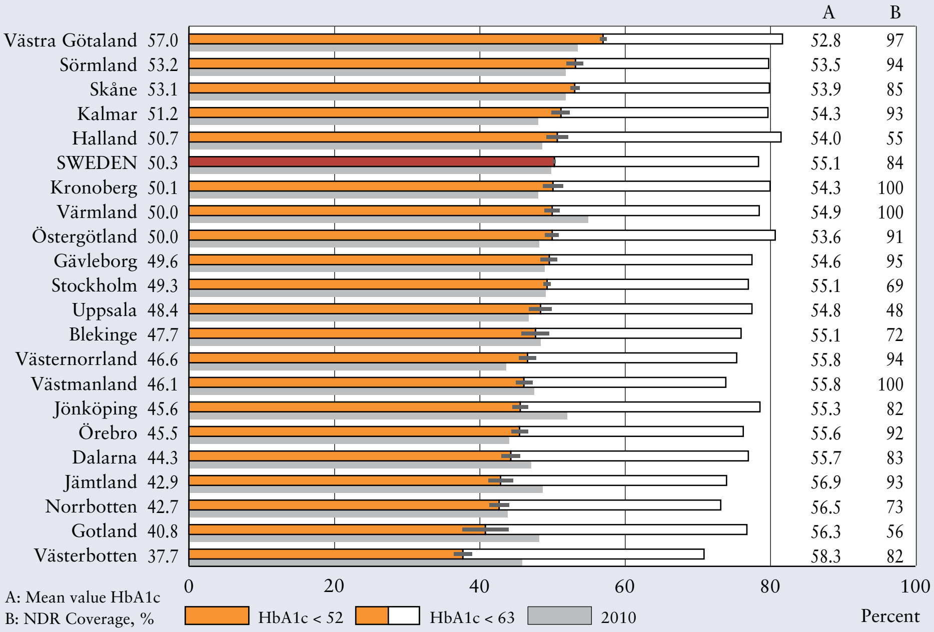


Figure 79 Percentage of persons with diabetes, younger than 80, in primary care who achieved the blood glucose goal (HbA1c < 52 mmol/mol), 2011.

Source: Swedish National Diabetes Register

79 Persons with Diabetes in Primary Care Who Achieve The Goal for Blood Glucose Levels

One goal of diabetes treatment is to maintain blood glucose at as normal a level as possible with only small increases after meals. Excessively low levels affect the patient's sense of wellbeing and may also be dangerous. Excessively high levels cause fatigue and thirst, as well as general malaise in the acute stage, not to mention long-term risks of complications. Persons with diabetes differ greatly in terms of both their need for medical treatment and their risk of developing complications. Thus, well-functioning screening, monitoring of risk factors and individualised treatment are required.

HbA1c level reflects long-term glucose control and strongly correlates with the risk of developing complications. The national guidelines target HbA1c below 52 mmol/mol but stress that treatment is to be adapted to the individual. The risk of frequent severe hypoglycaemic episodes, serious microvascular and macrovascular complications, comorbidity and shorter remaining life expectancy – all of which may be reasons for a high HbA1c level – must be taken into consideration. Few studies have analysed quality of life and other patient-reported outcome measures. All published recommendations emphasise the importance of ensuring that treatment does not reduce blood glucose to excessively low levels. Balancing blood glucose often poses a major challenge.

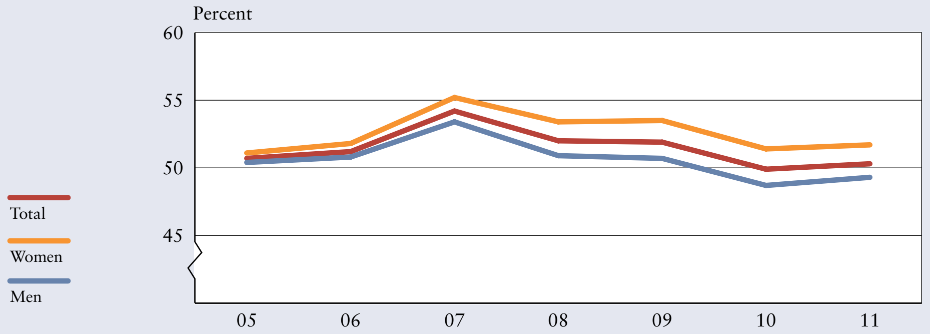


Figure 79
Sweden

Percentage of persons with diabetes, younger than 80, in primary care who achieved the blood glucose goal (HbA1c < 52 mmol/mol).

Source: Swedish National Diabetes Register

Figure 79 shows the percentage of patients whose average blood glucose level (HbA1c) was lower than the treatment goal of 52 mmol/mol – as well as lower than 63 mmol/mol (a reasonable threshold for the great majority of patients). The comparison includes all primary care patients younger than 80 who were reported to the National Diabetes Register (approximately 210 000 in 2011).

Approximately half of all patients nationwide had HbA1c levels equal to or lower than 52 mmol/mol. The variations among counties were modest. More women than men achieved the treatment goal for HbA1c in 2011. Seventy-eight per cent of patients nationwide were below 63 mmol/mol. It should also be kept in mind that 9 per cent of patients showed very poor glucose control, defined as HbA1c above 73 mmol/mol.

The results reported here suggest that some patients were not given satisfactory treatment, limited in many cases to dietary counselling. The new national guidelines underscore the importance of treating type 2 diabetes at an early stage.

According to data from the National Diabetes Register, the average HbA1c level for patients in primary care has not got any better in recent years. Improvements appear unlikely unless clinical practice is modified. Thus, outcomes should be analysed at the local level, leading to structured, intensive programmes to promote lifestyle changes, as well as more active drug therapy as needed.

80 Persons with Type 1 Diabetes Who Achieve the Goal for Blood Glucose Levels

Type 1 and type 2 diabetes do not differ with respect to either the importance of blood glucose control or the treatment goal set forth in the national guidelines. Thus, this indicator refers to the same variables as the preceding one but concerns the type 1 diabetes population instead. These patients, almost 33 000 of whom are included in the comparison, go primarily to outpatient clinics at hospital.

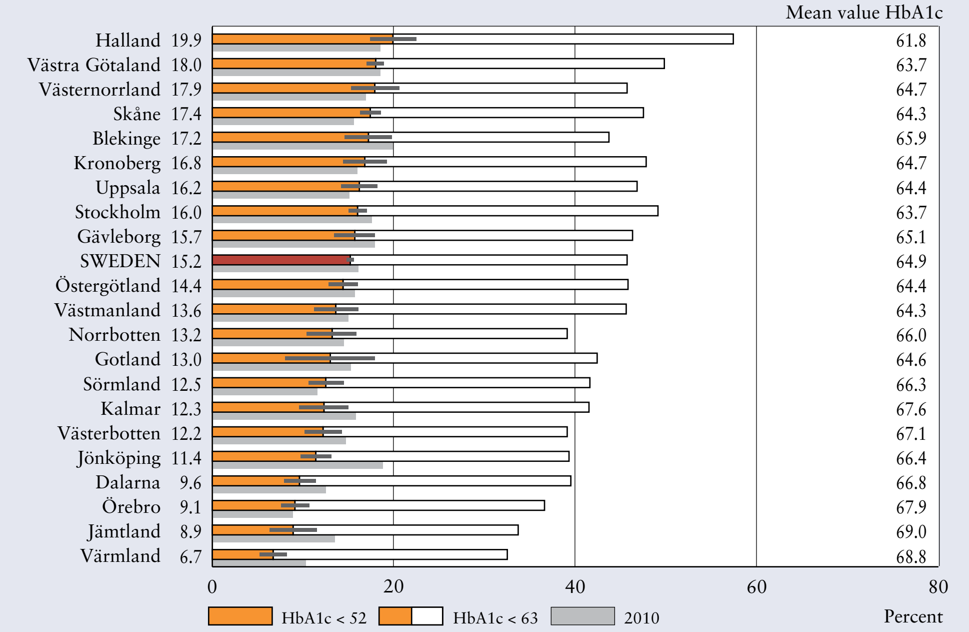


Figure 80 Percentage of persons with type 1 diabetes who achieved the blood glucose goal (HbA1c < 52 mmol/mol), 2011.

Source: Swedish National Diabetes Register

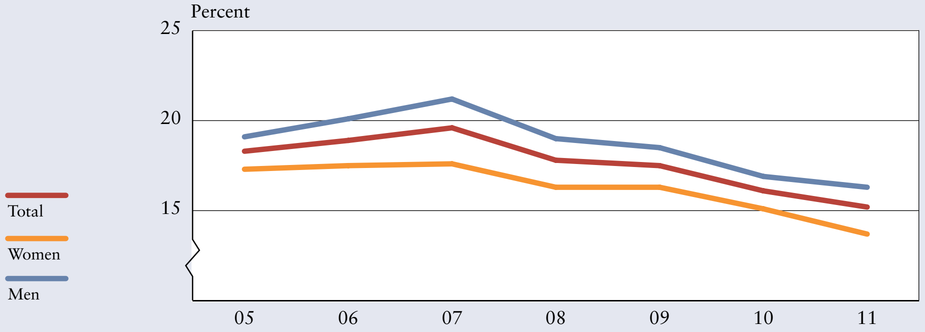


Figure 80 Sweden Percentage of persons with type 1 diabetes who achieved the blood glucose goal (HbA1c < 52 mmol/mol).

Source: Swedish National Diabetes Register

Only somewhat more than 15 per cent of patients nationwide reached the treatment goal of less than 52 mmol/mol, although the individual counties ranged from 7 to 20 per cent. Almost 61 per cent of patients were below the upper limit of 63 mmol/mol. No positive trend has been visible over time. The percentages vary more when comparing individual hospitals, but such differences should be interpreted with a grain of salt – measuring attainment of treatment goals generates consider-

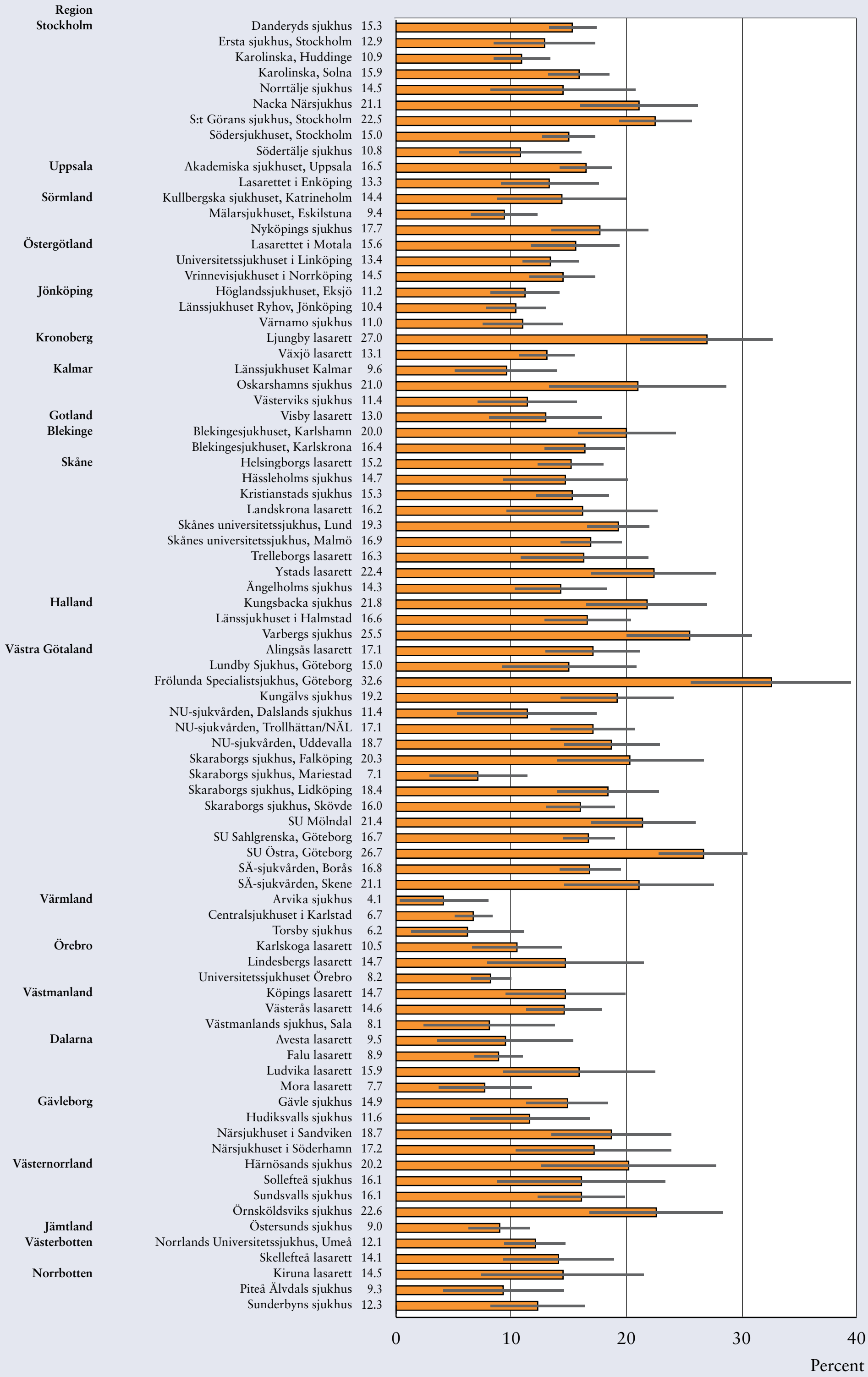


Figure 80
Hospitals

Percentage of persons with type 1 diabetes who achieved the blood glucose goal (HbA1c < 52 mmol/mol), 2011.

Source: Swedish National Diabetes Register

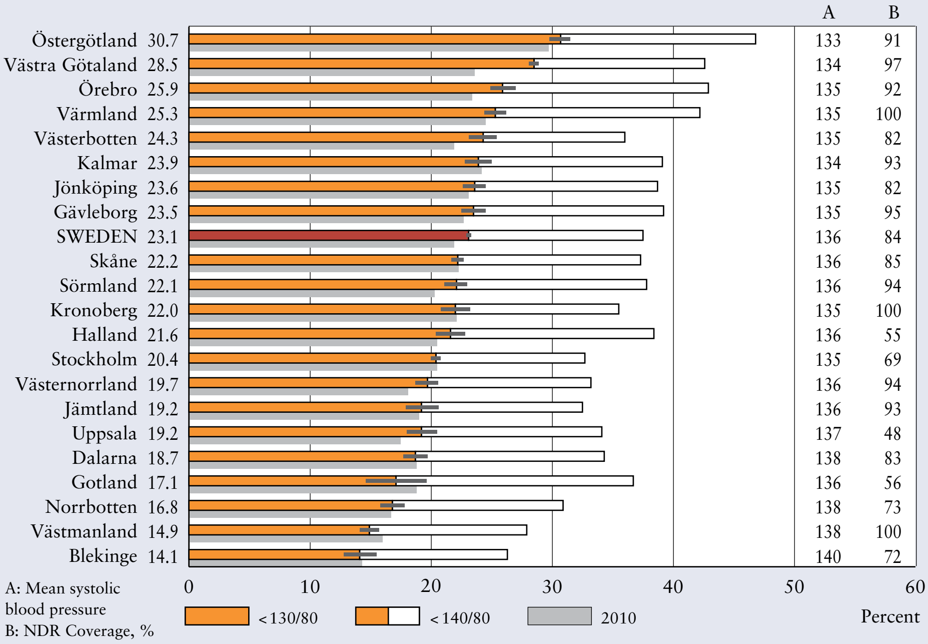


Figure 81 Percentage of persons with diabetes in primary care who achieved the blood pressure goal (< 130/80 mm Hg), 2011. Patients younger than 80.

Source: Swedish National Diabetes Register

ably greater discrepancies among care providers than show up in average or median HbA1c levels.

The guidelines stress the importance of individualised goals, and there are a number of reasons that such a low HbA1c level is an unsuitable target for many patients with type 1 diabetes. Minimising the percentage of patients with very high HbA1c levels is a matter of urgency. Approximately 25 per cent of all persons with type 1 diabetes are above 73 mmol/mol, which is much too high. Regardless of the particularly outcome measure or patient population that is placed under scrutiny, the potential for improvement is great.

81 Persons with Diabetes in Primary Care Who Achieve the Blood Pressure Goal

A number of independent studies have found that persons with diabetes run a 2–3 times elevated risk of cardiovascular disease. Several risk factors – including smoking, high blood glucose levels, hypertension and elevated blood lipids – are involved. The more risk factors, the higher the overall risk. The threshold for hypertension in persons with diabetes has been set at 130/80 mm Hg. A total of 80–90 per cent of all persons with diabetes in primary care had hypertension, defined as those who were taking antihypertensives or were untreated with blood pressure above the threshold.

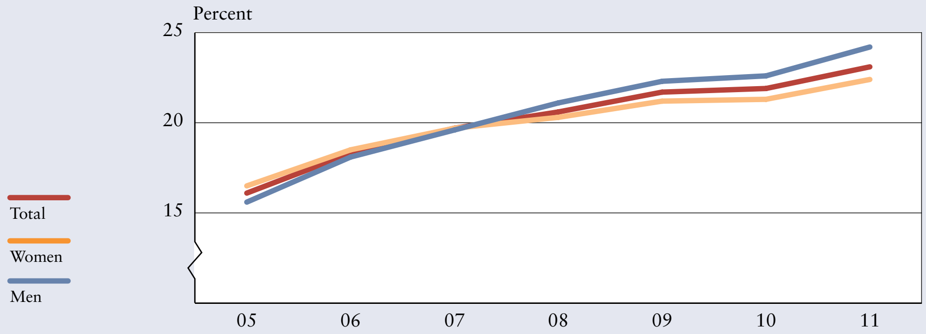


Figure 81
Sweden

Percentage of persons with diabetes in primary care who achieved the blood pressure goal (< 130/80 mm Hg). Patients younger than 80.

Source: Swedish National Diabetes Register

Antihypertensive therapy was given to approximately 80 per cent of persons with type 2 diabetes in 2011. Average blood pressure has declined in recent years, and the percentage of patients with 130/80 mm Hg or below has increased somewhat. Even more impressive is that the percentage of patients with systolic blood pressure over 140 mm Hg has decreased from 40 to 30 per cent, a clear trend reversal.

Figure 81 presents the percentage of persons with type 2 diabetes in primary care younger than 80 whose blood pressure was below 130/80 mm Hg. The percentage of patients with blood pressure below 140/80 is also shown. The comparison is based on data for more than 210 000 patients.

Only 23 per cent of patients nationwide achieved the goal. The results are considerably better (40 per cent), however, if only patients with blood pressure equal to or less than 130/80 mm Hg are included. The differences is due to rounding. The proportion of patients nationwide with blood pressure lower than 140/80 mm Hg was almost 61 per cent.

Thus, the majority of patients in this age group had higher blood pressure than the target set by the national guidelines, which entails an elevated risk of developing cardiovascular disease. Moreover, almost 40 per cent had blood pressure above 140 mm Hg. Despite substantial differences, the results generally point to undertreatment and a large potential for improvement in all counties.

82 Persons with Type 1 Diabetes Who Achieve the Blood Pressure Goal

Persons with type 1 diabetes with hypertension run an elevated risk of stroke, myocardial infarction, angina pectoris, kidney damage, peripheral vascular disease and death. The repercussions may show up in the form of both great personal suffering and high socioeconomic costs. As with type 2 diabetes, the national guidelines set the blood pressure goal below 130/80 mm Hg.

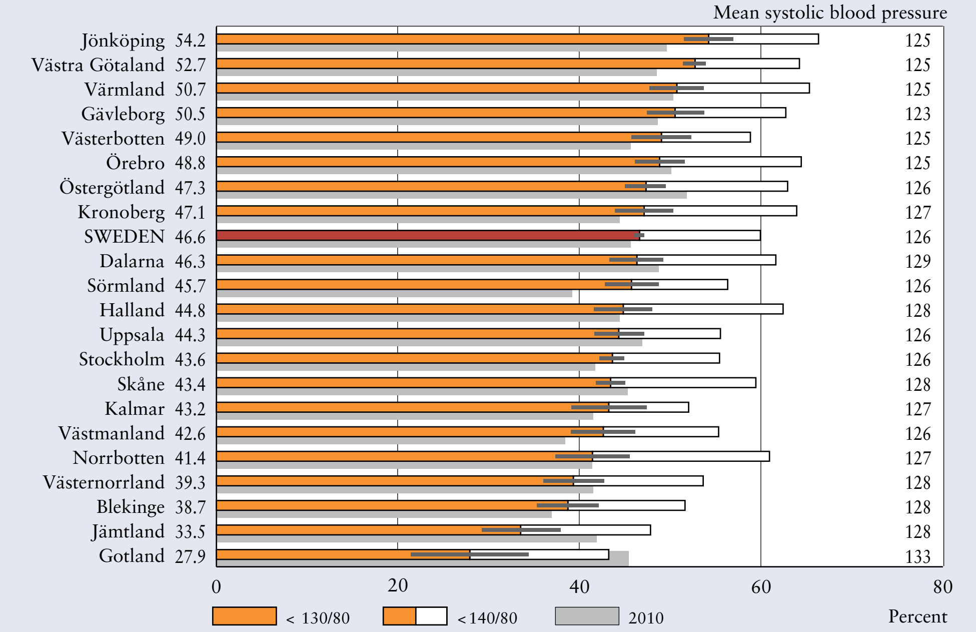


Figure 82 Percentage of persons with type 1 diabetes who achieved the blood pressure goal (< 130/80 mm Hg), 2011.

Source: Swedish National Diabetes Register

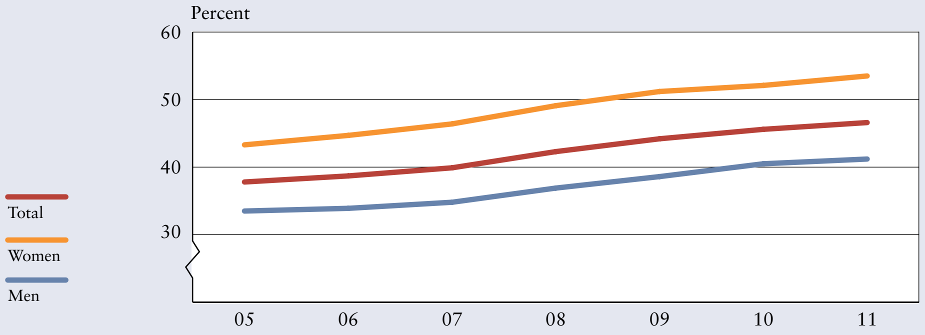


Figure 82 Sweden Percentage of persons with type 1 diabetes who achieved the blood pressure goal (< 130/80 mm Hg).

Source: Swedish National Diabetes Register

The indicator reflects the percentage of persons with type 1 diabetes who had attained the goal at their last appointment of the year. The comparison for 2011 is based on almost 32 000 patients, 44 per cent of whom were women. The diagram also presents the percentage of patients with blood pressure below 140/80 mm Hg.

47 per cent of patients nationwide, women more often than men, achieved the goal. Hospitals ranged from 26 per cent all the way to 68 per cent. The proportion of pa-

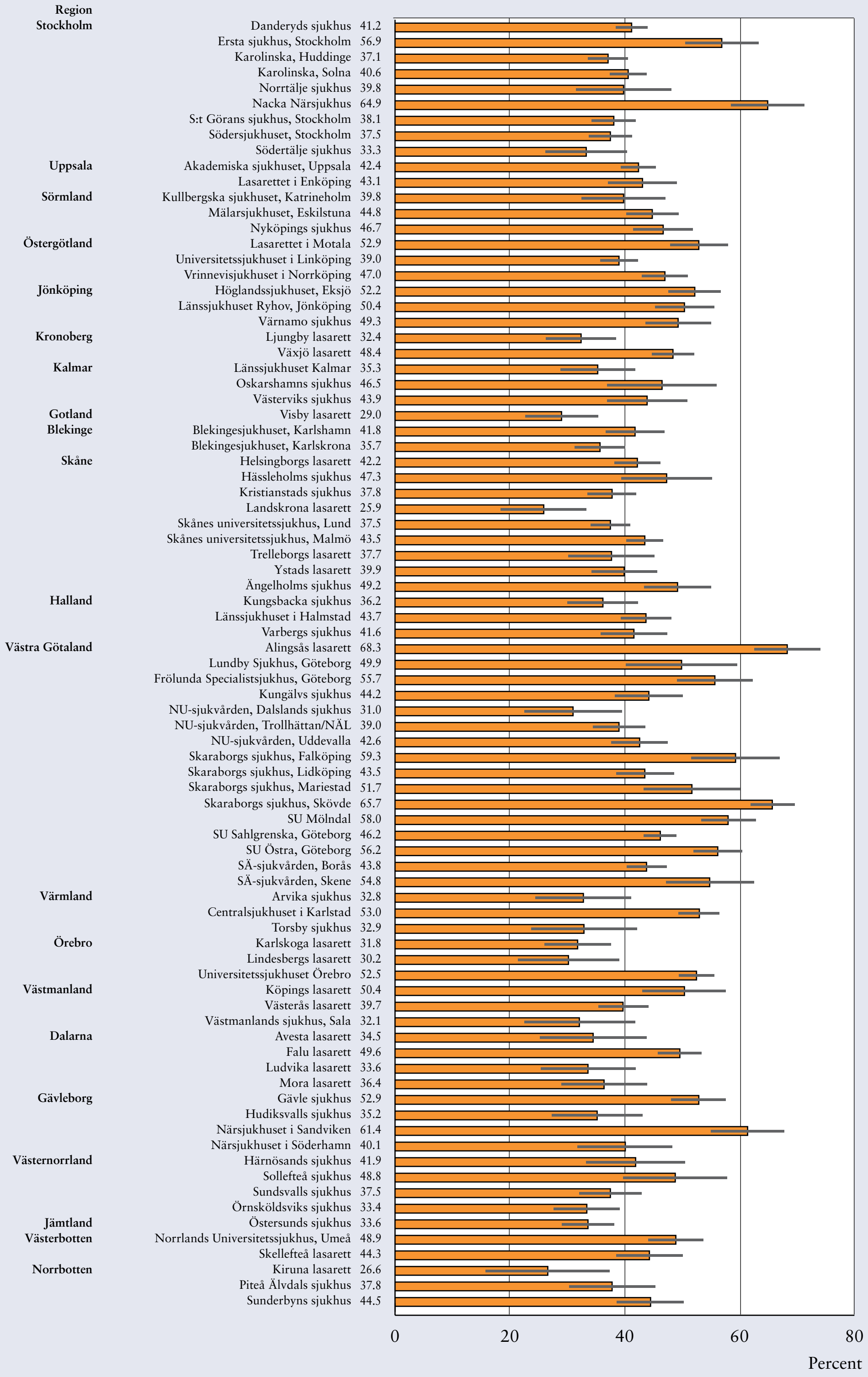


Figure 82
Hospitals

Percentage of persons with type 1 diabetes who achieved the blood pressure goal (< 130/80 mm Hg), 2011.

Source: Swedish National Diabetes Register

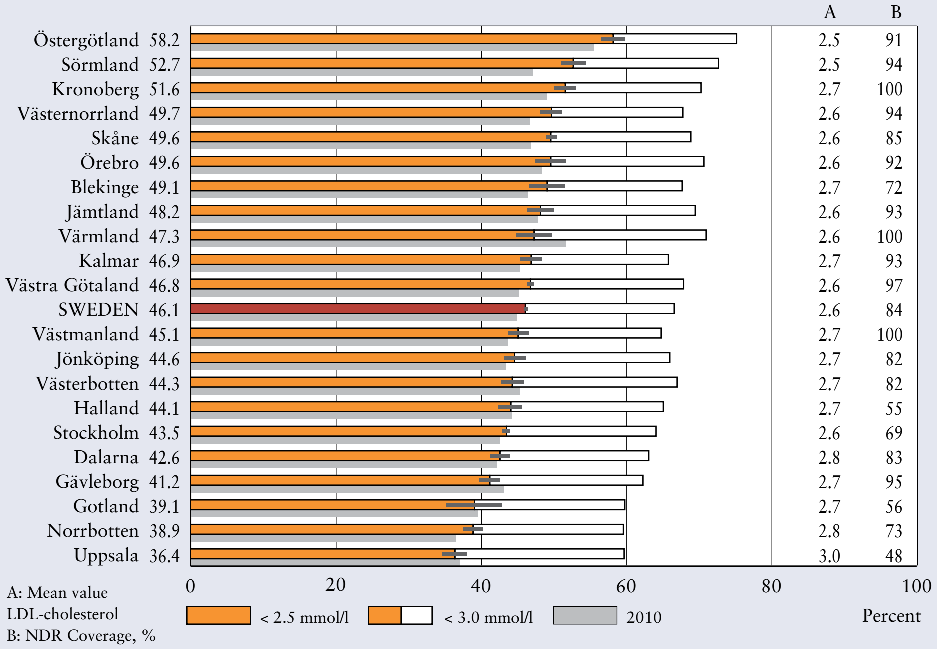


Figure 83 Percentage of persons with diabetes, younger than 80, in primary care who achieved the LDL cholesterol goal (< 2.5 mmol/l), 2011.

Source: Swedish National Diabetes Register

tients with blood pressure below 130/80 mm Hg jumped by more than 13 percentage points from 2005 to 2011.

The same rounding issues emerged as discussed for Indicator 82 above – the percentage of patients with blood pressure equal to or less than 130/80 mm Hg was substantially higher. The conclusion suggested by the data is also the same for this indicator, i.e., improvement is needed before the treatment goals of the national guidelines can be fully met.

83 Persons with Diabetes in Primary Care Who Achieve the Goal for LDL Cholesterol Levels

High blood lipid levels in persons with diabetes increase the risk of heart disease, stroke and impaired circulation in the legs. Preventive lipid lowering therapy, which can substantially reduce the risk, is recommended for high blood lipids in persons with type 2 diabetes.

The Swedish National Board of Health and Welfare guidelines target LDL ("bad") cholesterol of lower than 2.5 mmol/l. The indicator reflects the percentage of patients younger than 80 who achieved the goal. The comparison is based on data for more than 145 000 primary care patients. The percentage of patients below 3.0 mmol/l is also presented.

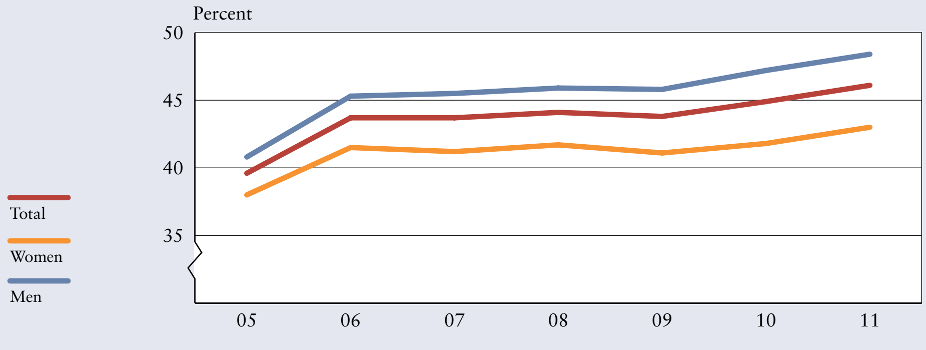


Figure 83
Sweden

Percentage of persons with diabetes, younger than 80, in primary care who achieved the LDL cholesterol goal (< 2.5 mmol/l).

Source: Swedish National Diabetes Register

Figure 83 reveals that only a little more than 46 per cent of patients nationwide, more men than women, achieved the treatment goal. The results for the various counties ranged by a wide margin of better than 20 percentage points.

According to the National Diabetes Register, the proportion of primary care patients receiving lipid lowering therapy has risen in recent years, reaching approximately 63 per cent in 2011. Both the low goal fulfilment and the variation between counties suggest that the condition is still significantly undertreated. The data demonstrate a clear need to improve compliance with the guidelines and follow-up of treatment.

84 Children and Adolescents with Diabetes Who Achieve the Goal for HbA1c Levels

Diabetes, which is the second most common chronic disease among Swedish children and adolescents, carries a risk of serious complications later in life. Almost 800 children develop diabetes every year. Approximately 7 700 children with diabetes (type 1 in 7 500 of the cases) are treated at paediatric clinics.

All children and adolescents with diabetes are reported to SWEDIABKIDS, a national quality register that monitors treatment outcomes and compliance with the care programme.

A number of quality indicators and associated treatment goals are available for child and adolescent diabetes care. Among the most important indicators is average blood glucose (HbA1c) level. People with high HbA1c levels run a considerably elevated risk of developing complications. Paediatric diabetes clinics generally check HbA1c levels four times a year. High test results occasion adjustments to the treatment regimen, which strives to strike a balance between diet, exercise and insulin therapy. The results can improve significantly after a single month of improved treatment.

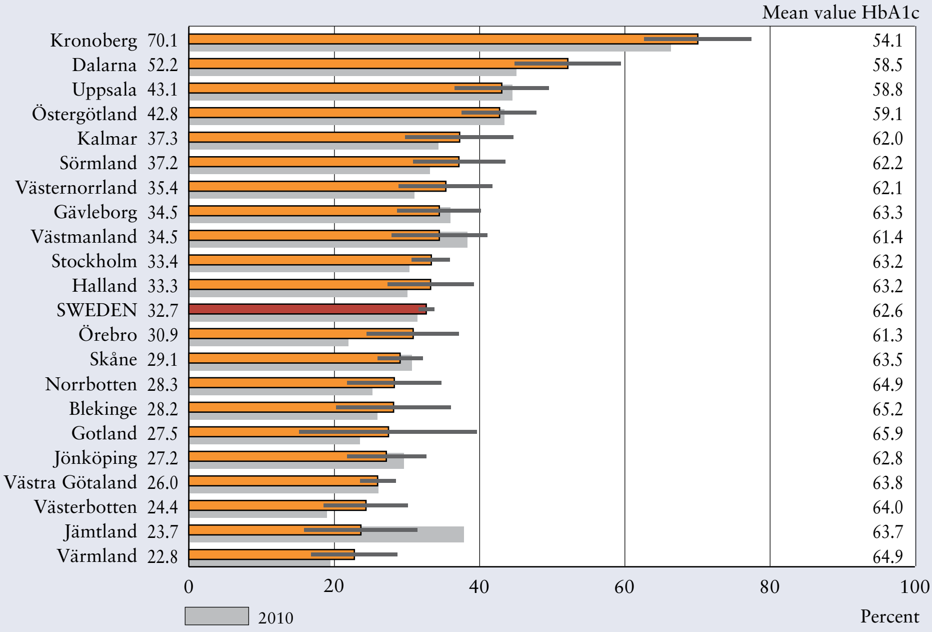


Figure 84 Percentage of children and adolescents with diabetes age 18 and younger who reached the goal for HbA1c (< 52 mmol/mol) 2011.

Source: Swedish National Diabetes Register

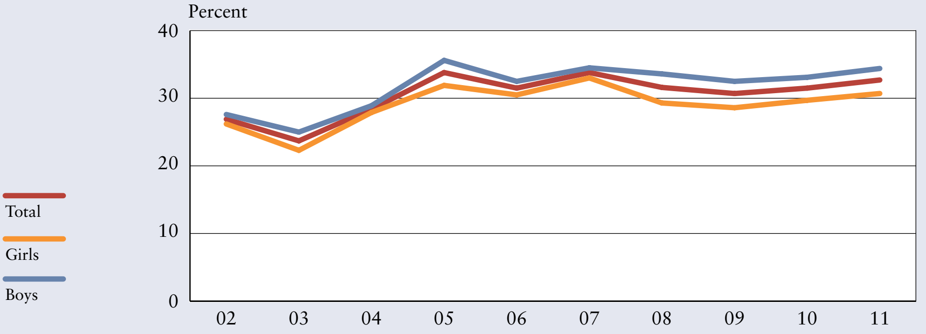


Figure 84 Sweden Percentage of children and adolescents with diabetes age 18 and younger who reached the goal for HbA1c (< 52 mmol/mol).

Source: Swedish National Diabetes Register

The care programme targets HbA1c levels below 57 per cent. Figure 84 presents the percentage of children whose average level over the course of a year satisfied that criterion. Almost 33 per cent of all children nationwide, just under 31 per cent of girls and 34 per cent of boys, attained the goal in 2011.

The outcome might be regarded as too low, but age standardisation of the goal would offer a clearer clinical picture given that most of the high levels are in the adoles-

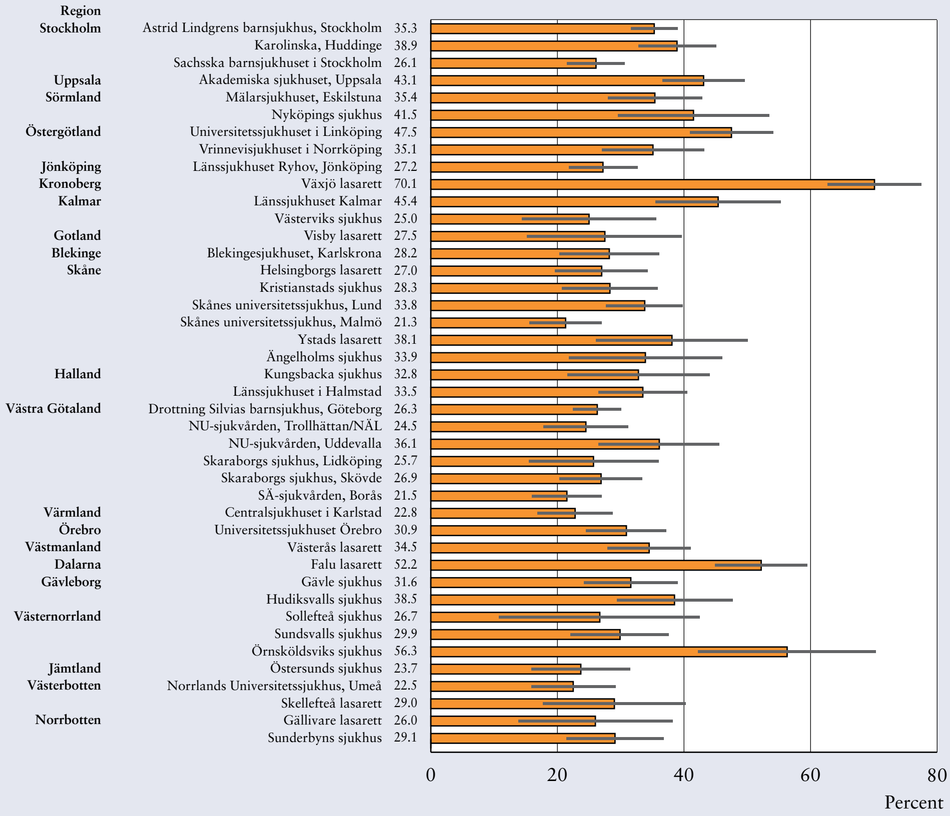


Figure 84
Hospitals

Percentage of children and adolescents with diabetes age 18 and younger who reached the goal for HbA1c (< 52 mmol/mol) 2011.

Source: Swedish National Diabetes Register

cent population. Swedish children and adolescents have low HbA1c levels compared to their international peers. The relatively large variation between counties suggests that many of them have significant potential for improvement.

Caregivers have spent a good deal of time in recent years discussing the differences in HbA1c levels reported by various clinics. Achieving satisfactory results requires a clear definition of the goal and the communication of a uniform message by each team, which should meet on a regular basis. A current dissertation project has not found a clear correlation between HbA1c levels and hard data such as insulin dose or therapeutic method.

85 Amputation Due to Diabetes

Impaired circulation in the legs is a serious complication of chronic diabetes. Pronounced impairment of peripheral circulation poses the risk of potentially life-threatening tissue death in the legs and feet. Part of the leg may have to be amputated.

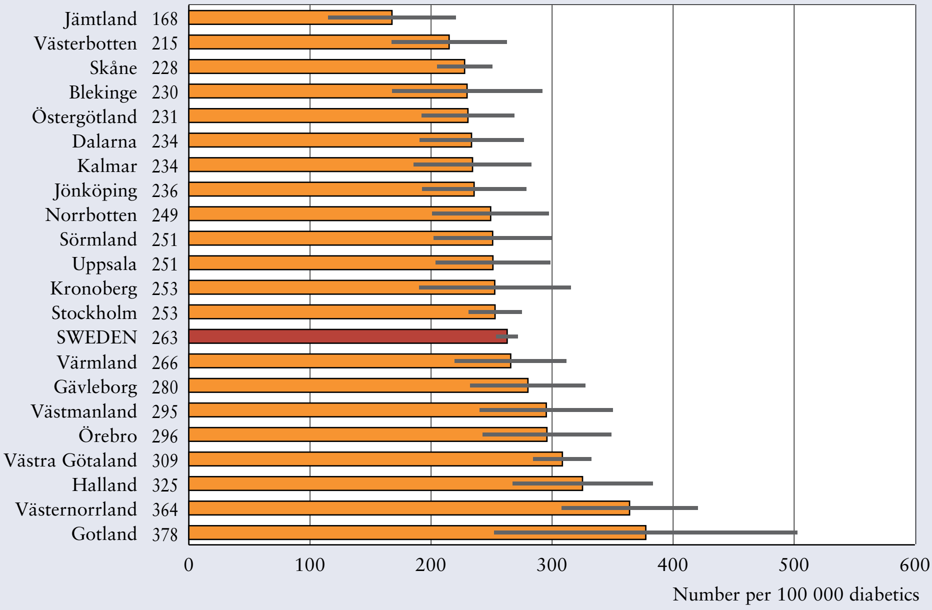


Figure 85

Number of first-time amputees above the ankle joint per 100 000 persons with diabetes, 2008–2011. Patients receiving drug therapy.

Source: Prescribed Drug Register and Patient Register, Swedish National Board of Health and Welfare

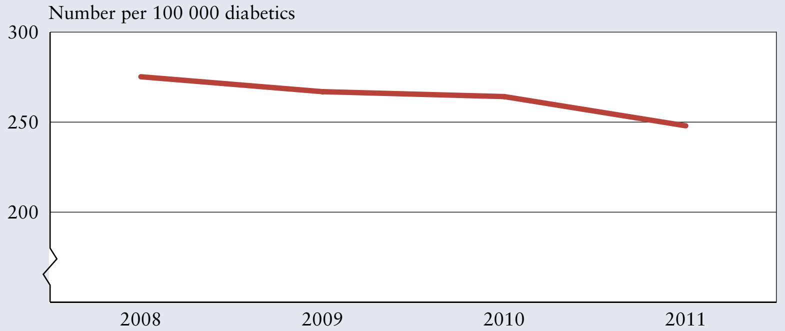


Figure 85 Sweden

Number of first-time amputees above the ankle joint per 100 000 persons with diabetes. Patients receiving drug therapy.

Source: Prescribed Drug Register and Patient Register, Swedish National Board of Health and Welfare

The three main risk factors for amputation due to vascular disease are advanced age, smoking and diabetes People with none of those factors face a very low risk. Information about prevention and good chiropody are integral to minimising the number of amputation. Customised shoes, daily inspection of the feet to detect ulcers as soon as possible, and early, correct treatment of any ulcers that develop have all been shown to reduce the risk. Smoking cessation is at the top of the list.

Good chiropody and early intervention can include "minor" amputation of parts of the forefeet and toes to prevent or delay impaired circulation and tissue death higher up in the leg. Assuming that such an amputation does not lead to complications, satisfactory function and health-related quality of life are usually preserved.

An amputation above the ankle is generally regarded as more of a major operation, often a sign that diabetes care services have waited too long to intervene. More than 800 such amputations are performed each year among upwards of 300 000 person with diabetes aged 40 and older who are receiving drug therapy. Given that minor amputations do not always end up in the register, the data for the frequency with which they are performed are somewhat less reliable.

Figure 85 shows the number of persons with diabetes per 100 000 receiving drug therapy that had an amputation above the ankle in 2008–2011. The nationwide result was 263 per 100 000, varying from 167 to 377 depending on the county. The number of amputations has basically held steady in recent years. Because there were relatively few cases, the county level data for the period were combined to include both women and men.

Other countries and international organisations use similar indicators – for example, Sweden has provided data for an OECD comparison. The indicator reflects the quality of diabetes care 5-10 years ago rather than the current situation. Considering that amputation above the ankle is a major operation that leads to disability and generates high socioeconomic costs, following both national and international trends is a vital necessity.

CARDIAC CARE

Cardiovascular disease is the most common cause of death and among the most frequent sources of disability in Sweden. Acute myocardial infarction, of which there were more than 32 000 cases in 2010, is the cardiovascular disease that leads to the most deaths. As the result of rapid progress in the care of acute myocardial infarction patients over the past ten years, mortality rates have declined substantially.

Eighteen indicators, nearly all of which appeared in the major report on cardiac care published by the Swedish National Board of Health and Welfare in 2009, are presented here. Most of them concern myocardial infarction or the more all-embracing concept of ischaemic heart disease. Indicators for heart failure, cardiac arrhythmia and cardiac arrest outside hospital are presented as well.

Data for the indicators come from both Swedish National Board of Health and Welfare registers and national quality registers. Apart from the Swedish Heart Intensive Care Admissions (RIKS-HIA) Quality Index, the quality registers are discussed in connection with the appropriate indicators, including comments about participation rate and other considerations.

RIKS-HIA, which is now part of the SWEDEHEART register, is the source for four of the indicators. RIKS-HIA contains data about myocardial infarction patients admitted to cardiac intensive care units at hospitals. All hospitals that provide acute cardiac care participate in the register, but the completeness of registration varies between hospitals.

The participation rates of RIKS-HIA and the National Patient Register were compared for 2011. There were almost 26 600 cases of myocardial infarction for the year. Seventy-two per cent (some 7 400 fewer than the total) were reported to RIKS-HIA and 99 per cent to the Patient Register. The variation was greater between hospitals than between counties. The participation rates are compared every year.

The differences in participation rates should be taken into consideration when interpreting RIKS-HIA data, particularly for the two indicators that reflect non-ST-segment elevation myocardial infarction. Inclusion of all categories of myocardial infarction patients in county data could affect the results of the comparison.

86 Survival after Cardiac Arrest outside of Hospital

A large percentage of deaths due to heart disease consist of sudden cardiac arrest before arrival at hospital. The first arrhythmia in cardiac arrest is most often ventricule fibrillation. The use of a defibrillator, which can restore normal heart rhythm by means of an electric shock, is the most effective treatment for most patients. Nevertheless, most patients die simply because the treatment is not provided quickly enough. The probability of survival increases dramatically if breathing and circulation can be artificially maintained by means of cardiopulmonary resuscitation (CPR).

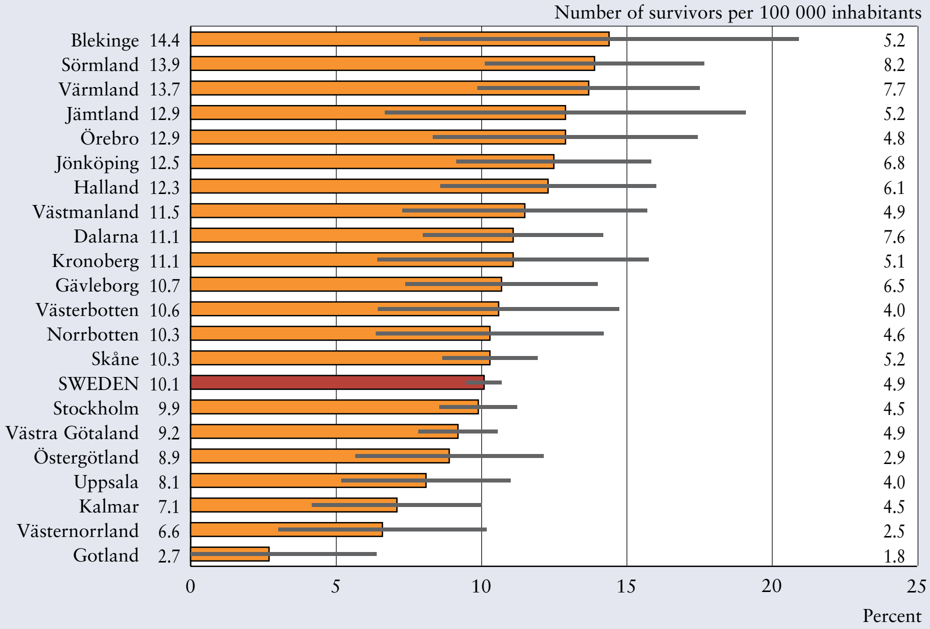


Figure 86 Percentage of cardiac arrest patients outside hospital who had been administered CPR and were alive 30 days later, 2010–2011.

Source: The Swedish Register of Cardiopulmonary Resuscitation

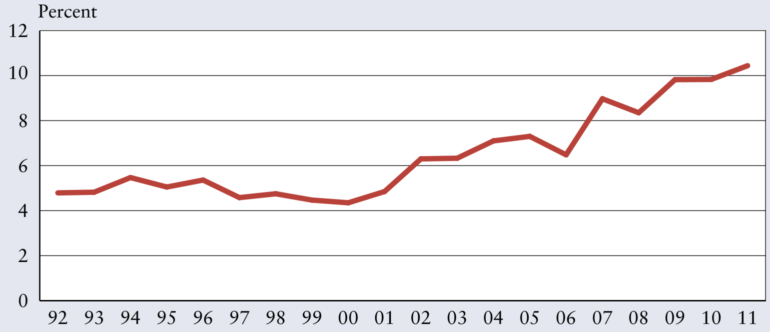


Figure 86 Sweden Percentage of cardiac arrest patients outside hospital who had been administered CPR and were alive 30 days later.

Source: The Swedish Register of Cardiopulmonary Resuscitation

Given that three million Swedes have been trained in CPR, cardiac arrest victims outside of hospital should have a decent chance of survival. Sixty-eight per cent of cardiac arrest cases witnessed by a bystander receive CPR before the ambulance arrives, an impressive figure compared to other countries and the result of widespread voluntary training.

Data on cardiac arrest outside of hospital are reported to the Swedish Register of Cardiopulmonary Resuscitation. The register is to include all such patients who had first been treated either by ambulance personnel or by someone else before their arrival.

The register covers all ambulance services throughout the country. The participation rate is an estimated 80 per cent at the individual level, a proportion that has been rising in recent years. Altogether 4 514 cases were reported to the register in 2010. The number of cases reported per 100 000 inhabitants varies substantially from year to year at the county level. The fluctuations may be due to differing participation rates, but it is certainly possible that the percentage of cases in which CPR is administered actually varies over time and by county.

The indicator shows the percentage of patients with cardiac arrest outside of hospital who were subsequently given CPR and remained alive 30 days later. The comparison is based on 9 464 cases in 2010–2011.

More than 10 per cent of patients nationwide, ranging from 2.7 to 14.4 per cent depending on the county, survived for at least 30 days. The percentage more than doubled between 2001 and 2011. The right side of the diagram breaks down the number of survivors per 100 000 inhabitants by county.

Results for the counties are affected by a number of factors in addition to acute care by paramedics and hospital staff. Such factors include age, severity of the patient's heart condition, comorbidity, access to defibrillators in public places, and the amount of time and skill available for CPR before arrival of the ambulance.

87 Myocardial Infarction – 28-day Case Fatality Rate

The 28-day case fatality rate is an internationally established indicator of the quality of acute care after myocardial infarction. The indicator quantifies performance at each step along the way: preventive, ambulance, acute and follow-up care.

Figure 87 compares county results for 2009–2011 with 2006–2008. The bar for total 28-day case fatality also includes the percentage of patients who died outside of acute care. All diagnoses of myocardial infarction in the Cause of Death Register or the inpatient section of the National Patient Register are included. Thus, both patients who were initially hospitalised and those who died of acute myocardial infarction without being hospitalised are covered.

Variations between counties in reported case fatality rates may have several causes. In addition to diagnostic reliability, background factors such as comorbidity, social variables and the propensity to seek care all have an impact. Parameters directly related to quality and performance may include distance to an acute care hospital, the efficiency of ambulance personnel and the level of acute hospital services. The age-standardised 28-day case fatality rate has declined considerably for both women and men over the past 20 years.

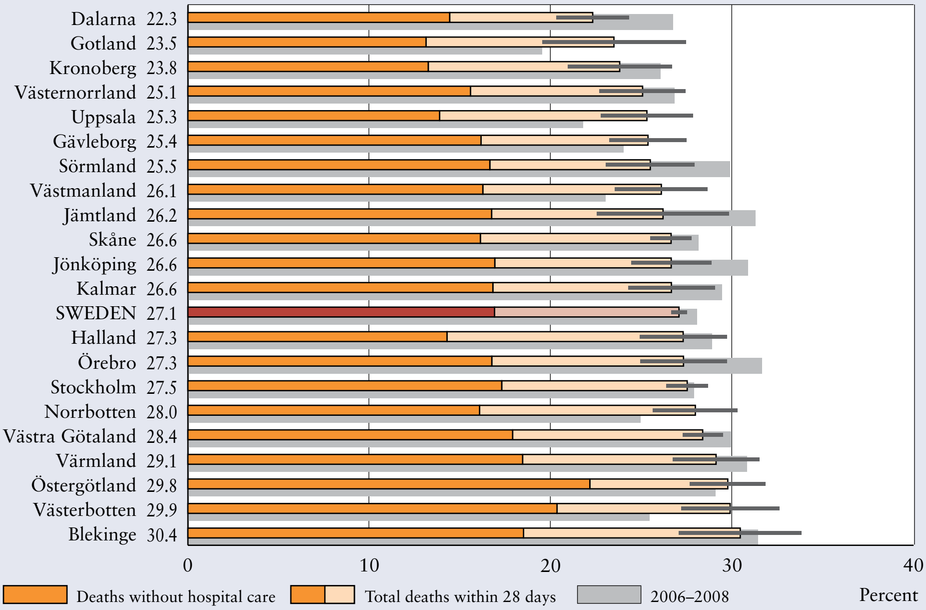


Figure 87
Women

28-day case fatality rate for myocardial infarction, 2009–2011. Both hospitalized patients and those who died without hospital care. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

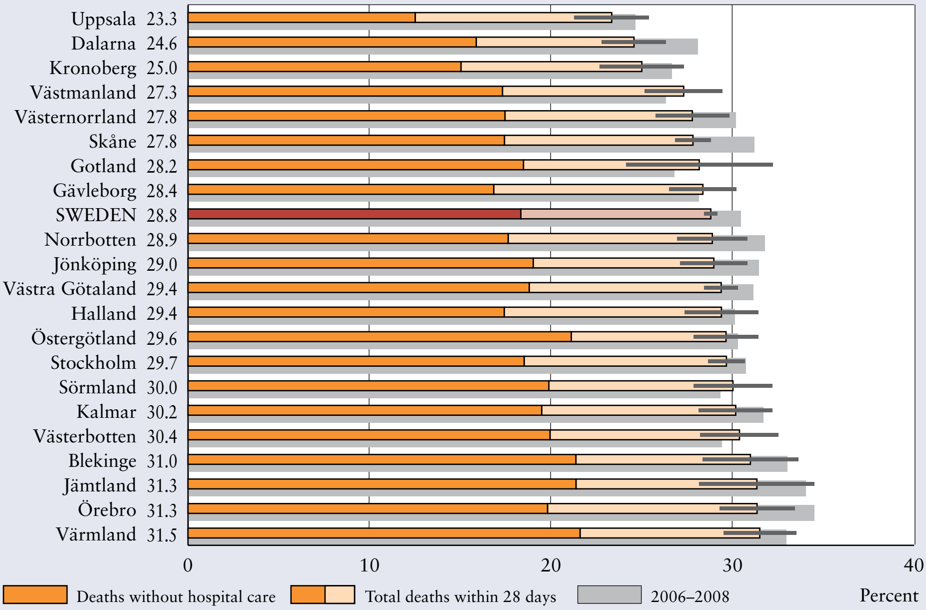


Figure 87
Men

28-day case fatality rate for myocardial infarction, 2009–2011. Both hospitalized patients and those who died without hospital care. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

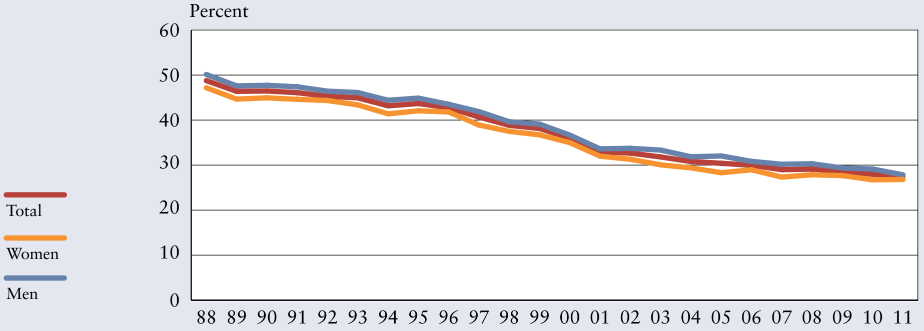


Figure 87
Sweden

28-day case fatality rate for myocardial infarction. Both hospitalized patients and those who died without hospital care. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

Myocardial infarction struck approximately 34 000 Swedes, many more men than women, in 2010. Somewhere around 28 per cent of them died within 28 days. Every year some 6 000 patients die of myocardial infarction outside of acute care. The data for 2011 remain preliminary at this point, given that some patients were not discharged until 2012.

One source of error is that only a small percentage of elderly, non-hospitalised patients were given an autopsy. Determining the cause of death among such patients is associated with greater statistical uncertainty. Considering, however, that they significantly affect fatality and case mix among those who are hospitalised, they need to be included in the comparison.

88 Myocardial Infarction – 28-day Case Fatality Rate – Hospitalised Patients

This indicator focuses on the quality of acute treatment of myocardial infarction patients and continuing care at hospital. The indicator is well-established internationally. In comparison with the other centres in 24 countries, the two Swedish centres that participated in the MONICA project conducted by WHO reported very low case fatality rates among hospitalised myocardial infarction patients. Short-term survival among hospitalised patients only is the measure that is available in many countries.

The comparison in Figure 88 is based on all patients aged 20 or older with a diagnosis of myocardial infarction who were initially hospitalised in 2009–2011. Age standardisation was performed in view of the differing gender and county-specific age structures. The shaded bar illustrates the corresponding result for 2006–2008.

More than 11 000 women and approximately 16 500 men have been hospitalised annually for acute myocardial infarction over the past few years. For the 2009–2011

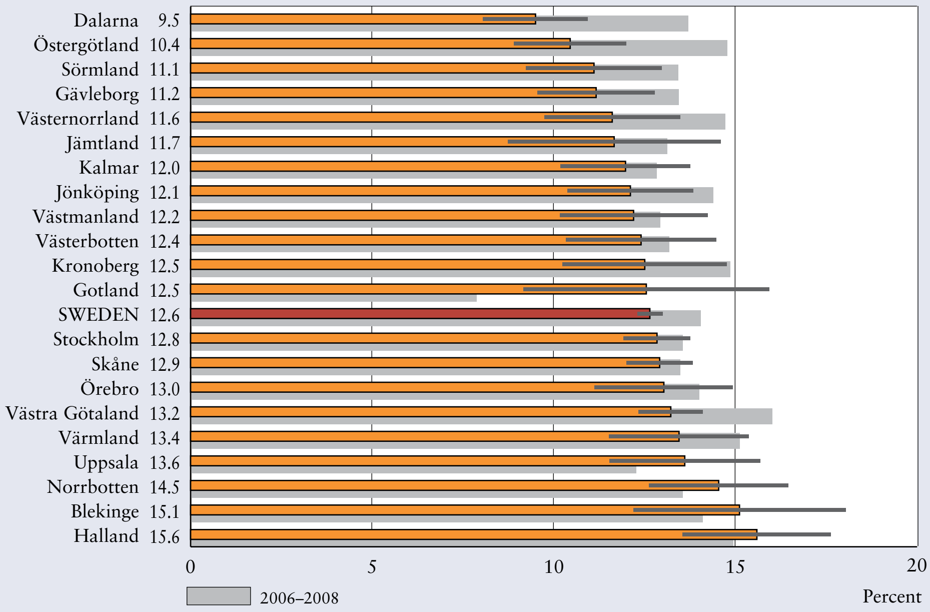


Figure 88
Women

28-day case fatality rate for myocardial infarction, 2009–2011.
Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

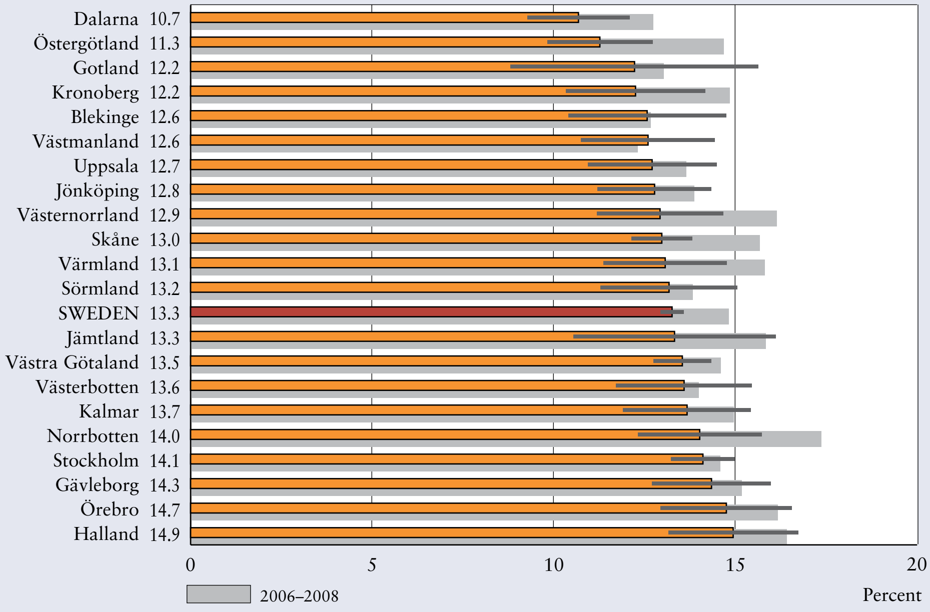


Figure 88
Men

28-day case fatality rate for myocardial infarction, 2009–2011.
Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

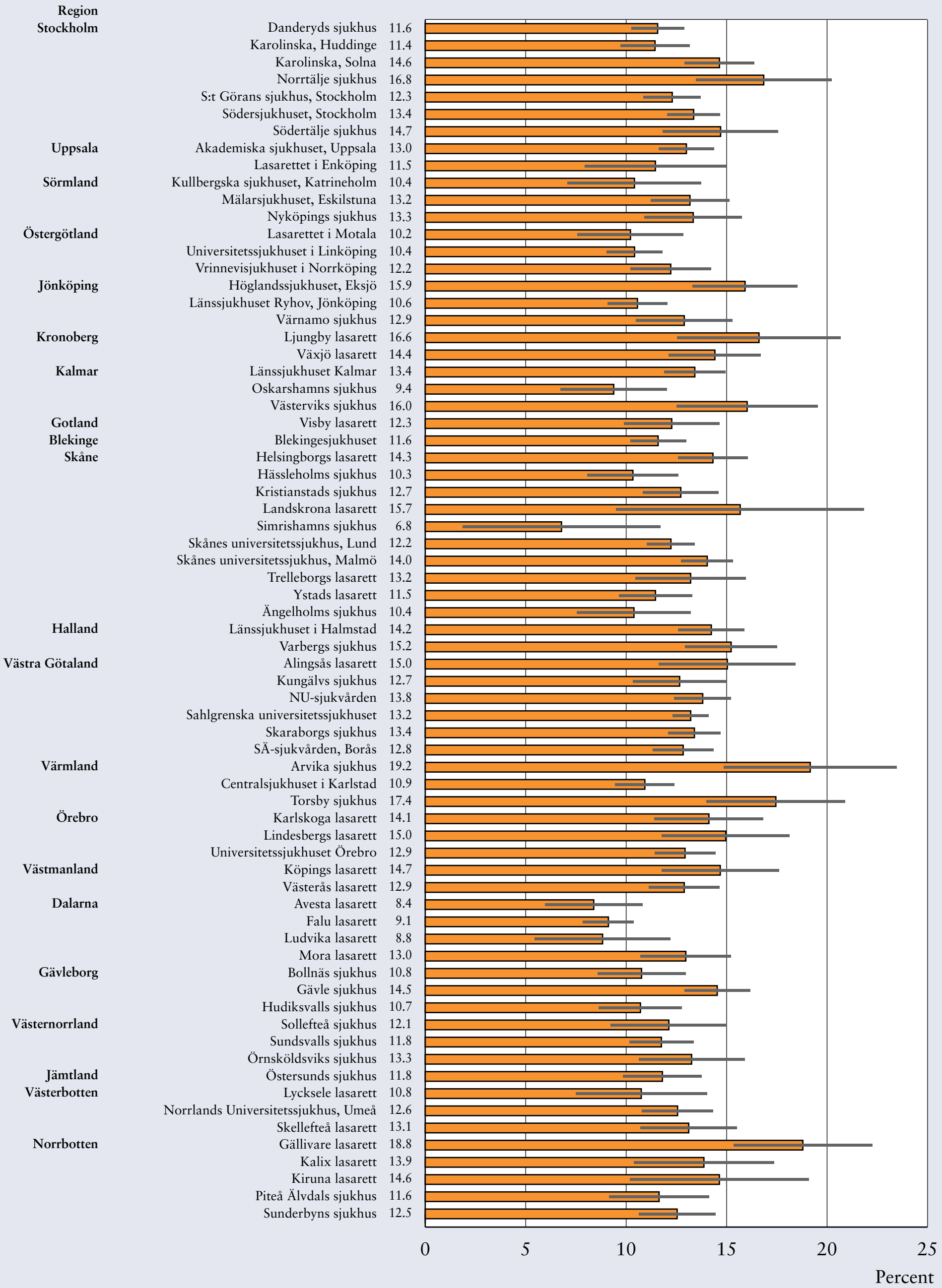


Figure 88
Hospitals

28-day case fatality rate for myocardial infarction, 2009–2011. Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

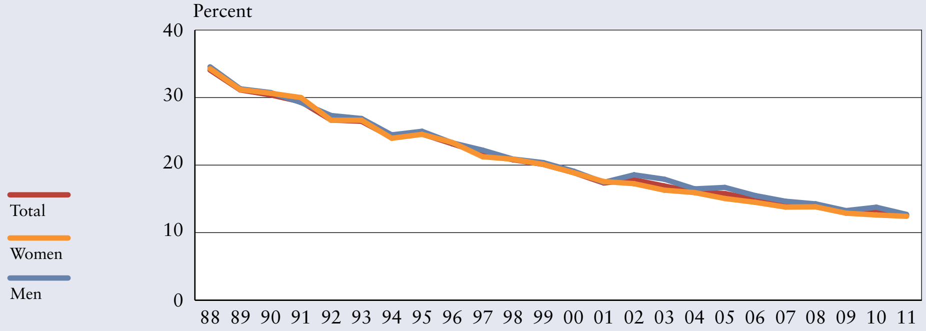


Figure 88
Sweden

28-day case fatality rate for myocardial infarction.
Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

period, almost 13 per cent of them died within 28 days and one-third within a year. After standardising for age, men now have only slightly higher case fatality rates than women. The case fatality rate has decreased by approximately 1.5 percentage points nationwide for both women and men since 2006–2008.

Once the differing age structures have been taken into consideration, rates were higher for men than women – both in the category of everyone who had an infarction and the category of everyone who was hospitalised. The gender difference was greater in the category of everyone who had an infarction, while considerably lower among hospitalised patients.

89 Recurrence of Infarction or Death from Ischaemic Heart Disease

This indicator concerns the percentage of myocardial infarction patients who were discharged from hospital and had a new infarction or died of another ischaemic heart disease within 365 days. Ischaemic heart disease is caused by impaired oxygen supply to the heart. The percentage of patients who died or suffered a recurrence may be the result of both acute care and secondary prevention interventions. The patient's condition before and after the first infarction has a fundamental impact on the outcome.

The comparison includes 38 000 patients of all ages who were hospitalised in 2009–2010 with myocardial infarction as the primary or secondary diagnosis, had not had a similar event for the past seven years and were subsequently discharged. One reason for including death from other ischaemic heart disease is to minimise the impact of differences between various diagnoses of the cause of death. Deaths without preceding hospitalisation are also covered. The data have been age-standardised. The sources of data are the National Patient Register and Cause of Death Register.

In the country as a whole and for both sexes, more than 13 per cent of patients had a new infarction or died of ischaemic heart disease within 365 days. The individual

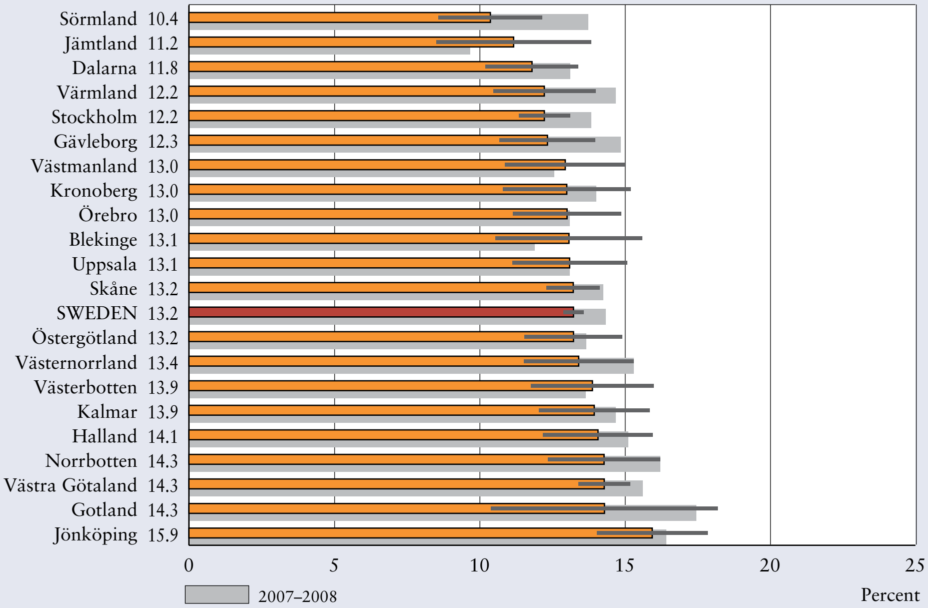


Figure 89 Percentage of patients who had a new myocardial infarction or died of ischaemic heart disease within 365 days, 2009–2010. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

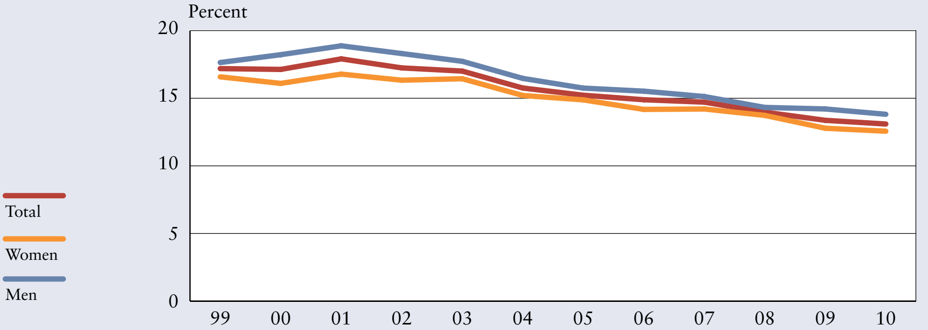


Figure 89 Sweden Percentage of patients who had a new myocardial infarction or died of ischaemic heart disease within 365 days. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

counties varied from 10 per cent to almost 17 per cent, a rather wide range. Women were more than one percentage point less likely to suffer a recurrence or death. The overall proportion has declined by approximately 4 percentage points since the early 2000s.

No desirable or optimum outcomes can be specified, but the variations between counties provide some guidance. There are considerable differences in the number of patients who died from myocardial infarction without having been hospitalised (see Indicator 87). The quality of hotline, emergency, ambulance and other non-hospital services affects this indicator as well.

The indicator is subject to sources of error. Given the low percentage of autopsies performed on the elderly, diagnosis of the cause of death is less certain when the patient dies without having been initially hospitalised. Diagnostic variations affect the results. However, following up hospitalisation for infarction only would be skewed by the percentage of cases that had never been hospitalised. In other words, a large proportion of non-hospitalised patients would make the percentage of recurrences seem lower. The inclusion of other ischaemic heart disease has probably reduced the uncertainty associated with diagnosing the cause of death among non-hospitalised patients.

90 Reperfusion Therapy for Patients with ST-segment Elevation Myocardial Infarction (STEMI)

STEMI is caused by an occlusion of a coronary artery. Myocardial infarction with concurrent left bundle branch block (LBBB) on the EKG also raises a strong suspicion of acute myocardial infarction.

Patients with STEMI need immediate primary percutaneous coronary intervention (PCI) or thrombolytic therapy. To minimise cardiac damage, as well as the risk of future heart failure and death, treatment should begin as soon as possible after the onset of symptoms and the diagnosis. Reperfusion therapy consists primarily of PCI and thrombolytic therapy. Acute coronary angiography that does not lead to PCI is also included.

Primary PCI, the predominant treatment in most Swedish counties these days, was performed at 29 hospitals in 2011. The national guidelines recommend primary PCI as the first-line treatment, relegating thrombolytic therapy to situations in which the former method would cause a delay of more than 90 minutes. Regardless of which method is selected, the guidelines prioritise reperfusion therapy for STEMI and LBBB.

The indicator reflects the percentage of myocardial infarction patients with ST-segment elevation or LBBB on the EKG who received acute reperfusion therapy. The indicator was used by the national guidelines for follow-up purposes and by the RIKS-HIA Quality Index for myocardial infarction care in 2011. The results are reported at the county level only, based on where the patient was admitted.

The comparison for 2011 covered 3 912 patients aged 79 or younger, including more than 900 women, for whom less than 12 hours passed between the onset of symptoms and first EKG.

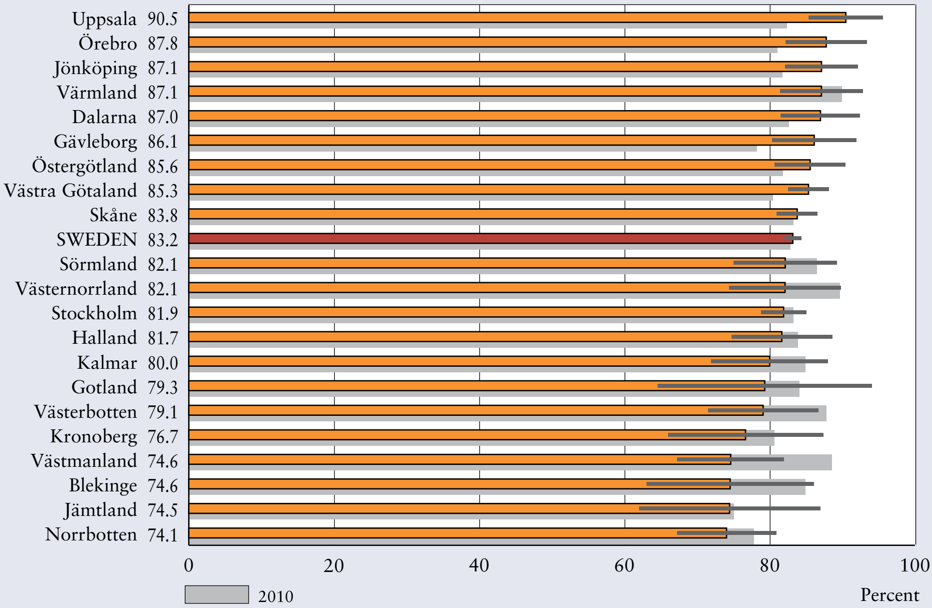


Figure 90 Reperfusion therapy for patients younger than 80 with ST-segment elevation myocardial infarction, 2011.
Source: SWEDEHEART

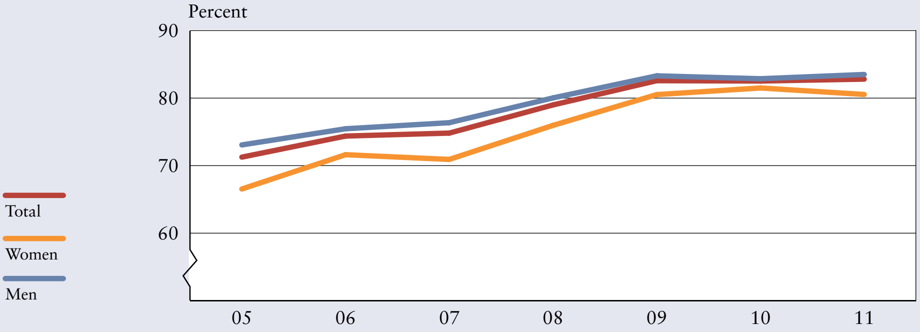


Figure 90 Sweden Reperfusion therapy for patients younger than 80 with ST-segment elevation myocardial infarction.
Source: SWEDEHEART

More than 83 per cent of patients nationwide (a somewhat greater proportion among men than women) received reperfusion therapy in 2011, an increase of more than 10 percentage points since 2005. Differences remained between the various counties but were narrower than in previous years. The RIKS-HIA Quality Index scores levels of 80-85 per cent, making it the de facto target.

The national guidelines accord high priority to reperfusion therapy. Although the proportion of patients who receive the intervention has increased in recent years, room for improvement remains, particularly in counties that report relatively low percentages.

91 Time until Reperfusion Therapy for Patients with ST-segment Elevation Myocardial Infarction (STEMI)

The indicator looks at the percentage of STEMI patients for whom reperfusion therapy commenced within the target time (90 minutes for PCI and 30 minutes for thrombolysis) after the initial EKG.

The shorter the delay, the greater the chances that reperfusion therapy will succeed. The international limit of 30 minutes for thrombolytic therapy is based on the time required to complete the various preparatory steps. The 90-minute deadline for PCI, which is a more complex procedure, stems from its incontrovertible medical advantages, assuming that transport to the hospital or the delay after pre-hospital EKG can be held down to that time.

Defining initial EKG as the starting point places the responsibility squarely in the lap of the healthcare system. The total time from the onset of chest pain and other symptoms of myocardial infarction to commencement of therapy is also a function of reactions by the patient, family members, hotline and emergency service centre, as well as the distance to the clinic.

The indicator was used by the national guidelines for follow-up purposes and by the RIKS-HIA Quality Index. The comparison for 2011 proceeds from data for 3 254 patients, 700 of whom were women.

A total of 73 per cent of patients, approximately the same proportion of women and men, were treated within the target time. Men had previously fared better than women. The individual counties ranged widely from 37 to 86 per cent. No county received the highest score from RIKS-HIA, i.e., treating 90 per cent of all patients within the limit. The 73 per cent target fulfilment in 2011 represented an increase from only 29 per cent back in 2002. Outcomes are not presented at the hospital level because they are regarded as a reflection of the way that a county organises the full range of its healthcare services.

This indicator reveals the greatest room for improvement in acute coronary care. Most counties and hospitals are well positioned to reduce delays for reperfusion therapy. Taking additional information about causes for delay after onset of symptoms into consideration makes that conclusion even more obvious. More than three hours passed between initial symptoms and commencement of PCI in almost half the cases.

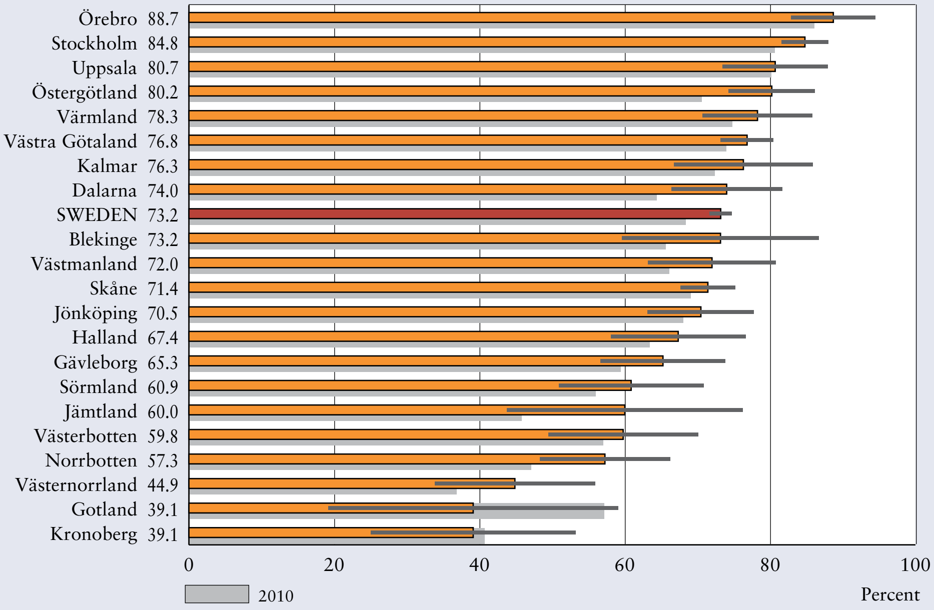


Figure 91 Percentage of STEMI patients, age 79 and younger, who received reperfusion therapy within the target time, 2011.

Source: SWEDEHEART

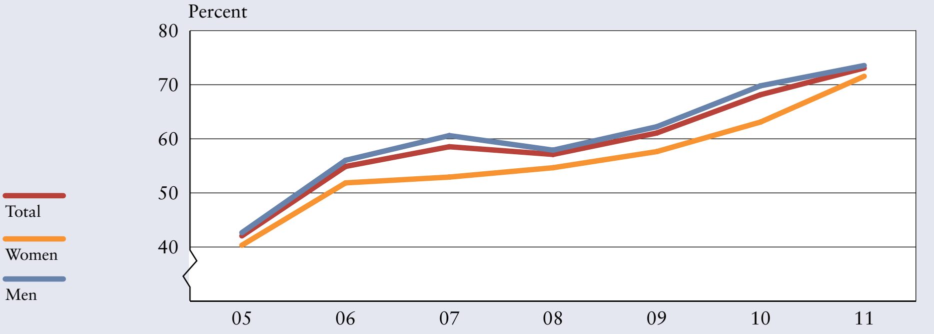


Figure 91 Sweden Percentage of STEMI patients, age 79 and younger, who received reperfusion therapy within the target time.

Source: SWEDEHEART

Performing the first EKG in the ambulance instead of upon arrival at hospital affects how the delay is reported. Counties that diagnose a large percentage of myocardial infarction cases in the hospital will show a longer delay due to transport time. Pre-hospital EKG, however, allows preparations for angiography and PCI to begin even before arrival at hospital, which reduces the total delay following the onset of symptoms.

92 Coronary Angiography after Non-ST-segment Elevation Myocardial Infarction (NSTEMI) in Patients with Another Risk Factor

More than 20 000 care events are reported for NSTEMI, which is a good deal more common than STEMI, every year. Most patients receive intensive antithrombotic treatment. Patients at moderate to high risk of a new infarction should undergo a coronary angiogram within a few days to determine any need for PCI or coronary artery surgery (within 7–8 days).

The national guidelines assign high priority to coronary angiography in patients who are at modest to high risk of new cardiac events – those who exhibit ongoing instability, have at least one additional risk factor (such as diabetes or previous infarction) or show pathological results on a stress test. Among factors that reduce potential benefits are comorbidity and poor general health. That all such patients receive a coronary angiogram should not be a strict goal.

This indicator shows the percentage of patients with NSTEMI and at least one risk factor who received or were scheduled for coronary angiography in connection with hospitalisation. The indicator was used by the national guidelines for follow-up purposes and by the RIKS-HIA Quality Index for hospitals.

The data for the comparison in Figure 92 were based on 5 396 patients aged 79 and younger, 1 400 of whom were women.

A total of 88 per cent of patients nationwide, 84 per cent of women and 90 per cent of men, underwent a coronary angiogram in 2011. The percentage has climbed steadily since the early 2000s. The various counties ranged from 81 to 94 per cent. All counties met the target of the RIKS-HIA Quality Index.

There may be logical reasons that more men were treated than women. The use of angiography decreases with age, perhaps due to various contraindications. Women, who tend to be older when they have infarctions, reflect this tendency more clearly. Age discrimination cannot be ruled out.

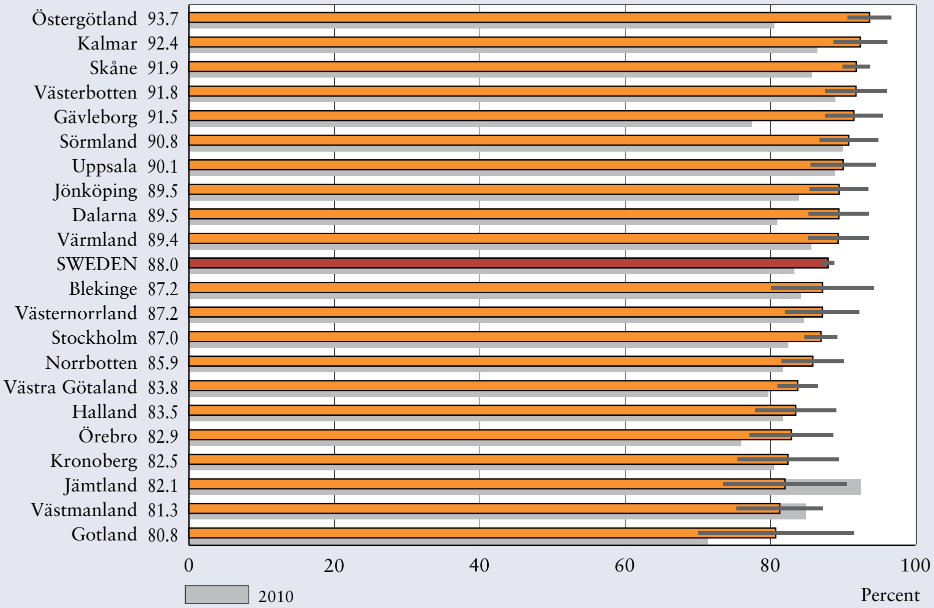


Figure 92 Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor, 2011.

Source: SWEDEHEART

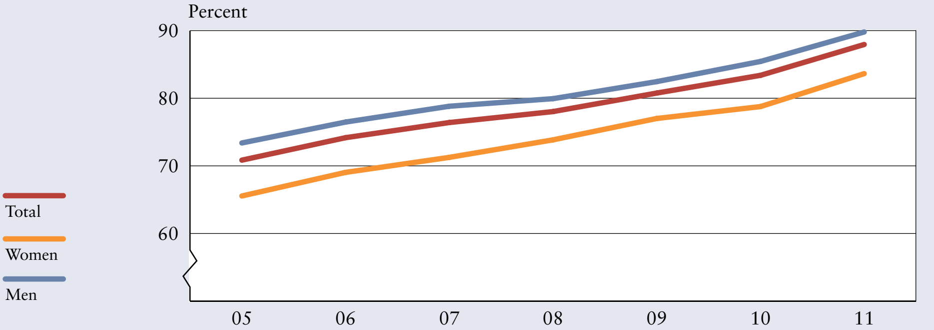


Figure 92 Sweden Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor.

Source: SWEDEHEART

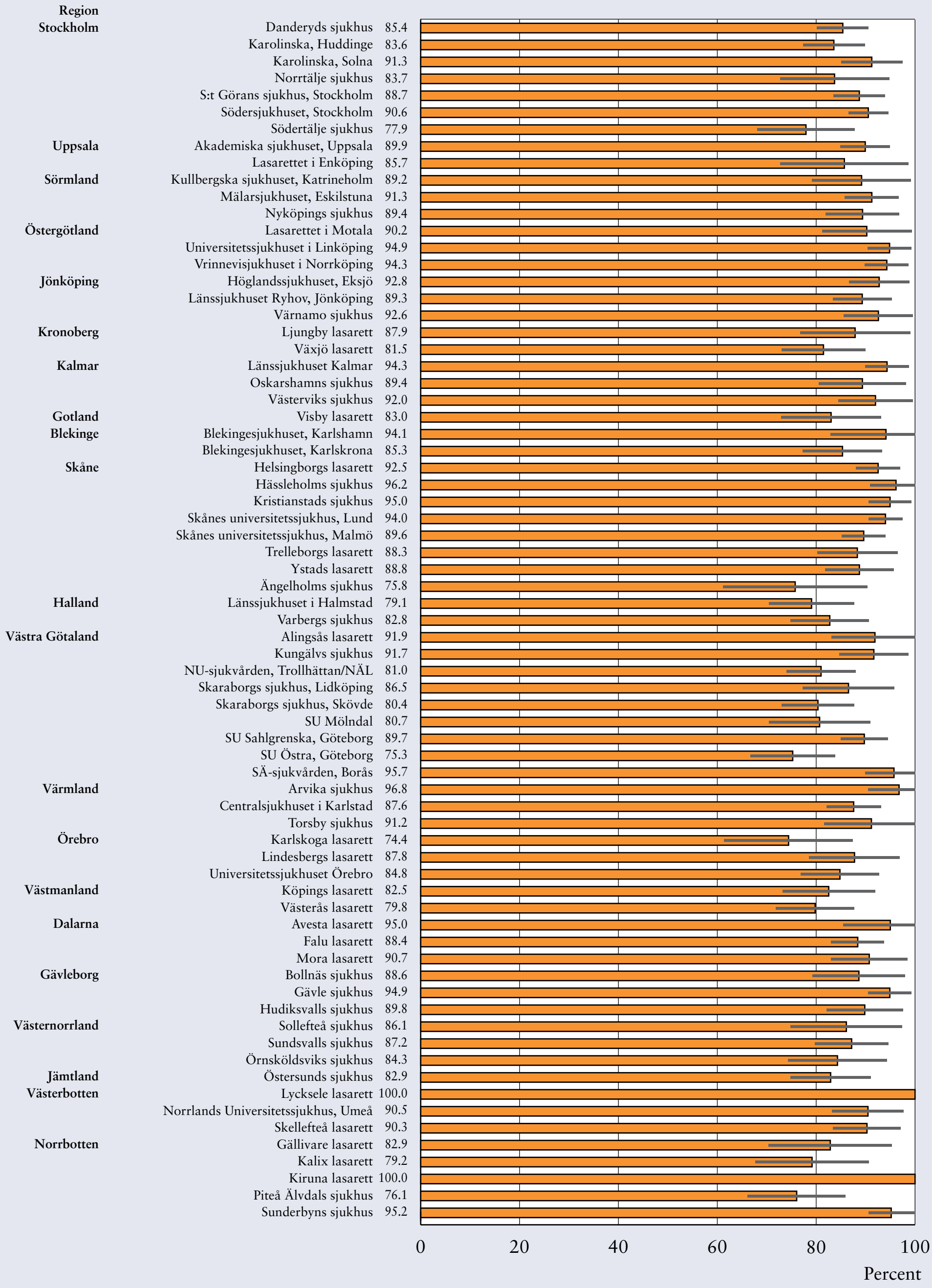


Figure 92
Hospitals

Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor, 2011.

Source: SWEDEHEART

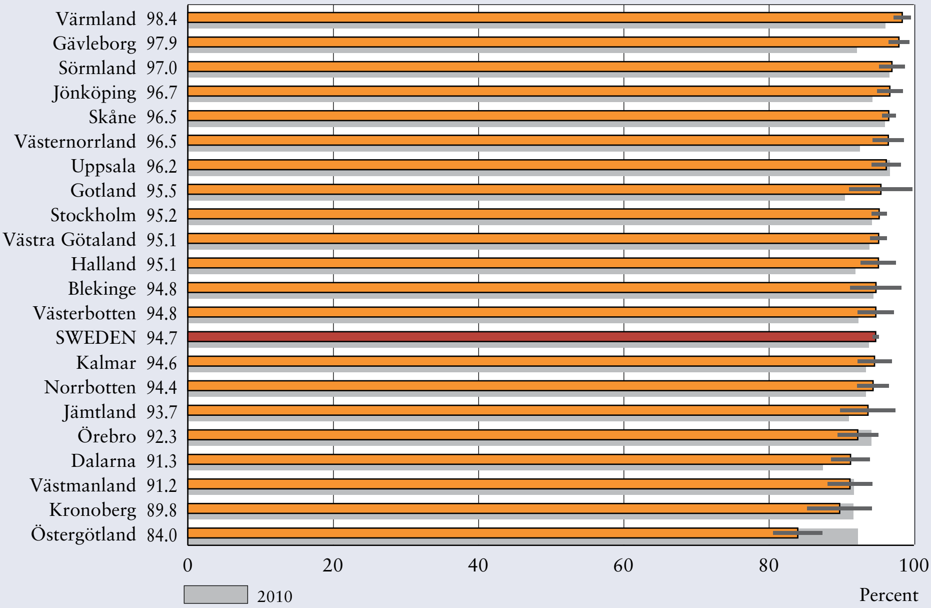


Figure 93 Antithrombotic therapy (P2Y2 receptor antagonist) after non-ST-segment elevation myocardial infarction in patients younger than 80, 2011.

Source: SWEDEHEART

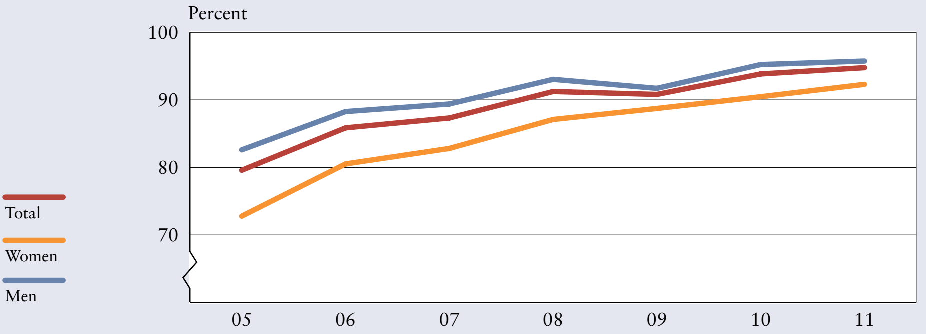


Figure 93 Sweden Antithrombotic therapy (P2Y2 receptor antagonist) after non-ST-segment elevation myocardial infarction in patients younger than 80.

Source: SWEDEHEART

93 Antithrombotic Therapy after NSTEMI

NSTEMI patients are treated with acetylsalicylic acid (aspirin), P2Y12 receptor antagonists or Warfarin to prevent blood clots. Prescribing P2Y12 receptor antagonists as an adjunct to acetylsalicylic acid for the first 3–12 months after an episode of unstable coronary artery disease has been shown to reduce the risk of myocardial infarction, stroke or death.

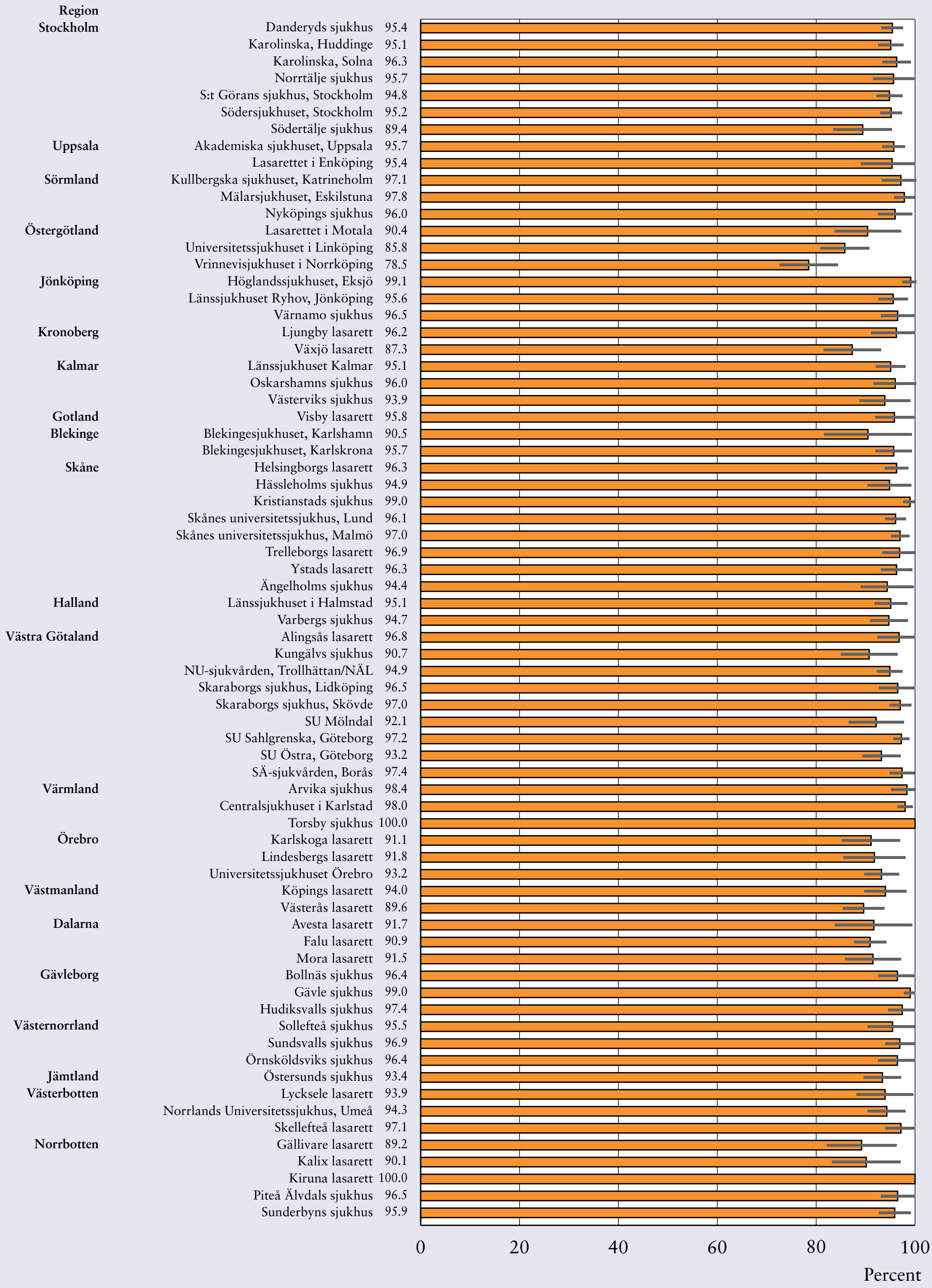


Figure 93
Hospitals

Antithrombotic therapy (P2Y2 receptor antagonist) after non-ST-segment elevation myocardial infarction in patients younger than 80, 2011.

Source: SWEDEHEART

The national guidelines prioritise therapy during this period. But long-term therapy is not recommended, given the lack of evidence that the benefits outweigh the risk of bleeding complications at that point.

Essentially all NSTEMI patients should be prescribed P2Y12 receptor antagonists in the absence of contraindications. Because therapy is based on individual assessment, a target of 100 per cent should not be set.

This indicator, which reflects the percentage of patients who were receiving P2Y12 receptor antagonists when discharged from hospital, is part of the RIKS-HIA Quality Index. The data are based on more than 10 000 patients aged 79 and younger, almost 2 700 of whom were women.

A total of 95 per cent of patients nationwide, 92 per cent of women and 96 per cent of men, received P2Y12 receptor antagonists in 2011. The county percentages were within a moderate range of 84 to 98 per cent.

The RIKS-HIA score of 85-90 per cent represents a target that is fully in line with the recommendation of the national guidelines. In other words, target fulfilment was good.

94 Lipid Lowering Drug Therapy after Myocardial Infarction

As is the case with stroke, elevated blood pressure and lipid levels after myocardial infarction are key risk factors for recurrence of cardiovascular disease. While a proper diet and lifestyle are integral to treatment, a considerable percentage of myocardial infarction patients need lipid lowering drug therapy. Statins lower lipid levels and thereby reduce the risk of new coronary artery stenosis. Low-cost statin therapy has high priority in the national guidelines.

This indicator presents the percentage of myocardial infarction patients who picked up prescriptions for lipid lowering drugs for 12–18 months after hospitalisation. For that purpose, data from the National Patient Register and Prescribed Drug Register have been combined. The results cover more than 23 000 patients aged 40–79 who were hospitalised for myocardial infarction in 2009–2010. The data are age-standardised.

Figure 94 shows the percentage of patients who were treated with lipid lowering drugs after myocardial infarction. The national proportion was 84 per cent. 80 per cent of women were treated, as opposed to 86 per cent of men. The variations among counties were modest.

The diagram also presents the percentage of patients treated for the first four months after discharge. The higher proportion (91 per cent) suggests that some patients received lipid lowering therapy shortly after myocardial infarction but subsequently stopped. That pattern was more common among women than men.

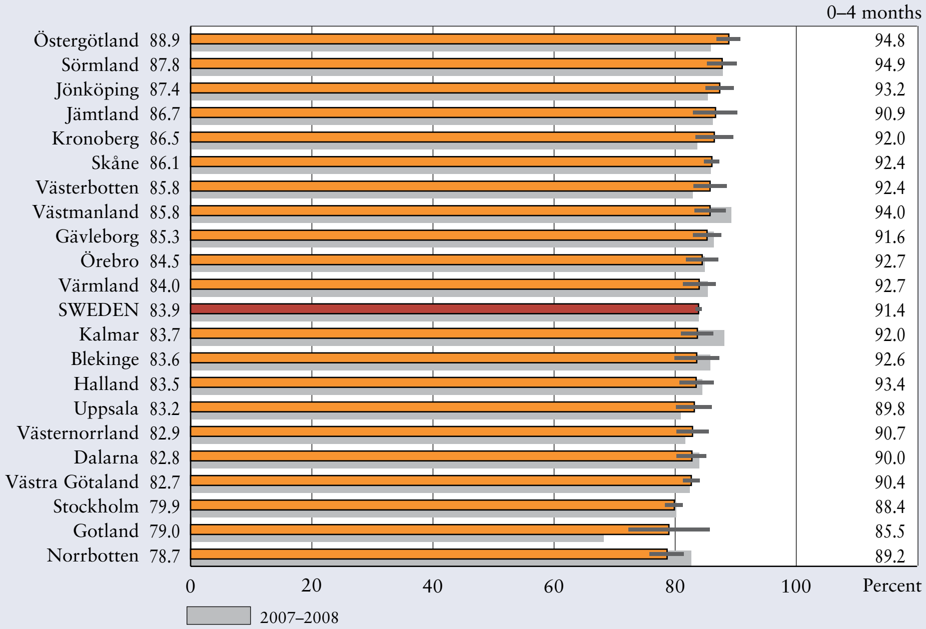


Figure 94 Lipid lowering drug therapy 12–18 months after myocardial infarction, in patients age 40–79, 2009–2010. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

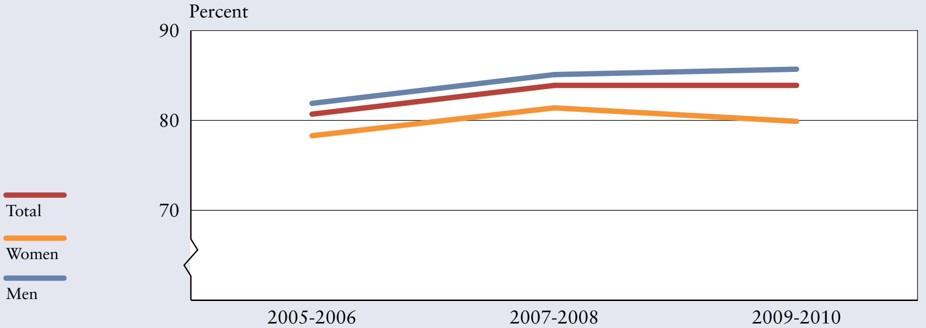


Figure 94 Sweden Lipid lowering drug therapy 12–18 months after myocardial infarction, in patients age 40–79. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

The indicator was once part of the RIKS-HIA Quality Index for hospitals, targeting treatment in 90–95 per cent of patients. Given that no county reached 90 per cent 12–18 months after hospitalisation for myocardial infarction in 2009–2010, patients appear to have been undertreated.

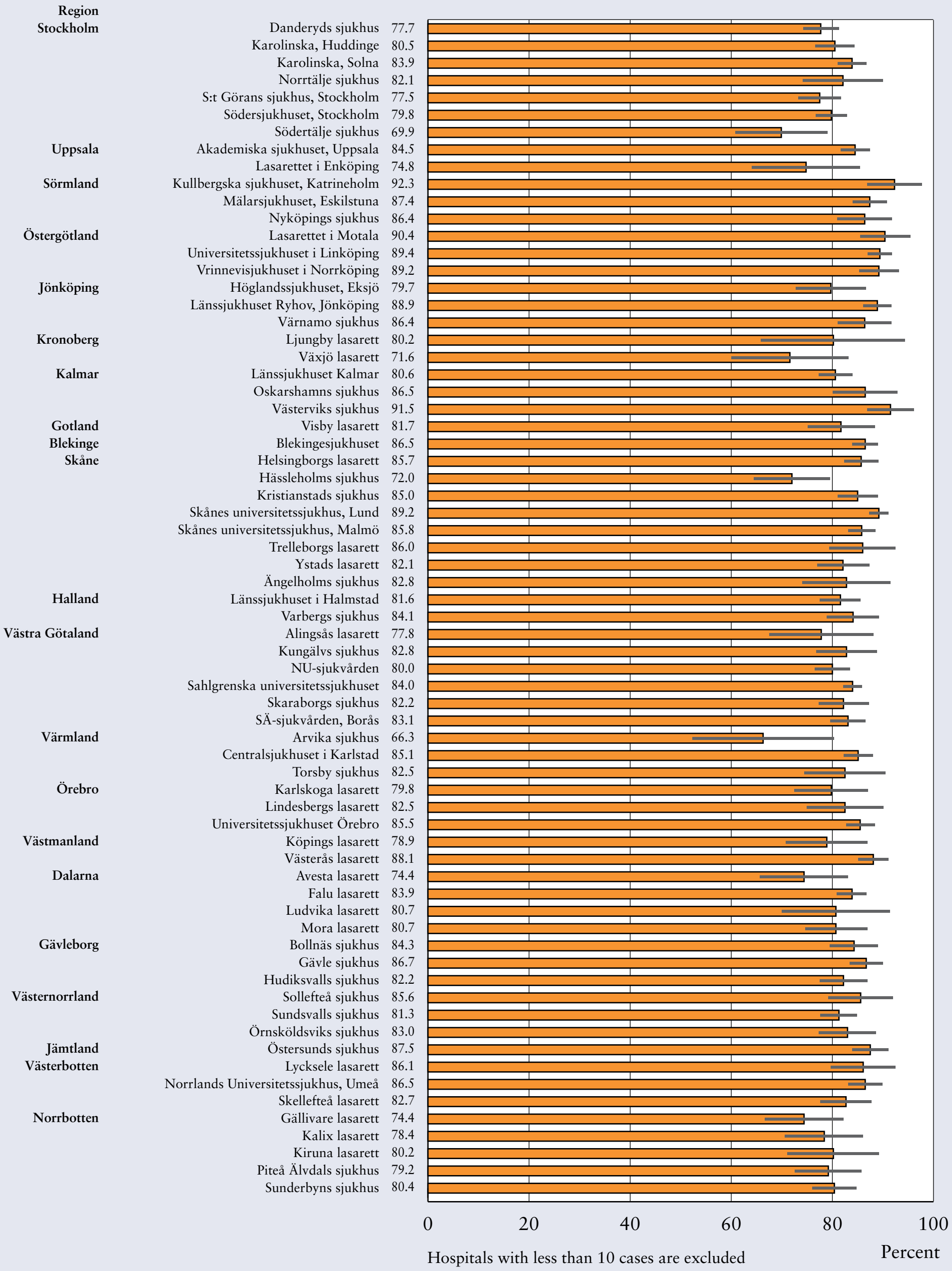


Figure 94 Hospitals Lipid lowering drug therapy 12–18 months after myocardial infarction, in patients age 40–79, 2009–2010. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

Proceeding from the alternate assumption that only patients with elevated cholesterol levels are to be treated would suggest that 80 per cent should receive lipid lowering drugs. In that case, patients would not have been undertreated on a nationwide basis.

95 PCI for Unstable Coronary Artery Disease – 365-day Case Fatality Rate

The following two indicators and a table of process measures that shed light on performance of PCI are based on data from the Swedish Coronary Angiography and Angioplasty Register (SCAAR), which is part of SWEDEHEART. The purpose of coronary angiography is to determine whether PCI or CABG is called for.

PCI involves inserting a balloon catheter through the wrist or groin to dilate narrowed arteries in the heart. A metal net (stent) subsequently expands to reinforce the arterial wall. The largest patient population that receives PCI consists of those with unstable coronary artery disease – severe angina pectoris, without ST-segment elevation on the EKG, that can lead to major myocardial infarction. The other two major populations are patients with stable angina pectoris or acute myocardial infarction with ST-segment elevation on the EKG, which is associated with a high rate of premature death and requires expeditious treatment. Approximately 20 000 PCIs and more than 38 000 coronary angiograms are performed in Sweden every year.

All 29 hospitals that perform PCIs report to SCAAR. The register has close to a 100 per cent participation rate for treatment performed. A comparison for 2010 showed that SCAAR contained 98.2 per cent of all PCIs reported to it or the National Patient Register of the Swedish National Board of Health and Welfare, while the National Patient Register contained 94.9 per cent.

Death after PCI is one of several possible outcome measures. This indicator reflects the case fatality rate among the largest population of patients, those with unstable coronary artery disease. Thus, it partially overlaps with Indicator 88, which presents the case fatality rate among patients with myocardial infarction, regardless of whether they received PCI or thrombolytic therapy.

The indicator shows the percentage of patients who died within 12 months after PCI for unstable coronary artery disease. The comparison is based on data for 15 142 patients, including almost 11 000 men, who underwent PCI in 2009–2010. The data have been age-standardised. Patients were assigned to the county in which they lived no matter where treatment was provided.

More than 4 per cent of patients nationwide died within 12 months. The counties showed a fairly wide variation from just over 2 per cent to almost 7 per cent. No significant gender differences emerged. No major changes in the national case fatality rate have occurred since 2005, despite an increase in the mean age over time.

The statistical difference in case fatality rates after PCI may be due to any one of several factors. Random fluctuations represent the most probable explanation. A handful of deaths that are not caused by cardiovascular disease can have a substantial impact on the outcomes reported by less populous counties. Case mix, includ-

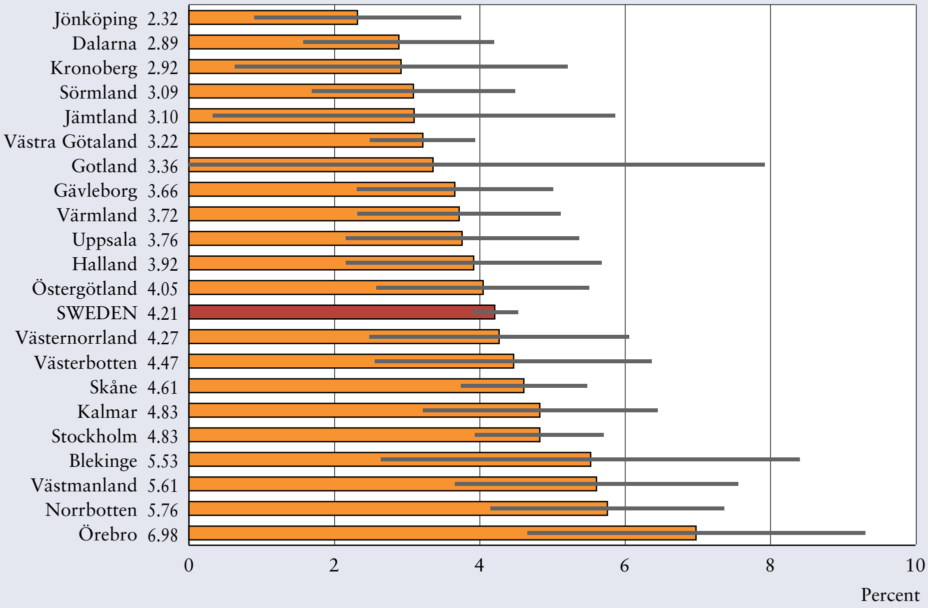


Figure 95 Percentage of deaths within one year after PCI for unstable coronary artery disease, 2009–2010. Age-standardised

Source: SWEDEHEART

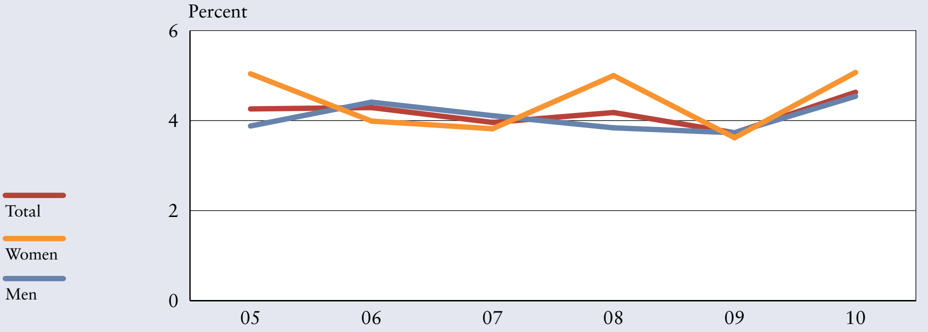


Figure 95 Sweden Percentage of deaths within one year after PCI for unstable coronary artery disease. Age-standardised

Source: SWEDEHEART

ing severity of disease, is a key variable that affects fatality rates insofar as it differs from one clinic or county to another. Except in connection with age standardisation, severity of disease has not been taken into consideration here. Outcomes can also be affected by the skill and experience of the doctor, not to mention the way that healthcare services are structured. Secondary prevention intervention also has a role to play, given the 12-month horizon involved.

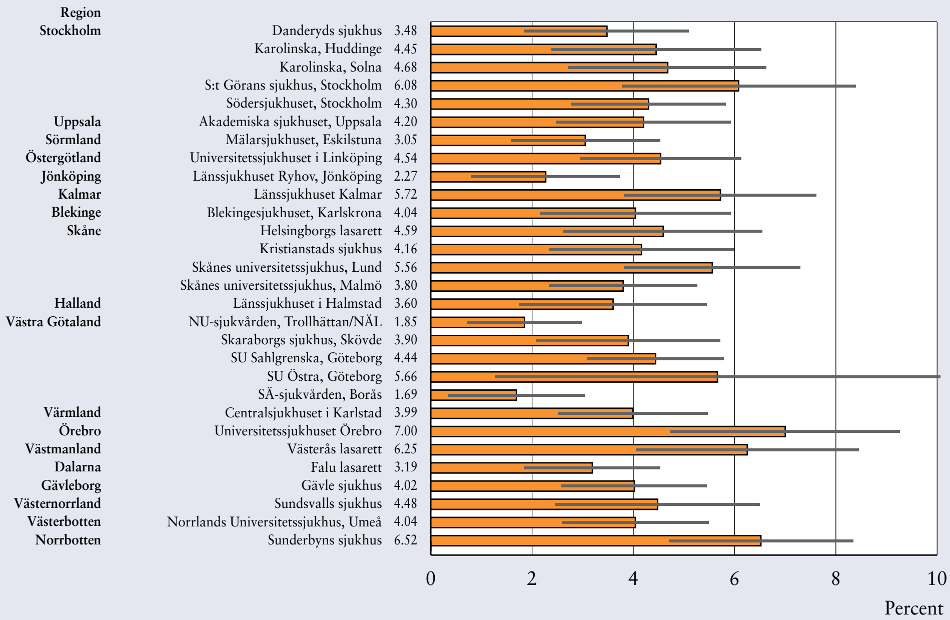


Figure 95
Hospitals

Percentage of deaths within one year after PCI for unstable coronary artery disease, 2009–2010. Age-standardised

Source: SWEDEHEART

96 Restenosis of the Coronary Artery after PCI

Although PCI dilates the coronary artery, there is a risk that it will subsequently narrow again (restenosis) at the same place, requiring a repeat of the procedure or another kind of treatment. Thus, restenosis after PCI is a logical, widely used outcome measure. Stenosis diameter and length are among the factors that determine the risk of recurrence. Persons with diabetes face an elevated risk.

The indicator presents the percentage of patients who developed restenosis within 12 months after PCI among those who had a follow-up angiogram due to recurrent discomfort. The comparison is based on data for 16 008 patients, including almost 12 000 men, who underwent PCI in 2010. Patients of all ages and pathological conditions were included. The data were not age-standardised. Patients were assigned to the county in which they lived no matter where treatment was provided.

Five per cent of patients nationwide developed restenosis within 12 months. The counties showed a wide variation from approximately 2 per cent to almost 7 per cent. No gender differences emerged at the national level.

The risk of restenosis decreased considerably when a stent was used rather than balloon dilatation alone. A drug eluting stent that blocks proliferation of cells and connective tissue further minimises the risk. The percentage of restenosis cases nationwide started to rise in 2005 but receded again after 2008. The likely explana-

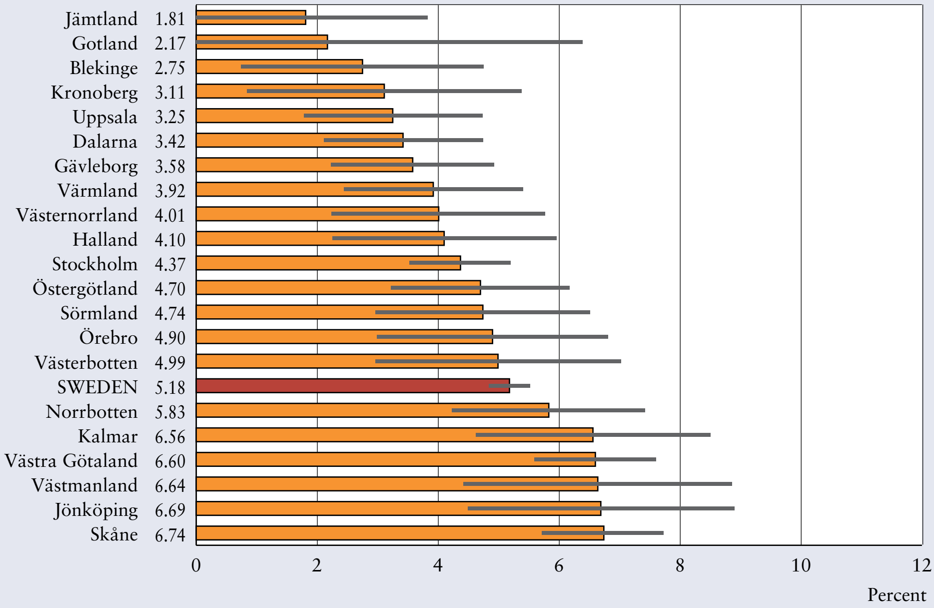


Figure 96 Percentage of patients in whom restenosis of the coronary artery was detected at a follow-up examination within one year after PCI, 2010.

Source: SWEDEHEART

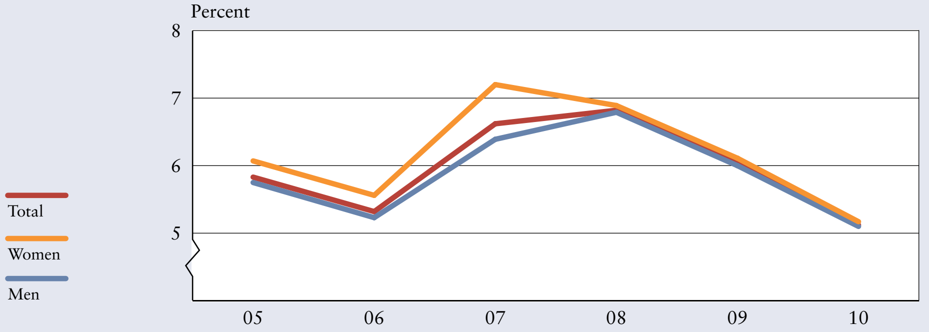


Figure 96 Sweden Percentage of patients in whom restenosis of the coronary artery was detected at a follow-up examination within one year after PCI.

Source: SWEDEHEART

tion is that fewer drug eluting stents were inserted in 2006–2007 following reports that, though effective, they heightened the risk of developing potentially fatal acute blood clots. Once the long-term safety of such stents had been demonstrated, doctors started to use them again and the incidence of restenosis declined.

The variation between counties and clinics may reflect case mix (the selection of patients offered PCI as first-line treatment), as well as the degree to which follow-

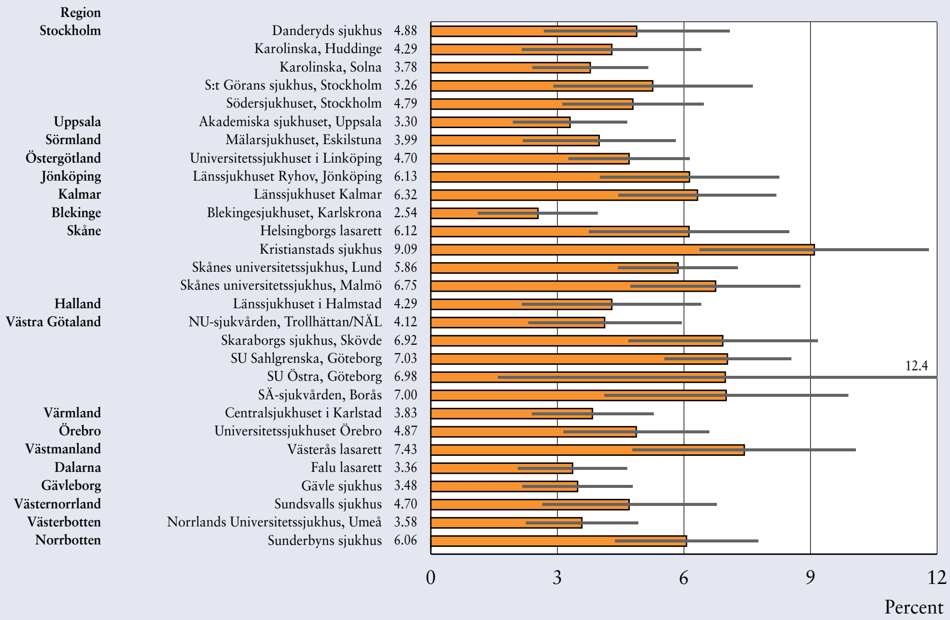


Figure 96
Hospitals

Percentage of patients in whom restenosis of the coronary artery was detected at a follow-up examination within one year after PCI, 2010.

Source: SWEDEHEART

up examinations and new coronary angiograms were performed. In other words, follow-up is not a routine procedure. Furthermore, the criteria for diagnosing restenosis may vary from clinic to clinic. The choice of stent can make a difference as well. Clinics that rely on a high percentage of drug eluting stents tend to have a lower risk for restenosis.

97 Death or Readmission after Hospitalisation for Heart Failure

Approximately 200 000 Swedes have symptomatic heart failure and the same number have latent heart failure. Heart failure, which significantly increases the risk of premature death, is one of the most common diagnoses among elderly patients who are hospitalised. A chronic condition, heart failure exhibits symptoms such as fatigue, shortness of breath during exertion, dyspnoea and coughing at night, and swelling of the legs.

The availability of data about the quality of treatment for heart failure is fairly limited. The following three indicators are based on the National Patient Register, Prescribed Drug Register and Swedish Heart Failure Registry.

Patients frequently die or are readmitted shortly after being hospitalised for heart failure. Because the condition is chronic, death after hospitalisation is a complex quality indicator but nevertheless worth examining. Among the reasons for read-

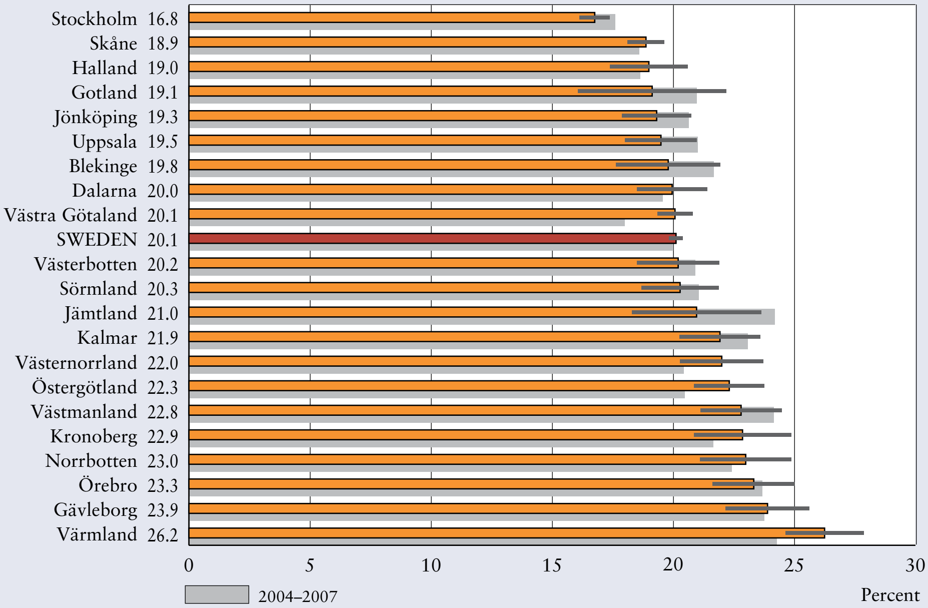


Figure 97 Death or readmission within 30 days in patients hospitalised for heart failure, 2008–2011. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

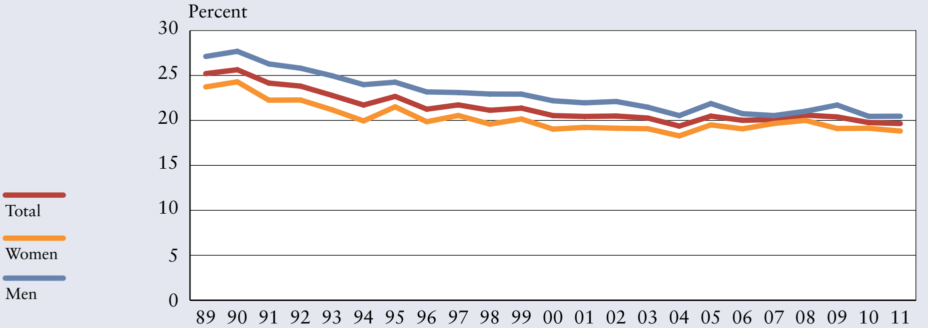


Figure 97 Sweden Death or readmission within 30 days in patients hospitalised for heart failure. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

mission may be premature discharge, inadequate drug therapy or poor information for patients. Avoidable readmission represents a quality problem that leads to greater personal suffering and higher costs for the healthcare system.

Indicator 97 reflects the percentage of heart failure patients who either died or were readmitted to hospital within 30 days after discharge for the same diagnosis. All ages were included and the data were age-standardised.

A total of 75 000 care episodes, with a slight preponderance of men, for which heart failure was the primary diagnosis were reported in 2008–2011. All in all, 15 000 episodes led to either death or readmission within 30 days. The proportion of deaths or readmissions nationwide was 20 per cent; men were somewhat overrepresented. The variation between counties was a considerable at 16.7–26.2 per cent. Death was more common than readmission. The national percentage of deaths or readmissions has held relatively steady since 2004.

Variations between counties and hospitals may largely reflect variables, such as admission policies, other than care quality. The lower the threshold for severity of disease prior to admission, the better the reported outcome. Thus, future comparisons should pay more attention to case mix at individual hospitals.

The same is true of diagnostic criteria. A county or hospital that diagnoses patients with mild heart failure more often will show better results.

98 Drug Therapy for Heart Failure

Antihypertensive therapy with RAAS inhibitors – Angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs) – reduce the risk of hospitalisation, myocardial infarction and death in patients with heart failure of various severities. Beta blockers lower blood pressure, pulse rate and cardiac output, which protects against dangerous arrhythmia and cardiac arrest. Beta blockers also lead to a long-term improvement in the cardiac output of heart failure patients. The national cardiac care guidelines give high priority to both types of therapy. In the absence of medical obstacles, essentially all heart failure patients should be treated.

The indicator shows the percentage of patients hospitalised for heart failure who received both RAAS inhibitors and beta blockers. Patients who had been hospitalised for heart failure during the preceding 365 days were excluded. The comparison proceeds from almost 41 000 care episodes for patients hospitalised with the primary diagnosis of heart failure in 2009–2011 who survived the first six months. Men somewhat outnumbered women.

The national proportion of patients receiving both medications approached 69 per cent, ranging from 60 to 80 per cent depending on the county. The gender differences were small. Approximately 80 per cent of patients were prescribed at least one of the two types of drugs.

The guidelines do not target a specific percentage of patients to be treated following an individual assessment. The target of the Swedish Heart Failure Registry is that at least 90 per cent of patients be given RAAS inhibitors and that the same proportion

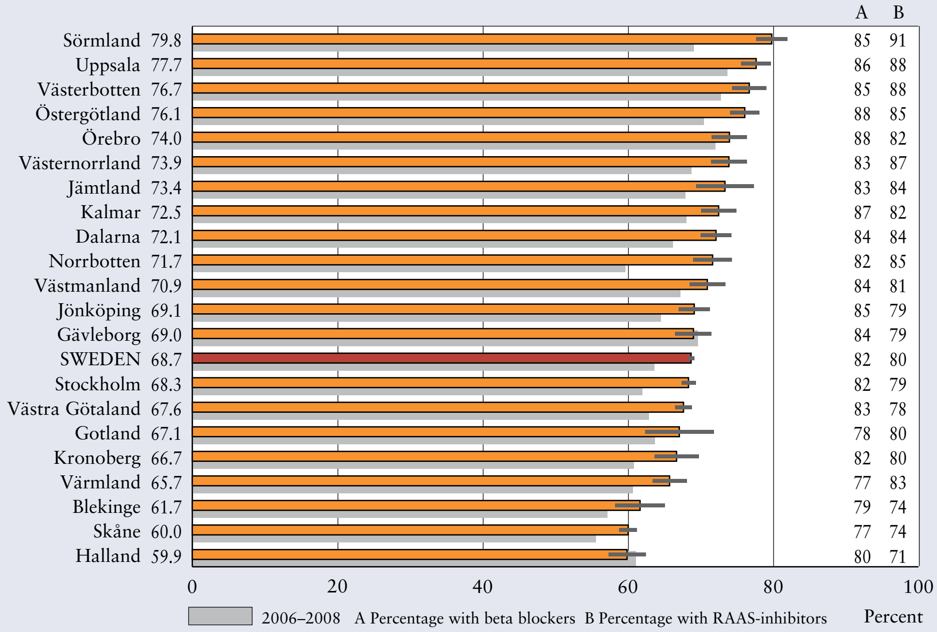


Figure 98 Percentage of patients hospitalised for heart failure who were being treated with both Renin angiotensin aldosterone system (RAAS) inhibitors and beta blockers after 12–18 months, 2009–2011. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

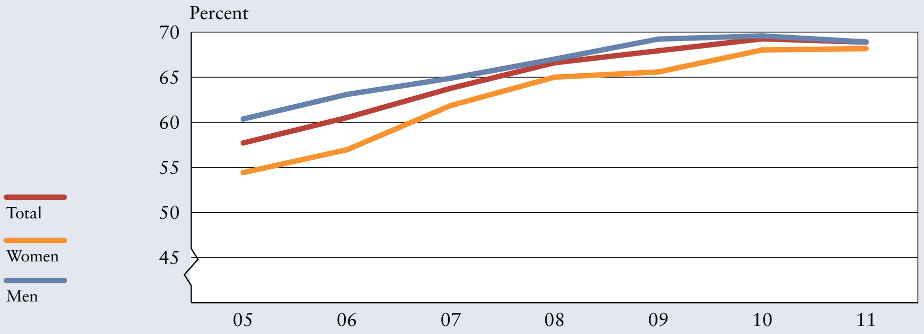
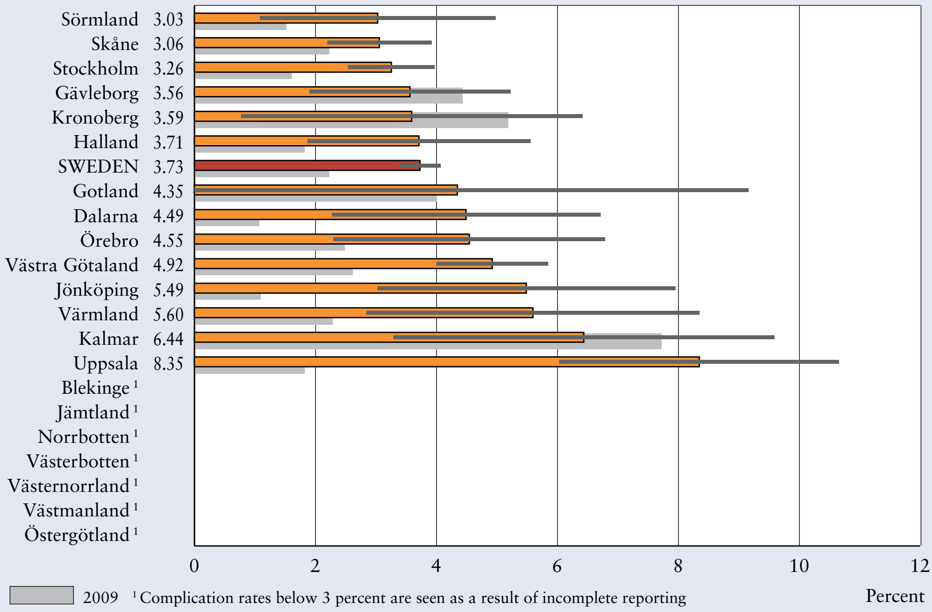


Figure 98 Sweden Percentage of patients hospitalised for heart failure who were being treated with both Renin angiotensin aldosterone system (RAAS) inhibitors and beta blockers after 12–18 months. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

receive beta blockers. A simple calculation suggests that the first-line treatment for at least 80 per cent of heart failure patients should be both types of drugs. In other words, there is significant latitude for improvement.



[1] Complication rates below 3 percent are seen as a result of incomplete reporting

Figure 99 Percentage of patients who experienced complications within one year after pacemaker treatment, 2010.

Source. Swedish ICD/Pacemaker Registry

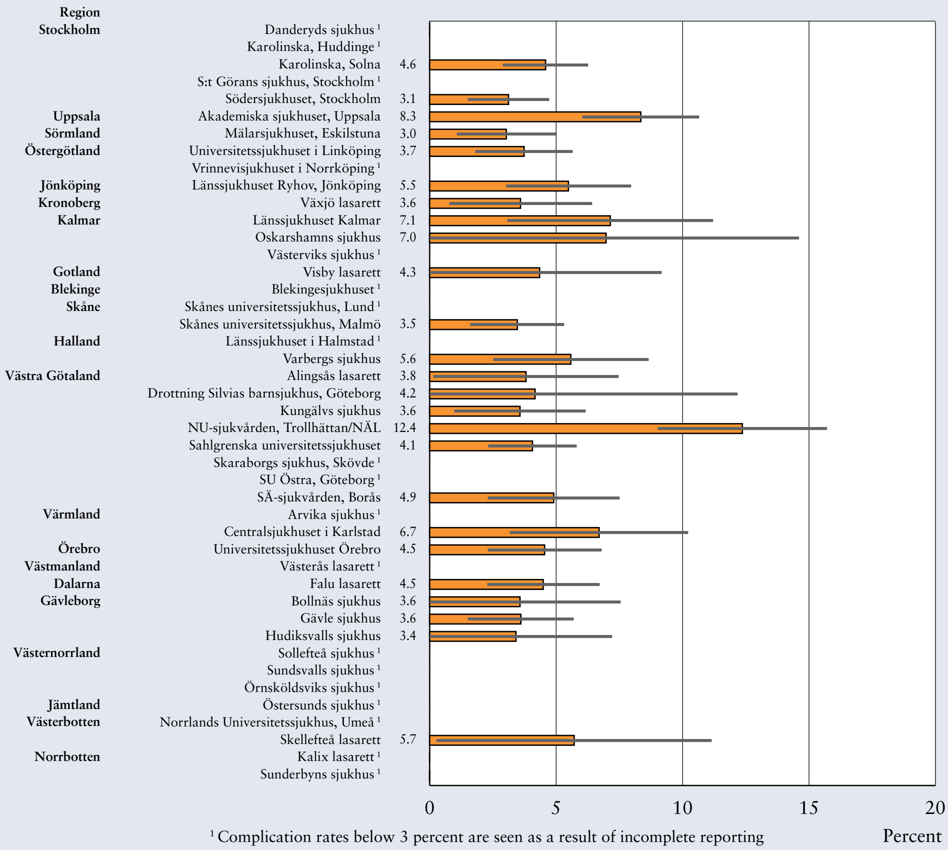
99 Complications after Pacemaker Implantation

Slow or irregular heartbeat can lead to dizziness, fainting spells or sudden death. A pacemaker is implanted to help restore a sufficiently rapid pulse or regular rhythm. Approximately 6 300 Swedes, with men averaging 75 years of age and women 78, receive their first pacemaker each year. Almost 50 000 Swedes currently have pacemakers.

Pacemaker surgery is typically uncomplicated and lasts for an hour. Patients are normally hospitalised, but day-case surgery may be an option. Nevertheless, the procedure is associated with the risk of complications. Thus, the frequency of complications is an obvious indicator for monitoring quality.

The Swedish ICD/Pacemaker Registry is the source of the data. Information about insertion of standard pacemakers, implantable cardioverter defibrillators (ICDs) and cardiac resynchronisation therapy (CRT) devices is reported to the register. All 43 clinics that implant pacemakers report to the register. The participation rate is very good at the individual level. A comparison for 2006 found the rate to be 95 per cent, which is better than the National Patient Register.

The indicator shows the percentage of patients who experienced complications after initial implantation, replacement or correction of a standard pacemaker. The location of the clinic rather than where the patient was living formed the basis of county reporting.



[1] Complication rates below 3 percent are seen as a result of incomplete reporting

Figure 99
Hospitals

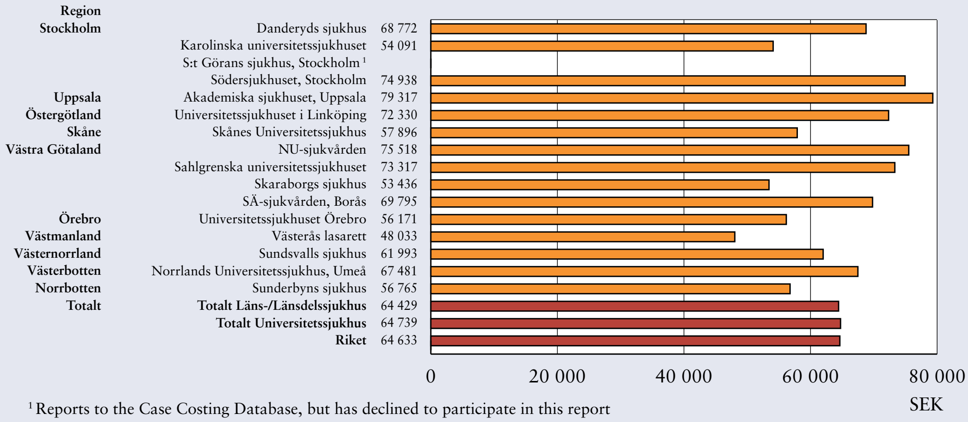
Percentage of patients who experienced complications within one year after pacemaker treatment, 2010.

Source. Swedish ICD/Pacemaker Registry

A complication, which can arise either during or after the care event, is defined as an unforeseen dysfunction of the pacemaker system or another serious adverse event. Furthermore, the adverse event must be of such nature and scope that either surgical intervention or drug therapy (antibiotics, etc.) is required.

The comparison covers approximately 11 700 patients, almost half of them women, who were treated in 2010 and followed up on in 2011. Complications arose after 3.7 per cent of implantations nationwide, ranging from less than 1 per cent to more than 8 per cent from county to county.

The differences between clinics may partly reflect the thoroughness with which complications were reported. Each hospital is to report any complications that it notes at the time of surgery or during the follow-up period. The annual report of the register highlights unreliable outcomes by isolating clinics with a rate of complications below 3 per cent due to possible underreporting.



[1] Reports to the Case Costing Database, but has declined to participate in this report

Figure 100 Hospitals Cost per inpatient care event for percutaneous coronary intervention after myocardial infarction, 2011.

Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

100 Cost per Inpatient Care Event for PCI after Myocardial Infarction

Nineteen hospitals in 13 counties reported to the Case Costing Database in 2010. The database contains costs for each unique care event and for the interventions associated with it. Costs for follow-up appointments or drug consumption in outpatient care are excluded, as are outliers. The intention is to present a normalised average cost per hospital.

Figure 100 shows costs per inpatient care event for PCI after myocardial infarction. The procedure is performed immediately after STEMI, as well as within a few days after NSTEMI has been diagnosed and treated with drugs.

The Case Costing Database for 2011 contains 7 110 care events for which PCI was performed. The average cost was SEK 64 633 (excluded outliers), ranging from less than SEK 50 000 at six hospitals to more than SEK 700 000 at five hospitals.

There are a number of possible reasons for the reported cost discrepancies. One is that hospitals collaborate in treating these patients. While PCI is performed at 29 hospitals, myocardial infarction care is provided at approximately 70 acute care hospitals. A patient may be given PCI on an emergency basis at one hospital and then taken to another hospital for further care. Another patient may be treated at the same hospital during the entire care episode. Such practices affect the data that are reported to the Case Costing Database. In other words, interpretation of cost data requires knowledge of how the particular hospital operates.

A second possible reason is that costs are affected by staff size per bed and per hospital. A third possible consideration is that costs reflect case mix at a hospital, such as the percentage of acute PCIs performed on STEMI patients.

STROKE CARE

Stroke is one of the most common diseases. Approximately 29 000 Swedes, roughly an equal number of women and men, have strokes every year. Some three-quarters of patients are over 65. Stroke is the most frequent cause of neurological disabilities in adults, as well as the third most common cause of death, following myocardial infarction and cancer. The number of stroke cases has declined significantly since 2000.

Care events in which some type of stroke was the primary diagnosis accounted for almost 400 000 days of hospitalisation. Many patients face a substantial need for rehabilitation and care after discharge. Thus, stroke involves very large care and resource utilisation at municipal assisted living facilities and home help services.

The eleven indicators presented here represent an increase since last year. The new indicators concern interventions in the acute stage, secondary prevention drug therapy and patient perceptions of rehabilitation measures.

In 2011 the Swedish National Board of Health and Welfare published an indicator-based evaluation of how well the healthcare system had implemented the national stroke guidelines. All eleven indicators, though updated here, were part of the Board's more comprehensive report.

The data for these indicators come from the National Patient Register, Cause of Death Register, Prescribed Drug Register and Swedish Stroke Register. All hospitals that care for stroke patients during the acute phase participate in the Stroke Register. More than 25 000 care events were entered in the register in 2011. In addition to keeping data about the acute phase, follow-up is performed at three months. One-year follow-up, which provides additional information about the patient's health and function, was adopted in 2009.

The participation rate of the Swedish Stroke Register vis-à-vis the National Patient Register is monitored each year. Over 90.5 per cent of all first-ever strokes were entered in 2011, although the counties varied somewhat and the hospitals even more noticeably. Given that the National Patient Register contains some misdiagnoses, the actual participation rate may be somewhat higher. The follow-up response rate in 2011 was 88 per cent at three months and 80 per cent at 12 months. The 2011 annual report of the Stroke Register sets targets for a number of indicators, including several of those presented here. Target fulfilment is scored as either high or moderate. Refer to the discussion below for additional details.

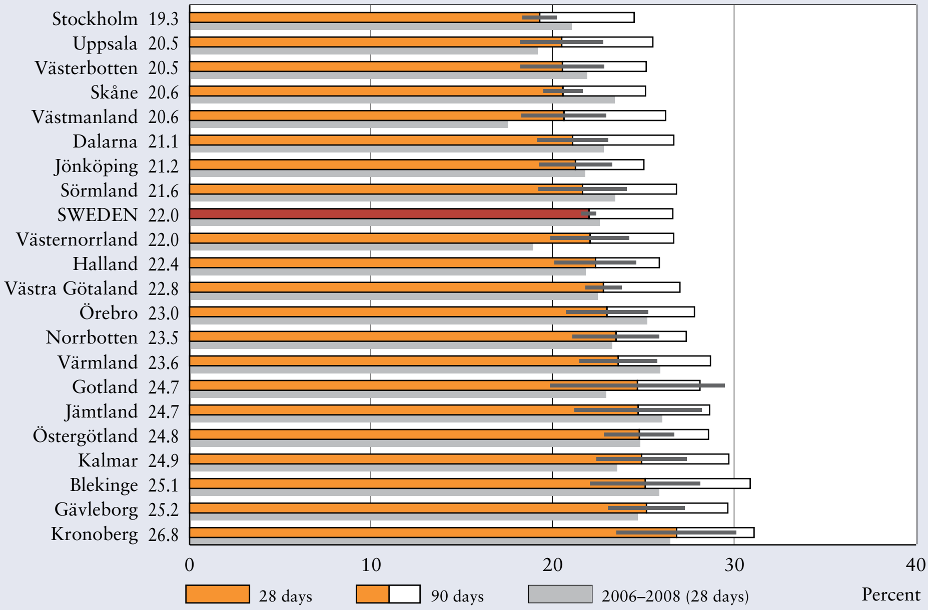


Figure 101
Women

28-day and 90-day case fatality rate for first-ever stroke, 2009–2011. Both hospitalised patients and those who died without hospital care.

Source: Patient Register and Cause of Death Register, National Board of Health and Welfare

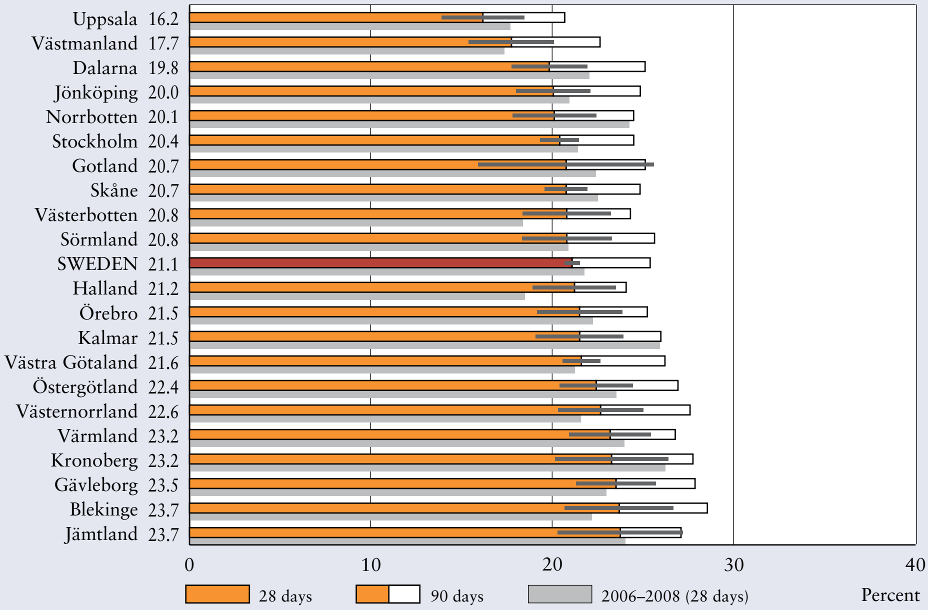


Figure 101
Men

28-day and 90-day case fatality rate for first-ever stroke, 2009–2011. Both hospitalised patients and those who died without hospital care.

Source: Patient Register and Cause of Death Register, National Board of Health and Welfare

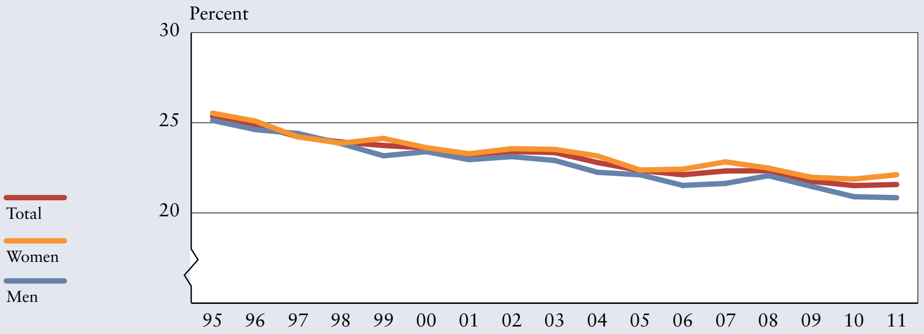


Figure 101
Sweden

28-day case fatality rate for first-ever stroke.
Both hospitalised patients and those who died without hospital care.
Source: Patient Register and Cause of Death Register, National Board of Health and Welfare

101 First-ever Stroke – 28-day and 90-day Case Fatality Rate

The OECD uses mortality after stroke as an indicator of healthcare quality in international comparisons. The indicator presented here examines quality throughout the healthcare system: preventive, ambulance, acute and follow-up.

Stroke is defined as all cases that include a diagnosis of cerebral haemorrhage, cerebral infarction or unspecified stroke in the Cause of Death Register or the inpatient section of the National Patient Register. Thus, both patients who were hospitalised and those who died without being hospitalised are included. The comparison comprises only first-ever stroke cases (more than 77 000 in 2009–2011), i.e., patients who had not had a stroke during the seven preceding years.

Almost 22 per cent, or over 5 500 annually, of them died within 28 days during this three-year period. More than 26 per cent died within 90 days. After adjusting for differing age structures, the case fatality rate was similar for women and men. Mortality within both 28 and 90 days had declined by half a percentage point since 2006–2008.

Figure 101 reveals that the counties varied somewhat in terms of case fatality rates. Among the possible causes of the differences are diagnostic reliability, comorbidity and other background factors, social variables, random parameters and the propensity of the population to seek care. Healthcare-related factors may include distance to emergency care, the efficiency of ambulance services and acute hospital care.

The 28-day case fatality rate varied from 19 to 27 per cent for women and 16 to 24 per cent for men among the various counties.

The diagram of trends makes it clear that post-stroke survival has improved somewhat over the past 15 years for both women and men, though not to the same extent as for myocardial infarction.

102 Hospitalised Stroke Patients – 28-day and 90-day Case Fatality Rate

This indicator, which reflects the 28-day and 90-day case fatality rate for hospitalised stroke patients, focuses on the quality of acute and continuing care at hospital.

International comparisons by the OECD, the Nordic cooperation and other bodies use various indicators of mortality after stroke. Short-term survival among hospitalised stroke cases only is a common indicator and the one that is available in many countries.

Approximately 25 500 of the 29 000 Swedes, approximately the same number of women and men, who have a stroke each year are hospitalised. The number is uncertain, but an estimated 3 000–4 000 die without being hospitalised.

Stroke is defined as all cases in 2009–2011 that included a diagnosis of cerebral haemorrhage, cerebral infarction or unspecified stroke in the inpatient section of the Patient Register – in other words, stroke patients who were initially hospitalised. Only first-ever stroke cases, i.e., people who had not had a stroke for the seven preceding years, were included. The selection was further limited to patients aged 20 and over. The comparison covered approximately 70 000 cases altogether.

More than 14 per cent of hospitalised stroke patients died within 28 days and 19 per cent within 90 days. An average of 3 300 people die each year within 28 days following first-ever stroke. After adjusting for differing age structures, the national case fatality rate – both subsequent to hospital care and as a whole – was similar for women and men. Neither the 28-day nor the 90-day case fatality rate have changed significantly for either women or men over the past five years.

When comparing case fatality rates at hospital level, it should be noted that there are case mix differences other than age, which is not accounted for.

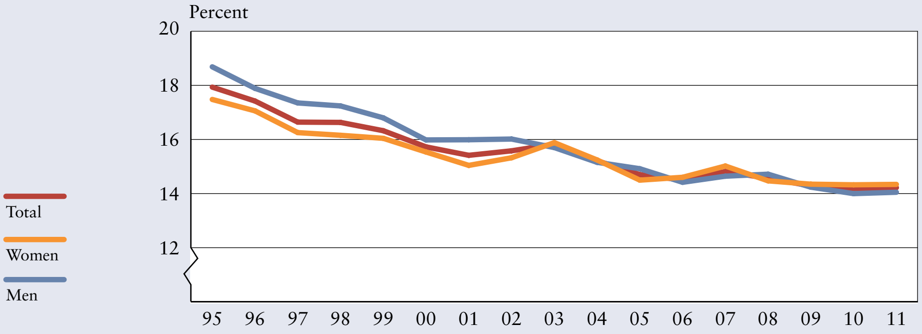


Figure 102
Sweden

28-day and case fatality rate for first-ever stroke.
Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

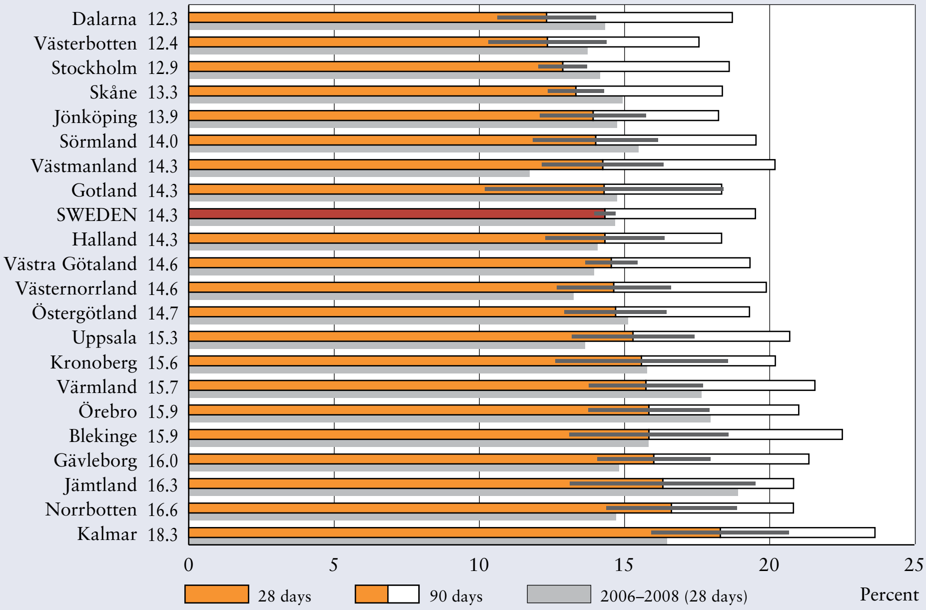


Figure 102
Women

28-day and 90-day case fatality rate for first-ever stroke, 2009–2011. Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

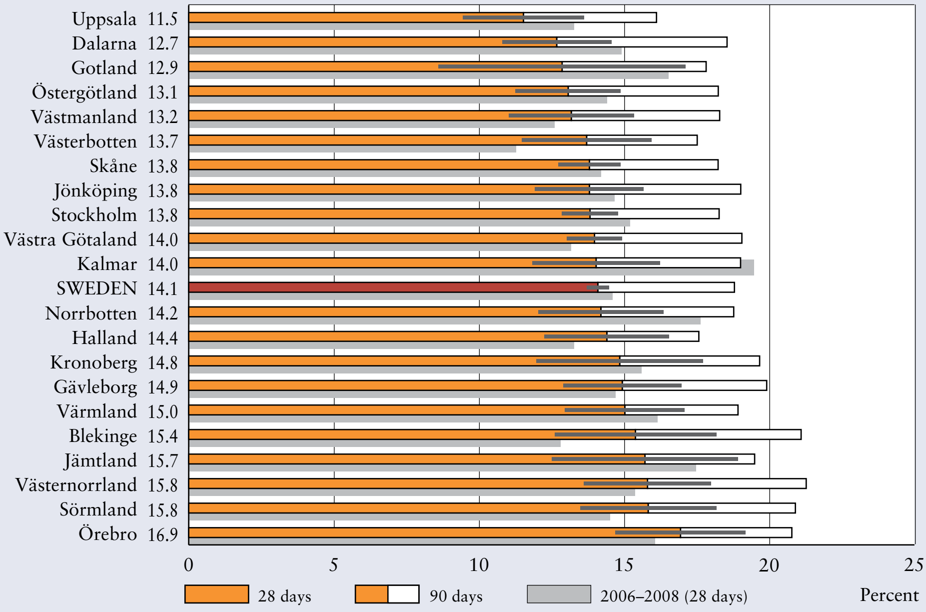


Figure 102
Men

28-day and 90-day case fatality rate for first-ever stroke, 2009–2011. Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

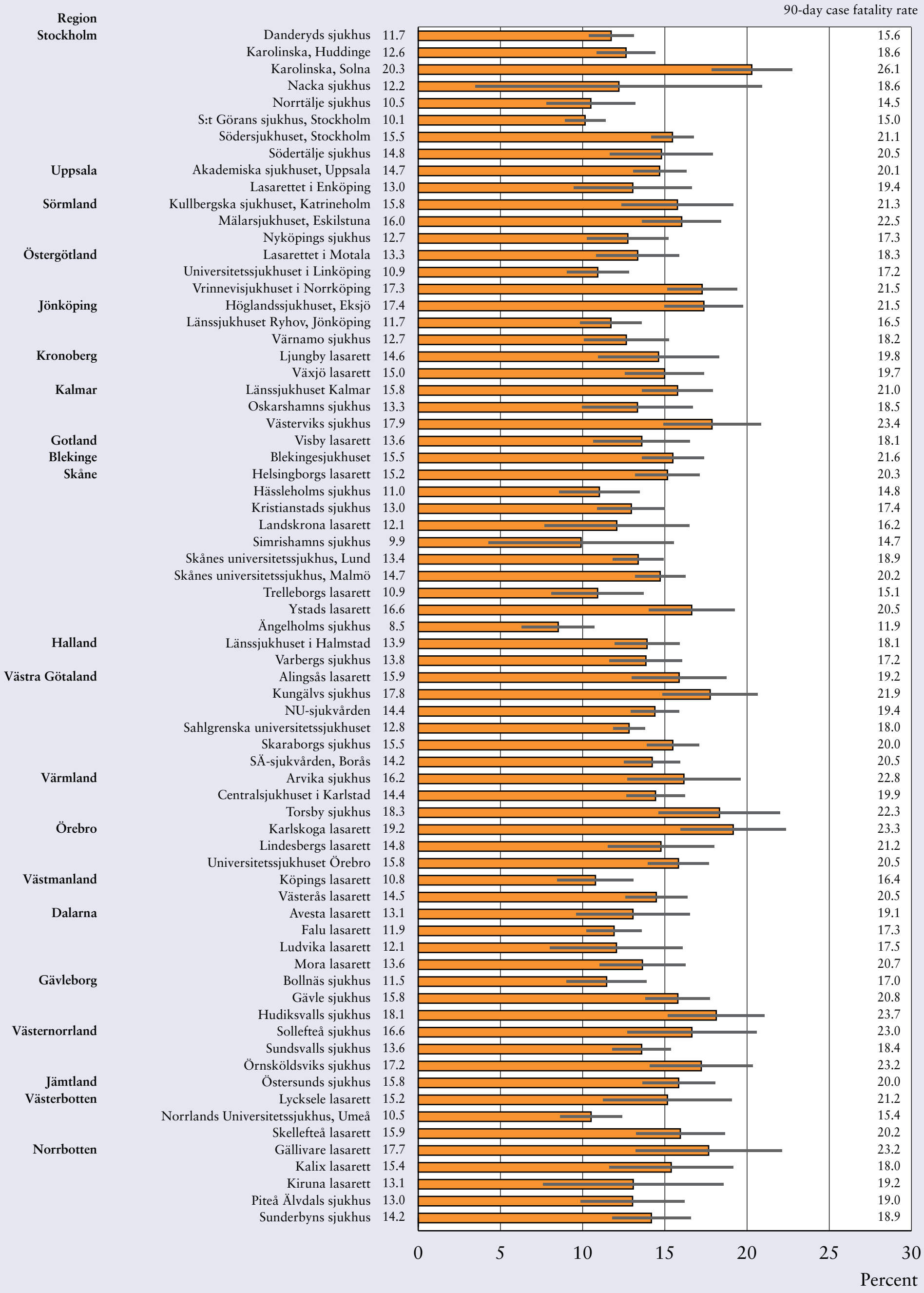


Figure 102
Hospitals

28-day case fatality rate for first-ever stroke, 2009–2011. Hospitalised patients. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

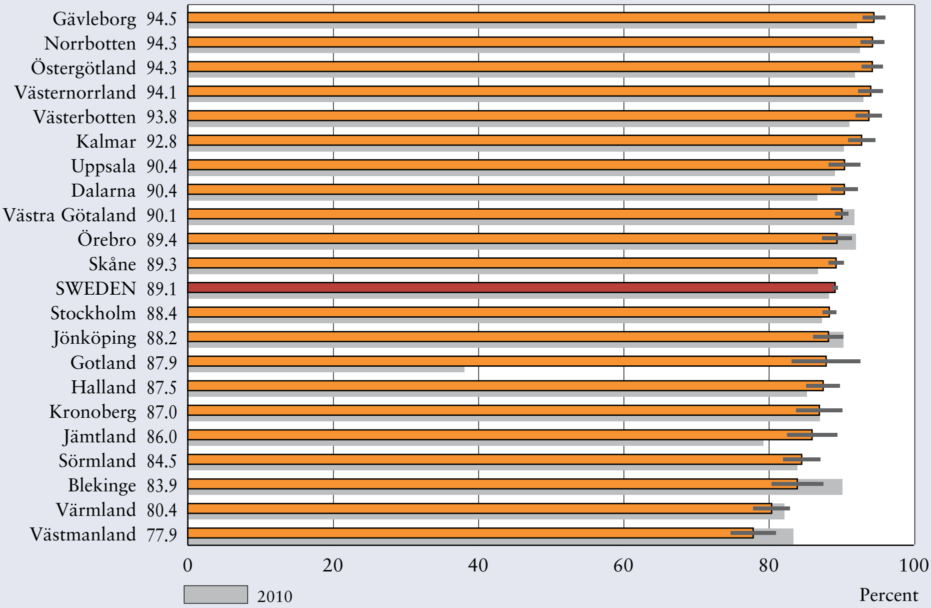


Figure 103 Percentage of patients treated at a special stroke unit, 2011.

Source: Swedish Stroke Register

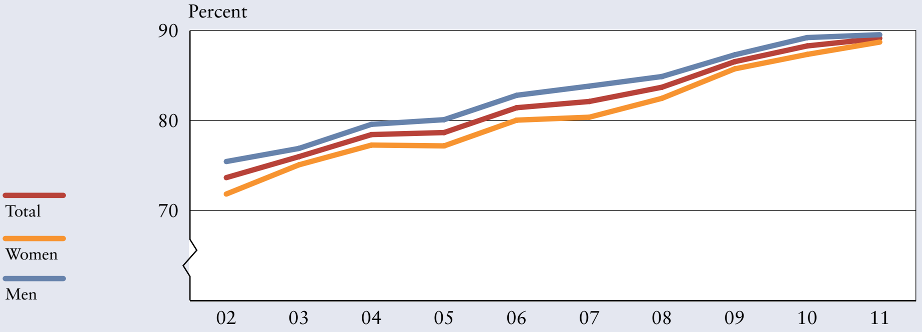


Figure 103 Sweden Percentage of patients treated at a special stroke unit.

Source: Swedish Stroke Register

103 Patients Treated at a Special Stroke Unit

According to the Swedish National Board of Health and Welfare guidelines, care during the acute phase is to be provided at special stroke units. Each unit has expertise in stroke management. A unit is to consist of an interdisciplinary team of doctors, nurses, assistant nurses, physiotherapists, occupational therapists, counsellors and speech therapists, as well as access to dieticians, psychologists and psychiatrists.

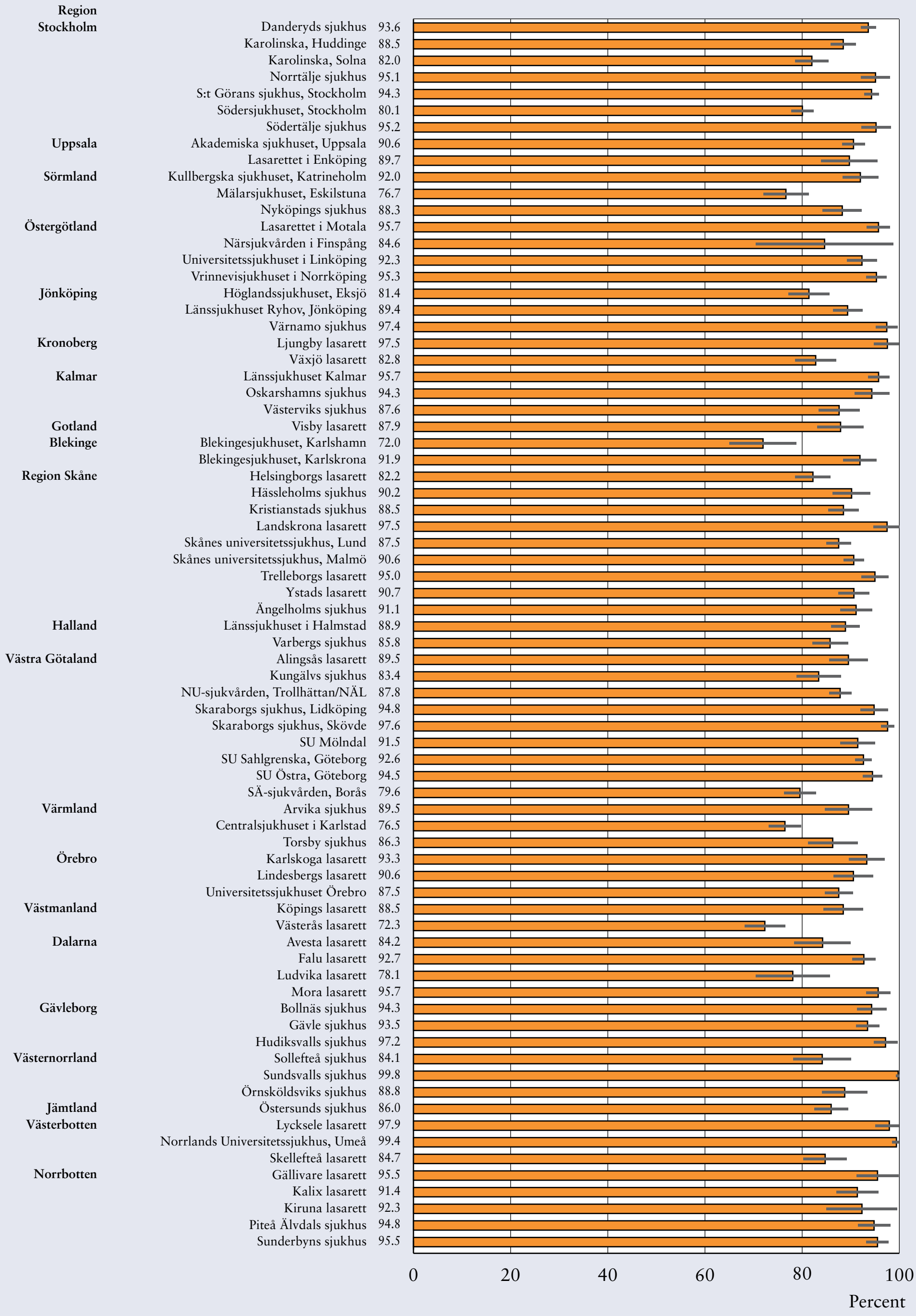


Figure 103
Hospitals

Percentage of patients treated at a special stroke unit, 2011.

Source: Swedish Stroke Register

Immediate mobilisation and early rehabilitation are central to the care such a unit provides.

There is a strong empirical basis for maintaining that care at well-functioning special stroke units reduces fatality rates, personal dependence and the need for institutional living. All stroke patients benefit, regardless of age, gender or severity of brain damage. Thus, the guidelines give top priority to care at a special stroke unit.

Over 89 per cent of the more than 25 000 patients entered in the Swedish Stroke Register were treated at special stroke units in 2011, an increase of close to one percentage point since 2010. The previous gap between women and men had virtually closed. The differences between counties were decidedly smaller in 2011 than five or six years ago. The Stroke Register defines high target fulfilment as 90 per cent or greater and moderate target fulfilment as 85–89 per cent.

104 Thrombolytic Therapy after Stroke

Approximately 85 per cent of strokes are caused by cerebral infarction and 15 per cent by cerebral haemorrhage. Intravenous thrombolytic therapy performed in accordance with current criteria has a highly beneficial impact on outcomes for some cerebral infarction patients. Because the procedure reduces the risk of death and disability, the national guidelines for stroke assign it high priority.

The presence of cerebral infarction and the passage of no more than 4½ hours since the onset of symptoms are among several criteria for commencement of thrombolytic therapy. A total of 11 766 of the patients entered in the National Stroke Register in 2011 met the criteria of having suffered a cerebral infarction, being 18–80 years of age and having previously been independent of others for their personal activities of daily living (ADL). The amount of time between the onset of symptoms and treatment limited the percentage of patients who could be given thrombolytic therapy.

Considering that thrombolytic therapy requires skills development in clinical and radiological diagnosis but is otherwise based on traditional stroke care, essentially all acute care hospitals should have the capacity to perform it. Uppsala County and Gothenburg each provide all thrombolysis services at a single hospital. The shortest possible delay after the onset of symptoms is crucial to the outcome. That patients and those around them have the ability to recognise symptoms of stroke and promptly obtain medical assistance is also decisive.

Figure 104 shows the percentage of patients receiving thrombolytic therapy among those who met the above criteria in 2011. The national proportion was approximately 10 per cent for both women and men. The large variations between counties are somewhat to be expected, given that the procedure is relatively new and hospitals are adopting it at their own pace. Kronoberg, where the percentage of patients

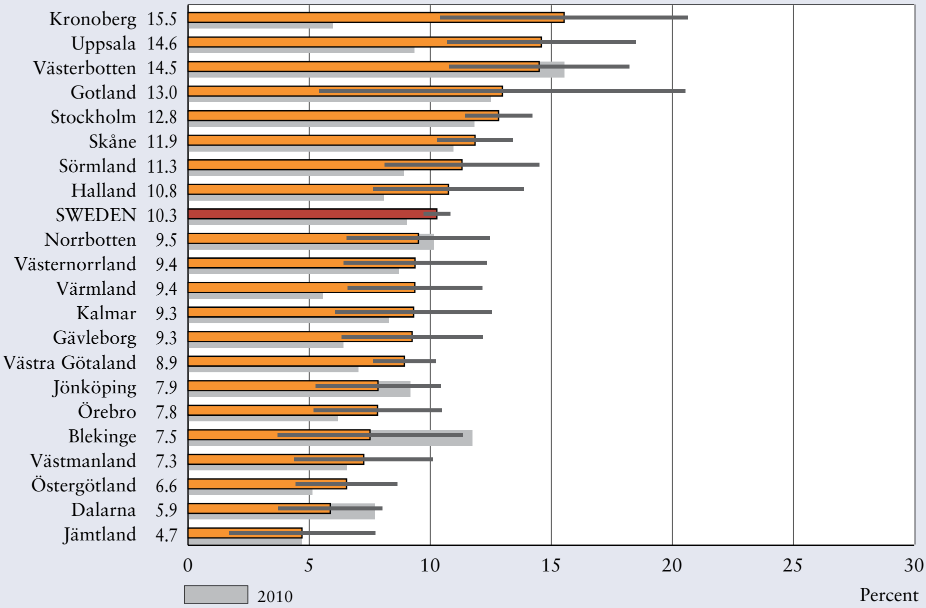


Figure 104 Percentage of eligible stroke patients who received thrombolytic therapy, 2011.

Source: Swedish Stroke Register

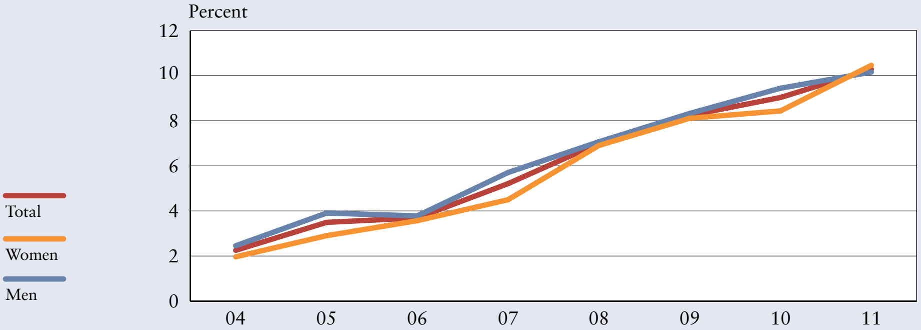


Figure 104 Sweden Percentage of eligible stroke patients who received thrombolytic therapy.

Source: Swedish Stroke Register

receiving thrombolytic therapy more than doubled in one year, was one of several countries reporting rapid increases.

The Swedish Stroke Register defines high target fulfilment as 15 per cent or greater and moderate target fulfilment as 10–14 per cent.

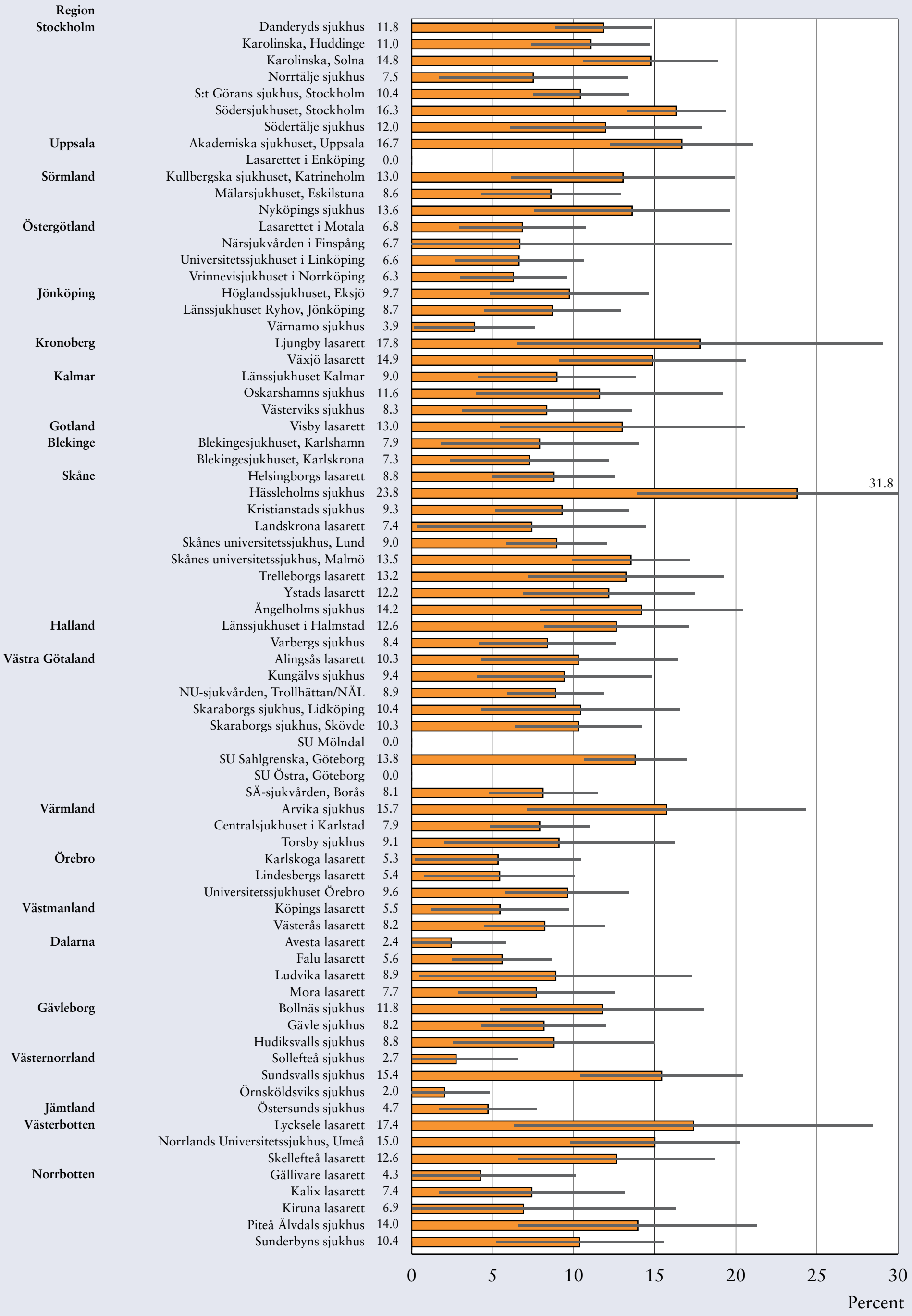


Figure 104
Hospitals

Percentage of eligible stroke patients who received thrombolytic therapy, 2011.

Source: Swedish Stroke Register

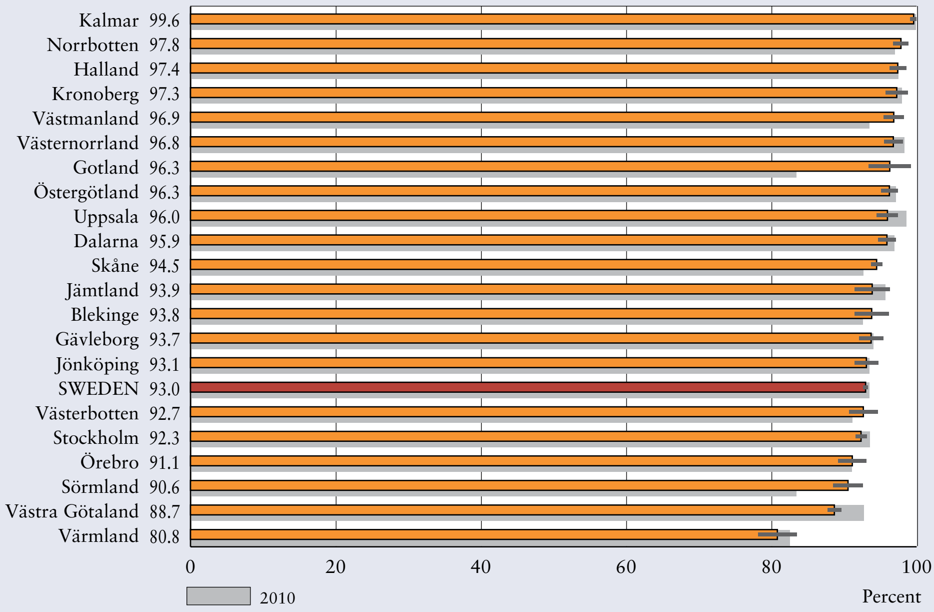


Figure 105 Percentage of stroke patients who were given a swallow test after arrival at hospital, 2011.

Source: Swedish Stroke Register

105 Swallow Test after Acute Stroke

Stroke can impair the ability to swallow such that food gets caught in the airways. If worse comes to worst, the result can be respiratory arrest or severe pneumonia. The ability of stroke patients to swallow should be routinely assessed at the time of hospitalisation by means of a simple test. The test has priority 1 (out of 10) in the national guidelines.

Patients whose awareness is markedly impaired when arriving at hospital cannot take the swallow test. There are also other possible reasons that the test may not be feasible.

The indicator reflects the percentage of patients who were given a swallow test upon arrival or who were excluded due to their medical condition among everyone who was hospitalised for acute stroke in 2011. The comparison includes approximately 24 500 patients, almost half of them women.

A total of 93 per cent of patients nationwide either took the swallow test or were unable to by virtue of their condition. There were no gender differences. The variations between counties were generally within a 10 percentage point range but the proportions for a few of them were exceptionally low. The Swedish Stroke Register defines 95 per cent as high target fulfilment and 90–94 per cent as moderate target fulfilment.

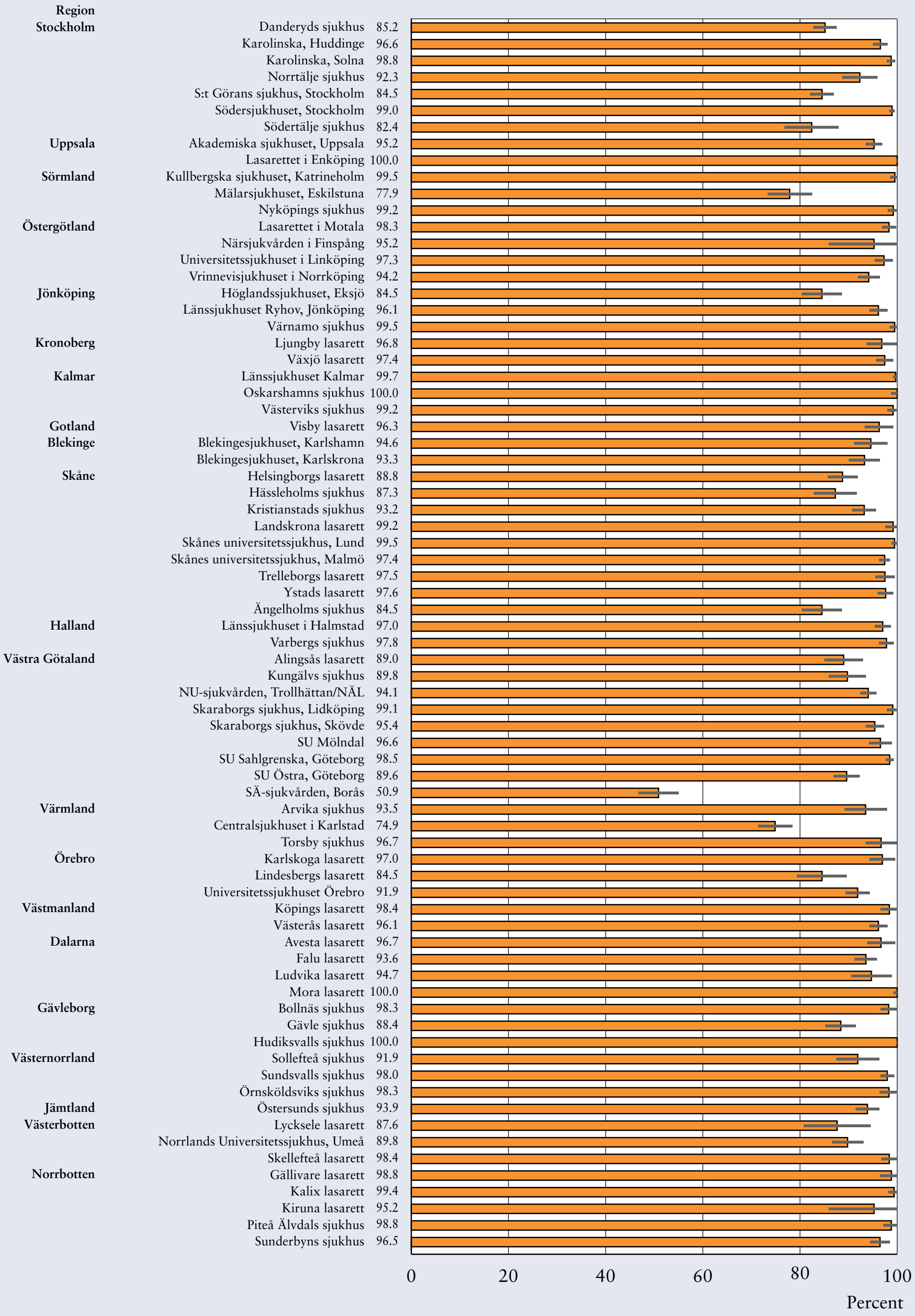


Figure 105
Hospitals

Percentage of stroke patients who were given a swallow test after arrival at hospital, 2011.

Source: Swedish Stroke Register

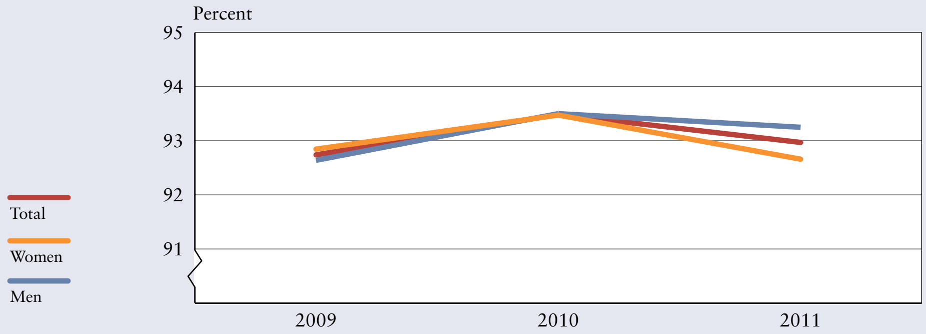


Figure 105
Sweden

Percentage of stroke patients who were given a swallow test after arrival at hospital.

Source: Swedish Stroke Register

Given the formulation of the indicator in this report, all counties should strive for 100 per cent. Generally speaking, every patient should have a swallow test if at all possible. In other words, additional potential for improvement remains.

106 Anticoagulant Therapy for Stroke Patients with Atrial Fibrillation

An estimated 1 per cent of the population has atrial fibrillation, which is one of the most common causes of stroke (approximately 6 000 Swedes every year). It is also a key risk factor for stroke recurrence. Warfarin therapy after stroke due to cerebral infarction and for atrial fibrillation leads to a considerably lower risk for recurrence of stroke or for other cardiovascular disease.

Warfarin after stroke or for atrial fibrillation is a high-priority therapy in the national stroke guidelines. Many of these patients should be candidates for anticoagulant therapy once comorbidity and very advanced age have been taken into consideration. The comparison also includes dabigatran, a new medication for this patient population.

Figure 106 shows the percentage of stroke patients with atrial fibrillation who were given anticoagulant therapy 12–18 months after discharge from hospital. The data are based on the National Patient Register and the Prescribed Drug Register. The comparison includes approximately 2 900 patients aged 55–79 who were discharged after stroke in 2009–2010.

A total of 67 per cent of patients nationwide received therapy, a small increase since 2007–2008. There were no gender differences. The rather large gaps between counties, however, suggest that their risk/benefit assessments varied with respect to warfarin and dabigatran therapy. The percentage of this patient population that should have therapy is difficult to determine.

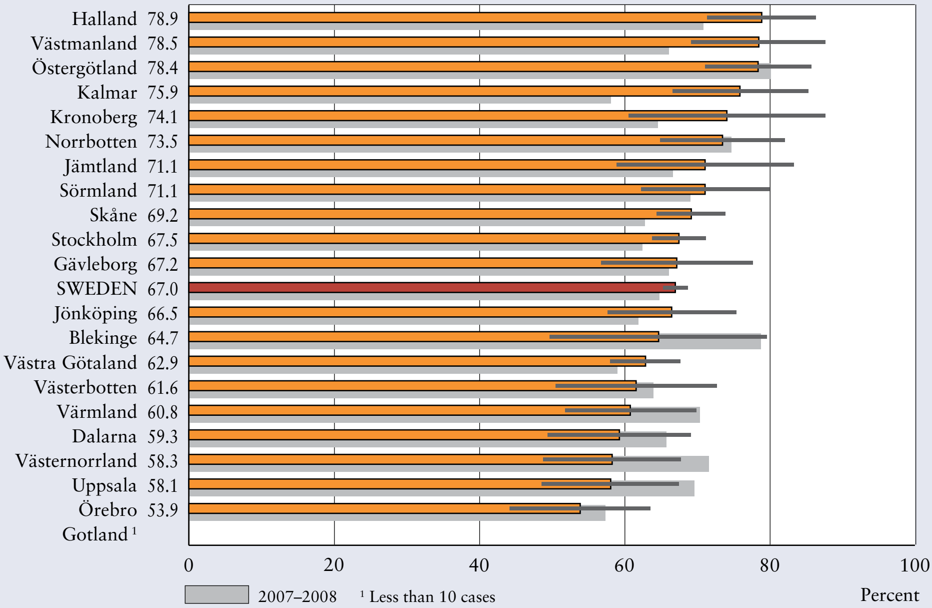


Figure 106 Anticoagulant therapy after 12–18 months for stroke patients age 55–79 with atrial fibrillation, 2009–2010. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

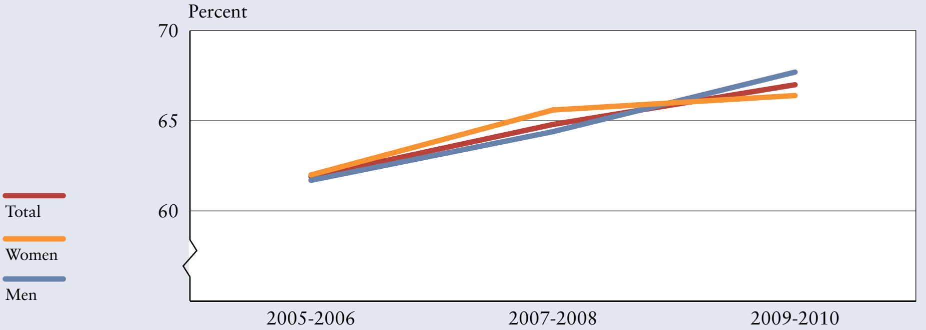


Figure 106 Sweden Anticoagulant therapy after 12–18 months for stroke patients age 55–79 with atrial fibrillation. Age-standardised.

Source: National Patient Register and Prescribed Drug Register, National Board of Health and Welfare

Waran, the most frequently prescribed brand, is inexpensive and offers major potential benefits. The therapy, which requires regular appointments, is associated with some risk of bleeding. The percentage of patients who should be given therapy must be discussed and interpreted, given that the use of warfarin in elderly patients may be limited by dementia, tendency to fall and other contraindications. However, the very oldest patients have been excluded from this comparison.

The recommendations of the Swedish Stroke Register, which also focuses on patients under 80, define high target fulfilment as 70 per cent or greater and moderate target fulfilment as 55–69 per cent.

107 Lipid Lowering Drug Therapy after Cerebral Infarction

Secondary prevention interventions are vital to minimising recurrence of stroke or the development of another cardiovascular disease. Treatment with statins (lipid lowering drugs) have been shown to be effective for secondary prevention following cerebral infarction. The national guidelines assign high priority to the intervention; essentially all cerebral infarction patients are to receive statins. Among the potential risks of the therapy are adverse effects and harmful drug-drug interactions.

The indicator presents the percentage of patients treated with statins within 12–18 months after discharge from hospital after treatment for cerebral infarction. The comparison includes approximately 16 200 patients aged 50–79 who were hospitalised for first-ever ischaemic stroke in 2009–2010. The data were obtained from both the National Patient Register and the Prescribed Drug Register.

As Figure 107 indicates, 71 per cent of patients were prescribed statins within 12–18 months after discharge. The individual counties varied from 63 to 77 per cent. Sixty-eight per cent of women and 73 per cent of men were given the therapy. The gender gap may be due to the fact that more men undergo statin therapy prior to stroke because of cardiovascular disease.

Another consideration, as suggested by the Swedish National Board of Health and Welfare stroke report in 2011, is that the difference may be smaller at the time of discharge but that women are more likely to stop taking their medication after a while. The same pattern emerges in Indicator 18 about compliance with antihypertensive therapy and Indicator 94 concerning lipid lower drug therapy after myocardial infarction. Although the proportion of patients who receive the intervention

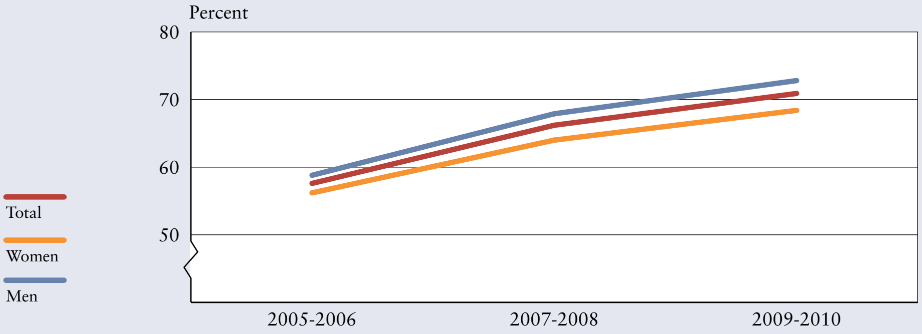


Figure 107
Sweden

Percentage of patients who were receiving lipid lowering drug therapy 12–18 months after stroke (cerebral infarction).

Source: Swedish Stroke Register

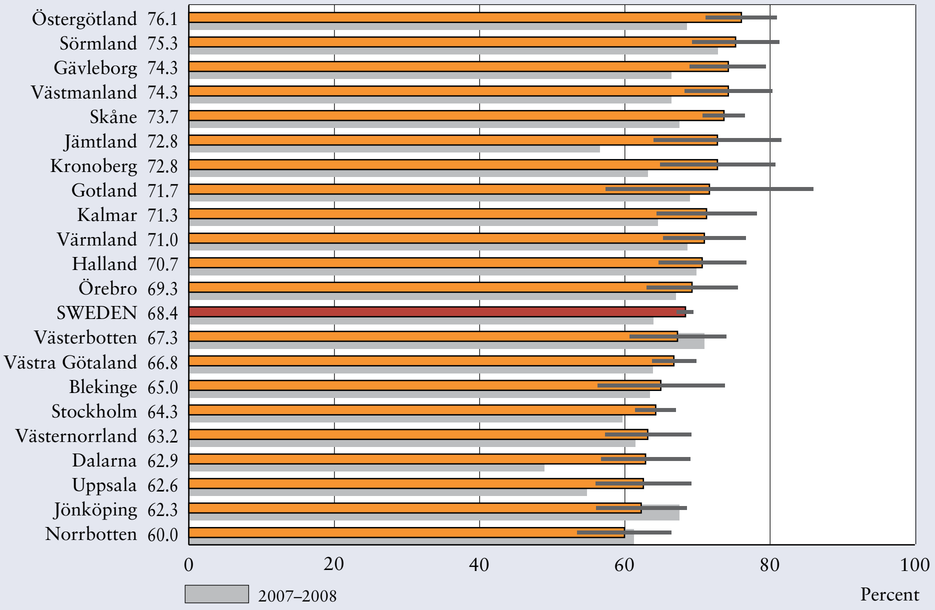


Figure 107
Women

Percentage of patients who were receiving lipid lowering drug therapy 12–18 months after stroke (cerebral infarction), 2009–2010.

Source: Swedish Stroke Register

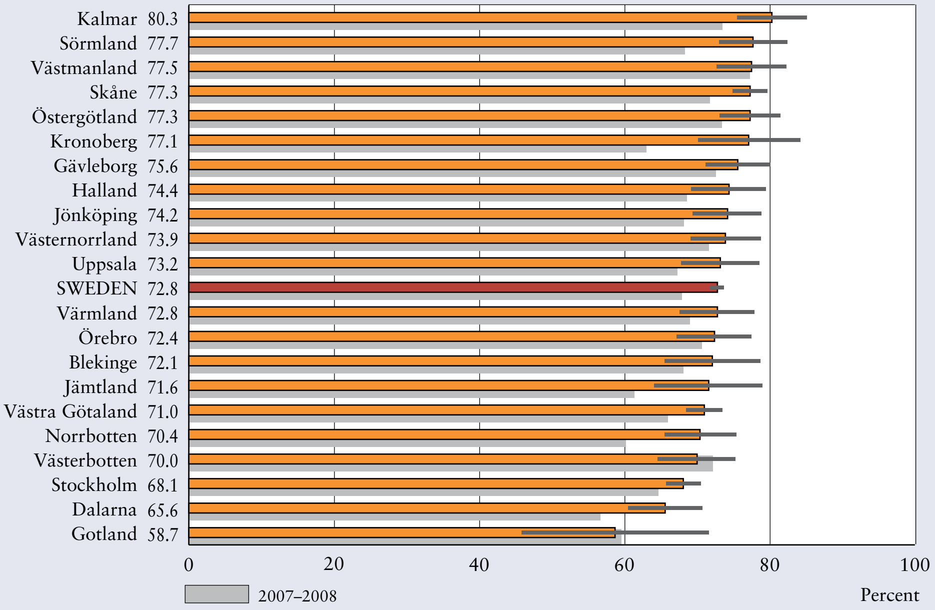


Figure 107
Men

Percentage of patients who were receiving lipid lowering drug therapy 12–18 months after stroke (cerebral infarction), 2009–2010.

Source: Swedish Stroke Register

has increased in recent years, there is a wide range between the various counties. Gender differences demand attention as well. Most counties need to prescribe statins for cerebral infarction patients more regularly if they want to fully comply with the national guidelines.

108 Readmission for Stroke

The percentage of readmissions to hospital among first-ever stroke patients can provide a gauge of the efficacy of secondary prevention interventions. Among such interventions are lifestyle changes mediated through smoking cessation, dietary counselling, assistance with physical activity, drug therapy (antihypertensives, lipid lowering drugs and antithrombotics) and carotid endarterectomy. Along with survival and readjustment to daily life, recurrence is a basic outcome measure for stroke care. This is also the motive for presenting this indicator, in spite of existing difficulties to correctly measure readmission rates for stroke.

Figure 108 shows the percentage of patients who were readmitted to hospital for stroke within 365 days of their initial care episode. The comparison covers almost 80 000 patients in the National Patient Register who were treated in 2006–2010 for first-ever stroke with the primary diagnosis of cerebral haemorrhage, cerebral infarction or unspecified stroke and who subsequently survived the first year. The Patient Register was monitored until the end of 2011.

Approximately 8 per cent of both female and male patients nationwide were readmitted for stroke or its late effects during the five years under consideration. The counties varied from 5 to 10 per cent. The percentage of readmissions has decreased somewhat over the past 10 years.

Stroke patients face a considerable risk of recurrence, not to mention development of another cardiovascular disease. The cumulative secondary prevention interventions that the healthcare system has to offer are central to any attempt to reduce the

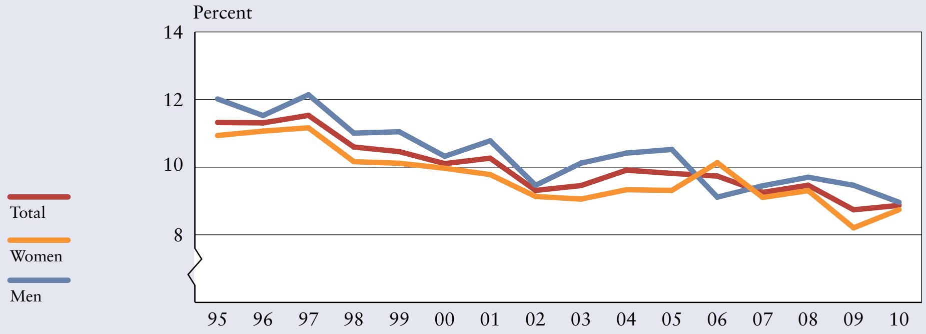


Figure 108
Sweden

Percentage of patients readmitted for stroke after 365 days.
Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

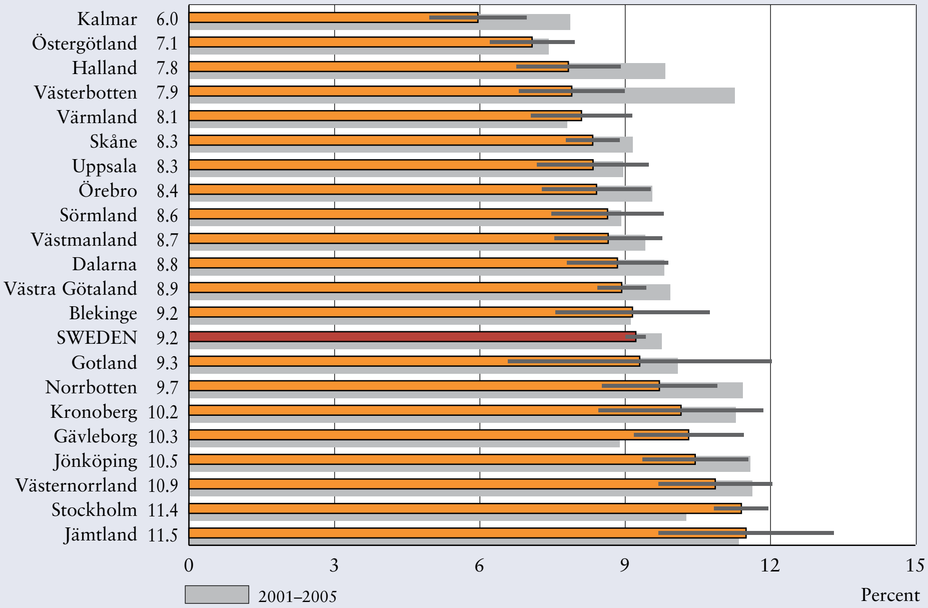


Figure 108 Percentage of patients readmitted for stroke after 365 days, 2006–2010. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

risk of recurrence. If each county is to keep track of the impact of targeted interventions and the like, repeated studies over time are required. Healthcare providers need to monitor their patients with respect to recurrence as well.

109 Personal Activities of Daily Living (ADL) three Months after Stroke

Stroke survivors recover their previous function to varying degrees. The Swedish Stroke Register collects data about the dependence of patients on others for their personal activities of daily living (ADL) three months after stroke. Personal ADL refers to locomotion, toileting, dressing and undressing. The quality indicator reflects healthcare interventions both during the acute phase and in ongoing rehabilitation after discharge from the acute care hospital.

Figure 109 illustrates the percentage of patients who could handle their personal ADL by themselves prior to stroke, who survived and who were independent of others for these activities three months after the acute phase. The results have been adjusted for age and level of awareness at the time of stroke. Such adjustments allow not only for greater accuracy, but a more correct comparison of hospitals, for which variations are presumably large. The comparison included more than 16 200 patients.

Approximately 81 per cent of both women and men nationwide were independent of others for their personal ADL. The variations among counties were modest, never outside a range of 10 percentage point.

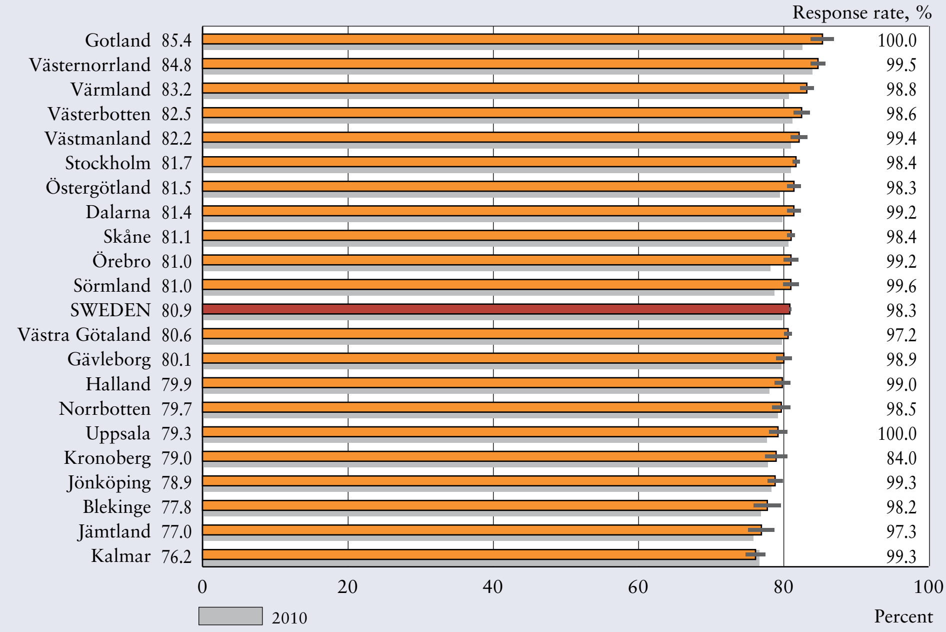


Figure 109 Percentage of stroke patients who were dependent on others for their personal activities of daily living (ADLs) three months after stroke, 2011.

Source: Swedish Stroke Register

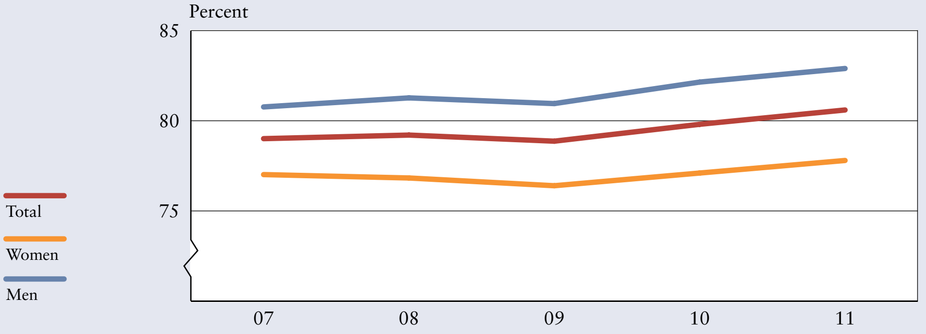


Figure 109 Sweden Percentage of stroke patients who were dependent on others for their personal activities of daily living (ADLs) three months after stroke.

Source: Swedish Stroke Register

If at all possible, this outcome measure should be interpreted along with the percentage of survivors. Hospitals and counties achieved the best results when they had a high percentage of patients who survived and were independent of others for their personal ADL (largely recovered their previous function).

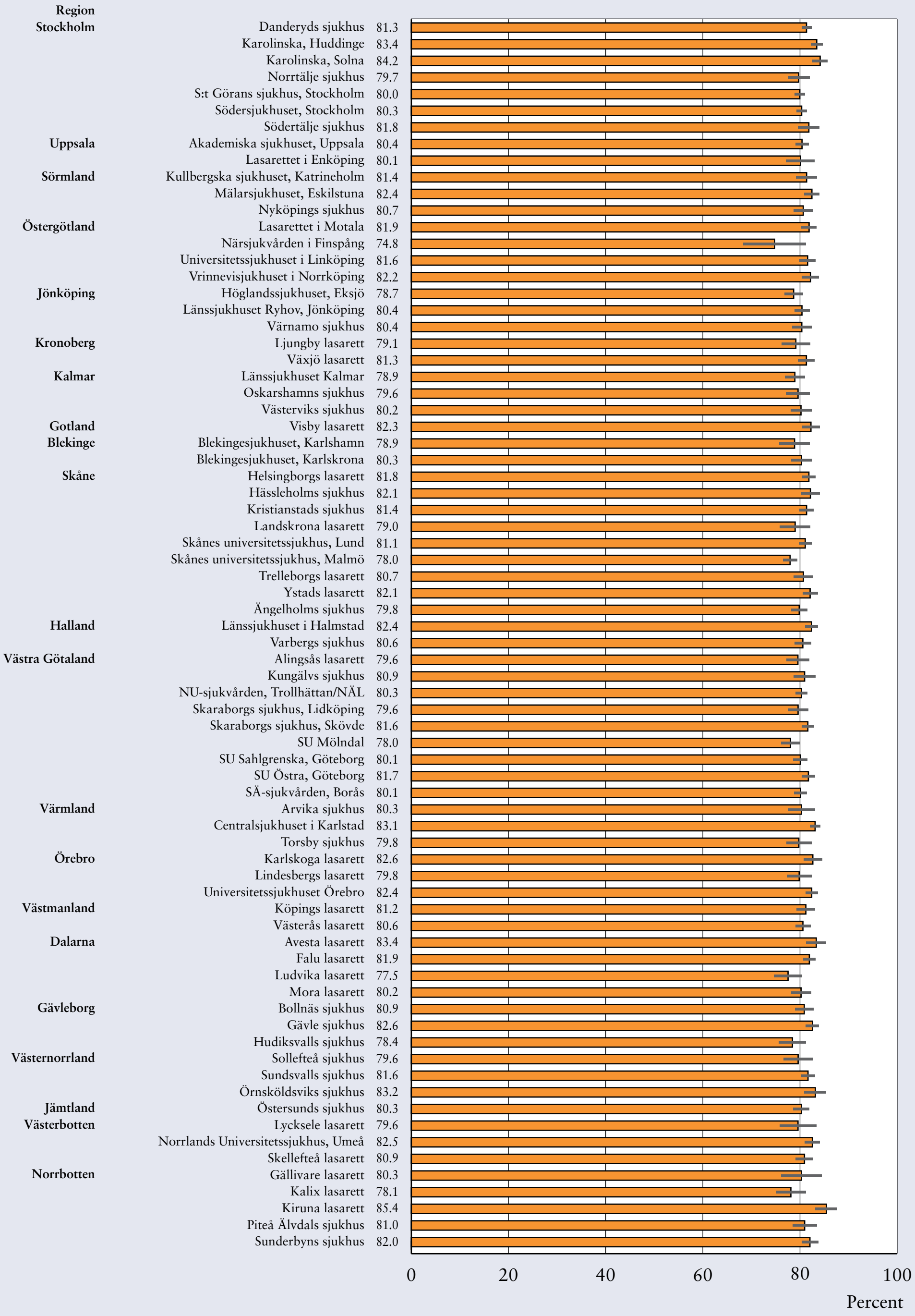


Figure 109
Hospitals

Percentage of stroke patients who were dependent on others for their personal activities of daily living (ADLs) three months after stroke, 2011.

Source: Swedish Stroke Register

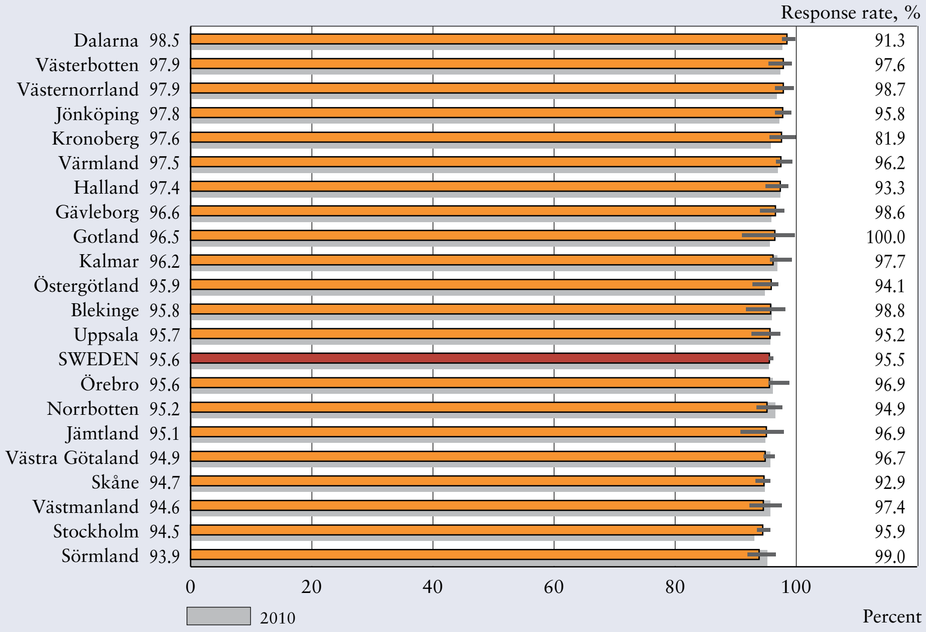


Figure 110 Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received, 2011.

Source: Swedish Stroke Register

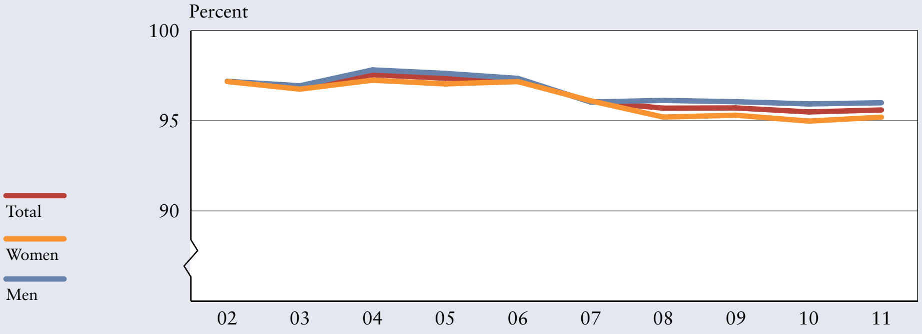


Figure 110 Sweden Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received.

Source: Swedish Stroke Register

110 Satisfaction with Stroke Care at Hospital

A Swedish Stroke Register three-month follow-up includes questions for patients and their families about satisfaction with the care they have received. This and the next indicator each look at one of these questions.

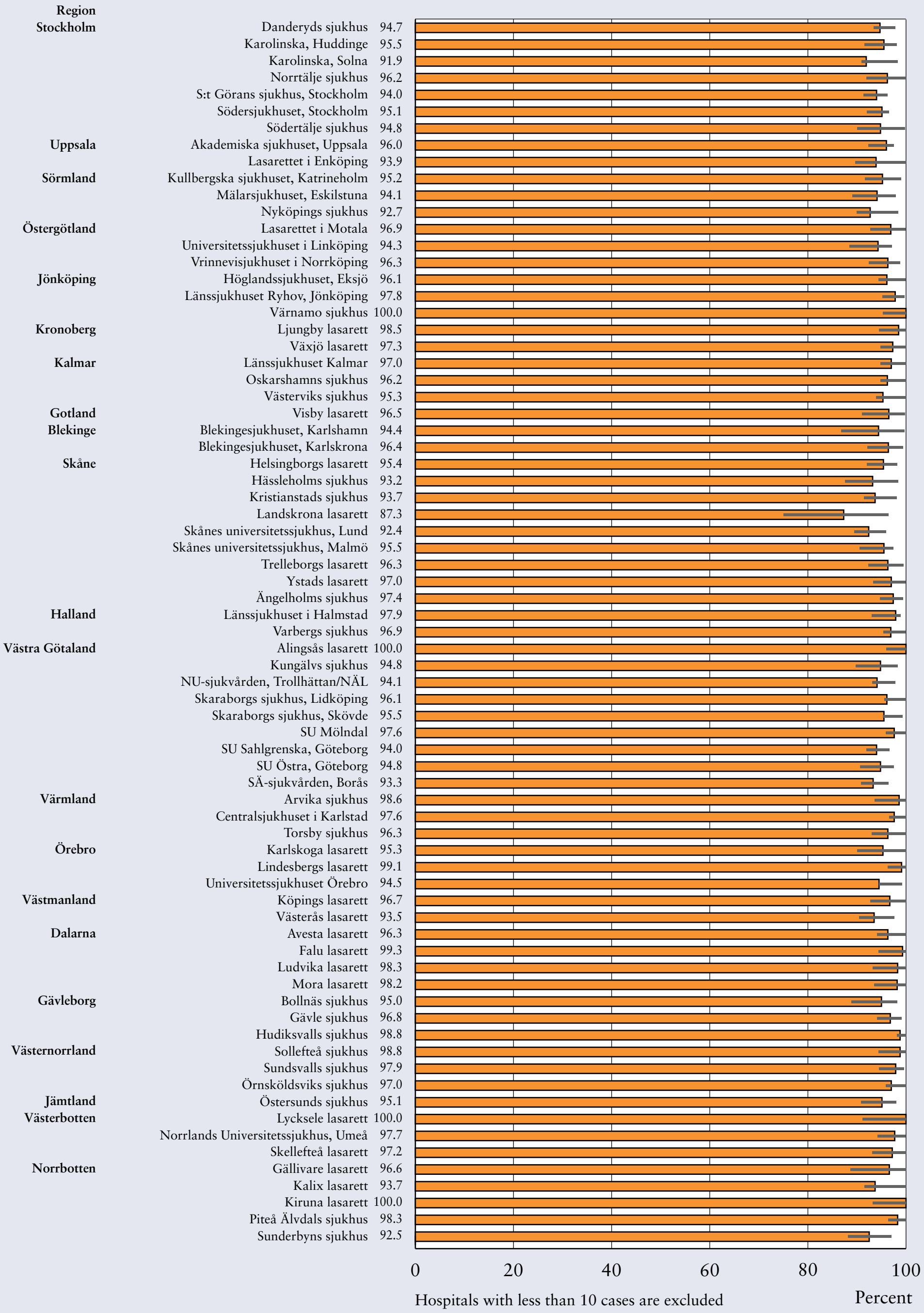


Figure 110
Hospitals

Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received, 2011.

Source: Swedish Stroke Register

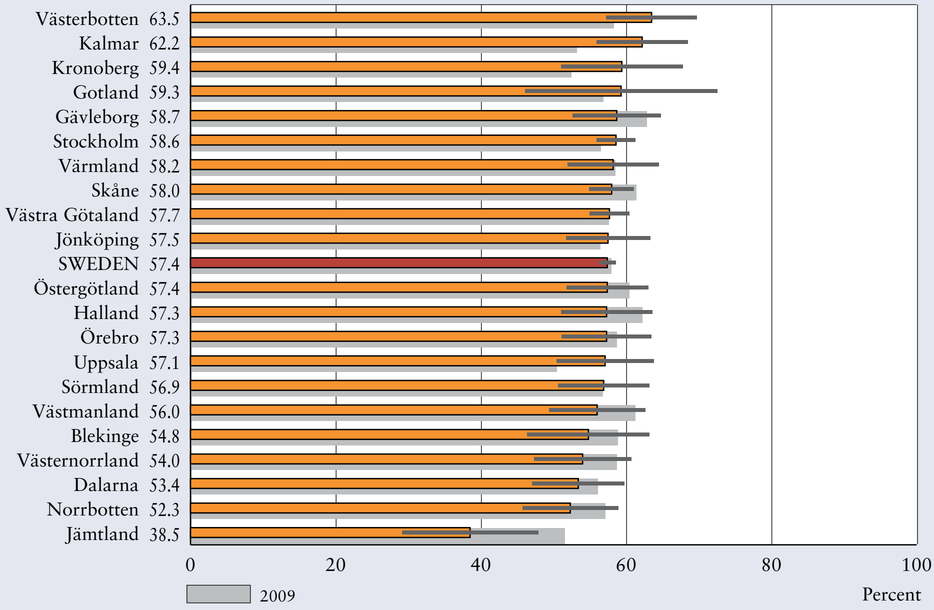


Figure 111 Percentage of stroke patients 12 months after the acute phase who reported that their rehabilitation needs had been met, 2010.

Source: Swedish Stroke Register

Figure 110 presents the level of patient satisfaction with hospital care. The 3-month follow-up response rate is also shown. More than 15 500 patients responded and were included in the comparison. Almost 96 per cent of patients nationwide, approximately the same proportion of women and men, were satisfied or very satisfied. The results have been in the same vicinity since 2001, peaking above 97 per cent in 2004–2005. The data are more representative these days now that both participation and response rate have improved.

The differences between counties are small, particularly in view of the highly favourable responses. Age and possible disability may affect the capacity of patients to assess the quality of care they received three months before.

111 Meeting Rehabilitation Needs after Stroke

Stroke patients may need long-term rehabilitation. Shedding light on the extent to which rehabilitation needs are being met one year after stroke can provide vital information in that regard. This quality indicator strives to reflect assessments by patients and their families of municipal and county council healthcare services.

The variable under consideration is the percentage of patients who report 12 months after stroke that their rehabilitation needs are being met. The data are based on the questionnaire responses of more than 7 300 patients who had a stroke in 2010.

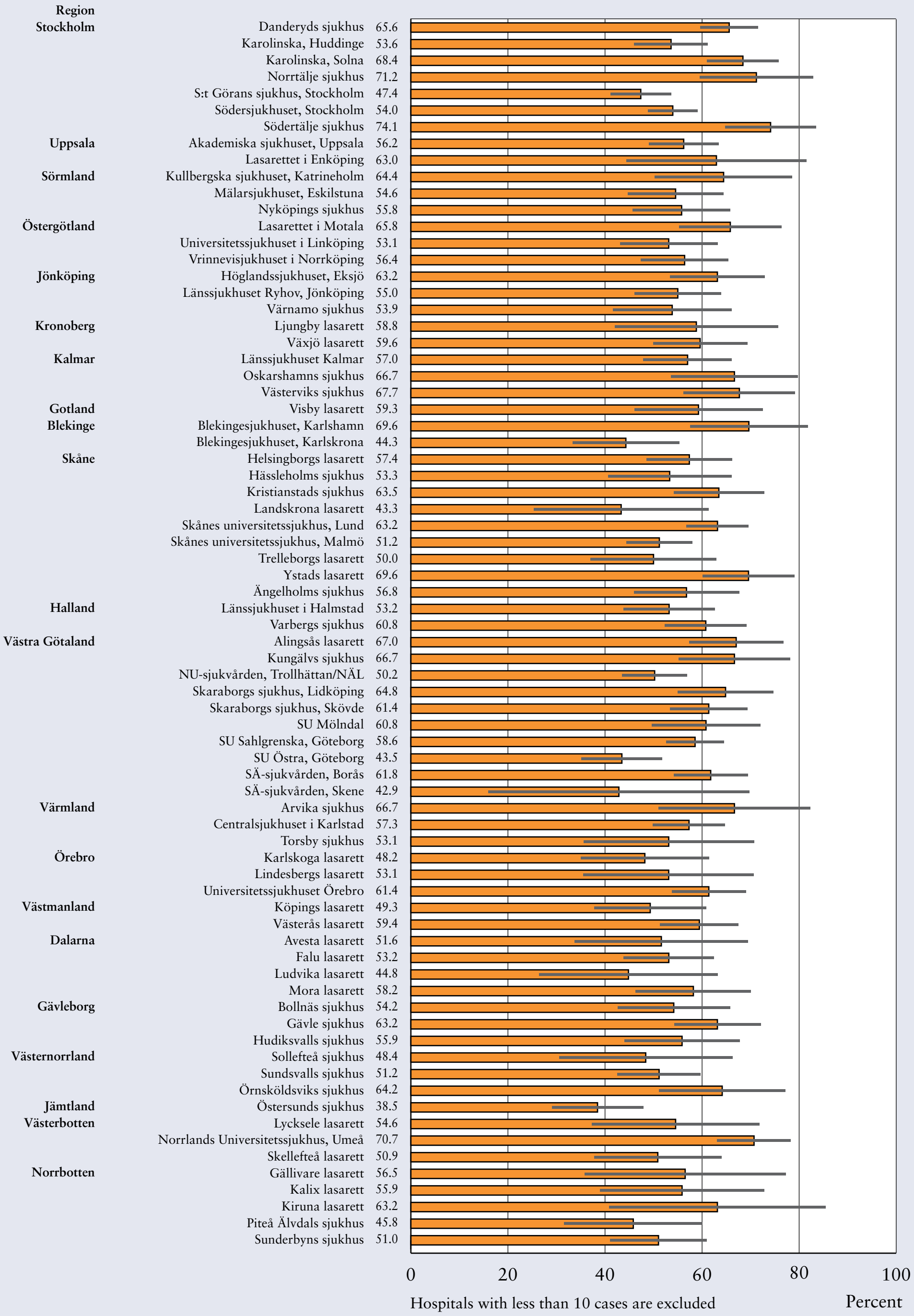


Figure 111
Hospitals

Percentage of stroke patients 12 months after the acute phase who reported that their rehabilitation needs had been met, 2010.

Source: Swedish Stroke Register

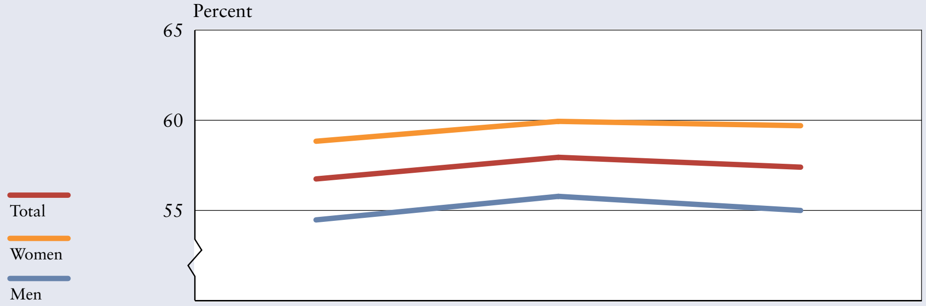


Figure 111
Sweden

Percentage of stroke patients 12 months after the acute phase who reported that their rehabilitation needs had been met.

Source: Swedish Stroke Register

Fifty-seven per cent of the respondents nationwide indicated that they were satisfied. Except for one low outlier, the counties were within a modest range of 52 to 63 per cent. Almost 60 per cent of women expressed satisfaction with the rehabilitation they had received, as opposed to 55 per cent of men.

Two out of every five patients, in other words, felt that some of their needs were not being met. While some patients may have unrealistic expectations when it comes to the ability of rehabilitation to restore previous function, the results suggest that municipalities and county councils are falling short with respect to certain needs of stroke patients.

RENAL CARE

More than 4 per cent of the Swedish population has significantly impaired renal function. Most of them do not face any immediate danger, but the condition is associated with increased risk of cardiovascular disease or death. Only a small percentage of people develop renal failure so serious that lifesaving dialysis or transplant (renal replacement therapy) is needed. More than one third of all patients who need dialysis or transplant have diabetes. Other common (15-20 per cent) indications for renal replacement therapy are atherosclerosis of the kidney and chronic glomerulonephritis, which affects a considerably more heterogeneous patient population. Hereditary kidney disease accounts for approximately 10 per cent.

Approximately 1 100 patients have started treatment every year for the past decade. The total number of patients who had been treated for life-threatening renal failure had risen by approximately 3 per cent annually over the past ten years to 8 752 at the end of 2011. A gradual improvement in survival is the reason for the increase. With respect to both new and existing patients, Sweden is in the average range for Western and Northern Europe. Life-threatening kidney disease is twice as common in men as women.

Approximately one-half of all patients in renal replacement therapy have a functioning transplant and half are being given dialysis. Sweden has a high percentage of transplants, surpassed only by Norway among neighbouring countries. Approximately three-quarters of dialysis patients receive haemodialysis and the remainder receive peritoneal dialysis. Depending on what is included in the calculation, the total annual cost of Swedish dialysis and transplant care is an estimated SEK 2-3 billion. These patients would die if they were not treated.

Due to its high health-related and patient-reported quality of life and low mortality risk, kidney transplant is the better option. For medical reasons, transplant is appropriate for only one-quarter of all new patients. Because of the shortage of organs from deceased donors, most candidates must undergo dialysis for an average of 2-3 years before transplant. Patients who have access to a living donor can receive a transplant just before dialysis is needed or a short time thereafter.

Thus, available, high-quality dialysis is both a life-sustaining measure for patients who cannot receive transplants and a necessity if transplant services are to work properly. This report presents four indicators, each based on data from the Swedish Renal Registry, to which all clinics report. The register, which includes every transplant patient and at least 95 per cent of chronic dialysis patients, collaborates with the Swedish National Board of Health and Welfare on comparisons of participation rate.

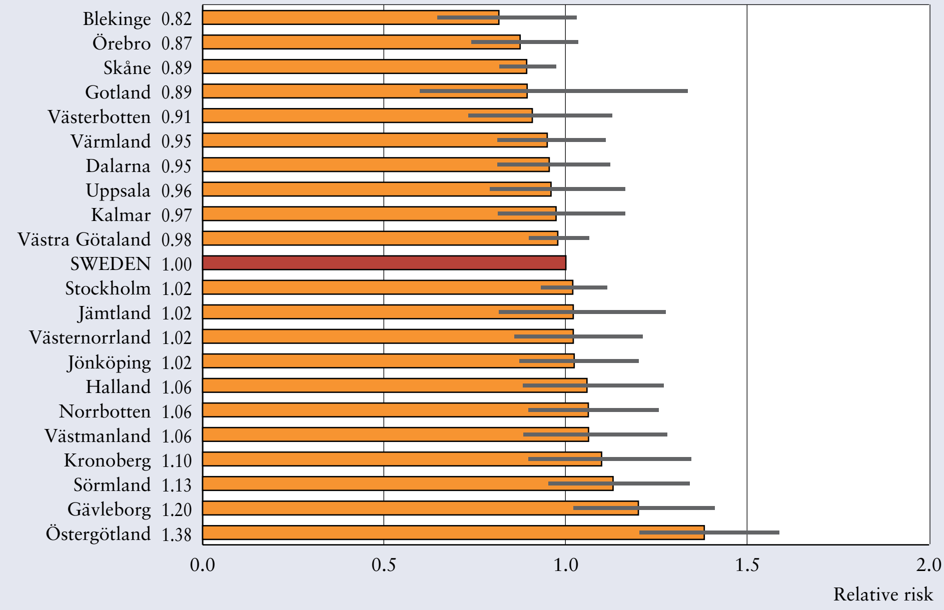


Figure 112 Relative risk of death within the first five years on dialysis therapy, 2002–2011. Adjusted for age, sex and primary renal disease.

Source: Swedish Renal Registry

112 Dialysis Treatment – Relative Risk of Death

Renal replacement therapy is the umbrella term for dialysis treatment and kidney transplant. A dialysis patient faces approximately ten times the risk of death as one with a well-functioning transplant. The length of time that a patient with terminal renal failure has to wait before receiving a transplant is determined by factors that are only partially amenable to influence. Both access to living donors and delays caused by the machinery of the healthcare system impose certain restrictions. Thus, the use of total survival rates as a quality measure for patients in renal replacement therapy may be called into question. This is why the comparison is presented for dialysis patients only, as the relative risk of death based on a Cox regression analysis.

The analysis covers all 9 362 patients who entered treatment in 2002–2011. Only patients who survived for more than 90 days are included, thereby avoiding the problem of incomplete or sporadic reporting in the early stages. Patients were included until such time as they received a kidney transplant. The analysis was adjusted for age, gender and primary disease. The relative risk for each county was compared with all of the others.

The differences among the various counties were small and, with a few isolated exceptions, remained within the statistical margin of error. A striking improvement has been observed over time. Adjusted for patient mix, the relative risk of death averaged a 3.7 per cent annual decline in 1992–2011. Another way of putting it is that the risk of death during that period was 72 per cent of what it had been during the previous 10 years.

Dialysis may be a lifesaving treatment, but it is associated with an increased risk for early death. For the most part, the explanatory factors are not directly related to renal failure and treatment, but to age, comorbidity and other variables. Doctors resort to renal replacement therapy when they believe that renal failure will become life-threatening within the near future. But a common observation, both in Sweden and elsewhere, is that there are varying opinions about the degree of functional impairment required before dialysis should commence. Another generally accepted insight is that the more residual renal function a dialysis patient has, the less the risk of death. The possibility that systematic differences in terms of the proper time to embark on dialysis skew the results cannot be ruled out. No statistical methods are currently available to deal with this problem.

The analyses are based on all deaths. This suggests that occasional deaths wholly unrelated to the quality of dialysis may affect outcomes in less populous counties.

While survival data is essential to assessing quality, counties and hospitals cannot be justly compared based on current reporting methods. Discussions are ongoing about the best way to report survival as a component of quality comparisons. The primary purpose of the indicator at this point is to encourage counties and hospitals to analyse their survival outcomes.

That said, it is well known that differences in clinical practice among countries, regions and clinics affect results. The following three indicators are key gauges of process quality when it comes to haemodialysis.

113 Target Fulfilment for Haemodialysis Dose

A sufficient dialysis dose is a prerequisite for long-term wellbeing and low risk of dying. An insufficient dose leads to premature death. Measurement, monitoring and adjustment of the dose are central to the quality of haemodialysis treatment. Around 80 per cent of haemodialysis patients nationwide currently have three sessions per week. Approximately 10 per cent have more than three sessions and 10 per cent fewer than three. The trend in recent years has been towards more frequent sessions. Thus, overall comparisons must be based on the total weekly dose.

The Kt/W standard measure uses a calculation based on ultrafiltration during dialysis, a blood sample before and after the session, the length of the session and the number of weekly sessions. Kt/W above 2 represents fulfilment of the daily dose target.

Figure 113 illustrates the percentage of patients in each county who met the target for dialysis dose. The data, which have been taken from the most recent Swedish

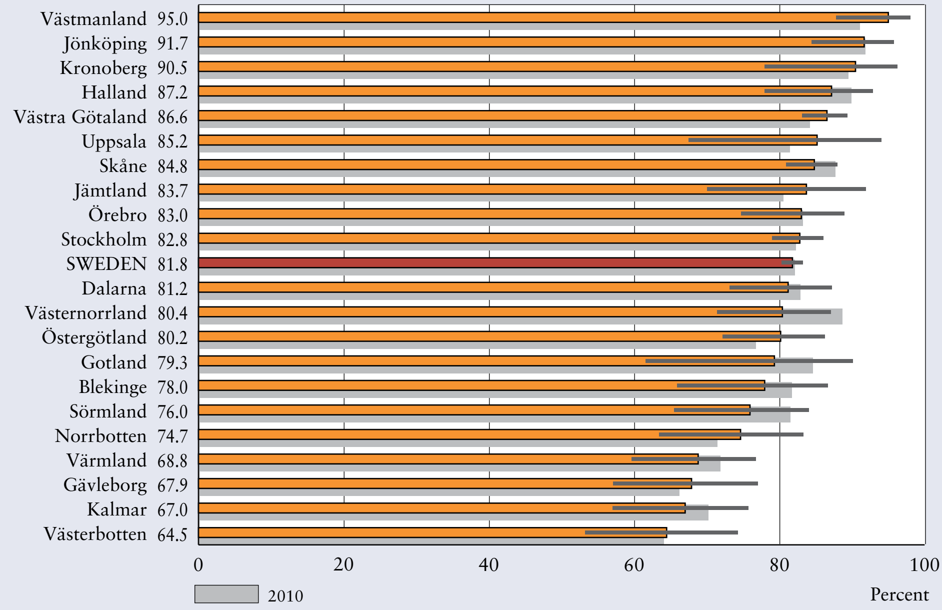


Figure 113 Percentage of patients reaching the target (standardised Kt/V>2) for haemodialysis dose, 2011.

Source: Swedish Renal Registry

Renal Registry cross-sectional study, are based on 2 899 patients in autumn 2011. Differences in case mix are unlikely to explain the large variation that appears in the diagram. Low dose results are primarily due to patients having only two sessions per week. Target fulfilment has gradually improved for the country as a whole since the first study was conducted in 2002.

Each study includes patients for whom a full dialysis dose either is unnecessary due to significant residual renal function or is unsuitable for some other reason. While both populations are small, their relative distribution among the various clinics at any particular time is unknown. Comparisons of dialysis dose at the clinic level must take that statistical uncertainty into consideration.

Given the above reflections, the optimum outcome at the county level would be that 80–90 per cent of patients meet the target for dialysis dose. Nationally speaking, target fulfilment is somewhat higher for women than men. But practice varies a great deal among the individual clinics and counties. Recent research suggests that women require substantially higher doses than men. Their ostensibly better target fulfilment should be interpreted with that proviso in mind.

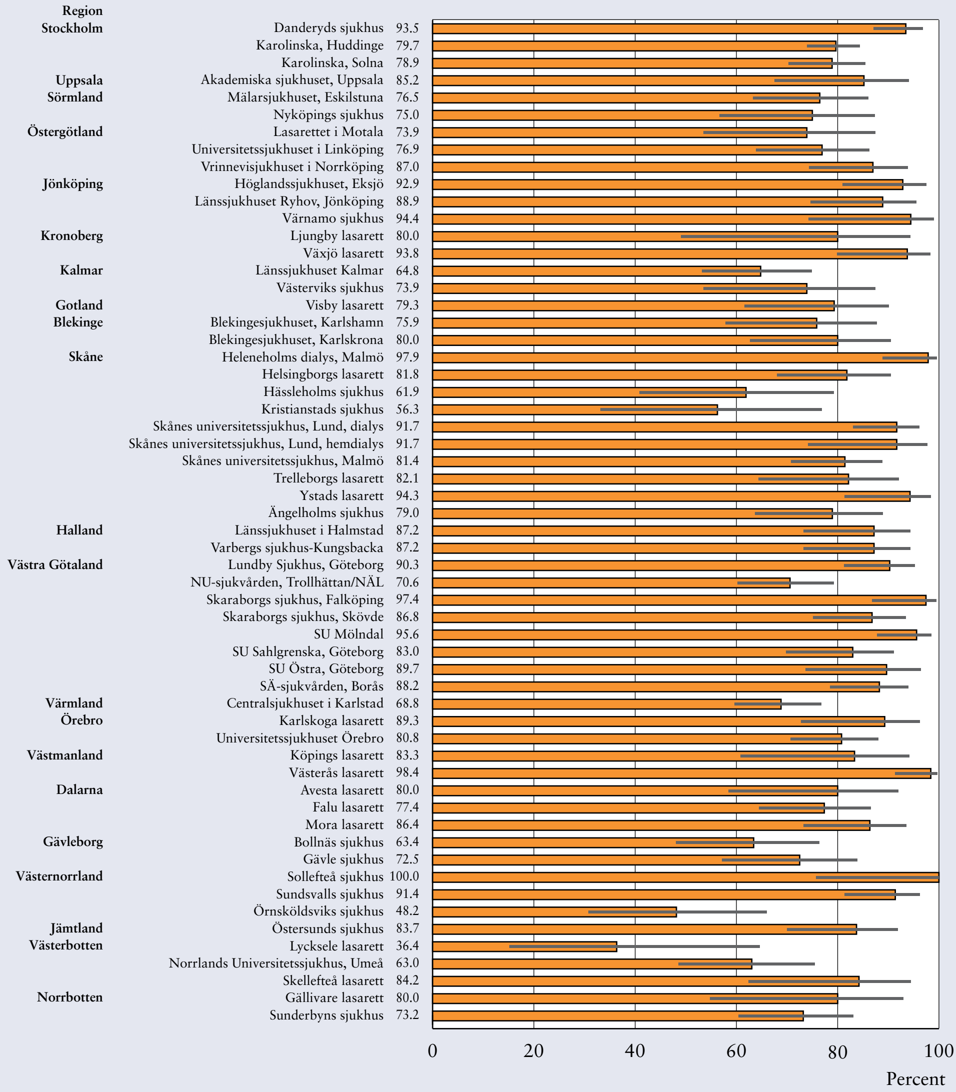


Figure 113
Hospitals

Percentage of patients reaching the target (standardised Kt/V>2) for haemodialysis dose, 2011.

Source: Swedish Renal Registry

114 Vascular Access during Dialysis

The access to the blood vessels required during haemodialysis can be obtained in various ways. A surgically created arteriovenous (AV) fistula is the best form of vascular access. An arteriovenous graft (with synthetic vascular material) is not quite as good and is associated with a greater risk of occlusion and poorer function, as well as a somewhat elevated risk of infection. The alternative to an AV fistula or graft is a central venous catheter (CVC), which poses a substantially higher risk of serious infection, often reducing blood flow and thereby the effectiveness of dialysis.

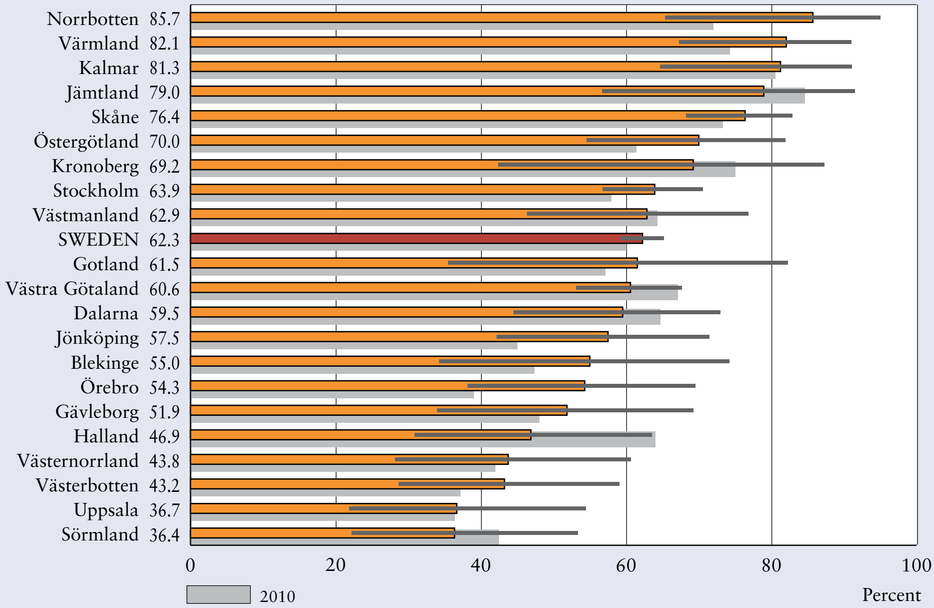


Figure 114
Women

Percentage of dialysis patients with an AV fistula or an AV graft, 2011.
Source: Swedish Renal Registry

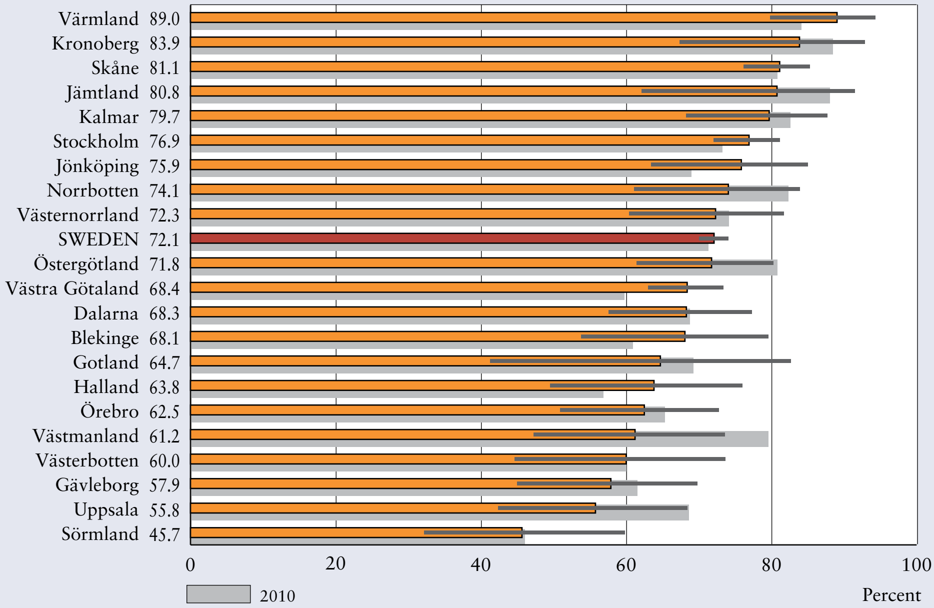


Figure 114
Men

Percentage of dialysis patients with an AV fistula or an AV graft, 2011.
Source: Swedish Renal Registry

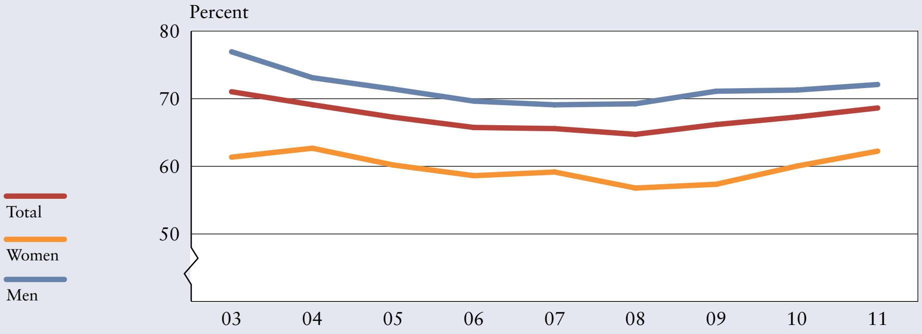


Figure 114
Sweden

Percentage of dialysis patients with an AV fistula or an AV graft.
Source: Swedish Renal Registry

Because well-functioning access is essential to effective dialysis, the percentage of patients who are given an AV fistula or graft is a significant indicator. The indicator also reflects the results of a care process that begins even before the commencement of dialysis. The indicator summarises a number of key dimensions of the total quality of renal care – the availability of access surgery, as well as the degree to which dialysis clinics are able to ensure well-functioning access. Nearly all Swedish dialysis clinics now report to the separate Swedish Renal Registry database for vascular access that was set up in 2009.

Figure 114 shows the percentage of patients who were receiving dialysis with an AV fistula or graft in autumn 2011. The data are based on annual cross-sectional studies conducted by the Swedish Renal Registry. The gradual increase in the prevalence of desirable types of access after a number of years in which the trend was heading in the opposite direction appears to be continuing. Nevertheless, the situation is still less propitious than when the cross-sectional studies began in the early 2000s.

The variations between counties remain unacceptably large. The potential for improvement is undeniable at both the clinic and county level. Well-functioning access practice places heavy demands on coordination among vascular surgery, interventional radiology and renal care. Women tend to receive an AV fistula or graft less often than men. Although part of the reason is that women's blood vessels are less suitable to the use of an AV fistula, some of the underlying causes could be amenable to influence. For instance, women may be referred to a specialist at a later stage of renal failure, rendering them less likely to have optimum vascular access when starting on dialysis.

While no specific target has been set for this indicator, 70–80 per cent for an AV fistula or graft is fully reasonable in an unselected patient population. Observational studies point to an optimum target of 90 per cent.

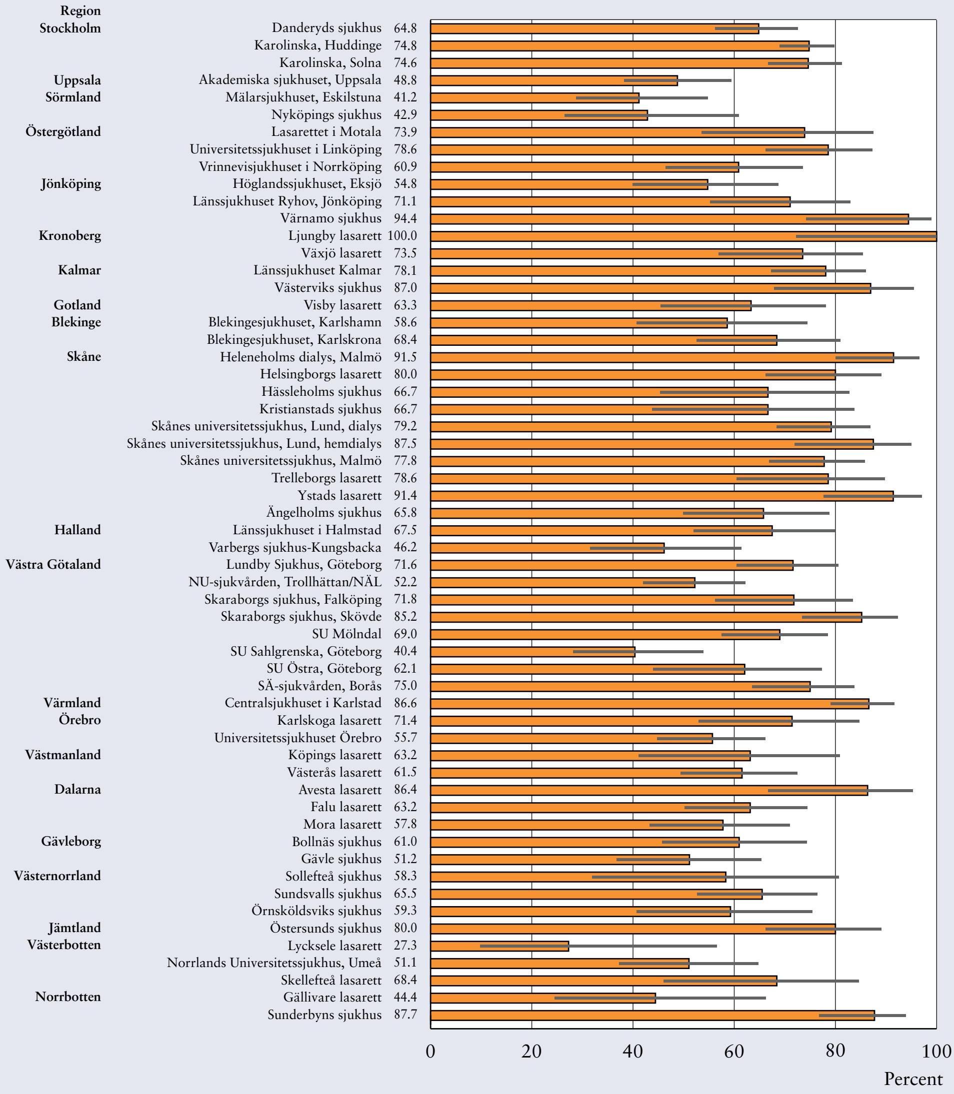


Figure 114
Hospitals

Percentage of dialysis patients with an AV fistula or an AV graft, 2011.

Source: Swedish Renal Registry

115 Achievement of Blood Pressure Goals during Haemodialysis

Patients with chronic kidney disease regularly experience hypertension that is frequently difficult to treat. A great deal of evidence suggests that proper control of blood pressure both arrests the progress of many kidney conditions and reduces the risk of developing cardiovascular disease. The blood pressure target recommended for patients with chronic renal failure while awaiting renal replacement therapy is lower than the 140/90 mm Hg suggested for the general population. Given what medical science currently knows, however, specifying an evidence-based target for

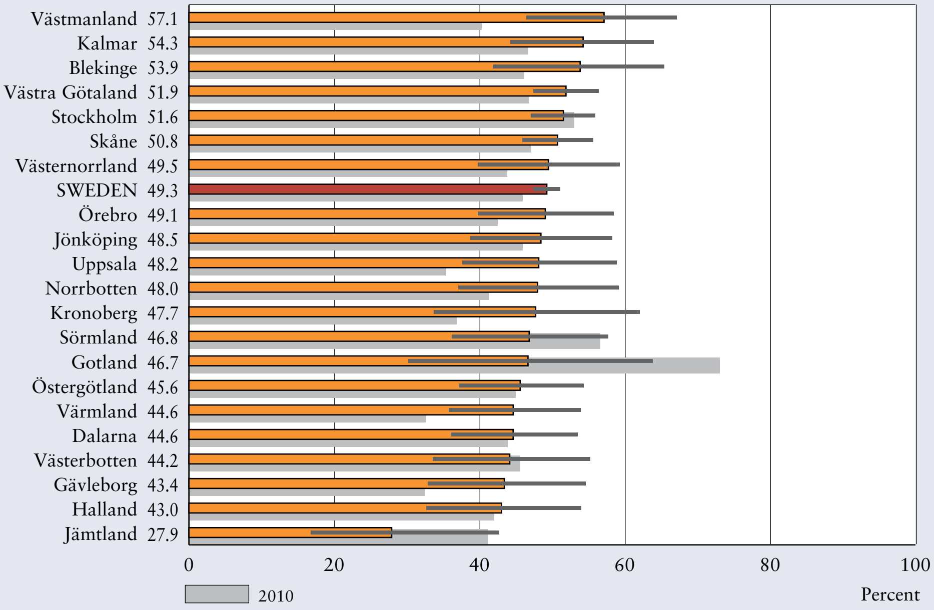


Figure 115 Percentage of haemodialysis patients who achieved the blood pressure goal (< 140/90 mm Hg), 2011.

Source: Swedish Renal Registry

haemodialysis patients that would reduce the risk of cardiovascular disease is not a realistic option. Thus, this indicator serves mostly to bring existing differences to the surface. Comparisons over time reveal that the percentage of patients whose blood pressure is below the recommended upper limit is continuing to increase.

Controlling blood pressure in haemodialysis patients is particularly challenging. Because most of them produce only negligible quantities of urine, fluids accumulate between dialysis sessions. Blood pressure control is more difficult under such circumstances. A number of other factors also come into play. But proper duration, frequency, fluid composition and technique during dialysis can often normalise blood pressure without extensive drug therapy.

Figure 115 reveals distinct variations in the extent to which blood pressure was sufficiently controlled. As is the case with other process variables, pronounced differences emerged at the county level as well.

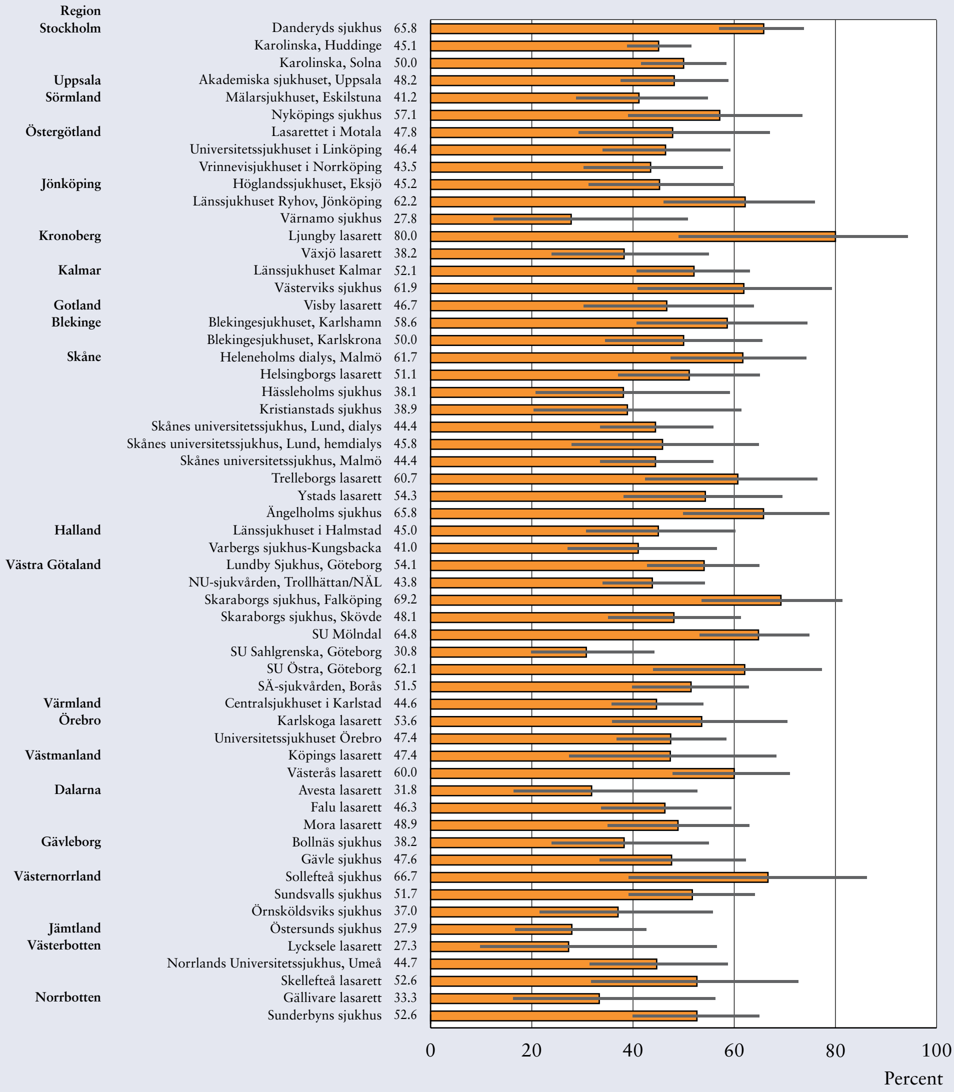


Figure 115
Hospitals

Percentage of haemodialysis patients who achieved the blood pressure goal (< 140/90 mm Hg), 2011.

Source: Swedish Renal Registry

CANCER CARE

A total of 55 342 cancers, 52 per cent in men and 48 per cent in women, were diagnosed and reported to the Swedish Cancer Registry in 2010. The incidence has averaged annual increases of 2.0 per cent for men and 1.4 per cent for women for the past two decades. An ageing population, screening policies and improved diagnostic methods have all contributed to the rising numbers. Despite higher survival rates, cancer remains the second most common cause of death after cardiovascular disease.

The 16 indicators presented here are essentially the same ones that appeared in last year's report. All except one concern some common type of cancer: breast, colon, rectal, lung or prostate. The indicators reflect survival rates after diagnosis, mortality or reoperation following surgery, various measures of waiting time, use of multidisciplinary team meetings for lung cancer patients and curative treatment of prostate cancer. The data for two-year and five-year survival rates are taken from the Swedish Cancer Registry, while the other data come from national healthcare quality registers.

The indicators of waiting time are based on the effort to construct a common model that the Swedish National Board of Health and Welfare is currently conducting. As a result, they are not fully comparable with last year's indicators. Several of the waiting time indicators show median and quartile values. Refer to the fact box below.

Cancer survival rates

Relative two-year and five-year survival rates were calculated for patients diagnosed with cancer in 2004–2010 and monitored until December 2011. Relative means that the rates represent a comparison with expected survival of people who were not diagnosed with cancer. A relative five-year survival rate of 50 per cent indicates that half of the cancer patients would have been alive after five years if cancer had been the only possible cause of death. Any differences between counties in life expectancy have been taken into consideration. Patients were assigned to the county where they were registered at the time of diagnosis.

Survival time, which refers to the period between diagnosis and death, can be extended by both early detection and proper care or other post-diagnostic variables. Thus, early detection leads to a longer survival time whether or not actual length of life increases. If early detection is at a stage in which the malignancy is easier to treat, thereby postponing death, both of the above factors come into play.

A comparative study of cancer survival rates in Europe was conducted as part of the 19-country EUROCARE-4 collaborative project. Because EUROCARE-4 relied on a different analytical method than used when estimating five-year survival rates, the data are not directly comparable with those presented here.

According to EUROCARE-4, Sweden outperformed the average of the European countries that were examined when it came to the three types of cancer for which five-year survival rates are presented here. Swedish survival rates were almost 4 per cent above the European average for colon and rectal (grouped as colorectal) cancer and approximately 7 per cent above the European average for breast cancer. The Nordic countries (excluding Denmark, which did not participate in the study), were all on the same level, with the exception of Iceland, where the breast cancer survival rate was higher.

116 Colon Cancer – Relative Five-year Survival Rates

Colon cancer is the third most common cancer in both women and men. More than 4 100 Swedes, approximately the same number of women and men, were diagnosed with colon cancer in 2010. More than 28 000 Swedes now living have had the disease. Colon cancer is uncommon before the age of 49, and the great majority of patients are over 65 at the time of diagnosis. The number of new cases has been stable since 1990, with a small upward trend. One reason is that the population has aged.

Over 1 800 people, slightly more women than men, died of colon cancer in 2011. The relative five-year survival rate was 65 per cent among women and 62 per cent among men nationwide in 2004–2010. The differences between the various counties were fairly large. Because the number of colon cancer cases is relatively small, the survival figures for some counties are associated with greater uncertainty.

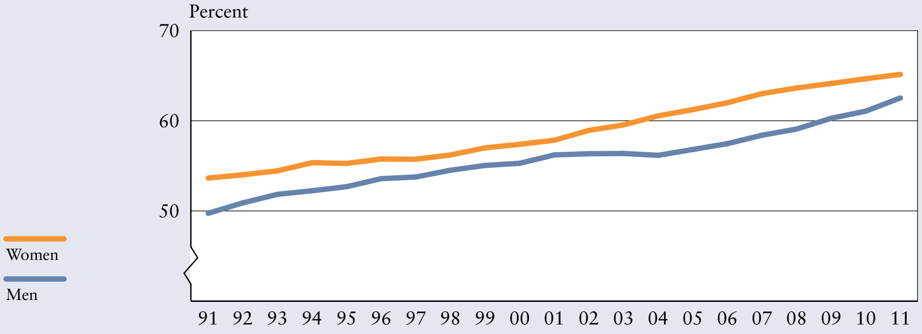


Figure 116
Sweden

Colon cancer – relative five-year survival rates.
Source: Swedish Cancer Registry, National Board of Health and Welfare

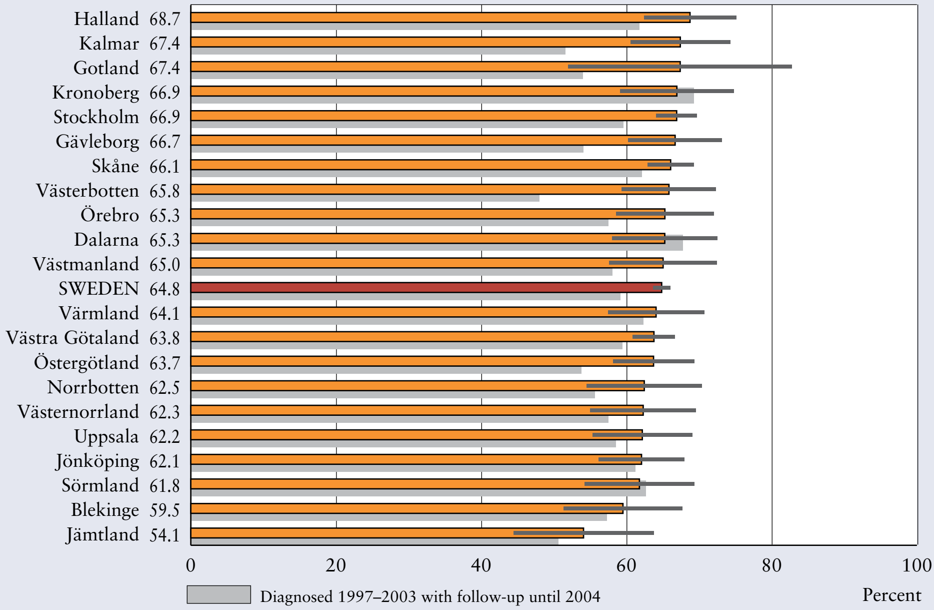


Figure 116
Women

Colon cancer – relative five-year survival rates. Patients diagnosed in 2004–2010 with follow-up until December 2011.

Source: Swedish Cancer Registry, National Board of Health and Welfare

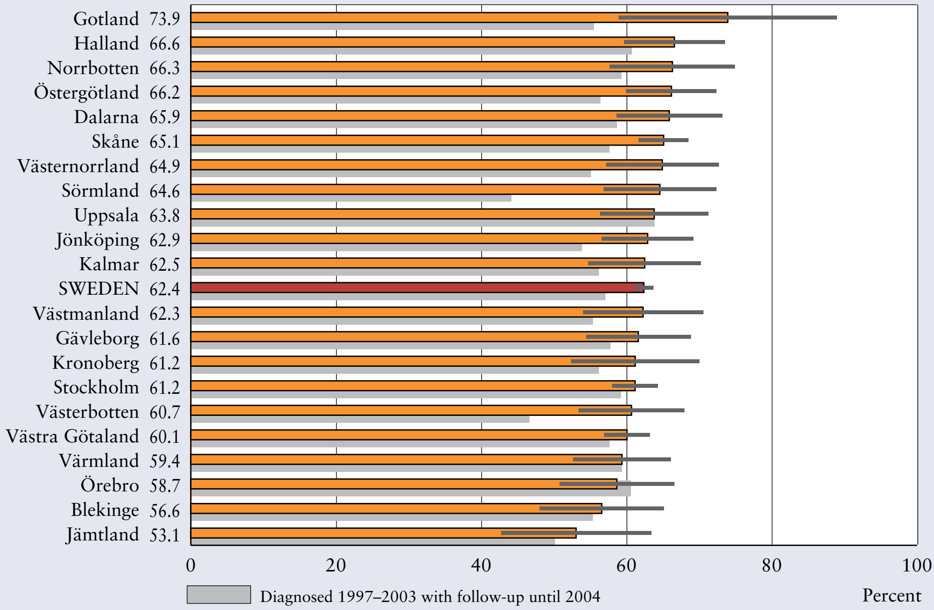


Figure 116
Men

Colon cancer – relative five-year survival rates. Patients diagnosed in 2004–2010 with follow-up until December 2011.

Source: Swedish Cancer Registry, National Board of Health and Welfare

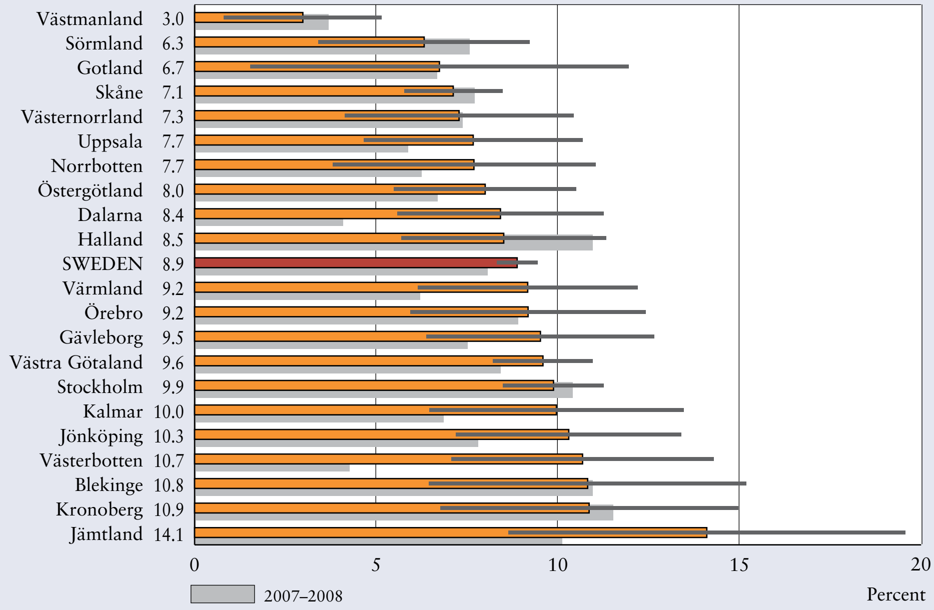


Figure 117 Percentage of patients who were reoperated on within 30 days after primary colon cancer surgery, 2008–2010.

Source: National Colon Cancer Register

117 Reoperation for Colon Cancer

Approximately 95 per cent of all colon cancer patients undergo surgery. The location and size of the malignancy, as well as the patient's general condition, affect the scope and riskiness of the operation. Complications may require a prompt reoperation, which brings additional suffering and increases the risk of further complications.

The Swedish National Board of Health and Welfare is currently updating its colon cancer guidelines and will publish them, along with an evaluation, in March 2013. Reoperation within 30 days after primary surgery is among the indicators that will be monitored.

Figure 117 shows the percentage of reoperations in 2009–2011. A total of 886, or 8.9 per cent, of the 9 982 patients who underwent surgery had a reoperation. The corresponding result in 2007–2009 was 8.7 per cent. The various counties ranged from 3.0 to 14.1 per cent. While a somewhat greater number of women underwent primary surgery during the period, only 6.5 per cent of them had reoperations, as opposed to 11.3 per cent of men.

The fact that some hospitals reported minor interventions as reoperations and some did not skewed the comparisons. The percentage of reoperations is also related to the way that primary surgery was performed and the patient's condition at the time.

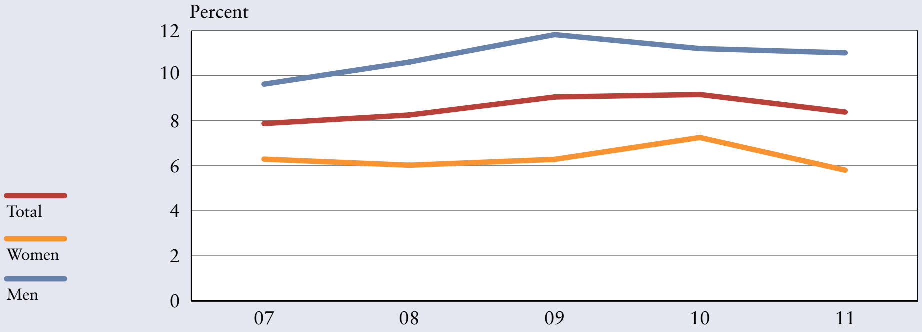
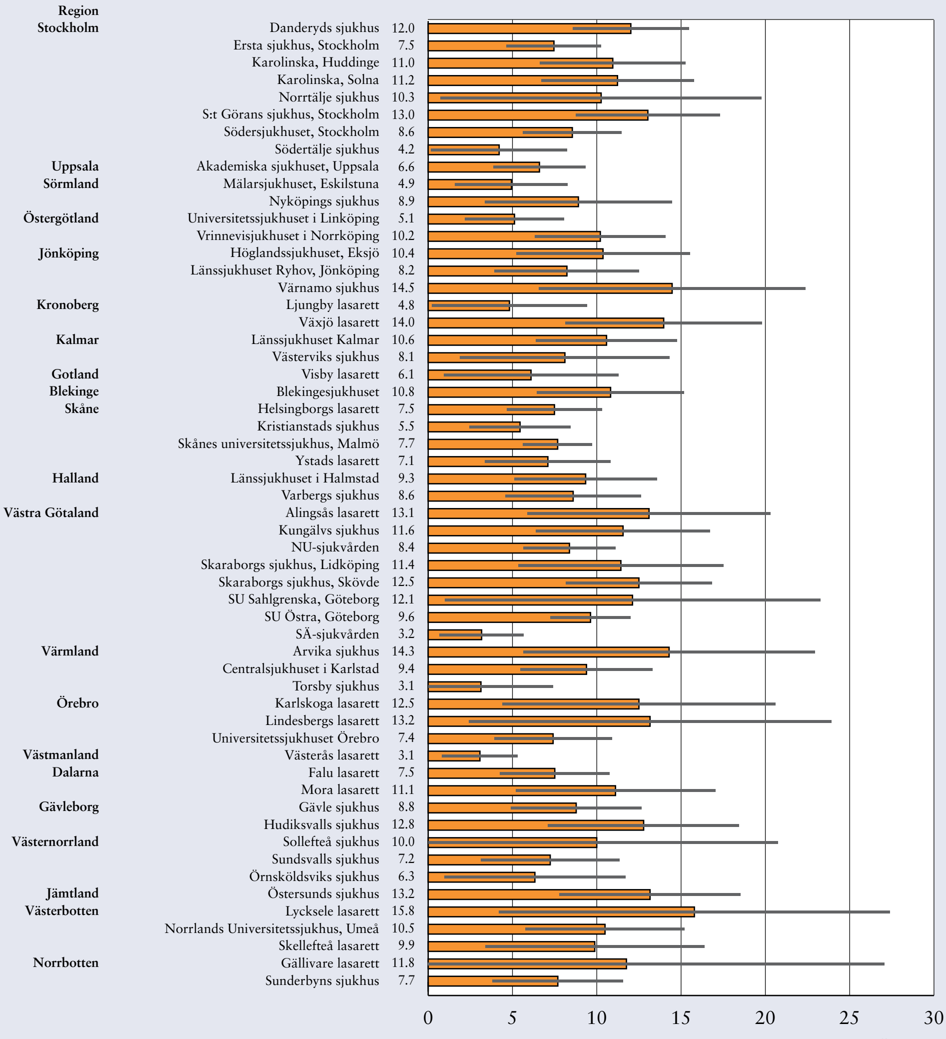


Figure 117
Sweden

Percentage of patients who were reoperated on within 30 days after primary colon cancer surgery.

Source: National Colon Cancer Register



Hospitals with less than 10 cases are excluded

Figure 117
Hospitals

Percentage of patients who were reoperated on within 30 days after primary colon cancer surgery, 2008–2010.

Source: National Colon Cancer Register

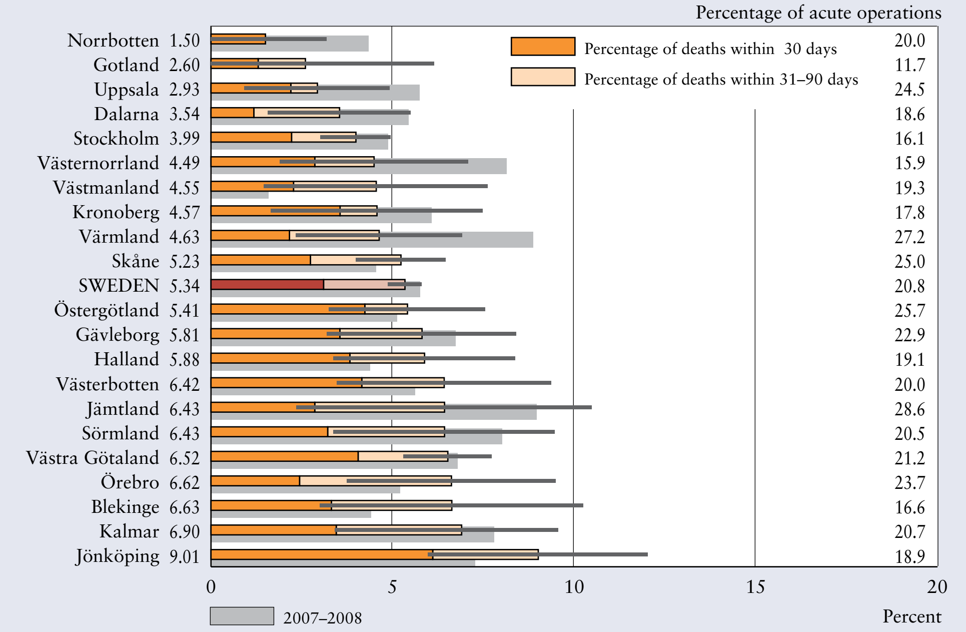


Figure 118 Percentage of deaths within 30 and 90 days after colon cancer surgery, 2008–2010.

Source: National Colon Cancer Register

118 Colon Cancer Surgery – 30-day and 90-day Case Fatality Rates

The Swedish National Board of Health and Welfare is currently updating its colon cancer guidelines and will publish them, along with an evaluation, in March 2013. One of the indicators that will be monitored is the percentage of deaths within 30 and 90 days of surgery, which is important in following healthcare quality. The indicator reflects the selection of patients for surgery, as well as the care they received before, during and after the operation.

Figure 118 compares county results for 2009–2011. The comparison covers 9 003 patients, approximately 90 per cent of all those operated on for colon cancer, who underwent colon resection surgery during the period. The group consisted of 4 637 women and 4 396 men. The divided bar in the diagram presents the number of deaths within 30 and 90 days.

A total of 482, or 5.3 per cent, of all patients died within 90 days of surgery – small gender differences emerged. The percentage was somewhat less than the previous period. Although the percentage of deaths within 90 days varied from county to county, the fact that there were relatively few cases led to substantial statistical uncertainty. However, the national outcome was in line with international trends. Just over three per cent of patients died within 30 days.

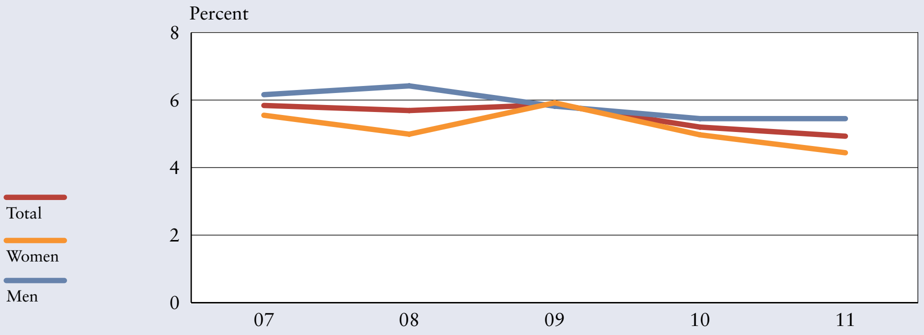


Figure 118
Sweden

Percentage of deaths within 90 days after colon cancer surgery.

Source: National Colon Cancer Register

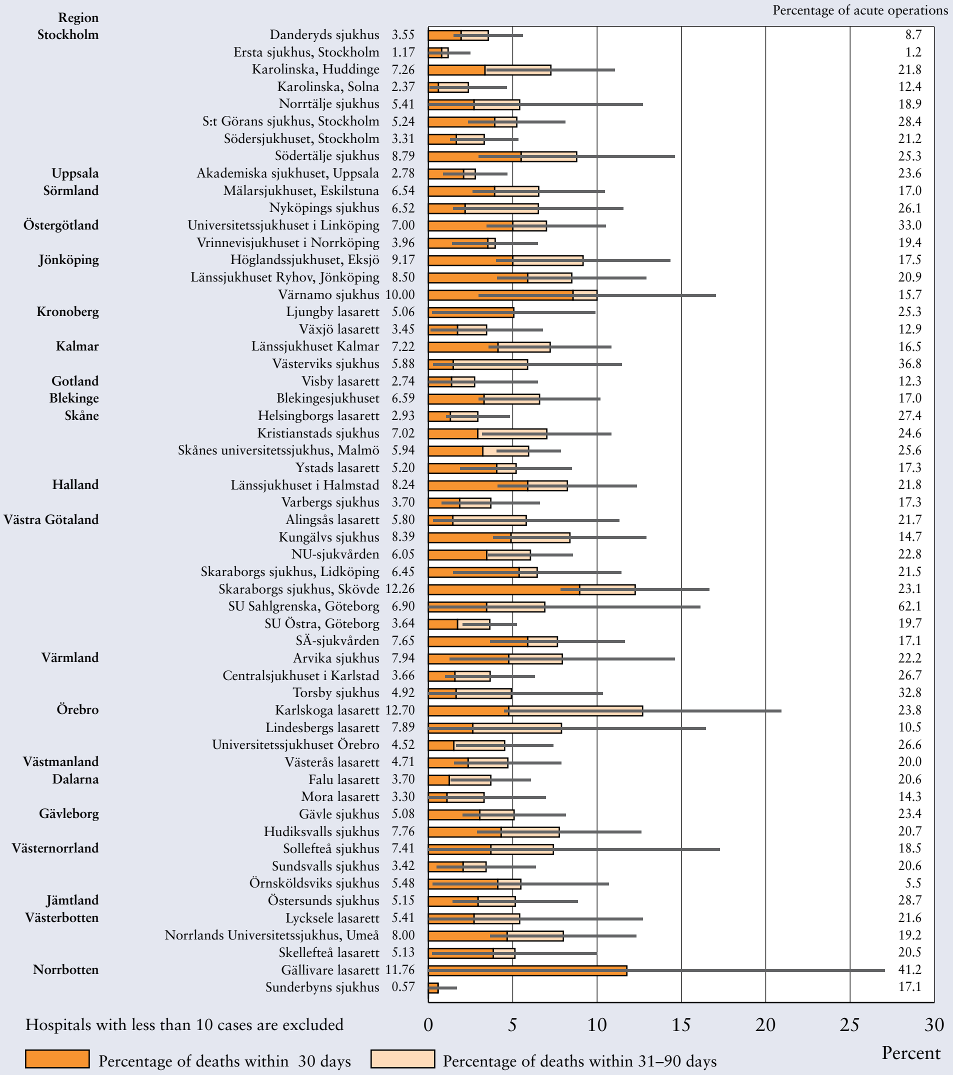


Figure 118
Hospitals

Percentage of deaths within 30 and 90 days after colon cancer surgery, 2008–2010.

Source: National Colon Cancer Register

The right side of the diagram shows the percentage of patients who underwent acute surgery and ran a higher risk of subsequently dying. Approximately 21 per cent of patients who died within 90 days had undergone acute surgery.

Age, gender, and severity of the malignancy, none of which have been adjusted for in this report, partly affected the percentage of deaths.

119 Rectal Cancer – Relative Five-year Survival Rates

Rectal cancer, which is more common among men than women, accounts for approximately 4 per cent of all malignancies. A total of 909 women and 1 194 men were diagnosed with the condition in 2010. Rectal cancer usually develops after age 60. Given that symptoms often manifest early and people go to the doctor, many of them have a high chance of being cured.

Approximately 760 people died of rectal cancer in 2011. The relative five-year survival rate for Sweden as a whole was 64 per cent among women and 61 per cent among men in 2004–2010. The fact that many counties have few rectal cancer cases renders the comparative survival figures less certain.

Approximately 82 per cent of all rectal cancer surgery involves removal of the entire tumour. The location and size of the tumour, as well as the patient's general condition, affect the scope and riskiness of the operation. Bleeding, infection, leakage or another complication may require prompt reoperation, which entails additional personal suffering and increases the risk of further complications.

The Swedish National Board of Health and Welfare is currently updating its rectal cancer guidelines and will publish them, along with an evaluation, in March 2013. Reoperation within 30 days after primary surgery is among the indicators that will be monitored.

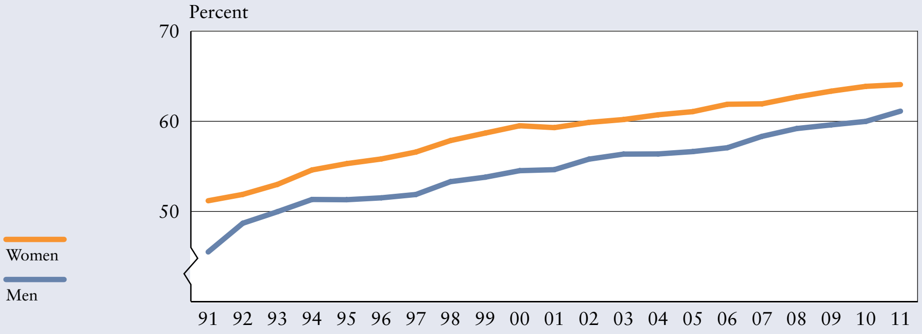


Figure 119
Sweden

Rectal cancer – relative five-year survival rates.
Source: Swedish Cancer Registry, National Board of Health and Welfare

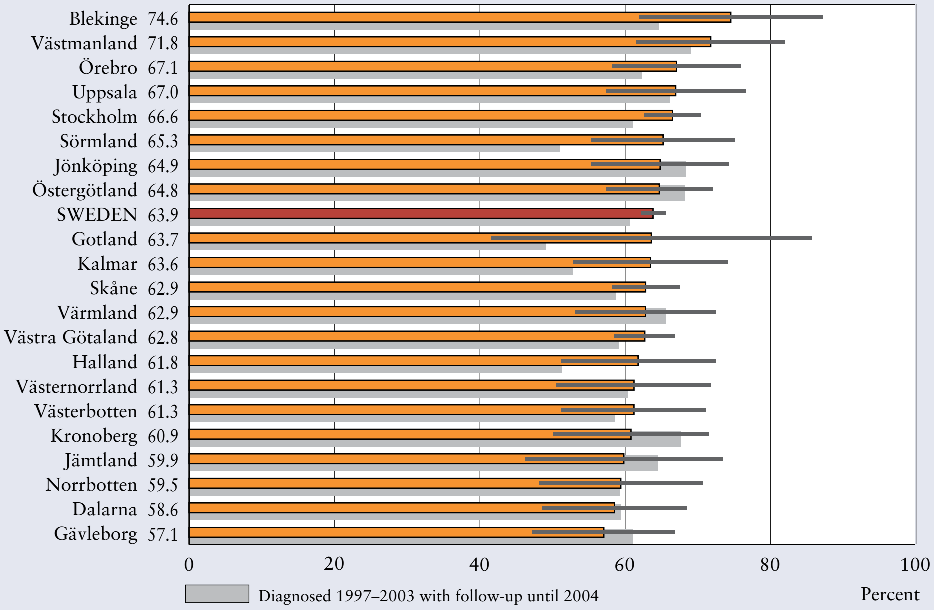


Figure 119
Women

Rectal cancer – relative five-year survival rates. Patients diagnosed in 2004–2010 with follow-up until December 2010.

Source: Swedish Cancer Registry, National Board of Health and Welfare

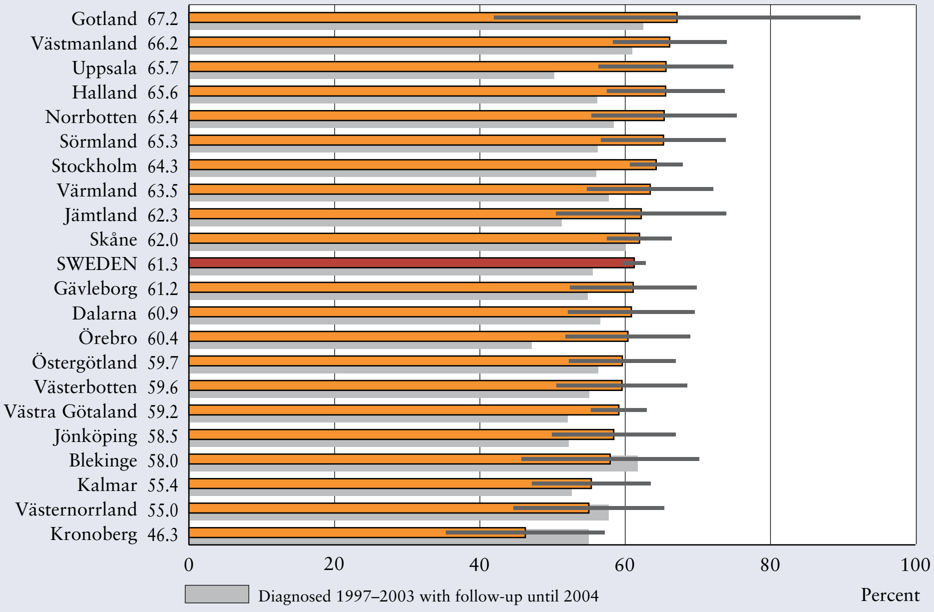


Figure 119
Men

Rectal cancer – relative five-year survival rates. Patients diagnosed in 2004–2010 with follow-up until December 2010.

Source: Swedish Cancer Registry, National Board of Health and Welfare

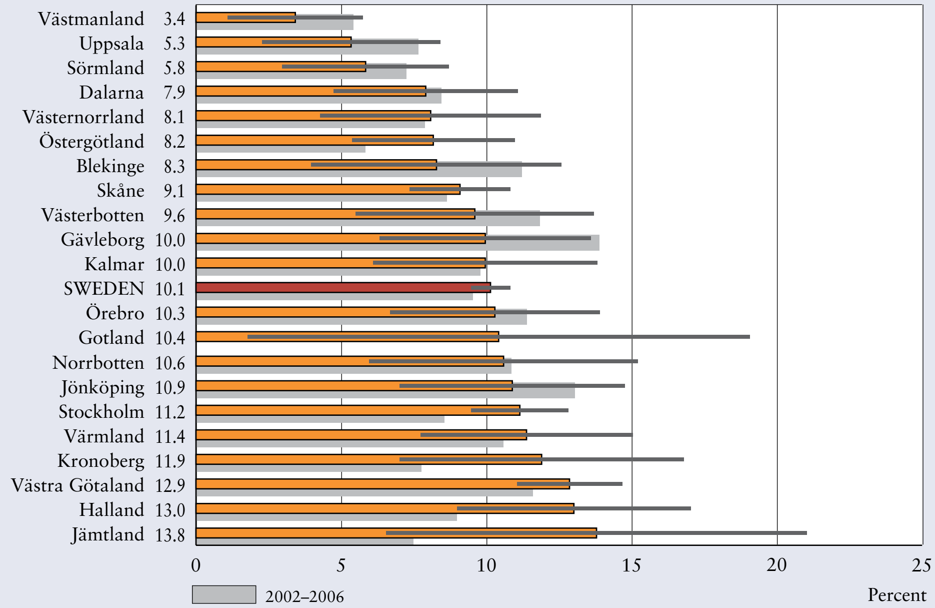


Figure 120 Percentage of reoperations within 30 days after primary surgery for rectal cancer, 2007–2011.

Source: Swedish Rectal Cancer Registry

120 Reoperation for Rectal Cancer

Approximately 82 per cent of all rectal cancer surgery involves removal of the entire tumour. The location and size of the malignancy, as well as the patient's general condition, affect the scope and riskiness of the operation. Bleeding, infection, leakage or another complication may require prompt reoperation, which entails additional personal suffering and increases the risk of further complications.

The Swedish National Board of Health and Welfare is currently updating its rectal cancer guidelines and will publish them, along with an evaluation, in March 2013. Reoperation within 30 days after primary surgery is among the indicators that will be monitored.

Figure 120 shows the percentage of reoperations in 2007–2011. A total of 776, or 10.1 per cent, of the 7 655 patients who underwent surgery had a reoperation. The various counties ranged from 3.4 to 13.8 per cent. The national percentage has held steady for the past few years. Depending on the county, both progress and regression were evident compared to 2002–2006. Men had reoperations 11.5 per cent, and women 8.2 per cent, of the time.

The fact that some hospitals reported minor interventions as reoperations and some did not skewed the comparisons. The percentage of reoperations is also related to the way that primary surgery was performed and the patient's condition at the time.

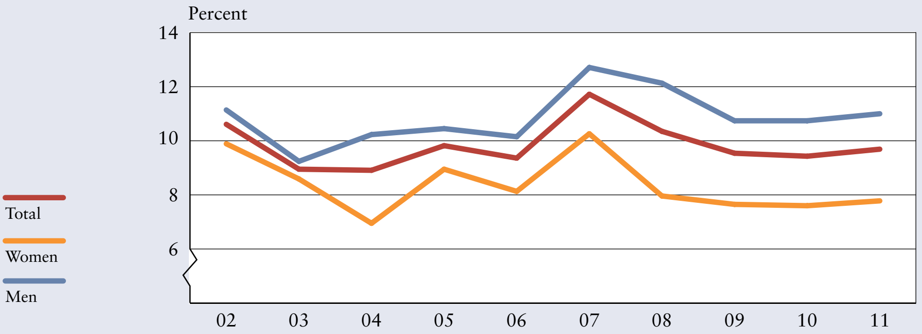


Figure 120
Sweden

Percentage of reoperations within 30 days after primary surgery for rectal cancer.
Source: Swedish Rectal Cancer Registry

121 Rectal Cancer Surgery – 30-day and 90-day Case Fatality Rates

The Swedish National Board of Health and Welfare is currently updating its rectal cancer guidelines and will publish them, along with an evaluation, in March 2013. Reoperation within 30 and 90 days after primary surgery is among the indicators that will be monitored, which is important in following healthcare quality. The indicator reflects the selection of patients for surgery, as well as the care they re-

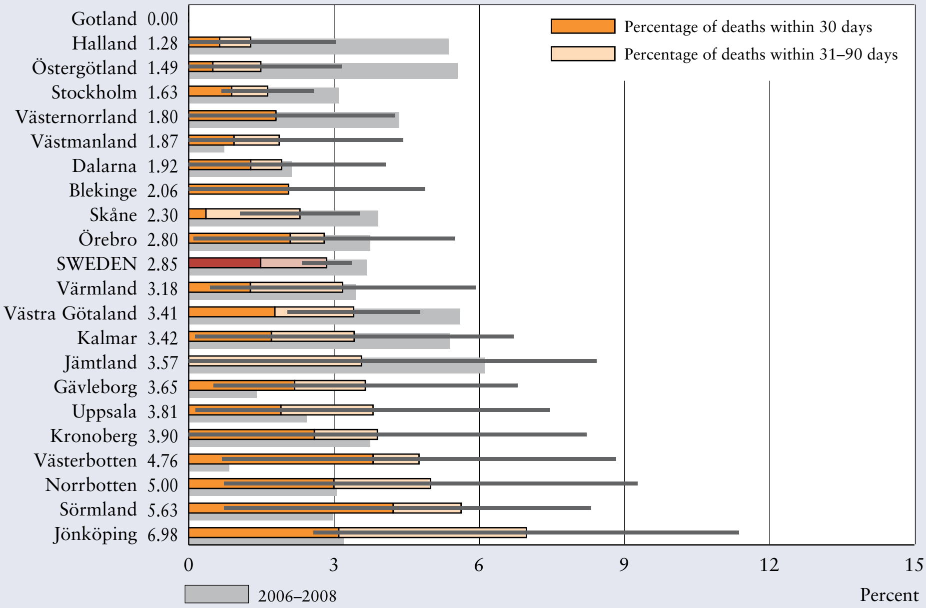


Figure 121

Percentage of deaths within 30 and 90 days after rectal cancer surgery, 2009–2011.
Source: Swedish Rectal Cancer Register

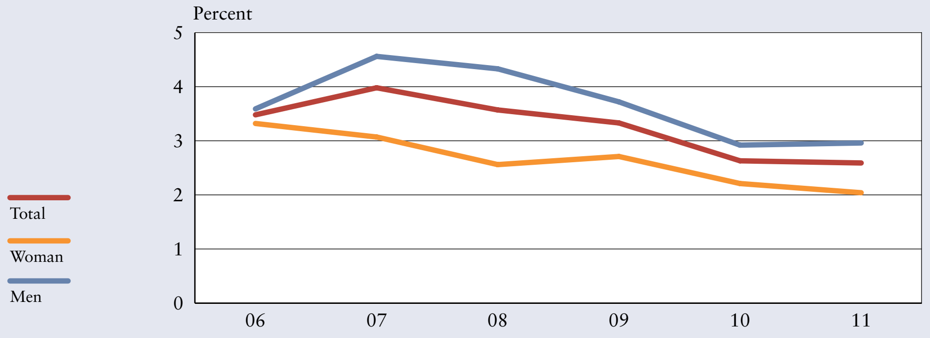


Figure 121
Sweden

Percentage of deaths within 90 days after rectal cancer surgery.

Source: Swedish Rectal Cancer Register

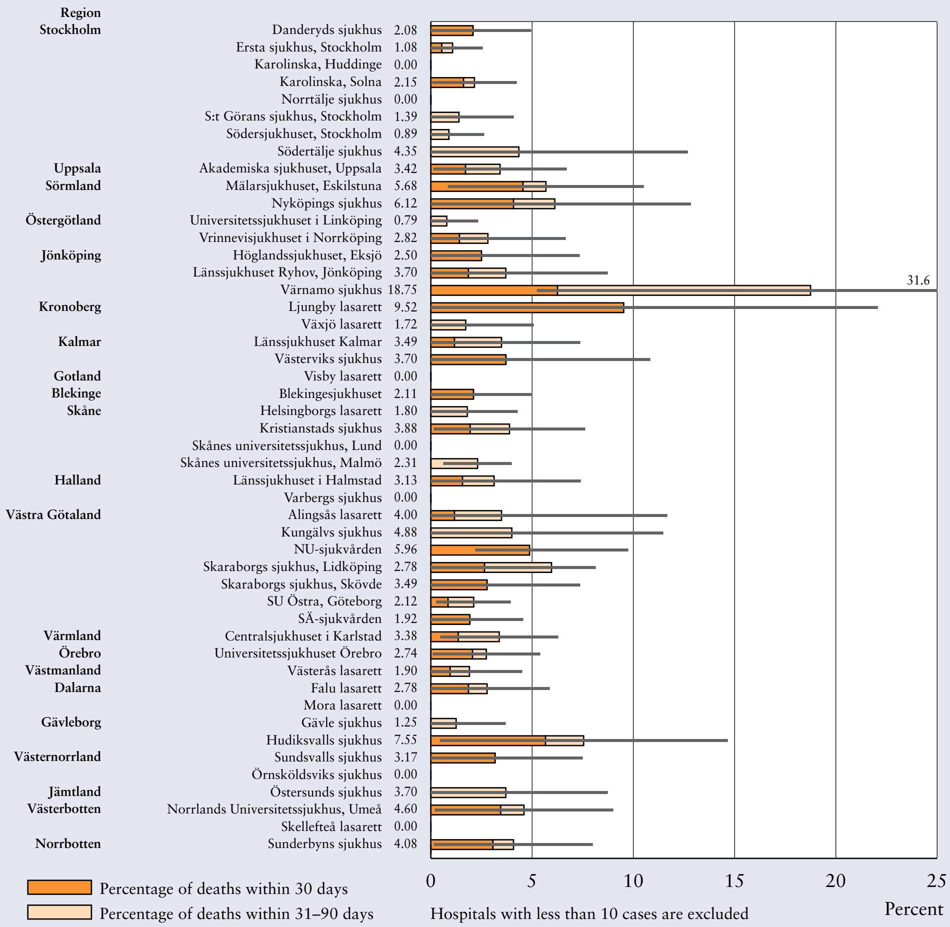


Figure 121
Hospitals

Percentage of deaths within 30 and 90 days after rectal cancer surgery, 2009–2011.

Source: Swedish Rectal Cancer Register

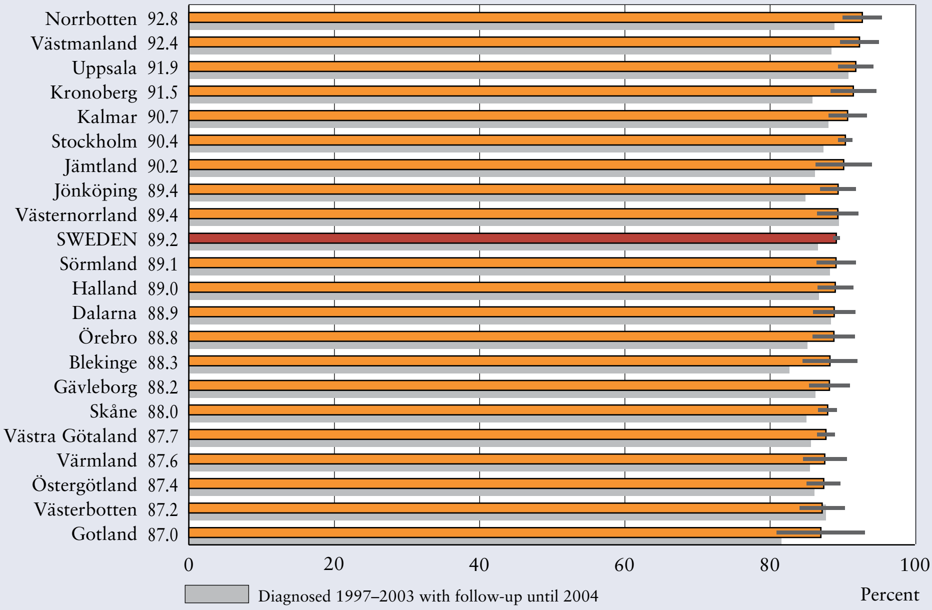


Figure 122
Women

Breast cancer – relative five-year survival rates. Patients diagnosed 2004–2010 with follow-up until December 2011.

Source: Swedish Cancer Registry, National Board of Health and Welfare

ceived before, during and after the operation. Given that patients who experience complications generally survive the first 30 days thanks to intensive care and other interventions, this comparison also presents those who die within 90 days.

Figure 121 compares county results for 2009–2011. The comparison covers all 2 432 men and 1 601 women – almost 90 per cent of those operated on for rectal cancer – who underwent rectal resection surgery during the period. A total of 115, or 2.8 per cent, of all patients died within 90 days of surgery. Although the percentage differed among the various counties, the fact that many of them had so few cases led to substantial statistical uncertainty. Altogether 3.2 per cent of men and 2.3 per cent of women died within 90 days of surgery during the period.

Age, gender, and severity of the malignancy, none of which have been considered in this report, affected the percentage of deaths.

122 Breast Cancer – Relative Five-year Survival Rates

Breast cancer is the most common form of cancer in middle-aged women. A total of 7 917 women and 33 men were diagnosed with breast cancer in 2010, and Sweden currently has approximately 88 800 females alive having had a previous diagnosis of breast cancer. The risk of being diagnosed with breast cancer before age 75 is approximately 10 per cent. The condition is uncommon before 35–40, after which it

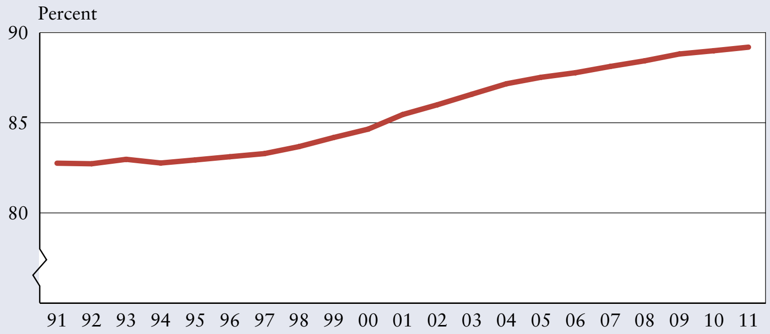


Figure 122
Sweden

Breast cancer – relative five-year survival rates.
Source: Swedish Cancer Registry, National Board of Health and Welfare

increases with age. The majority of patients are diagnosed before they turn 65. A total of 1 401 women and 15 men died of breast cancer in 2010. The prevalence has been increasing, albeit slowly, for the past few decades.

The five-year survival rate rose from 65 per cent in the mid-1960s to 84 per cent of women diagnosed in the mid-1990s and 89 per cent for 2004–2010. The improvement is due to early detection by means of mammography screening, as well as better treatment methods.

While all counties now provide mammography screening, they differ in terms of when the service began and the age range of patients who are offered the examination.

Figure 122 shows that five-year survival rates for the individual counties were in a narrow range of 87–93 per cent, suggesting that they provide high-quality and fairly uniform breast cancer care. Previous analyses revealed greater differences between counties, partly because those with poorer survival rates had not yet started mammography screening.

The good, uniform nationwide results and the fact that five-year survival rates have improved in almost all counties represent the most impressive conclusions that can be drawn from this indicator, as opposed to any geographical differences.

123 Reoperation for Breast Cancer Due to Tumour Data

More than 90 per cent of all patients diagnosed with breast cancer undergo surgery. A postoperative pathological anatomical diagnosis of the tumour, along with surrounding tissue (such as lymph nodes), is performed. If the analysis shows remaining tumour cells or malignancy within a larger area than previously known, reoperation is recommended to minimise the risk of recurrence. The second operation may involve additional physical suffering.

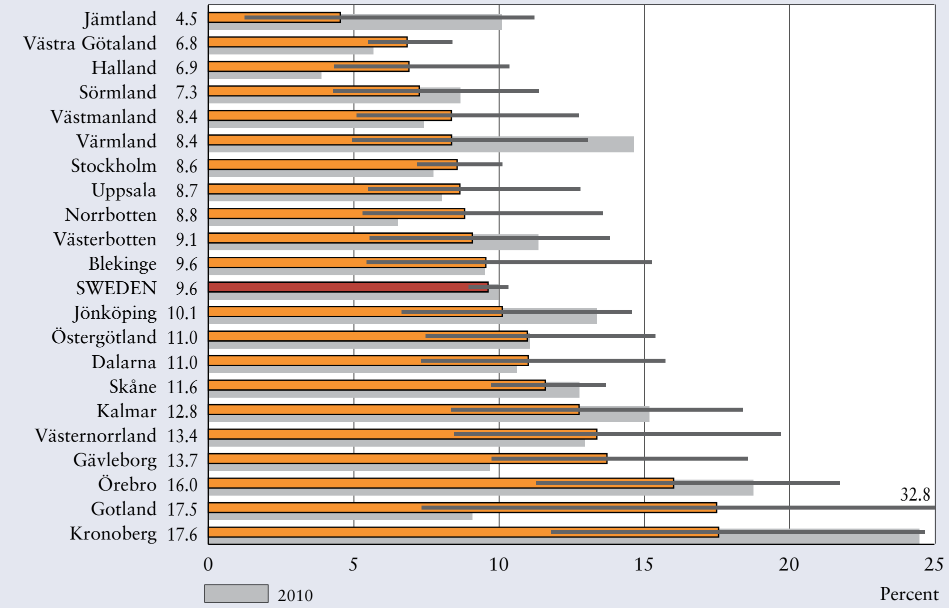


Figure 123
Women

Percentage of women with breast cancer who were reoperated on due to tumour data, 2010.

Source: National Breast Cancer Register

The Swedish National Board of Health and Welfare is currently updating its breast cancer guidelines and will publish them, along with an evaluation, in March 2013. One of the indicators that will be monitored is the percentage of reoperations due to tumour data. This indicator measures both the quality of preoperative malignancy assessment and how successful the surgeon is in removing the tumour.

Figure 23 shows the number of patients who were reoperated on due to tumour data in 2011. Of the 7 370 patients covered by the comparison, 710 or 9.6 per cent (down from 11.9 per cent in 2009) had a reoperation. The counties ranged from 4.5 to 17.6 per cent.

The data are based on relatively few cases, thereby generating a wide confidence interval. Errors may also have occurred because not all hospitals reported reoperations to the National Breast Cancer Register. Outcomes should also be related to the degree to which breast-preserving surgery, which increases the risk of reoperation, had been performed – and whether or not the purpose of primary surgery was to confirm a cancer diagnosis.

In the view of the Swedish Association for Breast Cancer Surgery, an intervention needs to be as definitive as possible in order to avoid reoperation, which should be performed on the basis of tumour data in fewer than 10 per cent of all cases. Approximately half of the counties met that target in this year's comparison.

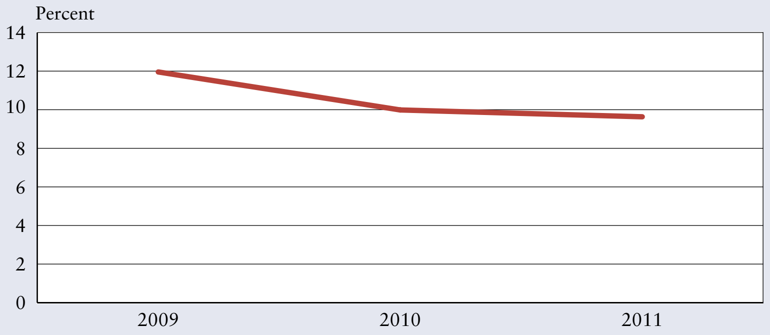


Figure 123
Sweden

Percentage of women with breast cancer who were reoperated on due to tumour data.

Source: National Breast Cancer Register

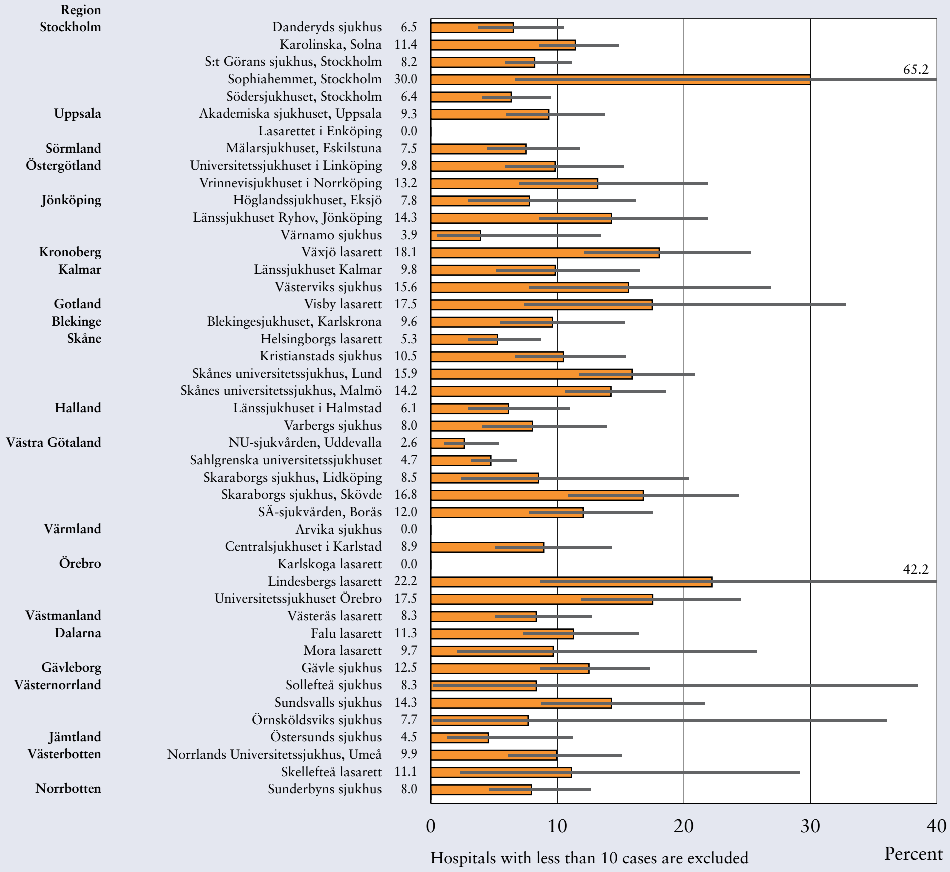


Figure 123
Hospitals

Percentage of women with breast cancer who were reoperated on due to tumour data, 2010.

Source: National Breast Cancer Register

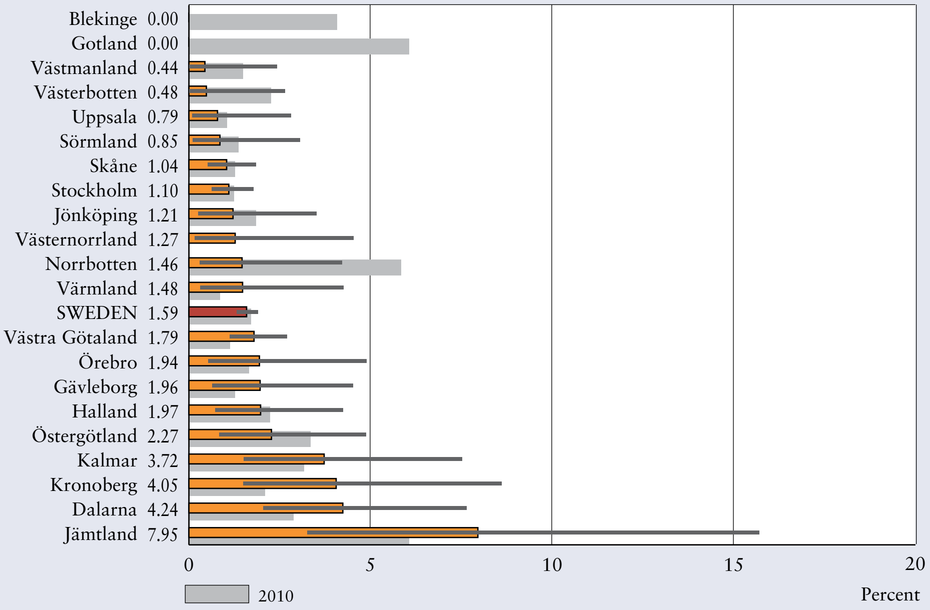


Figure 124
Women

Percentage of women with breast cancer who were reoperated on within 30 days due to complications, 2010.

Source: National Breast Cancer Register.

124 Reoperation for Breast Cancer within 30 Days Due to Complications

More than 90 per cent of breast cancer patients undergo surgery. The scope of surgery varies according to the location and microscopic presentation of the tumour, as well the patient's general state of health. Complications may require relatively prompt reoperation. Among such complications are bleeding, which usually occurs within 24 hours, or infection, whose symptoms appear within a week.

Follow-up by the National Breast Cancer Register indicates that most reoperations are due to bleeding within the first 24 hours. Given that breast cancer operations are regarded as clean surgery, infection should be rare; in fact, very few reoperations are performed as the result of surgical site infection. However, infections that do not lead to reoperations are not entered in the register.

The Swedish National Board of Health and Welfare is currently updating its breast cancer guidelines and will publish them, along with an evaluation, in March 2013. One of the indicators that will be monitored is the percentage of patients who have reoperations within 30 days due to complications, which is important to follow.

Figure 124 shows the percentage of reoperations in 2011. A total of 117, or 1.6 per cent, of the 7 366 patients who underwent surgery had a reoperation. The percentage has remained essentially unchanged in recent years. Although the percentage differed

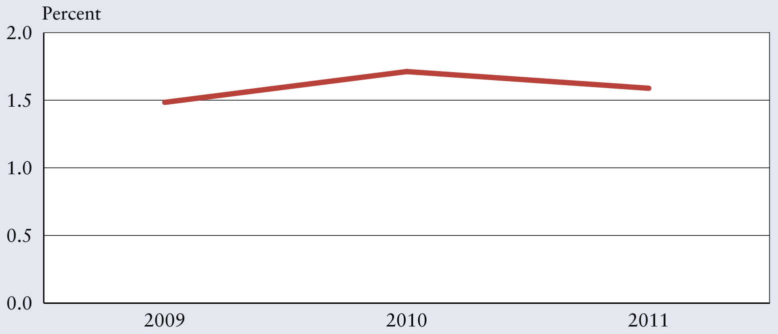
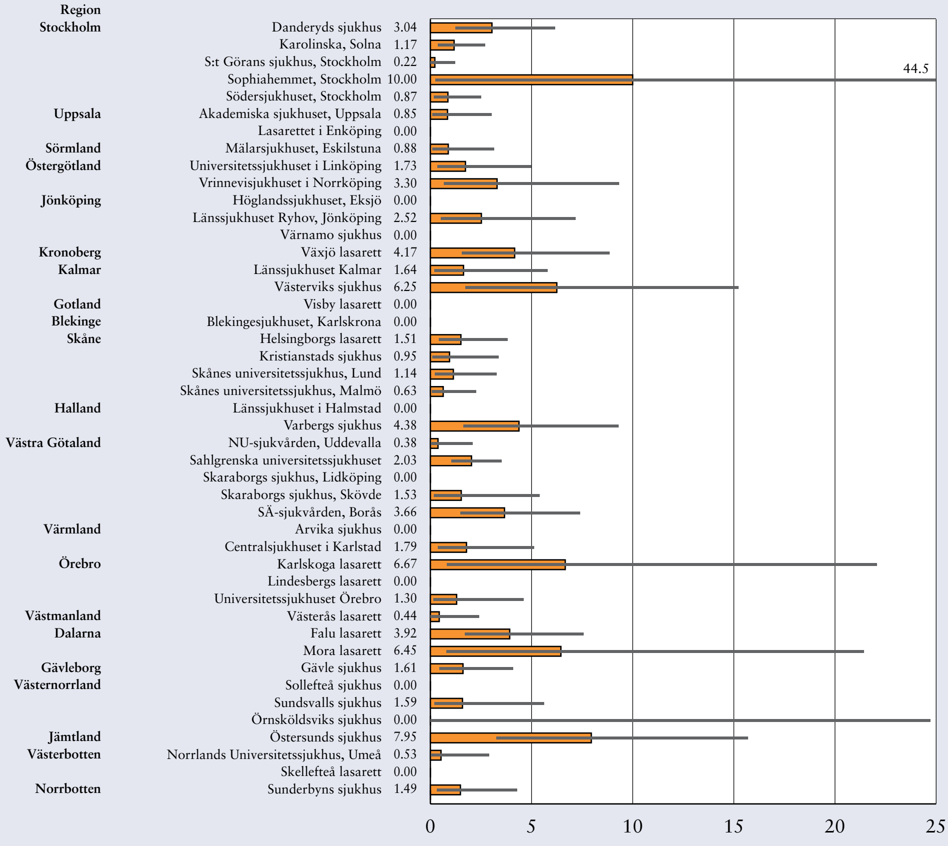


Figure 124
Sweden

Percentage of women with breast cancer who were reoperated on within 30 days due to complications.

Source: National Breast Cancer Register.



Hospitals with less than 10 cases are excluded

Figure 124
Hospitals

Percentage of women with breast cancer who were reoperated on within 30 days due to complications, 2010.

Source: National Breast Cancer Register.

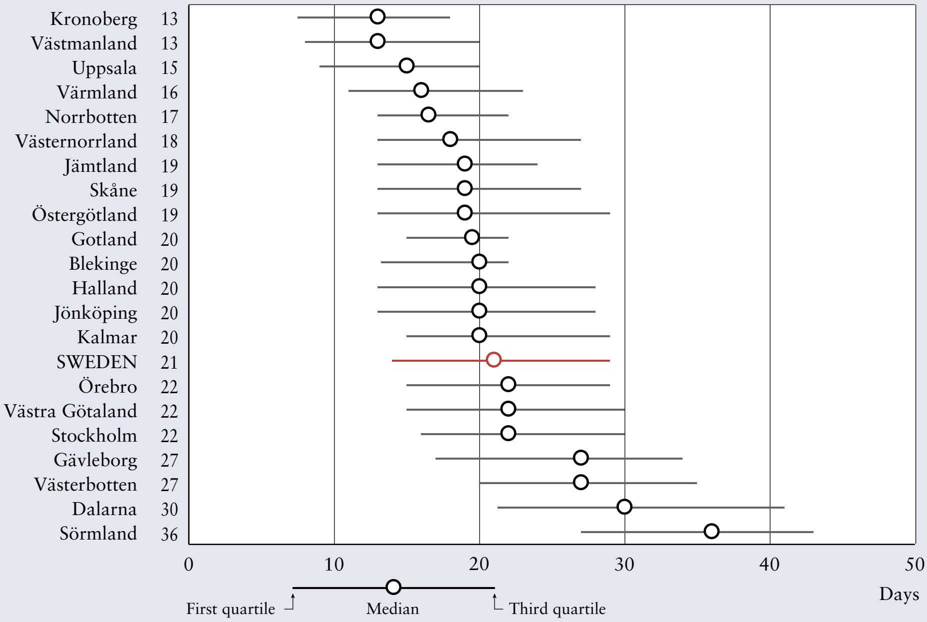


Figure 125
Women

Number of days from first appointment with a specialist until breast cancer surgery, 2011.

Source: National Breast Cancer Register.

among the various counties, the fact that there were so few cases led to substantial statistical uncertainty.

125 Waiting Times for Breast Cancer Surgery

The Swedish Association for Breast Cancer Surgery (SFBK), which advocates for a rapid care process, argues that more than 90 per cent of all patients with verified breast cancer should be offered surgery within three weeks and 100 per cent within four weeks. Waiting time is affected by the structure of the local breast cancer care process. In some counties, an assessment has begun or has already been completed before the patient is referred to a specialist clinic for treatment.

A postoperative pathological anatomical diagnosis of the tumour, along with the surrounding tissue, is performed. The SFBK targets waiting time of no more than one week. Waiting time is affected by the availability of pathologists, as well as procedures for handling tests and results.

Figure 125 shows that the median waiting time from the initial appointment with a specialist (surgeon) until the primary operation was 21 days for the 7 031 patients included in the comparison.

The various counties revealed substantial differences. The comparison covered patients who underwent surgery as the first-line treatment in 2011.

126 Lung cancer – relative one-year survival rates

As the fifth most common form of cancer, lung cancer was diagnosed among 1 739 women and 1 829 men in 2010. Approximately half of newly diagnosed patients were over 70 and fewer than 1 per cent were below 40. Lung cancer claims approximately 3 500 Swedish lives every year, more than any other form of cancer. The most frequent cause by far is smoking.

Women survive longer than men, but the percentage of people who recover is very small for both sexes. Figure 126 shows 1-year survival per county for two different periods of time. The relative 1-year survival rate was approximately 47 per cent for women and 40 per cent for men. The variations between counties were fairly large. For the country as a whole, the survival rate had increased by 4–5 percentage points since the previous period. The estimate is based on cases in 2004–2010, with follow-up until 2011. Virtually every county reported a higher survival rate than the previous period.

The relative 2-year survival rate was approximately 30 per cent for women and 23 per cent for men. The relative 5-year survival rate was approximately 18 per cent for women and 13 per cent for men.

While early diagnosis can affect survival rates, the lung cancer must be combated primarily with prevention measures, particularly smoking prevention.

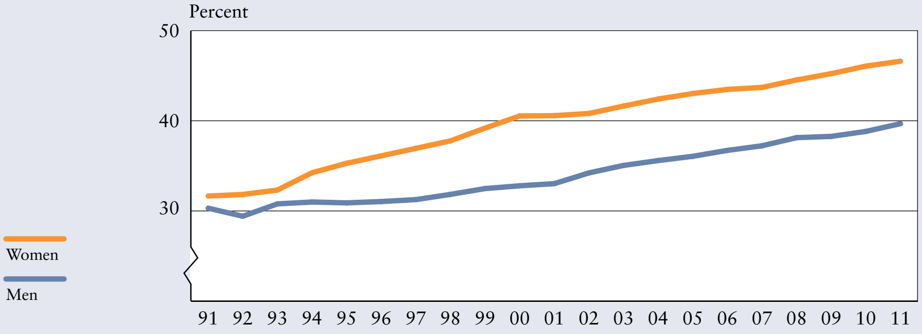


Figure 126
Sweden

Lung cancer – relative one-year survival rates.

Source: Swedish Cancer Registry. National Board of Health and Welfare

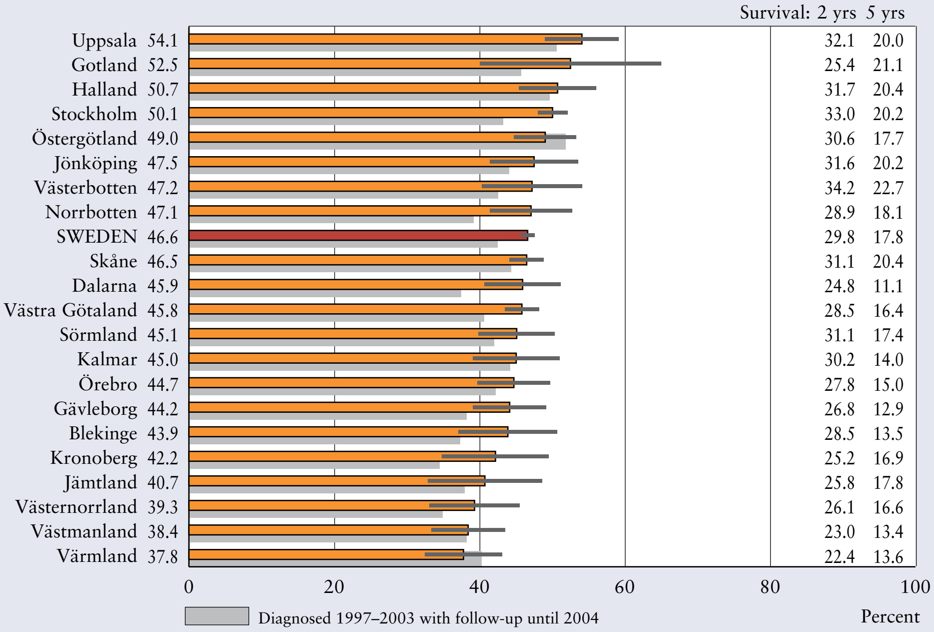


Figure 126
Women

Lung cancer – relative one-year survival rates. Patients diagnosed 2004–2010 with follow-up until December 2011.

Source: Swedish Cancer Registry. National Board of Health and Welfare

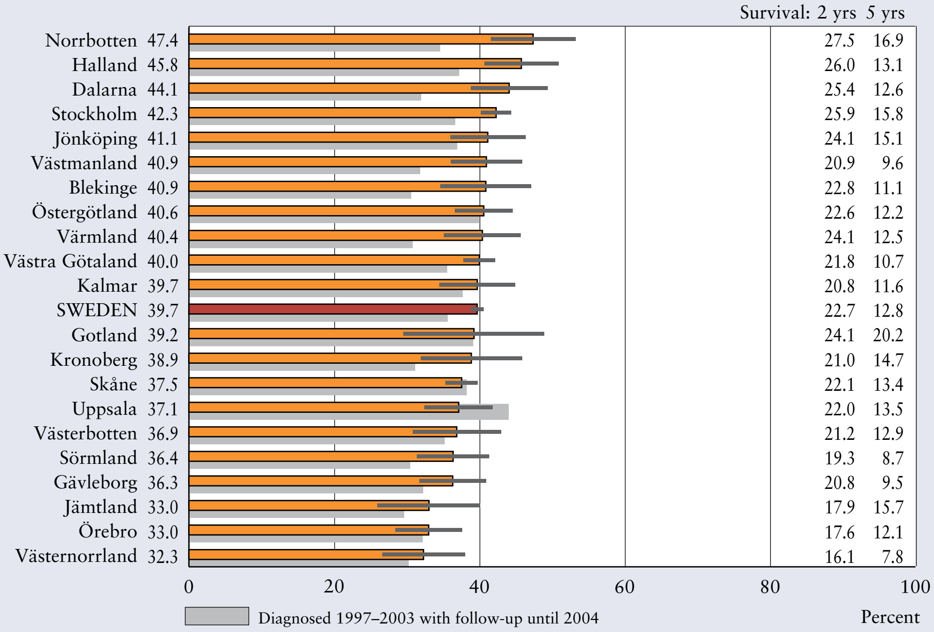


Figure 126
Men

Lung cancer – relative one-year survival rates. Patients diagnosed 2004–2010 with follow-up until December 2011.

Source: Swedish Cancer Registry. National Board of Health and Welfare

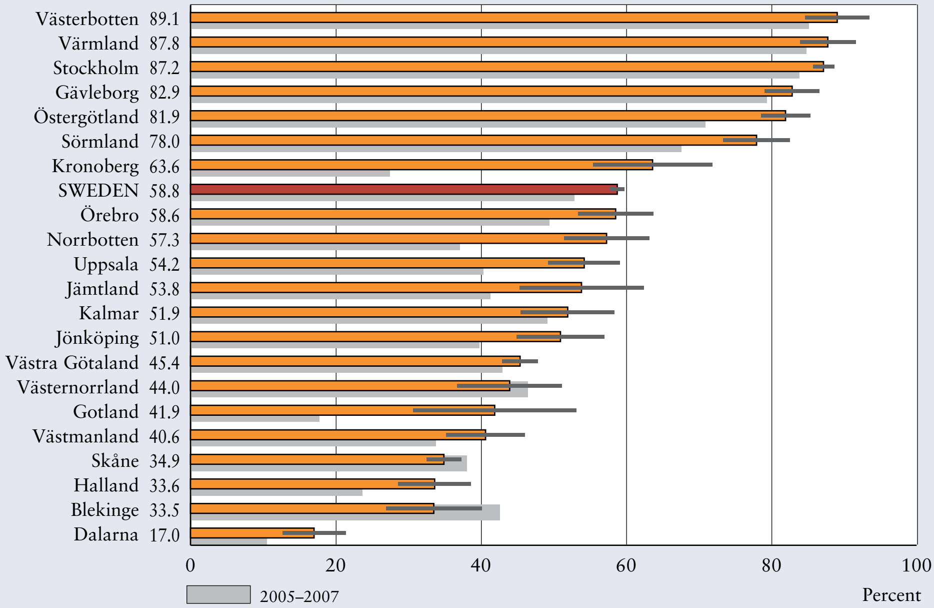


Figure 127 Percentage of patients for whom multidisciplinary team meetings were held prior to primary lung cancer treatment, 2008–2010.

Source: National Lung Cancer Register.

127 Multidisciplinary Team Meetings for Lung Cancer Patients

Primary lung cancer treatment should be preceded by a multidisciplinary team meeting, a comprehensive assessment for the purpose of optimising the intervention. Surgery, oncology, pulmonary, radiology, pathology and other specialists, as well as nurses, may participate. A multidisciplinary team meeting is particularly important when the benefit of surgery, radiotherapy or drug therapy is difficult to assess; multimodal treatment may be indicated. The Swedish National Board of Health and Welfare guidelines for lung cancer care assign high priority to a multidisciplinary team meeting before commencement of treatment for a newly diagnosed case.

This indicator shows the percentage of patients who were assessed at such a meeting prior to primary treatment. The results reflect whether the hospital and region have a structure for treating lung cancer patients and the extent to which the service is provided.

Figure 127 shows that 59 per cent of the 9 927 patients who had been diagnosed with lung cancer in 2008–2010 were subsequently assessed at a multidisciplinary team meeting. The counties varied from 17 per cent all the way to 89 per cent. A slight predominance of women were assessed.

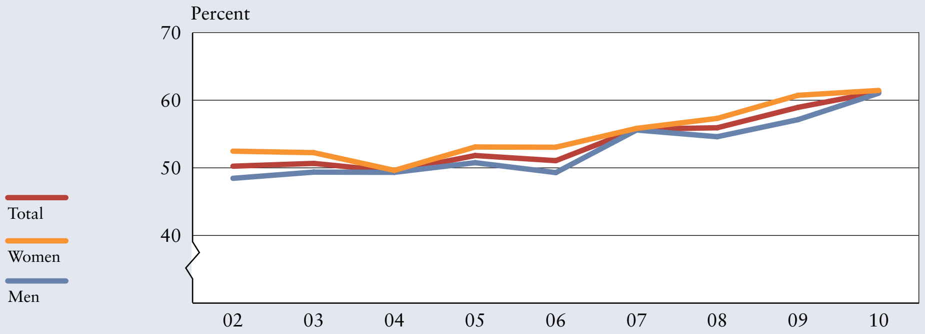
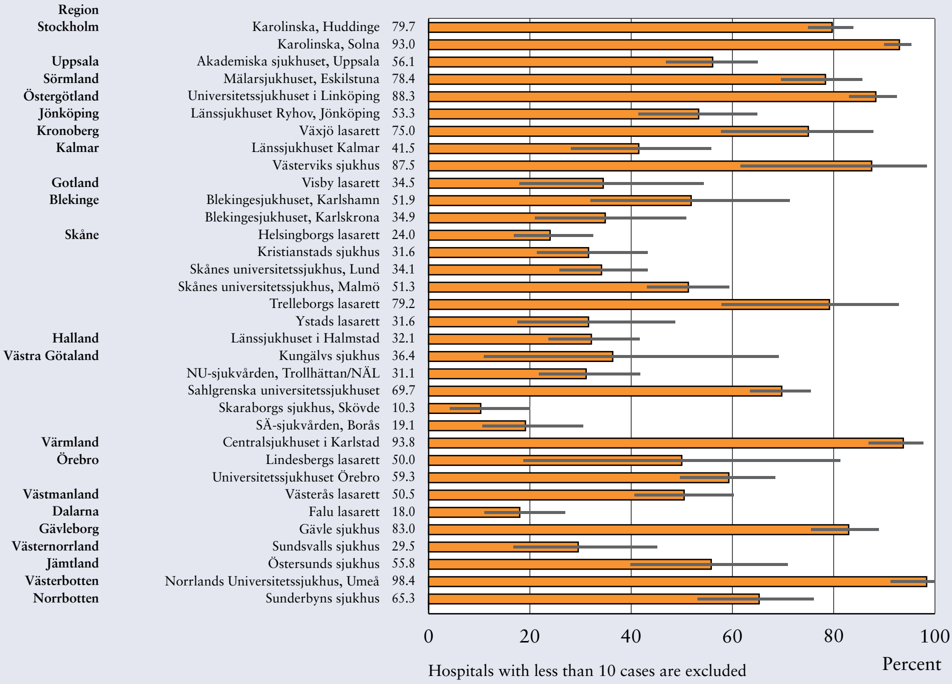


Figure 127
Sweden

Percentage of patients for whom multidisciplinary team meetings were held prior to primary lung cancer treatment.

Source: National Lung Cancer Register.



Hospitals with less than 10 cases are excluded

Figure 127
Hospitals

Percentage of patients for whom multidisciplinary team meetings were held prior to primary lung cancer treatment, 2008–2010.

Source: National Lung Cancer Register.

The guidelines target meetings in 74 per cent of cases, but few counties reach that level. The idea is that all counties are capable of doing so and that the level should be raised even higher one day.

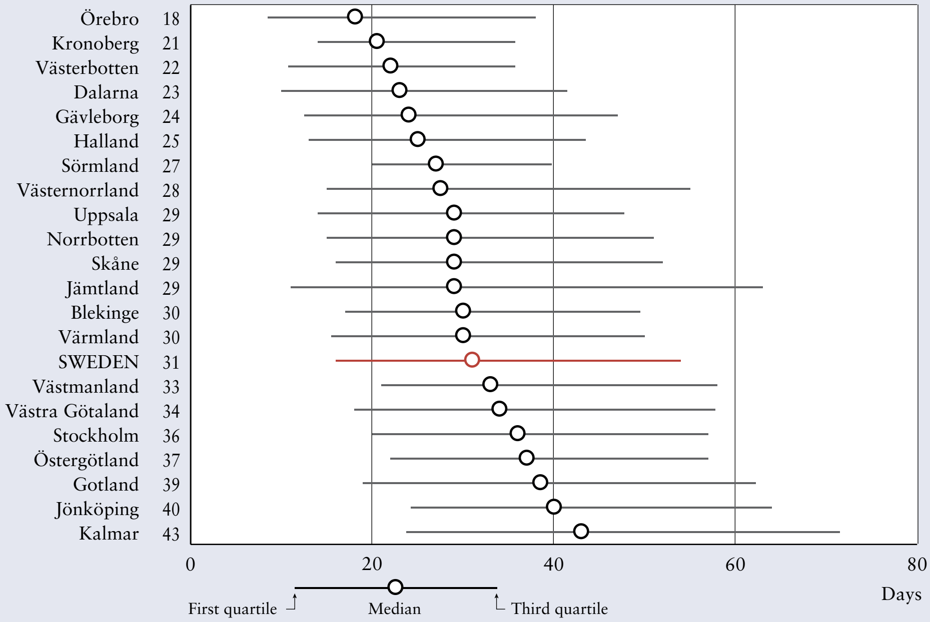


Figure 128 Waiting time from receipt of a referral by a specialist clinic until the decision to treat a lung cancer patient, 2010.

Source: National Lung Cancer Register.

128 Waiting Time from Receipt of Referral until Decision to Treat a Lung Cancer Patient

A key indicator of lung cancer care is the amount of time that transpires between the date that a specialist clinic receives a referral – or is contacted by the patient – and the decision to treat. The waiting time includes assessment and diagnosis until a decision is made at a multidisciplinary team meeting or in some other manner. The clinic ordinarily specialises in either pulmonary medicine or oncology. According to the Swedish Lung Cancer Group, the waiting time should be 28 days or less for at least 80 per cent of patients.

Figure 128 shows the number of days that 25, 50 and 75 per cent of 3 335 patients waited in 2010 between receipt of a referral until decision to treat. Twenty-five per cent of patients received a decision to treat within 16 days, 50 per cent within 31 days, 75 per cent within 54 days and 25 per cent after 54 days. The median waiting time for the entire country improved somewhat compared to 2009. The individual counties varied substantially from 18 to 43 days.

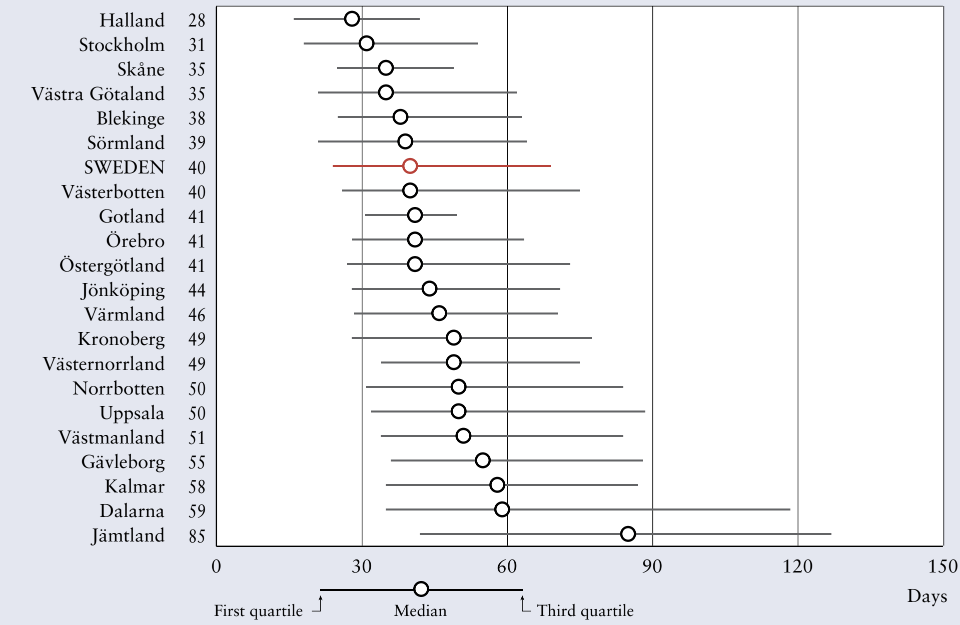


Figure 129
Men

Waiting time from a prostate cancer referral until the initial appointment with a urologist, 2010.

Source: National Prostate Cancer Registry of Sweden

129 Waiting Time from Prostate Cancer Referral until Initial Appointment with a Urologist

Prostate cancer is the most common form of the disease in Sweden and accounts for more than 36 per cent of all cases in men. A total of 9 697 new patients were diagnosed with prostate cancer in 2010, and Sweden currently has more than 75 000 prevalent cases. One out of every 10 men are diagnosed with prostate cancer at some point in their lives, and half of them are under 70. The risk of death depends on the stage and degree of the tumour. Because men are increasingly diagnosed with small, well-differentiated tumours, the relative five-year survival rate has risen to 86.5 per cent. A total of 2 375 Swedes died of prostate cancer in 2010. The fatality rate from prostate cancer for the male population as a whole has held steady for a long time.

Usually a general practitioner makes an assessment or, at the patient's request, a PSA test is performed as part of a routine check-up. A doctor who suspects cancer refers the patient to a urologist.

According to the national healthcare guarantee, the initial appointment with a specialist is to take place within 90 days after the referral has been sent. Since tumours of the prostate tend to grow slowly, waiting time is rarely decisive to treatment outcome. The PSA level, which reflects proliferation of the tumour, is useful in

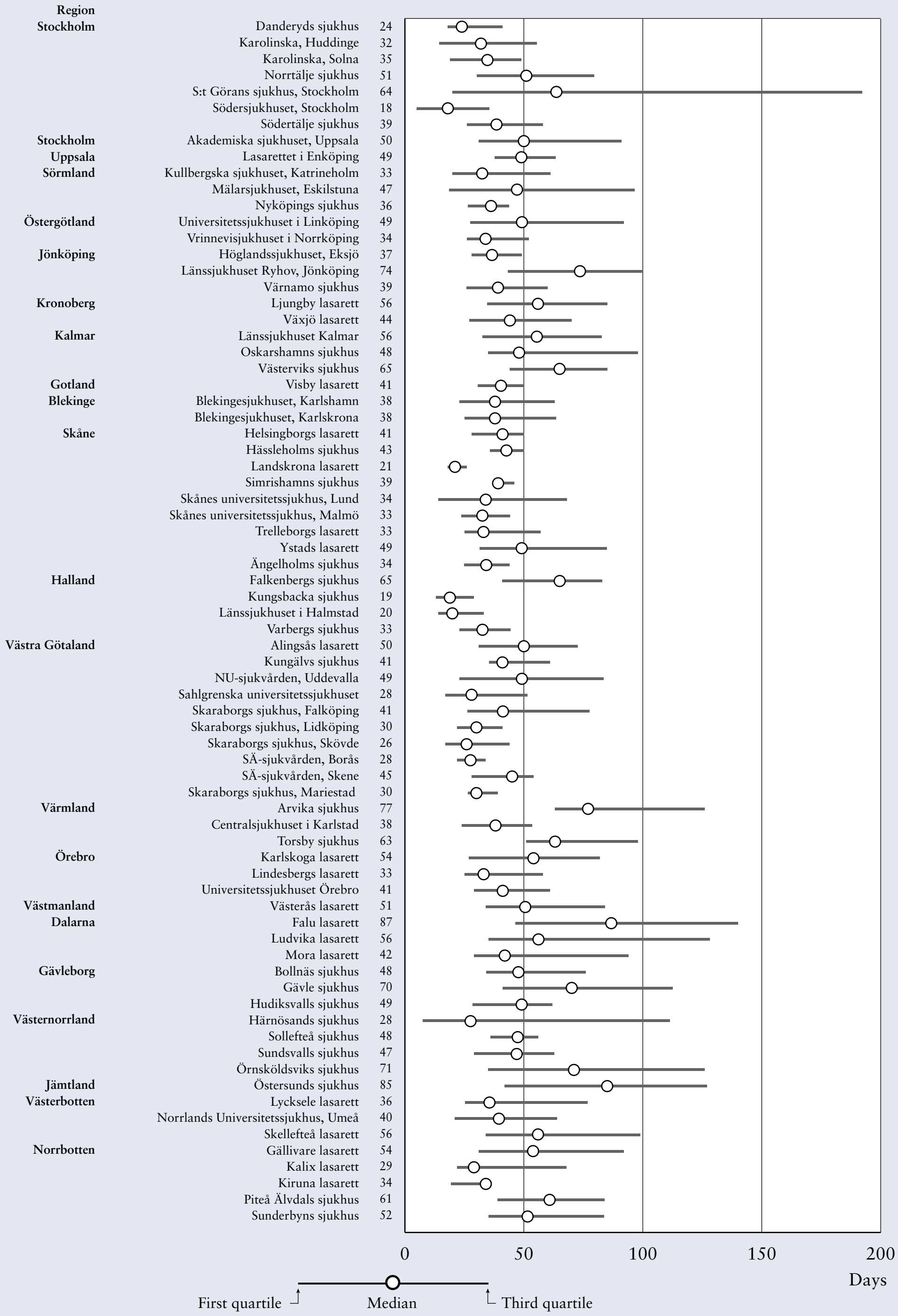


Figure 129
Hospitals

Waiting time from a prostate cancer referral until the initial appointment with a urologist, 2010.

Source: National Prostate Cancer Registry of Sweden determining the need for rapid assessment. Be that as it may, a long waiting time causes unnecessary anxiety and should be avoided.

This indicator shows how long it takes from the time that the clinic receives a referral or is contacted by the patient until the initial appointment with a urologist. The comparison is based on data for 7 468 patients who were diagnosed with prostate cancer and therefore appeared in the register. A number of men saw a urologist because they were suspected of having cancer, but were not entered in the register because the tests turned out to be negative.

The bar in figure 129 shows the number of days that 25, 50 and 75 per cent of patients waited for an initial urologist appointment. Twenty-five per cent of patients saw a urologist within 24 days, 50 per cent within 40 days, 75 per cent within 69 days and 25 per cent after 69 days.

The various counties reported substantial differences. Halland had the shortest median waiting time until the initial appointment, as well as comparatively short waiting times for patients who experienced a longer delay.

Patients in the third quartile (the 25 per cent with the longest waiting times) were close to the healthcare guarantee limit of 90 days. Thus, it would appear that many counties lacked the capacity in 2010 to meet that deadline.

This report does not consider the possibility that a patient was offered an appointment at a second urology clinic during the waiting period but turned it down.

130 Prostate Cancer – Curative Treatment of Patients Aged 75 and Younger

Knowledge on the outcomes of various treatment methods at different stages of prostate cancer is far from complete. Publications based on Swedish studies have provided new data in recent years. SPCG-7, a Scandinavian randomised study, found that the fatality rate was lower among patients with local advanced prostate cancer who received combination radiotherapy and endocrine therapy than those who received endocrine therapy only. A recently published study in Gothenburg found that screening that included early diagnosis and treatment reduced the fatality rate for prostate cancer patients. Data in the National Prostate Cancer Registry of Sweden demonstrated that the fatality rate for prostate cancer ten years after diagnosis of local moderately or well-differentiated tumours with low PSA levels was under 3 per cent.

Given that medium to high-risk prostate cancer poses a significantly higher risk of death, patients are normally offered the option of curative treatment, which involves one of various prostatectomy or radiotherapy techniques. This report presents a follow-up of patients aged 75 and younger, since their remaining life expectancy is usually longer than ten years.

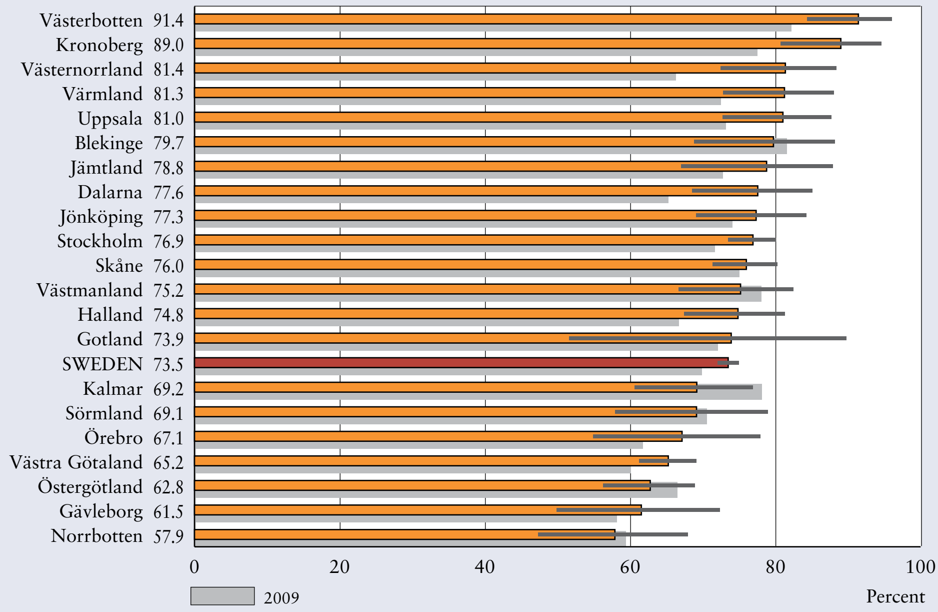


Figure 130
Men

Prostate cancer – percentage of patients under 75 with a local medium-risk or high-risk tumour who received curative treatment, 2011.

Source: National Prostate Cancer Registry of Sweden

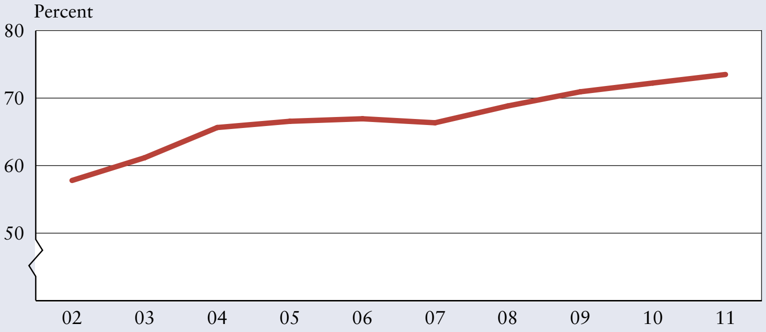


Figure 130
Sweden

Prostate cancer – percentage of patients under 75 with a local medium-risk or high-risk tumour who received curative treatment.

Source: National Prostate Cancer Registry of Sweden

Figure 130 shows that 73.5 per cent of 3 524 patients aged 75 and younger with medium to high-risk prostate cancer were given curative treatment in 2011. The counties ranged from 57.9 to 91.4 per cent. The percentage of patients with medium to high-risk prostate cancer who received curative treatment rose steadily from 53 per cent in 2001 to the 73.5 per cent figure in 2011. According to the National Prostate Cancer Registry, a reasonable target is 90 per cent for patients 75 and younger.

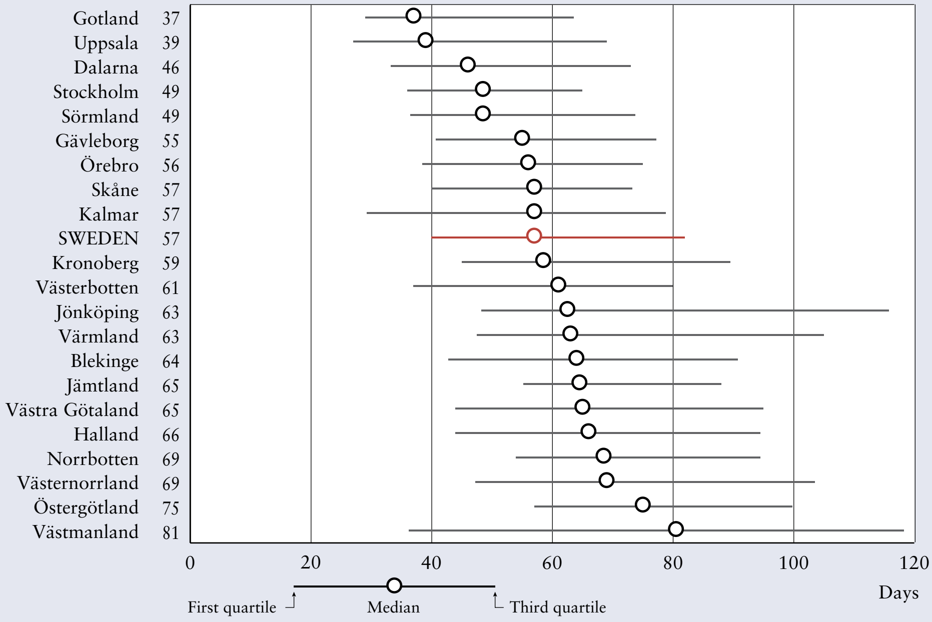


Figure 131 Average waiting time from receipt of a referral by a specialist clinic until commencement of treatment for malignant head and neck tumour, 2010–2011

Source: Swedish Quality Register of Otorhinolaryngology

The nine counties that provide curative treatment to less than 70 per cent of patients (the national average) presumably need to do more for this patient population. Given that biological rather than chronological age determines strategy, however, not all patients in this category should receive curative treatment. In other words, a 100 per cent treatment target is not to be desired.

131 Waiting Time from Receipt of Referral until Commencement of Treatment for Head and Neck Cancer Patients

Assessment of suspected cancer must be completed quickly so that treatment can commence before the malignancy gets bigger or metastasises. The way that the assessment is planned and the resources that are at the disposal of the clinic determine how long it takes to prescribe and commence treatment after receipt of the referral.

This indicator presents the length of time from receipt of a referral until treatment for malignant head and neck tumours begins.

The data are taken from the Swedish Quality Register of Head and Neck Cancer, a sub-register of the Swedish Quality Register of Otorhinolaryngology. The register, which is based on the INCA Platform run by the regional cancer centres, contains every newly diagnosed case of head and neck cancer in Sweden. The coverage rate vis-à-vis the Swedish Cancer Registry is 90 per cent.

Figure 131 presents the number of days that 25, 50 and 75 per cent of 2 023 patients had to wait in 2010–2011 for treatment after the clinic had received the referral. Patients were assigned to the county in which they were living.

As the diagram demonstrates, 50 per cent of patients nationwide waited 57 days or less and 25 per cent waited longer than 82 days. Not only did the individual counties vary from 37 to 81 days, but the differences within a particular county were large as well. More clinics need to analyse their care processes and launch improvement efforts. No specific target has been set for the length of the assessment period.

PSYCHIATRIC CARE

Specialised psychiatry accounts for approximately 9 per cent of county council healthcare costs. Descriptive systems and indicators need improvement for both psychological disabilities in general and psychiatric care in particular. The indicators presented below are the same as in last year's report. A fresh evaluation of the two national guidelines for psychiatric care is scheduled for publication in January 2013.

Access to relevant psychiatric data, as well as evidence-based guidelines and other research, is decisive to developing more and better indicators. Reporting to the national mandatory health data registers is still inadequate, particular when it comes to information about, and measures associated with, outpatient appointments. The lack of information about outpatient psychiatric care in other respects is partly due to the inability of the Swedish National Board of Health and Welfare to obtain data about non-medical appointments under the current regulations.

The Board is pursuing a number of efforts aimed at improving the basic data and indicators for psychiatric care. The focus is on currentness, better reporting to the National Patient Register and the ability to describe treatment by caregivers other than doctors.

The Government and Swedish Association of Local Authorities and Regions agreed in autumn 2011 to an initiative and substantial financial support for the overall purpose of incorporating the national quality registers into the monitoring and development systems used by psychiatric services. The registers are to be user-friendly, easily accessible and adapted to the needs of their target groups.

In addition to improving the participation rate, the initiative promotes use of the registers for organisational monitoring and development, as well as research. This year's *Regional Comparisons* presents data from one national quality register (National Quality Register for Forensic Psychiatric Care), while a separate report by the Swedish Association of Local Authorities and Regions presents data from a few additional registers in view of their low participation rates.

132 Regular Treatment with Soporifics or Sedatives

Benzodiazepines and related medications are the internationally accepted drugs for short-term treatment of pathological anxiety and temporary sleep disturbances. They are also used for mild forms of uneasiness and anxiety. Benzodiazepines are prescribed most often by general practitioners, as well as by psychiatrists and occasionally by internists. Thus, the indicator could have been included in another area.

Regular long-term use or high consumption of benzodiazepines can cause adverse effects in terms of cognitive ability, aggressiveness, dependence or abuse. Thus, they should not be routinely prescribed.

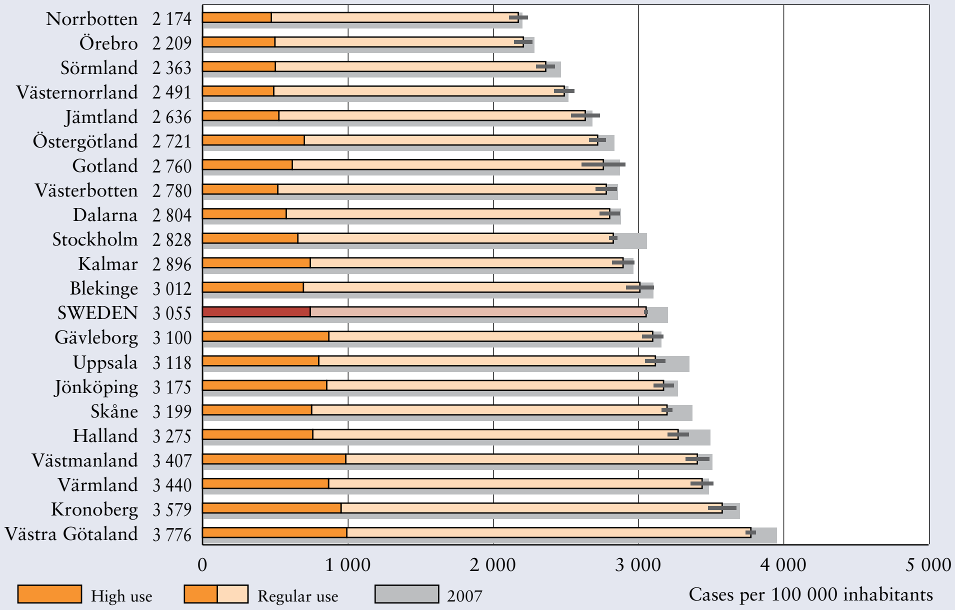


Figure 132 Number of people age 20–79 with regular and high consumption of soporifics or sedatives per 100 000 inhabitants, 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare

Benzodiazepines are prescribed more often for women, in whom anxiety is more common than in men. Consumption of the drugs is also age-related. People older than 65 account for more than half of their use. Thus, they have also been included under Indicator 13, Elderly Consuming Drugs That Should Be Avoided

The indicator reflects the number of regular users, those who average at least half a defined daily dose of benzodiazepines over the period of a year. High consumption is defined as at least 1½ defined daily doses. The source is the Prescribed Drug Register, to which all prescriptions picked up by outpatients are reported.

More than 128 500 women and almost 78 200 men age 20–79 picked up benzodiazepines on a regular basis in 2011. A total of 3 055 people per 100 000 inhabitants picked up benzodiazepine subscriptions on a regular basis. Figure 132 shows both those with high consumption and the greater percentage of those with regular consumption. Altogether 742 people per 100 000 inhabitants had high consumption. The variations between counties were substantial. One unanswered question is the extent to which differences in treatment traditions or the psychological health of the general population accounted for the variations.

Nationwide use had declined somewhat since 2007, the previous period. Consumption increased in some counties and decreased in others.

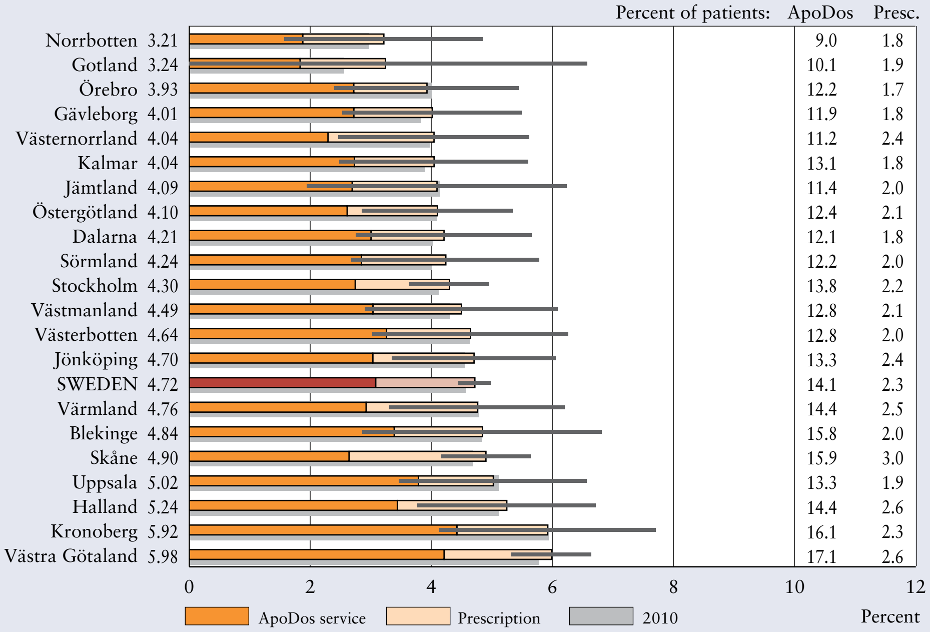


Figure 133 Percentage of people age 80 and older who were consuming three or more psychopharmacological drugs concurrently, 31 December 2011.

Source: Prescribed Drug Register, National Board of Health and Welfare

133 Polypharmacy – Elderly Who Consume Three or More Psychopharmacological Drugs

Concurrent treatment with three or more psychopharmacological drugs, either regularly or as needed, is an accepted indicator of polypharmacy. Concurrent consumption of multiple pharmacological drugs not only increases the risk of adverse effects and drug-drug interactions, but may point to inadequate treatment of psychiatric conditions. It is one of the Swedish National Board of Health and Welfare indicators for good drug therapy in the elderly.

Figure 133 presents the proportion of elderly among the entire population who were consuming three or more psychopharmacological drugs on 31 December 2011: 5.6 per cent of women (5.5 per cent in 2010) and 3.2 per cent of men (3.1 per cent in 2010), or more than 23 000 people altogether. The variation between counties was large at 3.7–7.2 per cent for women and 2.2–4.0 per cent for men.

The bars are broken down according to whether the patient received the medication through the ApoDos service or at the prescription counter. There has been some discussion to the effect that ApoDos, which offers considerable advantages for some patient populations, may make it easier for people to start on new drugs without a review of their overall consumption. The percentage of elderly who obtained their medications through ApoDos varied from county to county. The break-

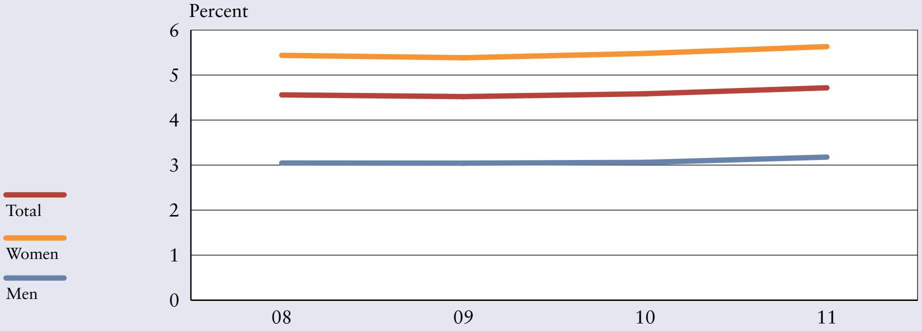


Figure 133
Sweden

Percentage of people age 80 and older who were consuming three or more psychopharmacological drugs concurrently.

Source: Prescribed Drug Register, National Board of Health and Welfare

down between ApoDos and the prescription counter, which appears on the right side of the diagram, includes prescriptions only, whereas the bars reflect the entire population.

A total of 14.1 per cent of ApoDos patients were consuming three or more psychopharmacological drugs, as opposed to 2.3 per cent of patients who picked up their medications at the prescription counter. The variation between counties was primarily due to ApoDos patients (9.0–17.1 per cent).

134 Consumption of Appropriate Soporifics by the Elderly

Long-term use of soporifics is common among the elderly. Due to age-related physiological changes, sedatives and soporifics can have prolonged action and build up to excessive levels that pose a risk of adverse effects. Furthermore, the central nervous system of elderly people is more sensitive to these drugs, increasing the risk of fa-

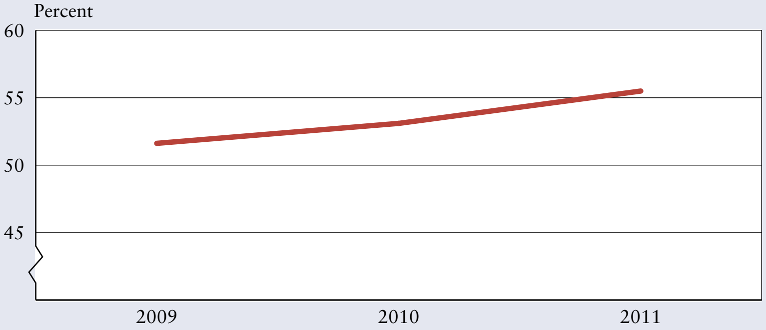


Figure 134
Sweden

Percentage of people age 80 and older who were using appropriate soporifics (zopiklon).

Source: Prescribed Drug Register, National Board of Health and Welfare

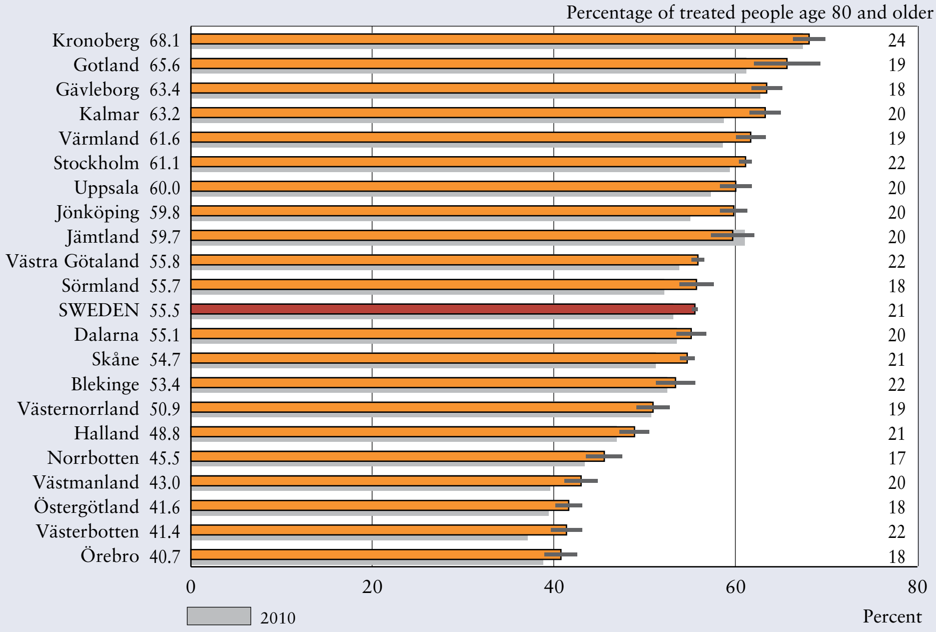


Figure 134 Percentage of people age 80 and older who were using appropriate soporifics (zopiklon), 31 December 2011.

Source: Prescribed Drug Register, National Board of Health and Welfare

tigue and falling, as well as memory loss, disorientation in space and time, impairment of abstract thinking and other cognitive difficulties.

Thus, identifying the proper medication is essential when treating sleep disturbances in the elderly. Absent an underlying cause that demands another medication, the Swedish National Board of Health and Welfare indicators for good drug therapy in the elderly point to zopiclone as the most appropriate choice due to its relatively short half-life.

More than 103 000 Swedes age 80 and older were using soporifics on 31 December 2011. According to Figure 134, zopiclone accounted for only 56 per cent of all soporifics consumed by members of that age group. The variation between counties was fairly large at 41–68 per cent.

135 Avoidable Inpatient Medical Care for People with a Psychiatric Diagnosis

This indicator reflects the quality of outpatient treatment, such as primary care and preventive public health efforts, for certain specific conditions. The assumption is that unnecessary hospitalisation can be avoided if patients with the selected conditions receive proper outpatient medical care. Refer to Indicator 7. Figure 135 shows the same indicator, but for people admitted to inpatient care with a psychiatric diagnosis.

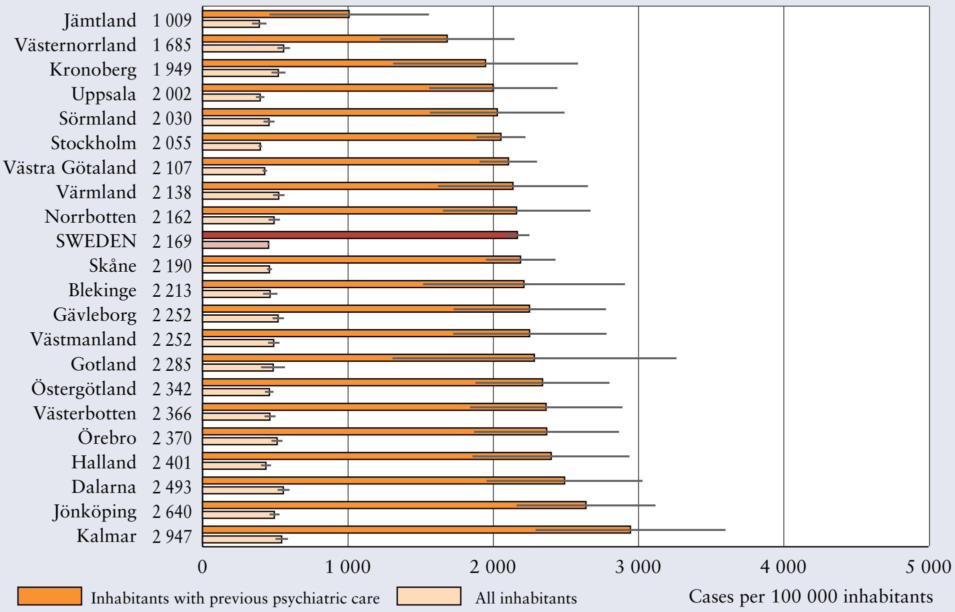


Figure 135 Number of people age 20-59 with avoidable inpatient medical care events and previous psychiatric care per 100 000 inhabitants, 2011. Age-standardised.

Source: National Patient Register, National Board of Health and Welfare

The figure present the number of 20–59 year-olds who were hospitalised at some point in 2006–2010 for a psychiatric diagnosis and subsequently had at least one avoidable inpatient medical care event. A total of 2 551 people (2 169 per 100 000 inhabitants) hospitalised for a psychiatric diagnosis had such a care event in 2011. For the population as a whole, 455 per 100 000 inhabitants had such avoidable hospitalisations. The nationwide proportion rose somewhat from the previous year.

People who were hospitalised for a psychiatric diagnosis faced a considerably higher risk of an avoidable inpatient medical care event in the future. Among the reasons may be that the disease was detected later, treatment took longer and patients were not as good at complying with their regimens. In addition, this patient population has a greater frequency of lifestyle risk factors.

Generally speaking, men had more avoidable care events than women. The likeliest explanation is that men develop some of the main types of psychiatric disorders more often, rather than that they are not treated as effectively as outpatients.

People with a serious psychological disturbance who have difficulty complying with medical outpatient care may be hospitalised instead. The reasons that patients with a psychiatric diagnosis are more likely to receive inpatient medical care deserve further study.

The frequency of certain psychiatric disorders may vary from county to county due to demographic, diagnostic or reporting factors. The availability of beds probably plays a role as well. If there are plenty of beds, the threshold for admission is low, and vice versa. This applies to both medical and psychiatric care. Such variables may have affected county results.

136 Readmission within 14 and 28 Days after Treatment for Schizophrenia

Approximately one per cent of Swedes develop schizophrenia at some point in their lives. There are no significant gender differences. The risk is highest among young people and those over age 70. The indicator is part of the preliminary national guidelines for psychosocial interventions in schizophrenia. Surveys have shown that inpatient care has been partially replaced by municipal housing.

This indicator reflects discharge from inpatient care that is premature or is not followed up by coordinated monitoring and outpatient care. Measuring readmission within one month sheds light on the quality of inpatient care.

Figure 136 shows the percentage of patients who were hospitalised for schizophrenia in 2008–2010 and readmitted to a psychiatric clinic within 14 or 28 days. The use of a cumulative annual average over three years reduces the statistical uncertainty associated with a relatively few number of cases.

On a nationwide basis, almost 12 per cent of patients were readmitted within 14 days and 17 per cent within 28 days. The percentages were the same for women and men. Determining the extent to which readmission can be avoided, and thereby the quality of the results, is a difficult task. The variation between counties was 8–15 per cent for readmission within 14 days and 13–20 per cent for readmission within 28 days. The indications that a particular county relies on before hospitalising patients may impact outcomes.

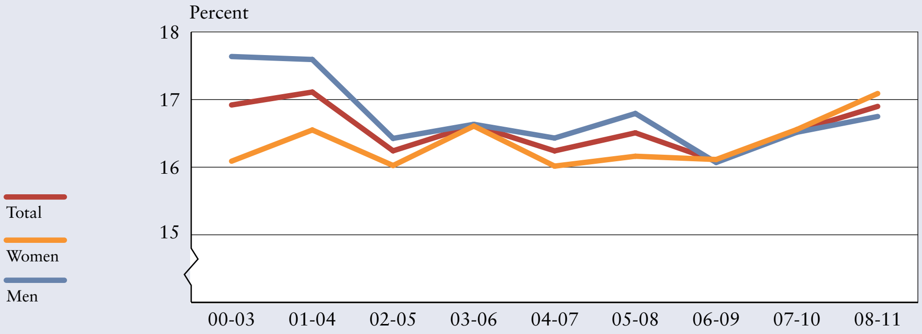


Figure 136
Sweden

Percentage of patients age 20–59 who were readmitted within 28 days after inpatient care for schizophrenia.

Source: National Patient Register, National Board of Health and Welfare

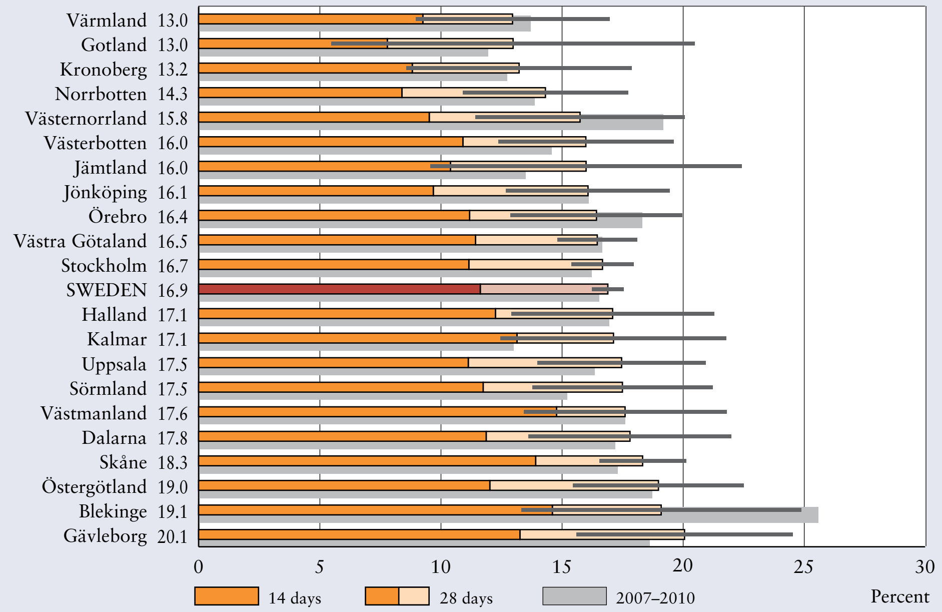


Figure 136 Percentage of patients age 20–59 who were readmitted within 14 or 28 days after inpatient care for schizophrenia, 2008–2011.

Source: National Patient Register, National Board of Health and Welfare

137 Readmission within 3 and 6 Months after Treatment for Schizophrenia

This indicator is intended as a tool in assessing follow-up and care after discharge. The percentage of readmissions within six months can help describe the quality of outpatient care, municipal and social service interventions, and the interplay between the various providers. Readmission within 14 or 28 days is regarded as a more accurate gauge of inpatient care quality. The indicator is part of the preliminary national guidelines for psychosocial interventions in schizophrenia.

Figure 137 shows the percentage of patients who were hospitalised for schizophrenia in 2008–2010 and readmitted to a psychiatric clinic within 3 or 6 months. The use of a cumulative annual average over three years reduces the statistical uncertainty associated with a relatively few number of cases.

Almost 29 per cent of patients were readmitted within 3 months and 38 per cent within 6 months, equally distributed between women and men. Determining the extent to which readmission can be avoided, and thereby the quality of the results, is not easy. The variation between counties was 24–35 per cent for readmission within 3 months and 32–41 per cent for readmission within 6 months. Differing criteria for admission to inpatient care and the structure of outpatient care presumably affect outcomes. The indicator needs some work before a determination can be made

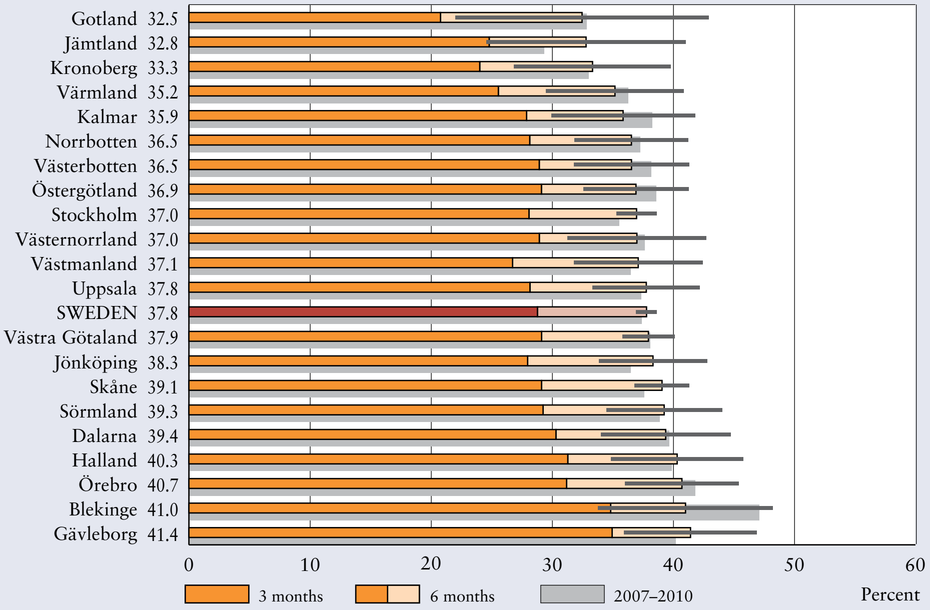


Figure 137 Percentage of patients age 20–59 who were readmitted within 3 or 6 months after inpatient care for schizophrenia, 2008–2011.

Source: National Patient Register, National Board of Health and Welfare

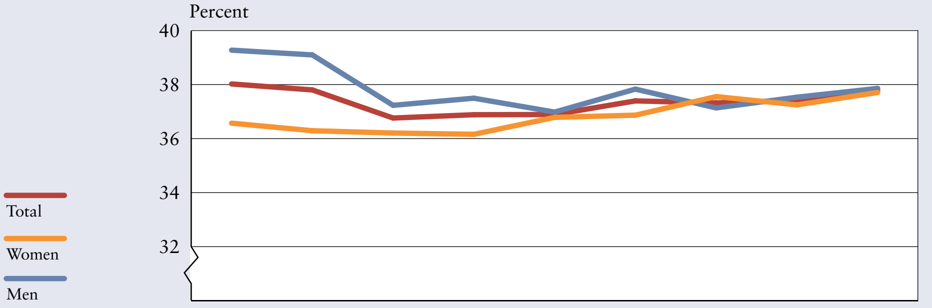


Figure 137 Sweden Percentage of patients age 20–59 who were readmitted within 3 or 6 months after inpatient care for schizophrenia.

Source: National Patient Register, National Board of Health and Welfare

as to how well it reflects the quality of outpatient psychiatric care, or its interplay with municipal and social service interventions.

Figure 138 Percentage of patients age 18 and older with ongoing lithium therapy who continued treatment in 2011. Age-standardised.

Source: Prescribed Drug Register, National Board of Health and Welfare

138 Compliance with Lithium Therapy for Bipolar Disorder

Lithium therapy is intended to prevent recurrence of manic or depressive episodes. The national guidelines for treatment of depressive and anxiety disorders accord high priority to bipolar disorder. While it is difficult to know which patients are most likely to relapse, the risk is greater if there have been at least two episodes over the past two years. Other determining factors are whether the previous episodes were accompanied by high suicide risk or had major repercussions on the patient's career or family life.

While lithium does not wholly eliminate the risk of recurrence, any episodes are usually shorter and less severe. Suicide rates and cardiovascular deaths are closer to the norm as well. Many patients experience adverse effects, such as fine hand tremor and metabolic disturbances, from lithium. Impaired renal function is common in conjunction with long-term therapy.

Given that the idea of presenting the indicator on the basis of new lithium patients has been discussed, it may be changed eventually.

Figure 138 presents the percentage of patients who received regular lithium therapy in 2010 and continued in 2011. The data, which were taken from the Prescribed Drug Register, show a nationwide result of approximately 80 per cent for both women

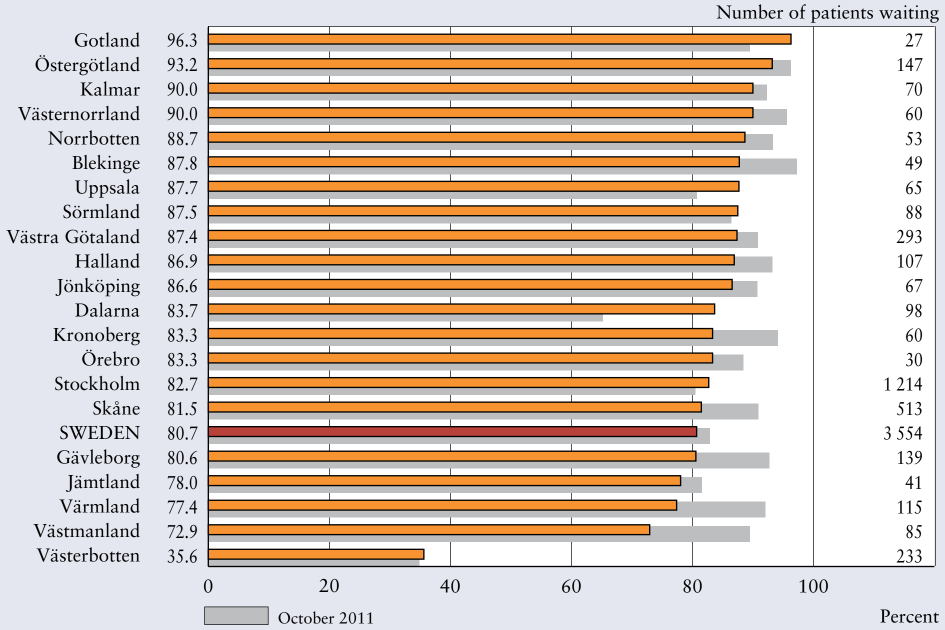


Figure 139 Appointments at child and adolescent psychiatric clinics – percentage of patients with waiting times longer than 30 days of everyone on the waiting list, 31 March 2012.

Source: Waiting Times in Health Care Database, Swedish Association of Local Authorities and Regions

and men. The proportion was essentially the same as the previous year, as was the variation among counties (73–87 per cent).

According to the national guidelines, lithium is effective in preventing recurrence of both manic and depressive episodes. The indicator represents an attempt to reflect compliance with preventive lithium therapy. Because some patients benefit by terminating therapy and switching to another medication, full compliance is not a desirable target.

Diagnosis and reporting in both inpatient and outpatient psychiatric care still suffer from major inadequacies and inconsistencies. Thus, health data registers do not accurately reflect the percentage of bipolar patients who are taking lithium. While the registers show how many people are in drug therapy, the total number of bipolar patients remains uncertain.

139 Child and Adolescent Psychiatry – Appointment within 30 Days

The Swedish Association of Local Authorities and Regions and the Government reached agreement in February 2009 on a special initiative for child and adolescent psychiatric care. An initial appointment at a specialised child and adolescent psychiatric clinic was to be available within 30 days, as opposed to the 90 days specified

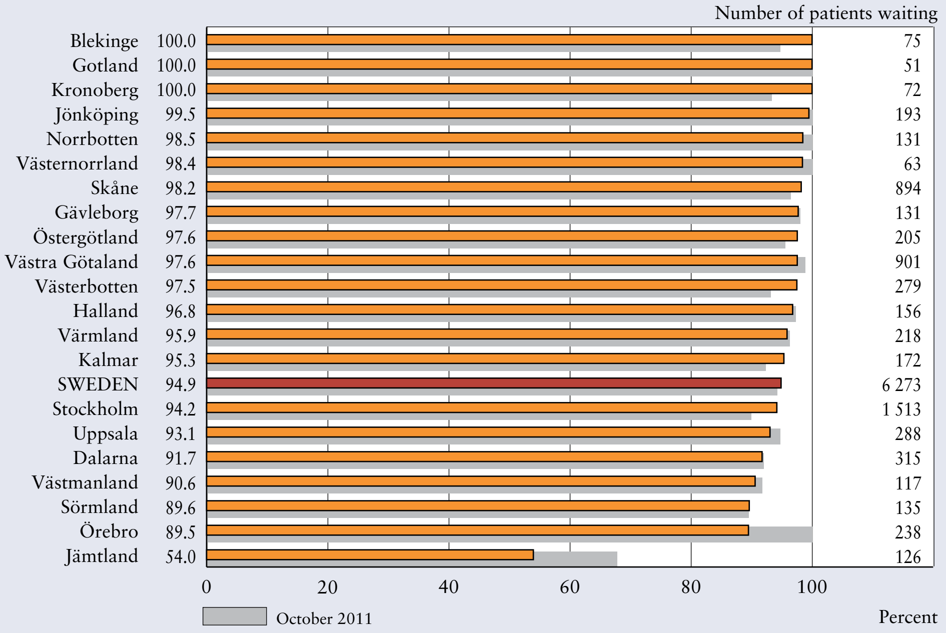


Figure 140 Appointments at adult psychiatric clinics – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2012.

Source: Waiting Times in Health Care Database, Swedish Association of Local Authorities and Regions

by the national care guarantee. As of 2011, further assessment and commencement of therapy are to be offered within 30 days.

Financial incentives are provided to encourage counties to strive for the goals of the special initiative.

Figure 139 presents the percentage of patients who had been waiting no longer than 30 days for an initial appointment at a child and adolescent psychiatric clinic on 31 March 2012. The nationwide outcome was 81 per cent, as opposed to 83 per cent in October 2011.

Some 3 500 patients were waiting for an initial appointment, approximately 2 800 no longer than 30 days.

140 Adult Psychiatry – Appointment within 90 Days

The data cover the number of people waiting for an elective initial appointment at an adult psychiatric clinic. Waiting patients are defined as those for whom therapy has been decided on, whether or not it has been scheduled.

The proportion of adults nationwide who had been waiting no longer than 90 days held fairly steady above 90 per cent since the previous year. The various counties ranged from 54 to 100 per cent.

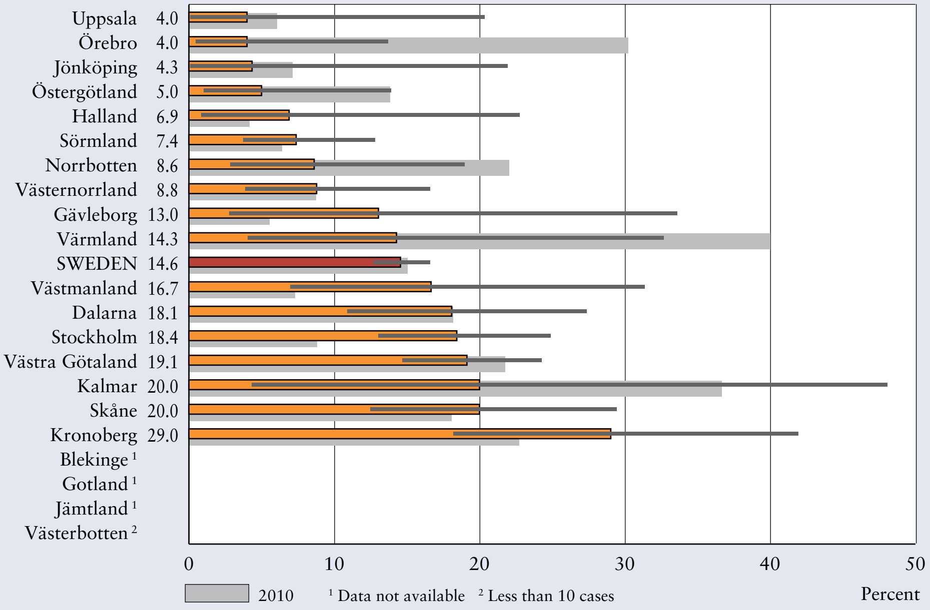


Figure 141 Percentage of recidivists during forensic psychiatric care, 2011.

Source: National Quality Register for Forensic Psychiatric Care

As was the case in October 2011, 90 per cent or more of the patients in all counties but one had been waiting no longer than 90 days.

Approximately 6 200 patients nationwide were waiting for an appointment, 5 900 of whom no longer than 90 days.

141 Percentage of Recidivists during Forensic Psychiatric Care

Approximately 1 500 patients were receiving forensic psychiatric care in May 2008. Such care involves custody under the Compulsory Mental Care Act. The objective of forensic psychiatric care is to prevent recidivism, as well as recurrence of mental illness or substance abuse.

The period of care averages approximately five years, which permits the development of trusting relationships between patients and caregivers. The compulsory nature of the care makes it particularly important that the patient is willing to co-operate. Fully respecting the patient's privacy and autonomy is a delicate task. Such care must be of uniform high quality throughout the country. The various services need to compare their results with each other in order to progress and improve.

Preventing recidivism is a core objective of forensic psychiatric care. Figure 141 shows the percentage of recidivists during ongoing forensic psychiatric care. Access to criminal records would have been useful in following up on patients after dis-

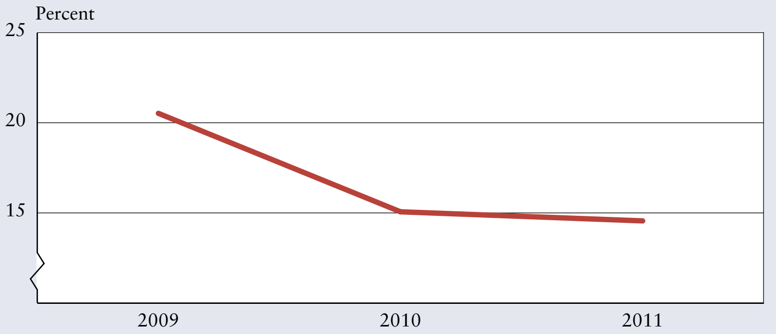
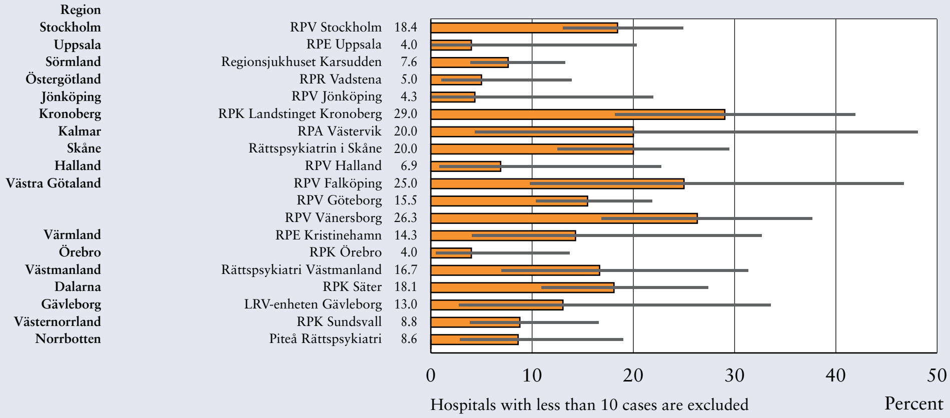


Figure 141
Sweden

Percentage of recidivists during forensic psychiatric care.

Source: National Quality Register for Forensic Psychiatric Care



Hospitals with less than 10 cases are excluded

Figure 141
Hospitals

Percentage of recidivists during forensic psychiatric care, 2011.

Source: National Quality Register for Forensic Psychiatric Care

charge, but it is not permitted under current legislation. According to the National Quality Register for Forensic Psychiatric Care, the ability to monitor such data is an urgent matter. Thus, the register currently obtains its information from court rulings, caregiver observations and patient narratives. Recidivism is defined in the register's instructions as a situation in which a report has been filed with the police or grounds exist for doing so. Only a court of law can determine whether a criminal offence has actually been committed.

The comparison covers 1 305 patients, approximately 90 per cent of whom were men. Assuming that the total number of patients had remained unchanged since the 2008 survey, the register had a participation rate of approximately 90 per cent. All clinics but one reported to the register. Patients were assigned to the county in which the clinic was located rather than where they were living.

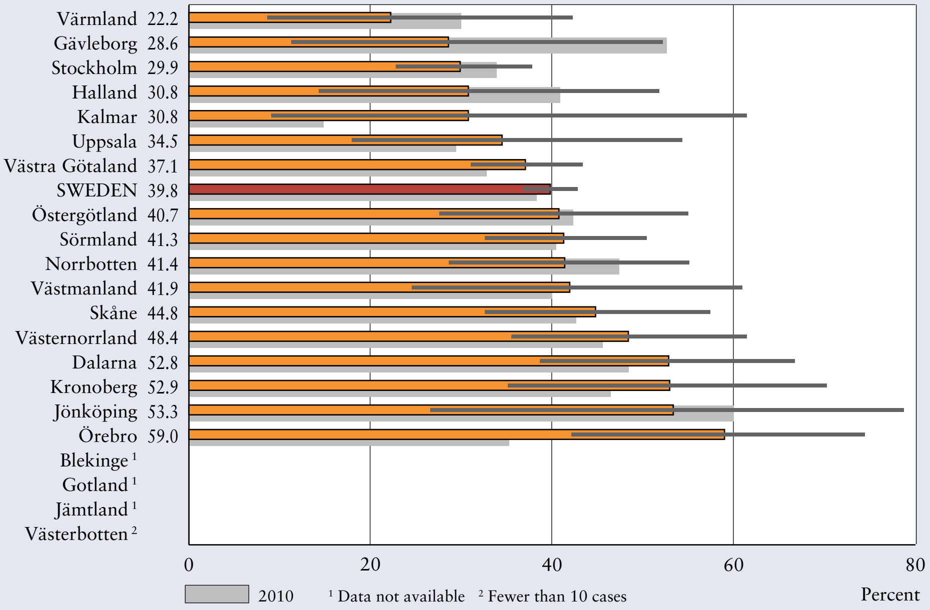


Figure 142 Percentage of forensic psychiatric patients with BMI above 30, 2011.

Source: National Quality Register for Forensic Psychiatric Care

A total of 14.6 per cent of patients nationwide were recidivists within the past year. While there was a large reported variation among counties and clinics, the statistical uncertainty was considerable. Recidivism was at approximately the same level as 2010.

This was the fourth year that the indicator had been monitored. Although the target is zero recidivism, no expected results can be specified at this point. Differences in that which a particular clinic regards as recidivism or chooses to report, such as verbal threats, affect outcomes. Now that the indicator is being monitored, various discussions have attempted to reach a consensus for reporting purposes.

142 Obesity among Forensic Psychiatric Patients

People with mental illnesses account for a disproportionate share of medical conditions and mortality. Among the contributing factors are overweight and obesity. They are signs of metabolic disorders and represent a growing problem in Sweden. Ten per cent of Swedish women and men have obesity, i.e., BMI greater than 30. The underlying factors are heredity, lifestyle and socio-economic circumstances.

People with mental illnesses have a greater tendency towards obesity than the general population. Physical inactivity, poor diet and other unhealthy habits, as well as

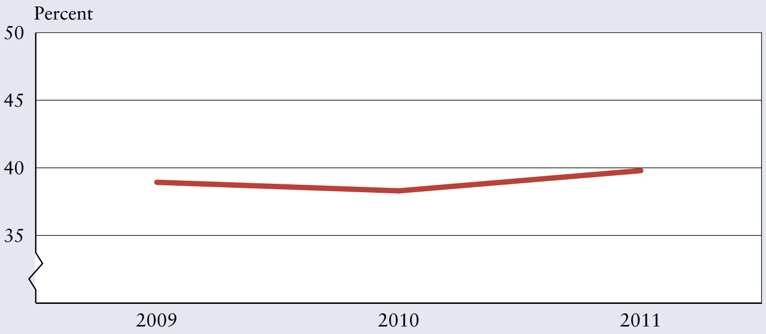
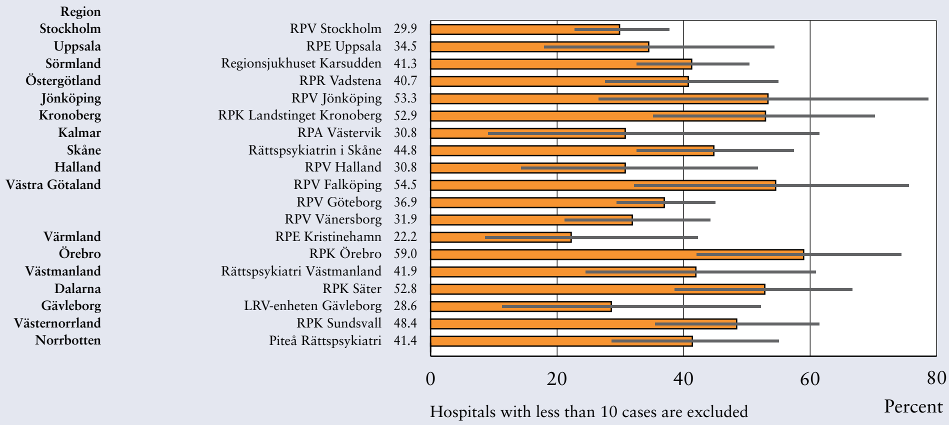


Figure 142
Sweden

Percentage of forensic psychiatric patients with BMI above 30.

Source: National Quality Register for Forensic Psychiatric Care



Hospitals with less than 10 cases are excluded

Figure 142
Hospitals

Percentage of forensic psychiatric patients with BMI above 30, 2011.

Source: National Quality Register for Forensic Psychiatric Care

certain types of drug therapy, can help explain obesity problems. *Clinical Guidelines for the Prevention and Treatment of Metabolic Risk in Patients with Serious Psychological Disturbances* (2009), which was compiled by the Swedish Psychiatric Association and others, found that medical conditions are not diagnosed and treated as thoroughly in people with mental illness as in the remainder of the population *National Guidelines for Methods of Preventing Disease* issued by the Swedish National Board of Health and Welfare in 2012 addresses the same problem.

Given the combination of incarceration, risk of physical inactivity, long care periods, smoking, overweight, passivity and other risky behaviour, forensic psychiatric care services have a particularly compelling reason for monitoring BMI. Many patients also have cognitive impairment, which makes it more difficult to absorb new information. A number of psychopharmacological drugs stimulate the appetite and indirectly affect weight.

Meanwhile, extended care periods for forensic psychiatric patients set the stage for long-term motivational and holistic interventions. The introduction of the National Quality Register for Forensic Psychiatric Care has attracted greater attention to the issue of BMI, which now serves as one of the register's national targets.

The indicator shows that an average of 39.7 per cent of the patients had BMI greater than 30 in 2011, as opposed to 10 per cent in the general population. The comparison was based on data for more than 1 000 patients. While there was a large reported variation among counties and clinics, case mix may have skewed the results. The fact that the number of patients tends to be small in many counties magnifies the impact of random fluctuations.

SURGERY

The following 17 indicators concern surgery. Seven of them are new this year. One indicator reflects outcomes for bariatric surgery, which is increasingly performed in Sweden. In addition to medical outcomes, two of the indicators look at costs per operation.

143 Reoperation for Inguinal Hernia

Inguinal hernia operations represent the most common general surgical procedure in Sweden. More than 17 000 operations are performed every year. Men, who are much more likely than women to develop an inguinal hernia, account for 92 per cent of all operations. Almost 16 000 operations were reported to the Swedish Hernia Register in 2011.

Successful surgery is an uncomplicated procedure requiring approximately one week of sick leave and normally followed by freedom from symptoms. But surgery can also lead to recurrence of the hernia and chronic pain conditions or feelings of discomfort. There was a time when close to 20 per cent of all patients had a recurrence of hernia. Newer surgical methods and materials have sharply reduced the recurrence rate.

The indicator estimates the odds of not needing a reoperation within five years – “survival” in accordance with a Kaplan-Meier analysis. The comparison was based on more than 76 000 operations reported to the Swedish Hernia Register in 2007–2011. The location of the clinic, not where the patient was living, determined how an operation was classified.

Figure 143 reveals various minor differences among the counties. Almost 98 out of every 100 patients nationwide did not have to undergo a reoperation within five years. There were major variations from hospital to hospital. The differences among

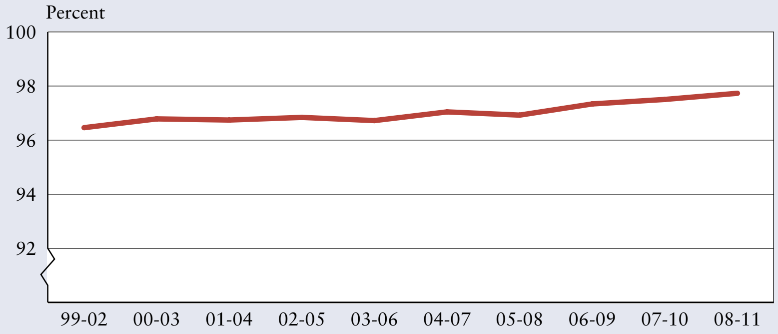


Figure 143
Sweden

Percentage of inguinal hernia repair cases not reoperated on within five years.

Source: Swedish Hernia Register

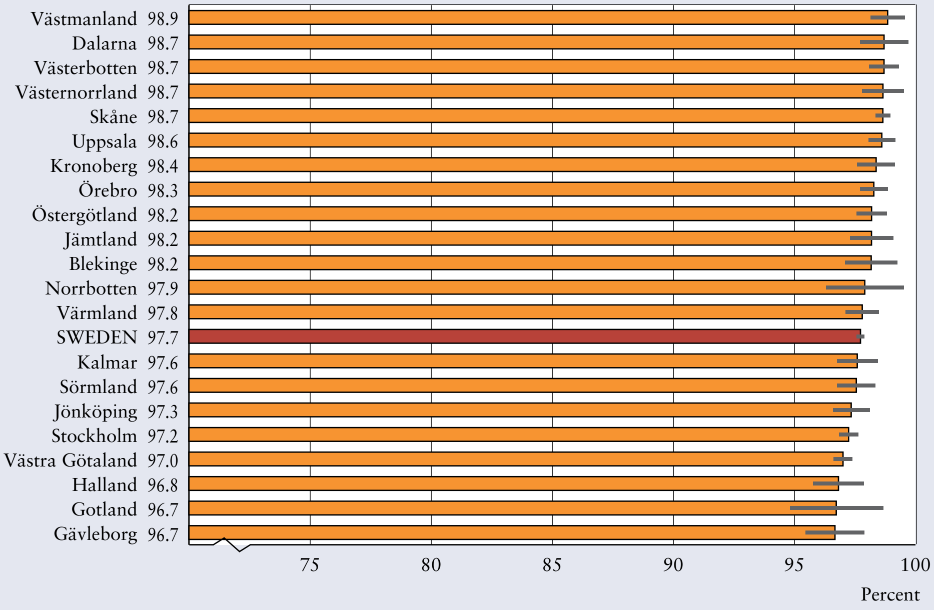


Figure 143 Percentage of inguinal hernia repair cases not reoperated on within five years, 2007–2011.

Source: Swedish Hernia Register

both counties and hospitals indicate that Swedish inguinal hernia surgery still has considerable potential for improvement.

144 Inguinal Hernia – Percentage of Day-case Operations

More than 15 000 inguinal hernia operations were reported to the National Patient Register in 2011. Given that private outpatients clinics do not report surgery as often as others, the actual number was considerably higher. Day-case surgery, a common approach, is less resource-intensive than inpatient care. The purpose of this indicator is to identify variations in resource utilisation.

More than 11 700, or 78 per cent of all, inguinal hernia operations in 2011 were day-case surgery. The percentage was approximately the same as for the base year. One county reported 93 per cent, whereas approximately half of the counties were below 80 per cent.

Local conditions can affect the percentage of day-case operations. Some clinics operate on more hernias that are technologically demanding, recurrent or acute, whereas others focus on uncomplicated first-time hernias. Comparisons of individual clinics are most affected by such differences.

The relatively large variation between counties suggests that many of them have the potential to perform more day-case operations, which would reduce costs without

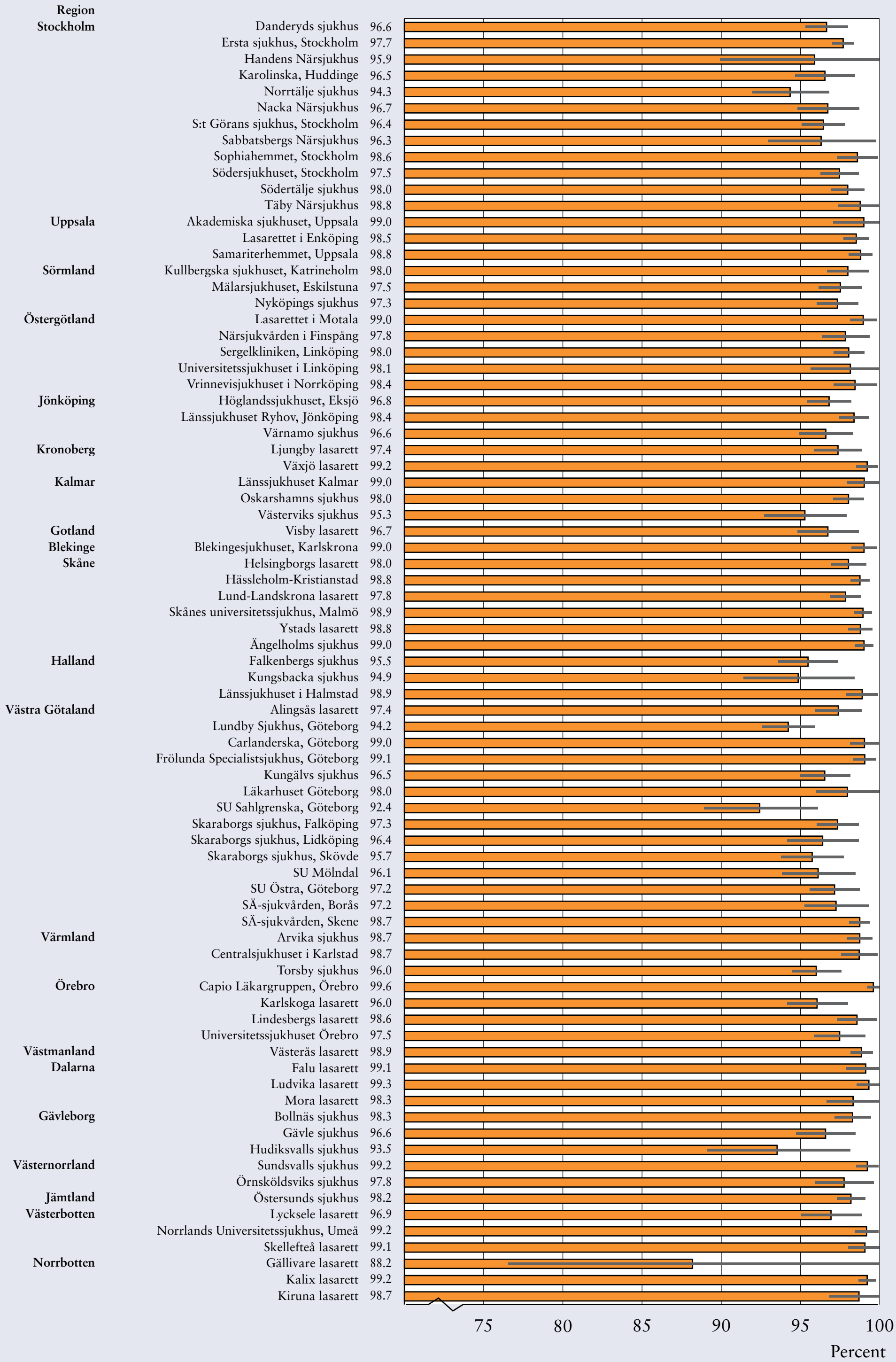


Figure 143
Hospitals

Percentage of inguinal hernia repair cases not reoperated on within five years, 2007–2011.

Source: Swedish Hernia Register

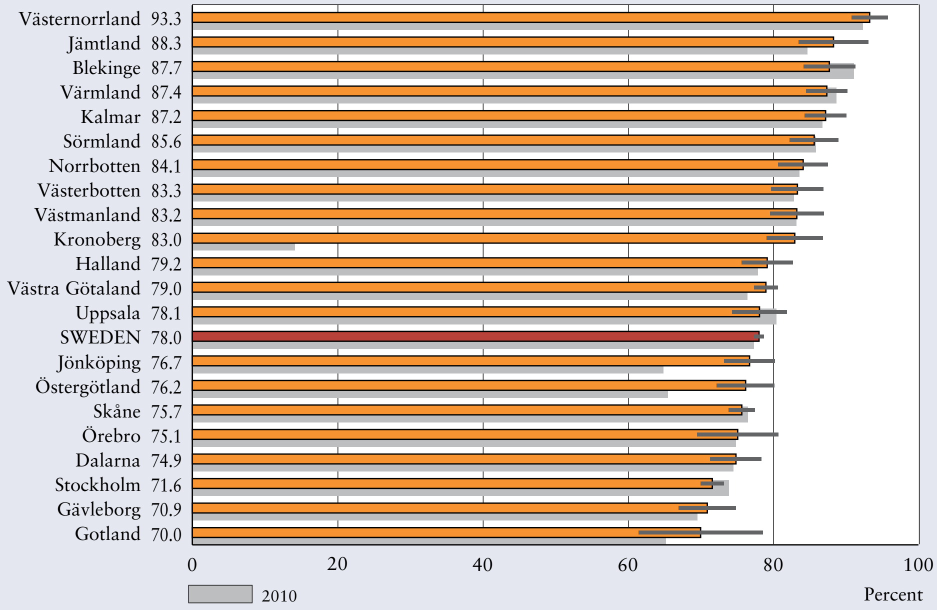


Figure 144 Percentage of day-case operations for inguinal hernia, 2011.

Source: National Patient Register, National Board of Health and Welfare

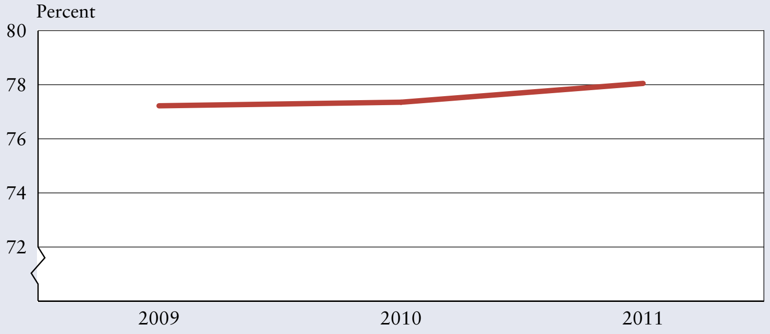


Figure 144 Sweden Percentage of day-case operations for inguinal hernia.

Source: National Patient Register, National Board of Health and Welfare

sacrificing quality. There is no reason to believe that the particular needs and conditions of individual patients have any significant impact on differences between counties.

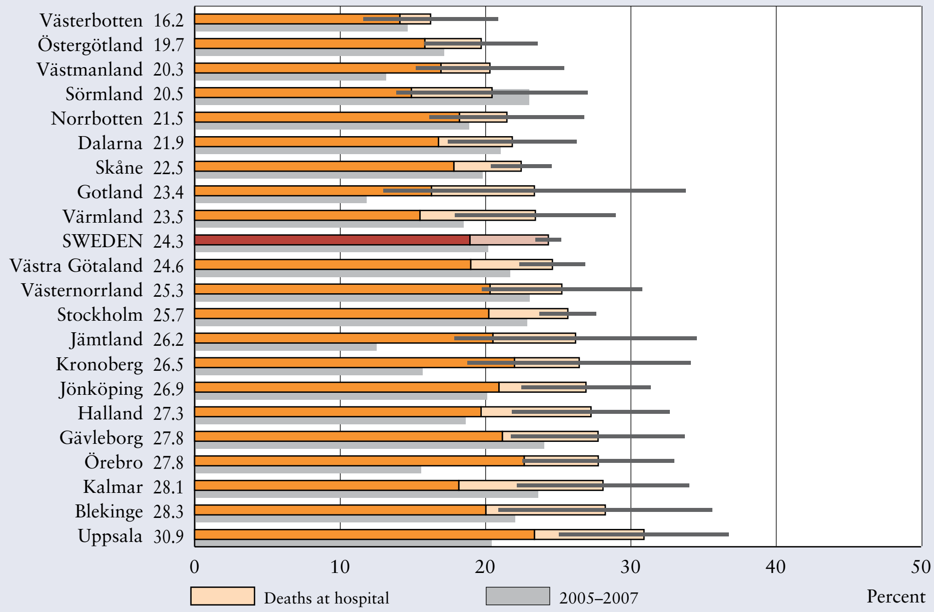


Figure 145 Percentage of deaths within one year after hospitalisation for bleeding ulcer, 2008–2010. Also includes deaths at hospital. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

145 Bleeding Ulcer – 365-day Case Fatality Rate

Bleeding ulcer is an acute life-threatening condition that requires hospitalisation. The risk increases substantially with age. Men are at greater risk than women of developing a bleeding ulcer. According to a 2011 report by the Swedish Council on Technology Assessment in Health Care (SBU), approximately 7–10 Swedes develop a bleeding ulcer every day and one person dies of the condition every three days. Presumably due to the declining prevalence of *Helicobacter pylori* in the general population, the report found that bleeding ulcer has become less common over time.

The known risk factors for bleeding ulcer are advanced age, *H. pylori* infection and previous gastric ulcer, as well as consumption of analgesics or anti-inflammatory drugs containing non steroidal anti-inflammatory drugs, acetylsalicylic acid or low-dose acetylsalicylic acid. In recent years, selective serotonin reuptake inhibitors have also been shown to be associated with greater risk. While probably not causing ulcers, anticoagulants and corticosteroids appear to increase the risk of bleeding. A number of studies have concluded that comorbidity, primarily cardiovascular disease, makes it more likely that a person will develop a bleeding ulcer, but no consensus has emerged as to whether smoking, alcohol consumption and other lifestyle variables constitute independent risk factors.

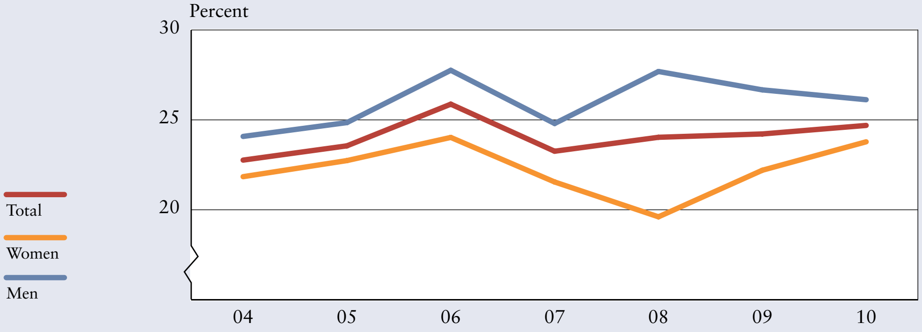


Figure 145
Sweden

Percentage of deaths within one year after hospitalisation for bleeding ulcer. Also includes deaths at hospital. Age-standardised.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare

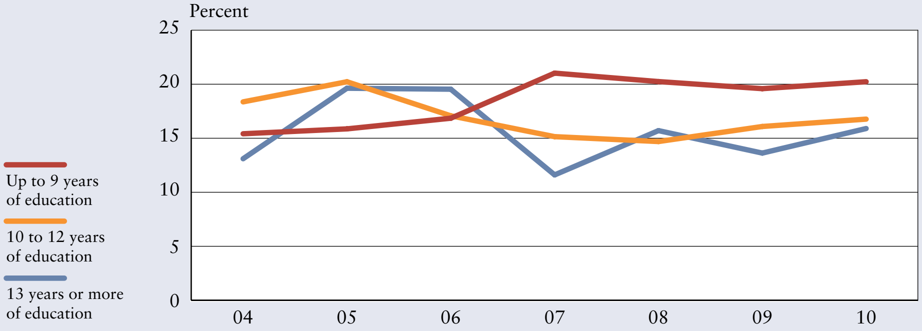


Figure 145A

Percentage of deaths among patients age 45–79 within one year after hospitalisation for bleeding ulcer by educational level.

Source: National Patient Register and Cause of Death Register, National Board of Health and Welfare, Swedish Register of Education, Statistics Sweden

The risk of dying within one year after developing a bleeding ulcer can be regarded as a gauge of how well the health care system handles both the acute stage and follow-up treatment after discharge from hospital .

Figure 145 compares county results for 2008–2010 with 2005–2007. All cases of bleeding ulcer in the inpatient section of the National Patient Register for 2008–2010 were included. The comparison looked at first-time cases only, i.e., people who had not been hospitalised for bleeding ulcer during the preceding five years. Upwards of 8 600 patients were identified for the three-year period.

More than 24 per cent of them, approximately 700 per year, died within 12 months after hospitalisation. The case fatality rate was almost 22 per cent among women and 27 per cent among men. The counties ranged rather widely from 16 per cent to nearly 31 per cent when both sexes were counted.

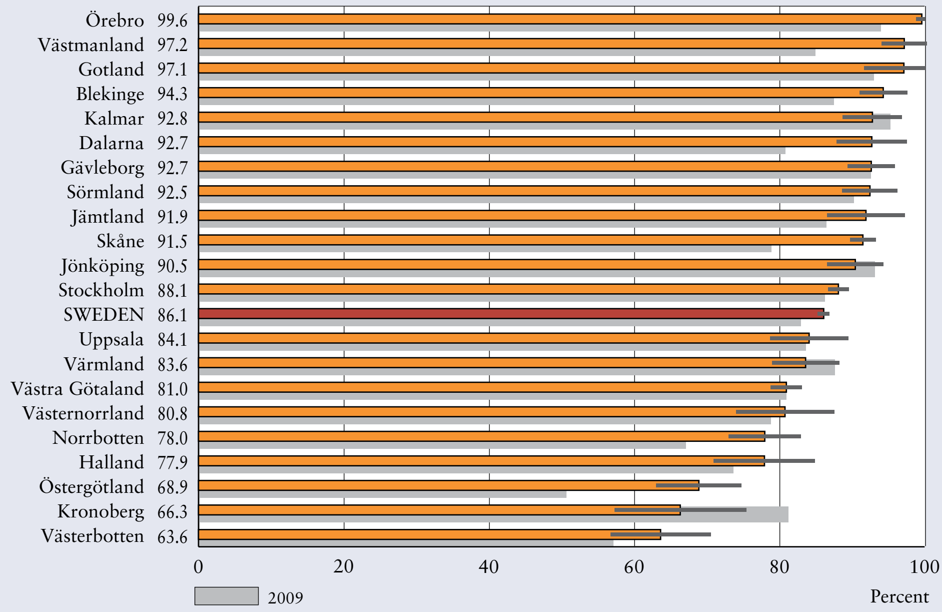


Figure 146 Percentage of patients who were being monitored one year after bariatric surgery, 2010.

Source: Scandinavian Obesity Surgery Registry

The variation between counties was greater for women than men. Different counties accounted for the highest and lowest case fatality rates depending on whether women or men were included. The percentage of deaths that occurred during the hospital stay varied between counties as well. More than one-fifth of all deaths were attributable to the period of hospitalisation.

Among the possible causes of the differences are diagnostic reliability, comorbidity and other background factors, social variables and random fluctuations. Healthcare-related factors may include distance to emergency care, as well as the skilfulness of paramedics and acute hospital staff. Interventions after discharge, such as the attention that caregivers pay to risk factors for recurrence, also have an impact.

146 Monitoring Patients after Bariatric Surgery

Bariatric surgery is increasingly common in Sweden. More than 8 000 operations were performed in 2 010, as opposed to 700–800 per year in the early 2000s. Women account for three-quarters of the procedures. Expert assessments suggest that well over 10 000 operations may be needed every year. The patients – who often have diabetes, cardiovascular disease or arthritis – are at elevated risk for cancer and premature death.

Their data are reported to the Scandinavian Obesity Surgery Register. All but one of the 44 Swedish clinics that perform bariatric surgery report to the register; in 2010, 97 per cent of all operations that either it or the National Patient Register could identify were entered. The Patient Register, on the other hand, contained only 85 per cent of the operations.

This report presents two indicators of bariatric surgery, both of which are based on data from the Scandinavian Obesity Surgery Register. The first indicator presents the percentage of patients monitored one year after surgery, while the second indicator concerns weight loss.

All patients who undergo surgery for severe obesity need to be monitored afterwards for a number of reasons. Patients inevitably require vitamin B12 therapy to avoid anaemia. Virtually all women of childbearing age, as well as many men and older women, require periodic iron supplements. Many patients have diabetes, hypertension, sleep apnoea and joint pain or other secondary diseases that change following surgery. Their treatment regimens may have to be adjusted accordingly. Finally, surgery both necessitates and spurs lifestyle changes when it comes to diet and physical activity. Continuing to see a caregiver may reinforce this dynamic. The ability of the healthcare system to provide such services is a key measure of quality.

Indicator 146 shows the percentage of patients who have been monitored at one-year follow-up after bariatric surgery. The 7 304 patients included in the presentation underwent surgery in 2010 and were followed up on in 2011. Patients were assigned to their county of residence regardless of where surgery or follow-up was performed.

A total of 86 per cent of patients nationwide had been monitored at one-year follow-up, ranging from 64 to 100 per cent depending on the county. The large variation suggests significant room for improvement. That said, the percentage is on the rise in most counties.

While there is no generally accepted target for the percentage of cases that should be monitored, all patients except for those who decline to participate for one reason or another should be included.

Patients who undergo bariatric surgery often seek care, which requires a long follow-up period, in another county. The healthcare system is faced with fresh challenges as a result.

147 Loss of Excess BMI One Year after Bariatric Surgery

Most patients undergo bariatric surgery to improve their quality of life in a number of respects. The larger objective from the perspective of caregivers is to cure and alleviate secondary conditions, such as diabetes, hypertension and cardiovascular disease, as well as joint and other organic discomfort.

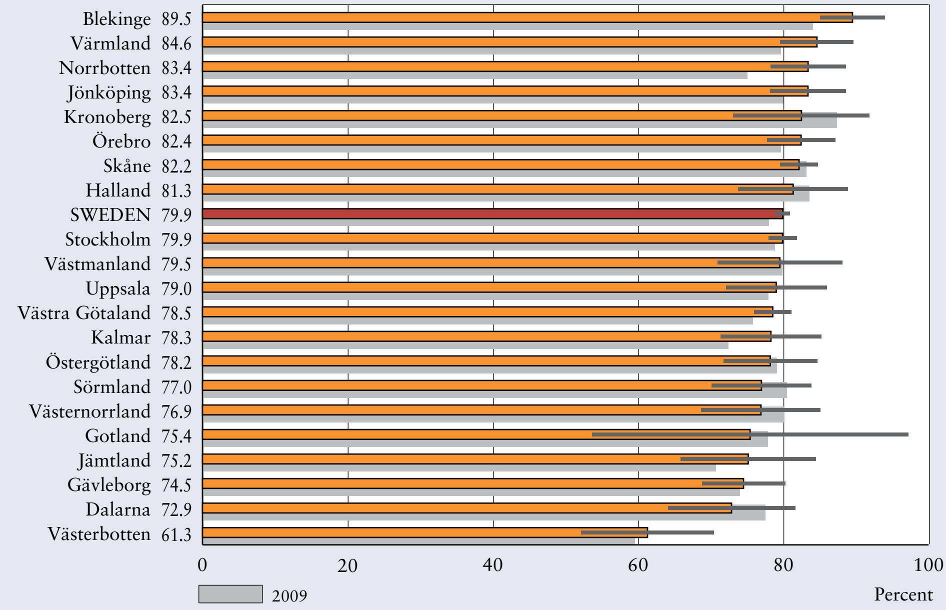


Figure 147 Loss of excess BMI one year after bariatric surgery, 2010.

Source: Scandinavian Obesity Surgery Registry

No single composite outcome measure has been established for these various treatment goals. This indicator is presented despite the fact that weight loss is not a treatment goal in itself. Nevertheless, at least some of the medical treatment goals correlate with the number of kilogrammes that the patient loses. Moreover, studies have shown that long-term qualify of life improvement requires lasting weight loss of at least 25 kilogrammes, generally half of the excess to start with.

This indicator is an internationally established outcome measure for bariatric surgery. The variable is the percentage of preoperative excess weight that the patient has lost one year after surgery. Preoperative excess weight is defined as the difference between the preoperative BMI value and 25. Weight loss (occasionally gain) is the difference between BMI one year after surgery and the preoperative level.

The comparison in Figure 147 is based on data for 5 973 patients who underwent surgery in 2010 and whose weight loss was followed up on one year later. Patients who were reoperated on and whose primary surgery was performed prior to start-up of the register were excluded. Patients were assigned to their county of residence regardless of where surgery or follow-up was performed. Only gastric bypass surgery, the method used for 97 per cent of all bariatric procedures in Sweden, was included.

For the country as a whole, patients had lost an average of 80 per cent of their excess body weight one year after surgery. The variations among counties were modest. Women were more successful than men. The main factors that determined the amount of weight loss were age, gender and the magnitude of preoperative excess. The scope of follow-up and the system used to perform it presumably influenced the results as well.

148 Minimally Invasive Cholecystectomy

Gallstone disease is a common condition. Between 25 and 50 per cent of the population develop gallstones at some point in their lives. Most people, however, do neither notice gallstones nor undergo surgery. Cholecystectomy, which is one of the most common surgical procedures, is performed on approximately 12 000 Swedes every year. A smaller percentage of the population develops stones in the bile ducts. Between 6 000 and 7 000 Swedes receive endoscopic retrograde cholangiopancreatography (ERCP) or other endoscopic procedures every year.

Both cholecystectomy and endoscopic treatment of stones in the bile ducts pose a 5–10 per cent risk of postoperative complications. Between 0.1 to 0.5 per cent of patients suffer from iatrogenically damaged bile ducts, death or other serious complications.

Since starting in 2005, the Swedish National Register for Gallstone Surgery and ERCP has come to include more than 70 hospitals with a participation rate of better than 90 per cent (2009). The purpose of the register is to help ensure optimum quality and safety in surgical treatment of gallstone disease.

Cholecystectomy involves removal of the gallbladder. The less the surgical trauma associated with cholecystectomy, the more rapid the recovery and the milder the postoperative stage. The choice of procedure cannot always consider surgical trauma alone, but must examine that which is technically feasible and entails the smallest risk of complications.

Figure 148 shows the percentage of patients in 2011 who underwent either laparoscopic or minimally invasive cholecystectomy.

A total of 86 per cent of all cholecystectomies in 2011 were minimally invasive, up from 81 per cent in 2008. Largely as a result of that trend, the average postoperative period of hospitalisation declined from 2.1 to 1.7 days in 2008–2010.

The more frequent use of minimally invasive surgery held true for both women and men. But the gender gap remained significant: less than 80 per cent for men and almost 90 per cent for women. One reason for the difference is no doubt that a larger percentage of operations on men are for the indication of gallstone complications. As a result, they are more likely to suffer postoperative complications and to receive antibiotic prophylaxis prior to surgery. The reason that gallstone disease progresses further in men before they have surgery remains unknown and will be an interesting topic for research.

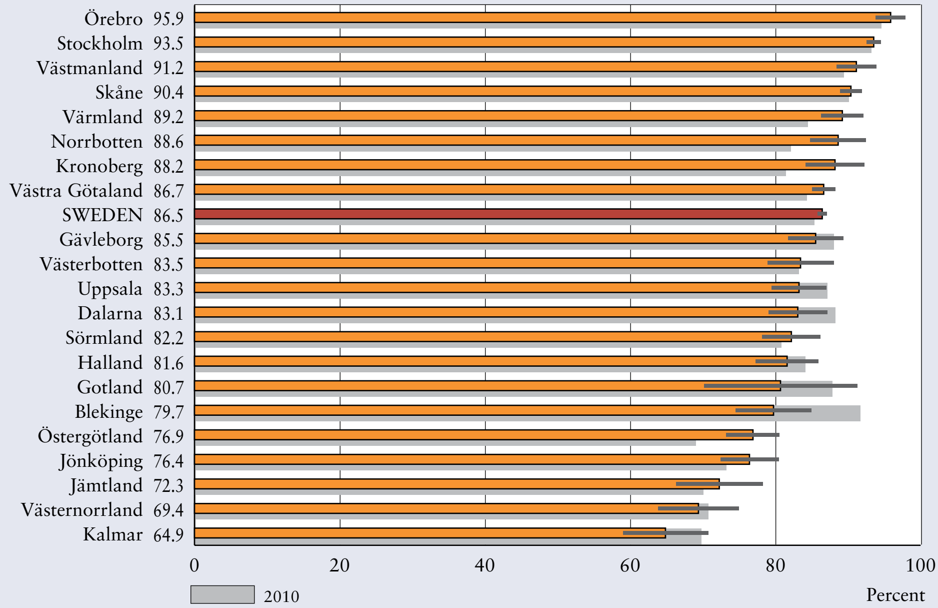


Figure 148 Percentage of cholecystectomies performed as minimally invasive procedures, 2011.

Source: Swedish National Register for Gallstone Surgery and ERCP

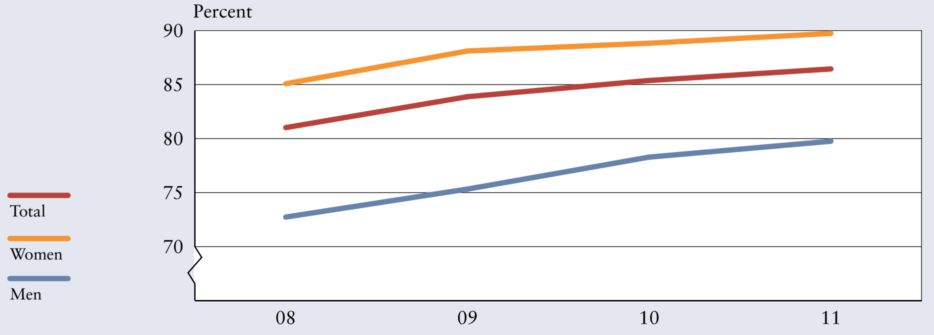


Figure 148 Sweden Percentage of cholecystectomies performed as minimally invasive procedures.

Source: Swedish National Register for Gallstone Surgery and ERCP

There is no specific optimum percentage of patients who should undergo minimally invasive cholecystectomy. But the large variation between counties (approximately 65 per cent to almost 96 per cent) indicates that the proportion can further increase without any unfavourable medical consequences ensuing.

A spot check of 1 168 medical records that were compared with register data showed that surgical method had been reported in 99.5 per cent of cases. At the county level, the risk of differences in case mix is limited and the participation rate is high. Thus, the analyses look at both elective and acute surgery. The outcomes for this indicator are highly reliable at the county level.

149 Surgical Complications following Cholecystectomy

This indicator reflects postoperative complications within 30 days of elective cholecystectomy. Among possible complications are bleeding, infection and bile leakage. All types of surgery are associated with the risk of complications. The complications presented here are specific to cholecystectomy and require some kind of intervention.

In 2011, 587 of 11 394 (5.2 per cent) patients experienced some kind of postoperative complication within 30 days. The frequency was 5.8 per cent among men and 4.8 per cent among women. The percentages have been relatively stable throughout the years with a certain downward trend, particularly among men.

There is no acceptable level of postoperative complications from cholecystectomy. The goal must be zero, even if it appears distant at this point. Well-planned routines, checklists, good training and efficient teams minimise the risk of complications.

Given the broad confidence intervals and uncertainties about the validity of this section of the gallstone register, variations between counties should be taken with a grain of salt.

A comprehensive review of the validity of the Swedish National Register for Gallstone Surgery and ECRP has been performed. The effort showed that 1.8 per cent of 45 000 entries differed from the case records, which were characterised by high quality. However, reviewers found a number of missing postoperative complica-

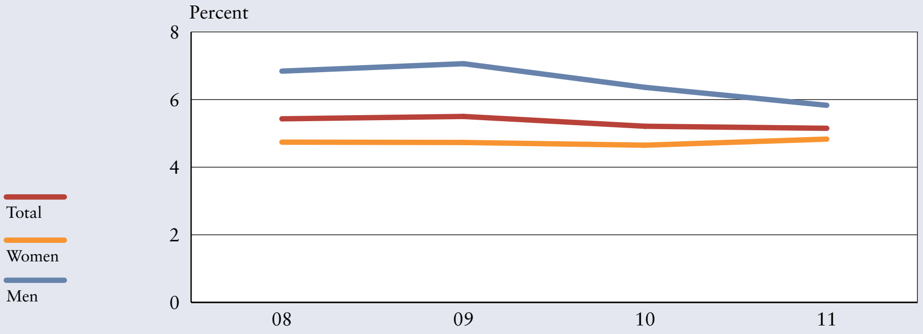


Figure 149
Sweden

Percentage of postsurgical complications
within 30 days of elective cholecystectomy.

Source: Swedish National Register for Gallstone Surgery and ECRP

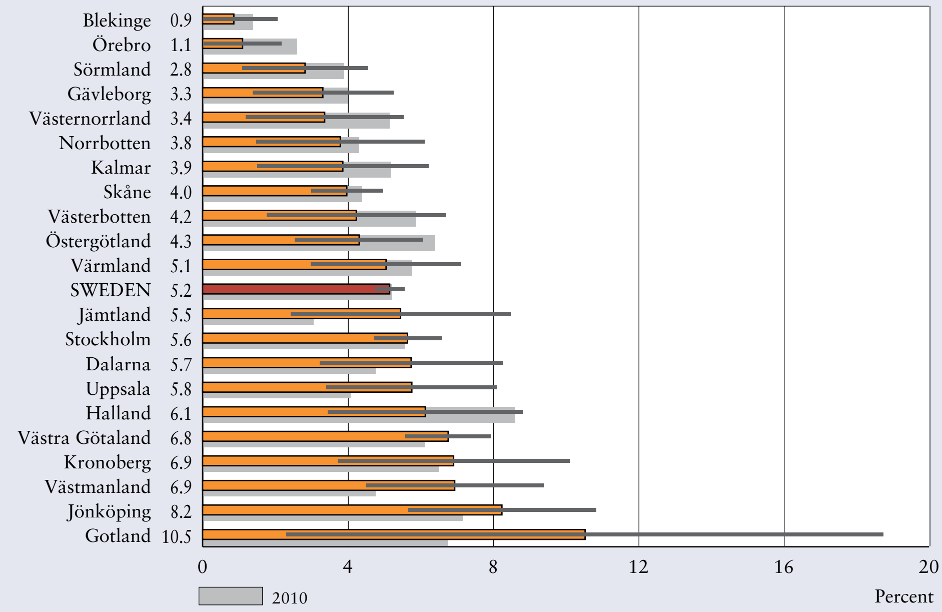


Figure 149 Percentage of postsurgical complications within 30 days of elective cholecystectomy, 2011.

Source: Swedish National Register for Gallstone Surgery and ECRP

tions. Thirty of the 1 172 medical records contained a note about a postoperative complication that had not been entered. In other words, approximately 30 per cent of complications went unreported. Improving training and devoting more time to follow-up efforts at participating clinics should raise the quality of this data over the next few years.

150 Use of Antibiotics prior to Cholecystectomy

Whether antibiotics are required prior to elective cholecystectomy in order to prevent postoperative infection has long been a topic of debate. Quite a few studies, including one based on a relatively large number of patients in the Swedish National Register for Gallstone Surgery and ECRP, have found that antibiotic prophylaxis does not reduce the risk. Thus, the current recommendation is that it not be administered.

The indicator shows the percentage of elective cholecystectomies for which antibiotic prophylaxis is given. The comparison is based on data for more than 7 200 patients. Over 1 400 (18 per cent) of these patients received the treatment in 2011. The variation among the individual counties remained large (from 9 to almost 27 per cent).

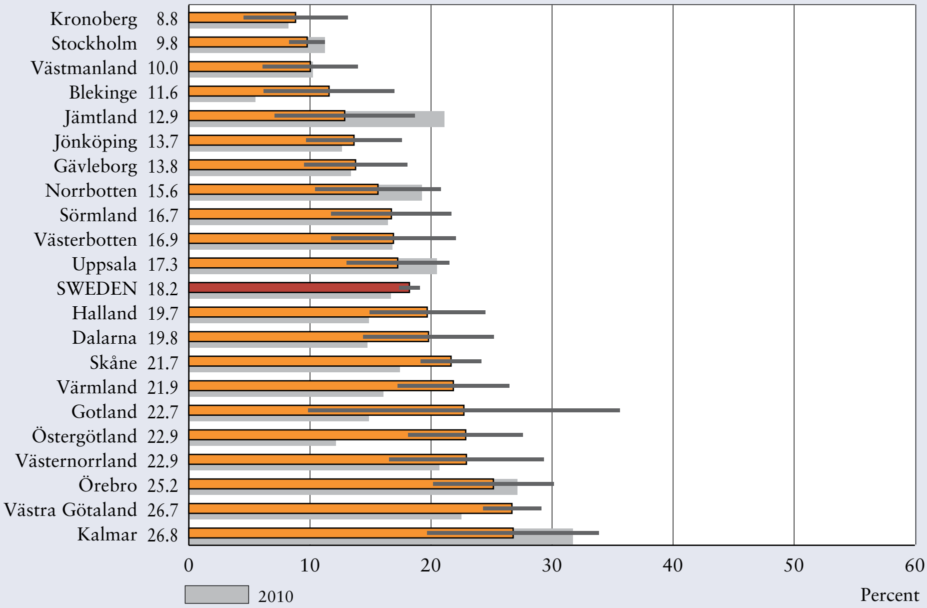


Figure 150 Percentage of patients who were given antibiotics prior to elective cholecystectomy, 2011.

Source: Swedish National Register for Gallstone Surgery and ECRP

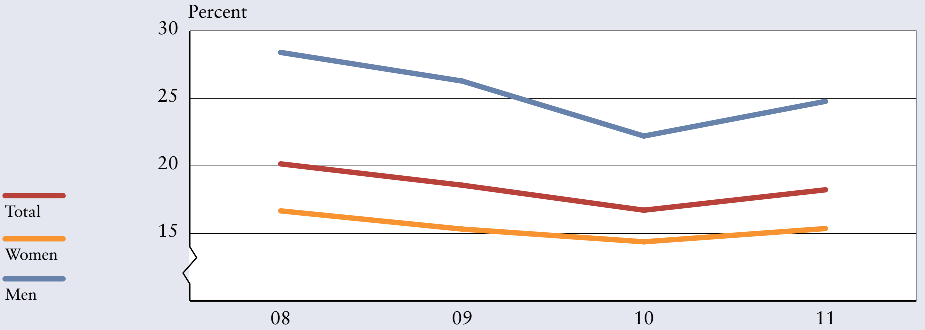
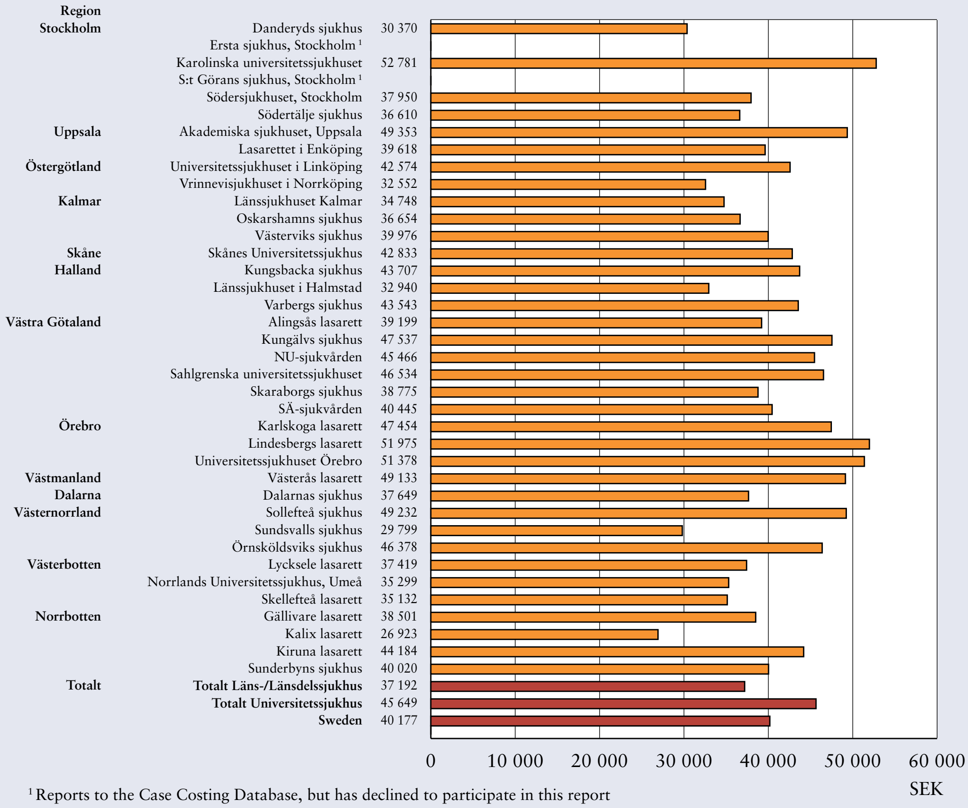


Figure 150 Sweden Percentage of patients who were given antibiotics prior to elective cholecystectomy.

Source: Swedish National Register for Gallstone Surgery and ECRP

Certain factors may dictate the use of antibiotics in individual cases just to be on the safe side. Due to variations in case mix with respect to severity of the condition, hospitals may differ when it comes to antibiotic use. Case mix should not, however, vary significantly at the county level. Thus, more uniform practice across the counties, not to mention generally lower antibiotic use, appears to be eminently achievable. The register enables the frequency of postoperative infection to be continually



[1] Reports to the Case Costing Database, but has declined to participate in this report

Figure 151 Hospitals Cost per DRG point for cholecystectomy, 2011.

Source: Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

monitored. Although antibiotics have been administered less since 2008, no signs have emerged to this point that postoperative infection is on the rise in Sweden.

151 Cost per DRG Point for Cholecystectomy

Up to this point, the costs associated with various conditions or treatment methods have been reported per care event. That approach does not consider case mix or the differing resources required for particular care events even though the basic disease is the same. The section on overall indicators and costs describes cost per DRG point, thereby relating costs to performance by considering resource utilisation, i.e., the productivity of the healthcare system.

Figure 151 presents costs per DRG point for cholecystectomy. In 2011, the Case Costing Database contained 7 208 care events classified as cholecystectomy. Both elective and acute surgery was included. The cost per DRG point in the database (excluded outliers) averaged SEK 40 177 in 2011. The cost differentials were substantial – as were variations in the period of care, which averaged approximately 4 days, ranging anywhere from 1 to 10 days depending on the county.

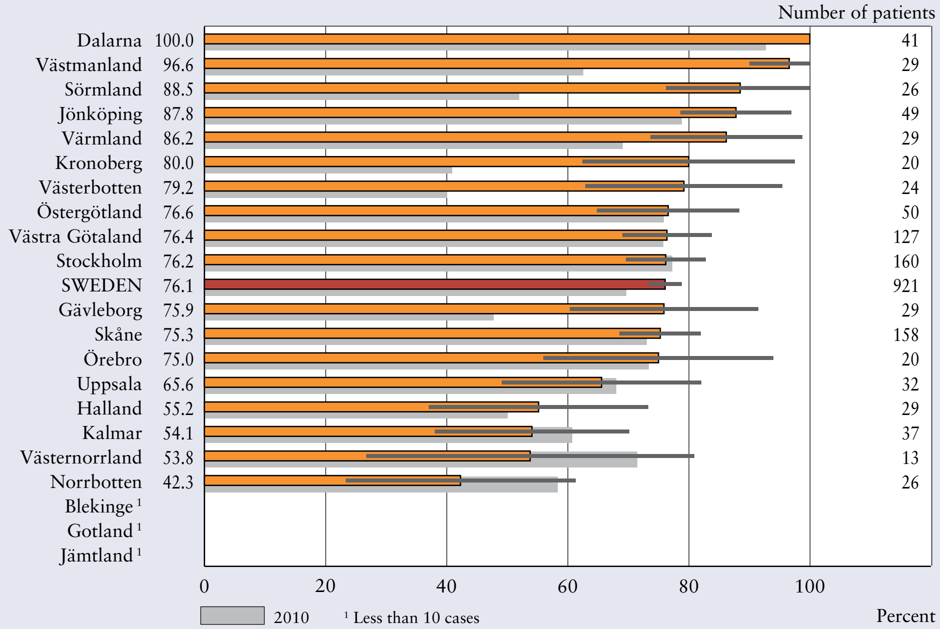


Figure 152 Percentage of carotid endarterectomies performed within 14 days, 2011.

Source: Swedish Vascular Registry

There are a number of possible reasons for the cost differentials: operating time and period of care, as well as staff size per bed and hospital – not to mention case mix, such as the number of acute and elective operations, and choice of surgical method .

Rules have been drawn up for the types of costs to be reported to the Case Costing Database, along with how they are to be estimated. Nevertheless, the calculations may differ from hospital to hospital.

152 Waiting Times for Carotid Endarterectomy

Carotid endarterectomy is surgery for stenosis of the carotid artery. Blood clots can form on the arterial wall and travel to the brain where they may cause a transient ischaemic attack (TIA) or permanent cerebral infarction (stroke). Carotid endarterectomy removes the stenosis. Most operations are performed as a secondary preventive measure after TIA or cerebral infarction with mild to moderate residual symptoms. The procedure is also performed as a primary preventive measure on asymptomatic patients who have been diagnosed with high-grade stenosis.

Particularly in patients with symptomatic high-grade stenosis, surgery significantly reduces the risk of stroke. Statistically speaking, this population requires only a few operations to prevent stroke, but time is of the essence. A delay of more than two weeks reduces the beneficial effect of carotid endarterectomy by 50 per cent.

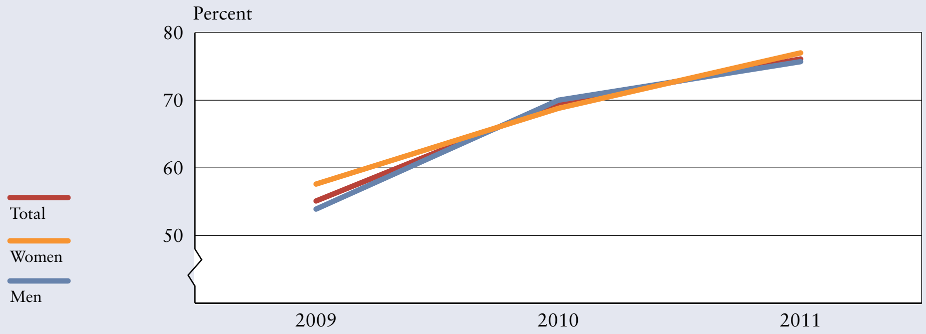
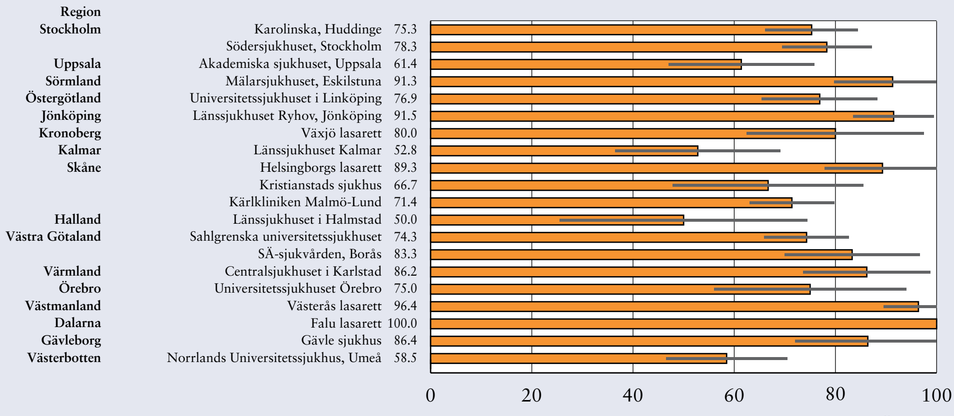


Figure 152
Sweden

Percentage of carotid endarterectomies performed within 14 days.
Source: Swedish Vascular Registry



Hospitals with less than 10 cases are excluded

Figure 152
Hospitals

Percentage of carotid endarterectomies performed within 14 days, 2011.
Source: Swedish Vascular Registry

The indicator, which is included in the national stroke guidelines, reflects the quality of both stroke care and vascular surgery. People must understand and take the symptoms seriously if delays are to be minimised.

The source of data is the Swedish Vascular Registry, which publishes annual data on waiting times for carotid endarterectomy. The participation rate was good. More than 95 per cent of all operations and associated waiting times were reported. Waiting time is defined as the period from the onset of the stroke symptoms that caused the patient to contact a care provider until actual surgery.

Figure 152 presents the number of carotid endarterectomies for symptomatic stenoses that were performed within 14 days of stroke symptoms. The comparison includes 921 operations performed in 2011.

Approximately 76 per cent of all surgery for symptomatic stenosis of the carotid artery was performed within 14 days. This represents an improvement compared with 2009 and 2010. The percentage of patients who underwent surgery within the 14-day period ranged from 42 to 100 per cent among the individual counties. Comparisons are difficult in some counties due to the infrequency of the procedure and associated statistical uncertainty. Approximately the same number of women and men underwent surgery within 14 days.

The Swedish National Board of Health and Welfare guidelines (2009) recommend that particular deadline. The differences between counties suggest that the badly needed improvement is fully attainable.

153 Death or Amputation after Infrainguinal Bypass for Chronic Cricital Ischaemia

Atherosclerosis leads to narrowing or blockage of the arteries. The disease is associated with considerably reduced life expectancy. Circulation in the legs is often impaired. Claudication refers to mild cases when blood flow is insufficient during exertion only, causing pain when walking. In more severe cases referred to as chronic critical ischaemia, blood flow is insufficient even during rest, which increases the risk of cold gangrene.

The greatest risk factor is smoking – nearly 90 per cent of patients with atherosclerosis are or have been smokers. The most effective treatment is smoking cessation. Another significant risk factor is diabetes (30 per cent of all cases). Scrupulous, continual monitoring of blood glucose levels is vital. Both nonsurgical methods and infrainguinal bypass surgery are available.

Figure 153 shows the percentage of patients who died or underwent amputation above the ankle within 30 days after infrainguinal bypass surgery. The comparison includes 2 666 chronic critical ischaemia patients entered in the Swedish Vascular Registry for 2011. Half of the patients, 7.8 per cent of whom died or underwent amputation within 30 days, were women.

The proportion varied between 7 and 11 per cent in 1999-2011. Despite the emergence of new surgical methods, no improvement trend has been spotted. Three per cent of the patients (4.2 per cent of men and 2.1 per cent of women) died within 30 days. When it comes to the frequency of amputation, the gender gap was narrower and statistically insignificant.

The counties ranged widely from 2 to 19 per cent. Given how infrequently the surgery is performed and the statistical uncertainty with which it is associated, the

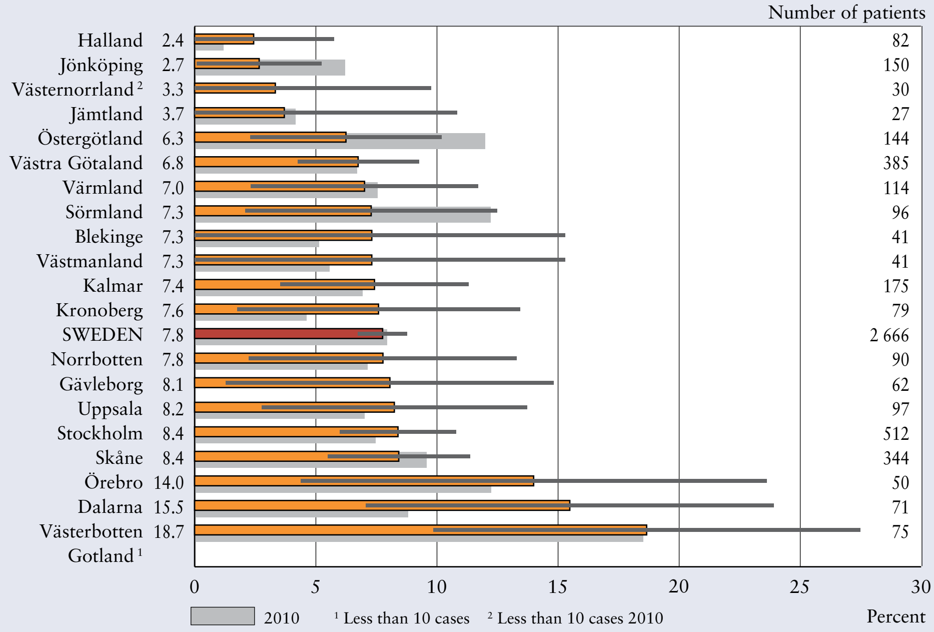


Figure 153 Percentage of deaths or major amputations within 30 days after infrainguinal bypass for chronic cricital ischaemia, 2011.
Source: Swedish Vascular Registry

large variation is difficult to interpret. The results for individual counties have fluctuated a great deal over time. The differences between counties may also reflect incomplete reporting and case mix factors.

No target has been set for the permissible percentage of deaths or amputations after infrainguinal bypass surgery. No randomised studies have compared nonsurgical and surgical interventions.

154 Deaths within 90 Days after Elective Surgery for Aortic Aneurysm

Aortic aneurysm is a pathological dilation of the aorta. Weakening of various layers of the aortic wall increases the risk of rupture. Aortic aneurysm is most common in the abdomen, particularly among men older than 60. Other risk factors, which apply to women as well, are long-term hypertension, smoking and cardiovascular disease. Heredity plays a role as well.

Because the condition rarely causes symptoms, it frequently goes undiagnosed. If left untreated, the aneurysm may rupture such that there is a high risk of death and emergency surgery is required. Approximately 80 per cent of all patients who come to the emergency room for a ruptured aneurysm die.

Between 5 and 10 per cent of all men age 65–79 have an aortic aneurysm, usually asymptomatic. They are generally detected by means of ultrasound screening,

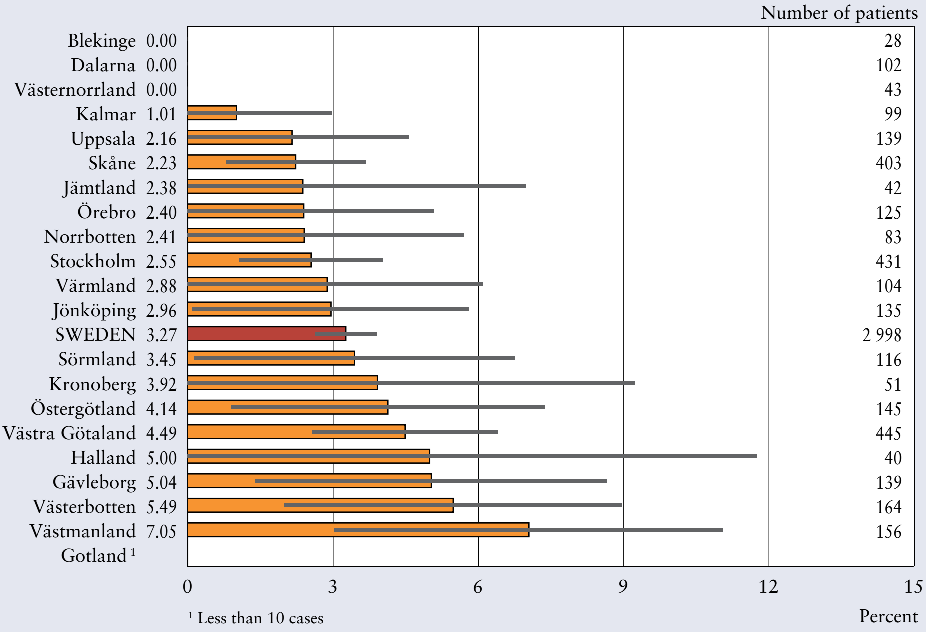


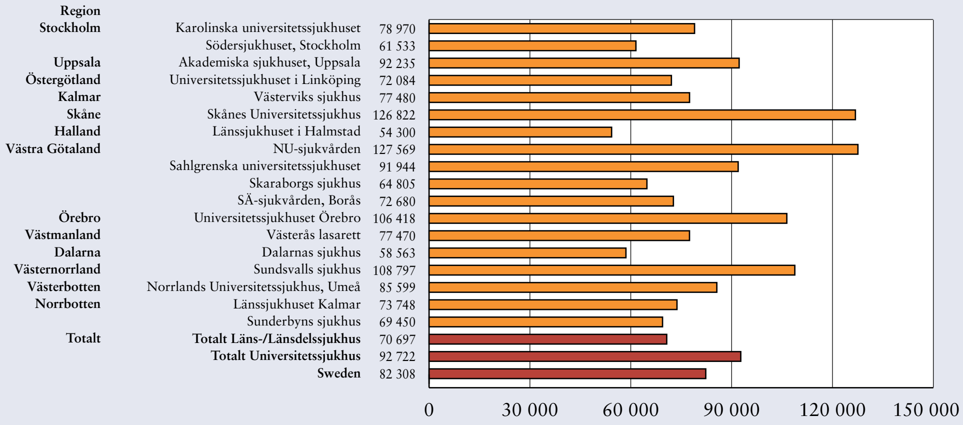
Figure 154 Percentage of deaths within 90 days after elective surgery for aortic aneurysm, 2009–2011

Source: Swedish Vascular Registry

which county councils have adopted in recent years after the Swedish Council on Technology Assessment in Health Care (SBU) demonstrated the benefits of the examination in men older than 65. Screening permits more diagnoses, after which high-risk patients are offered surgery and the remainder are offered continued observation. The objective is an increase in the frequency of elective surgery and a reduction in the number of patients with ruptured aneurysms.

The indicator reflects mortality within 90 days after scheduled surgery for an aortic aneurysm. The comparison is based on data for almost 3 000 patients who underwent surgery in 2009–2011 and were entered in the Swedish Vascular Registry. Patients were assigned to the county in which the clinic was located rather than where they were living.

A total of 3.3 per cent of patients nationwide died within 90 days after surgery. Due to the small percentage of deaths and the relatively low percentage of operations, the results are uncertain and the large variation between counties is difficult to interpret. The results may be affected by the skill of the individual surgeon, as well as case mix.



Hospitals with less than 10 cases are excluded

Figure 155
Hospitals

Cost per inpatient care event associated with infrainguinal bypass surgery, 2011.
Source: The Swedish Case Costing Database, Swedish Association of Local Authorities and Regions

155 Cost per Inpatient Care Event for Infrainguinal Bypass Surgery

Nineteen hospitals in 13 counties reported their costs for more than 2 400 care events associated with infrainguinal bypass surgery to the Case Costing Database in 2011. Costs for follow-up appointments or drug consumption in outpatient care were excluded, as were outliers.

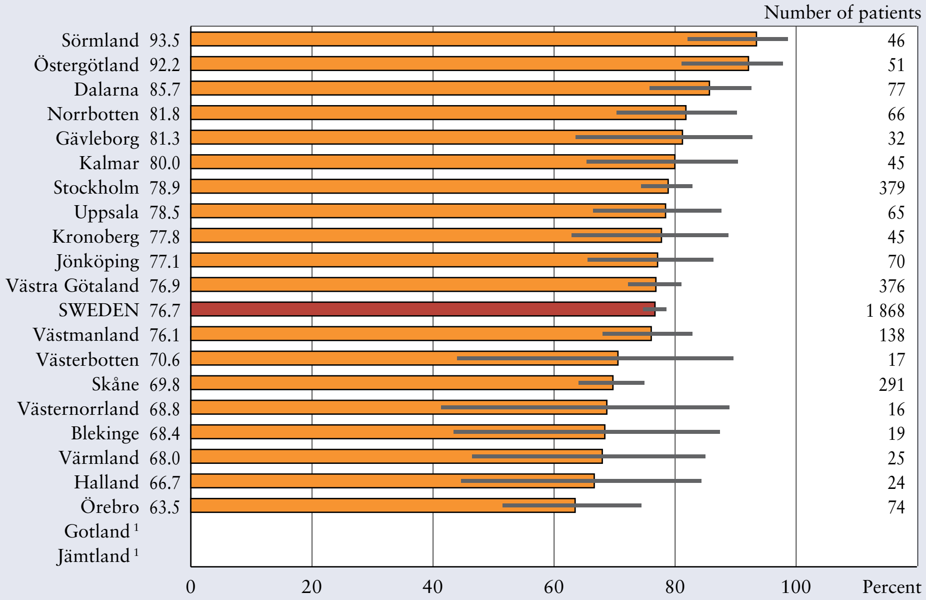
Figure 155 presents the costs per inpatient care event associated with infrainguinal bypass surgery. The purpose of the operation is to improve circulation in the legs. Hospitals with fewer than ten cases are not shown. The average cost in 2011 was SEK 82 308 (excluded outliers). Differences among hospitals were significant – ranging from just over SEK 54 000 to more than SEK 127 000. The average period of care was five days, with a considerable variation between hospitals of three to ten days.

The cost discrepancies may be due to a number of variables, including case mix, period of care and clinical practice. Despite the existence of general regulations that are to be followed, the estimation methods used by a particular hospital may also have an impact.

156 Patient-reported Outcome of Septoplasty

Septoplasty is surgery to correct a deviated nasal septum. The main indication for the surgery is nasal congestion. Nasal congestion can produce a number of secondary symptoms, including dryness of the mouth, snoring and fatigue, as well as leading to considerably reduced health-related quality of life. Eighty per cent of the operations are performed on men.

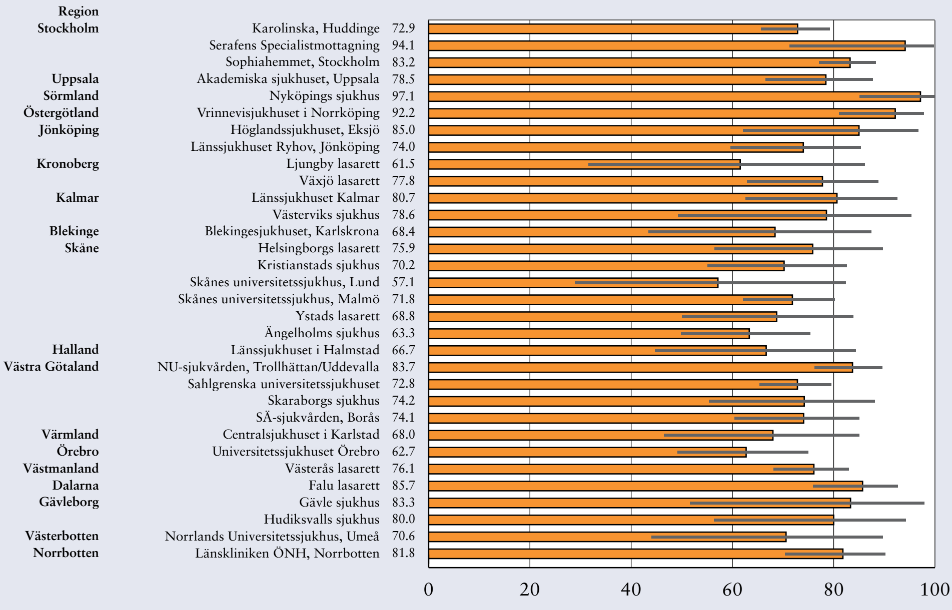
The presented data are extracted from the Septoplasty Register, one of nine subregisters in the Swedish Quality Register of Otorhinolaryngology. The comparison



¹ Less than 10 cases

Figure 156 Percentage of patients who were completely or fairly satisfied six months after septoplasty, 2010–2011.

Source: Swedish Quality Register of Otorhinolaryngology



Hospitals with less than 10 cases are excluded

Figure 156 Hospitals Percentage of patients who were completely or fairly satisfied six months after septoplasty, 2010–2011.

Source: Swedish Quality Register of Otorhinolaryngology

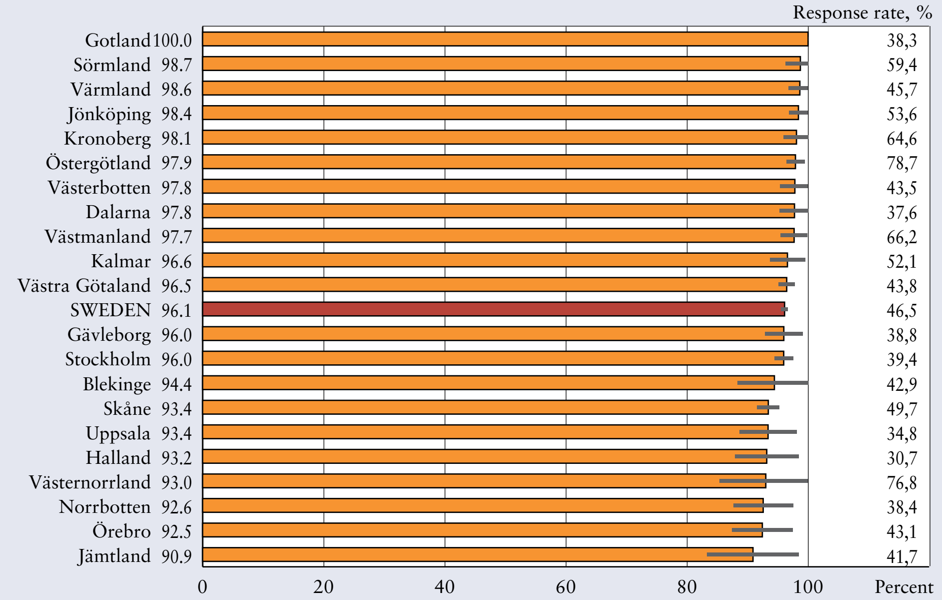


Figure 157 Percentage of patients who reported that they were completely or fairly free of symptoms six months after tonsillectomy, 2011.

Source: Swedish Quality Register of Otorhinolaryngology

includes 1 868 patients who underwent surgery in 2010–2011 and responded to the questionnaire. The data in figure 156 presents the results for the county councils in Sweden. The inclusion of operated patients is estimated to be 90 per cent of the total number of operations. However, not all patients respond to the questionnaire.

Patients were sent a questionnaire six months after surgery concerning its outcome. Figure 156 shows the percentage of patients who reported that the discomfort was gone completely or that they were almost satisfied with the outcome. Almost 77 per cent of patients nationwide responded in that manner, with county results varying from more than 63 per cent to 93 per cent. No gender differences in patient satisfaction were observed. But satisfaction clearly increased with age.

The association of ear, nose and throat specialists agreed that at least 90 per cent of patients should report that they have improved or recovered completely. Thus, the spread and outcomes presented here are poorer than the target. In other words, there is both a need and potential for improvement. It is important to point out, however, that the quality effort under way at the clinic level is paying off and that the most successful ones are now meeting the goal for the first time.

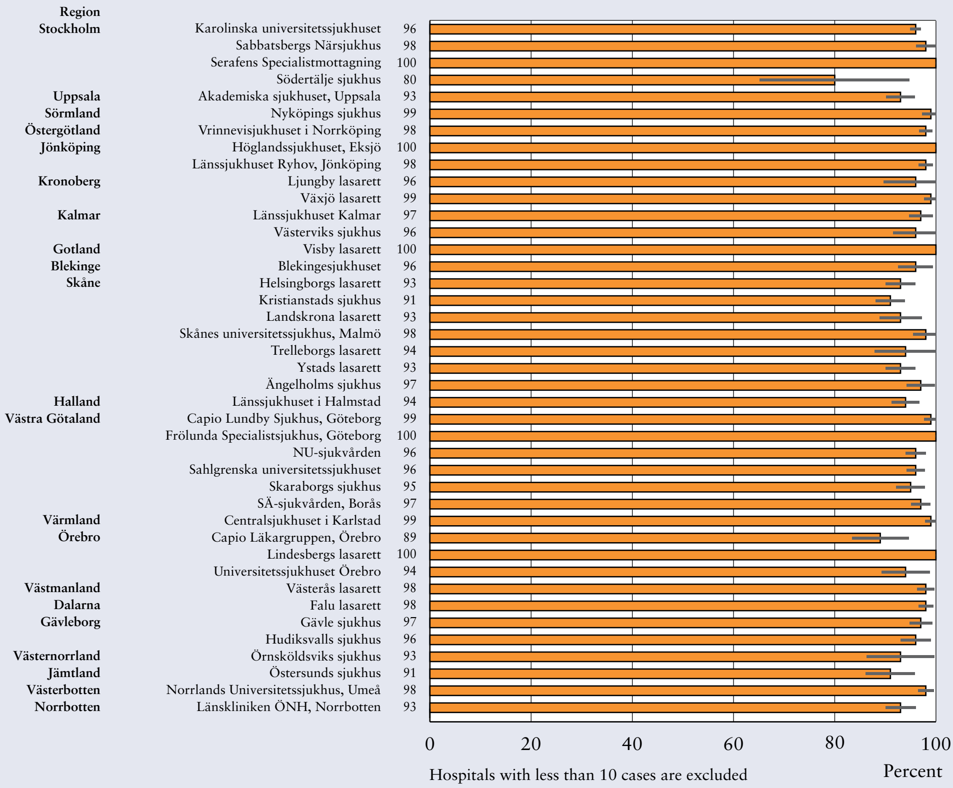


Figure 157
Hospitals

Percentage of patients who reported that they were completely or fairly free of symptoms six months after tonsillectomy, 2011.

Source: Swedish Quality Register of Otorhinolaryngology

157 Patient-reported Freedom from Symptoms after Tonsillectomy

In Sweden, the most common indication for tonsil surgery is enlarged tonsils that causes breathing problems, snoring and even difficulty swallowing. Frequent tonsillitis or peritonsillar abscesses is the second largest indication for surgery. Tonsil surgery is more often performed in the child or teenager, and is performed approximately 13 000 times a year in Sweden. More than half of the surgical procedures are day-case operations.

The source of data for this indicator is the National Tonsil Surgery Register in Sweden, which is part of the Swedish Quality Register of Otorhinolaryngology. Based on a comparison of the number of operations with the National Patient Register for 2011, the completeness of registration rate was estimated at 77 per cent.

The register contains data concerning surgical methods, as well as operation and haemostasis techniques. Information is obtained from patients about satisfaction with the information they received prior to surgery, as well as postoperative bleeding, infection, pain and other complications.

Patients are asked to fill out a questionnaire six months after surgery concerning the extent to which they are free of symptoms. This indicator presents the percentage of respondents who checked the alternative "symptoms gone" or "I am doing fairly well".

The comparison is based on data for almost 4 400 patients who underwent surgery in 2011. Cancer patients were not included. The county breakdown was based on the location of the clinic rather than where the patient was living.

More than 96 per cent of patients nationwide, varying from 91 to 100 per cent depending on the county, stated that their symptoms were gone or that they were doing fairly well. There were no gender differences.

Reported freedom from symptoms was affected by the indication for surgery, age, frequency of postoperative complications, and the quality of the information given to patients prior to the operation.

158 Cataract Surgery, Visual Acuity below 0.5 in the Better-seeing Eye

More than 91 000 cataract operations were performed in 2011, an increase of 3 per cent from the previous year. The eyesight of a large percentage of the patients improved considerably.

Data on visual acuity in the better-seeing eye at the time of cataract surgery is a gauge of its availability in the various counties. If a large percentage of the population is operated on for a number of years, the patients who have had surgery previously will see comparatively better prior to a new procedure. More frequent operations on the other eye are also improving outcomes.

The data are taken from the Swedish National Cataract Register. According to the register, it currently has an excellent participation rate of over 98 per cent of all surgery. Although mandatory, reporting of cataract surgery to the National Patient Register is much poorer. More than half of the operations not reported to the Patient Register in 2009 were performed by private care providers.

Figure 158 shows the percentage of all patients who had visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery. A low percentage means that the patients had better vision, and vice versa. The data are for 2011. The county data are based on the patient's residence regardless of where surgery was performed.

Women generally had poorer vision at the time of surgery than men. Interpretation of gender differences is rendered more difficult by disparities in other variables – such as age, surgery on the other eye and driving licence. Furthermore, women were operated on 1½ times as often as men.

Though large for a number of years, differences between counties have narrowed more recently. One reason may be that the national care guarantee programme has

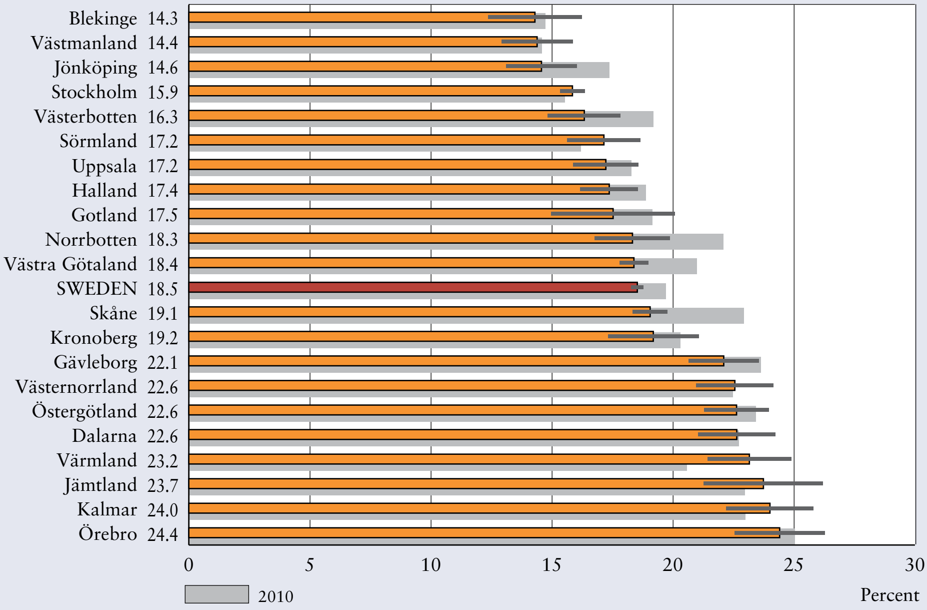


Figure 158 Percentage of patients with visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery, 2011.

Source: Swedish National Cataract Register

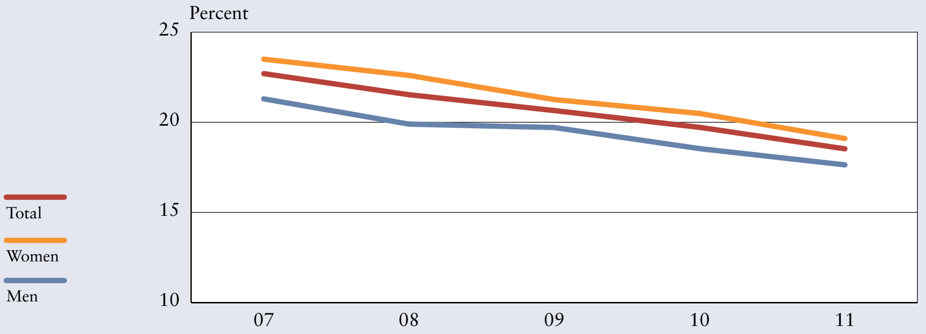


Figure 158 Sweden Percentage of patients with visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery.

Source: Swedish National Cataract Register

included development of joint indicators of the point at which cataract surgery should be performed .

The long-term nationwide trend makes it clear that patients have had better and better vision at the time of surgery. The register demonstrates an indisputable correlation between frequency of surgery and the extent of visual impairment when

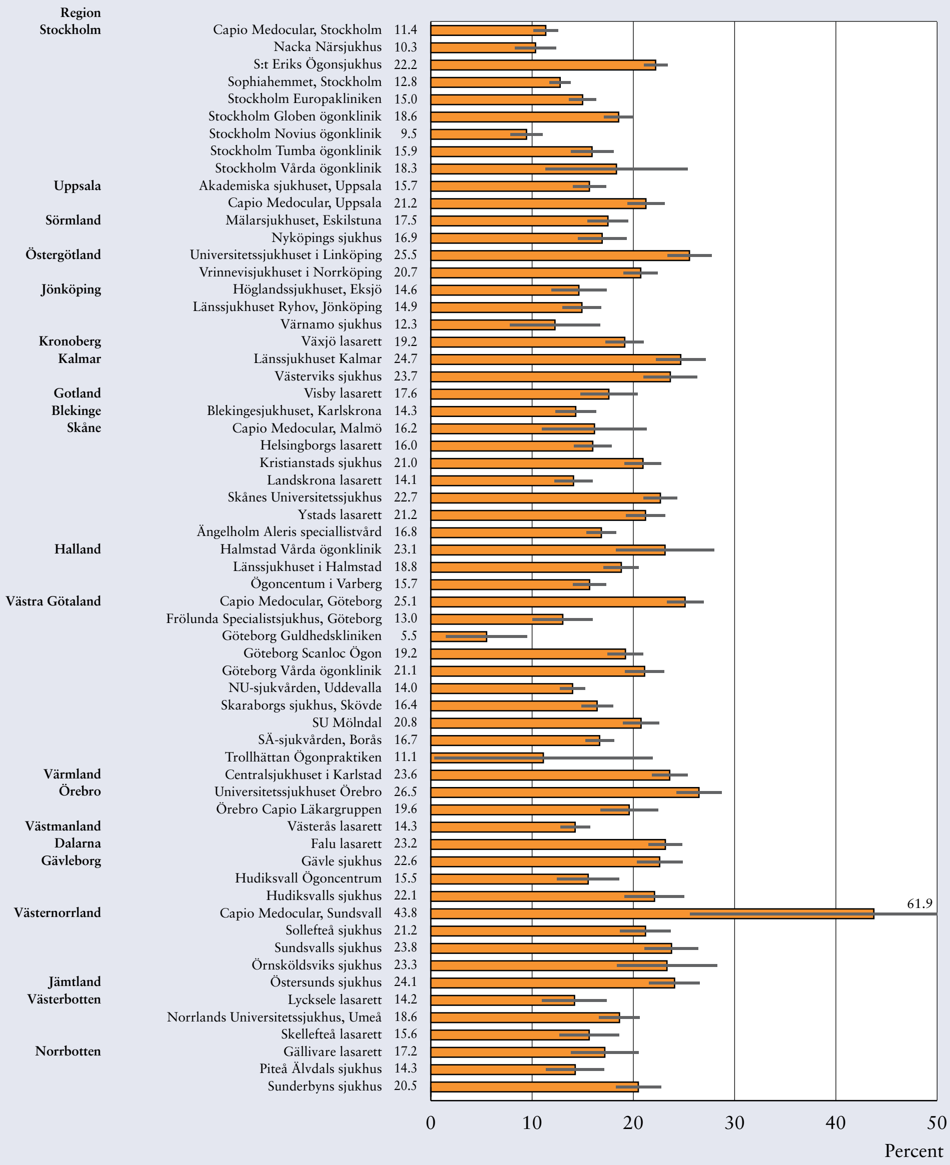


Figure 158
Hospitals

Percentage of patients with visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery, 2011.

Source: Swedish National Cataract Register

it is performed. In other words, county councils can improve their outcomes by increasing the number of operations they finance.

159 Self-reported Benefit of Cataract Surgery

Cataract surgery is the most common of all operations in Sweden. The purpose of the procedure is to restore vision by removing the cataract. The overall objectives

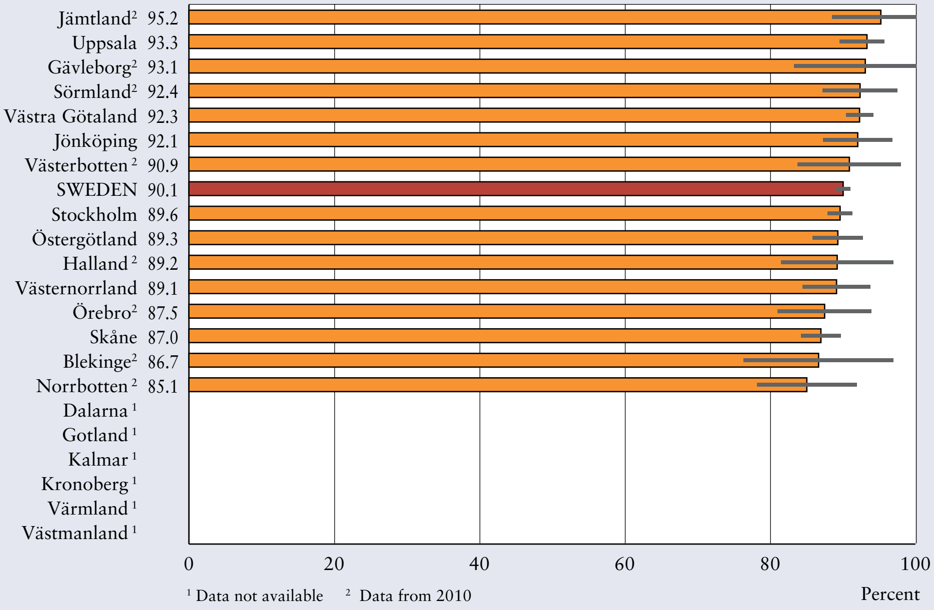


Figure 159 Percentage of patients who reported that their visual function had improved three months after cataract surgery, 2011.

Source: Swedish National Cataract Register

are to ensure optimum visual acuity, refraction and patient satisfaction, as well as minimal complications.

This indicator, which reflects the success of the healthcare system in improving the patient's self-reported vision, has been in full use by the Swedish National Cataract Register since 2009–2010. Catquest-9SF is a self-explanatory, disease-specific questionnaire that is filled out by the patient prior to, and three months after, surgery. The content area is activity limitation in daily life because of vision. The postoperative survey had a response rate of approximately 80 per cent. Studies have suggested that the average non-respondent is somewhat older and sicker than the average respondent. Clinics participate on a voluntary basis for one month each year. A total of 35 clinics participated in 2010 and 27 in 2011. More than 60 units perform the surgery. The national outcome appears to be fairly representative.

The indicator shows the percentage of patients who reported experiencing fewer obstacles to performing activities of daily living following surgery. The comparison is based on data for more than 3 400 patients who were operated on in 2011. For certain counties, the 2010 results are shown for clinics that failed to report in 2011.

Ninety per cent of the patients said that they experienced fewer obstacles in their daily activities after surgery, as opposed to almost 92 per cent in 2010. Given that

[1] Data from 2010

Figure 159
Hospital

Percentage of patients who reported that their visual function had improved three months after cataract surgery, 2011.

Source: Swedish National Cataract Register

the same clinics did not participate both years, drawing any conclusions about differences at the national level is a tricky proposition.

Any number of reasons could cause a patient to report deterioration after surgery: comorbidity in the eye that was operated on, postoperative complications, abnormal refraction outcome and the absence of problems prior to surgery. In a nutshell, severe visual impairment, exceedingly good vision and postoperative complications each make it more likely that a patient will report additional problems once the operation has been performed.

INTENSIVE CARE

Intensive care is defined as advanced surveillance, diagnosis and treatment when vital functions threaten to, or demonstrably, fail. Severely ill patients, usually with multiple life-threatening conditions, are cared for in a high-tech setting with many caregivers. In other words, intensive care demands more resources than most other types of health care. According to the Case Costing Database, intensive care accounts for approximately 8 per cent of costs associated with all inpatient medical care. More than 50 000 events at Swedish intensive care units (ICUs) are reported every year. Sixty-six of Sweden's 84 ICUs in 2011 were general units at the great majority of Swedish provincial, county, regional and university hospitals, while 18 were specialist departments.

The Swedish Intensive Care Register began in 2001. Given the rapid progress and considerable resource utilisation – as well as the high morbidity and mortality rates – associated with intensive care, a single register was needed that could reflect all possible diagnoses.

The register compiles information to support local quality assessment efforts, as well as promoting comparisons over time within and among the participating units. Seventy-five of the 84 ICUs belonged to the register. Over 90 per cent of departments that offered general intensive care were members. An estimated 91 per cent, or almost 46 000, of intensive care events were reported to the register in 2011. The register's participation rate fluctuated according to the variable involved. Ninety-eight per cent of patients were being monitored with respect to survival, one of the indicators presented here. For technical reasons, 7 per cent of the members were unable to submit data in 2011. Thus, statistics are unavailable for some counties and departments.

In collaboration with the Swedish Association of Anaesthesiology and Intensive Care and the Swedish Association of Intensive Care, the register develops and disseminates information about national guidelines for monitoring and reporting intensive care . The register focuses on ten national quality indicators for intensive care. This report presents three of them: risk-adjusted mortality after arrival at an ICU, night-time discharge from an ICU and unscheduled readmission within 72 hours after discharge from an ICU.

160 Risk-adjusted Mortality after Arrival at an Intensive Care Unit

Patients treated at ICUs have high mortality rates. Between nine and ten per cent of all patients die within 30 days of arrival. Thus, survival at 30 days is a highly relevant quality indicator. Mortality is affected by case mix at the particular unit. The 2011 annual report of the Swedish Intensive Care Register found that mortality at one-month follow-up varied from 2 to 30 per cent. Risk adjustment for age, severity of disease and medical history permits more accurate comparison of different units over time.

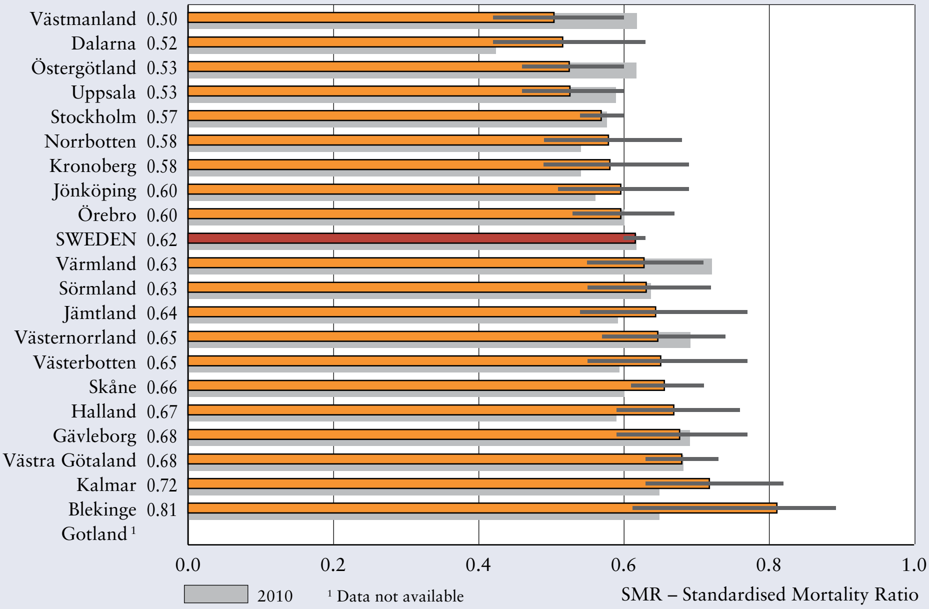


Figure 160 Risk-adjusted mortality within 30 days of arrival at an intensive care unit, 2011.

Source: Swedish Intensive Care Register

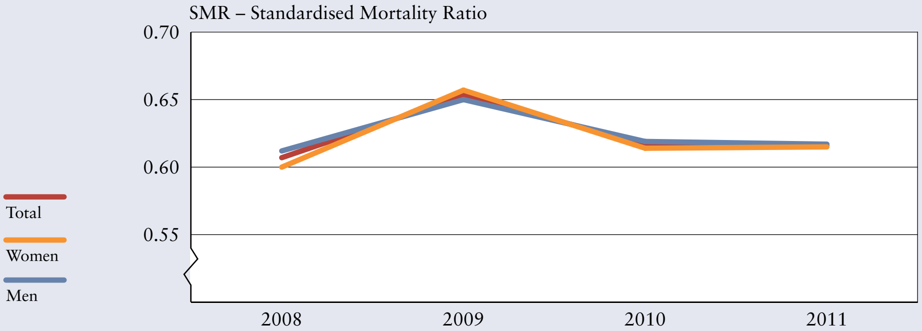


Figure 160 Sweden Risk-adjusted mortality within 30 days of arrival at an intensive care unit.

Source: Swedish Intensive Care Register

Risk-adjusted mortality is a composite indicator that reflects the first 30 days, from commencement of intensive care to hospitalisation to follow-up treatment at an institution or in the home. The indicator describes expected mortality, given the type and severity of the disease, as well as age and medical history. Among the variables to be adjusted for are age, chronic disease, type of acute disease (reason for admission), how the patient ended up at the ICU, the severity of the acute condition and whether surgery has been performed recently.

These data are used to estimate the risk of death within 30 days. The most widely used model (SAPS3) bases expected mortality on studies of intensive care patients, primarily European, in 2002. Expected and observed mortality are then compared. Their ratio is referred to as the Standardised Mortality Ratio (SMR).

The SMR is equal to 1 when observed mortality is identical to expected mortality, greater than 1 when it is higher than expected mortality and less than 1 when it is lower than expected mortality.

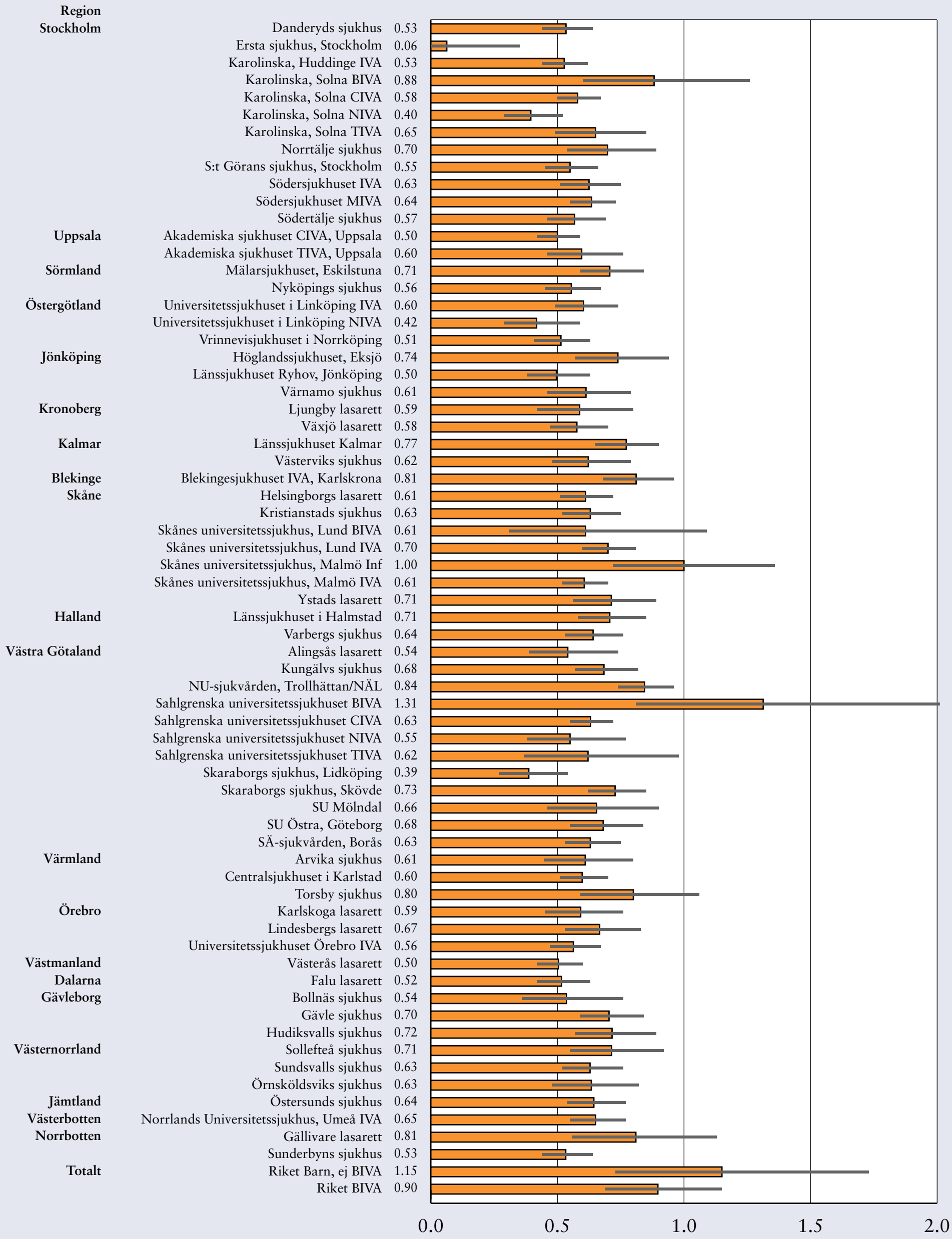
The Swedish Intensive Care Register calculates the SMR based on the outcome of alive or dead 30 days after arrival at an ICU. The SMR can be affected by caregivers, given that the indicator reflects the entire healthcare process until 30 days after admission to the ICU. Both intensive and follow-up care may influence the outcome.

The SMR must be interpreted in a nuanced manner. The best possible care and treatment for the sickest patients usually involve all conceivable interventions to preserve life. However, the best care and treatment may also involve refraining from or terminating an intensive care procedure. The SMR is an important quality indicator that can ensure a more correct description of intensive care outcomes when combined with other indicators, such as how often patients drop out of or decline treatment. Once variations in data quality, patient characteristics not captured by the risk-adjustment system and chance have been taken into consideration, discrepancies in quality throughout the healthcare process are left to explain SMR differences.

Based on SAPS3, the target is an SMR less than 1. An adjustment will be made to accommodate Swedish conditions once the intensive care register has collected sufficient data. The 2011 outcome was 0.62 for both women and men, which was substantially better than the target. The SMR ranged from 0.49 to 0.77 for women and from 0.48 to 0.86 for men in the various counties. No change has emerged over time.

A transition from APACHE to the SAPS3 system is still under way. For some counties in which both systems are used, only the SMR based on SAPS3 is reported. Data for calculating the SMR based on SAPS3 were missing for Gotland, which appears without a result in Figure 160.

Neither the APACHE nor the SAPS3 system is suitable for risk adjustment in the case of children at ICUs. This is why PIM2 has been adopted for patients younger than 16 and data are also presented this year for the specialist juvenile ICUs at the Astrid Lindgren Children's Hospital, Skåne University Hospital in Lund and Queen Silvia Children's Hospital. So few children are admitted to other Swedish ICUs that adjust risk in accordance with PIM2 that a separate presentation per unit is not meaningful. The diagram combines and presents the units as a single outcome.



Hospitals with less than 10 cases are excluded

Figure 160
Hospitals

Risk-adjusted mortality within 30 days of arrival at an intensive care unit, 2011.

Source: Swedish Intensive Care Register

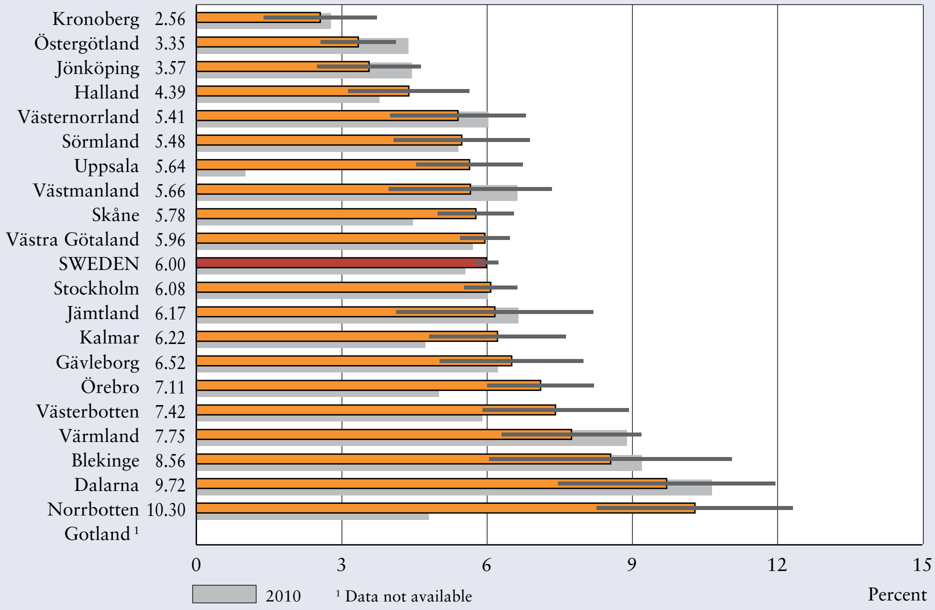


Figure 161 Percentage of patients who were discharged from an intensive care unit at night, 2011.

Source: Swedish Intensive Care Register

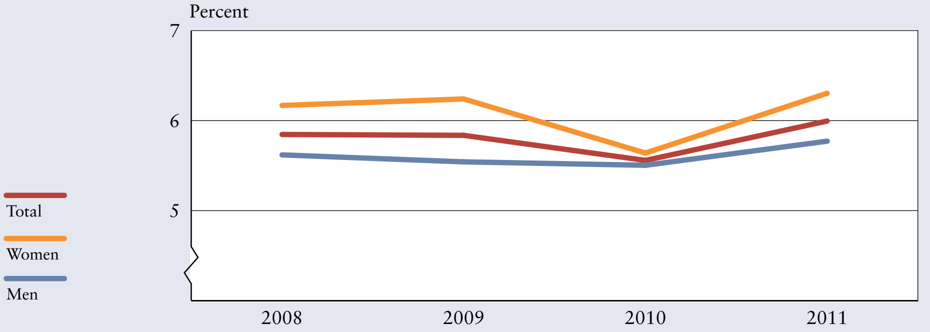


Figure 161 Sweden Percentage of patients who were discharged from an intensive care unit at night.

Source: Swedish Intensive Care Register

161 Discharge from an Intensive Care Unit at Night

Patients are normally discharged from ICUs at night due either to lack of beds or to the need for neurosurgery or other specialist care. Discharge from an ICU to a general ward is associated with higher risk of death.

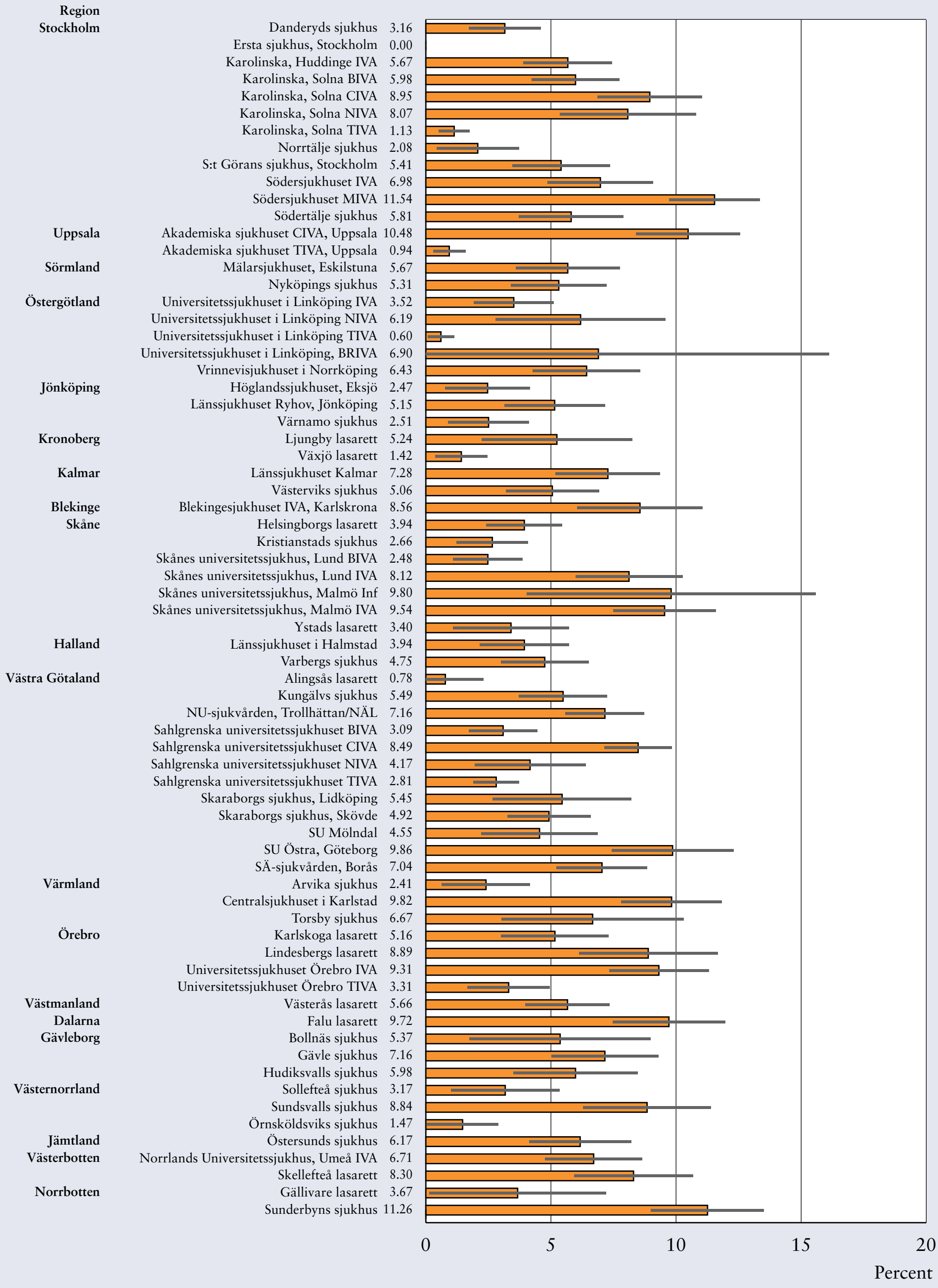


Figure 161
Hospitals

Percentage of patients who were discharged from an intensive care unit at night, 2011.

Source: Swedish Intensive Care Register

Because general wards often have limited staffs at night, patients are left more often to their own devices. This indicator, which reflects preventive and collaborative measures, may shed light on prioritisation or the availability of intensive care beds. While decisions to interrupt or refrain from treatment may affect the percentage of patients who are discharged at night from an ICU, no detailed perusal will be possible until current plans to upgrade the indicator have been completed.

According to the Intensive Care Register database, 6.1 per cent of all care events in 2005–2009 involved discharge to a general ward between 10 pm and 7 am. The register has set a target that fewer than 6.8 per cent of all discharges be at night. Six per cent (more than 2 200 patients) of all discharges from ICUs to general wards were at night in 2011 . There was considerable variation among the individual counties, half of which met the register's target. The national percentage was somewhat higher in 2011 than the year before.

162 Unscheduled Readmission to an Intensive Care Unit

It is well known that patients who are readmitted to the same ICU on an unscheduled basis within 72 hours run a greater risk of dying. Swedish Intensive Care Register data for 2008–2010, which show a correlation between readmission within 72 hours and increased mortality, confirm that observation: relative risk rose by 45 per cent after adjustment for severity of disease by means of SAPS3. For that reason, the Intensive Care Register presents the percentage of readmissions as a quality indicator.

The percentage of readmissions may be partially influenced by the availability of intensive care beds, as well as the structure of post-intensive care. The register targets an unscheduled readmission rate within 72 hours to the same ICU of less than 3.1 per cent.

Figure 162 shows the percentage of patients who were readmitted to an ICU on an unscheduled basis within 72 hours after discharge from the same unit. The nationwide outcome for 2011 was 2.7 per cent, ranging among the various counties from 1.4 to 4 per cent.

No significant gender-related statistical differences have been found at the national level.

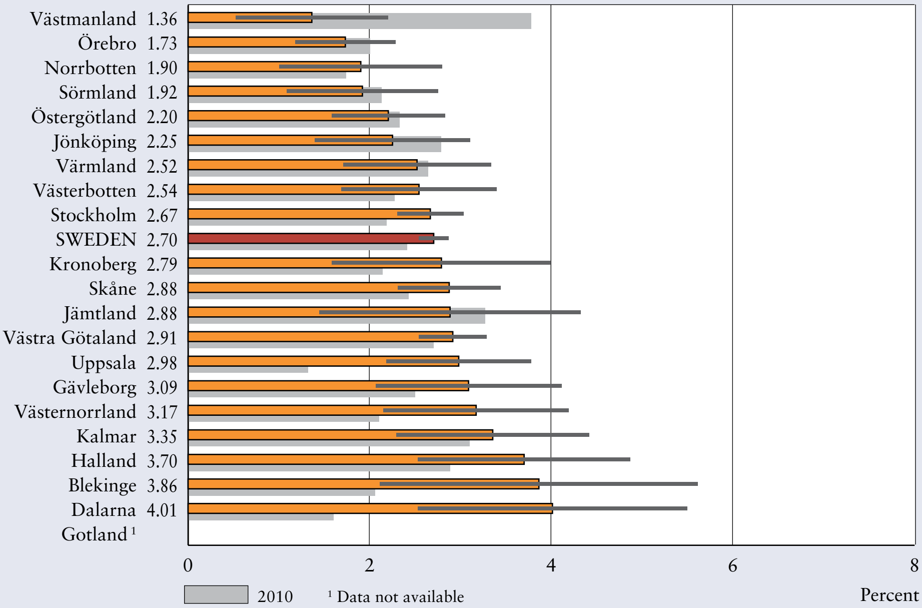


Figure 162 Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit, 2011.

Source: Swedish Intensive Care Register

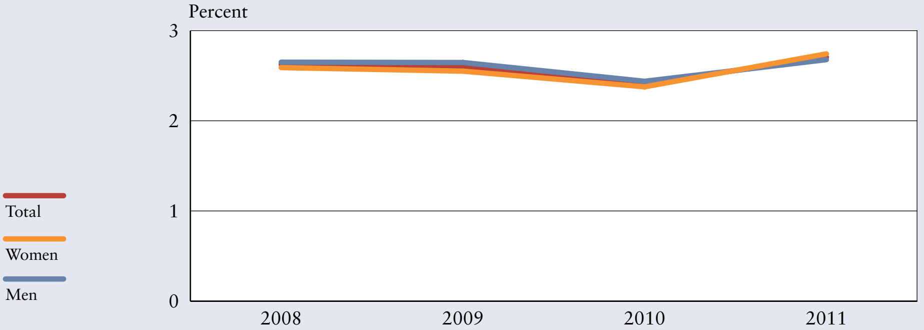


Figure 162 Sweden Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit.

Source: Swedish Intensive Care Register

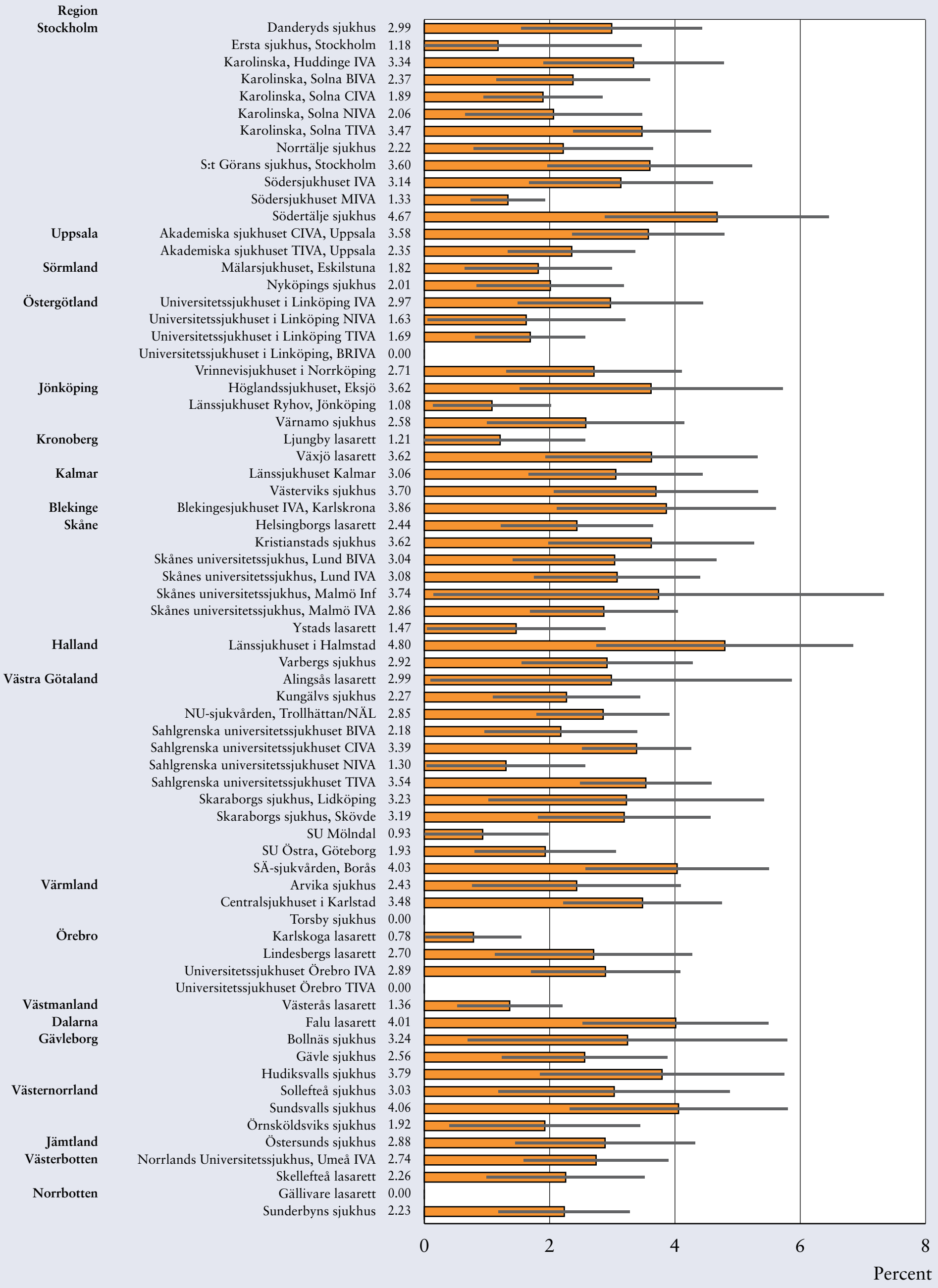


Figure 162
Hospitals

Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit, 2011.

Source: Swedish Intensive Care Register

OTHER CARE

163 Good Viral Control for HIV

HIV is a viral infection that leads to acquired immune deficiency syndrome (AIDS) and death unless treated. The lifetime antiretroviral therapy now available offers a normal life expectancy. Most of the 5 918 Swedes who have been diagnosed with HIV live in the metropolitan areas. The population grew by 5 per cent between 2011 and 2012.

The source for the indicator presented in this report is the InfCare HIV Quality Register. The purpose of the register is to ensure good, equitable treatment of all patients, regardless of caregiver or route of transmission. The key is to identify problems and potential for improvement. In addition to being a quality register, InfCare HIV supports clinical decision making by generating graphs to be used at each session with the patient. InfCare HIV, which is employed by all 32 clinics that treat HIV patients, has a participation rate of better than 99 per cent.

The primary indicator for antiretroviral therapy in clinical practice is the process measure HIV-RNA less than 50 copies/ml. The measure, which is regularly monitored for all patients, represents a state in which virus cannot be detected in the blood plasma and is directly related to prospects for survival. Not only is it internationally established, but it is the measure most frequently used by drug and treatment studies.

HIV-RNA less than 50 copies/ml is the treatment target. A slow or zero decline in viral load after commencement of antiretroviral therapy, or a subsequent increase, are very sensitive gauges of unsatisfactory efficacy. Identifying the reasons for such problems is fundamental to influencing and improving outcomes. Figure 163 shows the percentage of patients with good viral control (HIV-RNA less than 50 copies/ml) in April–May 2012. The presentation is based on each patient's most recent level. The comparison included 4 869 patients.

More than 92 per cent of patients nationwide reached the target. The result is fully satisfactory and in line with 2011. The various counties ranged from 84 to 100 per cent. The variation narrowed between 2009 and 2012. No gender discrepancies were observed.

A majority of counties met the target, or expected outcome, of the register that 90 per cent of patients have good virus control. One possible reason that the differences among counties and clinics narrowed is that all clinics now submit up-to-date data. Furthermore, quality assurance efforts were carried out in response to the results that had been presented for recent years.

Even in comparison with typical results of clinical studies subject to strict selection criteria, Swedish outcomes are excellent from an international point of view.

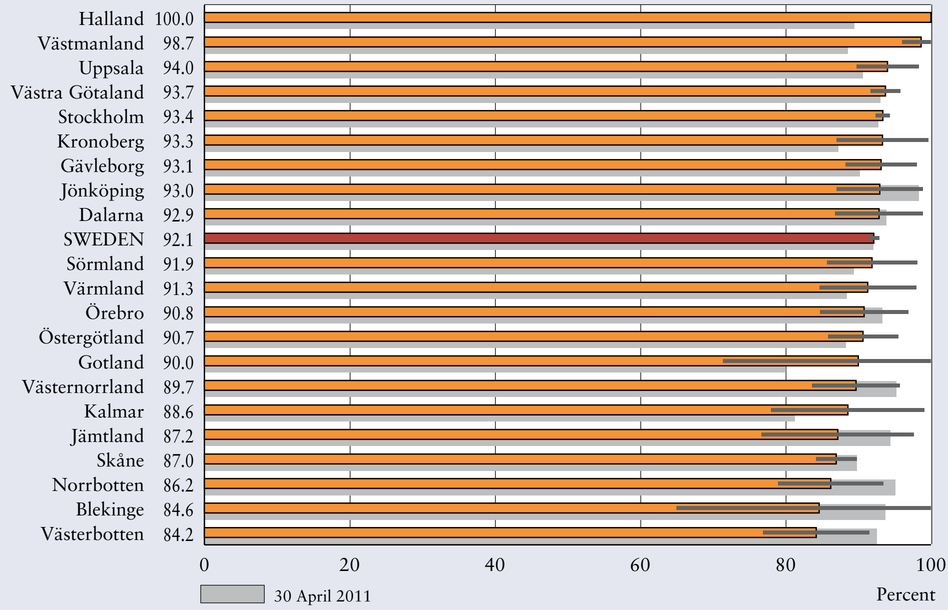


Figure 163 Percentage of HIV patients with good viral control (HIV-RNA < 50 copies/ml) of all patients receiving antiretroviral therapy, until 30 April 2012.

Source: InfCare HIV Quality Register

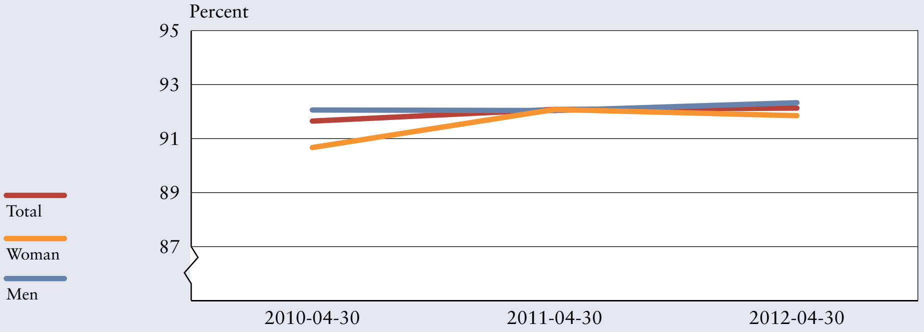


Figure 163 Sweden Percentage of HIV patients with good viral control (HIV-RNA < 50 copies/ml) of all patients receiving antiretroviral therapy.

Source: InfCare HIV Quality Register

Description of the HIV population has traditionally been based on route of transmission. The various groups are highly dissimilar when it comes to socio-economic and cultural variables, not to mention treatment frequency and outcomes. Such case mix differentials can affect county results. For statistical reasons, the data for small counties are less reliable, as reflected by the broad confidence interval.

Figure 163
Hospitals

Percentage of HIV patients with good viral control (HIV-RNA < 50 copies/ml) of all patients receiving antiretroviral therapy, until 30 April 2012.

Source: InfCare HIV Quality Register

164 Assessment of Pain Intensity at End of Life

Palliative care can be provided when curative treatment is no longer effective. Some people live with incurable conditions for many years, whereas others are free from symptomatic disease until shortly before they die. Over 70 000 of the more than 90 000 Swedes who die every year have contact with various caregivers at the end of life. These professionals should be in a position to collaborate such that all patients receive good, equitable care.

The purpose of the Swedish National Registry of Palliative Care is to improve palliative care for all patients, regardless of caregiver. Those who have cared for a recently deceased patient fill out a questionnaire about the last 1–2 weeks of life. In addition, they complete an annual questionnaire about their resources and procedures. All clinics, operated and financed at either the municipal or county level, can report to the register.

The register had a 59 per cent participation rate for all deaths in the first half of 2012, with a variation of 41–78 per cent between the individual counties. The diagrams present participation rate per county.

Three indicators are presented on the basis of data from the register. All deaths, not only cancer patients, are included.

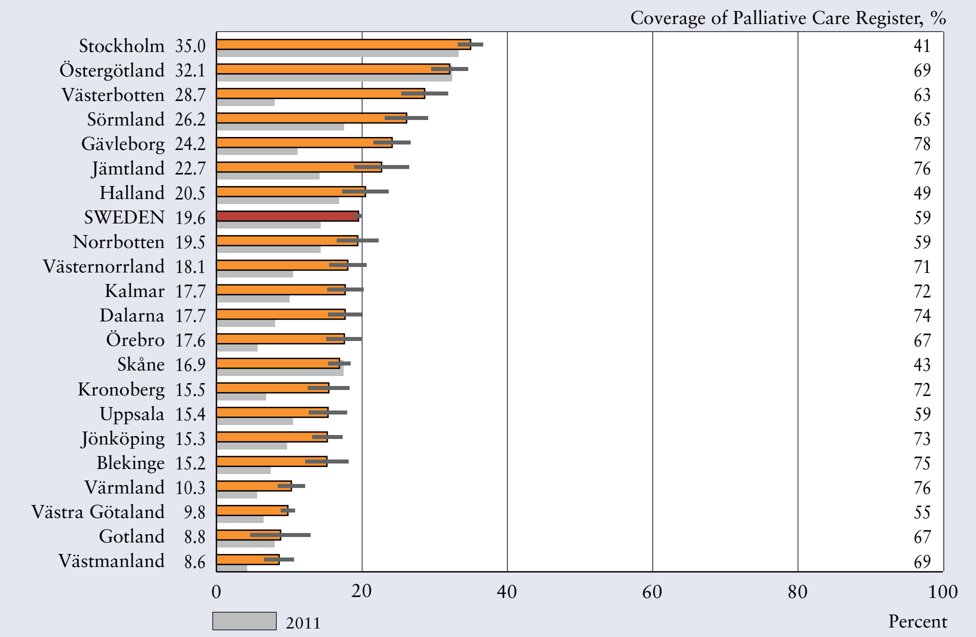


Figure 164 Percentage of patients at the end of life who assessed pain intensity on the VAS/NRS scale, January-June 2012.

Source: Swedish National Registry of Palliative Care

The indicator in Figure 164 measures process, i.e., the percentage of patients who assessed pain intensity on the VAS/NRS scale or another validated instrument at least once during their final week of life. Pain is a quintessentially personal experience. The preliminary guidelines for palliative care issued by the Swedish Board of Health and Welfare in summer 2012 accorded top priority to pain analysis and assessment.

Caregivers have a tendency to underestimate, and family members to overestimate, a patient's experience of pain. Routine, systematic pain assessment efforts are required to capture and minimise the experience of pain before it is too late. The effort to draw up national guidelines for cancer care concluded that the VAS/NRS scale was the most reliable instrument for patients whose ability to communicate is intact. The Abbey Pain Scale works best for patients with dementia who can no longer describe their pain verbally.

The Swedish National Registry of Palliative Care targets the use of pain assessment instruments for 100 per cent of all dying patients. The most important purpose of the indicator is to promote systematic pain assessment that is documented, properly applied and monitored until death. Most people are fearful about the prospect of pain at the end of life.

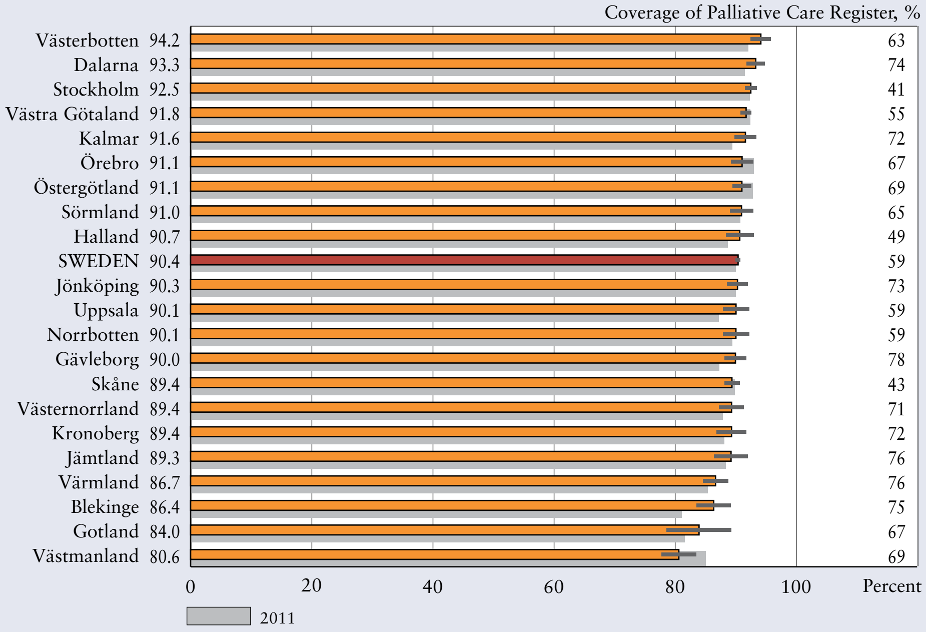


Figure 165 Percentage of patients who were prescribed opioids on an as-needed basis at end of life, January-June 2012.

Source: Swedish National Registry of Palliative Care

This indicator presents the percentage of all dying patients who assessed the intensity of their pain at the end of life. The comparison includes more than 23 200 patients reported to the register during the first half of 2012.

Only 19.6 per cent of patients nationwide, with a slight preponderance of men, assessed their pain using a validated instrument . The counties showed a wide variation of 9–35 per cent. No county reached even half of the target. Nevertheless, there was a marked improvement over the 15 per cent outcome in 2011.

165 Prescription of Opioids on an as-needed Basis at End of Life

Good palliative care at the end of life requires that patients and their families be notified that all treatment to cure or arrest the progression of the condition has been terminated. Certain medical and nursing measures must be taken at that point, including assurances that suitable drugs are available in the event of pain. Prescriptions must be customised to meet the highly individual needs of patients at this stage of their lives. Medical responsibility sometimes migrates from the specialist to the primary care doctor who is overseeing home health care or assisted living facilities. Thus, it is particularly important that no vital prescriptions fall through the cracks.

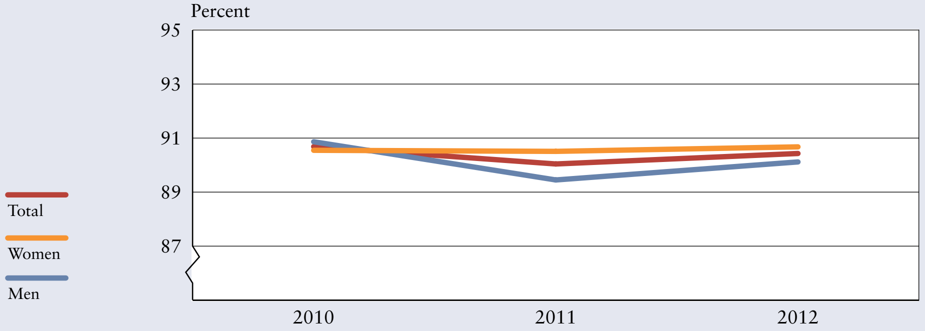


Figure 165
Sweden

Percentage of patients who were prescribed opioids on an as-needed basis at end of life.

Source: Swedish National Registry of Palliative Care

It is well known that the majority of terminal cancer patients need at least one injection of opioids at the end of life. Some doctors, however, are still reluctant to prescribe opioids before an actual need arises.

The time between increased pain and relief can be unnecessarily long. First the patient must realise that they are experiencing enough pain to push the alarm button. The alarm must reach a nurse, who needs to make an assessment and then have access to a suitable prescription, not to mention the actual drug. If the process is not to take an unreasonably long time, every step along the way must be well laid out in advance.

The percentage of prescriptions provided rises if written procedures have been drawn up. The register's target is that 90 per cent of patients be given a prescription for pain relief. Discussions are under way about whether the target should be raised.

Figure 165 shows the percentage of patients in the first half 2012 who received an as-needed prescription for opioids. The comparison includes more than 23 000 patients with all possible diagnoses. Approximately 90 per cent of patients nationwide received such a prescription. Both county and gender differences were small. All counties were above 80 per cent.

166 End-of-life Conversations

Good palliative care at the end of life requires that patients and their families be notified that all treatment to cure or arrest the progression of the condition has been terminated. Thus, the healthcare system must be equipped to provide individualised information about the patient's health and available examination methods, as well as options for care and treatment. The preliminary guidelines for palliative care issued by the Swedish National Board of Health and Welfare recommend ongoing conversations with the patient about the content and objectives of the care they are receiving. Several conversations are often required to properly convey the concept

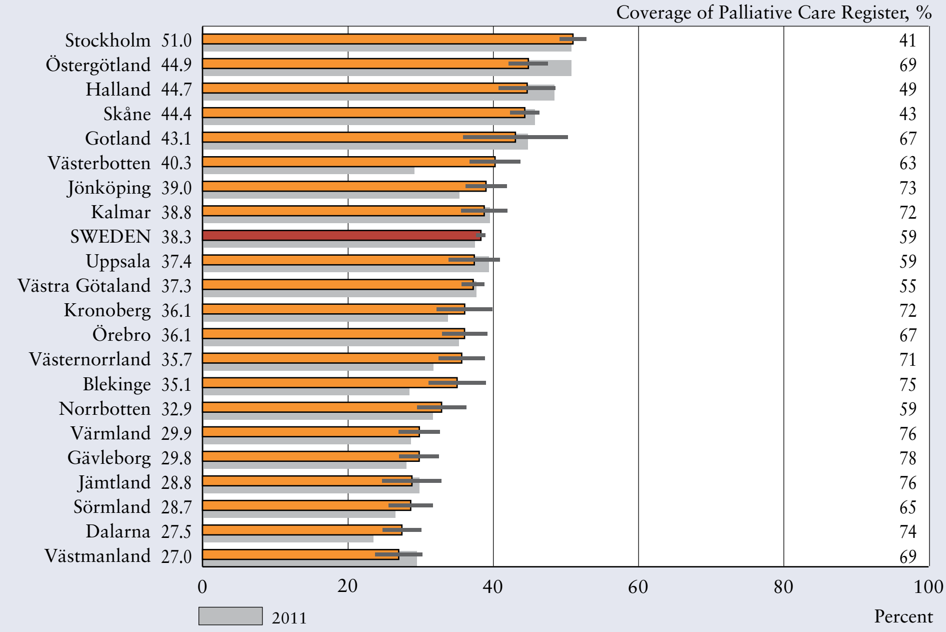


Figure 166 Percentage of patients for whom end-of-life conversations were held, January-June 2012.

Source: Swedish National Registry of Palliative Care

that care is entering a new phase that does not seek to extend life. Not every patient wants to hear the entire truth – at least not during the initial conversation. Some terminal patients are no longer able to actively participate in discussions about their care and the direction it is heading. In such cases, talking to family members or other people close to the patient is vital. The doctor must be fully involved.

The Swedish National Registry of Palliative Care reflects these needs. Caregivers previously responded to the question as to whether an end-of-life conversation had been held. The question was reworded in 2011 to better capture active participation by the doctor, as well as documentation of such conversation in the medical records. The presentation includes only patients for whom caregivers responded in the affirmative when asked whether death had been expected. Whether the patient was able to take part in treatment decisions and whether family members were present are also taken into consideration. As a result of these changes, the register now targets end-of-life conversations for 100 per cent of patients.

Figure 166 shows the percentage of patients for whom documented end-of-life conversations were held during the first half of 2012. The comparison included almost 18 000 patients.

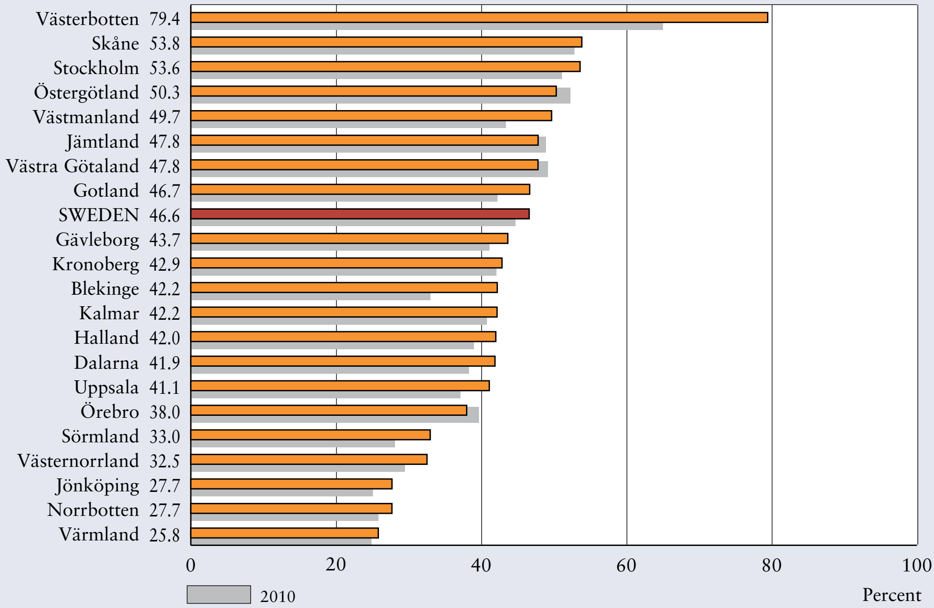


Figure 167 Estimated percentage of patients with secondary progressive multiple sclerosis who were being treated with immunomodulators, August 2012.

Source: Swedish Multiple Sclerosis Registry

Conversations were held for fewer than 40 per cent of patients nationwide. The counties varied widely from just over 27 per cent to 51 per cent. No county reached more than just over half of the target.

167 Immunomodulators for Relapsing-remitting Multiple Sclerosis

Multiple sclerosis is a chronic inflammatory disease that causes the immune system to attack the central nervous system, which usually leads to growing disability after many years. Even in the early stages of the disease, recurring symptoms and fatigue reduce quality of life and affect the patient's ability to work. A 2003 health economic study found that the annual socio-economic costs of multiple sclerosis were SEK 5 billion from loss of work, as well as care and treatment. Approximately 1 out of every 500 Swedes, twice as many women as men, have multiple sclerosis. Onset normally occurs between 20 and 40 years of age. Multiple sclerosis is found most often in northern Europe and appears to be increasingly prevalent.

The Swedish Multiple Sclerosis Registry contains data about more than 10 000 patients and their treatment. The completeness of registration has improved but varies from county to county. A comparison with the National Patient Register found that one register or the other had data about 13 500 patients.

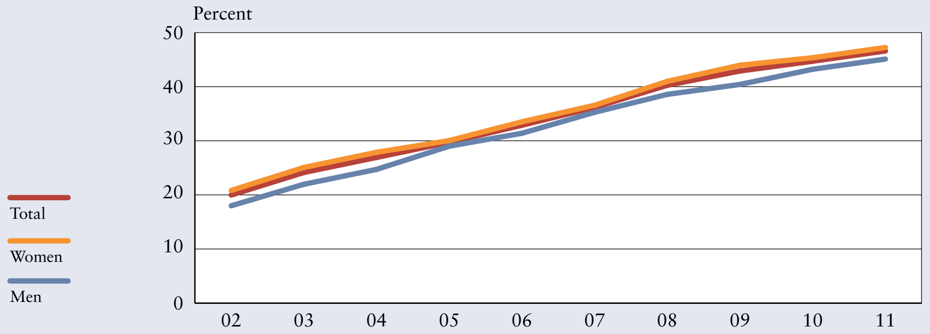


Figure 167
Sweden

Estimated percentage of patients with secondary progressive multiple sclerosis who were being treated with immunomodulators.

Source: Swedish Multiple Sclerosis Registry

Drugs have been approved since the 1990s for reducing the frequency of relapses in multiple sclerosis patients during the first 15 years before the progressive phase normally takes over. Studies have found that even the early stages of multiple sclerosis often give rise to irreversible damage, even though the symptoms are still mild. Thus, it is increasingly evident that immunomodulatory therapy must start early.

The Swedish MS Association (SMSS), an independent organisation of caregivers and researchers, issues recommendations for the use of immunomodulatory therapy. According to the association, approximately 75 per cent of patients with relapsing-remitting multiple sclerosis meet the criteria for therapy, as opposed to a small percentage of those with secondary progressive multiple sclerosis (Indicator 168). Use of the therapy among the latter population is limited to the transition period out of the relapsing-remitting stage, which may last for several years.

This report presents two different indicators of immunomodulatory therapy. The first indicator concerns early, relapsing-remitting multiple sclerosis, and the second indicator concerns the secondary progressive stage.

Figure 167 shows the percentage of patients with relapsing-remitting multiple sclerosis who were receiving an immunomodulator among those who had the disease for less than 15 years. The comparison includes 3 063 patients who were being treated on 31 December 2011, as related to the estimated number of patients in each county. Estimated prevalence is based on data in the Swedish Multiple Sclerosis Registry and National Patient Register.

A total of 46.6 per cent of the presumed patients nationwide were receiving treatment. The counties ranged from less than 26 per cent to more than 79 per cent.

One likely source of error is underreporting to the quality register. Another cause for uncertainty stems from the estimate of how prevalent the disease is in the vari-

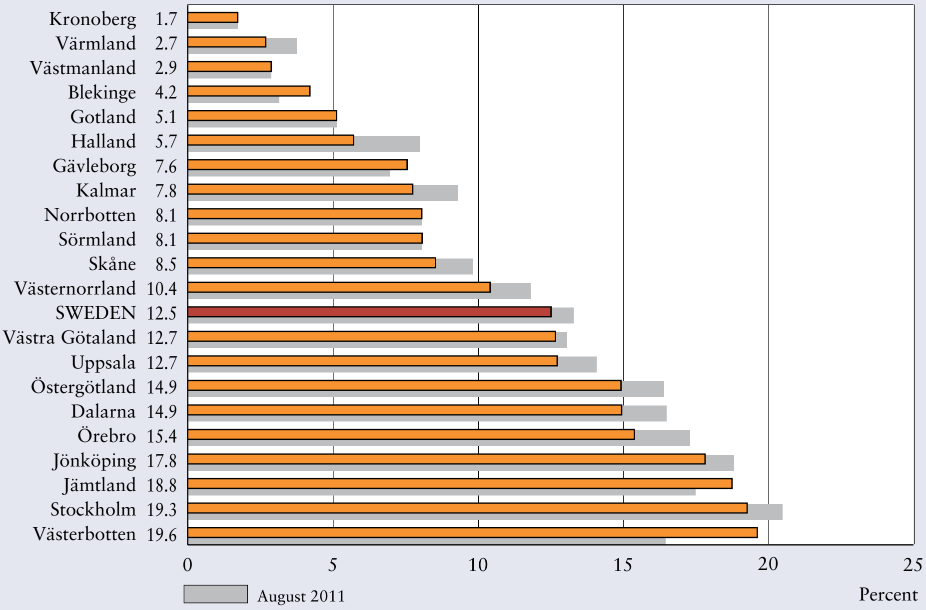


Figure 168 Estimated percentage of patients with secondary progressive multiple sclerosis who were being treated with immunomodulators, August 2012.
Source: Swedish Multiple Sclerosis Registry

ous counties. Although based on actual data from a scientific project, the estimate may still be unreliable.

168 Immunomodulators for Secondary Progressive Multiple Sclerosis

This indicator presents the percentage of patients with secondary progressive multiple sclerosis treated with immunomodulators. The comparison is based on more than 700 patients receiving treatment, as related to the estimated number of patients with secondary progressive muscular sclerosis in each county. The data are from August 2012.

According to Figure 168, just over 12.5 per cent of patients nationwide were being treated. Given that immunomodulators have not been proven to be effective for this stage of the disease, a low percentage is basically a good thing. Nevertheless, treatment may be indicated for patients who are in the transitional period between the two phases.

Moreover, some clinics may treat patients in this stage of the disease based on procedures that were established prior to the SMSS guidelines. Although the therapy is rarely harmful, healthcare resources could be used more wisely.

As with the previous indicator, the estimate of the number of patients in this particular phase of muscular sclerosis is also associated with uncertainty. Underreporting of the number of patients being treated also affects outcomes.

Ten years ago, data from the Swedish Multiple Sclerosis Registry showed that the frequency of therapy was essentially independent of disability – in other words, many patients in the early stage were not being treated, whereas a large number in the progressive stage were treated despite lack of evidence that it had any effect on clinical variables. The trend since then is to provide the therapy more in the relapsing-remitting stage and less in the secondary progressive stage. Differences between counties linger nonetheless.

Thus, the results for both indicators suggest that a patient's chances of receiving immunomodulatory therapy are unevenly distributed throughout the country and that both undertreatment and overtreatment occur. Compliance with the treatment guidelines needs to improve.

169 Improvement after Treatment for Macular Degeneration

Age-related macular degeneration (AMD) is the most common cause of visual impairment among people over 50 years of age in the Western World. An estimated 30 per cent of people in Sweden age 70 and older have some form of macular degeneration. The likelihood of developing AMD increases with age. Between 80 and 85 per cent of patients with AMD have a mild form of the disease that is referred to as dry or early macular degeneration. The remaining 15–20 per cent has wet macular degeneration which encompasses bleeding and swelling due to neovascularization or severe atrophy.

Left untreated, wet macular degeneration quickly leads to severe visual impairment with acuity of less than 0.1. At that stage it is impossible to read or to find one's way around in an unknown setting. The patient needs additional assistance with cooking, cleaning and other ordinary chores, perhaps transportation services as well due to problems navigating the public transport system.

Only people with wet macular degeneration are suitable candidates for treatment. A method of treating AMD became available in 2007, uses drugs that act by inhibiting the formation of new vessels (neovascularization) and subsequent complications. Patients who receive the therapy have a 90 per cent chance of retaining their existing visual acuity, and a significant percentage of them actually experience an improvement. The drug is injected into the vitreous body.

The treatment is very costly in terms of both the drug itself and in healthcare resources. Repeated injections and frequent check-ups are required. The regimen usually continues for a number of years, though with fewer and fewer injections as time goes on. The treatment offers major health economic benefits. Preservation

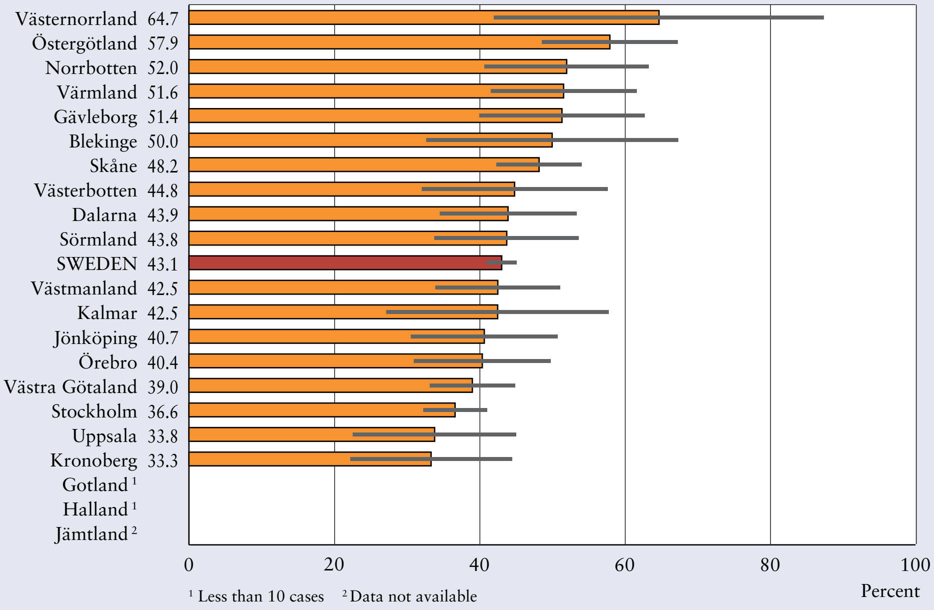


Figure 169 Percentage of patients (eyes) who could read at least one more row on the ETDRS eye chart one year after treatment for macular degeneration, 2010–2011.

Source: Swedish Makula Register

of visual acuity is treasured by patients, enables independent living and reduces the need for assistance.

Data concerning care of patients with AMD are entered in the Swedish Macula Register. Thirty-four of 36 clinics in Sweden that provide the treatment report to the register. Most clinics report initial, follow-up and treatment appointment alike. Outcomes are not monitored among patients for whom treatment has been terminated prior to 12-month follow-up. The data in the register are based on the total number of eyes treated, given that a patient may require therapy in one or both eyes. Approximately 2 500 eyes are treated for the first time each year. Because AMD is age-related, a substantial majority of patients are women. The register has an estimated participation rate of 75 per cent with respect to injections. The comparison only includes clinics that use the ETDRS eye chart.

The indicator shows the percentage of patients (eyes) able to read at least one additional row on the chart 12 months after commencement of treatment. The comparison is based on 2 167 patients (eyes) monitored in 2010–2011. The proportion of eyes for which that level of improvement was achieved totalled 43 per cent at the national level, ranging from just over 33 per cent to almost 65 per cent among the various counties.

It might be that not enough patients are being monitored at each clinic for the results to be regarded as reliable. The variation between the individual counties may also be due to the case mix of patients who are offered treatment, as well as the indications on which clinics base their decision to continue treatment. Further, patients may have been excluded from the presentation because their visual acuity had deteriorated to the point that treatment was regarded as no longer meaningful and was thus discontinued before a year had passed.

The number of patients who receive treatment varies between counties. This can be due to different participation rates among clinics or the fact that some counties have a larger percentage of elderly inhabitants and therefore more patients diagnosed with AMD. The accessibility of care and how liberally it is provided may also lead to differences from one county to the next.

All in all, the new treatment method has lived up to expectations, enabling a larger percentage of patients to preserve their visual acuity and even achieve improvement.

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Quality and Efficiency in Swedish Health Care

This is the seventh report in a series called *Quality and Efficiency in Swedish Healthcare – Regional Comparisons*. In this series, health care quality and efficiency in the 21 Swedish health care regions is compared, by using a set of national performance indicators. The first report was published in 2006.

One purpose of the comparisons is to inform and stimulate the public debate on health care quality and efficiency. A second purpose is to stimulate and support local and regional efforts to improve health care services, both in terms of clinical quality and medical outcomes, and in terms of patient experience and efficient use of resources.

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