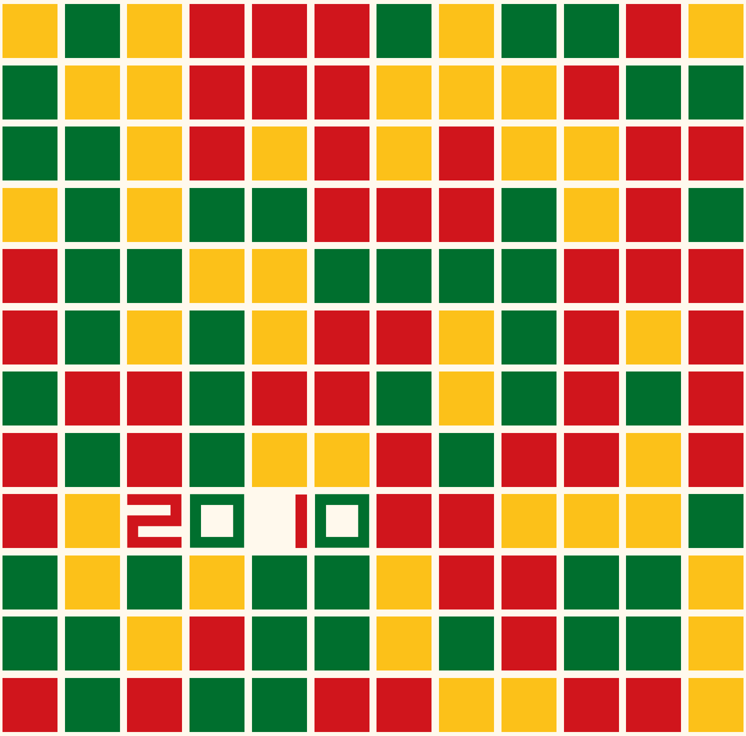
Quality and Efficiency in Swedish Health Care

Regional Comparisons

2010



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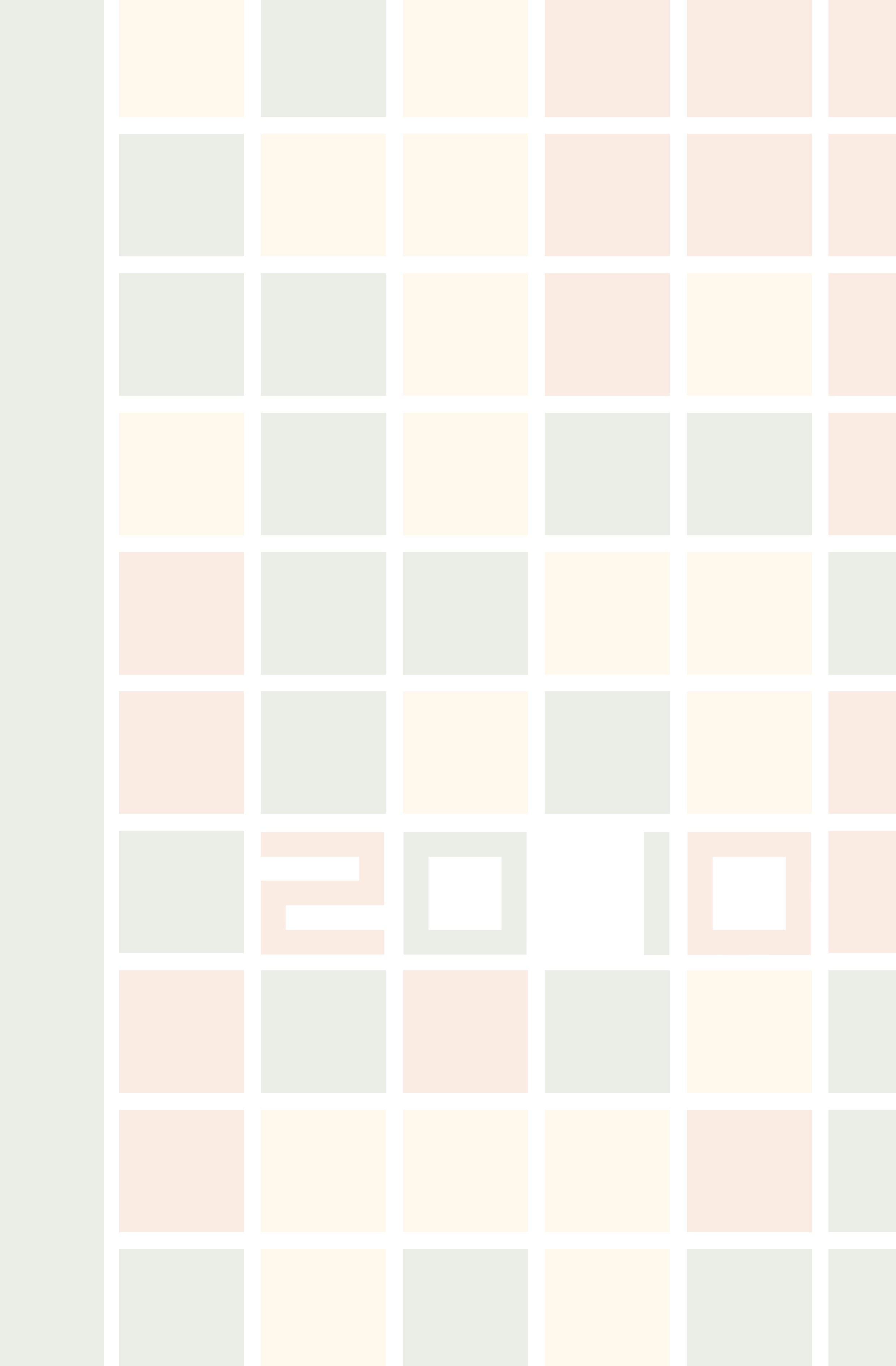
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Quality and Efficiency in Swedish Health Care

Regional Comparisons 2010

Quality and Efficiency in Swedish
Health Care – Regional Comparisons 2010

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Foreword

This is the fifth report of regional comparisons for 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 regions, although hospital data are frequently presented.

The steering committee for the *Regional Comparisons 2010* project consisted of Roger Molin, Agneta Rönn (through June) and Stefan Ackerby (as of August) from the Swedish Association of Local Authorities and Regions, as well as Mona Heurgren and Anders Åberg from the Swedish National Board of Health and Welfare.

The members of the joint task force were Max Köster, Behzad Koucheki, Birgitta Lindelius and Rickard Ljung from the Swedish National Board of Health and Welfare, as well as Thomas Fröjd, Göran Garellick, Soffia Gudbjörnsdottir, Bodil Klintberg, Martin Lindblom, Sofia Tullberg and Katarina Wiberg Hedman from the Swedish National Board of Health and Welfare and also Fredrik Westander, a consultant.

A number of people from both organisations contributed data for the report and its appendices: Charlotte Björkenstam (Cause of Death Register), Tsega Muzollo, Karin Gottvall and Olof Stephansson (Medical Birth Register), Emma Björkenstam (National Patient Register), Pinelopi Lundqvist, Johan Fastbom and Helena Schiöler (Prescribed Drug Register), Staffan Khan (Cancer Registry), Mats Talbäck (analysis of case mix) and Henrik Passmark (comparisons of participation rates) from the Swedish National Board of Health and Welfare, as well as Helene Ellström and Berlith Persson (Waiting Times in Health Care), Erik Sätterström (Population and Patient Survey), Åke Karlsson and Leif Lundstedt (the Swedish Case Costing Database) from the Swedish Association of Local Authorities and Regions.

The effort was conducted in dialogue with contacts from all county councils and a reference group of county council directors.

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 to the report.

Lars-Erik Holm
Director-General, Swedish National
Board of Health and Welfare

Håkan Sörman
Executive Director, Swedish Association
of Local Authorities and Regions

Summary

This is the fifth report in a series entitled *Quality and Efficiency in Swedish Health Care – Regional Comparisons*. The report covers 134 indicators, the number of which has steadily grown over the years. Some of the indicators are accompanied by data that reflect changes over time, which brings improvements or degradations until sharper focus.

The report covers many different areas of health care. The results for each of the indicators appear in diagrams that rank the various regions. No weighted ranking based on overall quality and efficiency is presented. In interpreting the results, the assessments of data reliability and other considerations discussed in connection with the diagrams should be used. The results point to questions that need to be addressed and evaluated at the local level.

Any attempt to provide a comprehensive overview of quality and efficiency in the Swedish healthcare system based solely on the report's indicators is bound to fail. Nevertheless, this summary attempts to underscore some of the most important results.

One general observation is that nationwide results, as well as those of most regions, have improved for most indicators since the previous measurement period. The compilation at the end of the report, which contains arrows that indicate improvements and degradations, clearly illustrates that observation.

Less frequent and more appropriate prescription of antibiotics

All regions are now prescribing antibiotics less often (Indicator 125), although many of them have a long way to go before meeting the Swedish Strategic Programme Against Antibiotic Resistance (Strama) target of no more than 250 prescriptions per 1 000 inhabitants. Women are still prescribed antibiotics at a considerably higher rate than men. The percentage of children who are prescribed penicillin V, the first-line treatment for respiratory infection, has risen (Indicator 126). In a number of regions, the increase since 2006 is quite evident. Even greater improvements were found when it comes to the percentage of women who are prescribed quinolones for urinary tract infection (Indicator 127). The prescription rate has fallen by almost 10 percentage points to approximately 15 per cent since 2006. While there are modest differences among the regions, all of them are significantly above the Strama target of no more than 10 per cent.

Myocardial infarction and stroke care – proper treatment means good results

Care of myocardial infarction patients continues to improve. The number of all infarctions, as well as ST-segment elevation myocardial infarctions (STEMIs), is steadily declining. Deaths within 28 days after infarction (Indicators 64, 65) among hospitalised patients have gradually fallen from 30 per cent 20 years ago to the current rate of approximately 13 per cent. No signs that the trend is about to level out have been observed.

The percentage of patients who receive the kind of treatment recommended by national guidelines (Indicators 67, 68, 69) has risen considerably in recent years. Although the analysis – which is based on the SWEDEHEART Register – does not include all infarction patients, the results demonstrate the degree to which quality monitoring can affect clinical practice and performance. All three indicators are part of the quality index for myocardial infarction care that SWEDEHEART publishes each year.

Stroke care exhibits a similar, albeit less pronounced, trend. The number of stroke cases has decreased somewhat. Fatality within 28 days after hospitalisation for stroke is down, while it has remained constant when deaths of non-hospitalised patients are included (Indicators 75, 76).

A number of the process indicators are improving. For instance, the percentage of patients cared for at stroke units has steadily increased. The differences among regions have narrowed. The number of stroke patients in the target group for thrombolytic therapy who received the treatment has increased from a low level (Indicator 78). According to a report of the National Stroke Register, the percentage of stroke patients receiving lipid lowering drugs has risen considerably, while the percentage of patients who are given antihypertensive therapy has remained high.

Anticoagulant therapy is recommended for stroke patients with atrial fibrillation for the prevention of relapse (Indicator 79). The percentage of patients who are given the therapy is up to almost 64 per cent, but there are still substantial differences among the regions.

Drug consumption among the elderly

Three indicators reflect drug consumption by the elderly. Elderly patients who consume ten or more drugs (Indicator 124) declined by more than 5 percentage points to under 11 per cent between 2006 and 2009. The differences among regions have narrowed. The percentage of elderly patients who consume risky combinations of drugs (Indicator 123) also decreased during the period, though not as much. The same is true of elderly patients consuming three or more drugs (Indicator 97). Although the calculation method varied from year to year, the conclusion that the percentage of elderly patients consuming ten or more drugs has substantially declined appears to be statistically reliable.

Drug therapy for multiple sclerosis and rheumatoid arthritis

Multiple sclerosis and rheumatoid arthritis are chronic diseases that generate major socioeconomic costs in addition to physical suffering. Effective drug therapy is available. Some of the drugs are associated with high costs, which is one reason they are so widely discussed. Prescription of biologic drugs for rheumatoid arthritis (Indicator 50) varies substantially from region to region, as is the case with immunomodulators for relapsing-remitting and secondary progressive multiple sclerosis (Indicators 133, 134). The lack of data about the occurrence of multiple sclerosis and rheumatoid arthritis in the various regions, as well as the fact that arthritis drugs are chosen on the basis of individual needs and cannot easily be translated to recommendations at the national level, makes it more difficult to interpret regional differences.

Mental illness

The indicators are largely taken from a comprehensive report by the Swedish National Board of Health and Welfare entitled *Open Comparisons and Assessment 2010. Psychiatric Care*. A number of the indicators also reflect treatment of patients with mental illness outside specialised psychiatric care. Psychiatric patients are hospitalised for medical care to a significantly higher degree than the rest of the population (Indicator 99). The percentage of elderly who are prescribed the recommended soporific is low and should be amenable to improvement (indicator 98). Among schizophrenia patients, 16–17 per cent are re-hospitalised within 28 days. A National Quality Register for Psychiatry and quality indicators based on Swedish National Board of Health and Welfare health registers is being developed on a parallel basis.

Advances and inadequacies in diabetes care

The indicators for diabetes care are good reflections of the new national guidelines. Notwithstanding improvements over time and greater use of drug therapy, the indicators suggest that diabetes patients reach their treatment targets less often than ought to be the case. While more and more patients with type 2 diabetes attain desired systolic blood pressure levels every year, the percentage remains too low (Indicator 58). Four out of ten have hypertension and are at increased risk of cardiovascular disease. Although a greater percentage of patients are prescribed lipid lowering drugs, only around 40 per cent reach the LDL cholesterol target. A new indicator measures the consumption of Metformin (Glucophage) among diabetes patients with kidney disease (Indicator 63). Because the drug carries risks, the trend should be followed (Indicator 63).

Undertreatment that requires attention

A number of indicators reflect considerable undertreatment and require special attention. One such indicator is therapy for women with post-fracture osteoporosis (Indicator 48). More frequent treatment would lower the risk of future fracture and generate major health benefits at low cost. The percentage of femur fracture patients who receive arthroplasty has steadily increased (Indicator 75), but additional improvement is needed. Use of the preferred mode of vascular access during dialysis has increased somewhat over the past year (Indicator 85), but representatives of quality registers indicate that many regions need to use ateriovenous fistula or graft even more often.

Patient-reported outcomes

Interest in patient-reported outcomes is growing both in Sweden and around the world. This report includes a number of such indicators. Hip arthroplasty patients rated health benefits one year after surgery (Indicator 44) – virtually all hospitals contributed data. Two indicators measure patient-reported health benefits from therapy for rheumatoid arthritis (Indicators 51, 52). Patients who underwent hysterectomy or uterine prolapse surgery assessed whether there were any post-surgical complications or unexpected events (Indicators 35, 36). Two other such indicators are patient-reported outcome of septoplasty (Indicator 114) and patient assessment of post-stroke activities of daily living (Indicator 81). The inclusion of additional patient-reported outcome measures in future *Regional Comparisons* would be highly desirable.

Adjustment for case mix among myocardial infarction patients

Important to keep in mind when comparing quality, particularly among hospitals, is that disease may vary in severity even though the same diagnoses are made. The case mixes of various hospitals may vary with respect to severity of disease.

The report describes an effort to develop methods that will adjust for case mix when analysing fatality rates after myocardial infarction. The basic objective is that quality comparisons reflect care provider activities and processes rather than the characteristics of individual patients. Adjusting for age only is generally insufficient.

The indicator of case fatality rate within 28 days after myocardial infarction is adjusted for educational level and other previous disease (starting on page 163), both at the regional and hospital level. The impact of the adjustment on the relative rankings of regions and hospitals is compared with the impact when the only adjustment is for age.

One or two regions and a few hospitals showed substantial differences between the two approaches, but the differences were modest in most cases. The analysis did not include certain fundamental variables, such as type of infarction and the time between the onset of symptoms and arrival at hospital, that affect fatality.

Greater understanding of the role played by case mix requires additional methodological development and comparison of various methods. A number of national quality registers are pursuing such efforts, both for myocardial infarction and for other diseases. The presentation in this report is but one step in that methodological development. No conclusions are drawn about the accuracy of the adjusted data.

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MORTALITY, STATE OF HEALTH, ETC.

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MUSCULOSKELETAL DISEASES

DIABETES CARE

🔴 New indicator 2010 🔵 Indicator changed from 2009

CARDIAC CARE

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🔴 New indicator 2010 🔵 Indicator changed from 2009

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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 regions and counties of Sweden. This, the fifth such report, again compares medical outcomes, patient experience, availability and costs. *Regional Comparisons* is based on available national healthcare statistics. The Swedish National Board of Health and Welfare (NBHW) and the Swedish Association of Local Authorities and Regions (SALAR) are jointly responsible for the project.

The first purpose 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 the public and political discussion about health care, *Regional Comparisons* improves the prospects for demanding accountability.

The second purpose is to promote healthcare management and control. Satisfactory and unsatisfactory outcomes, as well as clear inadequacies, are identified in a more structured manner. The comparisons spur the regions to perform in-depth analyses and institute improvements, as well as help them share information. The regions also obtain a broader knowledge base from which to monitor and control their own activities.

The active use of healthcare data in open published comparisons builds pressure for them to be up-to-date, nationwide and correct. The need for both new and improved data collection is highlighted and is particularly important, given that inadequate data availability and quality significantly limit both comparisons of quality and interpretation of their results.

Regional Comparisons is one of several tools that the NBHW and SALAR make available to the general public, media, patient associations, county councils, care providers and other organisations. NBHW and SALAR also conduct a number of projects that link to the regional comparisons of healthcare efficiency and quality based on specific tasks and responsibilities.

The Government decided in June 2009 to formulate a national strategy for quality development by means of regional comparisons. A national coordination team was formed to frame the strategy.

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.

Format of the report

The report has not changed significantly from previous years. The introductory summary of the results concentrates on trends during the five years since the first report was published.

The next section, *Indicators and Sources of Data*, describes the various indicators and how they have changed with respect to previous reports. A key issue is how the indicators are selected, and how the regions and medical experts interact in making that selection. The section also presents the sources of data for the comparisons.

The section entitled *Reporting Results and Interpreting Comparisons* is important for understanding the comparisons. The section describes both how the results are presented and how they should be interpreted. Among the themes central to this section are questions about the meaning of the ranked diagrams, data quality, statistical uncertainty and other interpretation hurdles. The comments accompanying each indicator provide more detailed, specific information.

The presentation of results begins with *Health Care – General Indicators*. Such indicators reflect broad parameters of the healthcare system. That is followed by a presentation of indicators broken down into 14 disease-specific or treatment-based areas, such as *Gynaecological Care*, *Diabetes Care*, *Cardiac Care* and *Drug Therapy*. Indicators concerning availability and costs are included in each area along with those concerning medical outcomes.

Each indicator is described and the results are shown by means of diagrams accompanied by brief explanations. Hospital data and nationwide trends, sometimes supplementary information as well, are presented for each indicator. Outcomes are discussed in terms of variations among the regions and sexes, as well as target levels or recommendations in any national guidelines that have been established. Reference is sometimes made to comparisons from other countries.

The report concludes with a chart that presents the results for individual regions and the country as a whole, showing whether the current data suggest improvement or deterioration from previous years.

Indicators and Sources of Data

This year's *Regional Comparisons* has more indicators than before, which permits additional types of diseases and aspects of the healthcare system to be examined. Nevertheless, the indicators still do not provide a comprehensive overview of quality and efficiency. Because data about some areas are not readily available, certain key considerations remain insufficiently analysed.

In areas for which data are more fully available, only a selection is included. The 10 cardiac care indicators are among the 45 included in the follow-up report published by the NBHW in spring 2009. The selection has a substantial impact on the results for the cardiac care provided by a particular region.

For the above reasons, the results are not compiled in a total index of regional quality and efficiency. While the ultimate objective is to reflect the entire healthcare system to the extent possible, the indicators and results should be regarded separately.

Although the overall results of the indicators cannot be used to judge the entire healthcare system of a region, they point to vital aspects of their particular area.

The report does not include a specific area of indicators about elderly or dental care. A separate collaborative report of the SALAR and NBHW contains local and regional comparisons concerning elderly care.

INDICATOR SETS

General Indicators

Mortality, State of Health, etc.
Confidence and Patient Experience
Availability
Costs

Indicators by Area

Pregnancy, Childbirth and Neonatal Care
Gynaecological Care
Musculoskeletal Diseases
Diabetes Care
Cardiac Care
Stroke Care
Kidney Care
Cancer Care
Psychiatric Care
Surgery
Intensive Care
Drug Therapy
Other Care

Although a few broad indicators – such as life expectancy and self-rated health status – are included again this year, *Regional Comparisons* is not strictly concerned with public health care at this point. The Swedish National Institute of Public Health, SALAR and NBHW all publish separate follow-up reports and comparisons of public health care.

The indicators – breakdown and changes

This year's report contains 134 indicators, as opposed to 124 in 2009. The indicators reflect various dimensions of quality and efficiency: medical outcomes, availability, patient experience and costs. The spotlight is on medical outcomes. The first set of indicators concern the healthcare system in general. Subsequent indicators cover types of disease or treatment. See the chart of indicators at the end of the report.

Last year's report introduced the concept of breaking the indicators down by type of disease. Regional representatives have been pleased with the approach. Combining indicators that reflect different healthcare dimensions for a particular patient population or type of disease offers clear advantages. Follow-up at the local level has a natural tendency to simultaneously look at the costs, medical quality and availability of gynaecological or stroke care. Such a breakdown more clearly relates to practical administration and monitoring of health care at the regional level.

Process for selecting the indicators

Proposed indicators are obtained primarily from representatives of quality registers and ongoing efforts at the NBHW, particularly the guidelines for cancer, cardiac, stroke, diabetes and psychiatric care that have been published in recent years.

The working group for the report also generated their own indicators. In addition, they coordinated with the *Good Care Quality Framework* that the NBHW is developing.

Regional and healthcare experts discussed the indicators and results both before and after publication of the report. Criticism often caused indicators to be modified or deleted. Regional representatives played a key role in conversations about the indicators and in passing on the views of administrators and county councils.

The availability of reliable, relevant data had a major impact on the selection of indicators. Some of the comparisons suffer from such severe quality problems that the only thing they demonstrate is change over time. Others are published for the sole purpose of illustrating the lack of data concerning important areas. Refer to the individual indicators for further discussion of data quality.

The report uses some indicators that meet these criteria only partially. Provisos concerning data quality and other interpretation problems are discussed in the comments accompanying the indicator involved.

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. Outcome measures reflect how individual patients or the general population fared. A number of them are based on *patient reported outcome measures* (PROMs), which are attracting growing interest in Sweden and around the world.

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 patients and the general population evaluate contact with, and treatment by, health practitioners – including their confidence in the system. Patient assessments of the results of specific treatments are presented under the related group of diseases.

The availability indicators are time-related and measure fulfilment of the national care guarantee. Other aspects of availability – such as geographic, language or financial barriers – are not covered. There are several different kinds of cost and resource utilisation indicators: cost per inhabitant, per admissions and per equivalent treatment options. Cost indicators are most useful when related to other results.

WHAT IS AN INDICATOR?

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

- **Quantifiable and available.** The indicator should be quantifiable, while data should be available at the national level and reportable on a regular basis.
- **Generally accepted and valid.** The 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.** The indicator should involve substantial volumes, costs, considerations or other issues.
- **Amenable to interpretation.** The indicator should be amenable to an evaluative interpretation – whether a high or low value is good or bad should be defined.
- **Capable of being influenced.** It should be possible for the regions and healthcare system to influence their results.
- **Outcome and process.** Both outcome and process measures may be used. Process measures should concern healthcare methods deemed to have a substantial impact on outcomes for the patient.

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

Sources of data

The report proceeds from a large number of data sources. Some of them are briefly described along with the results.

Medical quality indicators are based primarily on NBHW registers and national quality registers. Refer to www.socialstyrelsen.se and www.kvalitetsregister.se for information about these registers.

The report used the telephone healthcare survey (www.vardbarometern.nu) and national patient survey (www.skl.se/nationellpatientenkat) of SALAR 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).

Cost data per inhabitant, which were taken from the financial and administrative statistics of SALAR, were also used along with DRG grouping of the Patient Register to present cost per care admission. Finally, the Swedish Case Costing Database of SALAR were used to obtain the costs incurred by hospital for specific treatment methods. Refer to www.skl.se for additional information about financial statistics.

NBHW registers and national quality registers contain data about unique individuals and care events. Reporting is mandatory to NBHW registers and voluntary to the national quality registers. Sources of data about costs, availability and patient experience are not individual-based in the same sense. The Case Costing Database reflects contacts with the healthcare system but does not contain personal identity numbers.

Reporting results 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 purpose of 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 unwanted variations in health care. Whether the static or signals predominate depends on how the presentation is structured, as well as the reader's knowledge and ability to handle the information.

Regional Comparisons presents its information in a descriptive manner. The comments on the comparisons support readers in interpreting the results. The causes of the results are not analysed, and no definitive conclusions are drawn about their consequences.

Discerning interpretation of healthcare data requires general knowledge about the subject, time for analysis and in-depth study – frequently familiarity with local conditions as well. Regional and healthcare representatives are in the best position to interpret and evaluate their own results. 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 sign, 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 offer signals for further discussion and nothing more.

How are the indicators presented?

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

- Ranked regional comparisons
- Hospital data by region
- National trends over time

The report concludes with a chart of results for all regions and indicators. See below for the colour coding of the results.

Development over time: Many indicators show results per region 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: Gender-related data have been presented when available. Gender comparisons are sometimes shown at the regional level. The rule of thumb for medical indicators is to present gender-related data, but there are not always enough cases to permit such an approach. The results are also broken down by socioeconomic group for some indicators.

Local authority or health centre level: A number of indicators are highly relevant at the local authority or health centre level, but such a breakdown is beyond the scope of this report.

Selection of time period: Current data are always preferable and the most germane. How the healthcare system functioned 5–10 years ago is of little interest when it comes to quality improvements. Indicators should be designed such that improvements are detected quickly. Favourable results generated by changes in a hospital's routines should show up clearly instead of being diluted by previous data.

Data from 2009 are used when available and useful, and some indicators even include 2010 data. 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 insufficient statistical reliability and random fluctuations from year to year. In other words, the benefits of up-to-dateness and accuracy 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 regional 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 regions appear in descending order. The national average is also presented in a separate colour.

Generally speaking, the regions at the top of the diagram have shown the best results. 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 regions are ranked even when data quality is poorer, differences between them are small or statistical unreliability is large.

Even when ranking of the regions is easily justified (death, complications from health care, etc.), certain factors must be taken into consideration. When outcome measures are presented, differences between the health status of various populations or the case mixes of various hospitals is one such factor. The populations of the regions 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.

The report identifies regional variations in results as measured by a series of quality indicators. The variations may be due to superior organisation and administration of health care by certain regions. Such observations can serve as the basis for improvement efforts.

Variations may also stem from differences in terms of population health status or case mix, not to mention random fluctuations. To illustrate the first dynamic, examples of adjustments for case mix are presented. Adjusted case fatality rate after myocardial infarction is discussed in a separate section of cardiac care beyond the ordinary description of results. The purpose is to examine the impact of the adjustment while highlighting the methodological development that is under way. The issue is largely relevant for all outcome measures.

The confidence intervals that appear in the diagrams address the impact of random fluctuations on results. The intervals are shown for most indicators at both the regional and hospital level.

Notwithstanding the above provisos, there are good arguments for consistently ranking the regions. Generally speaking, regions 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 it.

When national guidelines or other recommendations provide a basis for evaluation, the description of the indicators examines whether the overall results satisfy them. The national guidelines do not specify formal targets. Any targets that have been set by organisations specialising in the area are mentioned. The only targets set as a matter of public policy are the time limits in the care guarantee.

Some of the indicators discuss how well Sweden's results stack up against those of other countries. Such juxtapositions were not feasible on a systematic basis, given that international comparison data on healthcare quality are generally lacking or unreliable.

Presenting data for hospitals

Data for a number of the indicators are presented at the hospital level in connection with the regional comparisons. The purpose is to highlight major variations and show the contributions of hospitals to regional 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 regional comparisons, 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 region 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 regional comparisons. Confidence intervals are specified to emphasise the uncertainty associated with the possibility that only a few cases are included. The hospitals are broken down in the same way as in the Patient Register or the quality register under consideration. Beyond age standardisation in line with the regional comparison, the data are normally not adjusted for case mix.

The primary purpose of *Regional Comparisons* is to present healthcare results at the regional level. A more thorough model for comparing hospitals would require additional development 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.

National average is not a yardstick

The diagrams often rank the regions 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 regional results. A region that performs far below average may still be doing well. The most important conclusion in such cases is that the results for all regions are favourable. The opposite is true as well. If the national average is unfavourable relative to individual Swedish hospitals, other countries or potential performance, a region may perform poorly and still end up at the top of the diagram.

INTERPRETING COMPARISONS AND RESULTS

- The comparisons are to serve as the basis for improvement, and they do not suffice in themselves for evaluating a region's results in a specific area with respect to what is best or worst.
- The regions are not ranked in an absolute manner, but as a signal that results should be analysed further. Familiarity with local conditions is a must if results are to be evaluated or opportunities for improvement identified.
- All comparisons are relative. Neither the national average nor an outcome that appears at the top of a diagram is necessarily good. A more absolute assessment may find that all or no regions exhibit satisfactory results.
- While clear targets have been set for certain indicators, the more common case is that the potential or desirable level remains largely undefined.
- Although results with wide confidence intervals are less certain, this is not a reason to avoid in-depth analyses of the underlying factors, as well as regional differences.
- The colour-coded model is part of this signal system. Because it offers a simplified view, it requires the reader to carefully analyse and interpret the results.
- The comparisons in this report are neither intended nor designed to support a patient's choice of care provider.

If one or more large regions 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 regions in order to identify potential for improvement.

How representative are the quality registers?

Any use of 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 for the entire patient population in question. Regional variations in the percentage of patients reported may affect the final results. If unreported patients are receiving other types of care or other results, the reported data will turn out to be biased.

If the report accepts a relatively large variation in the participation rate for a particular indicator, it is mentioned as a source of uncertainty. In other cases it is impossible to know what percentage of patients has been reported, given the lack of a comprehensive register to compare with. The normal comparison is between the quality register and the Patient Register, the broadest source of individual data about contact with both inpatient and outpatient care. But reporting of diagnoses and care events to the Patient Register is not fully perfect.

Statistical considerations and chance

The comments about the individual diagrams often mention regional differences. Thus, the following information should be considered when examining the diagrams.

For purely statistical reasons, the smaller regions – such as Gotland, Blekinge, Kronoberg and Jämtland – are more likely to be ranked by chance at one end or the other of the scale than the larger regions. The data for the large regions are more statistically reliable and thereby more stable over time. Thus, if there are few patients or care admissions, a small number of successes or failures will have a particularly heavy impact on the overall results.

Given their size, the Stockholm, Västra Götaland and Skåne regions tend to reflect the national average.

Most of the diagrams show a 95 per cent confidence interval with a black line by the bar of each region. The line specifies the statistical uncertainty associated with the region's reported results. The interval is wider in the case of small regions, for which there are fewer observations and greater latitude for chance. The data required to calculate the confidence interval were unavailable for a few of the indicators.

The purpose of bringing up these statistical considerations is to support the reader in interpreting the comparisons, not to suggest that they have no meaningful information to offer. The successes and failures (death, reoperation, readmission) on which the reported results are based have actually occurred. They cannot be dismissed with reference to chance or statistical uncertainty, but should be examined and evaluated.

Colour scheme specifies relative position and is not a score

A chart at the end of the report compiles all of the results. Regional results for each indicator presented in the diagrams are assigned a colour based on ranking – red for the seven regions at the bottom, green for the seven at the top and yellow for the others.

The purpose of the colour scheme is to offer an initial take on the results of the region in relation to others for the particular indicator. It is not a score. The chart should be regarded as an appendix to the diagrams rather than a guide to interpreting the results.

The advantages and disadvantages of this elementary colour scheme have been discussed on a number of occasions through the years. The objections are obvious. From an objective point of view, a red outcome can be good and a green outcome poor. In other words, green results may also suggest the potential for improvement. A region may be red even though it performs only slightly poorer than the median. Neither statistical uncertainty nor variations in data quality are considered, but all indicators are treated the same way in this respect. Nor is the fact that the indicators would be assigned different weights by a review taken into account.

An appealing change would be to set targets and link them to the colour scheme, but that would require more resources than are currently available and raise a number of basic questions.

FURTHER MATERIAL AND CONTACT PEOPLE

This report, and appendix with description of indicators, can be downloaded in PDF formats from www.skl.se/compare or www.socialstyrelsen.se/publicerat

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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Health Care – General Indicators

This section presents 25 general healthcare indicators in four subsections:

- Mortality, State of Health, etc.
- Confidence and Patient Experience
- Time-related Availability
- Costs

The indicators 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.

A number of changes have been adopted since last year's report. The patient experience indicators that were previously based on the Health Care Survey now obtain their data from the National Patient Survey and Primary Care Survey 2009. Refer to the subsection entitled *Confidence and Patient Experience* for additional information.

Last year's report contained a group of indicators in a subsection entitled *Preventive Health Care*. The subsection does not appear in the current report. While the indicators for influenza vaccination, mammography and cervical cancer screening are objectively important, reliable data were not available. MMR vaccination of children, the only remaining indicator, is presented in another subsection.

Influenza vaccination of the elderly has been reported for a number of years despite significant differences among the regions when it comes to calculating the percentage of the population that is vaccinated. The issue was regarded as important and the indicator is well-established internationally. The H1N1 programme had a major impact on last season's vaccination statistics. Thus, a determination was made that the inclusion of vaccination frequency in this year's *Regional Comparisons* would be a meaningless exercise.

Last year's report contained a table of mammography data, including estimates by the regions concerning the percentage of women who were screened. The source was a questionnaire by the Swedish Cancer Society. SALAR conducted a new survey in 2010, but a number of data problems remain. As a result, no information is presented this year. NBHW is exploring the possibility of setting up an individual mammography register.

While the cervical cancer screening indicator remains important, data from the quality registers previously used were unavailable this year. A new national approach to collecting the data is needed.

MORTALITY, STATE OF HEALTH, 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 2005–2009 was 83.1 for women and 78.9 for men. Thus, the figure has continued to rise somewhat for both sexes. The gender difference narrowed slightly from the previous measurement period but remained just under four years. The gender difference varied more in the municipalities. For both women and men, life expectancy varied no more than two years between the regions. The results are consistent with differences in avoidable deaths from ischaemic heart disease as presented below.

Relative to other countries, life expectancy is high in Sweden. Only men in Iceland, Switzerland, Japan and Australia live longer than those in Sweden. In the case of women, a few southern European countries also report higher figures than Sweden.

Swedes have one of the lowest mortality rates in the world from age 1 up to the age of 60 for women and 75 for men. After those ages, Swedes have relatively high mortality rates. One major reason is that women began to smoke earlier in Sweden than other countries. The smoking 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 declining after having peaked at 6.2 years in the mid-1970s. Men die more often from injuries, accidents, alcoholism, suicide, cardiovascular conditions and other lifestyle-related diseases. Due primarily to breast cancer, women are more likely to die from cancer up to the age of 60.

Well-educated women and men both have higher life expectancies than those with lower level of education.

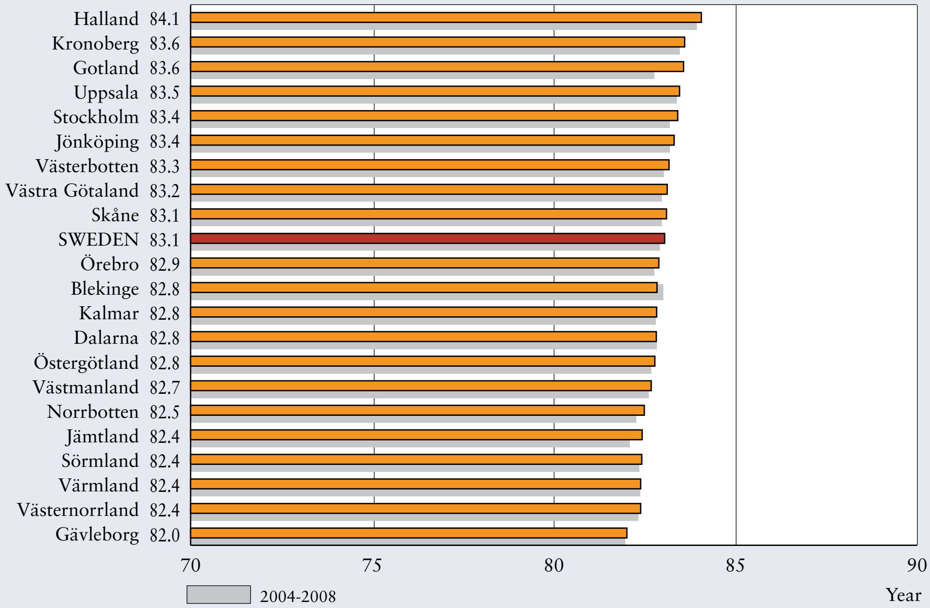


Figure 1
Women

Life expectancy at birth.
Children born in 2005–2009.

Source: Population Statistics, Statistics Sweden

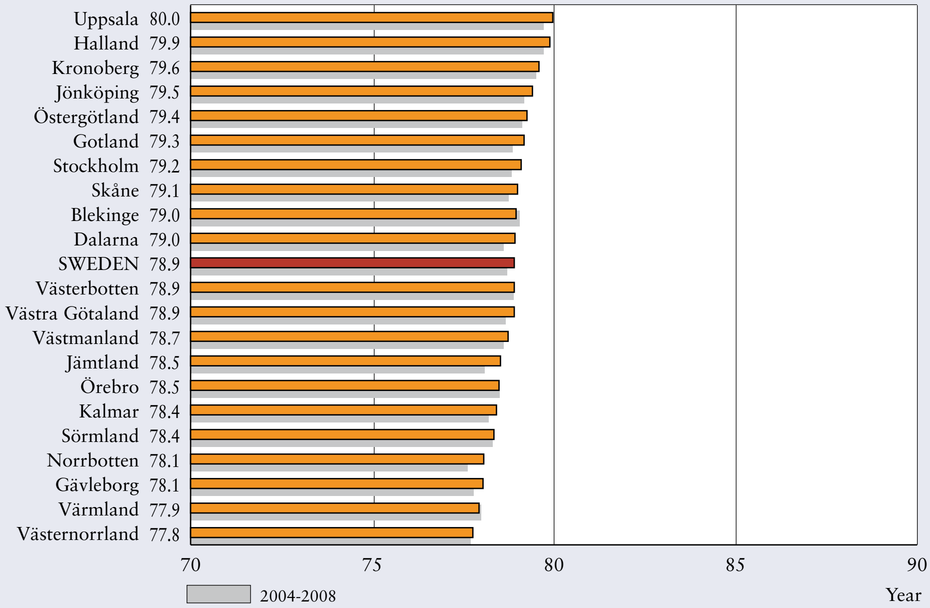


Figure 1
Men

Life expectancy at birth.
Children born in 2005–2009.

Source: Population Statistics, Statistics Sweden

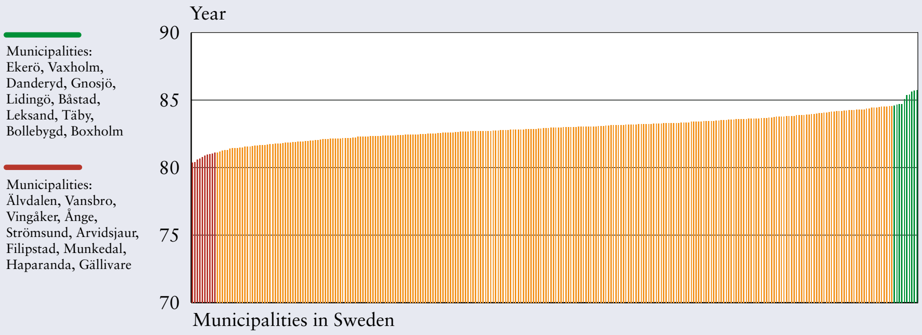


Figure 1A
Women

Life expectancy at birth.
Children born in 2005–2009.

Source: Population Statistics, Statistics Sweden

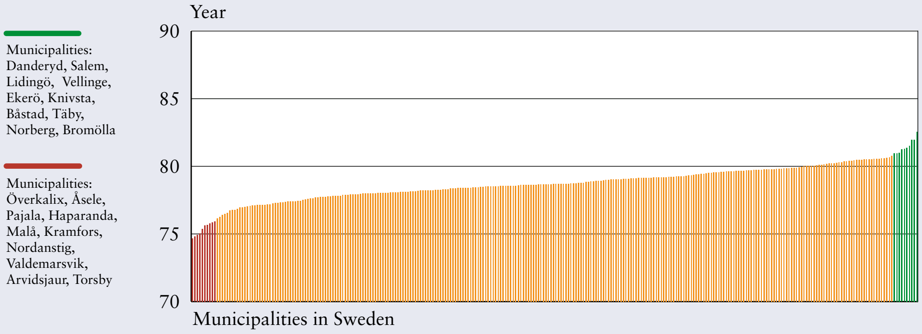


Figure 1A
Men

Life expectancy at birth.
Children born in 2005–2009.

Source: Population Statistics, Statistics Sweden

2 Self-rated health status

Self-rated health status, which is central to monitoring health trends in various populations, has been correlated with mortality in a number of studies. Both the OECD and EU use the indicator to compare different countries. Statistics Sweden and other organisations include the indicator in major demographic surveys.

Health on Equal Terms, an annual survey by the Swedish National Institute of Public Health, has included self-rated health status since 2004. The definition of the indicator is taken from the World Health Organisation and includes physical, psychological and social wellbeing. The question asked is, ”How do you rate your general health state?” The five alternatives range from Very Good to Very Bad. The results for respondents who say Very Good or Good are combined and reported together.

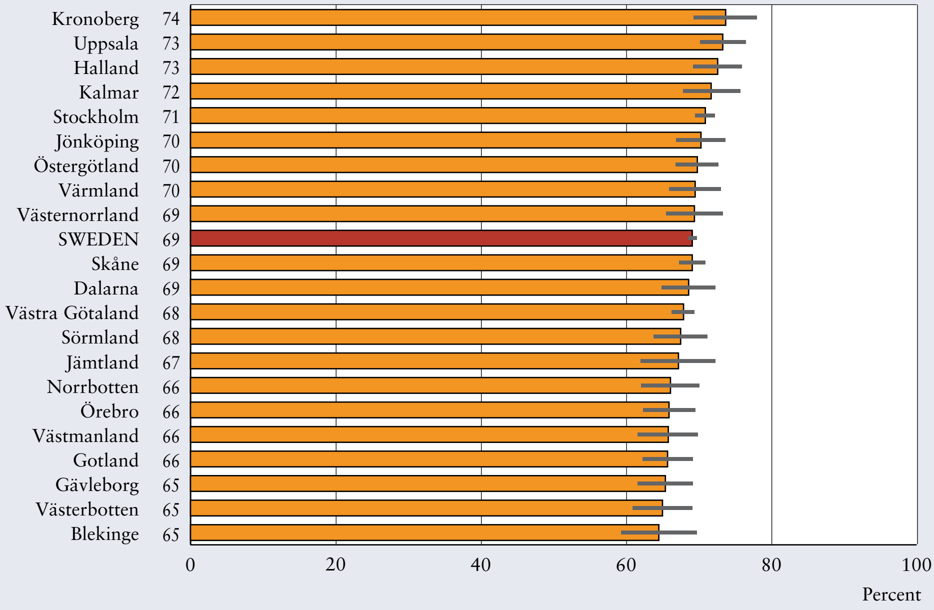


Figure 2
Women

Percentage of the population age 16–84 that rated their general health status as good or very good, 2007–2010. Age-standardised.

Source: Swedish National Institute of Public Health

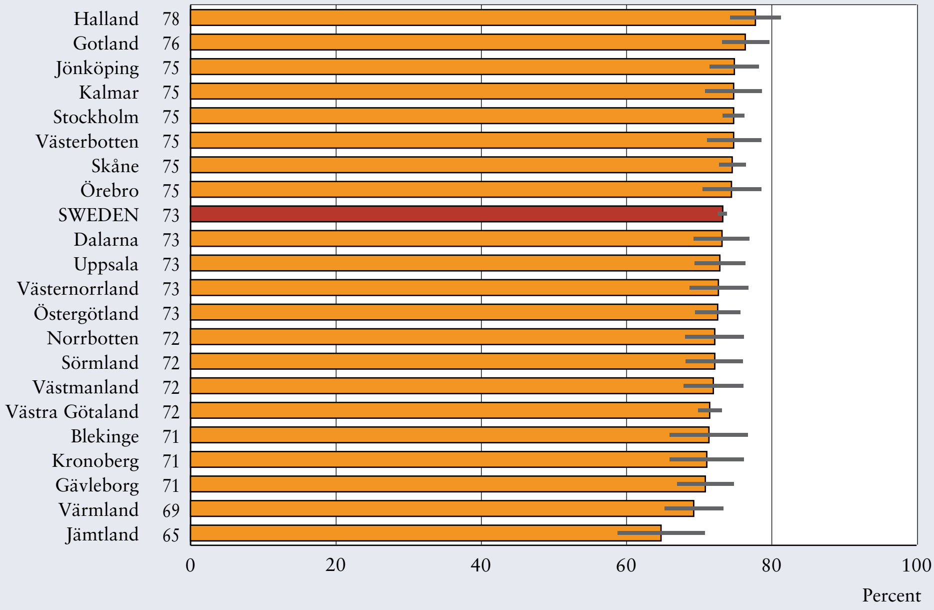


Figure 2
Men

Percentage of the population age 16–84 that rated their general health status as good or very good, 2007–2010. Age-standardised.

Source: Swedish National Institute of Public Health

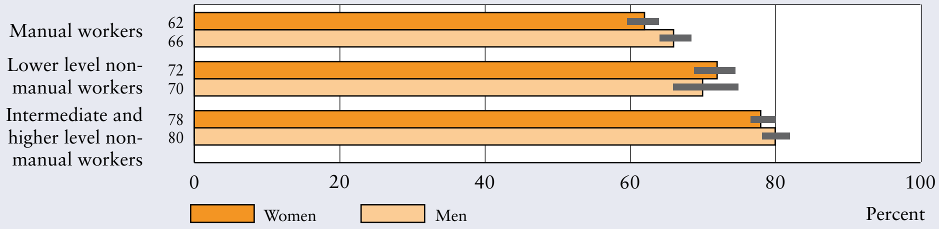


Figure 2A Percentage of the population age 16–84 that rated their general health status as good or very good, 2007–2010. Age-standardised.

Source: Swedish National Institute of Public Health

This report uses self-reported health status as a general indicator of both public health and healthcare needs among the population as a whole. Theoretically speaking, regions whose inhabitants score high on the indicator should have a lower percentage of healthcare consumption. In practice, other factors also impact how often people seek health care.

The data for the indicator combine the results of the Swedish National Institute of Public Health surveys in 2007–2010. A total of 65–74 per cent of women and 65–78 per cent of men rated their health status as high.

3 Self-rated impaired mental wellbeing

Health on Equal Terms, an annual survey by the Swedish National Institute of Public Health, includes 12 questions comprising the survey instrument GHQ12 (General Health Questionnaire). The questions intend to indicate mental well-being and measure mental reactions to strain rather than mental illness. The instrument is focused on interruptions in functioning "normally" rather than life-long characteristics. Many of the regions have used the indicator in their public health surveys for a number of years.

GHQ-12 is a validated international instrument for measuring mental wellbeing. A total score is calculated on the basis of the 12 questions. A dividing line is set for impaired mental wellbeing.

The data for the indicator combine the results of the Swedish National Institute of Public Health surveys in 2007–2010. A higher percentage of women experience impaired mental wellbeing than men. The regional figures vary from 15 to 24 per cent for women and 11 to 17 per cent for men.

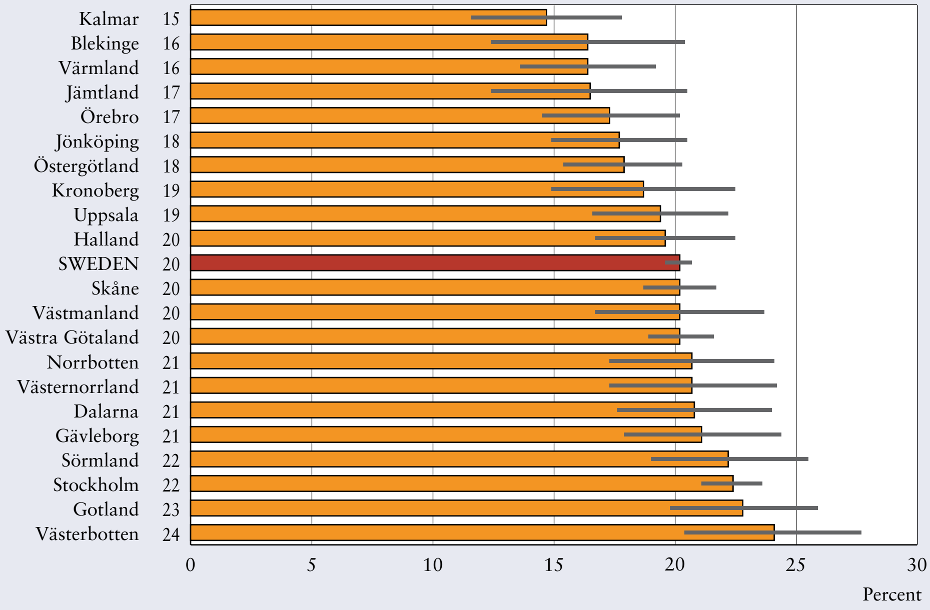


Figure 3
Women

Percentage of the population age 16–84 that rated their mental wellbeing as impaired, 2007–2010. Age-standardised.

Source: Swedish National Institute of Public Health

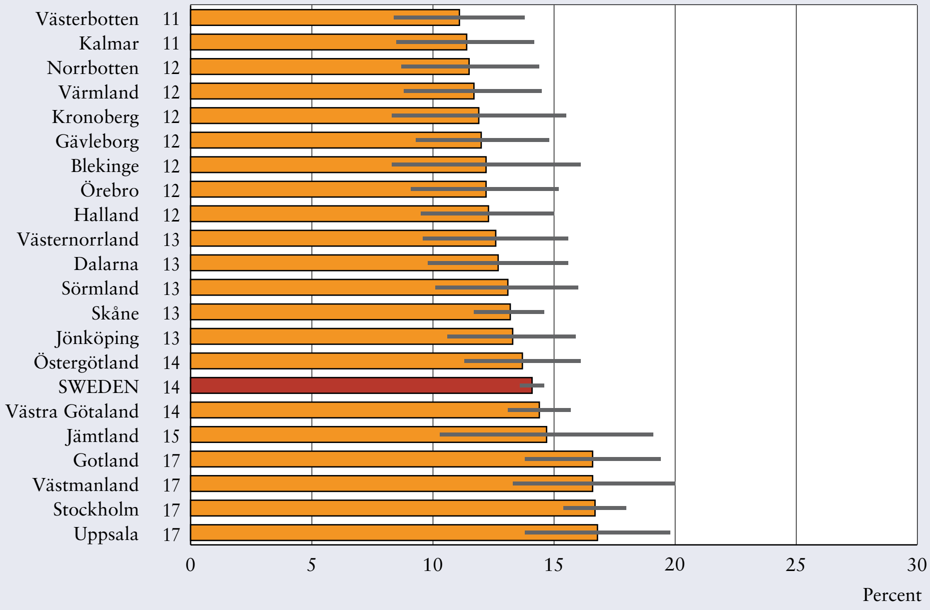


Figure 3
Men

Percentage of the population age 16–84 that rated their mental wellbeing as impaired, 2007–2010. Age-standardised.

Source: Swedish National Institute of Public Health

4 Policy-related avoidable mortality

Since the mid-1980s, 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 was extended to 79-year-olds last year.

The avoidable mortality indicator consists of death from a number of selected diagnoses and causes broken down into two groups, the first of which is presented here. It 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 NBHW monitoring indicators in accordance with *Good Care*.

The actual number of policy-related avoidable deaths for 2005–2008 totalled 14 885, of whom 5 725 were women and 9 160 were men.

Figure 4 shows aggregated regional data 2005–2008 concerning 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 regional differences in the age structure of the population. Lung cancer and motor vehicle accidents accounted for the greatest percentage of deaths measured by this indicator. The results for Gotland should be intepreted carefully due to its small population and hence large random variations.

Avoidable mortality was twice as high among men compared to women. However, the percentage for women rose from the previous measurement period. The region with the lowest avoidable mortality among men was still above the highest percentage for women. The figure for men varied from 40–60 avoidable deaths per 100 000 inhabitants. Despite variations, the result was greater for men in all regions.

5 Healthcare-related avoidable mortality

The second group of avoidable deaths consists of those from diagnoses that were selected because they were deemed possible to affect with various medical interventions by means of early detection and treatment. This report refers to the phenomenon as healthcare-related avoidable mortality. It is one of NBHW monitoring indicators in accordance with *Good Health Care*. Among the included diagnoses are diabetes, appendicitis, stroke, gallstone disease and cervical cancer.

The actual number of healthcare-related avoidable deaths for 2005–2008 totalled 17 540, of whom 7 981 were women and 9 559 were men. Figure 5 presents the number of deaths per 100 000 inhabitants by region and gender.

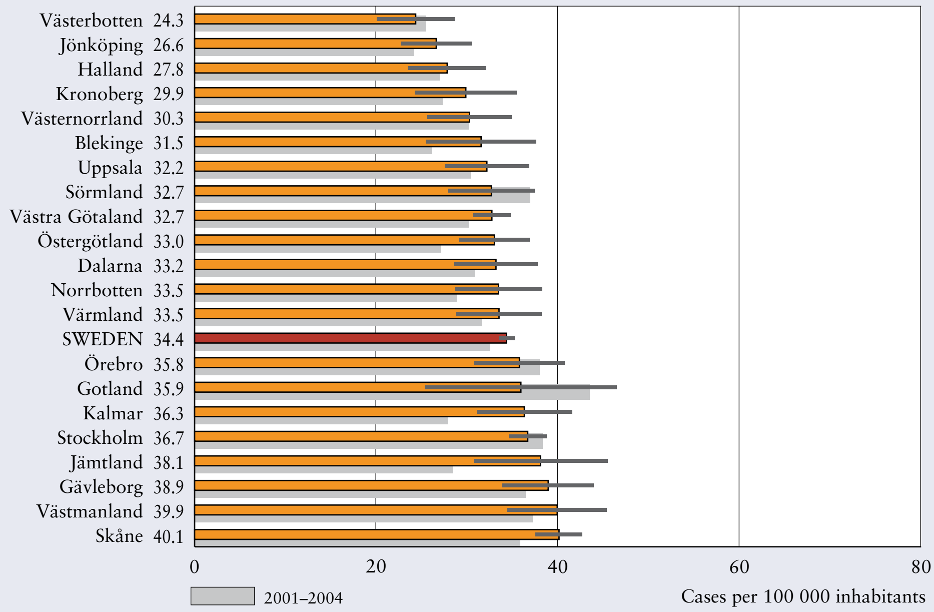


Figure 4
Women

Policy-related avoidable mortality per 100 000 inhabitants age 1–79, 2005–2008. Age-standardised

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

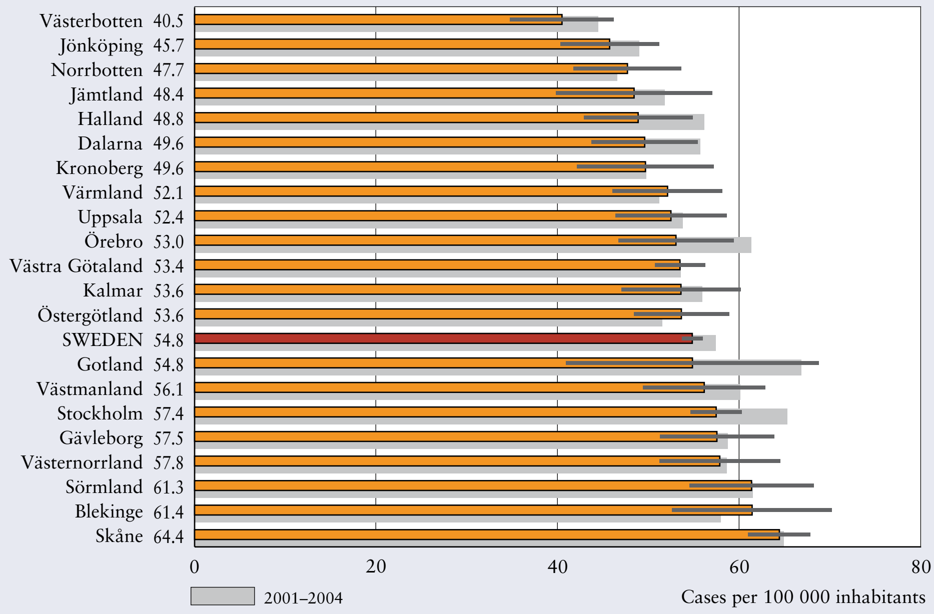


Figure 4
Men

Policy-related avoidable mortality per 100 000 inhabitants age 1–79, 2005–2008. Age-standardised

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

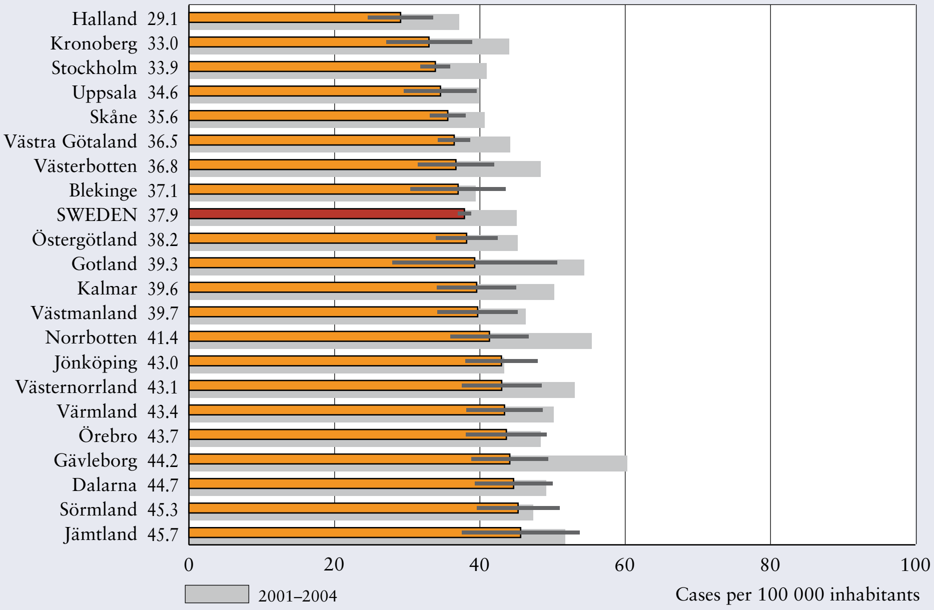


Figure 5
Women

Healthcare-related avoidable mortality per 100 000 inhabitants age 1–79, 2005–2008. Age-standardised.

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

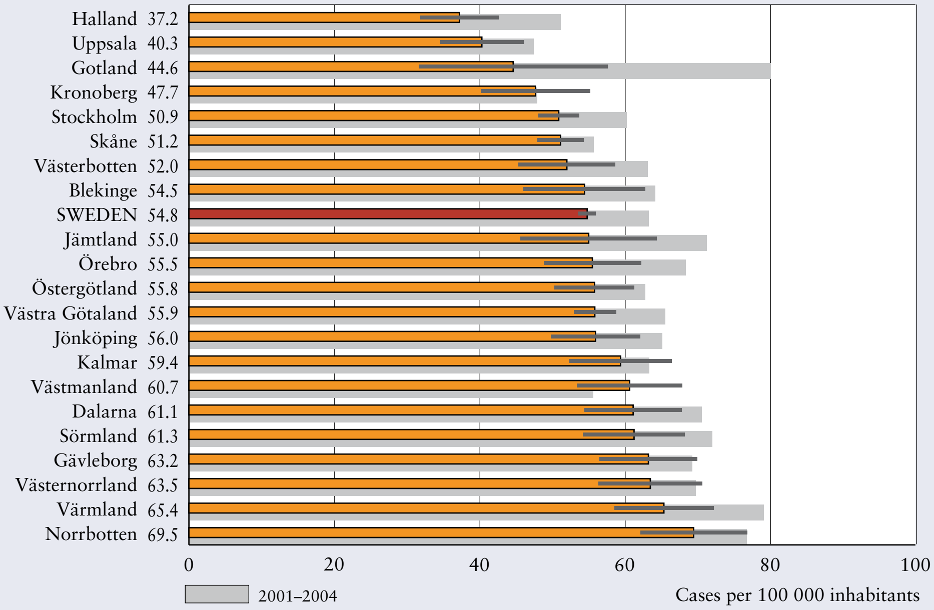


Figure 5
Men

Healthcare-related avoidable mortality per 100 000 inhabitants age 1–79, 2005–2008. Age-standardised.

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

Stroke, diabetes and cervical cancer are the diagnoses that had the greatest impact on healthcare-related avoidable mortality. Regional variations 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 differences varied from region to region.

Partly because diagnostic methods may vary among the regions, 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.

6 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 16 500 Swedes died in 2008 with the diagnosis of ischaemic heart disease. The number represented 180 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 33 per cent from 1997 to 2008 – somewhat more steeply for men than women. Nevertheless, men still die disproportionately from ischaemic heart disease. Despite the decrease, 18 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 4 and 5) 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 6 shows avoidable mortality from ischaemic heart disease, age-standardised per 100 000 inhabitants for each region 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 2007–2008.

The trend diagram indicates that avoidable deaths from ischaemic heart disease in the under-80 age population declined by almost 45 per cent in 1997–2008. Approximately 1 700 women and 4 000 men died from avoidable ischaemic heart disease in 2008, but the regional variations were significant for both sexes in 2007–2008.

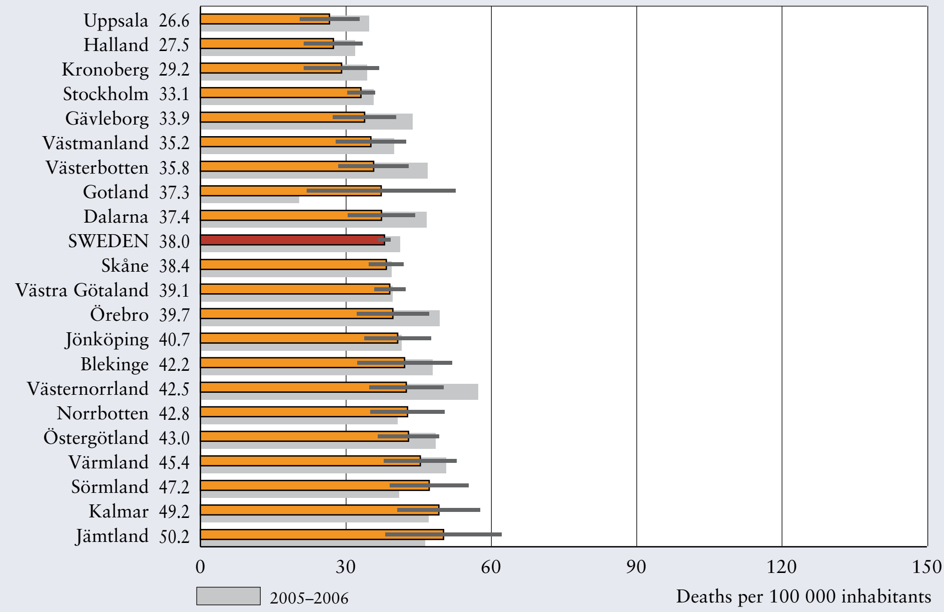


Figure 6
Women

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 1–79, 2007–2008. Age-standardised.

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

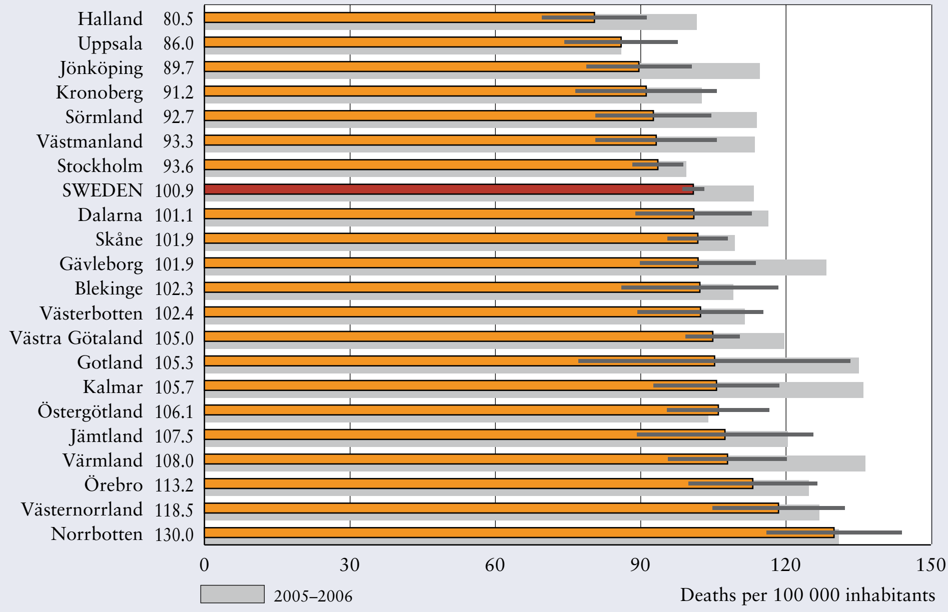


Figure 6
Men

Avoidable deaths from ischaemic heart disease per 100 000 inhabitants age 1–79, 2007–2008. Age-standardised.

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

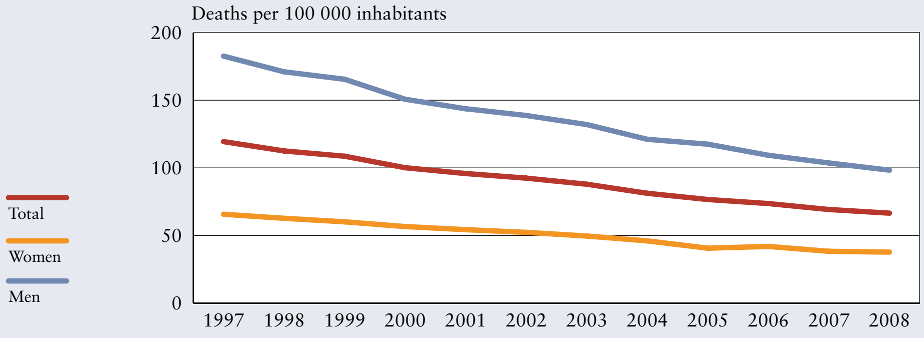


Figure 6
Sweden

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

7 Avoidable hospitalisation

This indicator is based on the assumption that unnecessary hospitalisation can be avoided if patients with the selected conditions receive proper outpatient care. Thus, it sheds light on the performance of preventive, primary and other care. It is one of NBHW monitoring indicators in accordance with *Good Health 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 lung 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. Sweden is currently participating in an OECD project aimed at establishing a version to which all countries can agree.

Figure 7 presents the number of people with avoidable hospitalisation per 100 000 inhabitants in 2009. The actual number was over 100 000, somewhat more men than women. The data are age-standardised. The higher figures for men probably are due to a greater incidence of the major diseases included rather than poorer outpatient care.

The results for 2009 may be compared with those for 2004, which appear in a shaded parallel bar. For the country as a whole, the number of avoidable hospitalisations

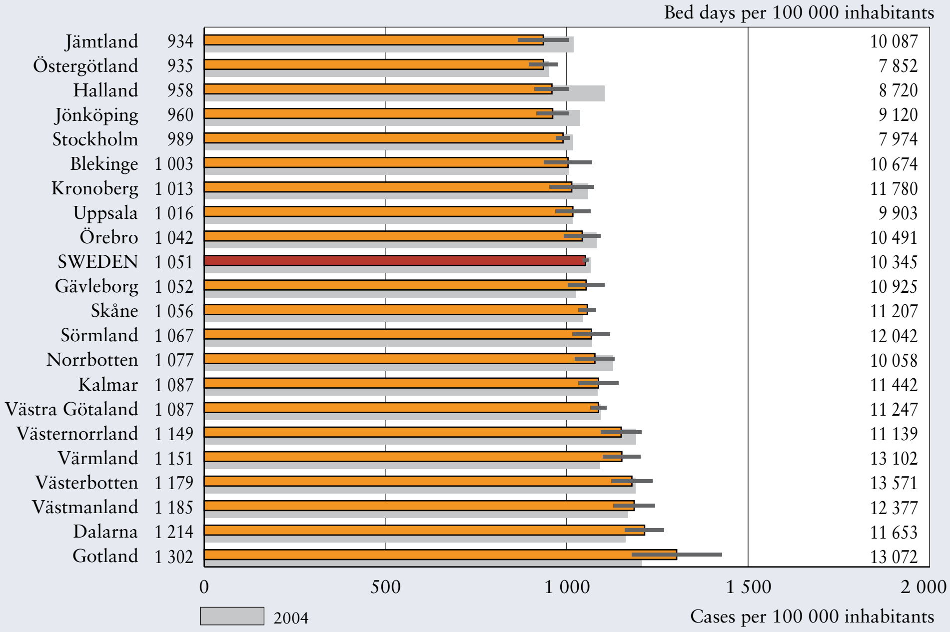


Figure 7
Women

Patients with avoidable hospitalisations per 100 000 inhabitants, 2009. Age-standardised.

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

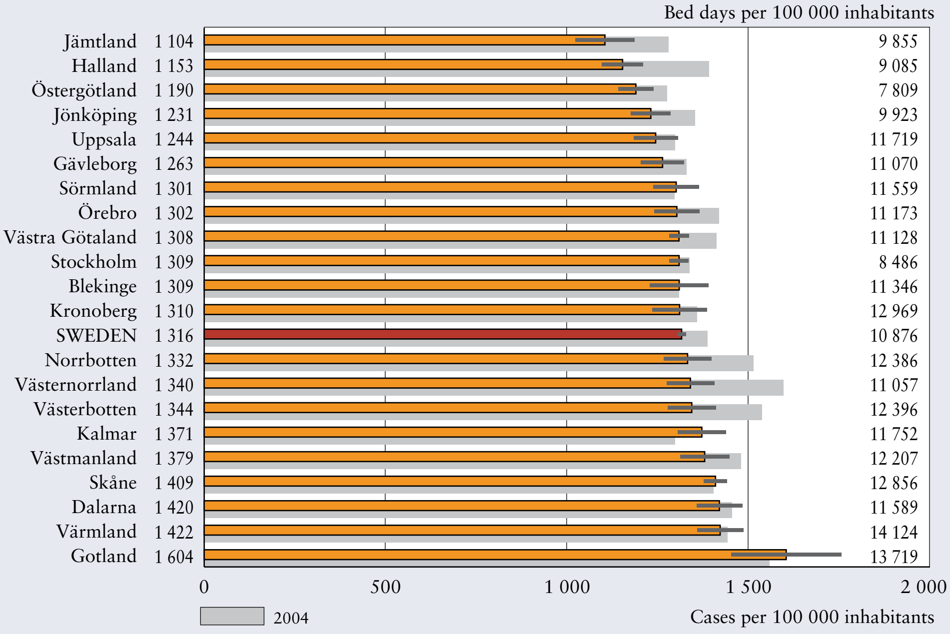


Figure 7
Men

Patients with avoidable hospitalisations per 100 000 inhabitants, 2009. Age-standardised.

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

declined during the period to a certain extent. Men accounted for the entire improvement.

The right side of the figure shows the number of days of avoidable hospitalisation per 100 000 inhabitants – approximately 10 300 for women and 10 900 for women. That represents almost one million days, or approximately 2 700 beds, for the country as a whole.

The scope of avoidable hospitalisation is affected by regional variations 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 regional differences indicate that potential exists for better outpatient care.

8 Targeted screening and contact tracing for Methicillin-resistant Staphylococcus aureus (MRSA)

Antibiotic resistance is one of the greatest threats to medical progress and thereby to public health in Europe. Many antibiotics no longer have the effect as originally intended due to bacterial evolution. Four groups of antibiotic resistant bacteria are currently regarded as serious enough to require mandatory reporting under the Swedish Communicable Diseases Act.

- MRSA (methicillin-resistant Staphylococcus aureus), which can no longer be treated with regular betalactamase stable penicillin. These bacteria used to be found mainly among hospital and nursing home patients. Now, they are most commonly encountered in the community among persons without known healthcare contact.
- ESBL (extended spectrum beta-lactamase)-producing intestinal bacteria, which are resistant to many of the most commonly used antibiotics such as penicillin and cephalosporins.
- VRE (vancomycin-resistant enterococci), which are primarily a problem in healthcare-related outbreaks, often including high-risk patients.
- PNSP, pneumococci with reduced susceptibility to penicillin, which are most common among children up to 4 years of age.

MRSA patients who develop a serious infection before having been microbiologically confirmed may receive ineffective antibiotic treatment. This puts them at greater risk of complications, suffering and death. MRSA treatment requires second-line, less efficacious, and more expensive antibiotics with more adverse effects.

In Sweden MRSA preventive activities have hitherto mainly been directed towards the health-care system. The main strategies for preventing the spread of

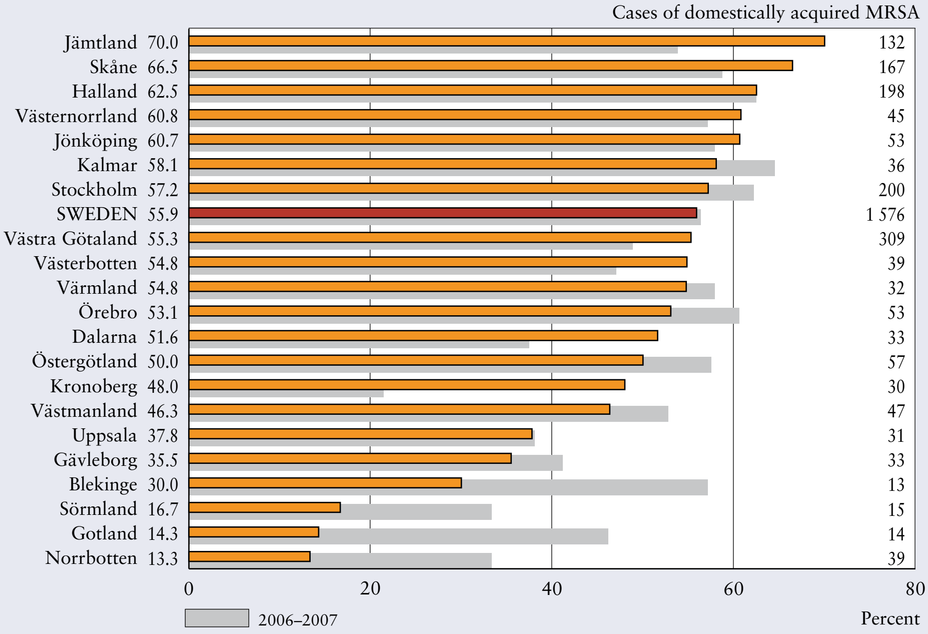


Figure 8 Percentage of domestically acquired MRSA cases that were detected by means of targeted screening or contact tracing, 2008–2009.

Source: Swedish Institute for Communicable Disease Control.

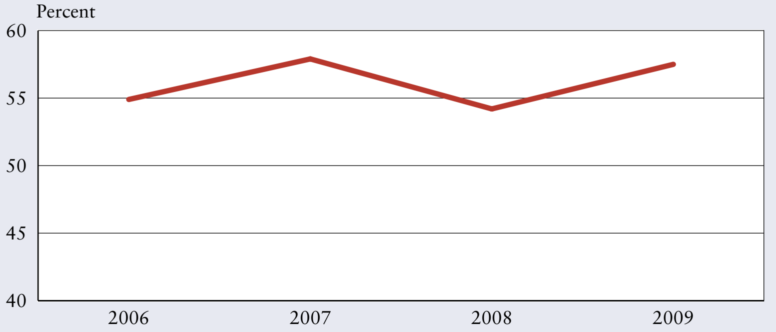


Figure 8 Sweden Percentage of domestically acquired MRSA cases that were detected by means of targeted screening or contact tracing.

Source: Swedish Institute for Communicable Disease Control.

MRSA include increasing staff compliance with basic hygiene procedures, early detection of symptom-free carriers by targeted screening of defined risk groups, and contact tracing.

The number of reported cases of MRSA increased in 2009. Nearly half of the cases (819) were domestic cases, meaning that they had contracted their MRSA in Sweden. In 2008 the number of domestic MRSA cases was 757.

Figure 8 shows the proportion of domestic MRSA cases that was detected by means of targeted screening in 2008–2009. The national average of 56 per cent was unchanged from 2006–2007. Data for regions with only a few dozen cases during the period should be interpreted with caution.

9 Noscomial infections

NBHW defines a noscomial 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 noscomial infections. Evidence shows that infections, particularly antibiotic resistant bacteria, spread less if caregivers always follow basic hygiene procedures and apply the proper dresscode.

Within the framework of the national project for increased patient safety, the regions are devoting extensive effort to implementing the action plans for the prevention of noscomial urinary tract infections, postoperative wound infections and infections through central venous catheters. A large number of projects to prevent noscomial infections have been carried out. The emphasis has been on compliance with basic hygiene procedures and rules for proper dresscodes. A number of observational studies are already under progress. The regions will perform the first national study in 2010 alongside of point prevalence studies of noscomial infections.

The indicator reflects the percentage of patients hospitalised for a medical condition who had noscomial infections at the time of the survey. That kind of snapshot must be supplemented by repeated surveys to provide a more reliable basis for interpreting the situation at each clinic and hospital. Given variations in case mix, the method is unsuitable for comparison between different hospitals.

All public hospitals, as well as a number of private hospitals that have agreements with county councils, participate in the noscomial infection survey that SALAR conducts each spring and autumn over a period of two weeks. The survey is carried out for one day at each hospital. The survey is based on standardised instructions and a protocol. All patients (almost 20 500 in spring 2010) who are in hospital for a medical condition at a specific time are included.

Figure 9 compares the results of the survey in spring 2010 with autumn 2009. The frequency of noscomial infections rose from 8.9 to 9.6 per cent nationwide. Five surveys have been conducted since the project started in spring 2008. All in all, the percentage of patients with noscomial infections declined, despite an increase

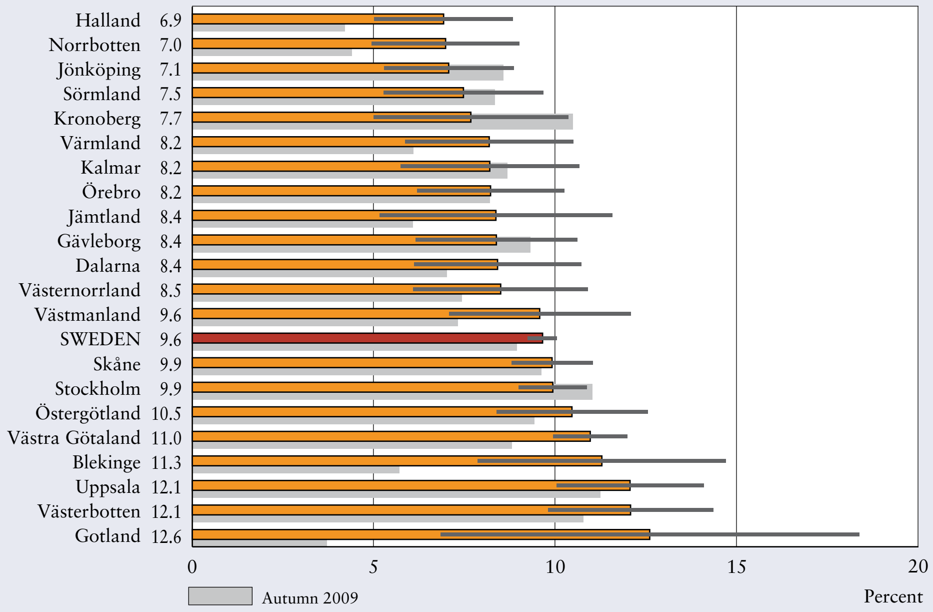


Figure 9 Noscomial infections, 15–31 March 2010.
Percent of all patients in inpatient care.
Source: Swedish Association of Local Authorities and Regions

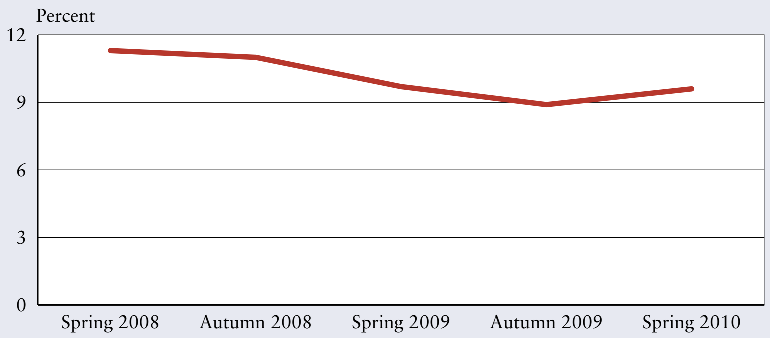


Figure 9
Sweden

Noscomial infections.
Percent of all patients in inpatient care.
Source: Swedish Association of Local Authorities and Regions

between the two most recent surveys. The regional variation was from below 7 per cent to more than 12 per cent. Noscomial infections are more common at regional hospitals, which affects the outcomes for those particular regions.

Each noscomial infection is estimated to extend the period of care by an average of four days. In addition to the actual suffering, extra beds and other resources are

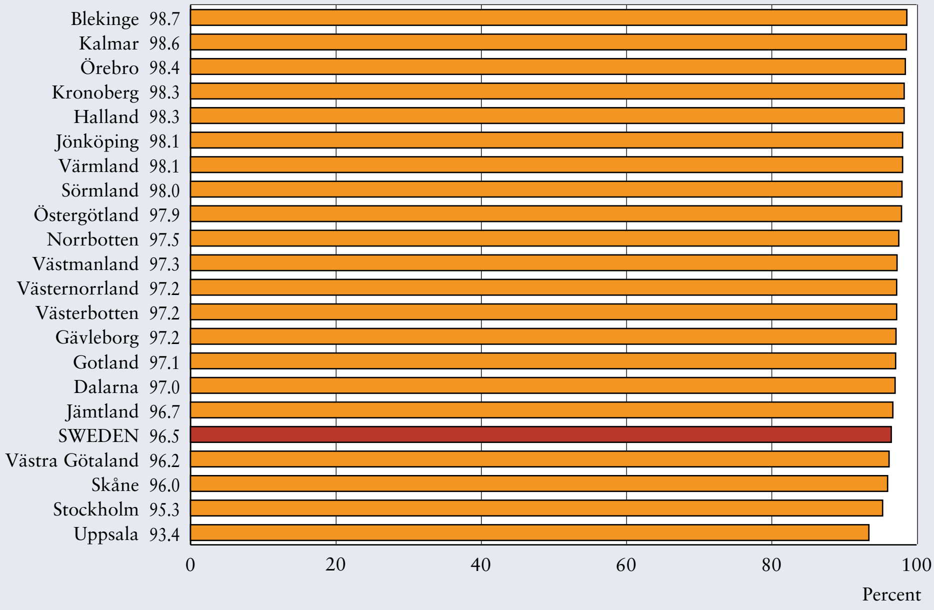


Figure 10 Vaccination of children – measles-mumps-rubella (MMR)
Children born in 2007, vaccination status reported in January 2010.
Source: Swedish Institute for Communicable Disease Control

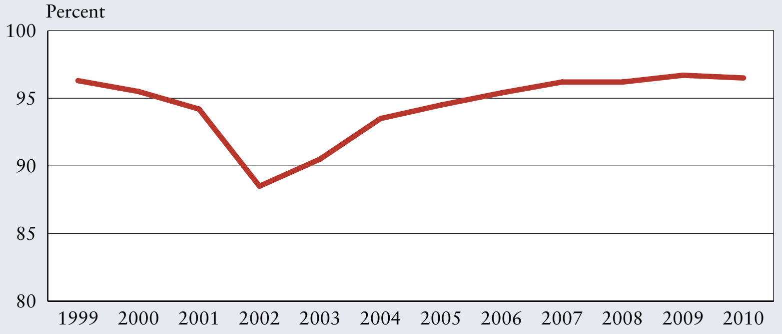


Figure 10
Sweden
Vaccination of children – measles-mumps-rubella (MMR).
Source: Swedish Institute for Communicable Disease Control

consumed. Based on the results of the spring 2010 survey, total annual costs for nosocomial infections are estimated at more than 4.4 billion kronor.

10 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. According to WHO statistics, 164 000 children – most of them in developing countries – died of measles in 2008.

All three diseases are uncommon in Sweden now but are reported among unvaccinated people of all ages. If the vaccination programme were to be terminated or a sufficiently large percentage of the population declined to participate, the diseases would return. To prevent the diseases from gaining a foothold, 95 per cent of the population must be immune, either through vaccination or natural infection.

MMR vaccine contains live attenuated virus strains, and an injection causes a symptomless 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 Communicable Disease Control. Because data for Örebro and Uppsala are taken from individual-based vaccination registers, they are not wholly comparable with the other regions. They calculate the percentage of all children entered in the population register – rather than those who are enrolled in the paediatric care system, as is the case with the other regions – who are vaccinated. As a result, the two regions report a somewhat lower percentage than the other regions.

Compared to other countries, a large percentage of Swedish children are vaccinated. In January 2010, 96.5 per cent of all children born in 2007 had been vaccinated. The great majority of regions had a vaccination frequency of 97–98 per cent.

CONFIDENCE AND PATIENT EXPERIENCE

This subsection presents six indicators. Data on perceptions by the general population concerning availability and reliability are taken from the annual Health Care Survey. The National Patient Survey provides data regarding patient experience of primary care visits. Each data source is first introduced. The national indicators for *Good Care* stress information, participation and caregiver respect and consideration as key to patient-focused health care.

Health Care Survey

The purpose of the Health Care Survey is to measure the attitudes, experience and knowledge of the general population when it comes to the healthcare system. The data, which covered all of 2009, were taken from telephone interviews with more than 45 000 randomly selected people. The annual goal is to interview at least 0.5 per cent of the population of the country and each region. All regions participated except Gotland. SALAR presents a more comprehensive yearly review of the results.

Seventy nine per cent of respondents nationwide had a healthcare visit in 2009, up 5 percentage points from 2008. One reason may have been the H1N1 vaccination programme. The yearly report describes more specific assessments by patients of their contact with the healthcare system. The three selected indicators are based on questions that respondents were asked whether or not they had a visit in 2009.

As of 2010, the Healthcare Survey focuses primarily on the general population. The results offer public officials, civil servants and healthcare representatives an overview of how inhabitants view the system in order to encourage improvement and provide a basis for administration and monitoring. Patient experience is to be captured in the National Patient Survey instead.

National Patient Survey – primary care

The National Patient Survey was first conducted in 2009 among 19 regions. More than 160 000 questionnaires were sent to randomly selected patients who had seen a primary care doctor in September. They had the opportunity to describe and rate their experience of the visit. The questions concerned caregiver respect and consideration, the level of patient participation, the quality of information received, perceived availability and other factors.

Two hundred questionnaires were sent to patients within each clinic. If a clinic did not have 200 visits during the four-week period, the remaining questionnaires were allocated to other clinics.

Nearly 100 000 patients responded. The national response rate was 60 per cent, varying between 56 and 65 per cent from region to region. Västra Götaland had the lowest participation and Kalmar had the highest.

The National Patient Survey of primary care in 2009 included all regions except for Norrbotten, which will begin actively participating in 2011. All regions with the exception of Stockholm collaborate on the survey. However, Stockholm has its own survey and largely uses the same questionnaire. Stockholm conducts its primary care survey twice a year and then combines the results for comparison with the National Patient Survey, which is carried out once a year. The Stockholm results are shown in the diagrams that appear in this report but are not included in national averages.

The results of the primary care survey in 2009 are available from www.indikator.org/publik and www.skl.se/nationellpatientenkat. The data are shown for the country in its entirety, as well as by region and clinic, which permits comparison of various health centres and clinics. The results at the clinic level also appear at www.1177.se (Jämför vård).

The indicators from the National Patient Survey presented in this report reflect caregiver respect and consideration, patient participation, quality of information and perceived availability. The results are shown at the regional and national level, but not by health centre or clinic.

Patient-reported quality

The results of the National Patient Survey are presented as patient-reported quality, a weighted score based on the responses, with the exception of ”not filled in,” ”not applicable,” etc. The score is calculated by multiplying the percentage of respondents for each remaining alternative by a number between 0 and 1, depending on how positive the alternative was. The products are added together, multiplied by 100 and rounded up to the nearest integer between 0 and 100.

The National Patient Survey will be conducted every year. Surveys for psychiatric and medical care are being conducted in 2010. Most regions are also conducting a second primary care survey in 2010, while all regions will conduct one in 2011.

11 Access to health care

Based on the Healthcare Survey, Figure 11 shows perceptions among members of the general population about their access to health care, regardless of whether they have had contact with the system or not over the past year.

A total of 78 per cent of people nationwide agreed wholly or in part with the statement, ”I have access to the health care I need.” That represented an improvement from 69 per cent in 2004. The results varied considerably from 69 per cent in Gävleborg to 86 per cent in Halland. Seven per cent of the respondents, a decrease of 5 percentage points since 2004, said that they did not have access to the health care they needed. The figure ranged from 4 per cent in Kronoberg and Halland to 13 per cent in Gävleborg.

There were large age-related differences. Young and elderly people were much more likely to say that they had access to the health care they needed than working-age people. The national results did not point to any significant discrepancy between women and men.

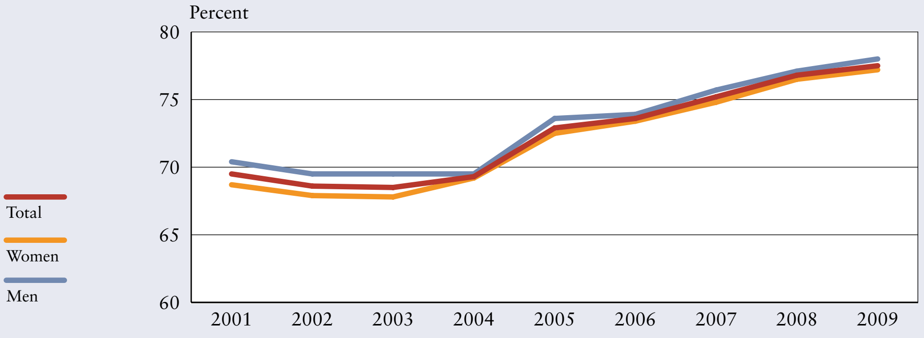


Figure 11
Sweden

Percentage of the general population reporting that they had access to the health care they needed.

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

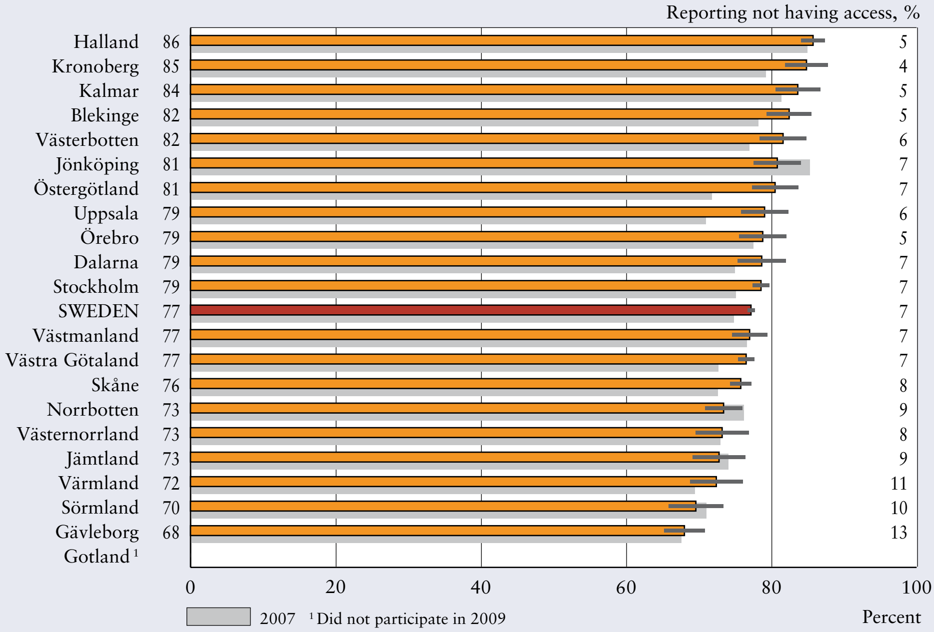


Figure 11
Women

Percentage of the general population reporting that they had access to the health care they needed, 2009.

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

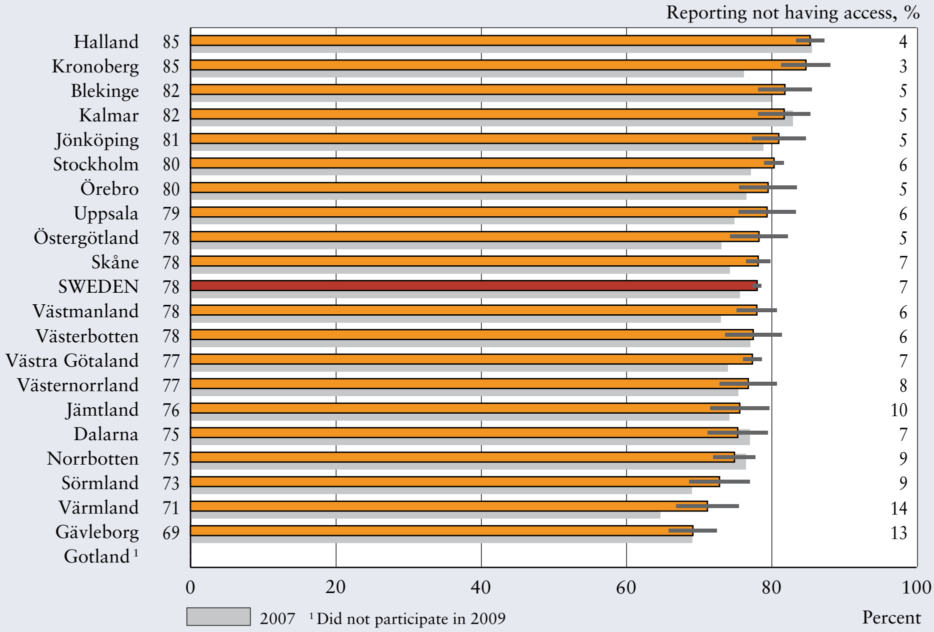


Figure 11
Men

Percentage of the general population reporting that they had access to the health care they needed, 2009.

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

12, 13 Confidence in care at health centres and hospitals

Figure 12 presents general confidence among the population in primary care at health centres or clinics. Fifty six per cent of the national population had a lot or quite a lot of confidence (as opposed to 52 per cent in 2005), while 12 per cent had little or very little confidence.

For women and men together, the regional statistics ranged from 51 to 64 per cent. Confidence in care at health centres rose the most in Kronoberg. Confidence in Västernorrland, Blekinge and a few other regions was down since the previous year. For both the country as a whole and most regions, men had more confidence in health centres than women.

Figure 13 shows that there was greater confidence in hospitals than primary care. A total of 66 per cent of the respondents had a lot or quite a lot of confidence in hospital care. Six per cent had little confidence.

The regional variations were large. Seventy four per cent of Örebro inhabitants had a lot or quite a lot of confidence in hospital care, as opposed to 59 per cent of Gävleborg inhabitants. Confidence declined substantially from the year before in Västernorrland while rising by 5 percentage points in Värmland.

A greater percentage of men than women expressed confidence in care at hospitals. Sixty nine per cent of men nationwide had a lot or quite a lot of confidence, as opposed to 64 per cent of women. The greatest gender discrepancy (8 percentage points) was in Värmland.

People who visited either a health centre or hospital during the year had more confidence in health care than those who did not.

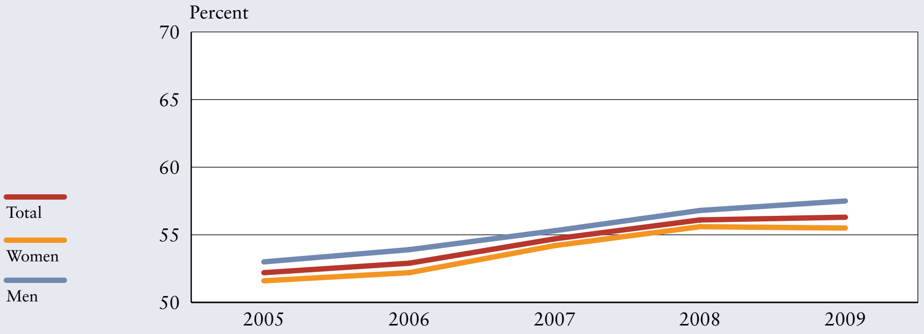


Figure 12
Sweden

Percentage of the general population with high or very high confidence in primary care.

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

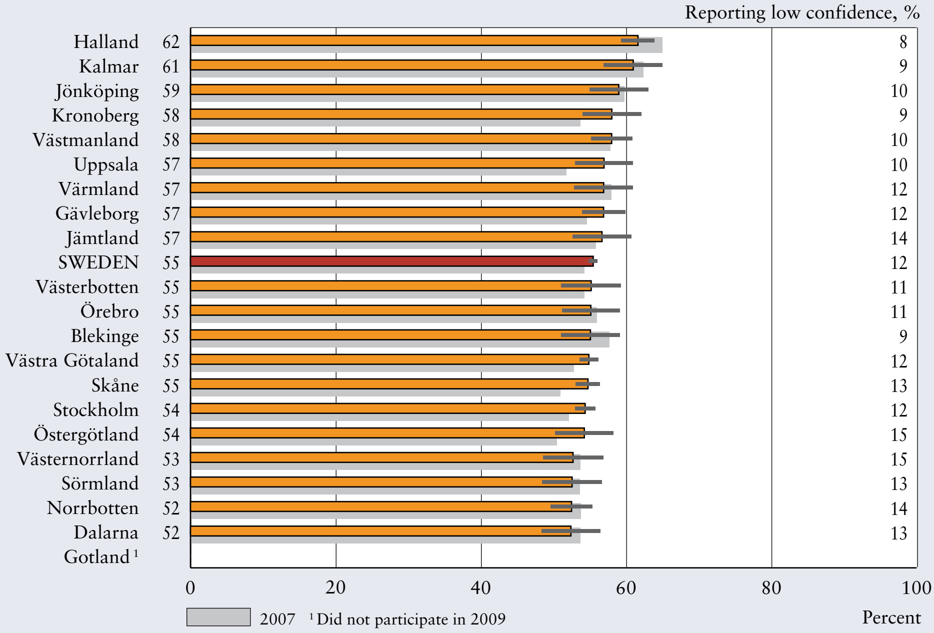


Figure 12
Women

Percentage of the general population with high or very high confidence in primary care, 2009.

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

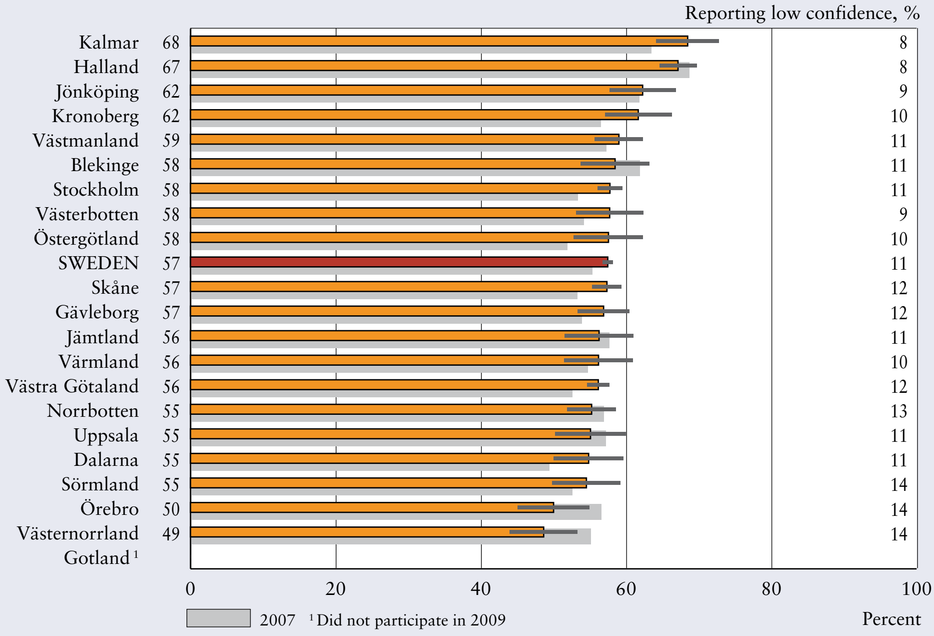


Figure 12
Men

Percentage of the general population with high or very high confidence in primary care, 2009.

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

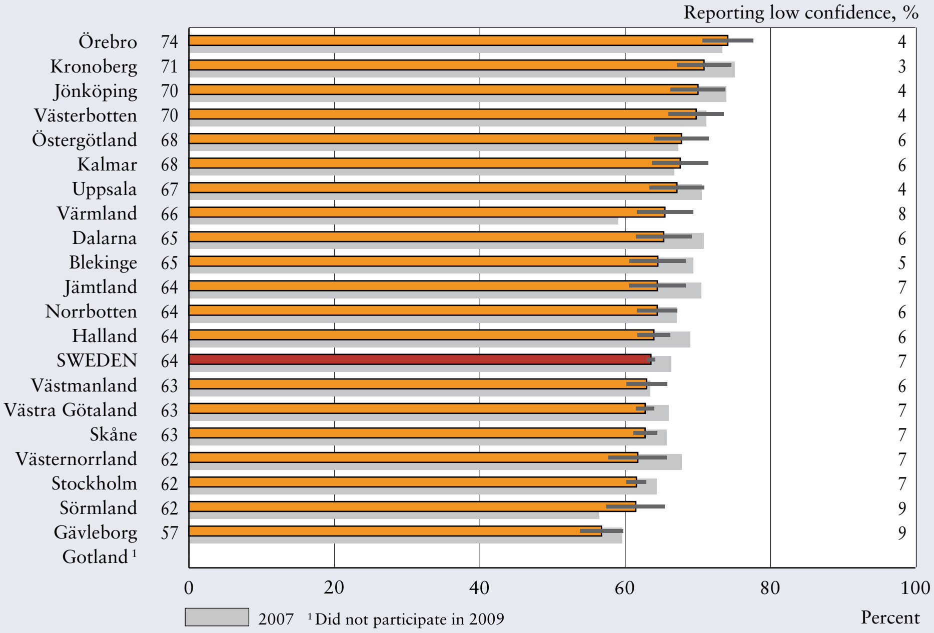


Figure 13
Women

Percentage of the general population who reported having high or very high confidence in hospital care, 2009.

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

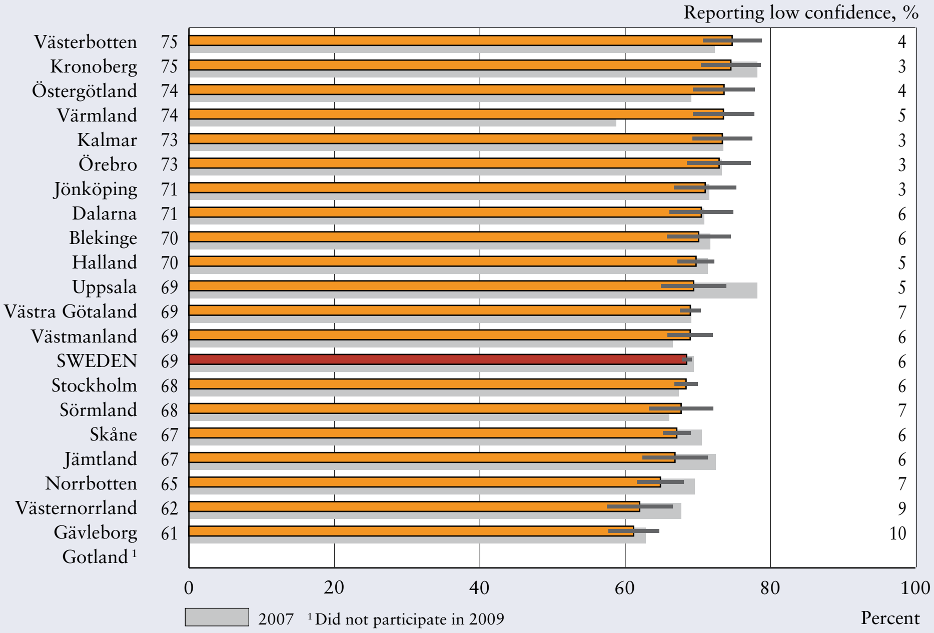


Figure 13
Men

Percentage of the general population who reported having high or very high confidence in hospital care, 2009.

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

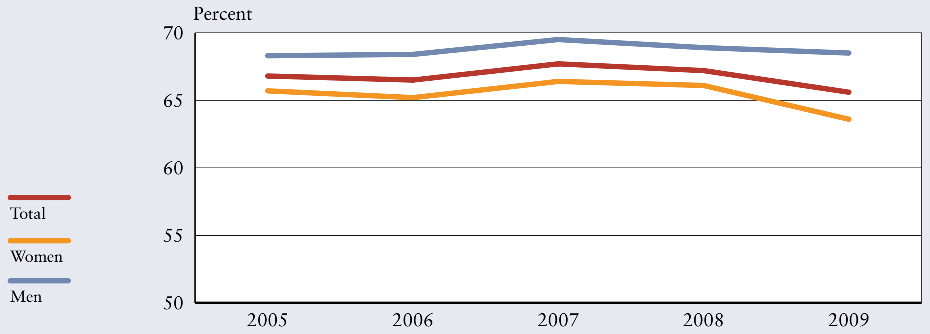


Figure 13
Sweden

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

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

14 Primary caregiver respect and consideration

The question in the National Patient Survey that addressed this issue was worded, ”Did you feel that you were given respect and consideration?”

Figure 14 shows the results for patient perception of respect and consideration among primary caregivers for each region. Caregiver respect and consideration is one of the indicators with the most favourable results nationwide. The regional differences were small. The scores for patient-reported quality varied from 85 to 92 for women and 88 to 93 for men.

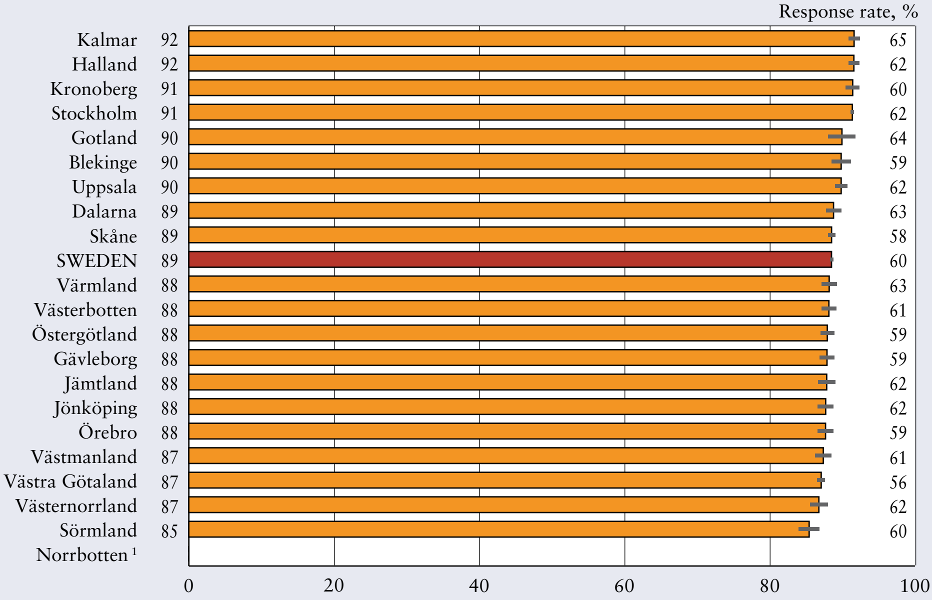
The number of inhabitants who answered, ”Yes, completely” to whether they felt that they had been given respect and consideration ranged from 76 per cent in Sörmland to 85 per cent in Kalmar and Halland.

15 Primary care information

Figure 15 shows responses to the question of whether people felt that they received sufficient information about their condition. Regional scores for patient-reported quality among women ranged from 73 to 81, for a national average of 77 – a greater variation than for caregiver respect and consideration. Patient-reported quality among men ranged from 74 to 84 and averaged 80 for the country as a whole.

Seven per cent of respondents nationwide said that they did not receive sufficient information, while 9 per cent stated that they did not need any information (neither alternative was included in the diagram). Sixty two per cent of Halland inhabitants and 53 per cent of Sörmland inhabitants responded that they had received the information they needed.

Fifty five per cent of women and 60 per cent of men indicated that they had received all the information they needed. However, a larger percentage of women than men said that they did not need any information.



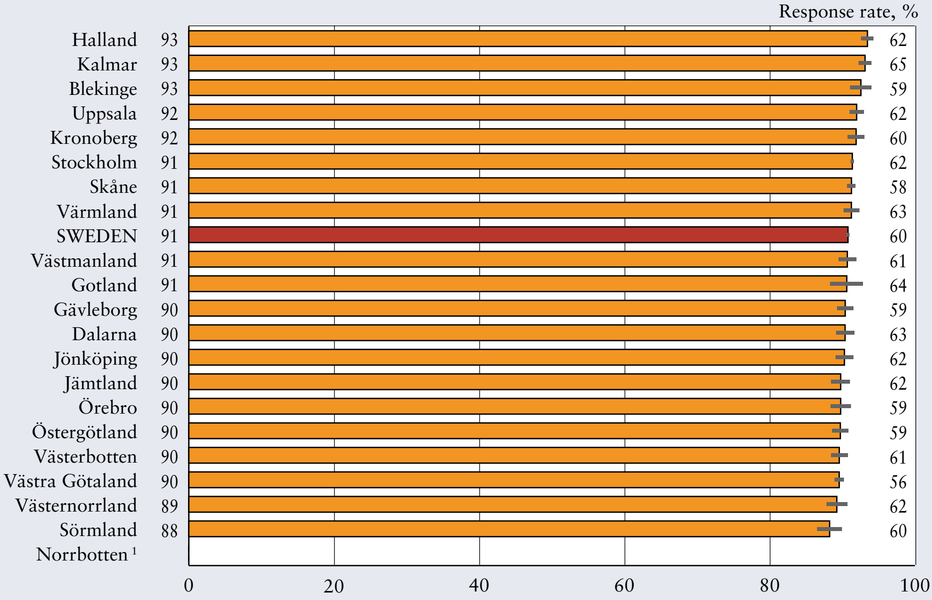
[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 14
Women

Patient-reported primary caregiver respect and consideration, September 2009.

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



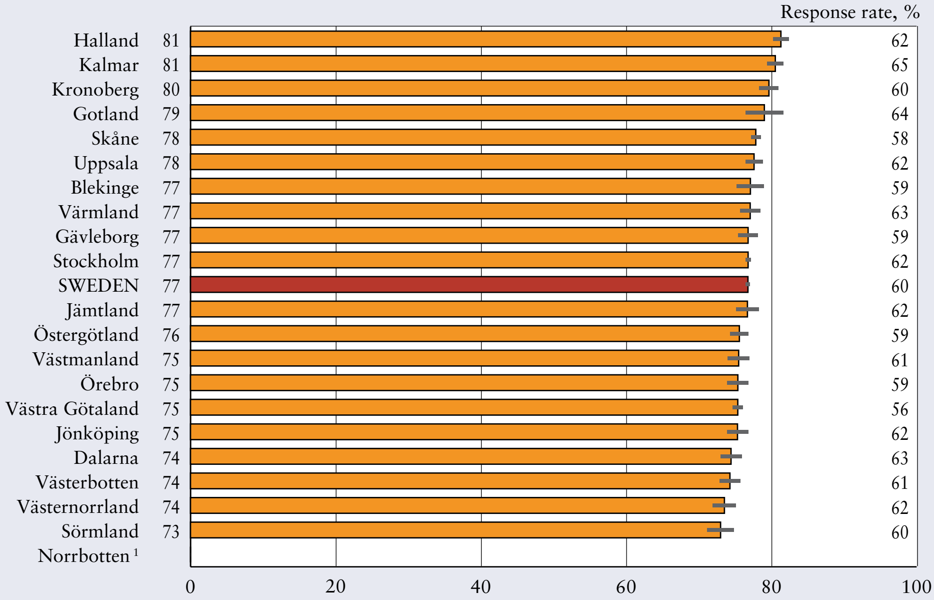
[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 14
Men

Patient-reported primary caregiver respect and consideration, September 2009.

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



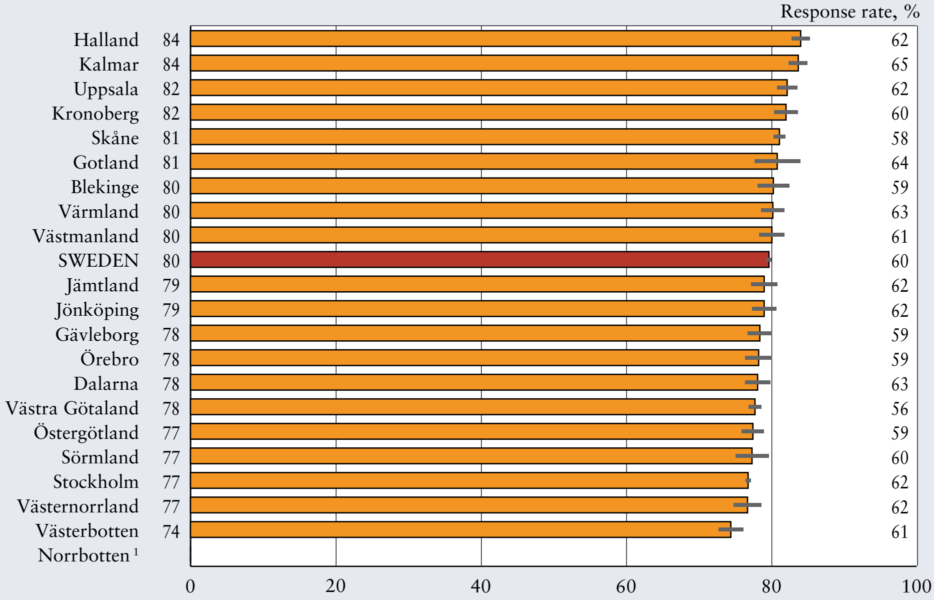
[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 15
Women

Patient-reported primary care information, September 2009.

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



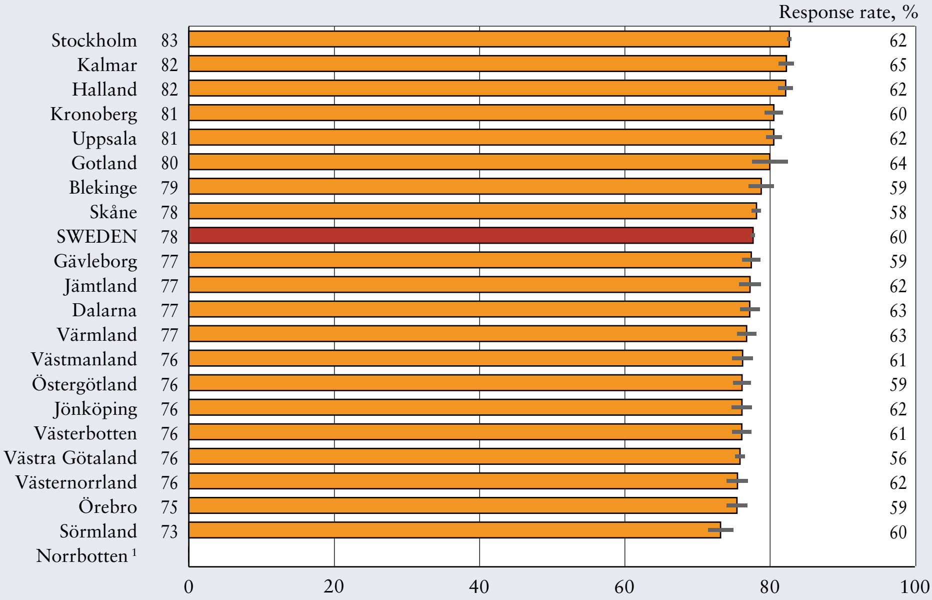
[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 15
Men

Patient-reported primary care information, September 2009.

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



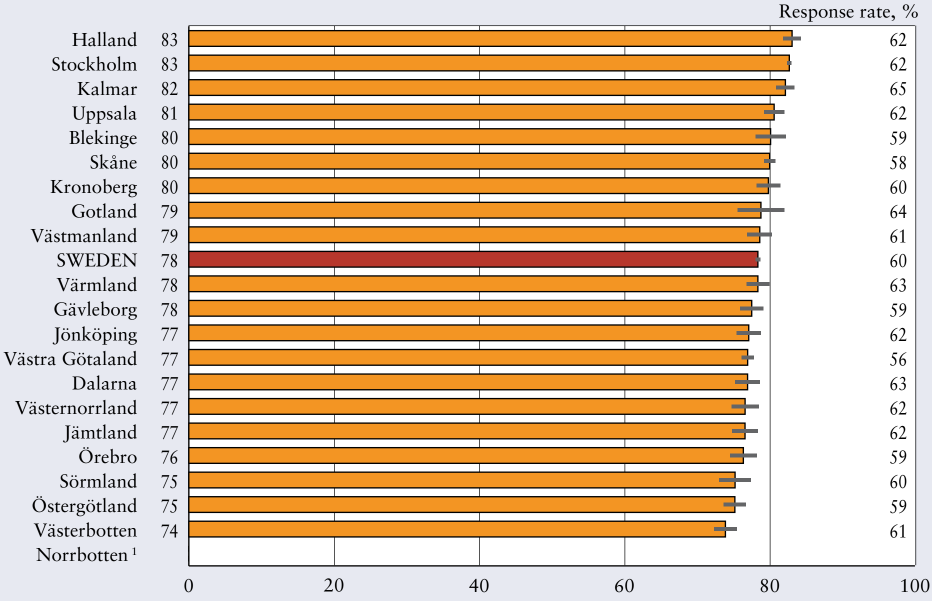
[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 16
Women

Patient-reported participation during primary care visits, September 2009.

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



[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 16
Men

Patient-reported participation during primary care visits, September 2009.

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

16 Patient-reported participation during primary care visits

Figure 16 shows the results concerning patient-reported participation when visiting doctors at health centres or the equivalent. The patient-reported quality score for women was 78 nationwide, varying from 73 to 83 among the regions. Nationally speaking, men scored the same as women.

Sixty two per cent of respondents nationwide indicated that they had participated in care and treatment decisions to the extent that they wanted.

In terms of the total patient-reported quality score, the regional differences were modest or small for all three of the above indicators. A more detailed presentation of the various alternatives may suggest a wider or narrower regional spread, but the most significant variations can be found at the health centre and clinic level.

AVAILABILITY

The Availability set of indicators concerns time-related availability. Three of the six indicators measure fulfilment of the national care guarantee, which covers all scheduled care. The guarantee does not govern whether care is to be provided, or what kind. It regulates only the time frame within which care that authorised staff has chosen after assessment, prioritisation and consultation with the patient is to be offered.

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

A patient should be able to contact primary care immediately (0). An appointment with a primary care doctor is to take place within seven days (7). A scheduled visit to a specialised care unit 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. All monitoring of waiting times poses methodological challenges. For instance, the medical indicators – the criteria for performing a particular treatment or method – appear to vary considerably throughout Sweden. Thus, some patients who are on the waiting list in a particular region 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 regions. The work of the national reporting organisation is continually improving the availability and quality of data.

With the exception of June and July (which have no impact on the results presented in this report), the participation rate has been excellent in 2010.

Four of the six indicators presented in this section concern patient-reported availability of primary care and healthcare advice based on the Healthcare Survey and National Patient Survey. The other two indicators involve visits and treatments within scheduled specialised care. The measurement period was 31 March 2010 for specialised care and 15–26 March 2010 for primary care.

17 Appointment with a general practitioner within seven days

Waiting times for an appointment with a general practitioner are measured each March and October. The data are reported through an online system provided by SALAR. The data presented here are from the latest survey on 15–26 March 2010.

All health centres and primary care clinics were expected to submit data. A total of 958 centres and private general practitioners with healthcare agreements participated in the survey. Eighty three centres did not. Thus, the overall response rate was 93 per cent. The response rate was 100 per cent in 11 regions and below 90 per cent in 2 regions. The results are broken down by health centre at www.vantetider.se

More than 260 000 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 can specify whether the patient chose a doctor's appointment more than 7 days later when initially offered one within the 7-day limit. Such waiting times are excluded from the presentation.

Figure 17 shows the percentage of patients who were given doctor's appointments within 7 days (the intention of the care guarantee) during the measurement period. The diagram also presents response rate per region.

The survey reveals that an average of 92 per cent of patients who were covered by the care guarantee had a doctor's appointment within the time limit. The regional variation was 83–97 per cent. The nationwide result was unchanged from October 2009.

The National Patient Survey asked respondents, "How long did you have to wait for an appointment?" Seventeen per cent of the respondents said that they had to wait more than 7 days, whereas data from the Waiting Times indicated that the actual figure was only 8 per cent. The discrepancy may be due to the periods during which the surveys were conducted, differing interpretations of whether patients chose to wait longer than required, or response rates (60 per cent for the patient survey and 100 per cent for the follow-up).

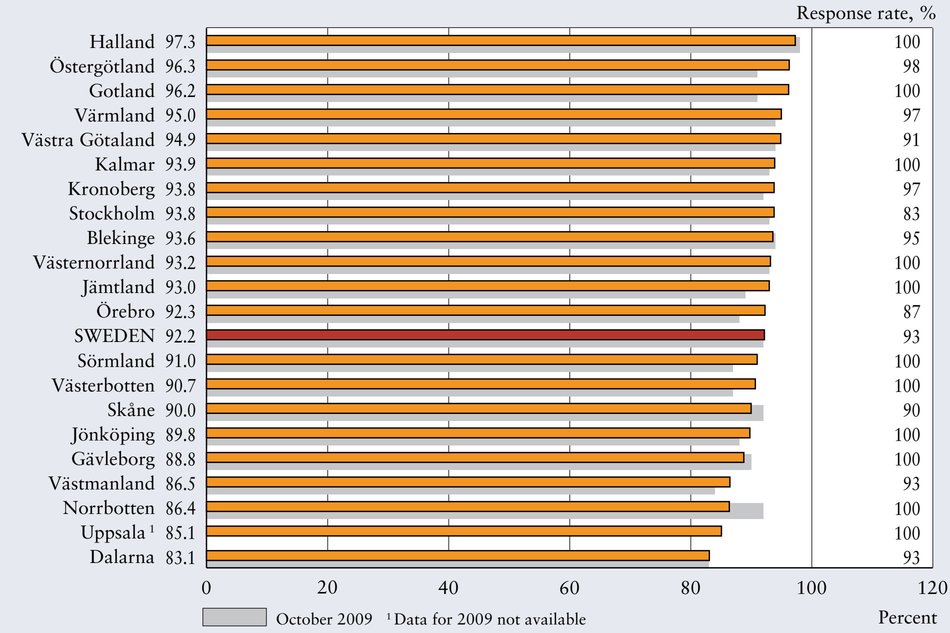


Figure 17 Percentage of patients who were given an appointment with a general practitioner within seven days, 31 March 2009.

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

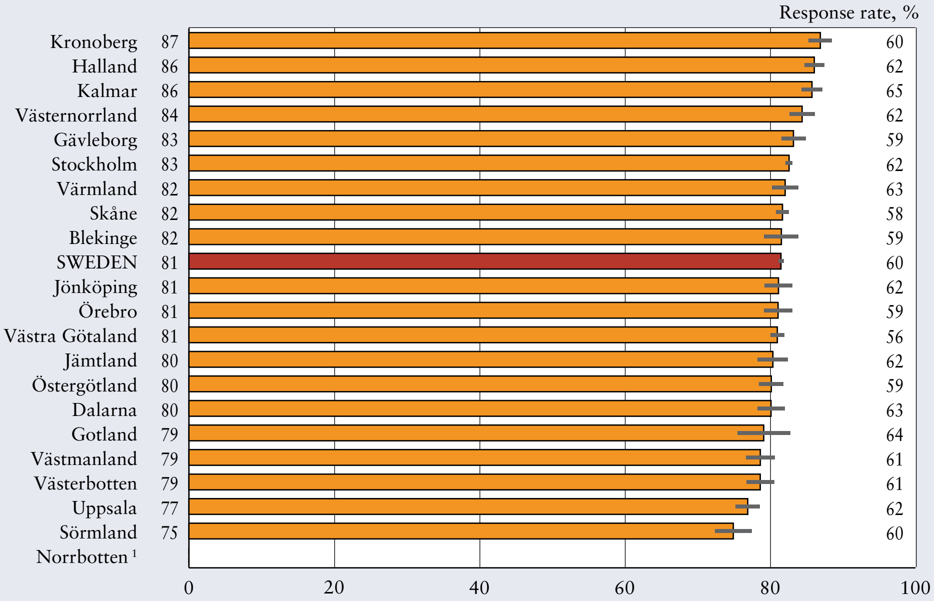
18 Perceptions of the availability of scheduled primary care

Figure 18 shows perceptions of the availability of scheduled primary care according to the National Patient survey. Nationwide patient-reported quality based on the question, ”How do you feel about the time you had to wait for a visit?” was 81 for women and 80 for men. The regional variation was a modest 10 percentage points for box sexes.

There was a certain degree of correlation between these results and the follow-up of waiting times in primary care. Many of the regions in which a large percentage of patients obtained doctor’s appointments within seven days had high patient-reported quality as well.

19 Availability of health centres by phone

The Healthcare Survey includes questions about the important issue of telephone availability. Patients frequently make initial contact with the healthcare system by phone. Due partly to the adoption of various electronic reply and call-back systems, actual telephone availability – which is measured on a continual basis – has improved considerably in recent years.



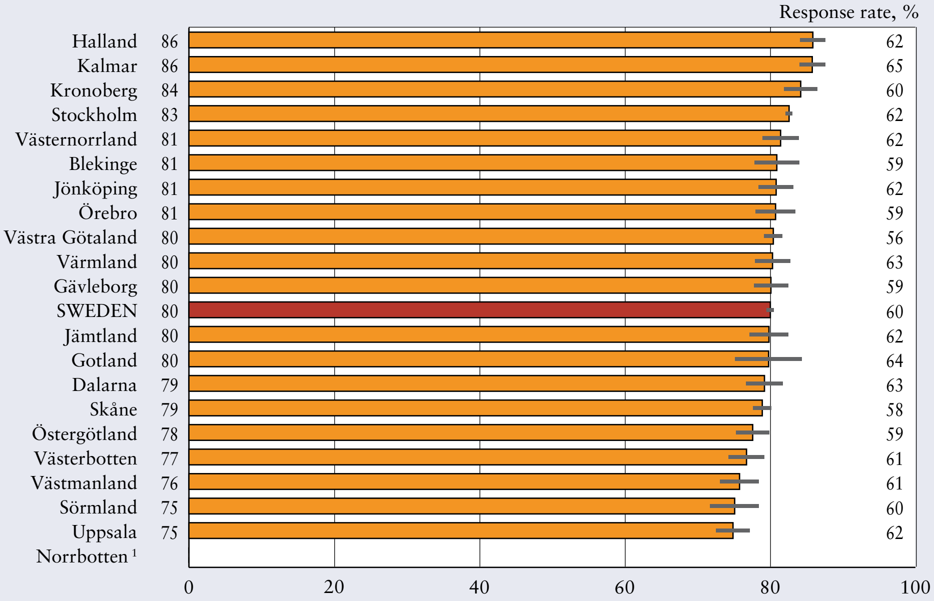
[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 18
Women

Patient-reported availability of scheduled primary care, September 2009.

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



[1] Did not participate in 2009

PUK = Patient-reported quality, index

Figure 18
Men

Patient-reported availability of scheduled primary care, September 2009.

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

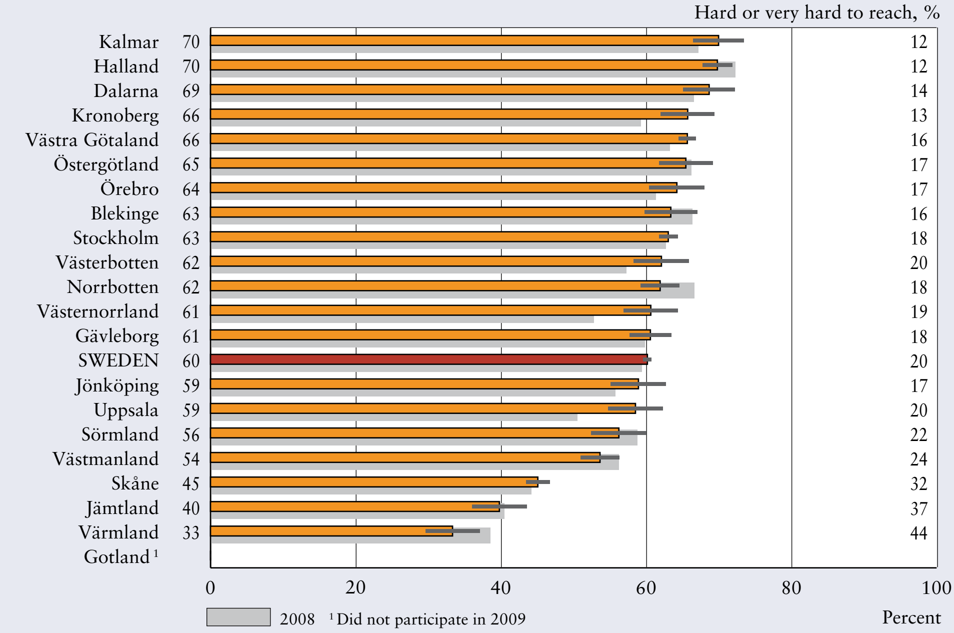


Figure 19 Percentage of patients who felt that it was easy or very easy to reach health centres by phone, 2009.

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

Sixty four per cent of the population nationwide had phoned a health centre or the equivalent during the past year. Regional variations were small. Despite improvements, many patients still felt that they had trouble getting through.

Figure 19 shows the percentage of respondents who experienced that it was easy or very easy to get through to a health centre. The nationwide result in 2009 was 60 per cent, with major variations from one region to the next. The regional outcome ranged from 33 per cent in Värmland to 70 per cent in Kalmar. The widening gap suggests great potential for improvement.

Twenty per cent of the respondents nationwide felt that it was difficult or very difficult to reach a health centre by phone. In Värmland, the figure rose from the previous year by 6 percentage points to 44 per cent.

Given the low number of respondents at the regional level, no breakdown between women and men is available. The questions on telephone availability of health centres and healthcare information were re-worded in the 2008 Health Care Survey. Thus, comparisons with previous years are not wholly correct.

20 Availability of healthcare advice centres by phone

According to the Healthcare Survey, 22 per cent of the population had phoned healthcare advice, 1 177 or the equivalent during the past year. The diagram indicates

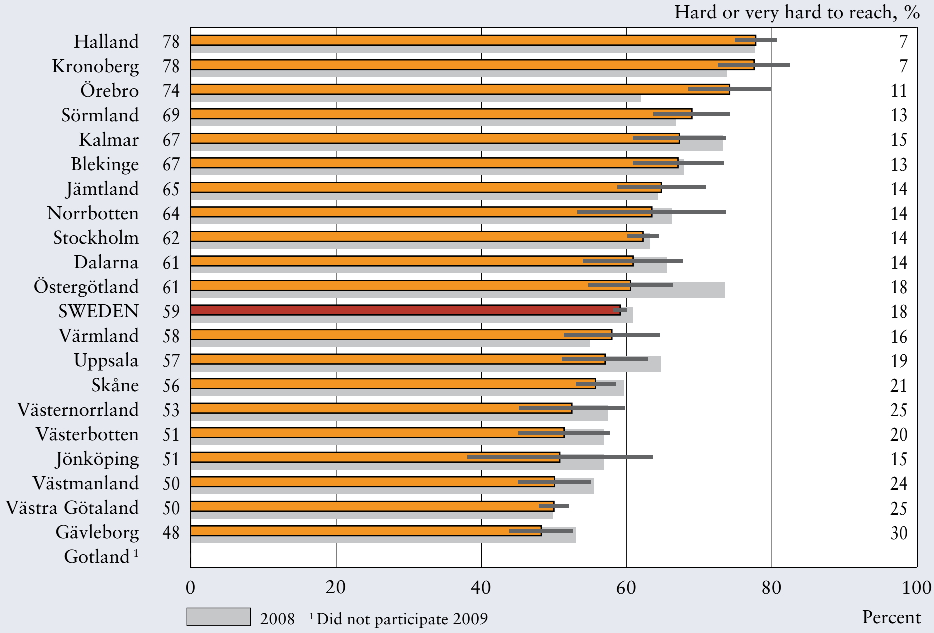


Figure 20 Percentage of patients who felt that it was easy or very easy to reach healthcare advice centres by phone, 2009.

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

that 59 per cent of respondents nationwide thought it was easy or very easy to get through.

The regional results varied widely, from 48 per cent in Gävleborg to 78 per cent in Halland and Kronoberg. The differences partly reflect the availability, knowledge and organisation of healthcare advice centres in the various regions.

Given the low number of respondents at the regional level, no breakdown between women and men is shown.

21, 22 Waiting times of longer than 90 days for specialist visits or treatment

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 scheduled 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.

Particularly in 2008 and 2009, the number of patients who voluntarily chose to wait longer than specified by the national care guarantee increased in some regions. The regions have collaborated on a clearer national definition of these patients. The new definition has been in effect since 1 April 2010.

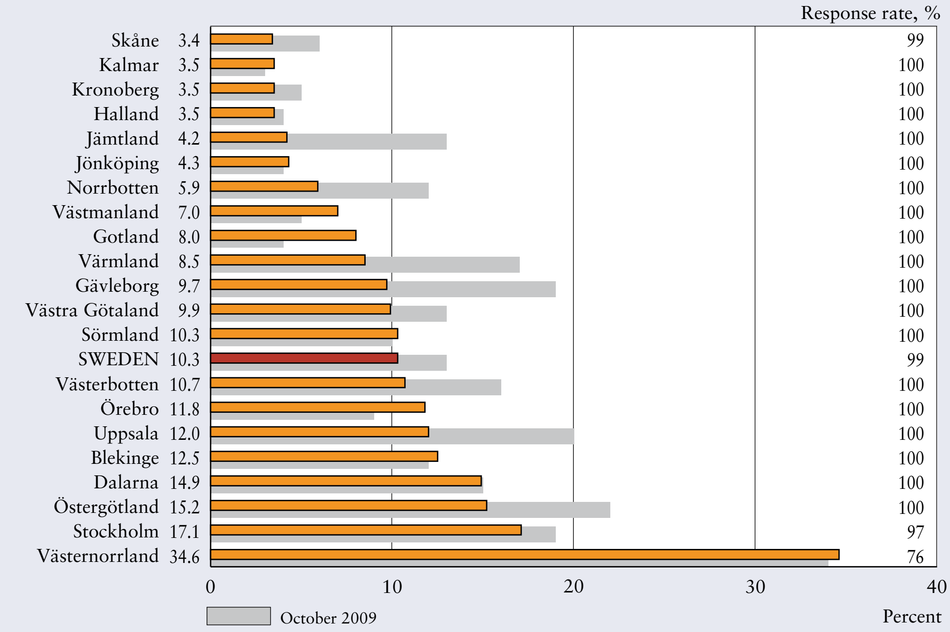


Figure 21 Percentage of patients with waiting times longer than 90 days of everyone on the waiting list – specialist visits, 31 March 2010.

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 273 000 in October 2009 to 236 000 in March 2010. Meanwhile, the number of patients for whom a decision had been made to treat or operate was down from 80 000 to 71 600.

The number of patients who had waited longer than 90 days for treatment decreased from 8 400 to 8 200 nationwide. These data cover the methods that are monitored in the National Waiting Times in Health Care database. The number of patients who had waited longer than 90 days for a special care visit declined by 36 000 to 24 000.

Figure 21 shows that approximately 10 per cent of all patients who were waiting for a visit in March 2010 had been doing so for longer than 90 days. That represents an improvement from approximately 17 per cent in April 2009.

The regional variations were large. The number of patients who had been waiting for longer than 90 days ranged from 3 to 35 per cent. The four regions that were at 3 per cent had continued to improve. A number of regions – including Värmland, Gävleborg and Jämtland – had improved by approximately 9 percentage points since October 2009.

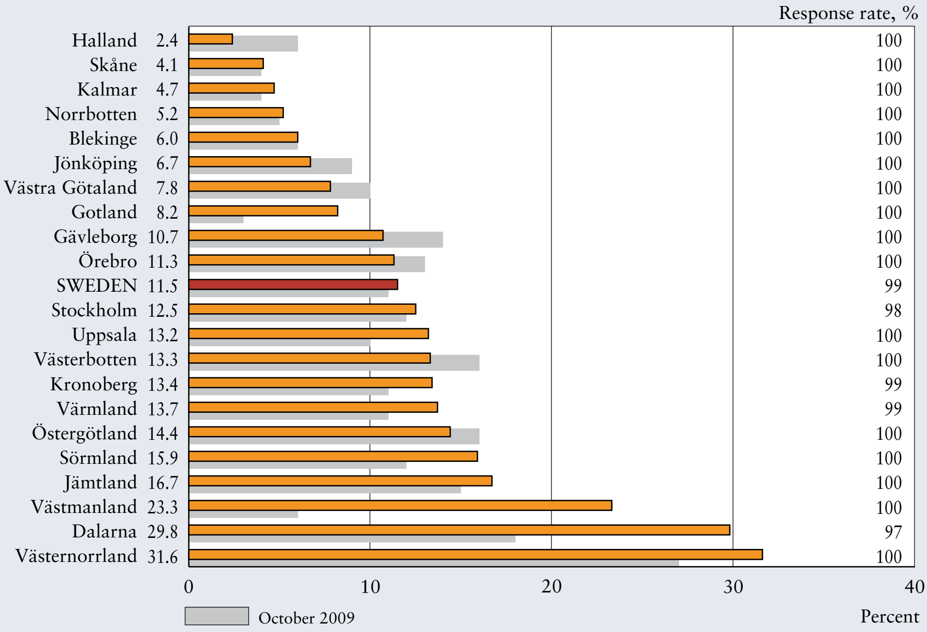


Figure 22 Percentage of patients with waiting times longer than 90 days of everyone on the waiting list– specialist treatment, 31 March 2010.

Source: Swedish Association of Local Authorities and Regions

Figure 22 shows that the regional variations were large when it came to treatment. Between 2 and 32 per cent of patients had waited longer than the intention of the care guarantee. Halland reported the biggest decrease (4 percentage points) since October 2009.

COSTS

One overall objective of the healthcare system is efficiency. 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 for the amount of resources. Efficiency can be gauged by correlating the outcome measures 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 in 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 costs per inhabitant and per case.

Under each of the three formal indicators are additional cost data per region and even per hospital. Costs per case or DRG point for specific treatments 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 the Swedish Case Costing database kept by SALAR. The database contains patient-related cost data for specific care hospital admissions and special care visits, 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 about cost differences between hospitals. Such comparisons are only ostensibly exact. They are just as complex and vulnerable to just as many pitfalls as comparisons of medical quality.

23 Structure-adjusted healthcare costs per capita

Healthcare costs cannot be identical in all regions. The regions have differing prospects for providing health care, while structural conditions affect costs. Among those conditions are the age composition of the population and disease frequency. The system of tax equalisation for local authorities strives to compensate for these factors.

A standard healthcare cost is calculated for each region on an annual basis. The standard cost 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 regions are to reflect what, according to the equalisation model, stems from structural discrepancies that are beyond their control. A similar model forms the basis of allocating the government drug subsidy to the various regions in a way that reflects structural differences in pharmaceutical costs.

The ratio between a region's standard cost, the 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 that ratio. Presented in Figure 23, it is one of NBHW monitoring indicators in accordance with *Good Care.*

The fact that the structure-adjusted cost per capita varies from region to region may reflect differing objectives or levels of healthcare efficiency. However, the variation may also be due to factors over which the regions have little control but that the equalisation system does not take into account.

Inflation-adjusted costs rose by 2.9 per cent nationwide from 2006 to 2009. There were significant regional variations. Costs were essentially unchanged in some regions while rising by 5–6 per cent in others.

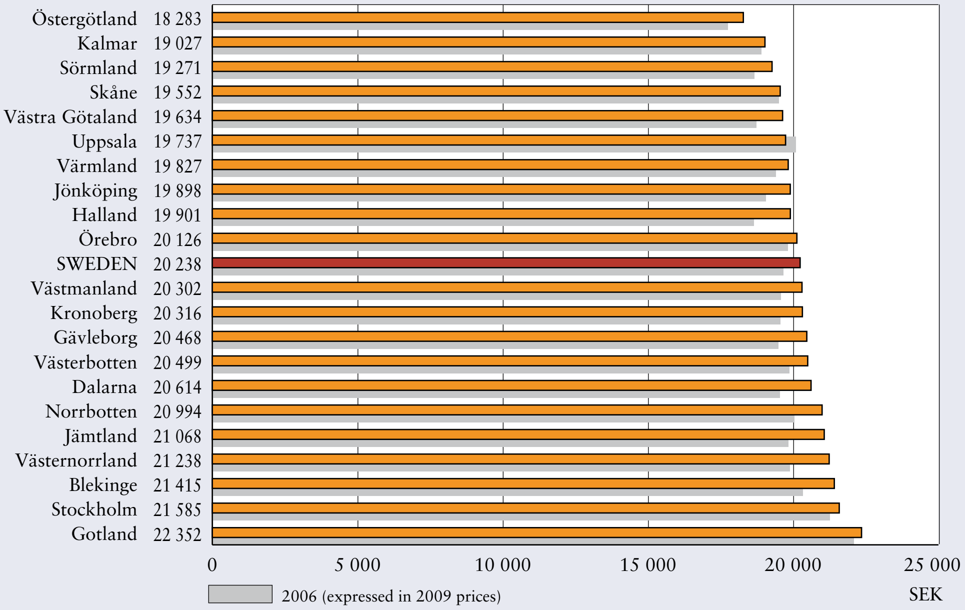


Figure 23 Structure-adjusted healthcare costs per capita, 2009.

Source: Swedish Association of Local Authorities and Regions

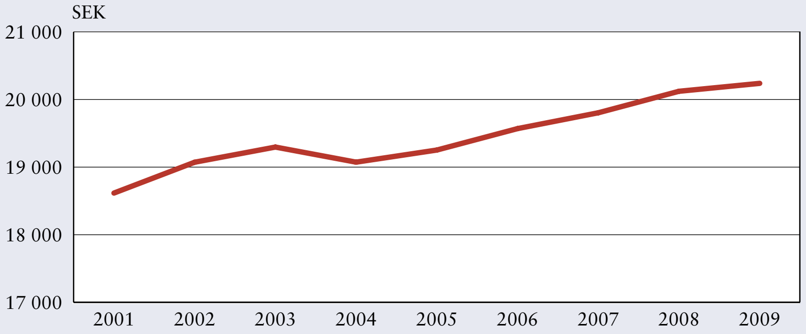


Figure 23 Sweden Structure-adjusted healthcare costs per capita.

Source: Swedish Association of Local Authorities and Regions

23A Per capita cost by type of care

Figure 23A shows actual per capita net cost by region for all health care, each type of care except dental, home health care and restructuring. 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, regional healthcare costs averaged 20 200 kronor per capita in 2009. Norrbotten's costs per capita were 11 per cent above average, whereas Östergötland's costs were 10 per cent below average. A comparison with Figure 23 reveals that the Norrbotten results were largely due to structural factors, given that its structure-adjusted cost was only 4 per cent above average. Kronoberg, on the other hand, had low actual costs that rose when adjustments were made for structural factors.

The per capita cost for primary care in 2009 averaged just over 3 400 kronor, corresponding to 17 per cent of total healthcare costs. The range was relatively wide, from 2 800 kronor in Kronoberg to 4 500 kronor in Jämtland.

Geographic conditions affect regional costs for primary care. The number of inhabitants per health centre varied from under 5 000 in Jämtland to 12 000 in Sörmland. Several sparsely populated regions – particularly Norrbotten, Västerbotten and Jämtland – 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 commitments from region to region.

Costs for specialised medical care, which accounts for an average of more than half of regional healthcare costs, were 11 000 kronor per capita in 2009. Relatively speaking, the regional cost differences were smaller for specialised medical care than other health care.

Stockholm had considerably higher costs than other regions when it came to specialised psychiatric care. One reason may be that mental ill-health is more widespread in a metropolitan environment. Age may also play a role. Stockholm has a young population, which tends to co-vary with greater consumption of psychiatric care. But that relationship is not unambiguous. Uppsala also has a young population, but its psychiatric care costs were close to the national average.

23B Adjusted drug cost per capita

Drug costs totalled 35.5 billion kronor in 2009. Prescription drugs accounted for 25.5 billion kronor, while drugs used in hospitals and for self-care accounted for most of the rest. Prescription drug costs subsidised by the regions (referred to as the benefits cost) amounted to 18.8 billion kronor in 2009.

A number of variables affect drug cost trends. The introduction of new medications, which might be indicated for a wider range of conditions, boosts costs. Among other factors are an ageing population, higher occurrence of obesity and mental ill-health, shifting perceptions of what diseases are treatable, more frequent doctor's appointments, greater patient expectations and new applications for existing medications.

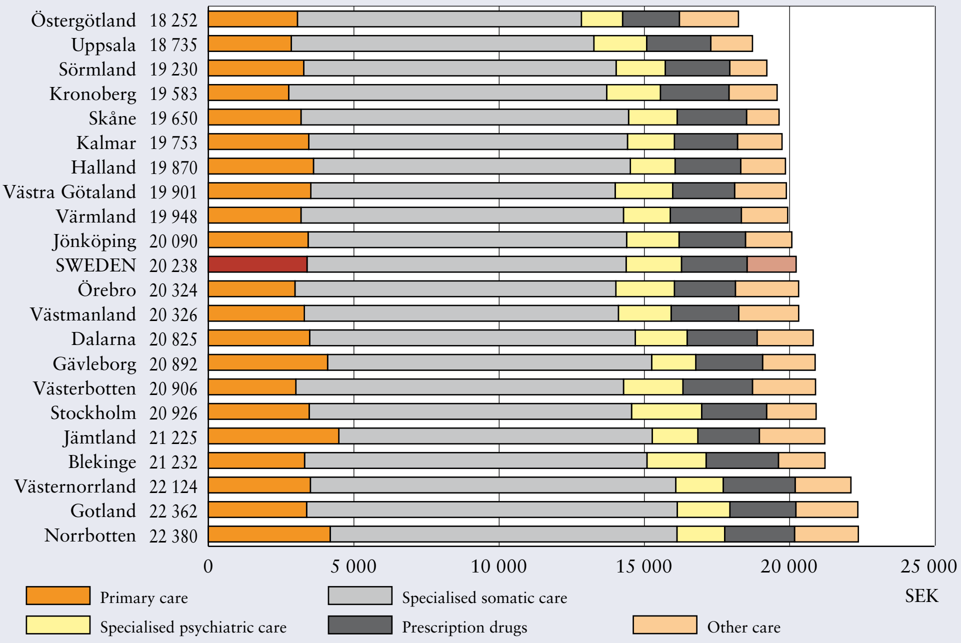


Figure 23A Per capita health care cost, 2009. Home health care, dental care and restructuring costs are excluded.

Source: Swedish Association of Local Authorities and Regions

A number of factors rein in costs instead. Patent expirations and the introduction of cheap generic drugs can have a major impact. Other factors include greater cost consciousness among caregivers and incentives for cost-effective drug consumption, such as a review by the Dental and Pharmaceutical Benefits Agency of available medications and decisions concerning which ones are to be included in the pharmaceutical benefit system.

Figure 23B shows regional benefits costs per capita for prescription drugs. The comparison does not include the cost of accessories covered by the benefit, such as special nutrition, stoma products and aids required to take or self-monitor medication. Drugs that are administered as an integral part of hospital care are excluded as well.

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 administration at the regional level are excluded. Because the factor fluctuates over time, the indicator excludes different medications from one year to the next. The comparison covers approximately 75 per cent of costs for the pharmaceutical benefit.

The cost data are standardised for age and gender. But the fact that no adjustment has been made for varying disease frequencies among the regions may provide one explanation for cost differences.

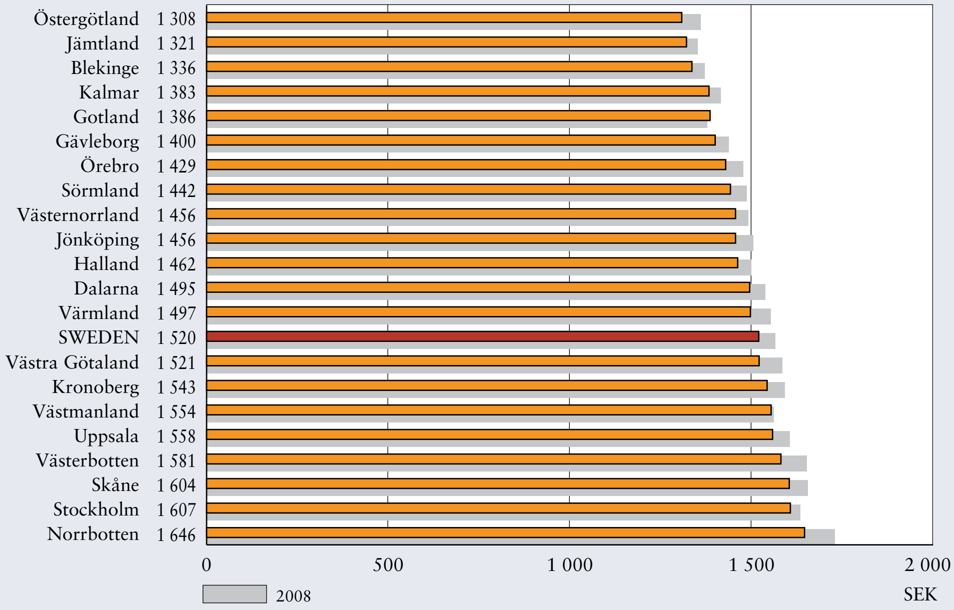


Figure 23B Drug cost per capita, 2009, pharmaceutical benefit, adjusted for gender and age.

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

24 Cost per consumed DRG point

Per capita costs have been considered up to this point. A more direct approach to measuring costs is to relate them to the number of hospital admissions and visits. A relevant measure of admissions and visits must weight them such that attention is paid to the differing resource requirements associated with various diseases and interventions.

Such weighting is possible in specialised medical care. NBHW Patient Register contains all hospital admissions and special care visits. Because diagnostic and age data are included, each event and appointment can be weighted with Diagnosis Related Group (DRG) points. The DRG system classifies individual contacts with the healthcare system based on the amount of resources and the medical issue involved. The data for calculating DRG weights are taken from the Case costing database, which has cost statistics for individual contacts with the healthcare system, including the same information as the Patient Register.

Figure 24 shows the cost per DRG point for the specialised medical care that inhabitants of each region received. This is an indicator of healthcare productivity, i.e., performance in relation to costs. Worth noting is that the indicator refers to cost per consumed DRG point regardless of what region provides the care. For instance, Gotland's cost per DRG point is affected by the price of healthcare services that it

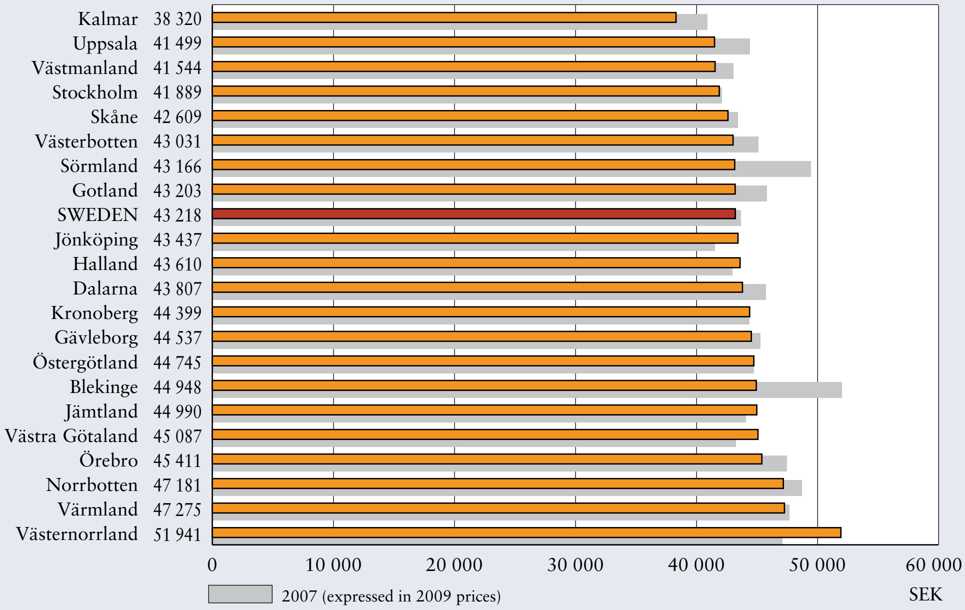


Figure 24 Cost per DRG point – specialised medical care, 2009.

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

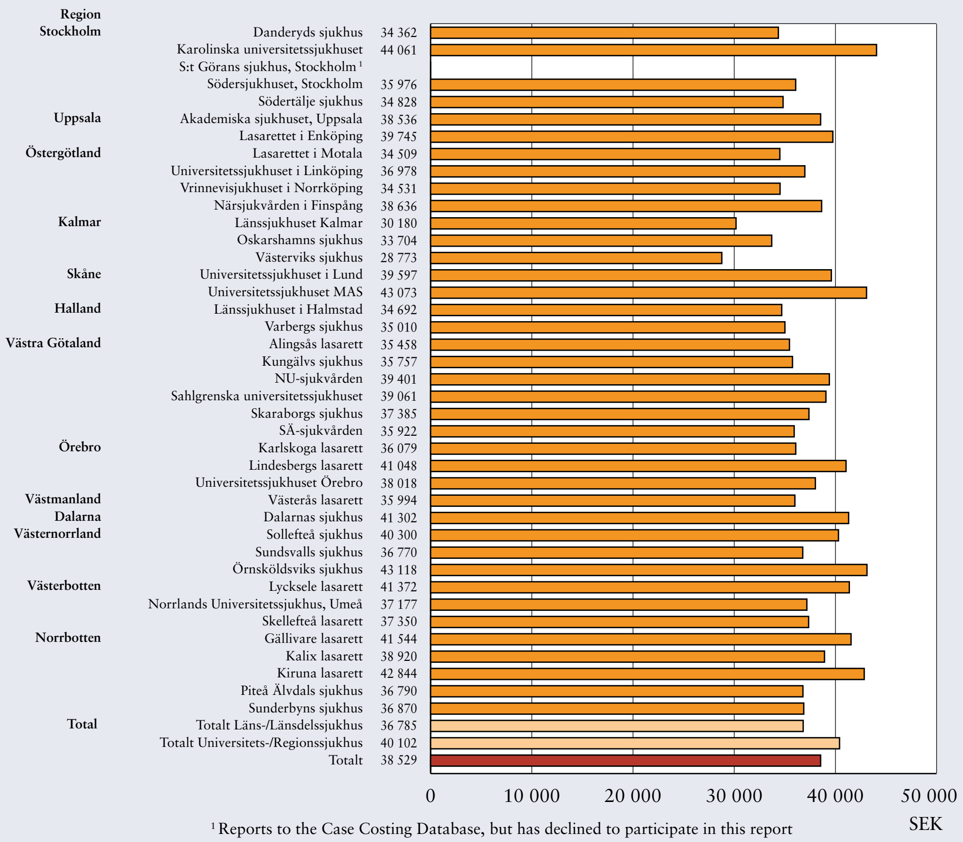
purchases from other regions. It is one of NBHW monitoring indicators in accordance with *Good Care*.

The apparent regional differences in cost per DRG point may reflect measurement problems. The quality of primary classification of various treatment methods and diagnoses, particularly when it comes to outpatient care, still varies from region to region.

There are also structural factors that have not been taken into consideration. Given variations in geographic conditions, wages and rents, not all regions can have the same costs. The DRG system takes regional case mix, but not other factors, into consideration.

Cost discrepancies among the regions are of approximately the same magnitude when measured this way as when examined on a per capita basis. But the rankings differ. Kalmar has the lowest cost per DRG point (11 per cent below average). Uppsala has the lowest cost per case measured by DRG points The reason that these regions do not report the lowest costs per capita is that their DRG points per inhabitant are relatively high.

The cost per DRG point was somewhat lower in 2009 than 2007, suggesting that costs rose less steeply than the weighted hospital admissions and visits.



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

Figure 24A
Hospitals

Cost per DRG point – specialised medical care, 2009.

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

There are uncertainties to be considered. An increase in consumed DRG points may be the result of improved hospital reporting to the Patient Register. This is particularly true of outpatient care. The reported benefits of healthcare consumption increase without adding any costs.

24A Cost per DRG point for hospitals

Figure 24A shows cost per case in 2009 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 admissions in the Case Costing database averaged more than 46 000 kronor in 2009. All events, including outliers, were included. Figure 24A excludes outliers, which reduces the national average to 38 500 kronor per DRG point, up a little more than 1 per cent since 2008.

One problem that arises when only costs per case in inpatient care are included is that they must be uniformly allocated between outpatient and inpatient care. If

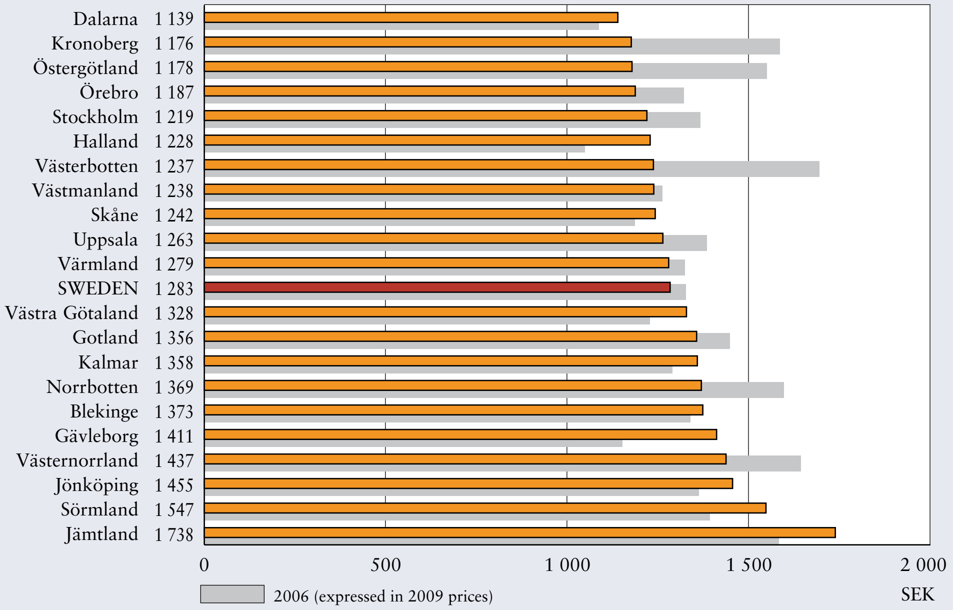


Figure 25 Cost per contact in primary care, 2009.

Source: Swedish Association of Local Authorities and Regions

not, such accounting differences affect productivity calculations. In the remainder of the report, hospitals are reported per region, not ranked by outcome.

25 Cost per contact with the primary care system

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

Figure 25 weights contacts with the healthcare system with respect to type of contact, the category of healthcare professional involved and the kind of primary care provided. The weighted number of visits is subsequently related to the cost of primary care in each region. It is one of the NBHW monitoring indicators in accordance with *Good Care*.

Cost per contact with the healthcare system can support analyses of primary care costs for a region. For instance, high primary care costs in Jämtland 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 Norrbotten, given that the cost per contact is not particularly high while the per capita primary care cost is relatively high. Sörmland (high cost per contact) and Östergötland (low cost per contact), both of which have average total primary care costs, reveal a similar dichotomy.

The cost comparison is approximate because contacts with the healthcare system and primary care visits do not reflect all of primary care, and because the indicator does not capture the considerable differences in time and resource utilisation that the contacts may be expected to exhibit.

Indicators by Area

PREGNANCY, CHILDBIRTH AND NEONATAL CARE

The new indicator in this area reflects smoking habits during late pregnancy. The other seven indicators are essentially unchanged. A number of the indicators show previous results as well.

The abortion indicator is based on NBHW statistics. Data for the indicators on pregnancy, childbirth and neonatal care were taken from NBHW Medical Birth Register, which includes virtually all births in Sweden. The Cost Per Patient database kept by SALAR is the source for the indicator on childbirth costs.

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

26 Smoking habits during pregnancy

Smoking habits were 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 medical birth 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 2008.

Snuff use was first entered in the medical birth register in 1999. The proportion of women who use snuff during early pregnancy declined from 1.4 per cent in 2003 to 1.1 per cent in 2008, while snuff use during weeks 30–32 remained constant at 0.5 per cent. Most snuff users were in the northernmost regions of Jämtland, Västerbotten and Norrbotten.

Smoking is the single biggest preventable risk factor for disease and early death. Evidence of the harmful effects of tobacco during pregnancy has grown. A number of scientific studies show that smoking increases the risk of miscarriage, premature childbirth, reduced foetal growth, abruptio placentae, foetal death and sudden infant death syndrome. Smoking is directly correlated to the risks. The foetus benefits as soon as the woman stops smoking.

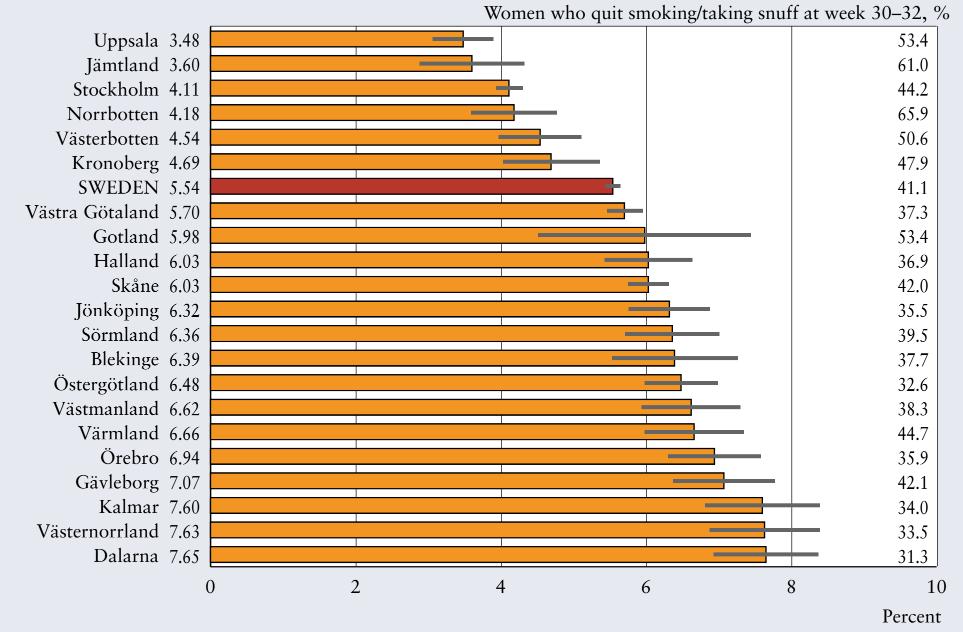


Figure 26 Percentage of women who smoked or used snuff during weeks 30–32 of pregnancy, 2007–2008. Age-standardised.

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

While the effects of snuff have not been examined to the same extent, a recent Swedish study shows that the risk of foetal death was 60 per cent higher for snuff users.

Figure 26 presents the percentage of women who smoked or used snuff during weeks 30–32 of pregnancy. The proportion ranged from 3.5 to 7.7 per cent, while the national average was 5.5 per cent. Patients who used tobacco during weeks 30–32 but not in early pregnancy were also included.

The right hand column of the diagram shows the percentage of women who stopped using tobacco during pregnancy. The proportion of patients who smoked or used snuff during early pregnancy and had stopped by weeks 30–32 was greatest in Norrbotten (65.9 per cent) and smallest in Dalarna (31.3 per cent).

A larger percentage of women stopped using tobacco in regions where use was already low. Tobacco use in the three northernmost regions, as well as Uppsala and Stockholm, was lowest during weeks 30–32, and a larger percentage of patients had stopped after registration for prenatal care.

27 Abortion prior to the 10th week of pregnancy

The number of abortions declined to 37 524 to in 2009. The number of abortions performed before the 10th week of pregnancy increased by more than 2 per cent

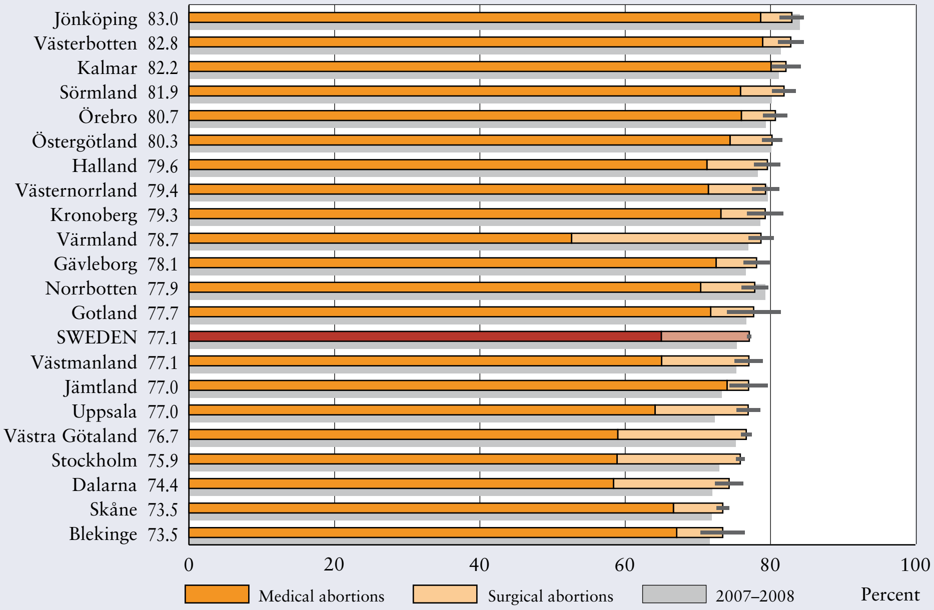


Figure 27 Percentage of abortions prior to the 10th week of pregnancy, broken down by medical and surgical procedures, 2008–2009. Age-standardised.

Source: Abortion statistics, National Board of Health and Welfare

to 29 247. Early abortion is a safer medical procedure. Although complications are uncommon, the risk increases with the term of pregnancy. Thus, it is important to minimise waiting times.

Prior to the 10th week of pregnancy, either a medical or surgical abortion can be performed. Up to that point, the patient can choose the method on her own as long as there are no medical obstacles. Surgery is most common after the 10th week. As a result, short waiting times are necessary so that women have the opportunity to make the choice that works 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 healthcare facility. The second round may be at home, assuming that certain criteria have been met. Surgical abortion involves 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. The proportion of medical abortions has risen in recent years and reached 73 per cent in 2009.

Figure 27 shows the percentage of abortions performed before the 10th week of pregnancy broken down by the medical and surgical method for 2008–2009. The

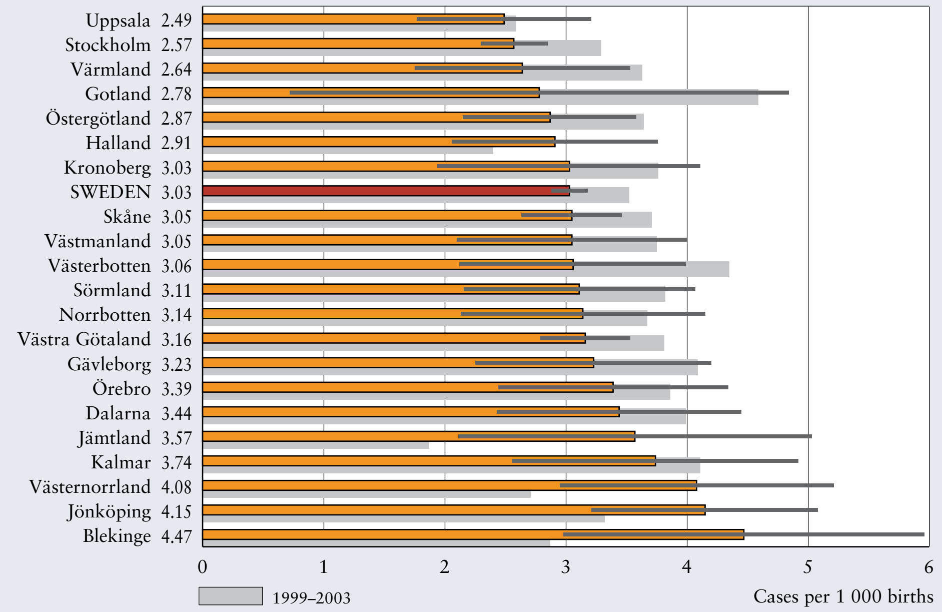


Figure 28 Foetal mortality rate per 1 000 births. 2004–2008. Age-standardised.

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

proportion of these abortions ranged from 73.5 to 83.0 per cent and averaged 77 per cent. The majority were medical, but there were large regional variations. The regions with the greatest percentage of abortions prior to the 10th week also had a very high percentage of medical abortions.

28 Foetal mortality rate

Until June 2008, foetal death was defined as a stillbirth after the 28th week of pregnancy. The definition was changed to the 22nd week as of July 2008.

Foetal death can occur either before or – less commonly – during delivery. While 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 cause can be identified in 10–15 per cent of cases.

The annual number of foetal deaths has been around 300 in recent years. 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. Patients age 35 and older are at greater risk than those age 20–34. Primaparas run a greater risk of intrauterine foetal death.

Smoking and overweight are among the leading known preventable risk factors for intrauterine foetal death. By means of early monitoring and regular check-ups, the

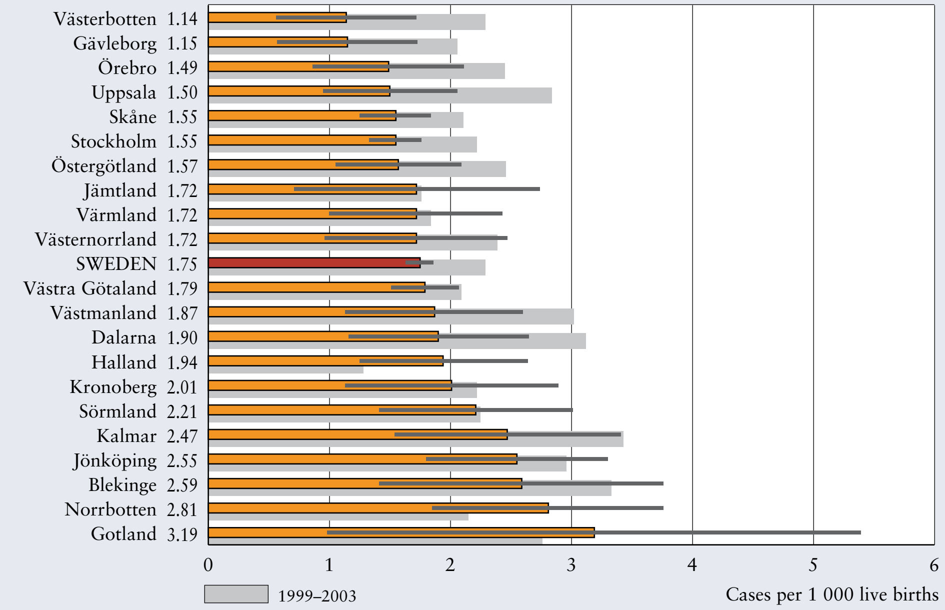


Figure 29 Neonatal mortality rate within 28 days per 1 000 live births, 2004–2008. Age-standardised.

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

prenatal care system should reduce the risk. According to comparisons performed by WHO Europe, Sweden has a very low percentage of foetal deaths.

Figure 28 presents the number of foetal deaths per 1 000 births in 2004–2008. The national rate was 3.0. The variation among regions was a relatively large 2.5–4.5. A number of regions reported a decrease from the previous period, which is shown by a shaded bar. The diagram demonstrates that statistical uncertainty was high, given that the actual numbers were very small.

29 Neonatal mortality

The neonatal mortality rate measures the number of infants who die within 28 days after birth. The rate may reflect the quality of both maternal and neonatal care. The neonatal mortality rate in Sweden has declined from over 5 per 1 000 live births in the early 1980s to 1.5–2.1 per 1 000 live births in the years presented here.

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

Figure 29 presents the number of neonatal deaths within 28 days per 1 000 live births in 2004–2008. The national rate was 1.8 per 1 000 live births or approximately

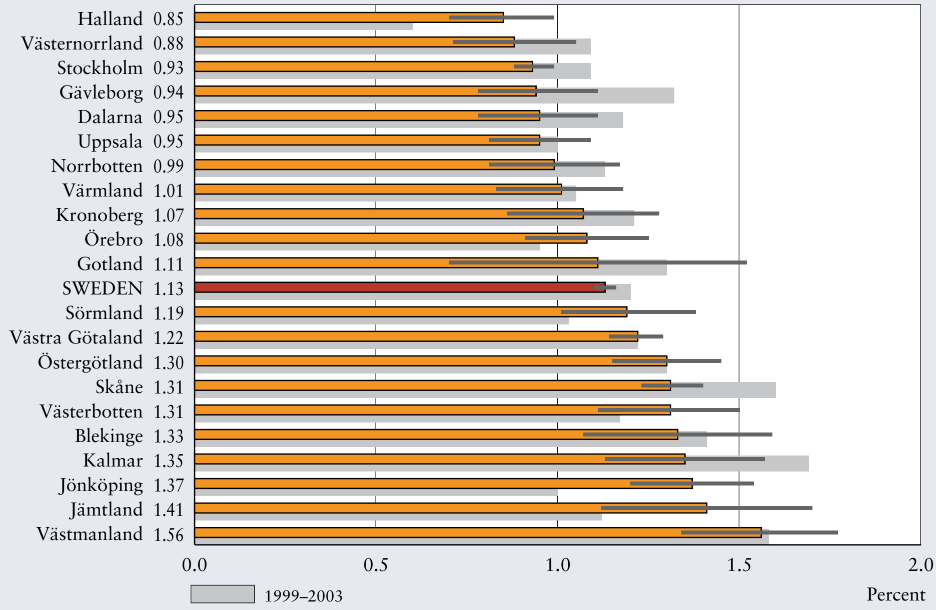


Figure 30 Percentage of newborns with Apgar score under 7 at five minutes, 2004–2008. Age-standardised.

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

180 per year. The regional variation was a relatively wide 1.1–3.2. Statistical uncertainty was great, given that the actual numbers were very small.

30 Percentage of newborns with Apgar score under 7

The Apgar score is a system for standardised assessment of the vitality of newborns. The newborn's heart rate, breathing, skin colouration, activity and muscle tone, and reflex irritability are rated on a scale of 0–2 at one minute, five minutes and ten minutes after birth. Ten is the highest possible Apgar score. A score below 7 at five minutes is normally defined as low.

A number of factors can lead to a low Apgar score at five minutes. The score reflects any oxygen deficiency that remains or first appears at that point. An oxygen deficiency may be caused by complications in the placenta, complications in the umbilical cord, stunted growth, disease in the mother, uterine inertia, assisted delivery or other childbirth complications, or anaesthesia or analgesics administered during delivery. Both mortality rates and the risk of serious neurological damage are greater in newborns with low Apgar scores at five minutes.

For the country as a whole, the percentage of newborns with Apgar scores lower than seven at five minutes was just over 1 per cent in 2004–2008. That corresponds to more than 1 100 newborns per year. The regional variation was 0.9–1.6 per cent.

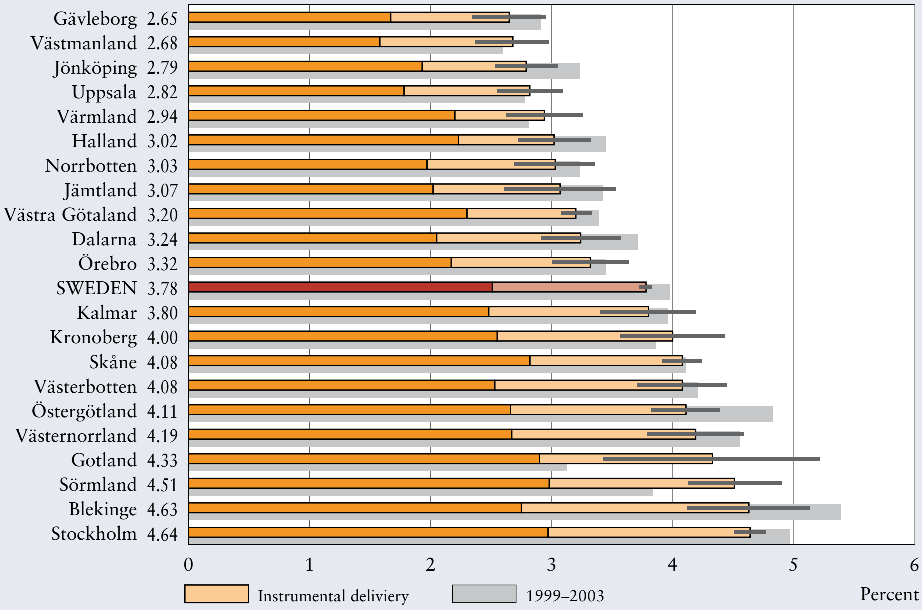


Figure 31 Percentage of third and fourth degree perineal tears during vaginal delivery, 2004–2008. Age-standardised.

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

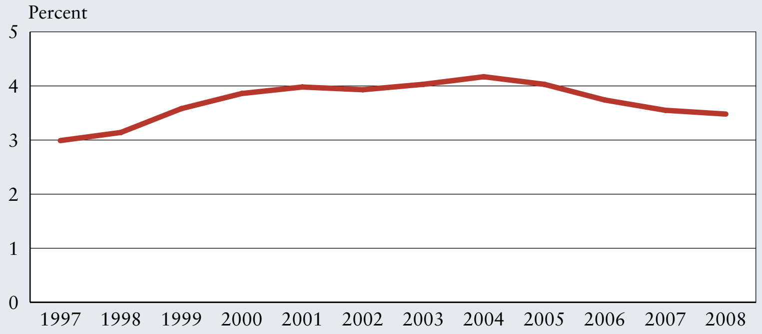


Figure 31
Sweden

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

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

31 Third and fourth degree perineal tear during vaginal delivery

Perineal tear during vaginal delivery is classified as first to fourth degree. First and second degree perineal tear involves external vaginal and perineal tissue and is usually not serious. Third degree perineal tear also includes all or part of the sphincter, and fourth degree perineal tear also involves the rectal mucosa.

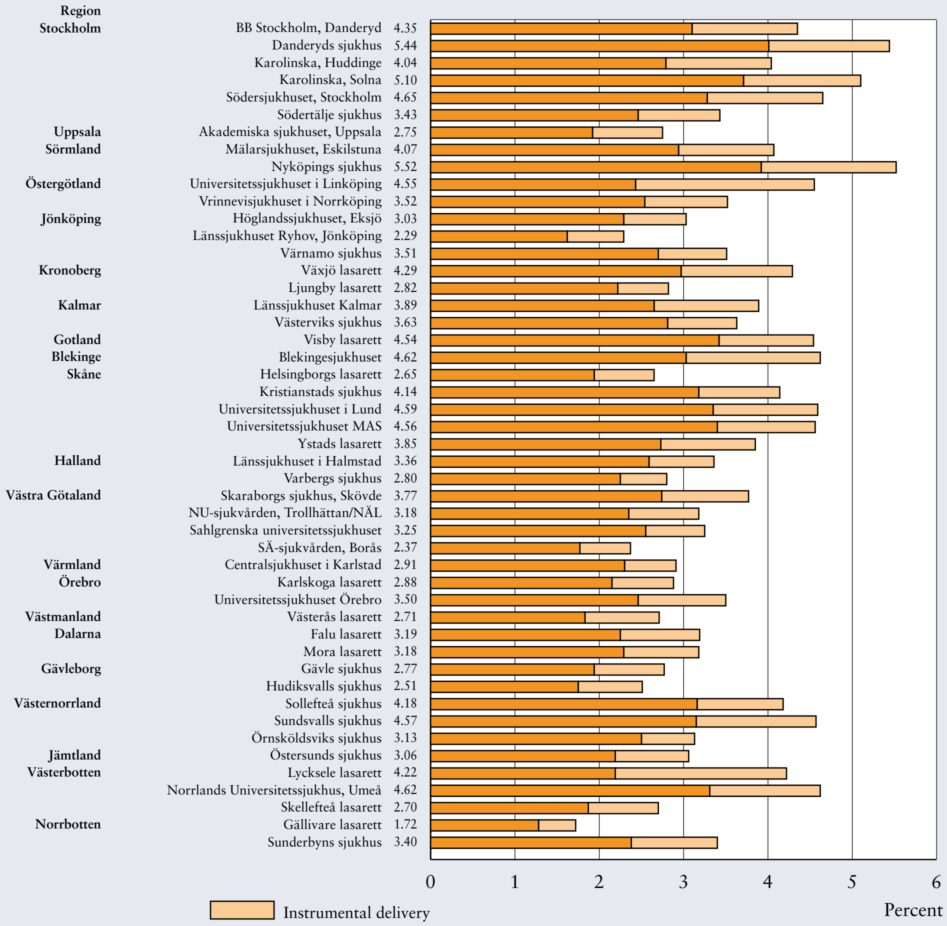


Figure 31
Hospitals

Percentage of third and fourth degree perineal tears during vaginal delivery, 2004–2008. Age-standardised.

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

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

Most perineal tears heal completely and the patient suffers no permanent harm. Perineal tears that remain undetected or are insufficiently treated can lead to serious health problems. They can impair mental and emotional wellbeing, including fears about incontinence, sexual performance and future pregnancy. Among the potential permanent complications are pain in the perineum, pain during intercourse and faecal incontinence.

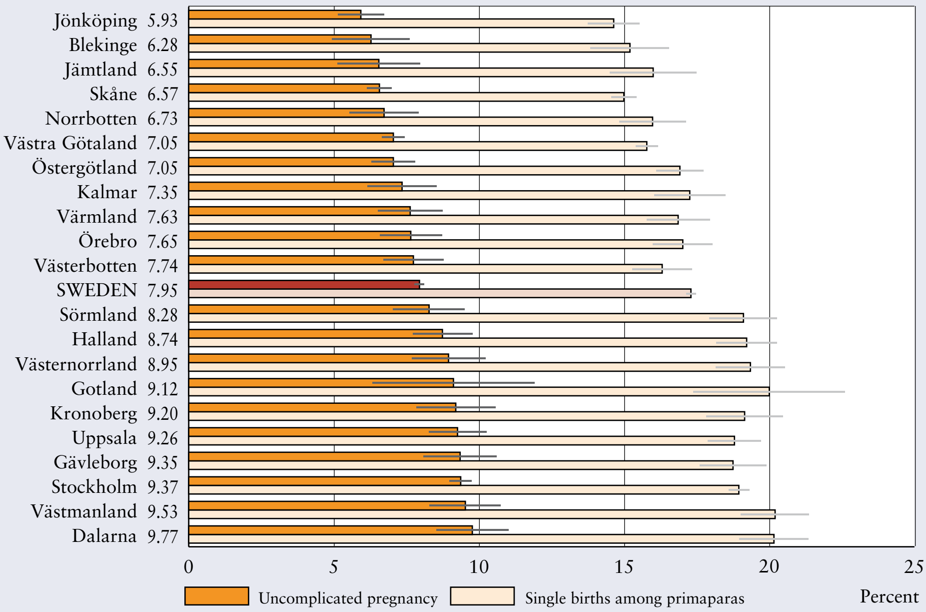


Figure 32 Caesarean section in uncomplicated pregnancy and in all single births among primaparas, 2004–2008. Ages 20–34.

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

Figure 31 presents the percentage of third or fourth degree perineal tears among all vaginal deliveries. The bars also indicate the breakdown between assisted and non-assisted deliveries. The shaded bar shows the frequency of third and fourth degree perineal tears in 1999–2003. The analyses include both primaparas and multiparas.

In the country as a whole, 3–4 per cent of vaginal deliveries were accompanied by third or fourth degree perineal tears. The proportion was 13 per cent for assisted deliveries (not shown in the diagram). That translates into more than 3 000 women a year. The total proportion in 2004–2008 was 2.7–4.6 per cent. The variation among hospitals and regions suggests that the number of third and fourth degree perineal tears can be influenced and the frequency of childbirth injury thereby significantly reduced.

32 Caesarean section in uncomplicated pregnancy

The frequency of Caesarean section rose from 10.6 per cent in 1990 to 17.2 per cent in 2008. No international consensus has been established concerning the optimum frequency. Thus, it does not directly reflect the quality of prenatal and maternity care. However, more frequent use of Caesareans in the absence of medical indication raises childbirth costs. The issue is worthy of analysis due to cost considerations, as well as variations in clinical practice from one region and hospital to another.

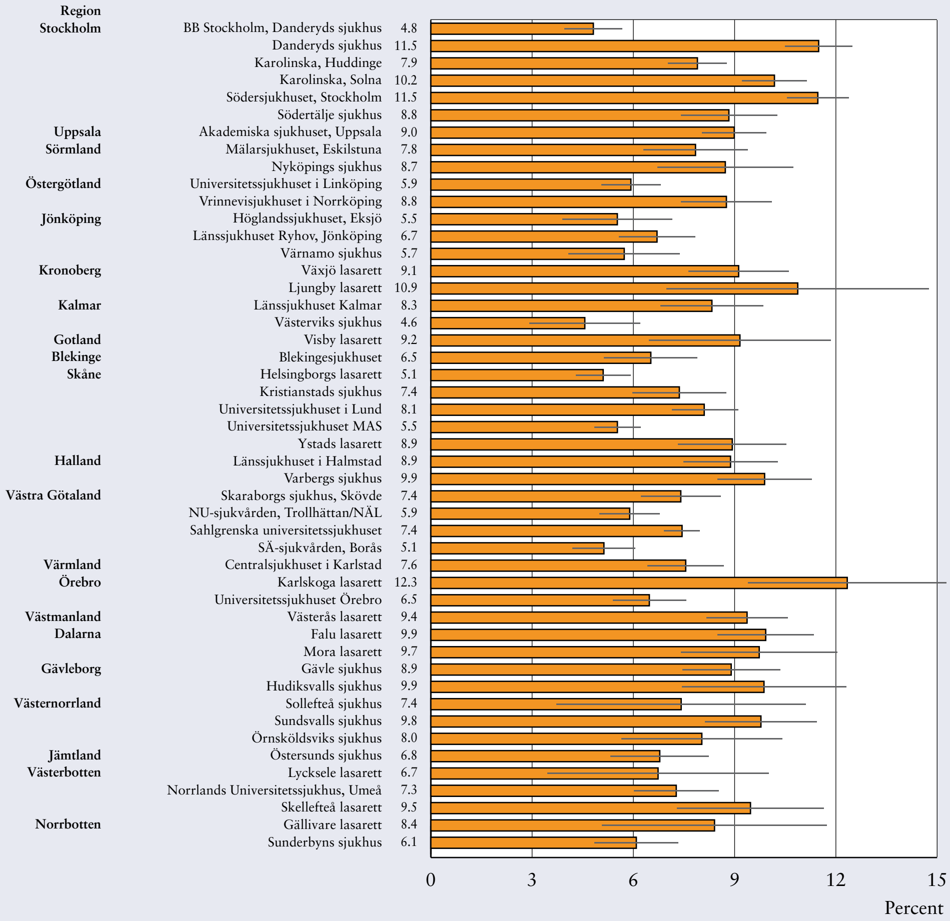


Figure 32
Hospitals

Caesarean section in uncomplicated pregnancy, 2004–2008. Ages 20–34.

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

While Caesareans are uncontroversial in emergencies, a number of variables must be examined when risk reduction for the foetus is more modest. In recent years, new complications – such as breech presentation – have been identified for which a scheduled Caesarean prior to labour has been shown to reduce the risks to the foetus. More effective identification of risk situations will inevitably lead to additional Caesareans.

Some published studies have concluded that a scheduled Caesarean is not wholly risk-free for either the woman or the foetus. Caesareans increase the risk of early breathing difficulties. Women who undergo a Caesarean are at higher risk of profuse bleeding, infection and blood clots during childbirth. However, they are at lower risk of vaginal tear and subsequent urinary incontinence. In connection with their next pregnancy, they run a higher risk of uterine rupture during childbirth and problems with placental position.

The shorter bar in Figure 32 shows the percentage of Caesareans among primaparas without risk factors whose pregnancies are uncomplicated. The group includes women age 20–34 who have a BMI under 30, live with the child's father and neither smoke nor use snuff. The comparison excludes women with diabetes, kidney disease or other serious diseases that can affect pregnancy. Women who have experienced various complications during pregnancy are also excluded. Both scheduled and emergency Caesareans are included. For more details, see Appendix 1.

From a medical point of view, Caesareans would be expected to be relatively infrequent for this category of childbirths. The nationwide frequency in 2004–2008 was almost 8 per cent or more than 7 300 births. In 1999–2003, the frequency was 7.4 per cent (not shown in the diagram).

The longer bar shows the percentage of Caesareans among all primaparas in a considerably larger population. The population included 20–34 year-old women who had single births. The national frequency of Caesareans was 17.3 in 2004–2008, as opposed to 16.3 per cent in 1999–2003 (not shown in the diagram).

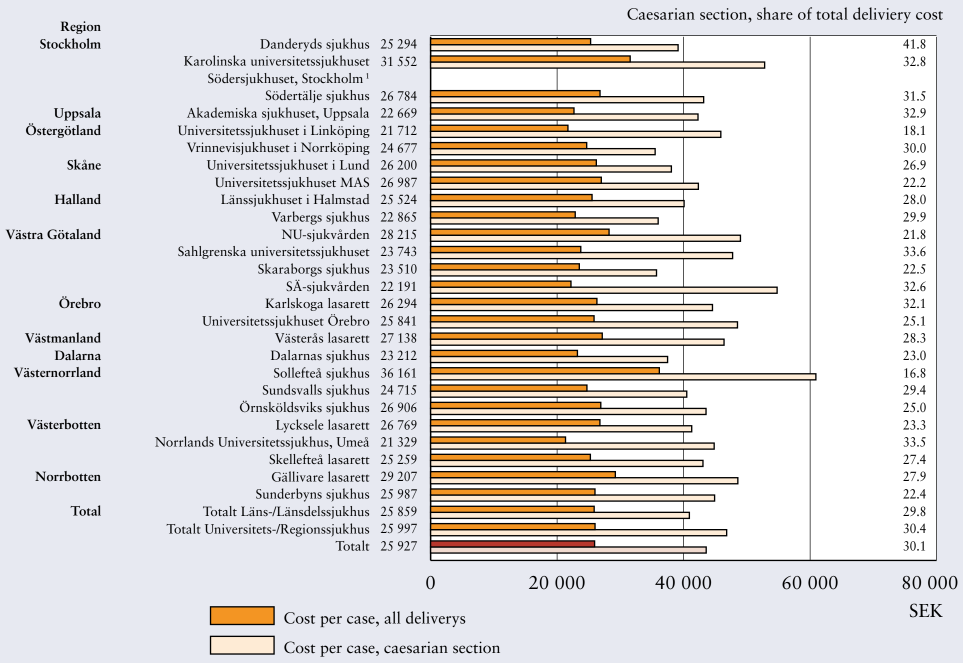
33 Cost per case in childbirth

A total of 27 hospitals in 12 regions reported childbirth data to the Swedish Case Costing database in 2009. The database contains the costs for each delivery and the interventions associated with it, but not check-ups or drug consumption in outpatient care. Outliers are excluded in order to show a normal average cost per hospital and partially adjust for variations in case mix.

Figure 33 shows cost per case in DRG 370-373 for all deliveries, as well as for Caesarean sections alone. Costs for 80 258 deliveries were reported to the Case Costing-database in 2009. The number of deliveries varied substantially from hospital to hospital. The cost for non-outliers in the database averaged 25 912 kronor in 2009. Hospitals varied from 21 000 to 36 000 kronor.

The cost differences were not wholly due to period of care, which was between two and just over three days for all hospitals. One variable that affects costs was the percentage of Caesareans, which are particularly resource-intensive because they are performed in operating rooms. Caesareans averaged just under 44 000 kronor, while vaginal deliveries averaged just over 22 000 kronor. Caesareans accounted for 17–43 per cent of total costs, depending on the hospital. These percentages appear on the right side of the diagram.

Beyond Caesarean frequency and period of care, there may 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.



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

Figure 33
Hospitals

Cost per case for delivery, 2009.
Both vaginal and caesarean section.

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

Rules have been drawn up for the types of costs to be reported to the Cost Per Patient database, as well as how they are to be calculated. Nevertheless, any comparisons should consider that the calculations may differ from one hospital to the next.

GYNAECOLOGICAL CARE

The seven gynaecological indicators reflect different quality and efficiency variables. The two new indicators concern patient-reported complications associated with hysterectomy and uterine prolapse. Their data source is the National Quality Register for Gynaecological Surgery (GynOp).

34 Adverse events after hysterectomy

Hysterectomy is a fairly common procedure. As with all surgery, there is a risk of postoperative infection or other complication 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.

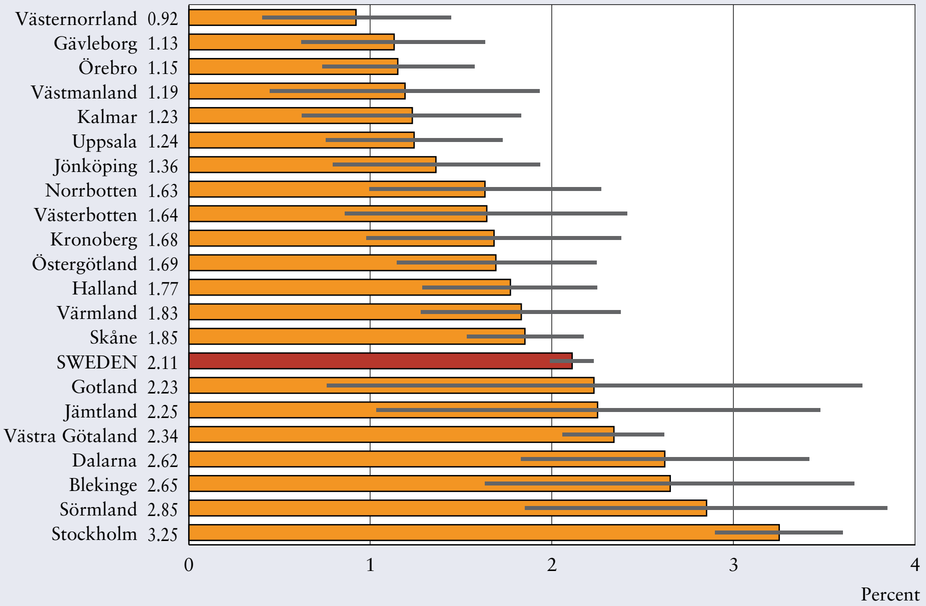


Figure 34 Adverse events after hysterectomy, 1999–2009.
Ages 15–84. Age-standardised.

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

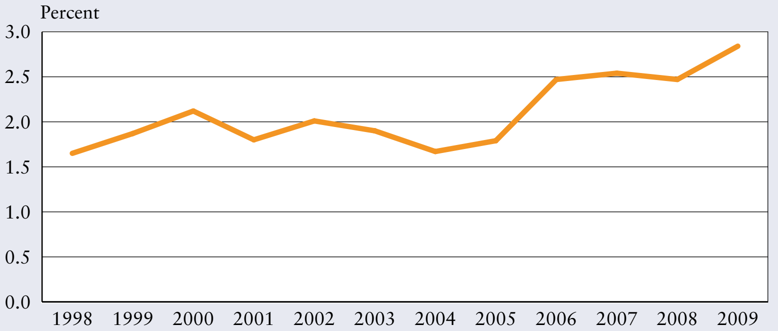


Figure 34
Sweden

Adverse events after hysterectomy.
Ages 15–84. Age-standardised.

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

The indicator shows adverse events, defined as readmission of hysterectomy cases not associated 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 Patient Register, almost 4 600 hysterectomies for benign indications were performed in 2008. Partially due to additional drug therapy options for profuse menstrual bleeding, the number of procedures has declined significantly over the past ten years.

Approximately 55 000 15–84 year-old patients operated on in 1999–2009 for benign indications were included. They were followed up for readmission within 28 days due to postoperative infection, ileus, diseases of the urinary organs and difficulty urinating. Postoperative infection accounted for 80 per cent of all readmissions.

A total of 2.1 per cent of hysterectomy cases nationwide were readmitted in 1999–2009 due to postoperative complications. The proportion varied from 1.6 to 2.8 per cent, depending on the year. The regions ranged from 1 to 3 per cent, but many 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.

This indicator reflects only complications that led to readmission. The next indicator includes other complications as well.

35 Patient-reported complications after hysterectomy

Data on patient-reported complications and unexpected problems were taken from GynOp, which consists of six independent registers.

Forty-three of Sweden's 56 clinics report to GynOp, 42 to the hysterectomy register and 38 to the uterine prolapse register. The seven hospitals in the Stockholm area have their own register and do not currently report to GynOp. The register includes Värmland and Gotland clinics. A random sampling of hospitals found that an average of 96 per cent of procedures were reported and that the response rate for patient questionnaires was better than 95 per cent.

The follow-up after hysterectomy for benign indications primarily concerns the frequency of complications. Apart from the problems and symptoms from which the patients seek relief, they are basically healthy. Surgery is expected to wholly eliminate the symptoms. Thus, it is particularly important that no serious complications arise. According to the GynOp follow-up, approximately 3 per cent of patients experience serious complications that require readmission, reoperation and convalescence extended for more than four weeks.

This indicator reflects postoperative complications in a broader sense, including unscheduled contact with the healthcare system due to unexpected events, mild infections, wound problems and inadequate information.

Figure 35 shows the percentage of patients who reported complications or unexpected problems, as well as mild symptoms that did not require contact with the healthcare system. A total of 2 522 patients responded to the questionnaire, which

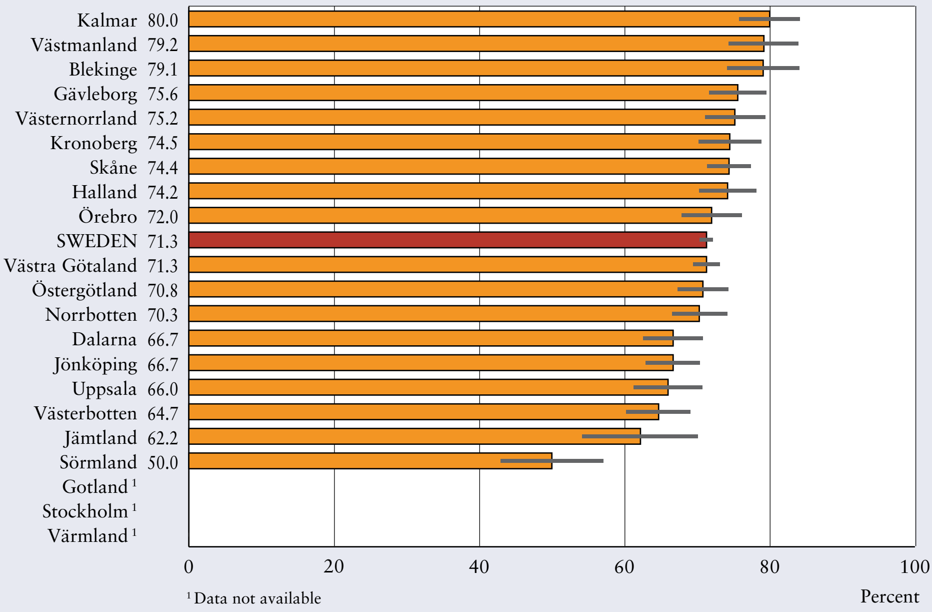


Figure 35 Percentage of patients who reported that they had no complications or adverse events after hysterectomy, 2009.

Source: National Quality Register for Gynaecological Surgery

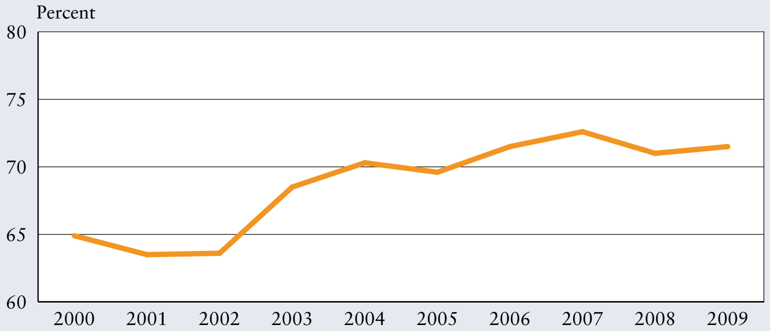


Figure 35 Sweden Percentage of patients who reported that they had no complications or adverse events after hysterectomy.

Source: National Quality Register for Gynaecological Surgery

was sent out two months after surgery. The response rate was 95 per cent but varied from clinic to clinic. Twenty nine clinics had response rate above 90 per cent. Örebro, Örnsköldsvik, Varberg and Lund had non-response rates above 20 per cent.

Seventy one per cent of patients nationwide reported that they did not experience any complications or unexpected problems. Regional results ranged from 50 to 80

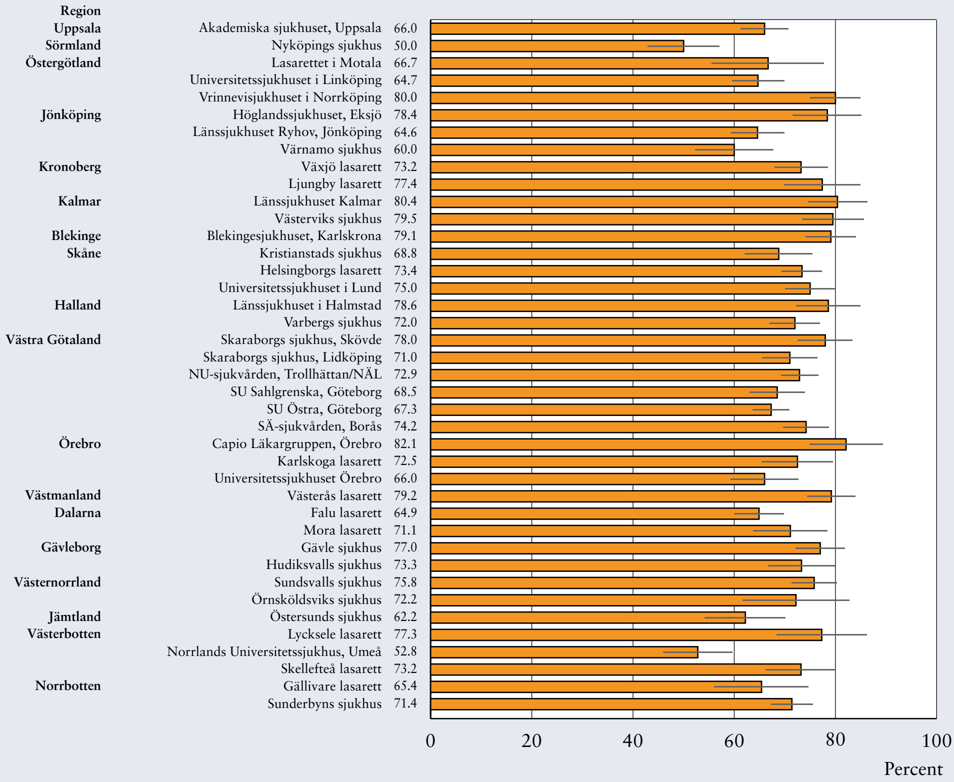


Figure 35
Hospitals

Percentage of patients who reported that they had no complications or adverse events after hysterectomy, 2009.

Source: National Quality Register for Gynaecological Surgery

per cent. The results were good compared to other countries, and the frequency of complications was lower than what randomised studies have found. A report by the quality register concerning post-hysterectomy complications in 2004–2007 indicates that routine health care in Sweden is world-leading.

36 Patient-reported complications after uterine prolapse surgery

Approximately 6 000 uterine prolapse operations are performed in Sweden every year. While not normally involving any medical complications, uterine prolapse may cause very annoying symptoms. The purpose of operating is to provide relief, and monitoring of postsurgical complications is integral to the results.

Figure 36 shows the percentage of patients who reported complications or unexpected problems, as well as mild symptoms that did not require contact with the healthcare system. A total of 3 167 patients responded to the questionnaire, which was sent out two months after surgery. The non-response rate was below 5 per cent for 12 of the 37 reporting clinics.

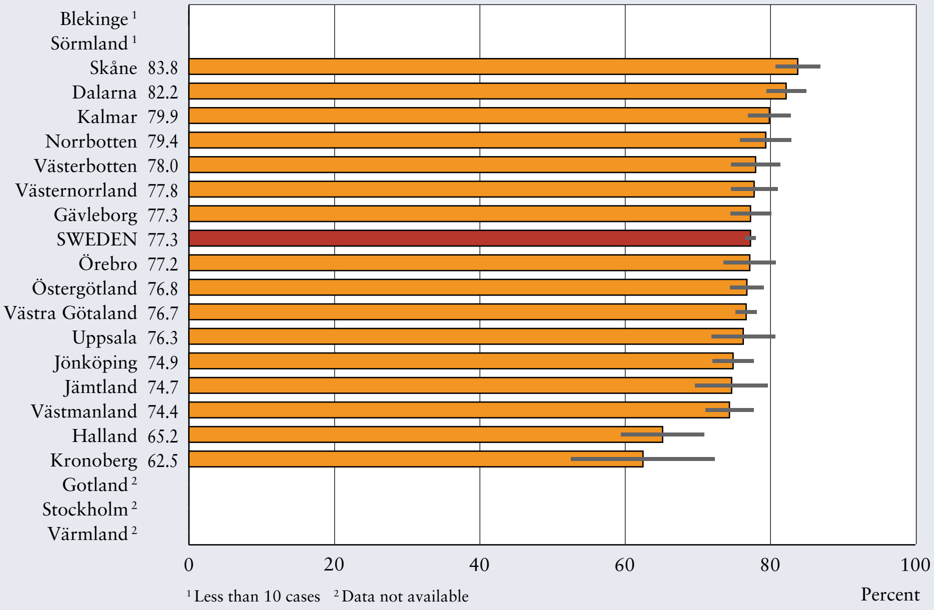


Figure 36 Percentage of patients who reported that they had no complications or adverse events after uterine prolapsed surgery, 2009.

Source: National Quality Register for Gynaecological Surgery

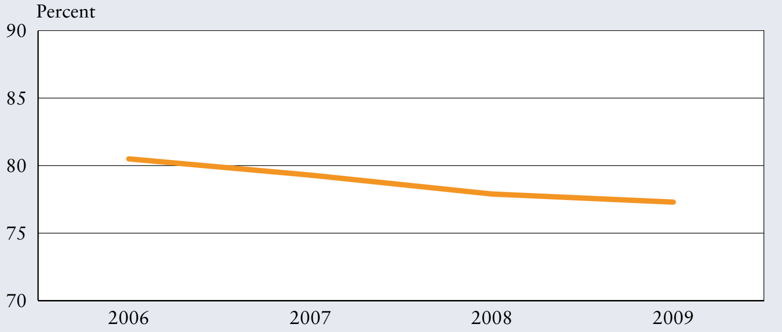


Figure 36 Sweden Percentage of patients who reported that they had no complications or adverse events after uterine prolapsed surgery.

Source: National Quality Register for Gynaecological Surgery

Seventy seven per cent of the patients nationwide reported no postsurgical complications or unexpected problems. The percentage has declined somewhat in recent years. A source of error in this type of follow-up is that patient reporting of complications in a questionnaire for the quality register is subjective.

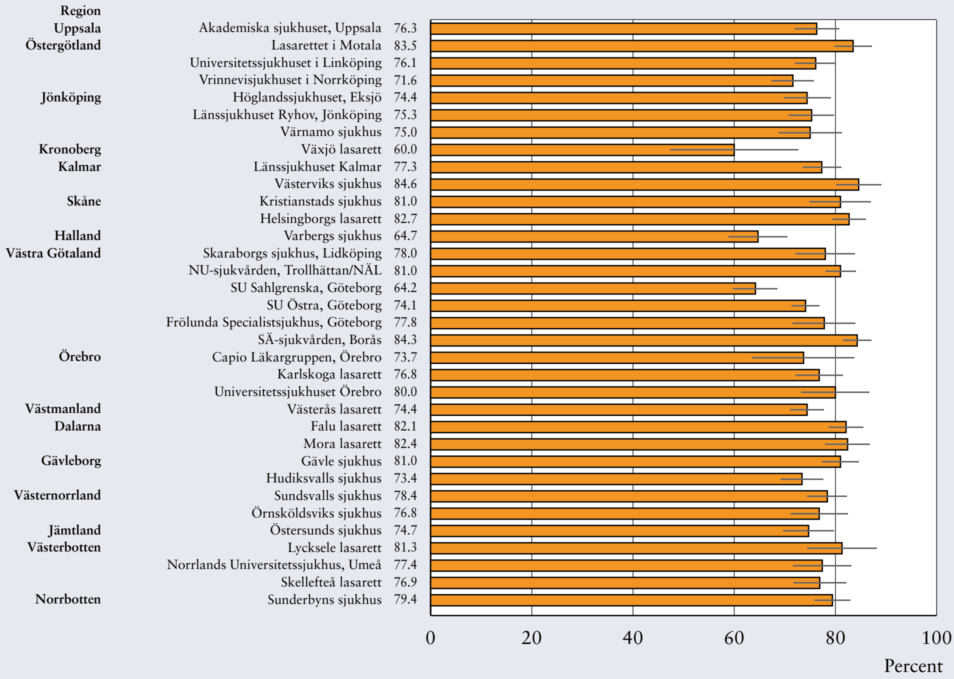


Figure 36
Hospitals

Percentage of patients who reported that they had no complications or adverse events after uterine prolapsed surgery, 2009.

Source: National Quality Register for Gynaecological Surgery

37 Uterine prolapse – frequency of day-case surgery

Approximately 6 300 uterine prolapse operations were performed in 2009. More than 1 100 were day-case surgery, a somewhat higher percentage than 2008. Day-case surgery is appropriate, assuming that postoperative surveillance is available for enough hours and inpatient resources can be called on when necessary. The diagnosis of uterine prolapse is broad and can involve very different degrees of severity. Similarly, surgery may be simple (standard), 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 care 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.

There is no evidence to suggest that the general or health status of patients differs radically from region to region. The regional variations in the percentage of day-case operations are so pronounced that local tradition and culture undeniably play a significant role. One region has approximately 70 per cent day-care surgery, whereas

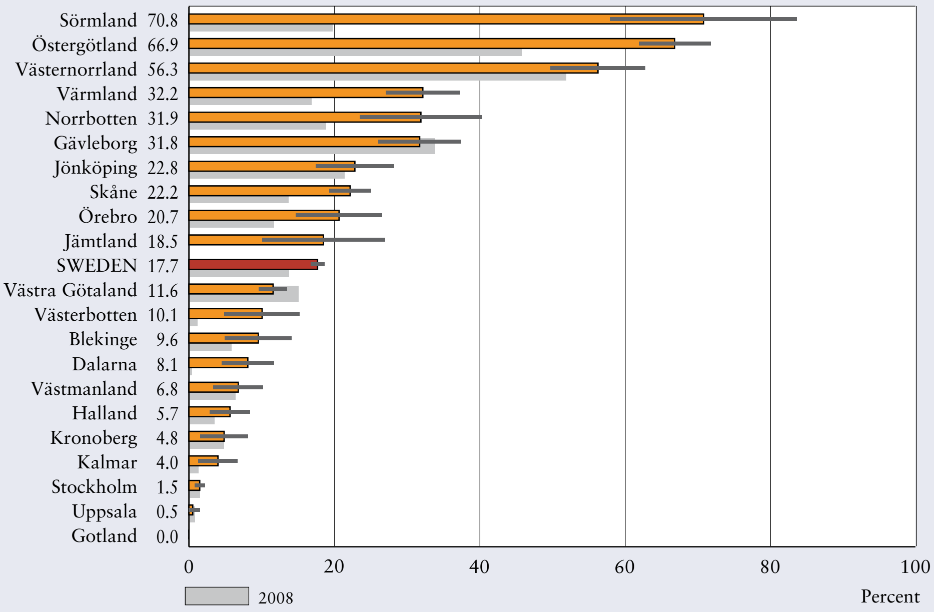


Figure 37 Uterine prolapse – frequency of day-case surgery, 2009.

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

others rely almost entirely on inpatient surgery. Regions with a high percentage of inpatient surgery should be able to lower their costs without sacrificing quality.

38 Cost per case for hysterectomy

A total of 3 399 cases with a procedure code for hysterectomy were reported to the Swedish Case Costing Database in 2009. The period of care averaged 3.3 days and varied from 1 to 5 days, depending on the hospital. The variation may be due to case mix, allocation of responsibilities or choice of surgical method.

Figure 38 shows costs per case for inpatient hysterectomy. The patient population and procedure are the same as those for which adverse events are presented in Figure 34. The cost for non-outliers in the case costing database averaged 50 321 kronor in 2009. The costs ranged widely from 31 000 to 75 000 kronor, depending on the hospital.

A number of variables beyond period of care may contribute to the cost discrepancies: operating time, staff per bed and hospital, case mix, technology and accounting procedures.

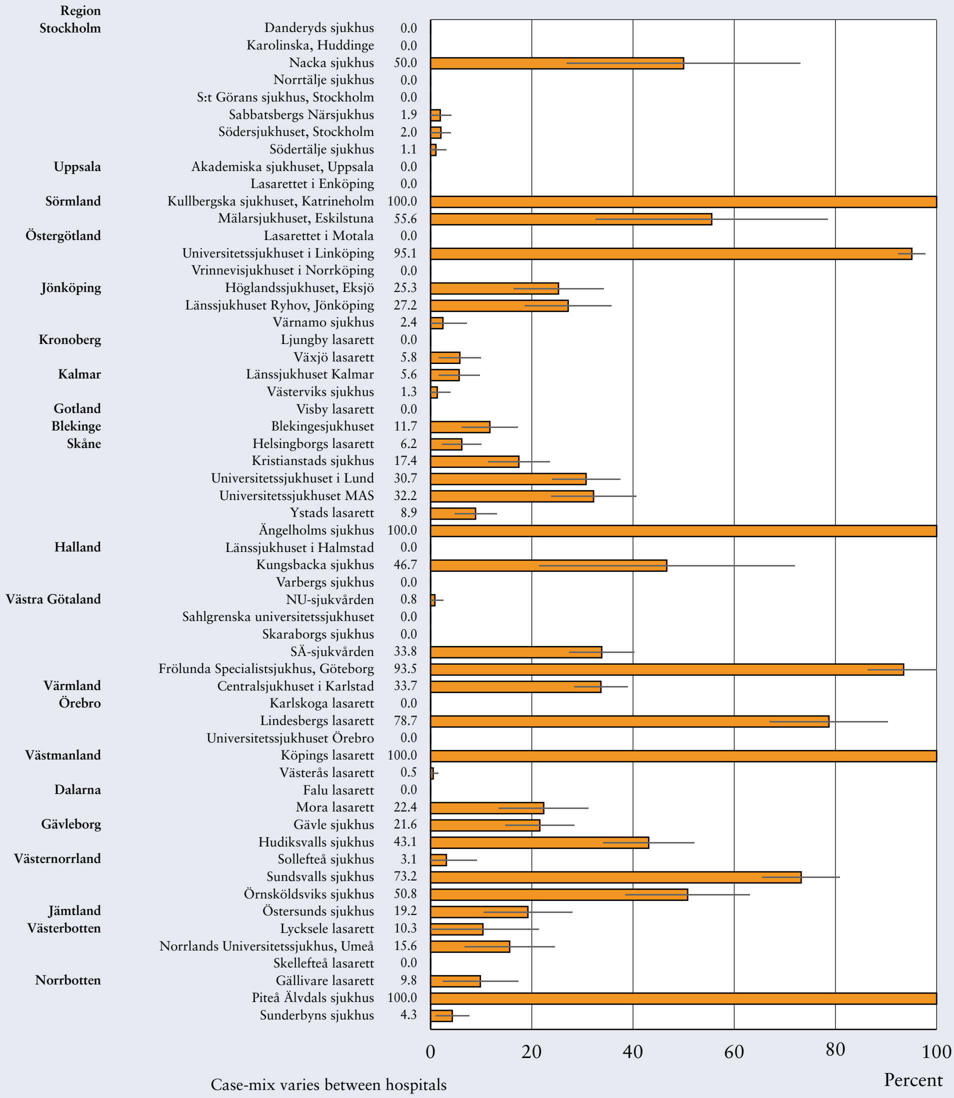


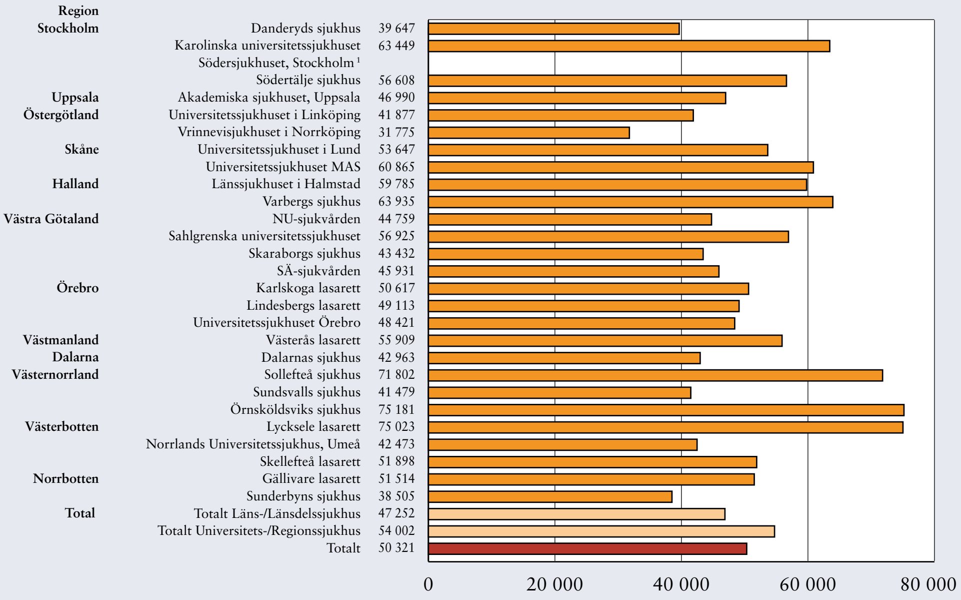
Figure 37
Hospitals

Uterine prolapse – frequency of day-case surgery, 2009.

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

39, 40 Waiting times of longer than 90 days for gynaecological surgery and doctor's appointments

Availability of gynaecological surgery and doctor's appointments was relatively good. The percentage of patients nationwide who had waited longer than 90 days improved slightly from October 2009 to March 2010. Nine regions met the care guarantee target that no patient wait longer than 90 days for gynaecological surgery. All regions but five were well below 10 per cent.



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

Figure 38
Hospitals

Cost per case for hysterectomy, 2009.

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

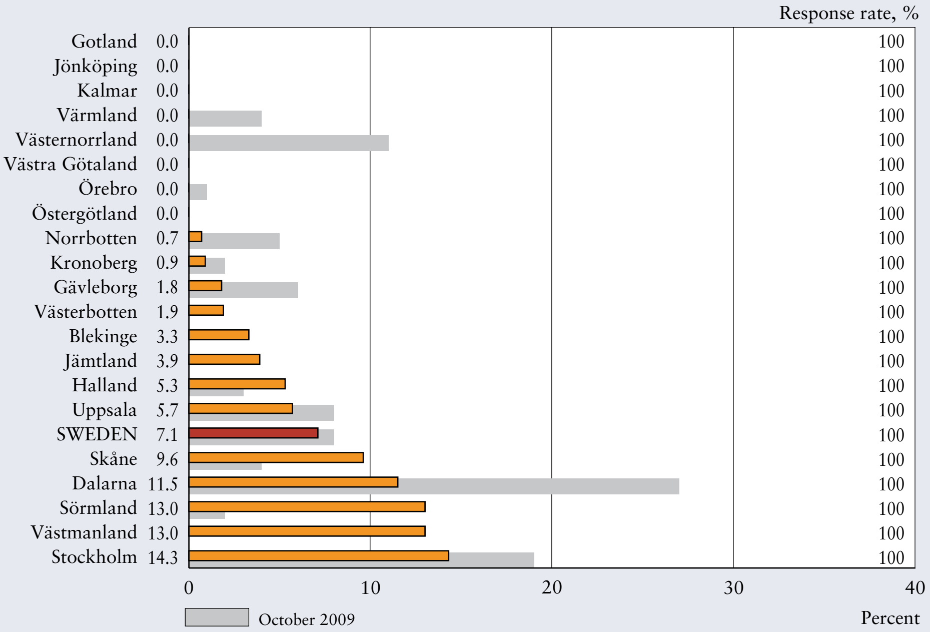


Figure 39

Hysterectomy, operations for uterine prolapse and incontinence – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

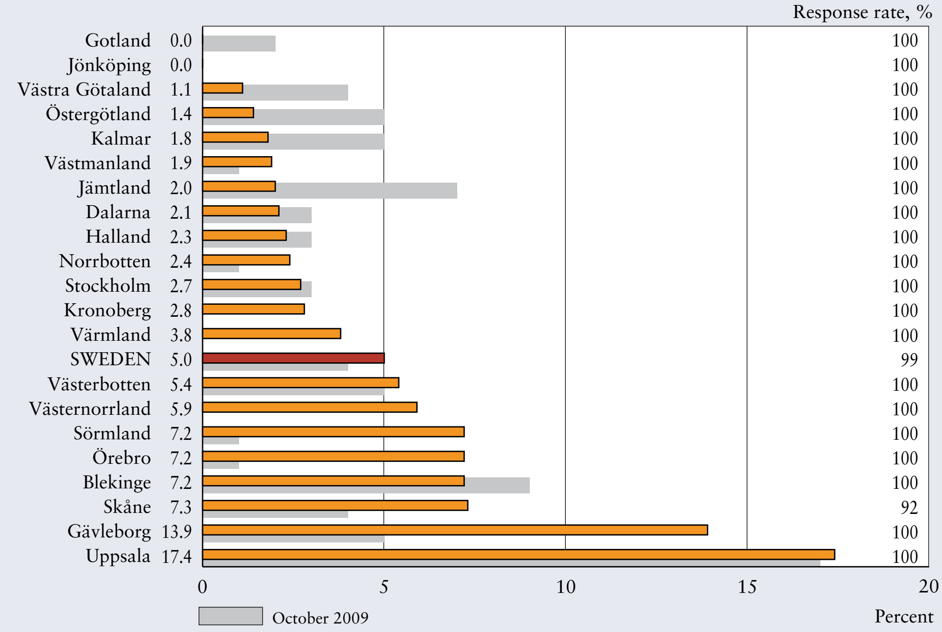


Figure 40 Gynaecological appointment – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

In March 2010, 2 963 patients were waiting for surgery, 209 longer than 90 days. More than half of them were in Stockholm. In all but four regions, fewer than 10 patients had waited longer than 90 days.

Availability of gynaecologists was also relatively good, although only Gotland and Jönköping met the care guarantee target of no waiting time. Both regions have reported good, sustainable trends for a number of years. Only two regions were above 10 per cent. Just over 14 500 patients were waiting in March 2010, 733 longer than 90 days.

MUSCULOSKELETAL DISEASES

Musculoskeletal diseases are the most common cause of pain, impaired working capacity and long-term sickness absence, as well as sickness and activity benefits. Given that such diseases account for one third of all ill-health and sickness absence every year, they are associated with major socioeconomic costs. Sickness absence due to osteoarthritis alone costs the healthcare system 1.4 billion kronor annually.

According to WHO's Global Burden of Disease study in 1997, osteoarthritis is a major disease in industrialised countries. Osteoarthritis is the second most common disease in women, and the fourth most common in men, younger than 60.

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 16 indicators reflects various areas of orthopaedics and rheumatology. The specialities overlap and frequently treat the same patients. Data for the three rheumatology indicators are obtained from the Swedish Rheumatology Quality Register. The orthopaedics indicators measure costs and waiting times in addition to medical quality. The data sources are various orthopaedic national quality registers, the Patient Register and Prescribed Drug Register of NBHW, as well as the Waiting Times in Health Care and case costing database of SALAR.

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

In the studied group more than 80 000 operations are performed each year. The frequency of total knee and hip arthroplasty rose by 13 and 8 per cent respectively in 2009. Fracture surgery, the most common surgical procedure in Sweden, also belongs to this set of indicators. Due to the lack of comprehensive quality registers for other types of fractures, the indicators cover surgery for hip fracture only.

41 Total knee arthroplasty – implant survival

Osteoarthritis of the knee is relatively uncommon in people younger than 50, and the frequency rises with age. Women, especially the elderly, develop knee osteoarthritis more frequent than men. A total of 12 600 primary knee arthroplasty procedures, almost 60 per cent on women, were performed at 78 clinics in 2009.

The data presented here are taken from the Swedish Knee Arthroplasty Register, which is the oldest national quality register in Sweden and has a completeness of individual registration of over 95 per cent. The register contains data for clinics that perform knee arthroplasty in every region. Clinics are reported under the region in which they are located regardless of where their patients live.

The indicator refers to all total knee arthroplasty procedures performed in 1999-2008 on osteoarthritis patients. Over 71 000 operations were performed during the period. Figure 41 presents the percentage of operations that did not require revision (exchange or removal 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 that remain 10 years after surgery.

Revision may be due to patient-related factors, as well as an inappropriate choice of prosthesis or surgical technique. The nationwide mean value for the period was 96 per cent for both sexes, while the regions ranged from 85 to 98 per cent for women

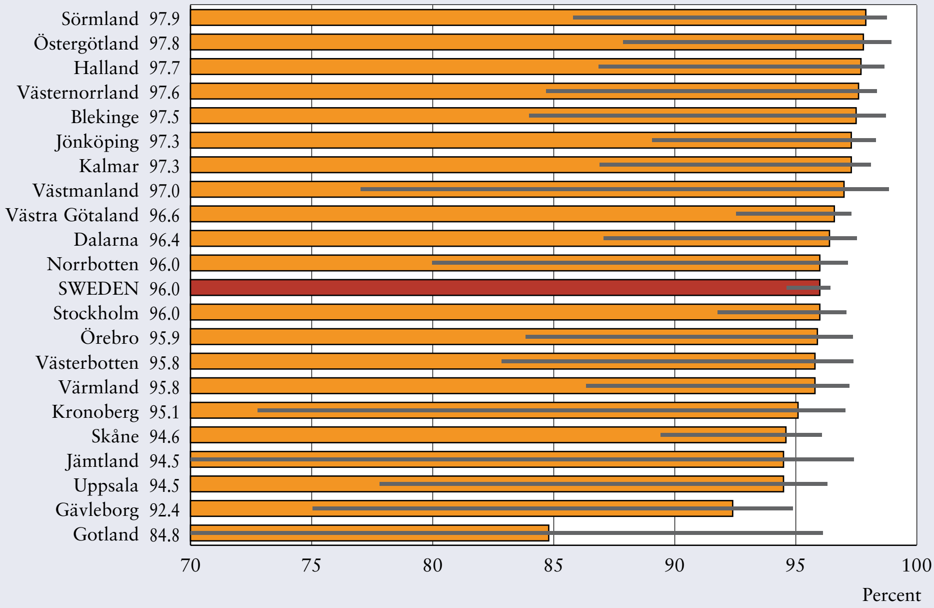


Figure 41
Women

Total knee arthroplasty – 10-year implant survival, 1999–2008.

Source: Swedish Knee Arthroplasty Register

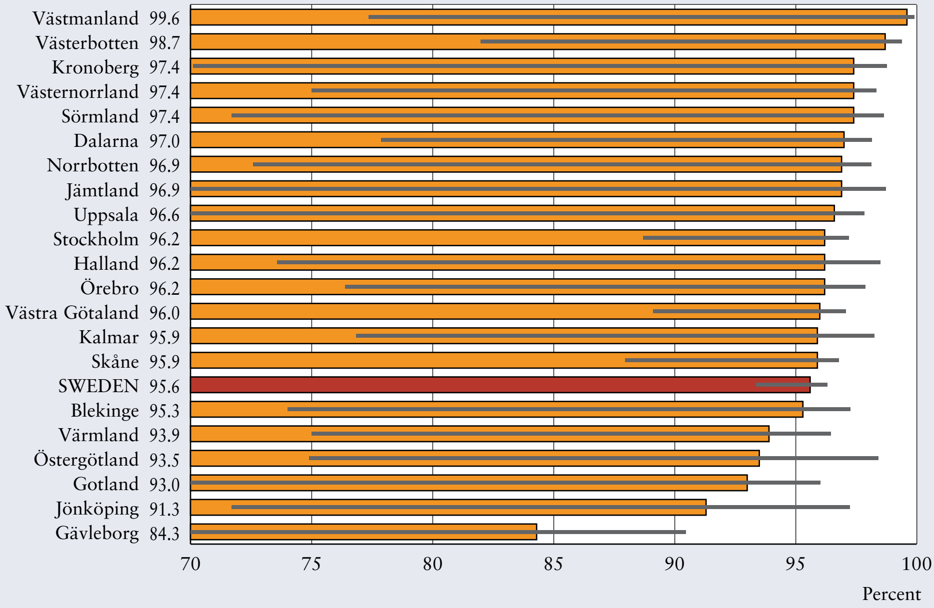


Figure 41
Men

Total knee arthroplasty – 10-year implant survival, 1999–2008.

Source: Swedish Knee Arthroplasty Register

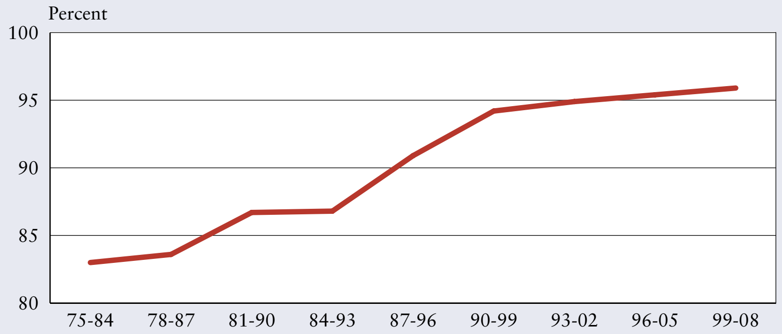


Figure 41
Sweden

Total knee arthroplasty – 10-year implant survival.
Source: Swedish Knee Arthroplasty Register

and 84 to 99 per cent for men. Thus, approximately 4 out of 100 operations required revision within 10 years. The results are based on one particular 10-year period and do not necessarily reflect 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 world-leading when compared to other countries, such as Australia and the rest of Scandinavia, that present similar statistics.

42 Total hip arthroplasty – implant survival

All clinics, both public and private, report to the Swedish Hip Arthroplasty Register. A recent comparison with the Patient Register showed that the Hip Arthroplasty Register had a completeness of individual registration of 97.5 per cent for 2009.

Primary total hip arthroplasty was performed 15 650 times in 2009, while there were 2 268 reoperations. More women (60 per cent) than men underwent surgery. Post-surgical implant survival (Kaplan-Meier statistics) is a key measure of quality. Surgery is regarded as having failed if a prosthesis component must be replaced or the entire implant removed. The Hip Arthroplasty Register has long followed this quality indicator. These data are based on 127 000 operations performed in 2000–2009.

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, regional results varied from 92 to 98 per cent. Women's implants had a 96 per cent 10-year survival rate, as opposed to 93 per cent for men. Confirmed by many earlier studies, the gender difference is probably due to the fact that men tend to engage in more strenuous physical activity, leading to greater long-term wear on the components and causing loosening.

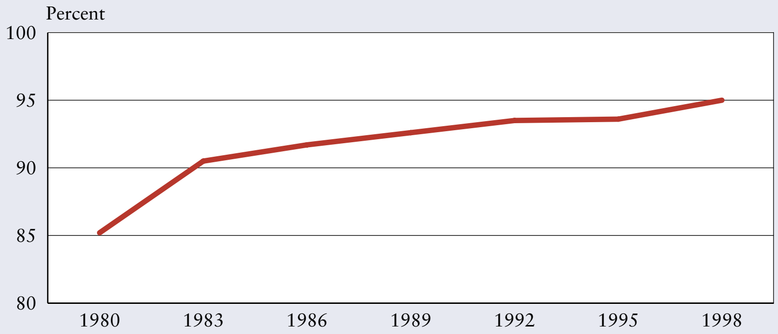


Figure 42
Sweden

Total hip arthroplasty – 10-year implant survival.

Source: Swedish Hip Arthroplasty Register

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 regional 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 comes from, forms the basis of the regional data. Clinics collaborate to make sure that severe cases are referred to those with specialist expertise. Those clinics operate on patients who face greater surgical risks and thereby a higher frequency of complications. Interregional referrals may affect results. This report has not made any correction for that possibility.

43 Reoperation 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 excessive 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 further surgery after the index operation. The short follow-up time primarily reflects early and serious postoperative complications, such as deep infection and revision due to recurrent dislocation of the hip prosthesis. Able-bodied patients who are re-operated on due to prosthesis-related infection or dislocation frequently experience poorer final results, costing the healthcare system and Social Insurance Agency millions of kronor per complication.

Only surgically treated complications are included. Neither infections treated with antibiotics nor total dislocations treated non-surgically are reported to the register. If a patient is repeatedly re-operated on for the same complication, only a single

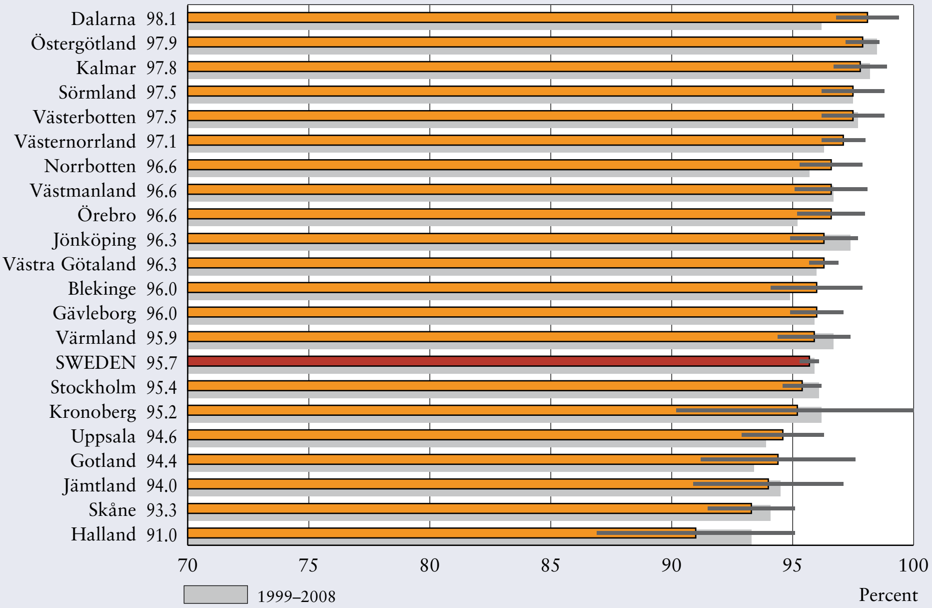


Figure 42
Women

Total hip arthroplasty – 10-year implant survival, 2000–2009.

Source: Swedish Hip Arthroplasty Register

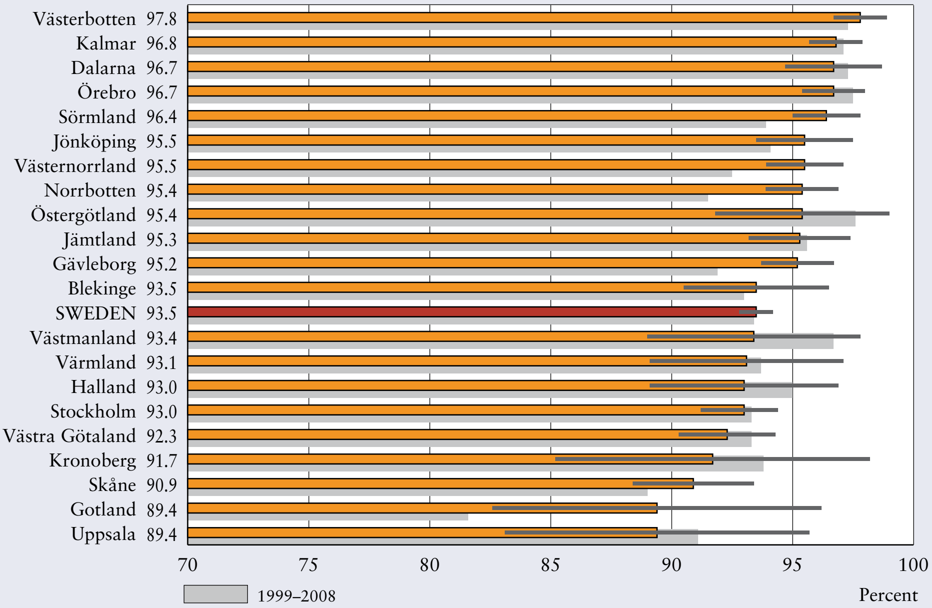


Figure 42
Men

Total hip arthroplasty – 10-year implant survival, 2000–2009.

Source: Swedish Hip Arthroplasty Register

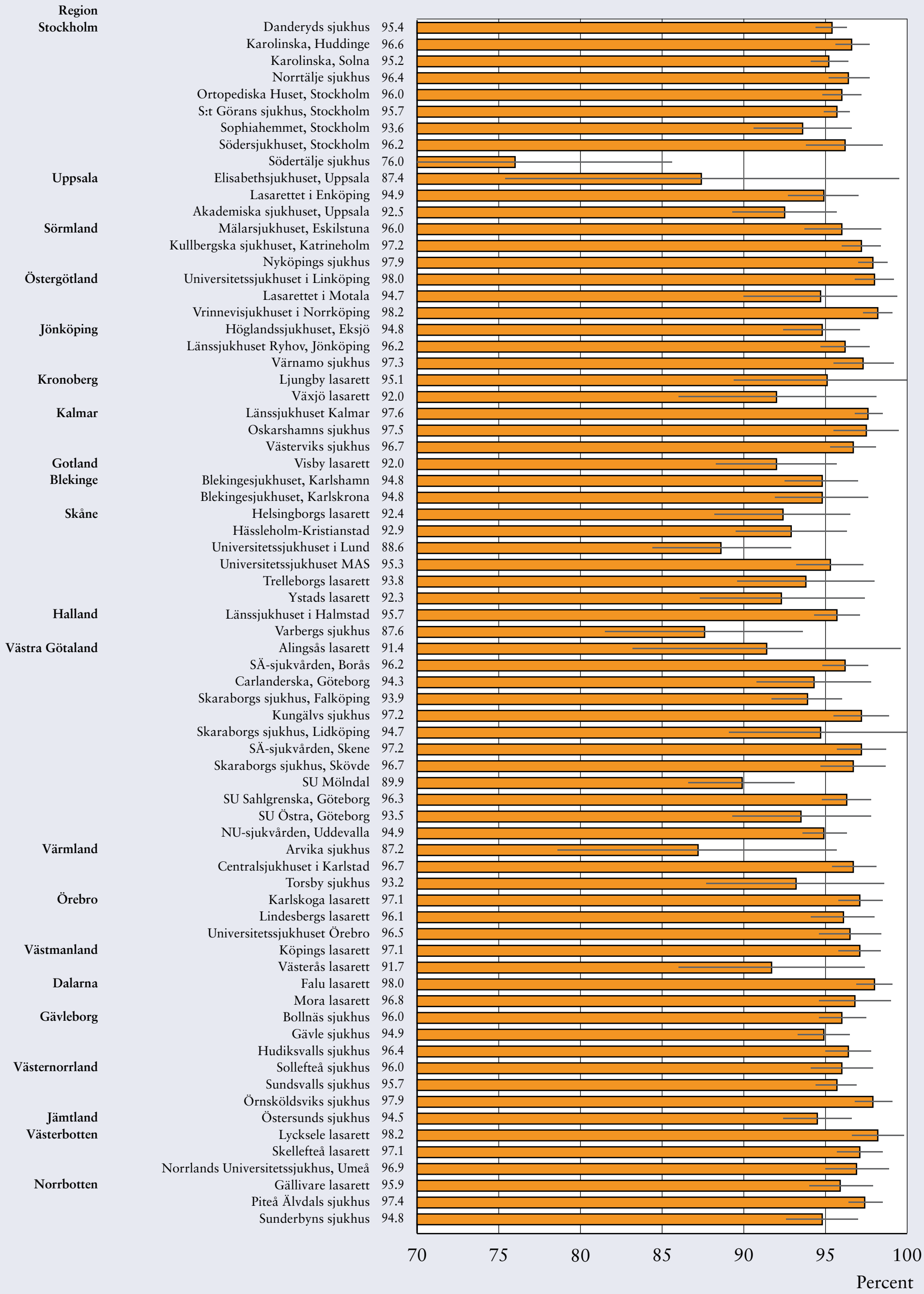


Figure 42
Hospitals

Total hip arthroplasty – 10-year implant survival, 2000–2009.

Source: Swedish Hip Arthroplasty Register

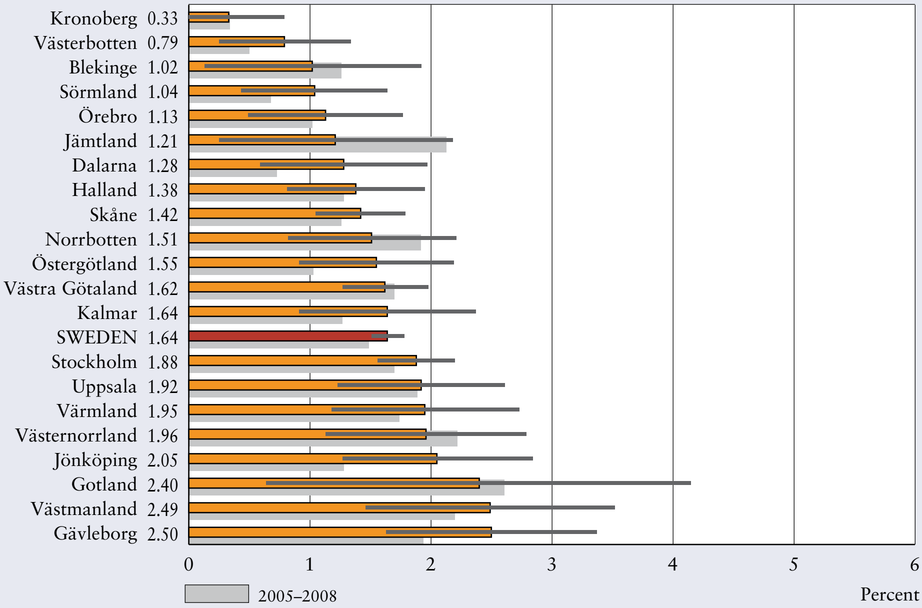


Figure 43
Women

Reoperation within 2 years after total hip arthroplasty, 2006–2009.

Source: Swedish Hip Arthroplasty Register

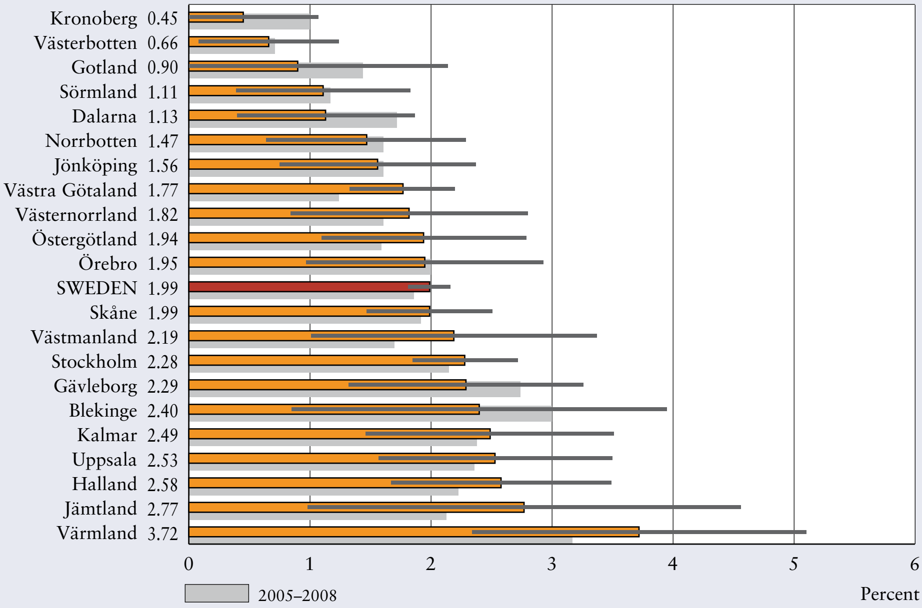


Figure 43
Men

Reoperation within 2 years after total hip arthroplasty, 2006–2009.

Source: Swedish Hip Arthroplasty Register

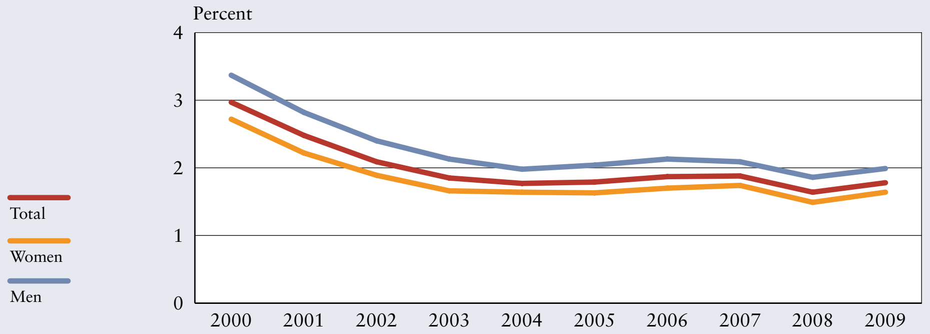


Figure 43
Sweden

Reoperation within 2 years after total hip arthroplasty.
Source: Swedish Hip Arthroplasty Register

complication is is included in the statistics. Data for patients re-operated on at a clinic other than the primary one are still assigned to the primary clinic.

The percentage of reoperations presented in Figure 43 is based on the 58 500 primary procedures performed in 2006–2009. A total of 1.8 per cent (1 043) of all patients nationwide had reoperations within two years. Two regions had reoperation rates below 1 per cent, while five regions were above 2 per cent.

There was a small difference in the frequency of complications between women (1.6 per cent) and men (2 per cent). At 0–4.9 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 rates are generally low. Case mix and random fluctuations have a large impact on the results, i.e., whether there are any clear trends, which can only be evaluated over time.

Expecting that all postsurgical complications can be prevented would be unrealistic. In recent years, the national average for reoperation within two years has consistently been between 1.6 and 1.8 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 regions suggest, the frequency of complications can be lower.

44 Patient-reported outcome of total hip arthroplasty

Patient Reported Outcome Measures (PROMs) have attracted greater attention, both in Sweden and abroad, over the past few years. The leading indications for total hip arthroplasty are subjective pain and poor health-related quality of life. Reporting these variables is essential to optimising treatment and measuring results in multiple dimensions. The Swedish Hip Arthroplasty Register has monitored patient-reported outcome of surgery since 2002. One of the measures is the EQ-5D instrument, which generates an index score for health-related quality of life.

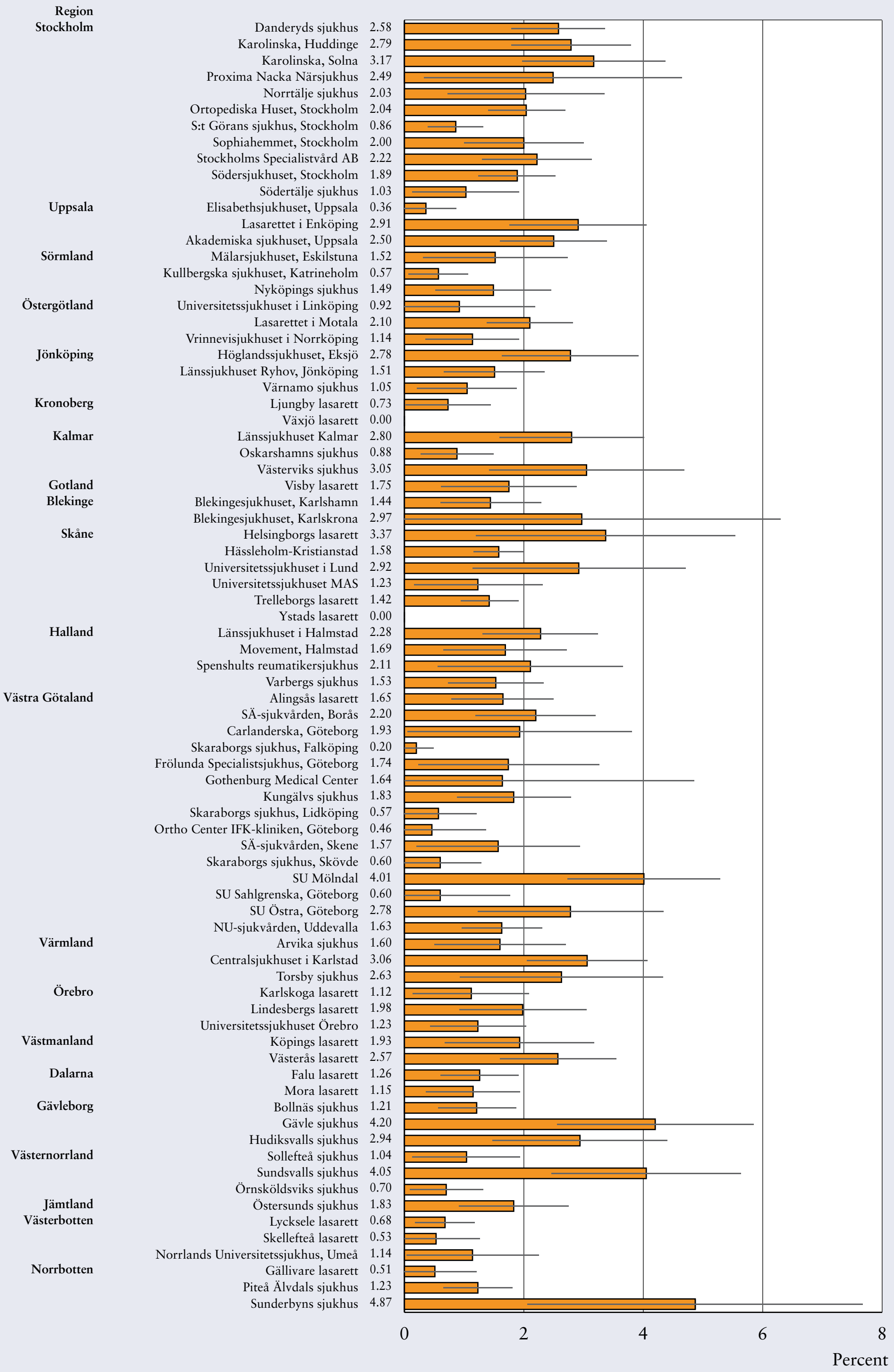


Figure 43
Hospitals

Reoperation within 2 years after total hip arthroplasty, 2006–2009.

Source: Swedish Hip Arthroplasty Register

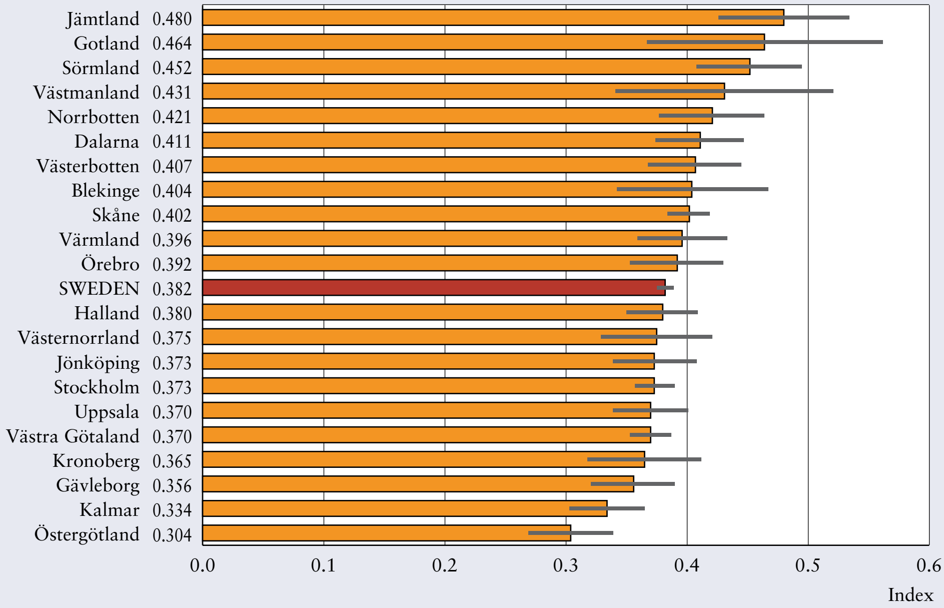


Figure 44
Women

Patient-reported outcome of total hip arthroplasty, 2007–2008. Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

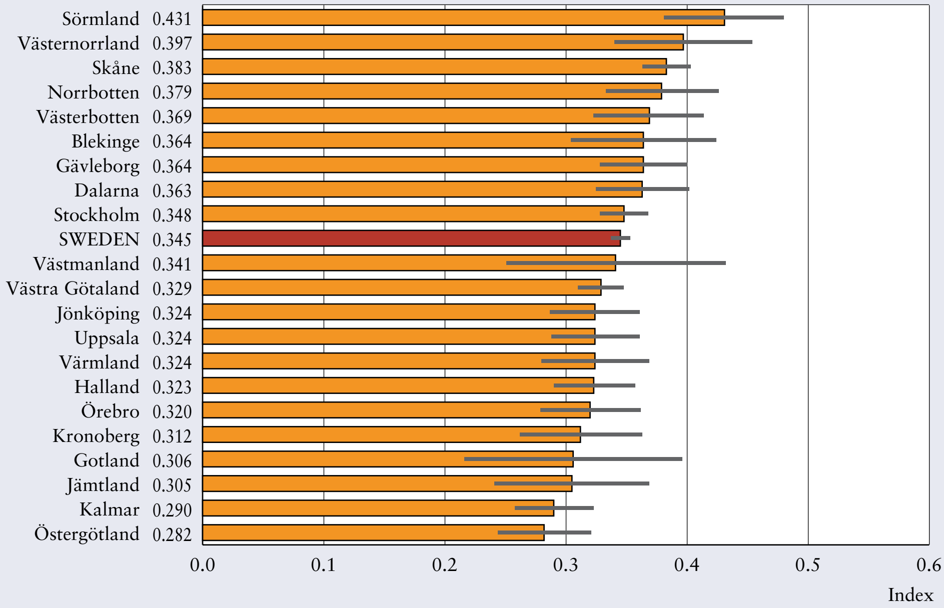


Figure 44
Men

Patient-reported outcome of total hip arthroplasty, 2007–2008. Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

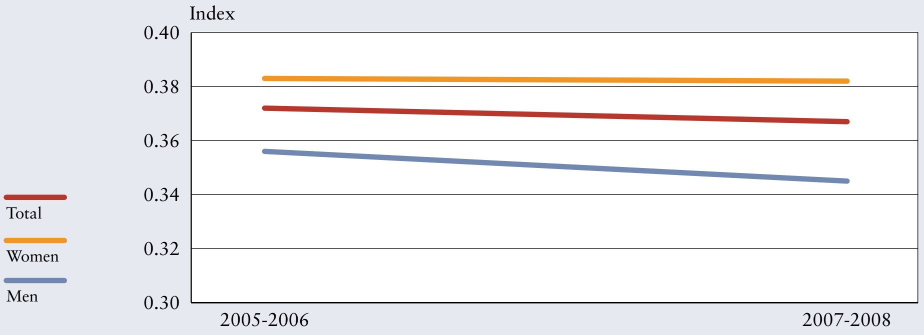


Figure 44
Sweden

Patient-reported outcome of total hip arthroplasty.
Improvement in EQ5D after one year.
Source: Swedish Hip Arthroplasty Register

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 6 and 10 years. Figure 44 shows the difference in the EQ-5D index, i.e., the improvement in health-related quality of life measured one year after surgery. This year's analysis covers surgery performed in 2007–2008 on 17 300 patients, as well as 1-year follow-up in 2008–2009. The follow-up includes all Swedish clinics that perform hip arthroplasty except Sophiahemmet. The response rate was 91 per cent.

No strict targets can be set for health-related quality of life, which is dependent on a number of factors in addition to osteoarthritis. Among such factors are age, comorbidity and gender. Given that the indicator concerns improved health-related quality of life, results are partially adjusted for the other factors. The national EQ-5D index after one year has held constant at 0.36 from the time that the database contained 200 patients to the current 61 000 patients. That may be regarded as a reasonable target. A low index improvement can suggest a shift in indication for surgery, while a high score can suggest that some patients were required to wait too long.

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

45 Adverse events 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 per-

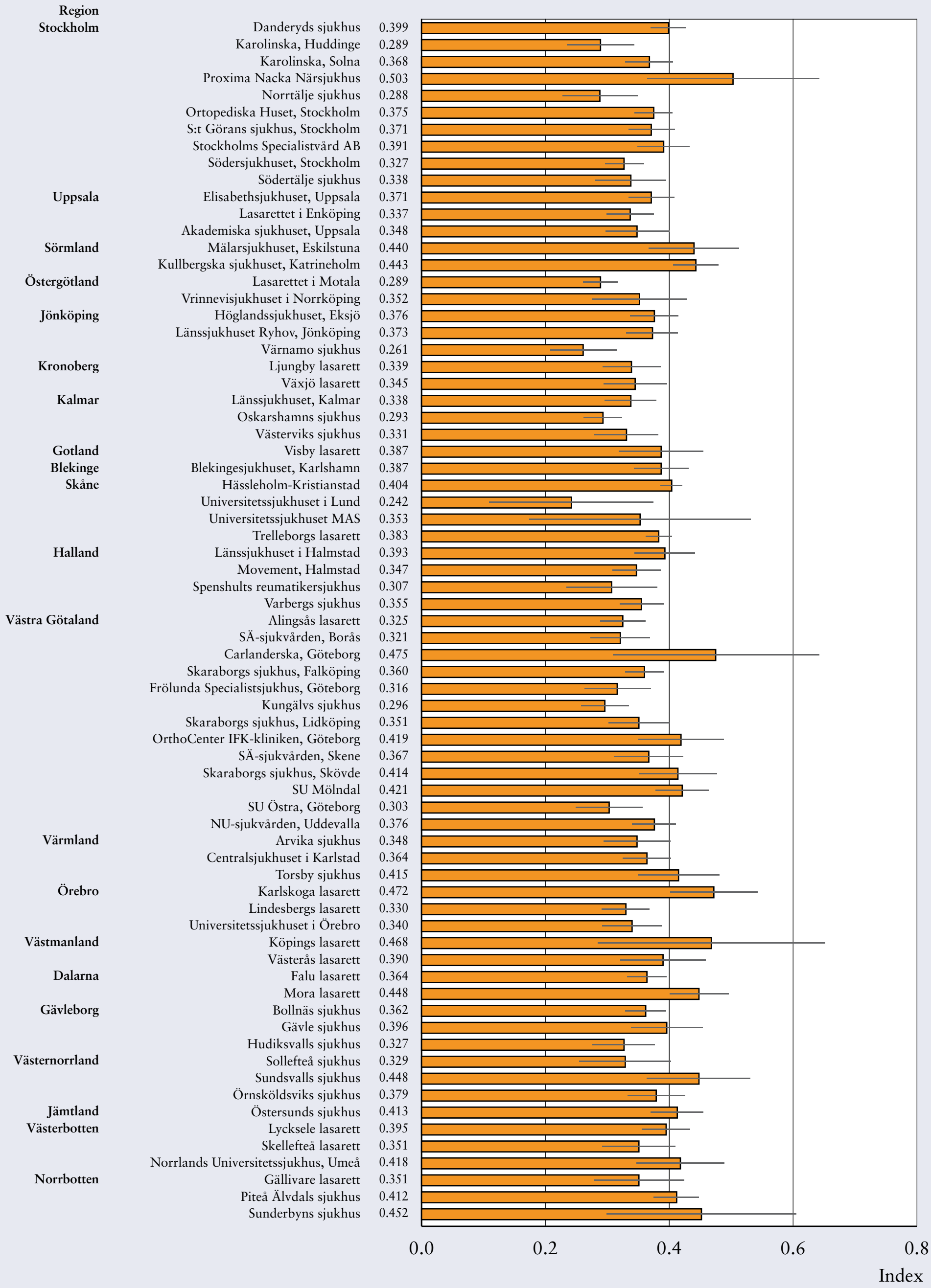


Figure 44
Hospitals

Patient-reported outcome of total hip arthroplasty, 2007–2008.
Improvement in EQ5D after one year.

Source: Swedish Hip Arthroplasty Register

formed. Such procedures, which normally are scheduled, constitute a large percentage of non-acute orthopaedic services.

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

Postsurgical 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 registers. But the registers do not contain other medical complications.

A number of adverse events may be analysed using the 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 treatments and diseases.

Figure 45 shows the frequency of readmission and death within 30 days after knee and total hip arthroplasty. The comparison includes almost 74 000 operations performed in 2007–2009. Among the causes chosen for readmission were local complications and common cardiovascular diseases such as myocardial infarction, angina pectoris, heart failure and stroke. Where the patient lives, not the location of the clinic, forms the basis of regional reporting.

A total of 2.9 per cent of women and 4.1 per cent of men died or were readmitted for some type of complication. Very few patients died. Specific local complications accounted for two thirds of the readmissions studied. The regional variation was 2.2–3.9 per cent for women and 2.7–6.1 per cent for men. The national frequency has trended downward over the past 10 years.

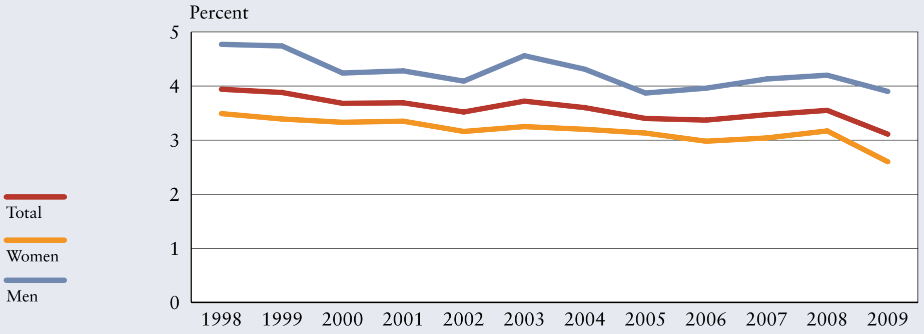


Figure 45
Sweden

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

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

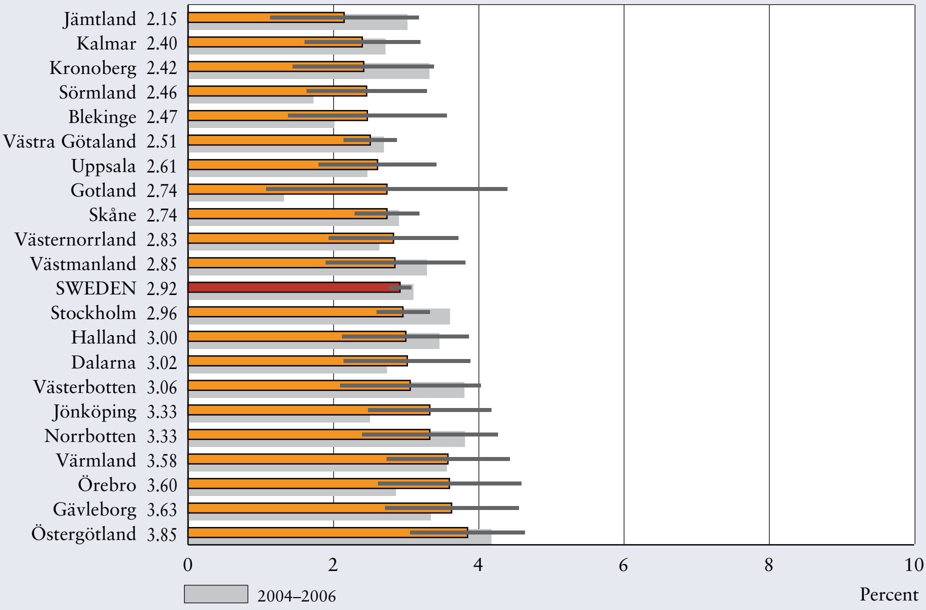


Figure 45
Women

Adverse events within 30 days after knee and total hip arthroplasty, 2007–2009. Age-standardised.

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

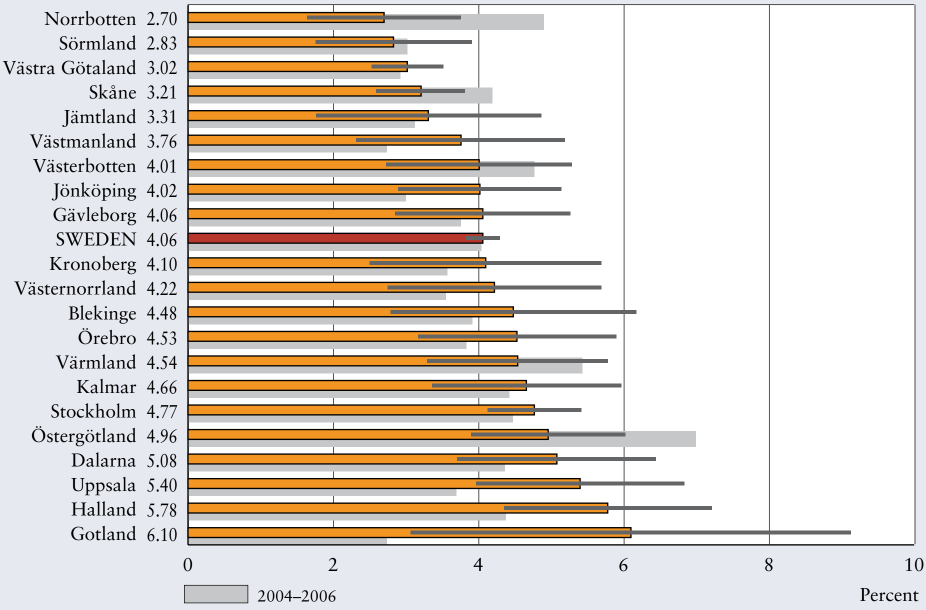


Figure 45
Men

Adverse events within 30 days after knee and total hip arthroplasty, 2007–2009. Age-standardised.

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

46 Hip fracture – waiting time for surgery

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 the fracture is not acutely life threatening, there may be a waiting time. Studies have shown that delay of 24 hours or more increases 4-month mortality, even in otherwise healthy patients. The frequency of complications such as infection, bedsores and confusion also rises. Waiting places a physical and mental strain on the patient while extending the period of care.

Waiting time for surgery, which reflects attitudes and resource utilisation, is a key process indicator. The period between arrival at hospital and commencement of surgery is also a frequent international quality measure. The source of data is the National Hip Fracture Register.

The comparison includes patients age 50 and older with non-pathological fracture. Fracture is unusual and develops for other reasons in younger patients. Due to a reorganisation of Swedish orthopaedic care that involves a breakdown into elective and acute services, only 53 hospitals currently perform hip fracture surgery. Hospitals in Gävle, Uppsala, Västerås, Danderyd and Örnsköldsvik do not presently report to the Hip Fracture Register. The results shown in Figure 46 are based on 12 804 hip fracture patients.

The average waiting time for the entire country was 25 hours, with a regional variation of 12–35 hours. NBHW 2003 guidelines recommend that surgery be performed as soon as possible on the day of admission. Some regions average waiting times much longer than 24 hours, which can increase the period of care and frequency of complications, given the delicacy of the condition.

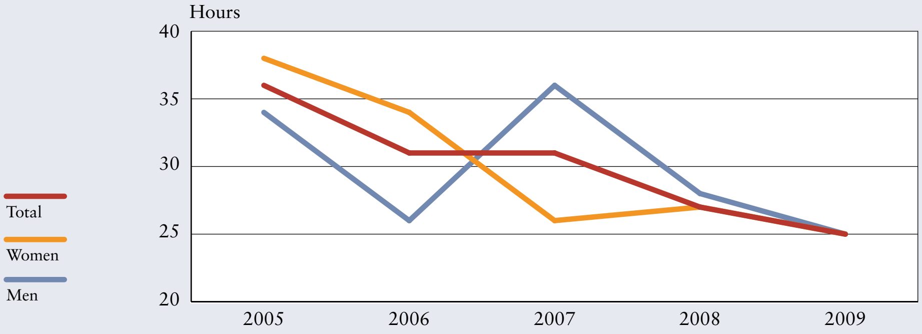


Figure 46
Sweden

Waiting times for hip fracture surgery after arrival at hospital.
Source: National Hip Fracture Register

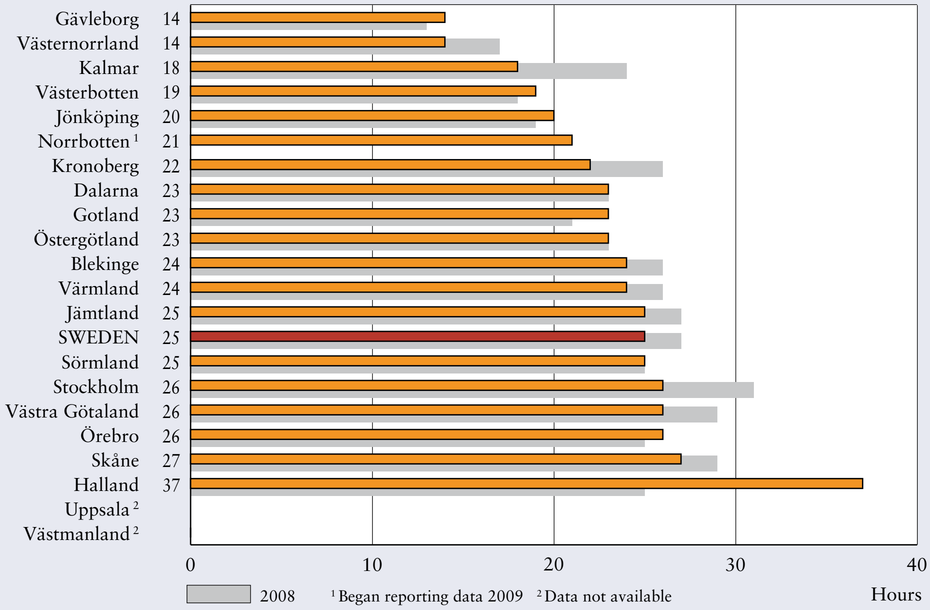


Figure 46
Women

Waiting times for hip fracture surgery after arrival at hospital, 2009.

Source: National Hip Fracture Register

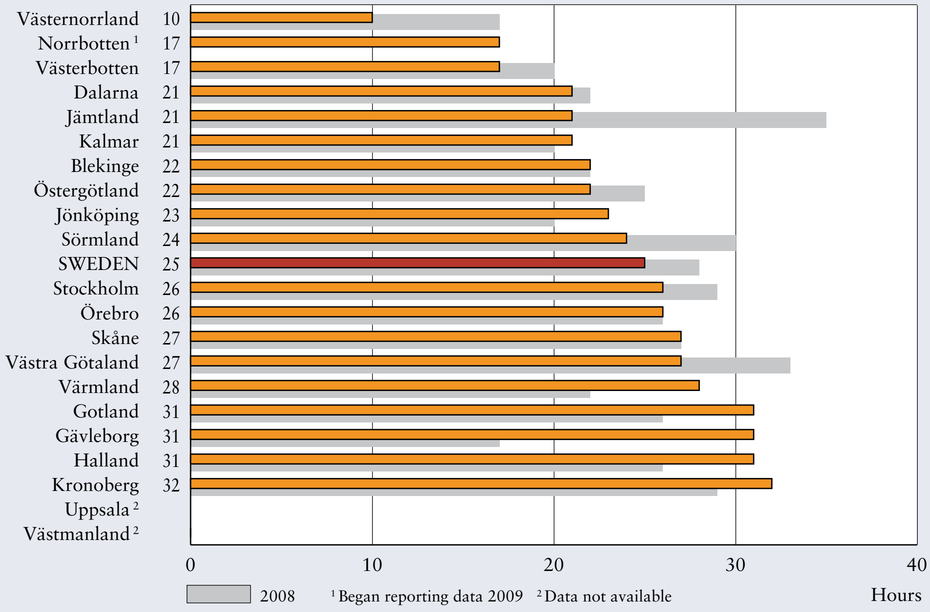
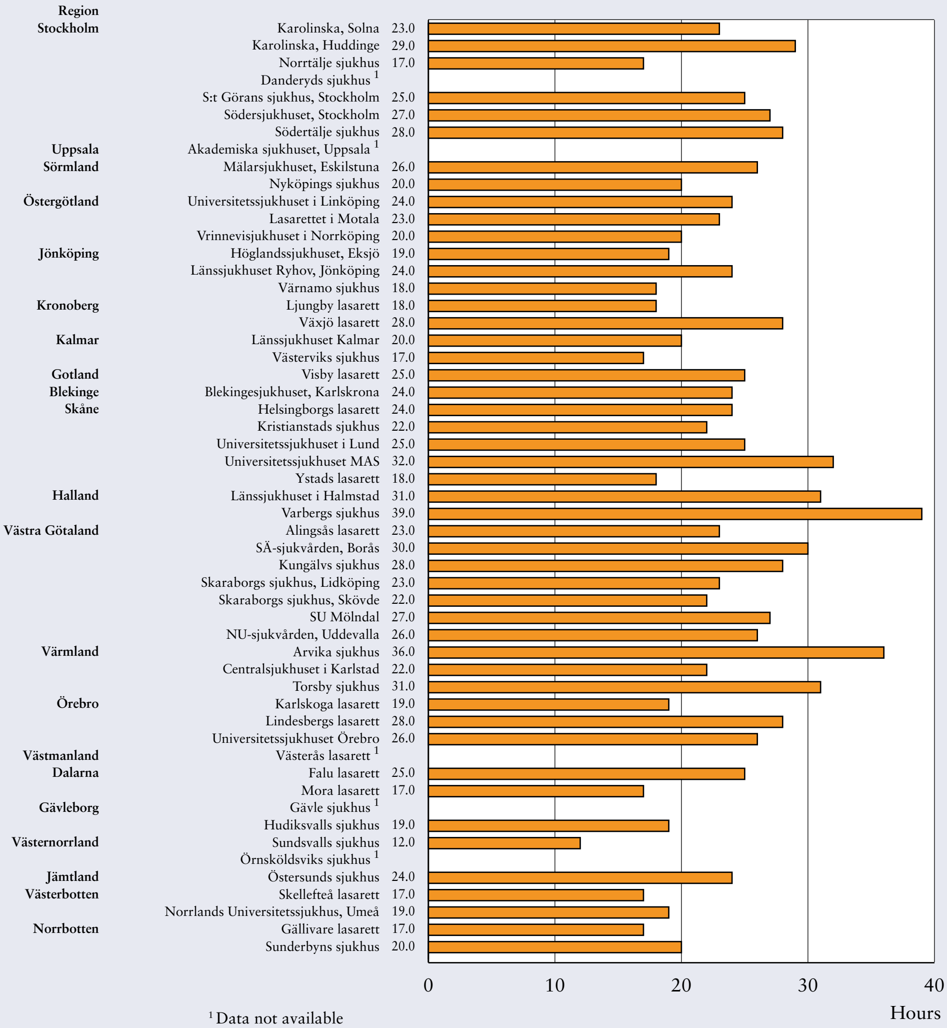


Figure 46
Men

Waiting times for hip fracture surgery after arrival at hospital, 2009.

Source: National Hip Fracture Register



[1] Data not available

Figure 46
Hosptals

Waiting times for hip fracture surgery after arrival at hospital, 2009.

Source: National Hip Fracture Register

The treatment model for femur fracture has radically altered in Sweden over the past 7–8 years. A growing number of patients receive hemiarthroplasties, placing an additional burden on orthopaedic clinics. That probably increases waiting times. The potential for improvement is great, and most regions should review their procedures.

47 Arthroplasty for hip fracture

Hip fracture was previously treated by means of osteosynthesis. The surgery is quick and easy to perform but has a high frequency of complications – the fracture

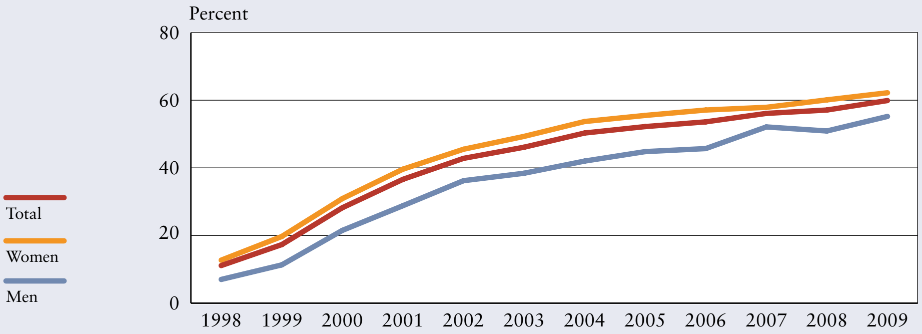


Figure 47
Sweden

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

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

may slip or fail to heal, or the articular head may disappear 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 changed over the past decade. Between 65 and 75 per cent of hip fracture patients should undergo hip arthroplasty. A 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 47 shows the percentage of hip fracture patients age 65 or older who were given hip arthroplasty in 2008–2009. The comparison was based on 14 500 cases in the Patient Register. Age standardisation was performed and only first-time cases were included. Where the patient lives, not the location of the clinic, forms the basis of regional reporting.

The nationwide percentage of hip fracture patients who received prostheses rose from 11 to 59 per cent since 1998. This year's analysis found a national average of 61.1 per cent for women and 53.0 per cent for men. Few regions were over 65 per cent. Despite the increase, the potential for improvement remains large at the national level.

Treating 65–70 per cent of all hip fracture patients with prostheses places heavy demands on clinics, including reorganisation of on-duty services and requirements

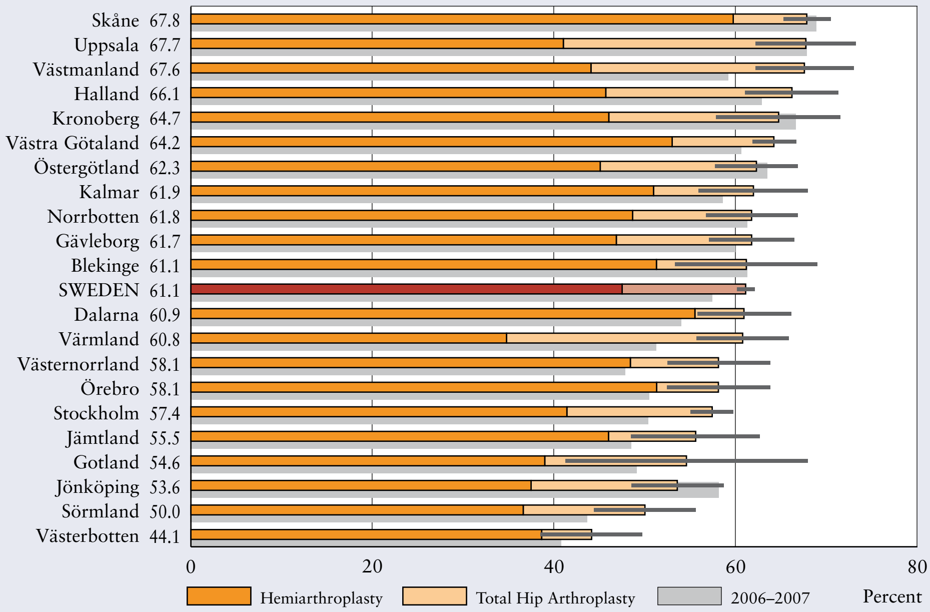


Figure 47
Women

Percentage of hip fracture patients 65 years and older who underwent arthroplasty, 2008–2009. Age-standardised.

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

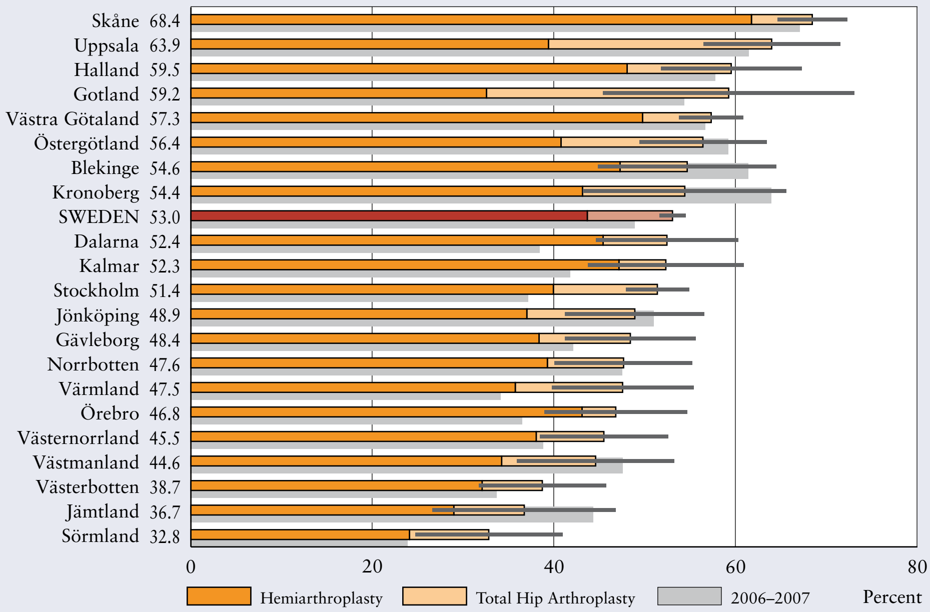


Figure 47
Men

Percentage of hip fracture patients 65 years and older who underwent arthroplasty, 2008–2009. Age-standardised.

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

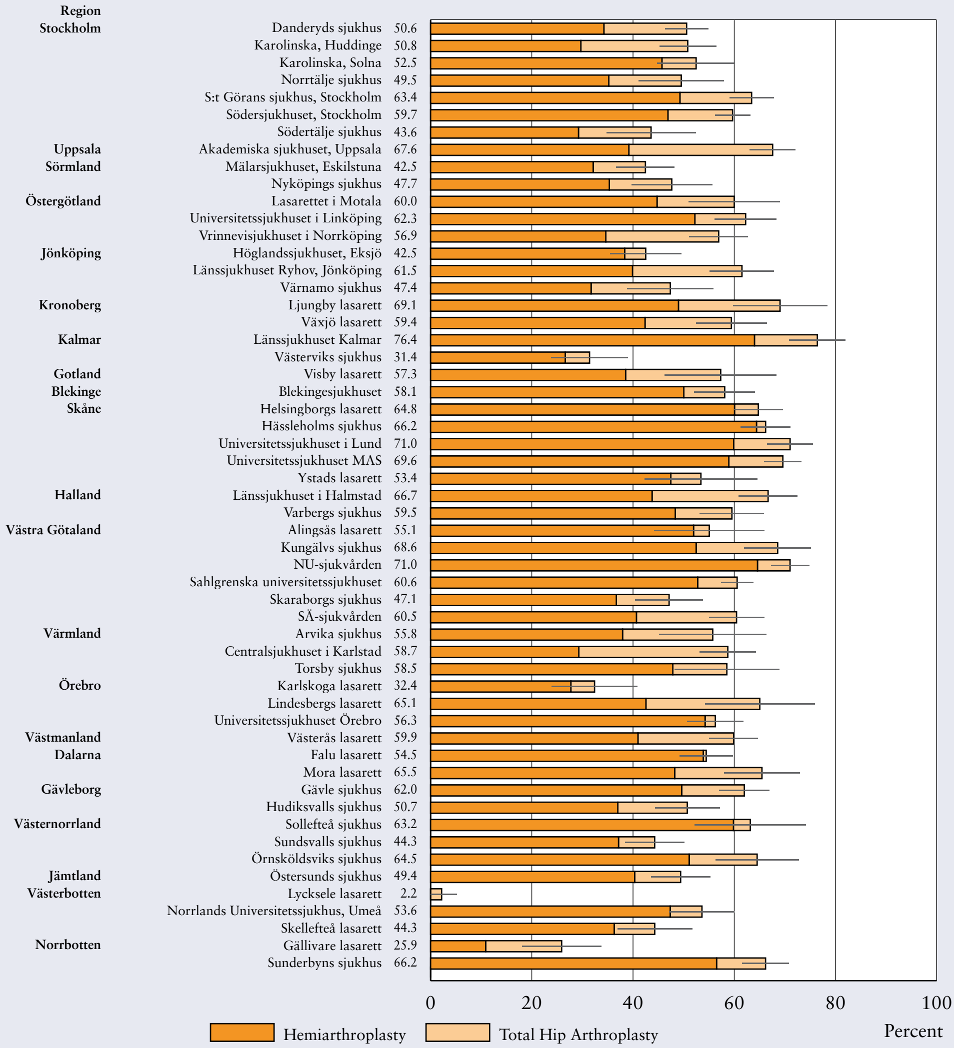


Figure 47
Hospitals

Percentage of hip fracture patients 65 years and older who underwent arthroplasty, 2008–2009. Age-standardised.

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

for surgical expertise. Another possible reason that some regions and clinics are not fully applying the new treatment model is that they feel the costs are too high. Hip arthroplasty requires longer surgery and greater implant costs, but the considerably lower frequency of complications compensates for these initial expenses. Primary hip arthroplasty also ensures less pain, easier rehabilitation and better health-related quality of life. Health economic analyses that consider these variables have found that the new treatment model considerably improves cost-effectiveness.

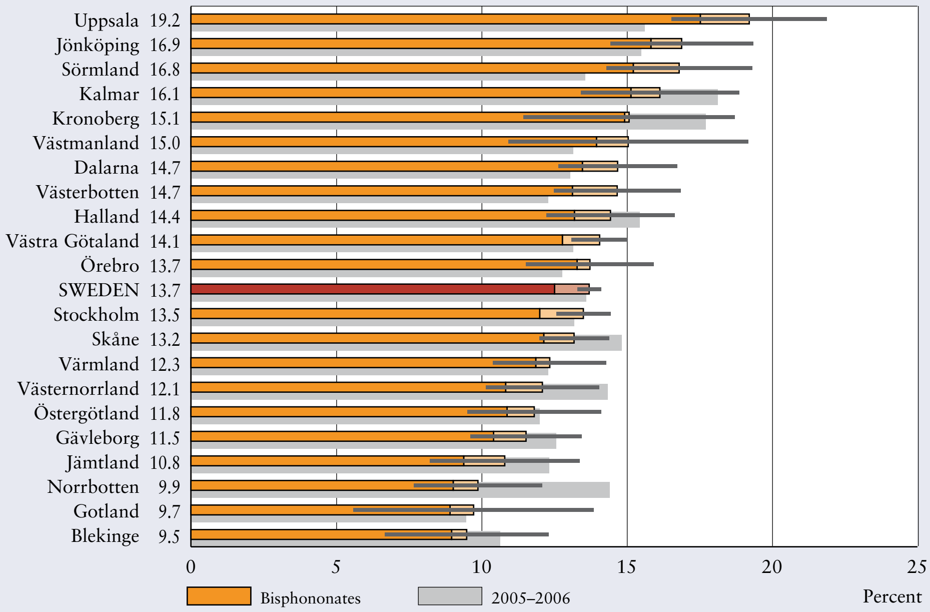


Figure 48 Percentage of women age 50 and older with fracture due to osteoporosis who received recommended drug therapy within 6–12 months, 2007 – June 2009. Age-standardised.

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

48 Drugs to prevent fracture due to 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 (slips and trips). Among the common fractures 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 with age. Women are primarily affected. 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 under-diagnosed and undertreated.

Therapy with drugs that decrease the progression of osteoporosis is indicated for many patients. The Swedish Council on Technology Assessment in Health Care (SBU) and the Medical Products Agency have established several times over the past few years that drug therapy for elderly with osteoporosis and fractures is well-documented and reduces the risk of additional fractures. Thus, it is important to study whether osteoporosis is diagnosed and treated after older women receive care for a fracture.

Data from the Patient Register and Prescribed Drug Register were used in order to study whether women with fractures received preventive drug therapy in the form of bisphosphonates or hormones. The follow-up covered 26 712 patients age 50 and older who had been hospitalised for a selection of fractures from January 2007 to June 2009. The prescriptions they picked up 6–12 months after hospitalisation were examined. The indicator is different from the one used last year with respect to minimum age (previously 55), as well as the drugs and hormones included.

Figure 8 shows that fewer than 14 per cent of the women nationwide had been treated. The regional variation from 10 to 19 per cent suggests that regions and care providers have absorbed and applied the guidelines to different degrees and at different rates. The Prescribed Drug Register does not include medications administered by hospitals. Whether a particular region prescribes or administers bisphosphonates such as zoledronic acid affects the results, though to a limited extent only.

Consistent with the recommendations of the Medical Products Agency, fewer than 10 per cent of patients who receive drug therapy are 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.

The Prescribed Drug Register does not show the indication for which various drugs have been chosen. Some of the patients probably receive hormones not to reduce the risk of fracture but to alleviate symptoms of menopause. This would strengthen the case that drugs for the prevention of osteoporosis are highly underprescribed.

NBHW is currently drawing up guidelines for care and treatment of musculoskeletal diseases, including osteoporosis. While no targets or recommendations have yet been issued, most scientific studies have concluded that 60–70 of patients should receive some kind of therapy to prevent osteoporosis.

49 Knee arthroscopy for osteoarthritis or degenerative meniscus leison

While primarily a diagnostic measure when introduced in the 1970s, knee arthroscopy soon became a treatment method. The technology was upgraded so that damaged meniscus tissue could be removed by means of the arthroscope. The use of knee arthroscopy to relieve the pain of osteoarthritis is the topic of widespread national and international debate. The discussion also includes whether removal of damaged meniscus tissue can relieve pain in patients older than 40. Age-related degenerative meniscus leison can be the result of osteoarthritis.

A number of studies have unanimously found that arthroscopy holds out no benefits for osteoarthritis patients. Thus, the procedure should not be performed. Findings are inconclusive when it comes to any role that degenerative meniscus leison may play in pain experienced by patients older than 40. Mechanical locking (immobility) of the knee joint is probably the only, though rare, indication for arthroscopy due to degenerative meniscus leison.

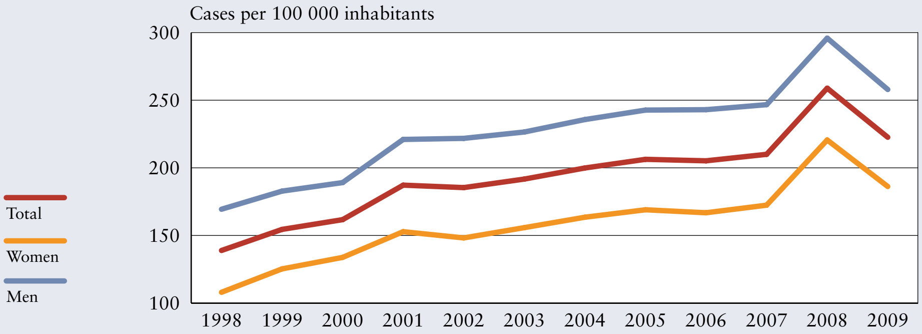


Figure 49
Sweden

Knee arthroscopy in patients age 40 and older with osteoarthritis or degenerative meniscus leison per 100 000 inhabitants. Age-standardised.

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

Figure 49 shows the number of knee arthroscopic procedures per 100 000 inhabitants that were performed in 2007–2009, as compared to 2004–2006. The comparison includes only patients age 40 and older who had been diagnosed with osteoarthritis or degenerative meniscus leison. The data are age-standardised, cover both inpatient and outpatient care and are taken from the Patient Register. Regardless of where it was performed, surgery was assigned to the region in which the patient lived.

A total of 25 847 arthroscopic procedures were reported to the Patient Register in 2009, almost 4 000 more than in 2008. Approximately 10 500 of the procedures were on the patient population described above, a decrease of 1 500 from the year before.

The diagram shows a large regional variation, as well as a significant gender difference. The national average per 100 000 inhabitants was 193 for women and 267 for men. The number of arthroscopic procedures on the patient population in question rose from approximately 9 300 in 2006 to 10 500 in 2009, peaking at 12 100 in 2008. Approximately 40 per cent of the procedures were based on an osteoarthritis diagnosis, a decrease of 10 per cent from the previous year. Approximately 50 000 MRIs of the knee are performed every year. The result may have been overdiagnosis of degenerative meniscus leison, perhaps increasing the number of arthroscopic procedures for the past 10 years.

Proceeding from the literature, the analysis shows that approximately 8 000 of the 10 500 arthroscopic procedures performed on this patient population in 2009 were based on doubtful indications. Approximately 4 500 of the patients had been diagnosed with osteoarthritis, for which the surgery should not be performed.

One source of statistical uncertainty is underreporting to the Patient Register, particularly with respect to private care providers and outpatient treatment. Some

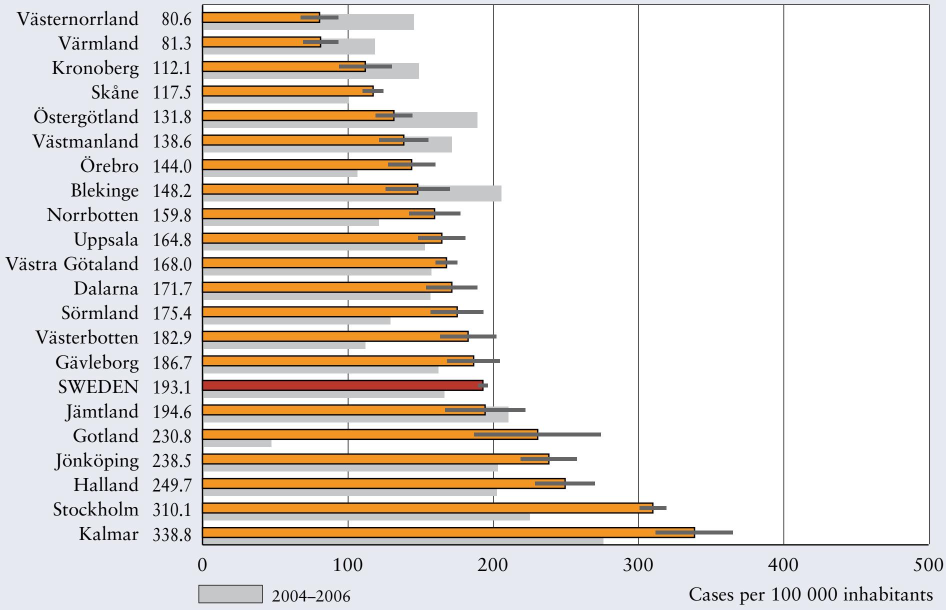


Figure 49
Women

Knee arthroscopy in patients age 40 and older with osteoarthritis or degenerative meniscus leison per 100 000 inhabitants, 2007–2009. Age-standardised.

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

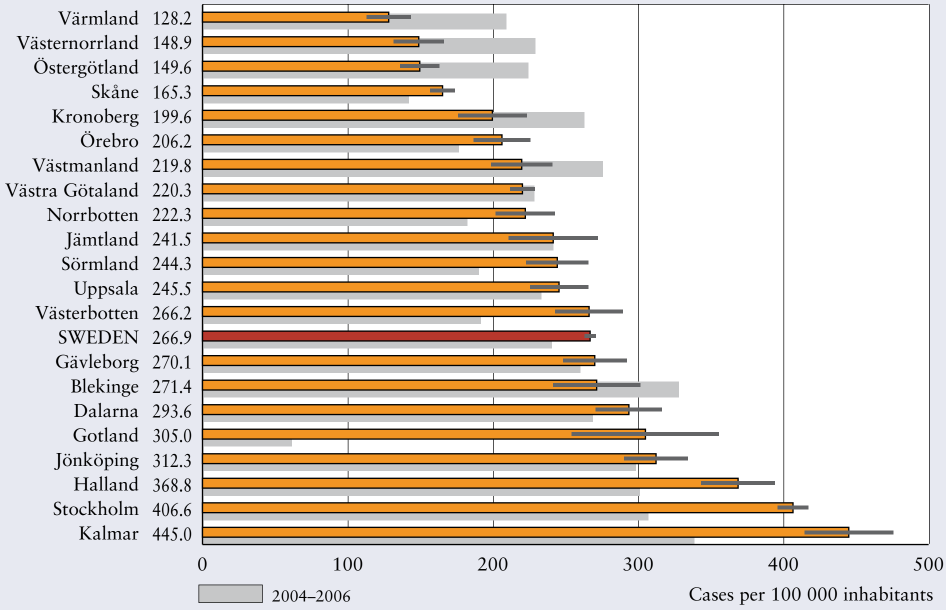


Figure 49
Men

Knee arthroscopy in patients age 40 and older with osteoarthritis or degenerative meniscus leison per 100 000 inhabitants, 2007–2009. Age-standardised.

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

private clinics that perform frequent surgery do not report at all. The number of procedures reported by private care providers declined by 4 per cent in 2009. The national trend in recent years is difficult to interpret. The decrease in 2009 may be the result of poorer reporting. The number of procedures in regions with large private arthroscopic units may have been underestimated. Underreporting by public clinics is most likely when it comes to outpatient care.

Regional differences in coding of diagnoses and procedures do not affect this comparison. The two long time intervals, the steady increase in the number of arthroscopic procedures performed, the diagnoses and measures included, and the relative stability of the ratio between osteoarthritis and degenerative meniscus leison diagnoses are reducing this source of uncertainty.

50 Biologic drugs for rheumatoid arthritis

The efficacy of biologic drugs, which are administered either as injection or intravenous infusion as prescribed by rheumatologists, stems from their ability to affect the immune system directly. Because full recovery from chronic inflammatory disease is indeed possible, it is important that these drugs be prescribed to all patients who need them. A first step toward describing this is to examine the geographic and gender breakdown of prescribed treatment based on the Swedish Rheumatology Quality Register.

The completeness of the rheumaology register cannot be wholly ascertained, as biologic drugs are not fully reported to other national registers used as comparators in analysis of coverage.The Prescribed Drug Register and rheumatology register were compared with respect to biologic drugs entered for 2006–2008. Based on the Prescribed Drug Register, the Rheumatology Quality Register had a national participation rate of 87 per cent. Eight regions were over 90 per cent, and ten others were over 80 per cent. Only Västernorrland, Norrbotten and Örebro were below 80 per cent.

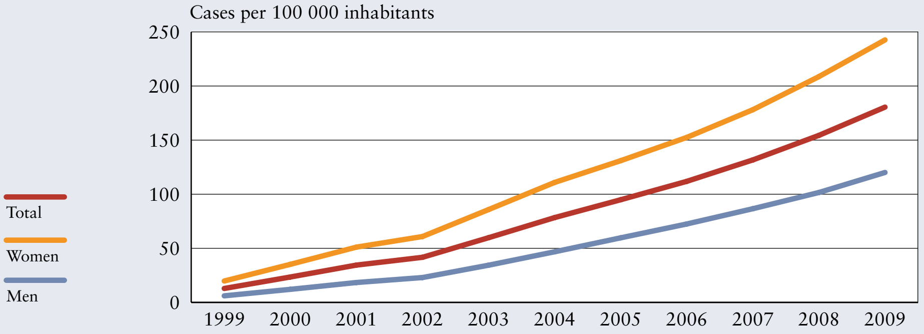


Figure 50
Sweden

Patients age 18 and older treated with biologic drugs for rheumatoid arthritis per 100 000 inhabitants.

Source: Swedish Rheumatology Register

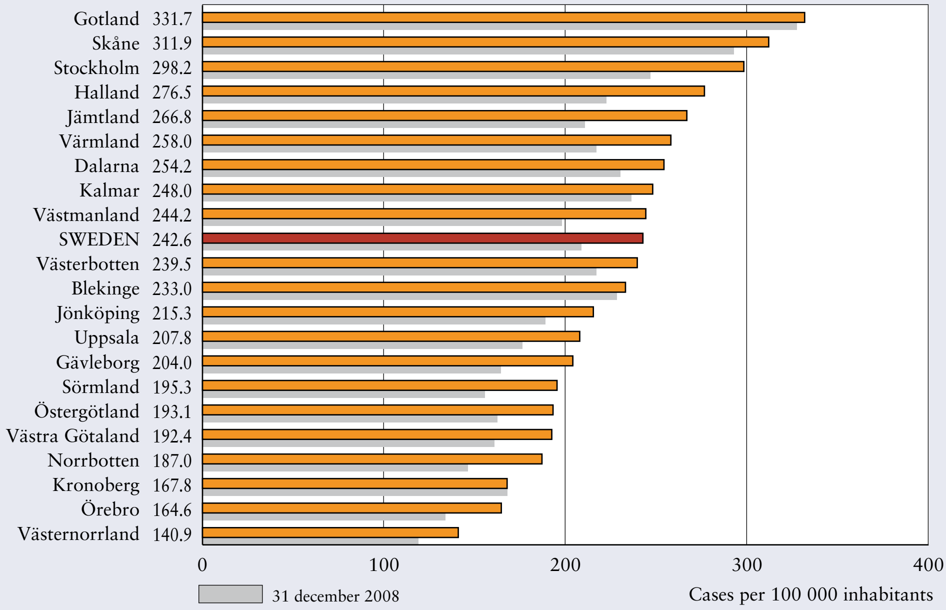


Figure 50
Women

Patients age 18 and older treated with biologic drugs for rheumatoid arthritis per 100 000 inhabitants, 31 December 2009.

Source: Swedish Rheumatology Register

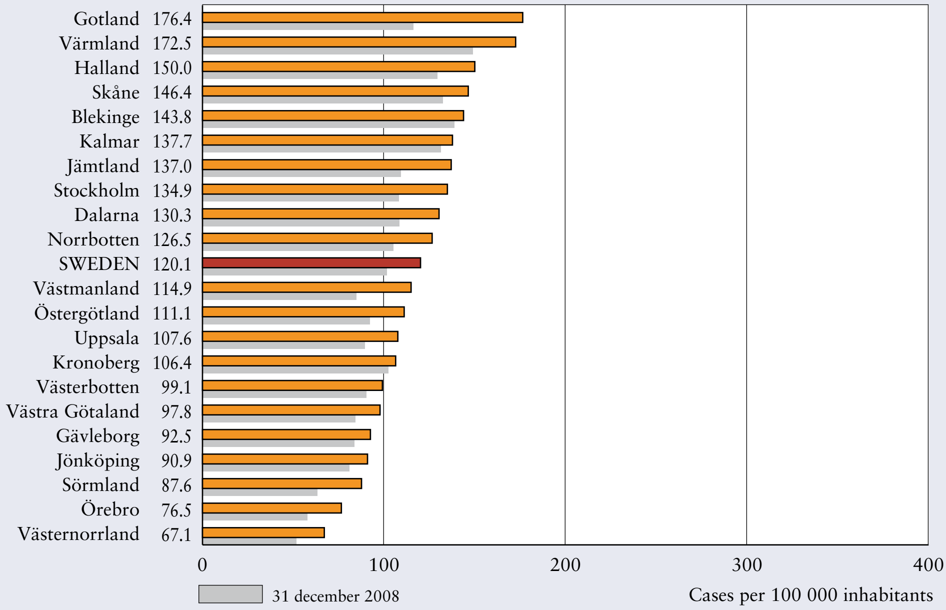


Figure 50
Men

Patients age 18 and older treated with biologic drugs for rheumatoid arthritis per 100 000 inhabitants, 31 December 2009.

Source: Swedish Rheumatology Register

On 31 December 2009, 13 155 adults were receiving biologic drug therapy. Figure 50 shows the number of patients treated per 100 000 adults in the various regions. The proportion of both women and men nationwide rose by 17 per cent from 154 per 100 000 adult inhabitants in 2008 to 180 in 2009. The regional differences were just as large as in 2008. The increase was considerably less in Blekinge, Kalmar and Kronoberg than the other regions.

Considering that the participation rates for the two drugs prescribed for rheumatoid arthritis were high in Stockholm (88 per cent), Skåne (94 per cent) and Västra Götaland (87 per cent) – the three most populous regions – the considerable reported difference between them is presumably accurate.

More women than men were prescribed biologic drugs, though the breakdown varied from region to region. But women may still be disadvantaged given their higher risk for rheumatic disease. For instance, they develop rheumatoid arthritis (RA) three times as often as men. However, the prevalence of rheumatic disease may vary, due to age variation and socioeconomic factors. This has not been compensated for in the numbers presented here.

The ultimate objective is to examine the health status of entire populations of patients with rheumatic disease by region and by gender. Such an analysis is not currently possible due to the incompleteness of the rheumatology quality register with respect to rheumatoid arthritis and other conditions. As a result, comparisons cannot be made among all existing patients with similar diseases in terms of biologic drug therapy and other treatments or no treatment.

While a much smaller percentage of patients receive biologic drugs in Västra Götaland than in Stockholm or Skåne, whether they are in poorer health is not yet possible to know. Many patients do well with traditional drugs, particularly if regularly monitored. A concerted effort is under way to improve the participation rate of the rheumatology quality register for all patients with rheumatoid arthritis, especially those who are doing relatively well. The aim is to create the basis for comparisons that can determine whether or not health status is uniform among the various regions.

51 Patient-reported improvement after initiation of biologic drug therapy for rheumatoid arthritis

If traditional treatment turns out to be insufficient, patients with severe inflammatory disease can receive biologic drugs that affect specific immune system mechanisms. These drugs, which have been approved since 1998, are used more every year.

Whenever routine clinical practice uses new drugs or treatment methods, patient-reported health impact is vital information. Prior to official approval of a drug, its efficacy is studied only in a patient population that meets strict inclusion criteria for clinical trials. Those patients rarely resemble the much larger population that clinical practice encounters.

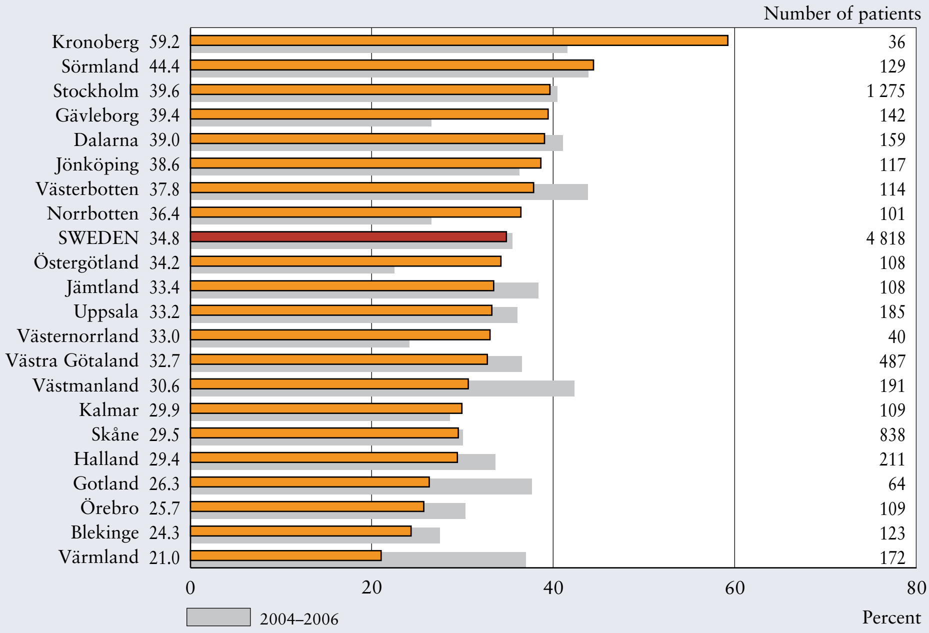


Figure 51
Total

Patient-reported improvement after initiation of biologic drug therapy for rheumatoid arthritis, 2007–2009.

Source: Swedish Rheumatology Register

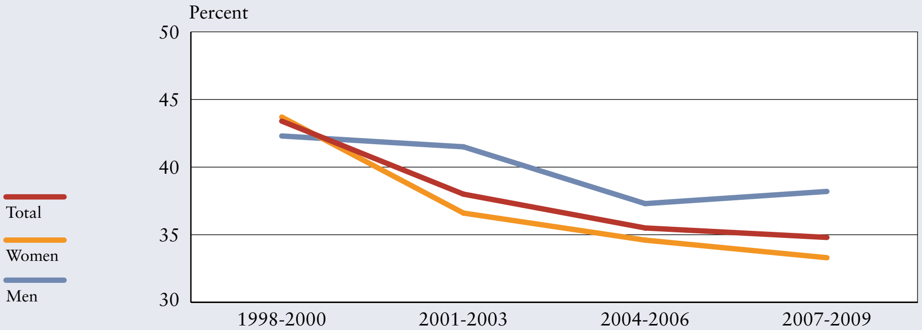


Figure 51
Sweden

Patient-reported improvement after initiation of biologic drug therapy for rheumatoid arthritis.

Source: Swedish Rheumatology Register

The rheumatology quality register measures patient-reported global health improvement during initial biologic drug therapy with a visual analogue scale (VAS 0-100 mm). Once it has been established that previous treatment was insufficient and a biologic drug has been prescribed, patients report their health during an appointment with a specialist. The results are subsequently compared with the average at follow-up appointments for the next 4–12 months. Any improvement is expressed as a percentage.

Not all patients with chronic, severe rheumatic disease can be expected to regain full health as the result of biologic drug therapy. Considering that patients vary in terms of the degree of health they are satisfied with, no universal target can be set.

Patients who first receive biologic drug therapy often have a chronic, severe disease that has been unresponsive to other medications. Nevertheless, they improve almost as much as those who are prescribed anti-rheumatic drugs as soon as they develop the disease (see Indicator 52). Improvement by the most successful region 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.

Figure 51 presents improvement in patient-reported health following initiation of biologic drug therapy in 2007–2009. The comparison included 3 188 women and 1 630 men. While regional differences were noted, the outliers were generally the regions where relatively few patients had been reported.

Gender differences also emerged. Women reported poorer health and less frequent improvement (average of 33 per cent) from initial biologic drug therapy than men (38 per cent). Because women develop rheumatoid arthritis three times as often, the number of men included in the regional results tends to be low. Thus, interpreting the data for men and comparing them with women is associated with a certain degree of uncertainty.

The results suggest that somewhat fewer patients have reported an improvement in recent years; the proportion declined from 43 per cent in 1998–2000 to 35 per cent in 2007–2009. However, the percentages for the initial years are less statistically reliable because fewer patients with a more severe disease were included in the early registration years.

The poorer rates of improvement over the past few years may be due also to changing perceptions of rheumatic disease and greater expectations of biologic drug therapy, which is much better known in later years.

The Disease Activity Score (28), a more objective measure that also includes a blood test and a doctor's examination of joint inflammation, suggests that initial biologic drug therapy is increasingly effective.

52 Patient-reported improvement after initial care for rheumatoid arthritis

Patient-reported health is particularly important during the initial period of a chronic disease such as the onset of rheumatoid arthritis. The Swedish Rheumatology Register measures patient-reported global health improvement during initial care with a visual analogue scale (VAS 0-100 mm).

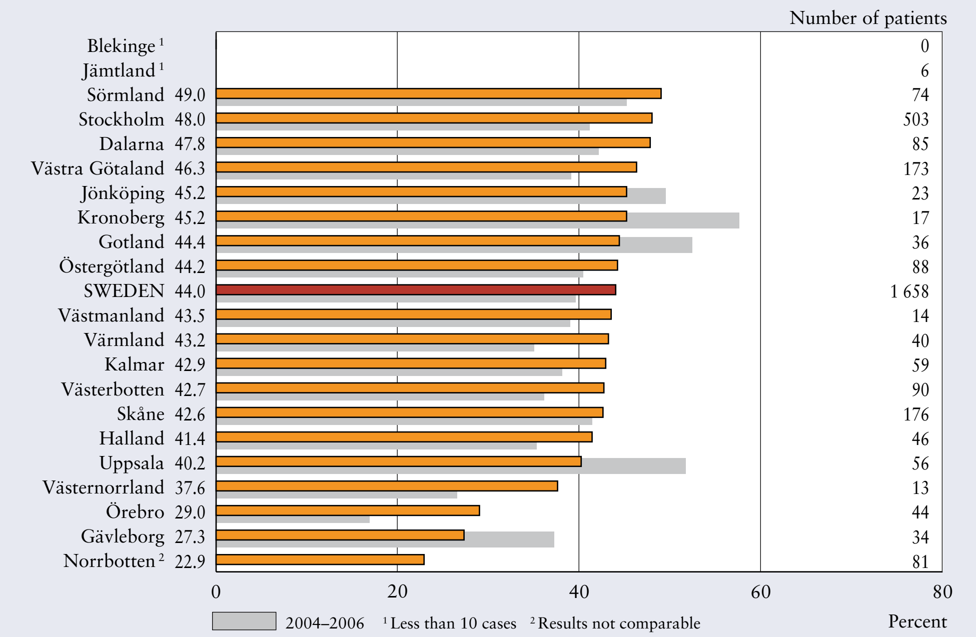


Figure 52
Total

Rheumatoid arthritis – patient reported health improvement 4–12 months after commencement of treatment, 2007–2009.

Source: Swedish Rheumatology Register

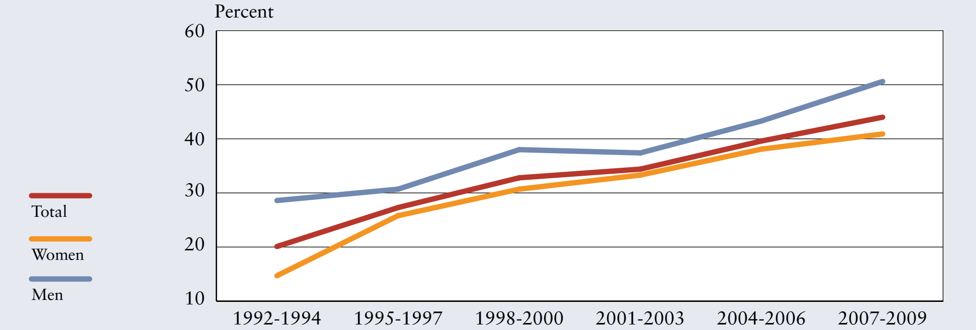


Figure 52
Sweden

Rheumatoid arthritis – patient reported health improvement 4–12 months after commencement of treatment.

Source: Swedish Rheumatology Register

Patients first report their health when initially diagnosed by a specialist. The results are subsequently compared with follow-up appointments for the next 4-12 months. Any improvement is expressed as a percentage of the initial global health measure.

Patients cannot be expected to regain full health during the first year. Considering that patients vary in terms of the degree of health they are satisfied with, no universal target can be set. The improvement by the most successful region 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.

Figure 52 shows health improvement for 1 658 patients who were initially treated in 2007–2009. The regions ranged from 27 to 49 per cent and averaged 44 per cent. The poorer results for Norrbotten are due to its use of a different measurement method. Since patients in Norrbotten are first diagnosed by a general practitioner who is consulting with a specialist over the phone (due to the vast distances in the region), the patients have already improved somewhat before they are seen by the specialist. Initial measurements in other regions are taken prior to the commencement of anti-rheumatic treatment.

The results presented here suggest that treatment has been increasingly effective – more than twice as many patients (44 per cent) reported an improvement than 15 years ago (20 per cent).

There were gender differences. As a number of scientific studies have found, women with rheumatoid arthritis reported poorer health than men, also from the very beginning. Similarly, 41 per cent of women reported an improvement, as opposed to 51 per cent of men.

53, 54 Waiting times of longer than 90 days – orthopaedic appointments, knee and total hip arthroplasty

Appointments at orthopaedic clinics, as well as knee and total hip arthroplasty, have long suffered from major availability problems. The situation has generally improved over the past year or two; in the case of appointments with orthopaedic specialists, the trend continued from October 2009 to March 2010.

Stockholm, Västernorrland and a number of other regions are still having significant difficulties when it comes to the availability of specialists. Four or five regions improved greatly during the period. Four regions fully satisfied the national care guarantee. Just under 40 000 patients nationwide were waiting for appointments, approximately 6 100 longer than 90 days. In almost half of the regions, no more than 50 patients had been waiting longer than the care guarantee limit.

The proportion of patients who had waited longer than 90 days for total knee or hip arthroplasty rose somewhat to 12 per cent, but declined in some regions. Approximately 6 600 patients were waiting nationwide, 820 of whom longer than 90 days.

The lack of improvement when it comes to availability may be related to the fact that the number of total knee and hip arthroplasty procedures increased by 13 per cent and 8 per cent respectively. If the number of operations decreased in 2010, it may turn out that the availability trends are volume-related.

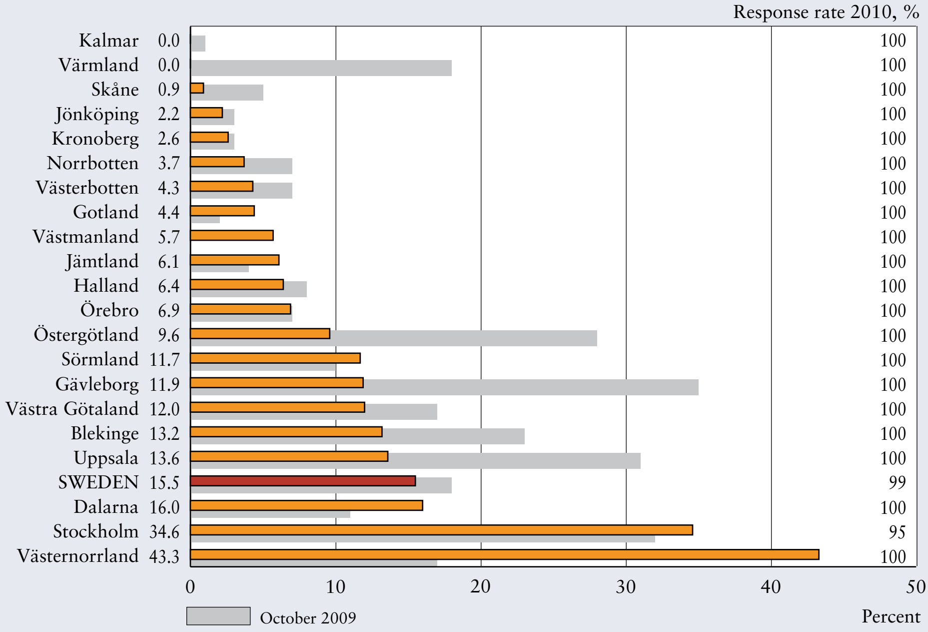


Figure 53 Orthopaedic appointments – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

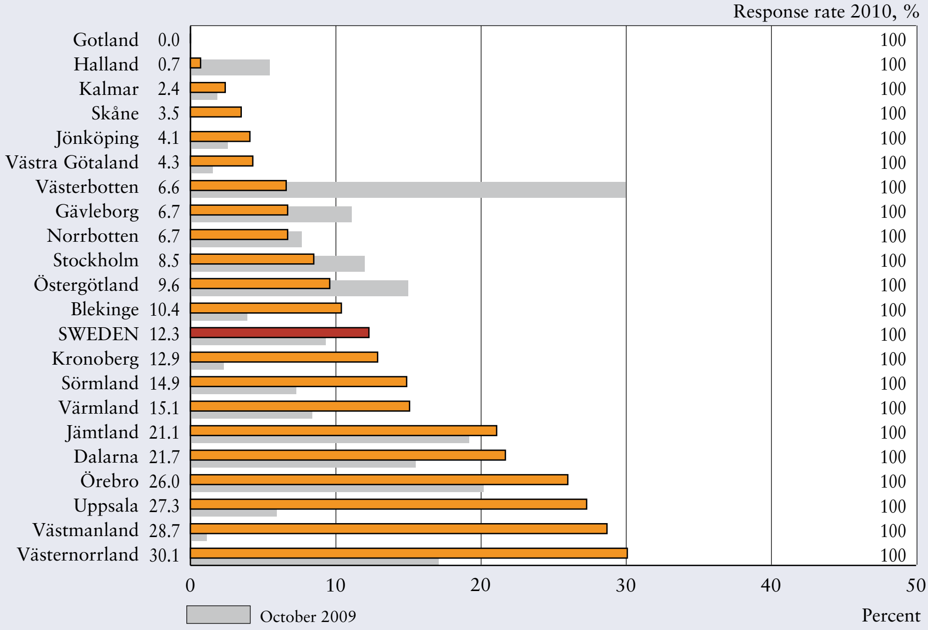
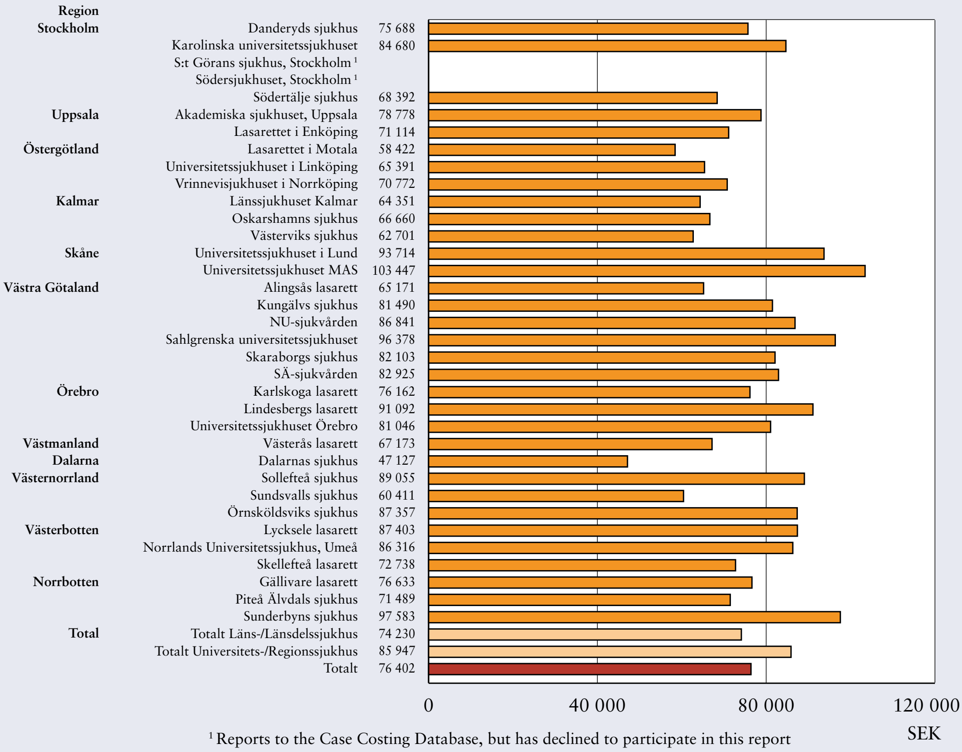


Figure 54 Knee and total hip arthroplasty – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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



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

Figure 55
Hospitals

Cost per case for primary total hip arthroplasty, 2009.

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

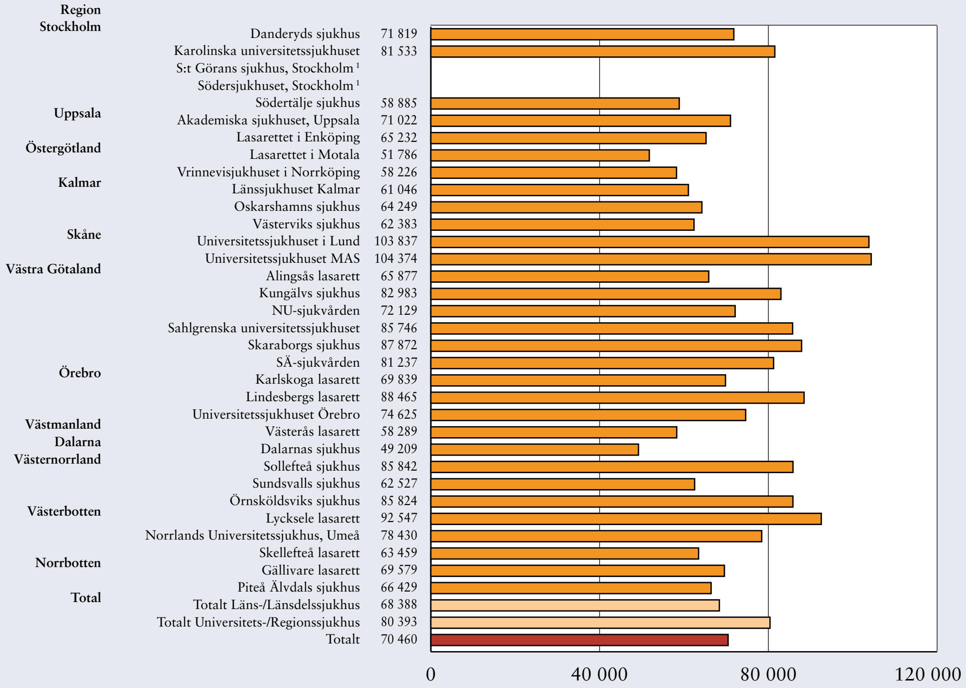
55, 56 Cost per case for primary knee and total hip arthroplasty

Figures 55 and 56 show costs per case for primary total hip and knee arthroplasty.

A total of 7 766, or approximately half of all, total hip arthroplasty procedures were reported to the Swedish Case Costing Database in 2009. All costs for individual cases 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 for non-outliers in the database averaged 76 402 kronor in 2009. Regional differences were significant – anywhere from 50 000 kronor to nearly twice that much.

Almost 13 000 primary total knee arthroplasty procedures are performed every year. A total of 5 419 cases, approximately half of all knee arthroplasty procedures, were reported to the case costing database in 2009. The cost averaged 70 460 kronor, somewhat lower than for total hip arthroplasty. Regional variations for the two types of surgery were approximately the same.



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

Figure 56
Hospitals

Cost per case for primary knee arthroplasty, 2009.

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

The average period of care for total hip arthroplasty ranged from four to ten days and averaged six days. At three to nine days, the average period of care was somewhat shorter for knee arthroplasty. The organisational structures of orthopaedic clinics affected the reported average period of care. If a second clinic provided postoperative rehabilitation services, reported cost and average period of care were lower. In such cases, the actual cost is higher than what is entered 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 operating time and the size of the overall hospital staff. Costs per case were approximately 12 000 kronor higher at university hospitals than at regional hospitals.

Rules have been drawn up for the types of costs to be reported to the case costing database database, as well as how they are to be calculated. 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. Over 350 000 Swedes, approximately 4 per cent of the population, are estimated to 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 average blood glucose (HbA1c), blood pressure and cholesterol levels, as well as smoking and obesity.

Seven diabetes care indicators are presented, an increase from last year. Six of them are based wholly on data from the National Diabetes Register or the Quality Register for Children and Adolescents with Diabetes, which is part of the first register. Data for the seventh indicator is obtained by matching the National Diabetes Register with the Prescribed Drug Register.

NBHW published new diabetes care guidelines 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, though designed somewhat differently on occasion.

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 in child and adolescent diabetes. The percentage of patients receiving lipid lowering therapy is also presented. The final two indicators look at the use of insulin pumps by medical clinics for patients with type 1 diabetes and the percentage of patients with impaired renal function who are treated with Metformin (Glucophage).

The indicators on treatment goals in primary care have been modified from previous years. The age limit has been lowered from 80 to 70. Other factors, such as adverse effects and the risks associated with polypharmacy, often affect the evaluation of diabetes-related treatment goals in the oldest patients. The goals for both blood pressure and lipids have been modified. Blood glucose levels are presented only for patients receiving dietary therapy. The purpose of the changes is to make the indicators more precise as quality measures.

The National Diabetes Register collects data about diabetes care from medical and primary care clinics. The register estimates the national participation rate for 2009 at 70 per cent, with relatively wide regional variations. The rate was excellent at hospitals and has improved significantly in recent years when it comes to primary care. The diagrams show participation rate by region based on matching between the National Diabetes Register and the Prescribed Drug Register. Whether reported results are representative of diabetes care in general is less certain when participation rates are low. The Prescribed Drug Register, which is based on the actual number of prescriptions picked up, covers all patients who received drug therapy.

57 Blood glucose level – diet treatment only

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 is required.

Important to stress is that treatment goals are consensus levels based on many types of scientific evidence. Few studies have analysed patient-reported outcome measures such as quality of life. All published recommendations emphasise the importance of ensuring that treatment not reduce blood glucose to excessively low levels. Balancing blood glucose often represents a major challenge.

The average HbA1c level for patients in primary care has not changed in recent years. Improvements appear unlikely unless clinical practice is modified. The new national guidelines underscore the importance of treating type 2 diabetes at an early stage, which is what this indicator reflects.

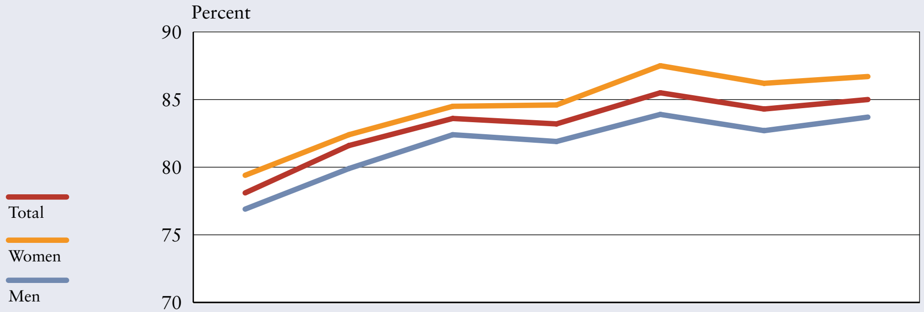


Figure 57
Sweden

Percentage of diabetics age 70 and younger in primary care receiving diet treatment only with blood glucose level (HbA1c) ≤ 6%.

Source: Swedish National Diabetes Register

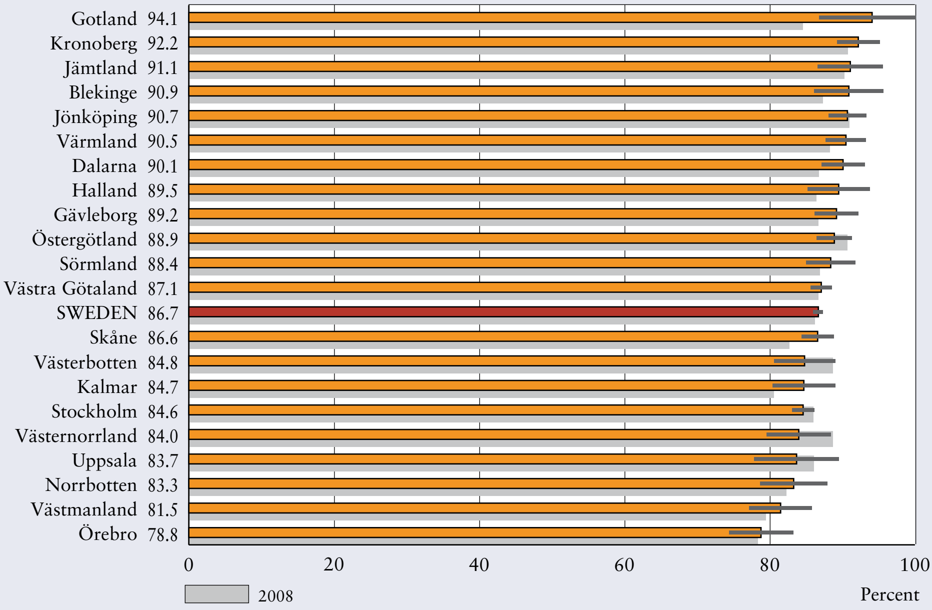


Figure 57
Women

Percentage of diabetics age 70 and younger in primary care receiving diet treatment only with blood glucose level (HbA1c) ≤ 6%, 2009.

Source: Swedish National Diabetes Register

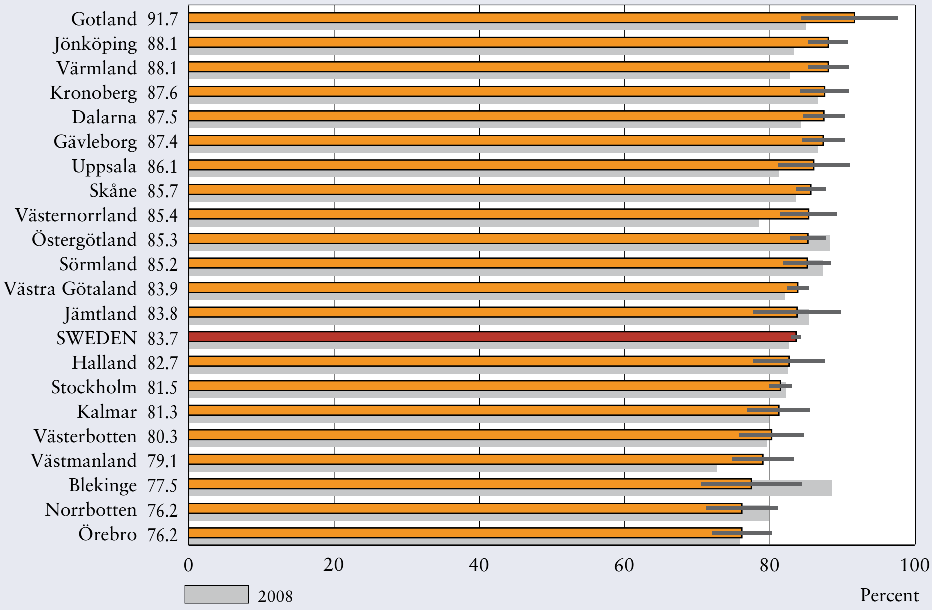


Figure 57
Men

Percentage of diabetics age 70 and younger in primary care receiving diet treatment only with blood glucose level (HbA1c) ≤ 6%, 2009.

Source: Swedish National Diabetes Register

The indicator concerns persons with diabetes who are given nutritional therapy only and whose disease is often of short duration. Figure 57 shows the percentage of these primary care patients whose average blood glucose level (HbA1c) was equal to or less than the treatment target of 6.0 per cent (Mono S method). Forty two per cent of primary care patients received nutritional therapy only for four years after being diagnosed with diabetes. All 18–70 year-old patients reported to the National Diabetes Register (approximately 160 000 in 2009) are included.

Eighty five per cent of patients nationwide had HbA1c levels equal to or lower than 6 per cent (Mono S method). The regional differences were very modest. More women than men achieved the treatment goal for HbA1c in 2009.

The guidelines stress the urgency of commencing diabetes treatment at an early stage. The results reported here suggest that some patients whose disease is of relatively short duration are not given satisfactory treatment. Thus, outcomes should be analysed at the local level, leading to structured, intensive programmes to promote lifestyle changes, as well as early prescription of tablets when called for.

58 High systolic blood pressure

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 overall risk rises with the number of risk factors. 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 diabetics in primary care had hypertension, defined as those who took antihypertensives or were untreated with blood pressure above the threshold.

Patients are increasingly prescribed antihypertensive therapy. More than 80 per cent of persons with type 2 diabetes were treated in 2009. Average blood pressure has declined in recent years, and the percentage of patients with 130/80 mm Hg or

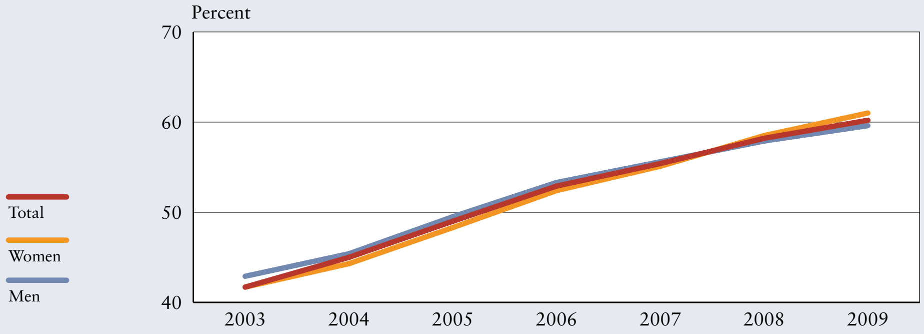


Figure 58
Sweden

Percentage of diabetics age 70 and younger in primary care who reached the blood pressure goal (≤140).

Source: Swedish National Diabetes Register

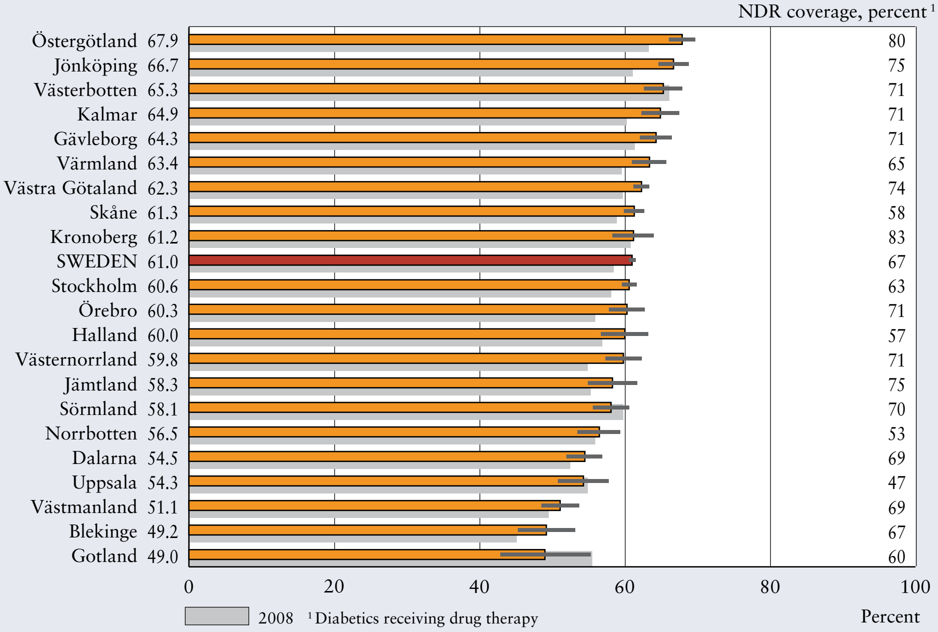


Figure 58
Women

Percentage of diabetics age 70 and younger in primary care who reached the blood pressure goal (≤140), 2009.

Source: Swedish National Diabetes Register

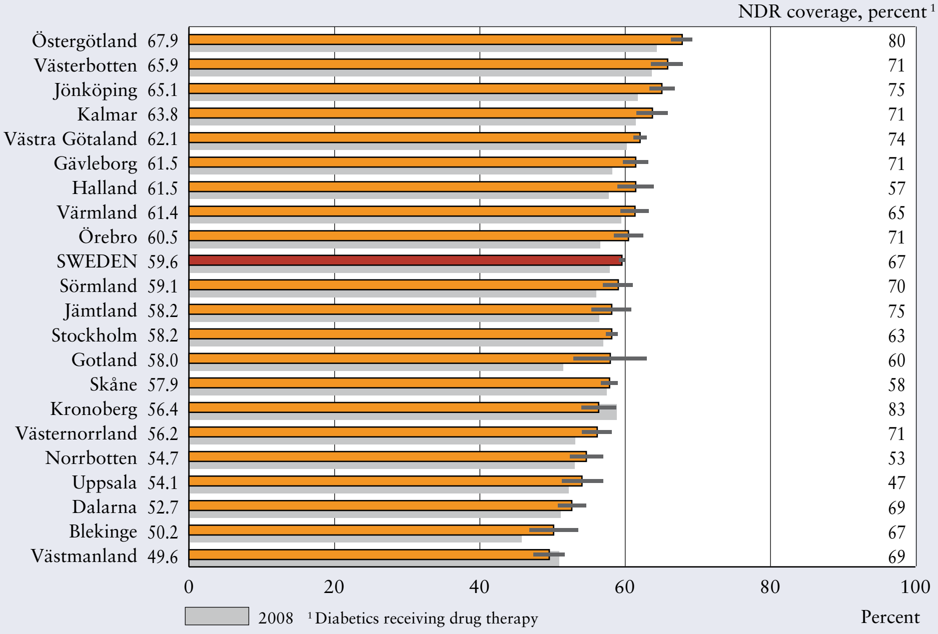


Figure 58
Men

Percentage of diabetics age 70 and younger in primary care who reached the blood pressure goal (≤140), 2009.

Source: Swedish National Diabetes Register

lower has increased significantly. Even more impressive is that that the percentage with systolic blood pressure over 140 mm HG has decreased from 40 to 30 per cent, a clear trend reversal.

Figure 58 presents the percentage of persons with type 2 diabetes age 70 and younger whose systolic blood pressure was below 140 mm Hg.

Sixty per cent of all patients nationwide had systolic blood pressure below that level. In other words, four of ten patients in that age group had hypertension and were therefore at elevated risk for cardiovascular disease. While some regional differences showed up, the results pointed primarily to undertreatment and a large potential for improvement in all regions.

59 Diabetic patients in primary care who reach 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 can substantially reduce the risk and is recommended for high blood lipids in type 2 diabetics. The new NBHW guidelines set the goal for LDL (bad) cholesterol at lower than 2.5 mmol/l.

Figure 59 shows the percentage of persons with diabetes who reached the LDL cholesterol goal.

Only 39 per cent of women and 44 per cent of men nationwide achieved the goal. Clear regional differences emerged. In the lowest region, only one in three patients reached the goal, and no region reported that more than half of the patients in this age group did so. Even after age standardisation, fewer women than men achieved the goal.

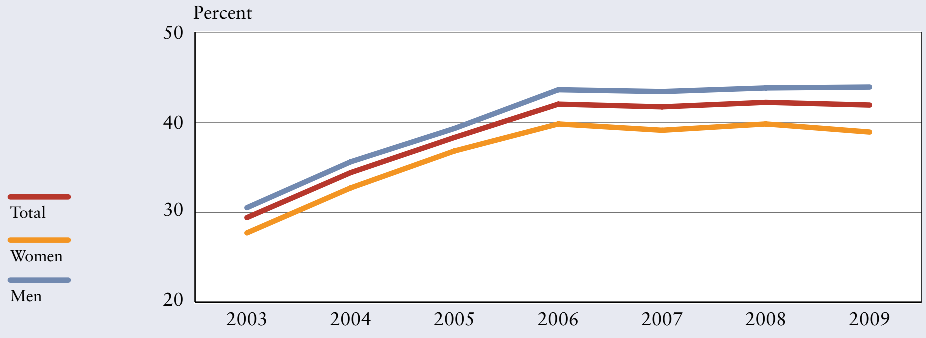


Figure 59
Sweden

Percentage of diabetics age 70 and younger in primary care who reached the LDL cholesterol goal (<2.5 mmol/l).

Source: Swedish National Diabetes Register

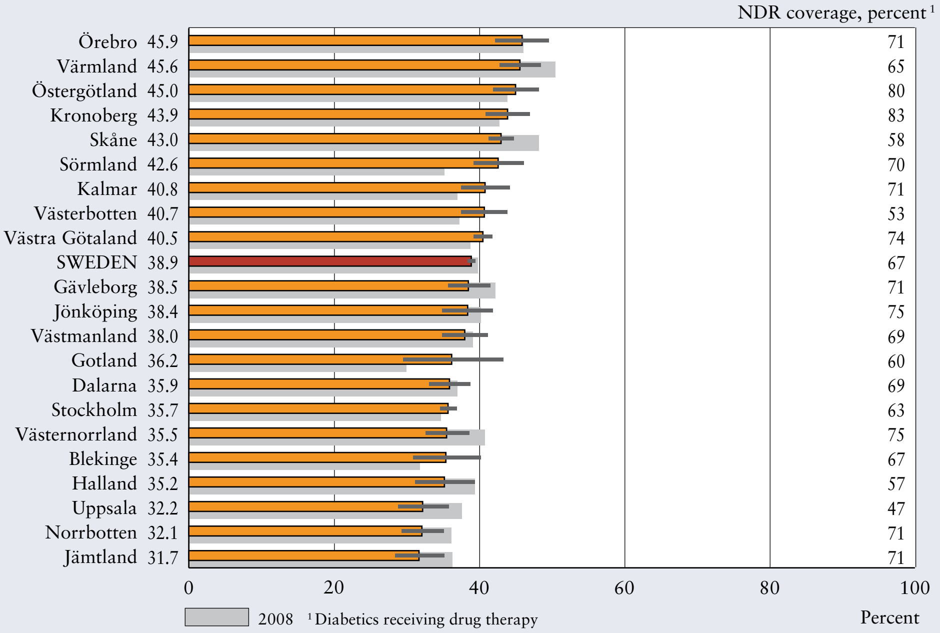


Figure 59
Women

Percentage of diabetics age 70 and younger in primary care who reached the LDL cholesterol goal (<2.5 mmol/l), 2009.

Source: Swedish National Diabetes Register

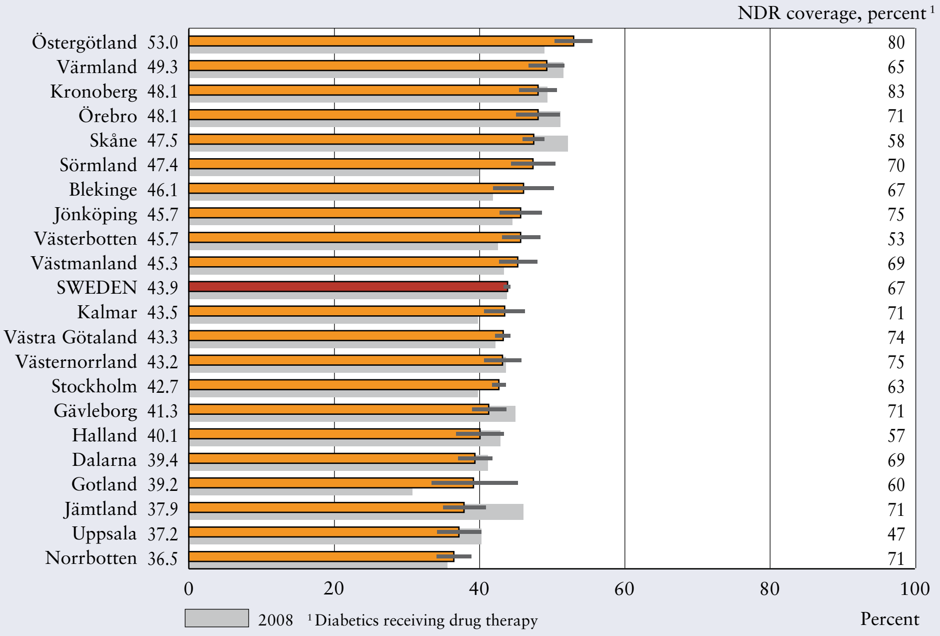


Figure 59
Men

Percentage of diabetics age 70 and younger in primary care who reached the LDL cholesterol goal (<2.5 mmol/l), 2009.

Source: Swedish National Diabetes Register

According to the National Diabetes Register, the proportion of primary care patients receiving lipid lowering therapy has more than doubled in recent years to 62.5 per cent of women and 65 per cent of men. The low goal fulfilment and regional variation suggest that the condition is still significantly undertreated. There is good reason to improve compliance with the guidelines and follow-up of treatment.

60 Lipid lowering drug therapy

A majority of patients with type 2 diabetes develop a lipid disorder at an early stage. Increased physical activity, smoking cessation and dietary modifications have a favourable impact on lipid disorders and the risk of developing cardiovascular disease. Drug therapy against lipid disorders is particularly important in diabetic patients with multiple risk factors, such as hypertension, smoking, microalbuminuria (small quantities of albumin in the urine) and abdominal obesity.

Figure 60 shows the percentage of persons with diabetes who received lipid lowering drugs. The data, which were taken from the Prescribed Drug Register, cover 325 000 persons with diabetes age 40 and over who were in drug therapy. Fifty nine per cent of women and 61 per cent of men nationwide were given lipid lowering drugs. A great majority of the regions differed by fewer than 10 percentage points.

The percentage rose considerably for all regions since the base year of 2006, which is shown in the shaded bar. In the country as a whole, the percentage increased by more than 10 percentage points for both women and men.

The National Diabetes Register goal fulfilment data for cholesterol levels provide support in interpreting the results. According to the register, 39 per cent of women and 44 per cent of men reached the treatment goal for LDL cholesterol of lower than 2.5 mmol/l. That percentage is unsatisfactory, pointing to continued undertreatment despite the increase of recent years.

61 Blood glucose levels – child and adolescent diabetes

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 are treated at children's clinics. Around 7 500 have type 1 diabetes.

All children and adolescents with diabetes are reported to SWEDIABKIDS, a national quality register that monitors outcomes in child diabetes care 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 level (HbA1c). People with high HbA1c levels have a considerably elevated risk of developing complications. Child diabetes clinics generally check HbA1c levels four times a year. High test results lead to adjustments in the treatment regimen,

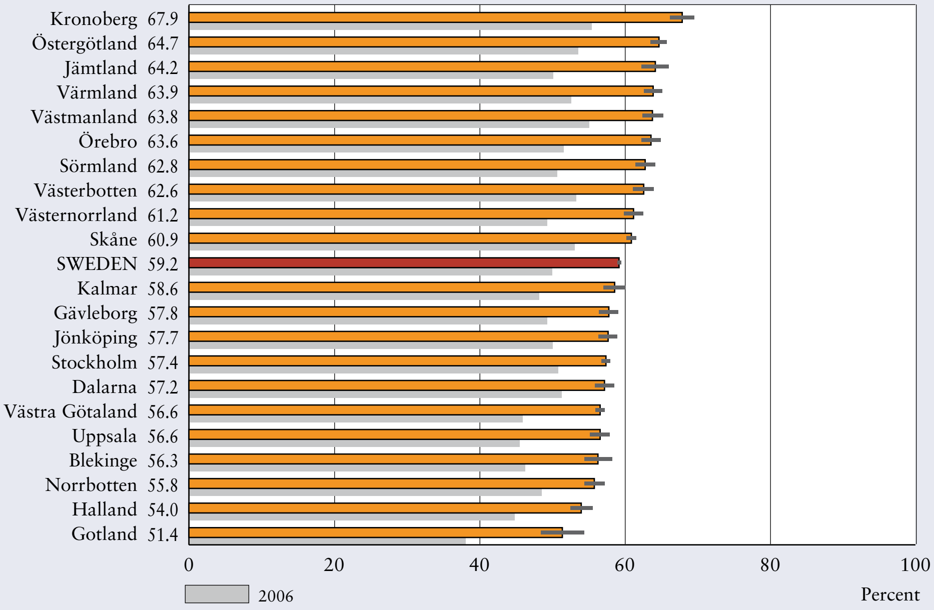


Figure 60
Women

Percentage of patients age 40 and older receiving diabetes drug therapy who were given lipid lowering drugs, 2009. Age-standardised.

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

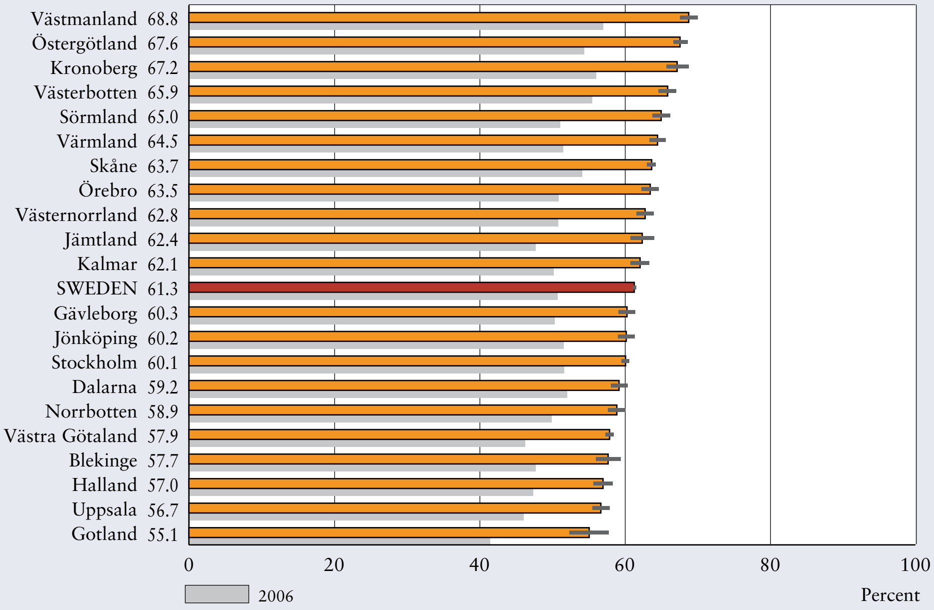


Figure 60
Men

Percentage of patients age 40 and older receiving diabetes drug therapy who were given lipid lowering drugs, 2009. Age-standardised.

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

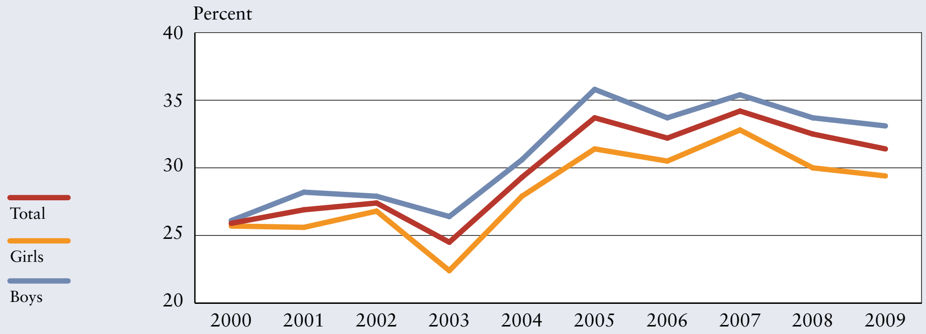


Figure 61
Sweden

Percentage of child and adolescent diabetics age 18 and younger who reached the goal for HbA1c (≤6.5 %).

Source: Swedish National Diabetes Register

which seeks a balance between diet, exercise and insulin therapy. The results can improve significantly after only one month of better treatment.

The care programme targets HbA1c levels of 6.5 per cent or lower. Occasionally the problem may be that a child or adolescent has too low a level, which is associated with the risk of a decrease in blood glucose. Figure 61 presents the percentage of children with average HbA1c of 6.5 per cent (Mono S method) or lower over the course of a year. More than 31 per cent of children, 29 per cent of girls and 33 per cent of boys, nationwide achieved that goal in 2009.

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 adolescent population. Swedish children and adolescents have low HbA1c levels in an international comparison. The relatively large regional variation indicates that many regions have significant potential for improvement. Adolescent girls have somewhat higher HbA1c levels than their male contemporaries.

Over the past two years, medical professionals have discussed the differences in HbA1c levels among various clinics. Reports from clinics with low average HbA1c levels and a large number of patients with levels below 6.5 per cent over the course of a year demonstrate the importance of a clear definition of the goal and the communication of a uniform message by each team.

A doctoral thesis project has compared clinics that had low HbA1c levels with those that had high levels, as well as with those that have improved in recent years. Preliminary data confirm the analysis above. Furthermore, regular team sessions are valuable. Clinics with high HbA1c levels articulate their goals less clearly or set higher goals than those with low values. In addition, there is less consensus among their teams and healthcare professionals are less satisfied with the care they provide.

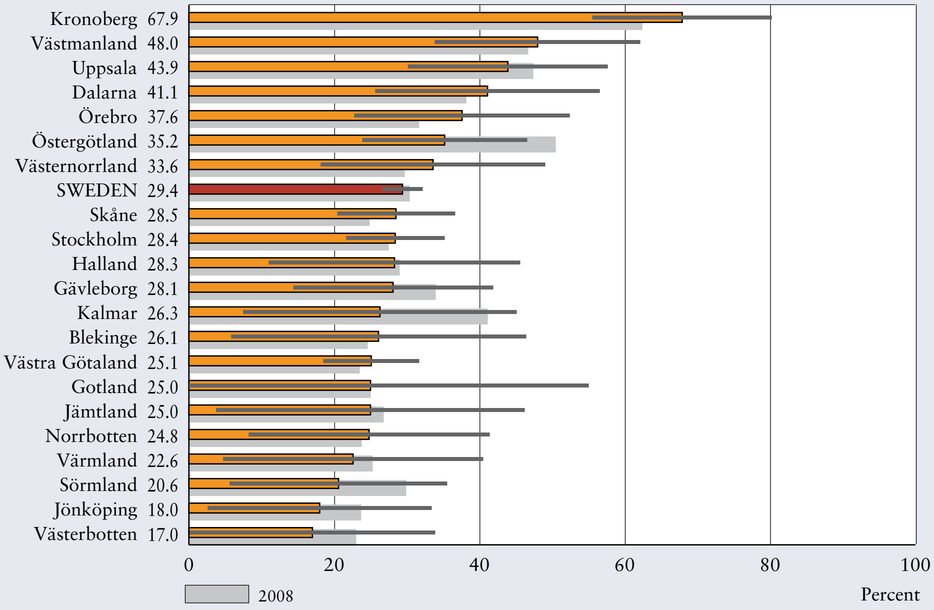


Figure 61
Girls

Percentage of child and adolescent diabetics age 18 and younger who reached the goal for HbA1c (≤6.5 %), 2009.

Source: Swedish National Diabetes Register

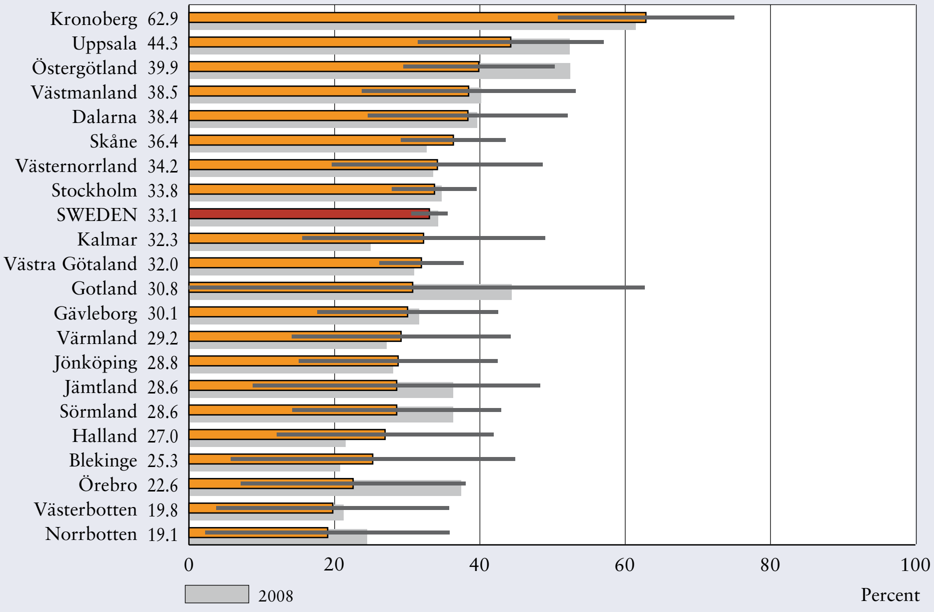


Figure 61
Boys

Percentage of child and adolescent diabetics age 18 and younger who reached the goal for HbA1c (≤6.5 %), 2009.

Source: Swedish National Diabetes Register

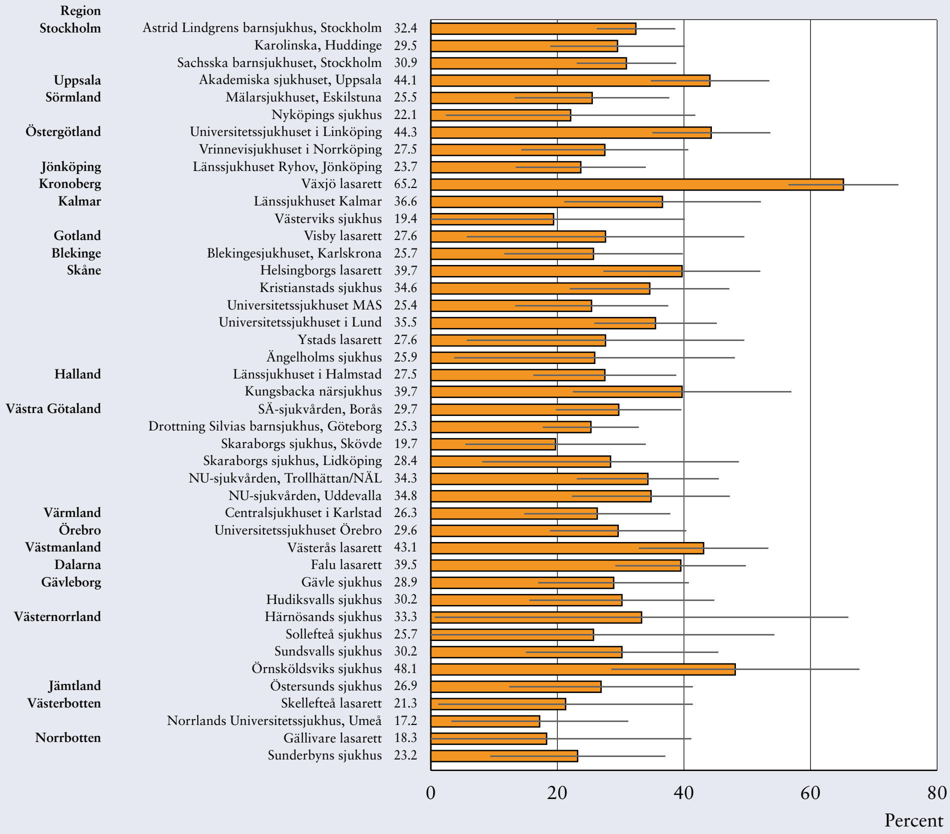


Figure 61
Hospitals

Percentage of child and adolescent diabetics age 18 and younger who reached the goal for HbA1c (≤6.5 %), 2009.

Source: Swedish National Diabetes Register

No clear correlation between HbA1c levels and more specific data (insulin dose, type of insulin therapy, etc.) has been reported.

62 Insulin pumps for type 1 diabetes

Use of an insulin pump allows a patient to change the standard dose prior to physical exertion, take advantage of programmes for an extended mealtime dose, and adopt (when appropriate) a night programme that reduces the risk that blood glucose levels will fall too low. An insulin pump may permit a 0.5-0.6 percentage point improvement in glucose control compared to customary multi-dose treatment.

The new national guidelines indicate that insulin pumps may be tried on type 1 diabetics when four-dose treatment has shown to provide insufficient glucose control. The guidelines also specify that insulin pumps should be tried on persons with type 1 diabetes receiving multi-dose treatment whose blood glucose levels are repeatedly too high or low. In patients with type 1 diabetes and the above conditions, insulin pumps are associated with a modest cost compared to multiple daily injections.

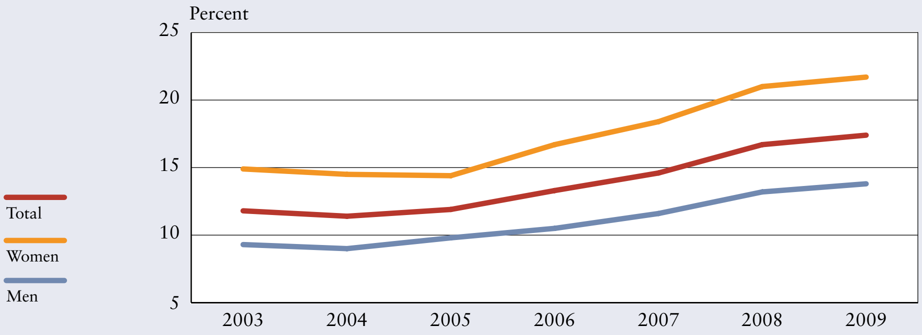


Figure 62
Sweden

Percentage of type 1 diabetics treated with insulin pumps.
Source: Swedish National Diabetes Register

Figure 62 shows the percentage of persons with type 1 diabetes treated at medical clinics who had insulin pumps. The comparison includes almost 27 000 patients entered in the National Diabetes Register. Nearly 22 per cent of women and 14 per cent of men nationwide had insulin pumps. The regional variations were very large for both women and men.

The percentage of persons with type 1 diabetes who meet the above criteria and are thereby candidates for insulin pumps is not known with certainty. Even though no generally accepted target can be set at this point, the large regional variation should encourage local analyses of the need for insulin pumps.

63 Metformin (Glucophage) for patients with type 2 diabetes and impaired renal function

Metformin is currently the first-line drug therapy worldwide for type 2 diabetes. The tried-and-tested drug has a number of favourable effects on metabolic disturbances among patients with diabetes: insulin sensitivity rises, leading to lower blood glucose levels, and the risk of cardiovascular disease decreases. However, NBHW guidelines question the use of metformin in patients with impaired renal function.

Metformin, which is wholly eliminated through the kidneys, can accumulate in the blood if renal function is impaired and give rise to a rare, but serious and occasionally fatal, condition referred to as lactic acidosis. FASS (the Swedish equivalent of the Monthly Index of Medical Specialities) sets a lower limit for impaired renal function of s-Creatinine of 130 µmol/L or estimated glomerular filtration rate (eGFR) of 60 ml/min (in accordance with the Cockcroft-Gault formula).

A recently published Swedish study suggests that renal function would have to be seriously impaired before the risk of lactic acidosis arises. However, a well-known observation is that all serious diseases can quickly impair renal function and that

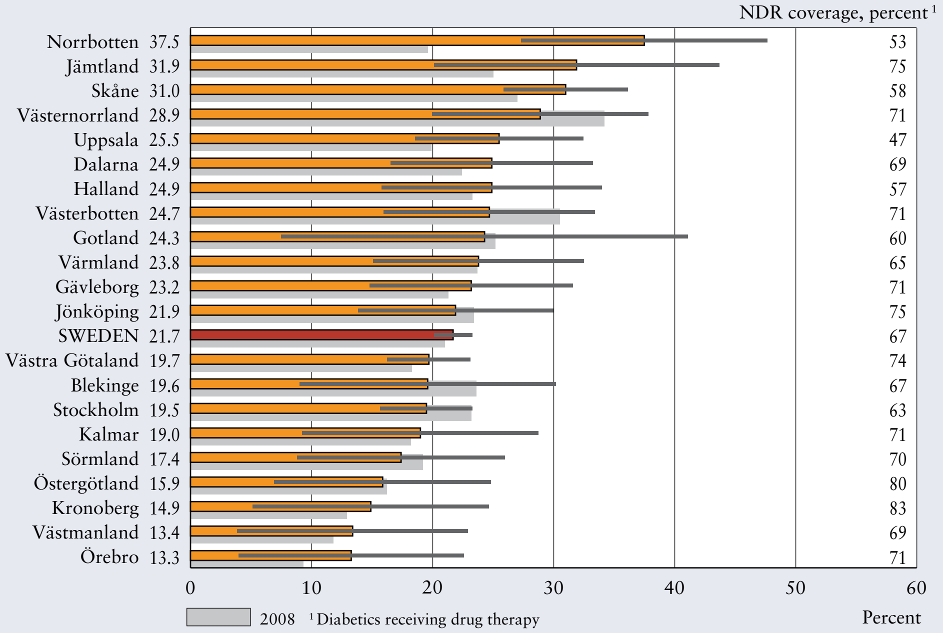


Figure 62
Women

Percentage of type 1 diabetics treated with insulin pumps, 2009.

Source: Swedish National Diabetes Register

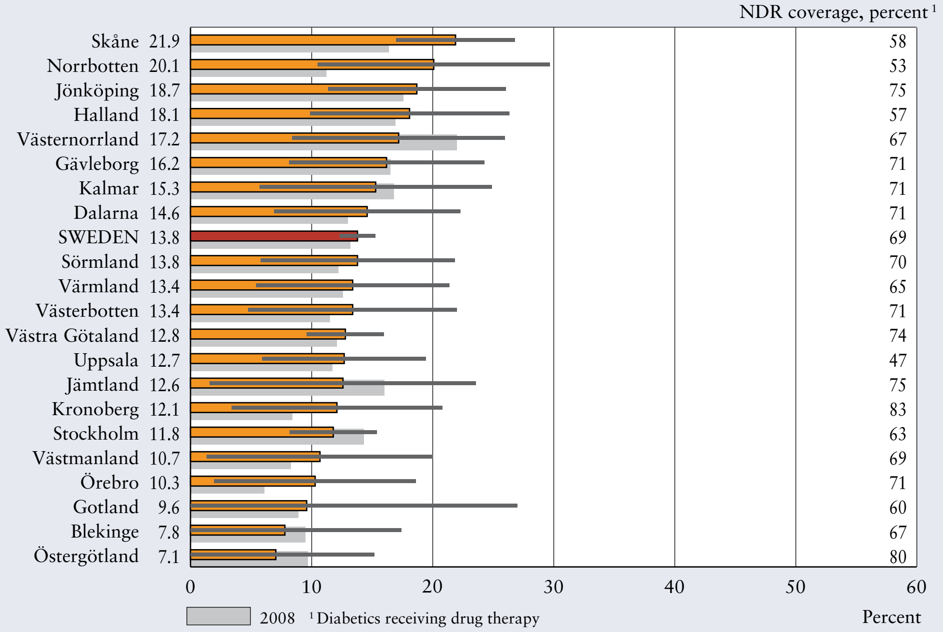


Figure 62
Men

Percentage of type 1 diabetics treated with insulin pumps, 2009.

Source: Swedish National Diabetes Register

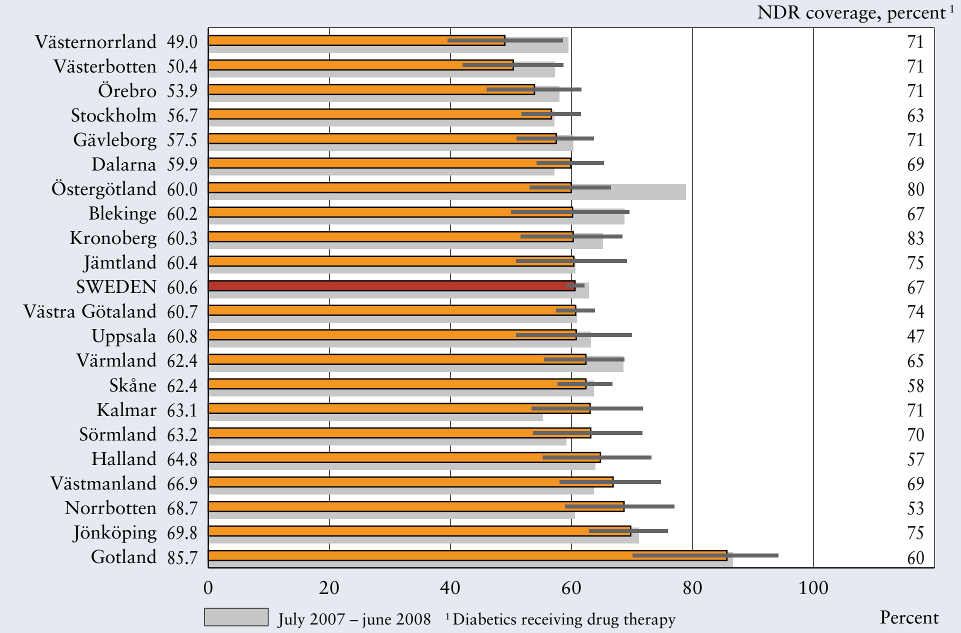


Figure 63
Women

Percentage of diabetics older than 80 receiving metformin who had impaired renal function, July 2008 – June 2009.

Source: Swedish National Diabetes Register

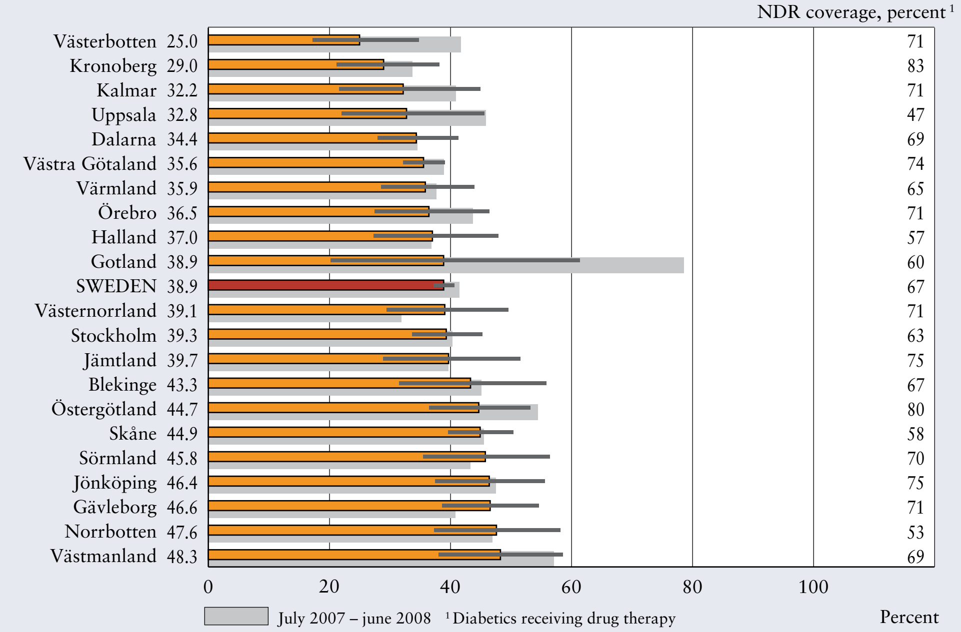


Figure 63
Men

Percentage of diabetics older than 80 receiving metformin who had impaired renal function, July 2008 – June 2009.

Source: Swedish National Diabetes Register

the risk increases with age. Termination of metformin treatment is probably the most effective way of preventing lactic acidosis in seriously ill patients.

Figure 63 presents the percentage of patients age 80 and older receiving metformin treatment who had impaired renal function. The data comprise 7 260 patients, including 4 200 women. The comparison was based on information obtained by matching the National Diabetes Register and Prescribed Drug Register. All patients were included who picked up at least three metformin prescriptions during the measurement period and for whom renal function data were available in advance.

More than 60 per cent of women and almost 40 per cent of men nationwide over age 80 who were receiving metformin treatment had impaired renal function. Thus, a significant percentage of elderly women and men were being given metformin although their renal function was poorer than the lower limit currently set by FASS.

Since not all persons with diabetes are reported to the National Diabetes Register, the actual number of patients affected may be considerably greater than those included in this comparison. A review of all Malmö patients who were receiving metformin generated results similar to those presented above.

A number of observations are germane at this point. First of all, measuring creatinine alone is insufficient when assessing renal function, particularly in the elderly. As has already occurred in some other countries, the choice of limits below which metformin should not be prescribed or should be given in lower doses may need to be reconsidered. Metformin must not be prescribed if there is a risk for rapid deterioration of renal function. The risk increases with age and with previously impaired renal function. Moreover, metformin must be discontinued any time a serious disease develops, and patients should be so notified. Particularly in terms of information to patients, there may be considerable room for improvement.

This is the first time the National Diabetes Register and Prescribed Drug Register have been used to publish data concerning meformin treatment in patients with impaired renal function. The results can be valuable in conducting improvement efforts and encouraging systematic pharmaceutical reviews among elderly patients.

CARDIAC CARE

Cardiovascular disease is the most common cause of death and among the most common causes of disability in Sweden. Acute myocardial infarction, of which there were more than 35 000 cases in 2008, is the cardiovascular disease that causes the most deaths. As the result of rapid changes in the care of acute myocardial infarction over the past ten years, fatality has declined substantially.

Eleven indicators, all of which were included in the major report on cardiac care published by NBHW in 2009, are presented here. Most of them concern myocardial infarction. Three indicators, one regarding fatality after infarction and one regarding recurrence, serve as outcome measures. Four indicators measure process, reflecting how effectively myocardial infarction care handles treatment and secondary prevention. The other indicators reflect heart failure, waiting times for coronary artery surgery, waiting times for appointments at cardiology clinics and costs per case for percutaneous coronary intervention in infarction patients.

A separate section presents case fatality rates for myocardial infarction by region and hospital, adjusted for age, previous disease, education and other factors. One purpose is to assess the extent to which the regional and hospital outcomes change when factors are considered that can be measured using the NBHW health data registers.

The Swedish Heart Intensive Care Admissions (RIKS-HIA) Quality Index, which is now part of the SWEDEHEART register, is the source for three of the indicators. RIKS-HIA contains data about myocardial infarction patients admitted to cardiac intensive care units at hospitals. Almost all hospitals participate in the register, but each of them has myocardial infarction patients who are not reported.

Reporting to RIKS-HIA for 2005–2006 was compared with the Patient Register. Forty per cent of cases nationwide were reported to the Patient Register and not to RIKS-HIA. Thus, over 12 000 myocardial infarction diagnoses per year were not reported to RIKS-HIA. The variation was even greater between hospitals than regions. An effort is under way to improve reporting of infarction patients to RIKS-HIA, regardless of what hospital unit treats them. Appendix 2 contains an updated comparison between RIKS-HIA and the Patient Register.

The differences in participation rate should be taken into consideration when interpreting RIKS-HIA data, particularly for the two indicators that reflect ST-segment elevation myocardial infarction. Inclusion of all categories of myocardial infarction patients in regional data could affect the results of the comparison.

64 Myocardial infarction – 28-day case fatality rate

The 28-day case fatality rate is an internationally established indicator of how well the healthcare system handles acute care after myocardial infarction. The indicator measures quality throughout the healthcare system: preventive, ambulance, acute and follow-up care.

Figure 64 compares regional results for 2006–2008 with those for 2003–2005. 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 Patient Register are included. Thus, both patients who were initially hospitalised and those who died without being hospitalised are covered.

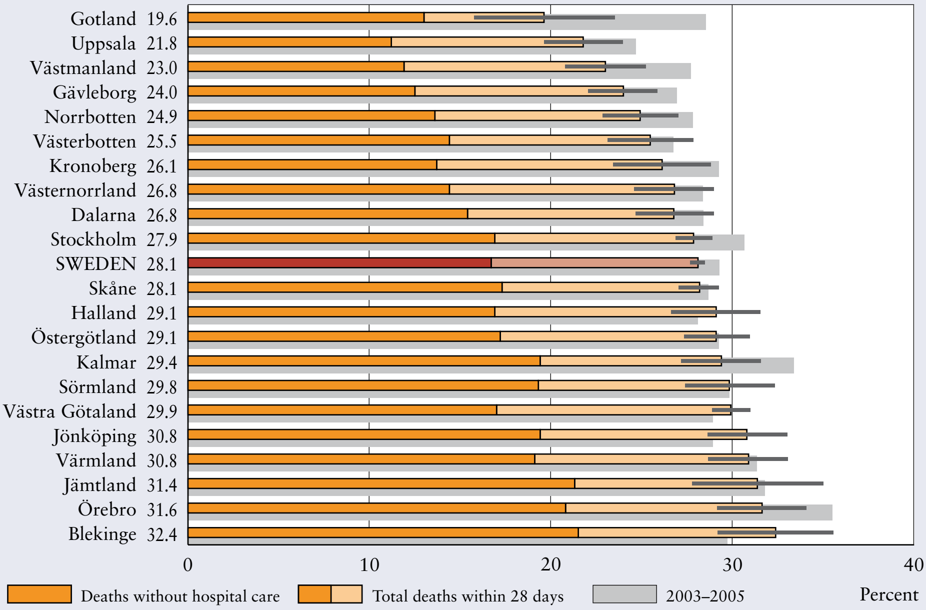


Figure 64
Women

28-day case fatality rate for myocardial infarction, 2006–2008. Both hospitalised 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

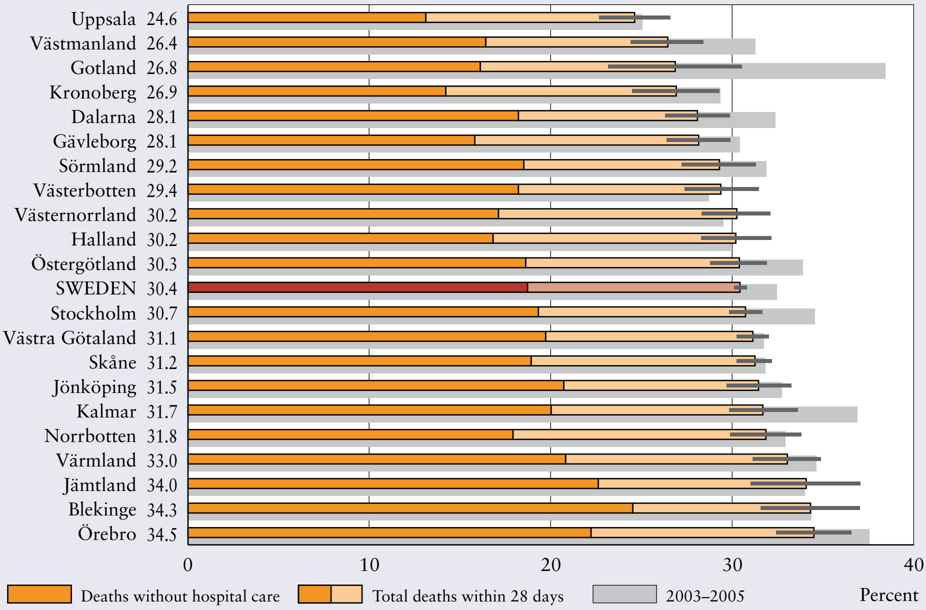


Figure 64
Men

28-day case fatality rate for myocardial infarction, 2006–2008. Both hospitalised 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

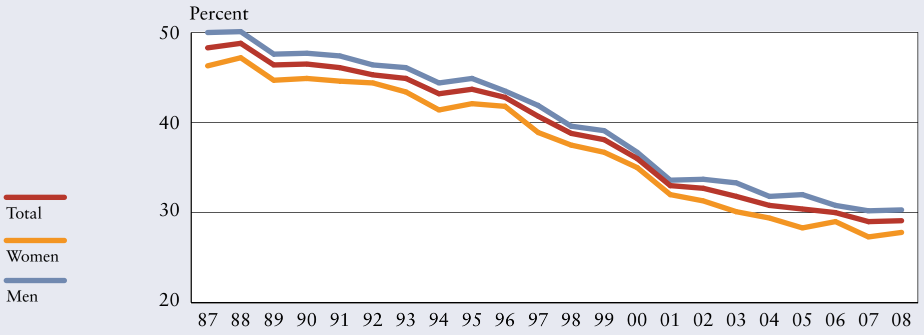


Figure 64
Sweden

28-day case fatality rate for myocardial infarction. Both hospitalised 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

Regional variations in case fatality rates may have several causes. In addition to diagnostic reliability, background factors such as concurrent diseases, social variables and the propensity of the population to seek care all have an impact. Direct care-related factors may include distance to an acute care hospital, the efficiency of ambulance services and acute hospital care.

The age-standardised 28-day case fatality rate declined by 10 percentage points for both women and men between 1990 and 2000. The diagram indicates that the decrease continued, though to varying degrees, in nearly every region until 2008.

Approximately 20 100 men and 14 500 women had myocardial infarctions in 2008. Almost one third of the patients died within 28 days. More than 7 000 patients diagnosed with infarction died outside of acute care each year.

One source of error is that only a small percentage of elderly, non-hospitalised patients are given an autopsy. Determining the cause of death among such patients is associated with less certainty. Considering, however, that they significantly affect the case fatality rate and case mix among those who are hospitalised, they need to be included in the comparison.

65 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 WHO’s MONICA project reported very low case fatality rates among hospitalised myocardial infarction patients. Short-term survival among hospitalised patients is the only measure that is available in many countries.

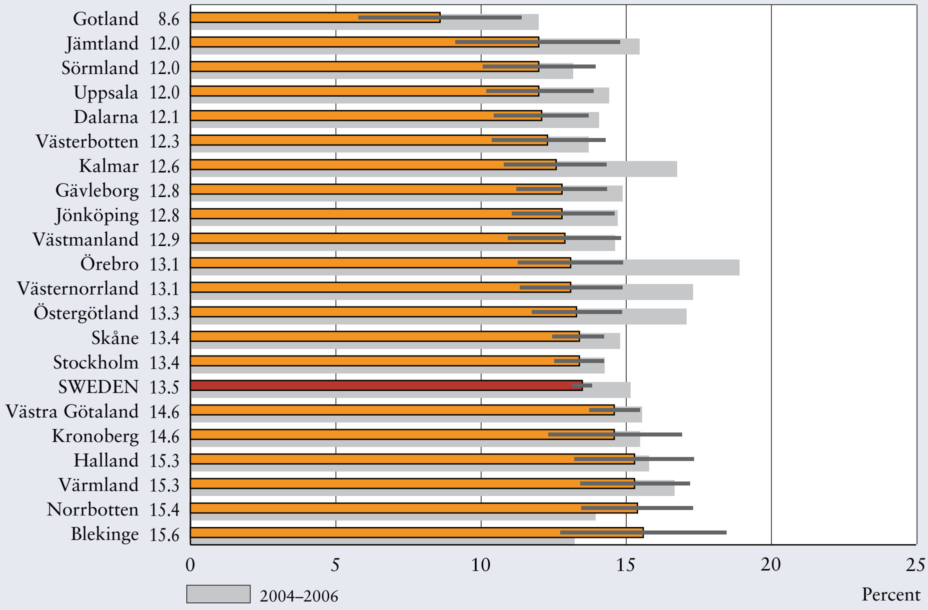


Figure 65
Women

28-day case fatality rate for myocardial infarction, 2007–2009. Hospitalised patients. Age-standardised.

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

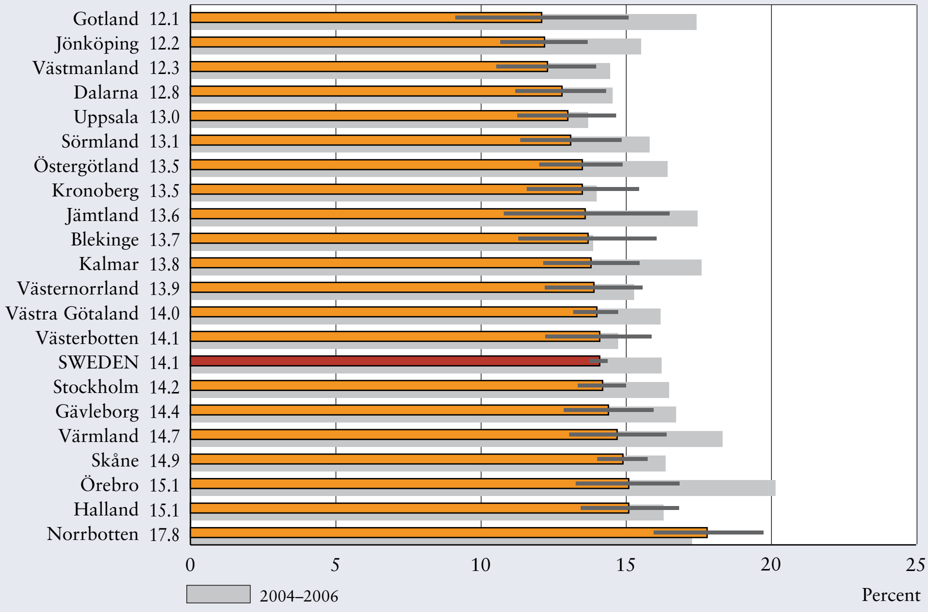


Figure 65
Men

28-day case fatality rate for myocardial infarction, 2007–2009. Hospitalised patients. Age-standardised.

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

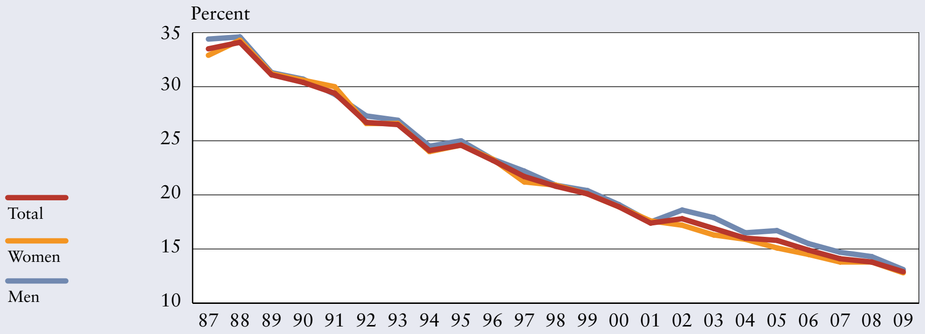


Figure 65
Sweden

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

The comparison in Figure 65 is based on all patients with a diagnosis of myocardial infarction who were initially hospitalised in 2007–2009. All cases in which the patient was age 20 or older were included. Age standardisation was performed in view of the differing gender and regional age structures. The shaded bar shows the corresponding result for 2004–2006.

Approximately 12 000 women and more than 16 000 men have been treated annually for acute myocardial infarction over the past few years. Among all hospitalised myocardial infarction patients in 2007–2009, almost 14 per cent died within 28 days and one third within a year. With age standardisation, men now have only slightly higher case fatality rates than women. Fatality has decreased by approximately 2 percentage points nationwide for both women and men since 2004–2006.

Thus, after taking the differing age structures into consideration, men showed higher case fatality rates following myocardial infarction 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.

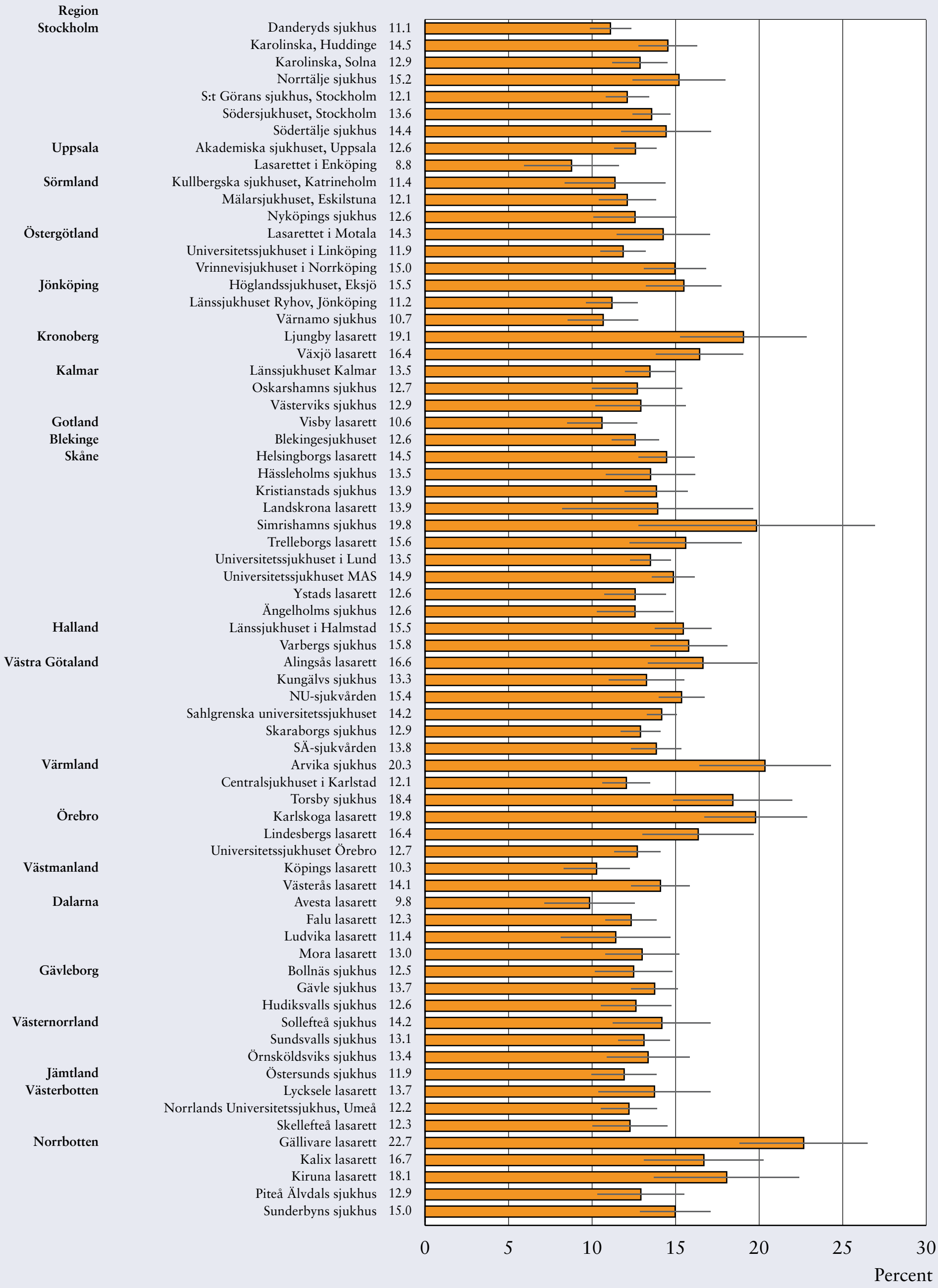


Figure 65
Hospitals

28-day case fatality rate for myocardial infarction, 2007–2009. Hospitalised patients. Age-standardised.

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

Adjustment for case mix among patients who die after myocardial infarction

Important to keep in mind when comparing the quality of care offered by various hospitals is that the severity of disease may differ as well. Based on death after myocardial infarction, the comparisons presented here take a number of such factors into consideration. This observation is relevant to most comparisons of quality.

NBHW quality and health data registers are used to varying degrees when comparing regional and hospital outcomes. The comparisons are often performed and published in many different kinds of rankings. Frequently the only adjustment is for age. Thus, there is a risk that outcome differences reflect case mix only. Rankings may erroneously identify individual hospitals as having better or poorer results than others.

The comparisons need to be made more reliable by paying greater attention to the underlying risk factors for the disease being studied. However, adjustment for the underlying factors for death after infarction can conceal important causes that the regions should try to correct. For instance, if immigrants have a higher fatality rate than native Swedes and an adjustment is made for country of origin, the fact that regions with many immigrants fail to provide equal care may go unnoticed.

The case fatality rates for myocardial infarction are analysed here after adjustment for a number of factors in addition to age. Such factors, which are independent of myocardial infarction care, may be unevenly distributed among regions or hospitals and should therefore be adjusted for.

Adjustment for comorbidity was based on NBHW data registers. Data on disease prior to infarction was taken from the Patient Register. The analysis includes information on care for 15 diagnostic categories. Data in the Prescribed Drug Registers on prescriptions picked up before infarction permitted diabetes and mental illness to be incorporated into the model. The education variable in the Statistics Sweden Education Register was used as a socioeconomic indicator. All of the factors are regarded as posing risks for death after infarction.

Comorbidity variables are chosen on the assumption that diabetes and previous cardiovascular disease suggest greater severity and increase the risk of death after infarction. The same is true of cancer, chronic obstructive pulmonary disease, dementia disorders and kidney disease. The table on the next page shows examples of case fatality rates for infarction patients of various ages and with comorbidity. The model adjusts for these factors.

The health data registers do not contain all information needed to correctly predict fatality after infarction. The registers lack many risk factors for death, including smoking, BMI and clinical data such as blood pressure, type of infarction, number of stenosed arteries and time between onset of symptoms and commencement of

Acute myocardial infarction (AMI), including out of hospital deaths – variables used when adjusting for case-mix

	Odds ratio, age-adjusted	AMI cases	Case-fatality rate, unadjusted
Total 2006-2007		78 258	30 %
Sex			
Men		45 086	29 %
Women		33 172	32 %
Age			
40-44		668	13 %
45-49		1 370	12 %
50-54		2 439	13 %
55-59		4 231	15 %
60-64		6 260	18 %
65-69		6 780	21 %
70-74		8 326	25 %
75-79		11 197	29 %
80-84		14 770	34 %
85-		21 860	44 %
Level of education			
Up to 9 years of education	1,32	38 715	32 %
10 to 12 years of education	1,18	23 254	25 %
13 years or more of education	1,00	8 235	22 %
Comorbidity			
Diabetes	1,13	16 105	32 %
Stroke	1,43	12 873	40 %
Heart Valve Disease	1,19	4 514	38 %
Heart Failure	1,53	19 118	42 %
Peripheral Vascular Disease	1,36	6 718	38 %
Renal Failure	1,62	3 629	42 %
Chronic Pulmonary Obstructive Disease (COPD)	1,28	8 055	36 %
Dementia	3,23	1 540	63 %
Cancer	1,31	9 495	38 %
Psychiatric disease	1,90	8 443	40 %
Liver Disease	2,47	589	46 %
Anemia	1,40	9 543	41 %
Nervous System Disease	2,37	2 153	52 %
Rheumatoid Arthritis, Other Systemic Disease	1,04	3 764	34 %
Drug therapy as an indicator of comorbidity			
Opiods	1,47	16 099	39 %
Antiepileptics	1,72	3 215	41 %
Antipsychotics	2,87	4 112	56 %
Benzodiazepines	1,30	23 300	38 %
Antidepressants	1,68	13 247	42 %

The odds ratios in the table above give an indication of the correlation between the case-fatality rate in AMI and individual patients comorbidities or level of education. Odds ratios > 1 mean than AMI patients with the disease have a higher risk of death than patients without the disease. For example, the high odds ratio show that dementia is strongly correlated to a higher risk of death, whereas cancer to a lesser degree increases the risk of death for AMI-patients.

treatment. Because the national quality registers often contain such data, performing this type of analysis in them is useful as well. Adding clinical data from the RIKS-HIA Quality Index permits an assessment of their value for such adjustments.

Adjustment method and interpretation of results

Adjusting for multiple factors can present problems if ordinary methods of direct standardisation are used. Indirect standardisation methods, such as the Standardised Mortality Ratio, are often used to adjust for underlying factors when the patient population is small and data are lacking for certain subpopulations. However, the method is unsuitable when a number of units are to be ranked.

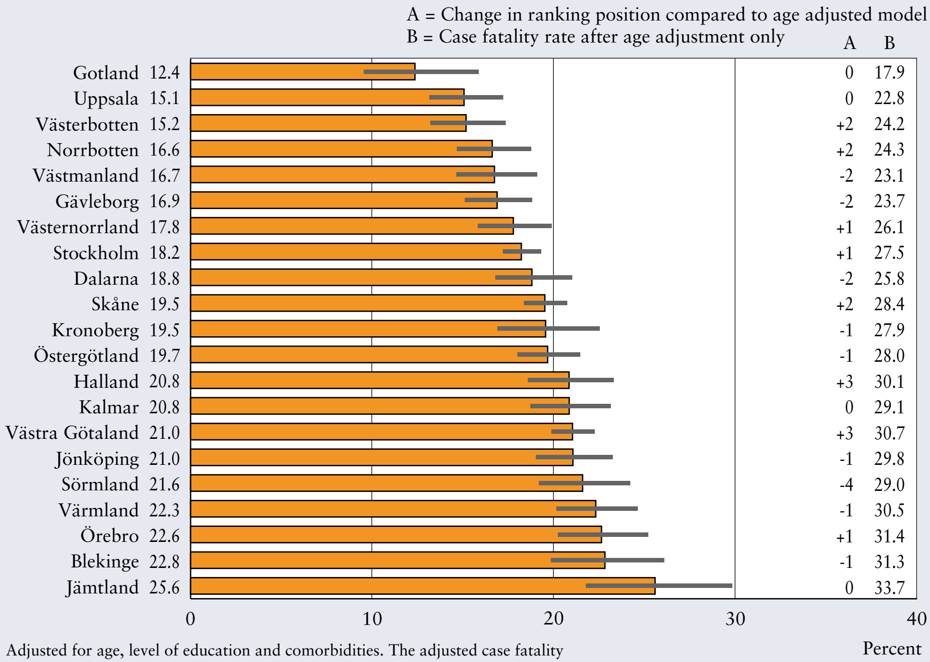
Logistic regression is used here to calculate adjusted case fatality rates. The adjusted percentages will then be at the same level as a certain case mix. The rankings below show adjusted case fatality rates for patients at 78 years of age (the median age for myocardial infarction), average education (upper secondary school) and no comorbidity. The calculation takes all myocardial infarction cases into consideration, including those with comorbidity and other educational levels.

Four diagrams appear on the following pages. First is adjusted fatality 28 days after infarction for both women and men. Non-hospitalised infarction patients are also included, as in Indicator 64. The subsequent diagram shows adjusted fatality for hospitalised patients – the same outcome as in Indicator 65. Women and men are reported separately.

The diagrams reveal how the relative positions of regions and hospitals changed after the adjustment compared with adjustment for age alone. While some of the changes were major, particularly for hospitals, most of them were modest.

How accurate is this presentation? One thing to keep in mind is that no adjustment was possible for the time between onset of symptoms and arrival at hospital, or for the magnitude of the infarction. Although research studies generally distinguish between ST-segment elevation myocardial infarction and non-ST-segment elevation myocardial infarction, no such data are found in the Patient Register. Also worth noting is that statistical uncertainty is fairly high at the hospital level even though myocardial infarction is relatively common and the analysis includes many clinics.

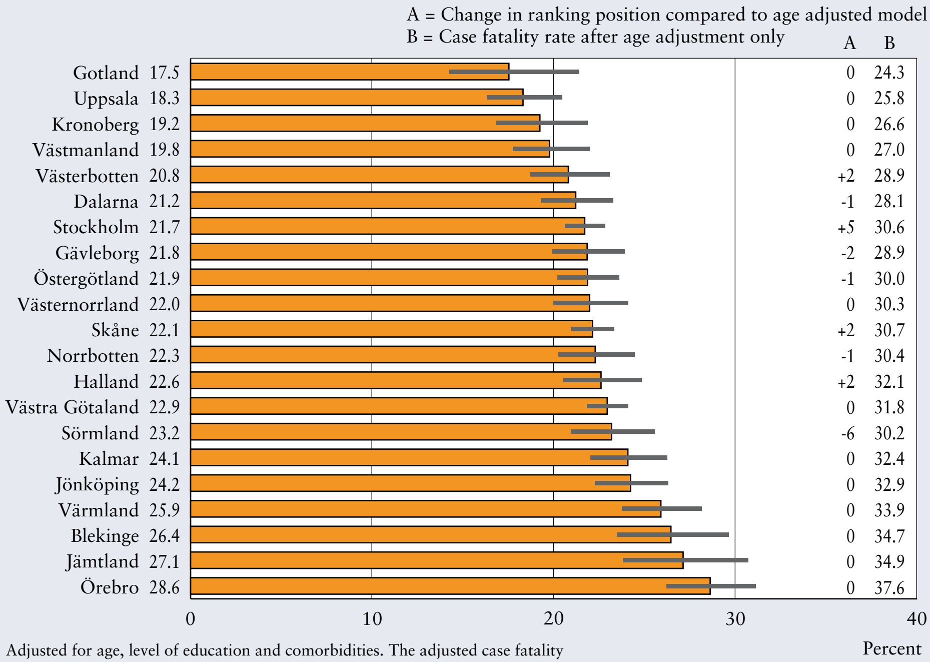
The analysis is still uncertain in terms of explaining variations in mortality by differences among the care processes of the hospitals involved, by the kinds of treatment they give or do not give. A development effort is required with respect to methods for adjustment and for assessing the extent to which outcomes can be attributed to healthcare measures. Clinical data from quality registers are vital to that endeavour.



Adjusted for age, level of education and comorbidities. The adjusted case fatality rate refer to patients at age 78, with 10-12 years of education and without comorbidities

Figure 64A Women Adjusted 28-day case fatality rate for myocardial infarction (AMI), 2006–2007. Both hospitalised patients and fatal out of hospital cases of AMI are included.

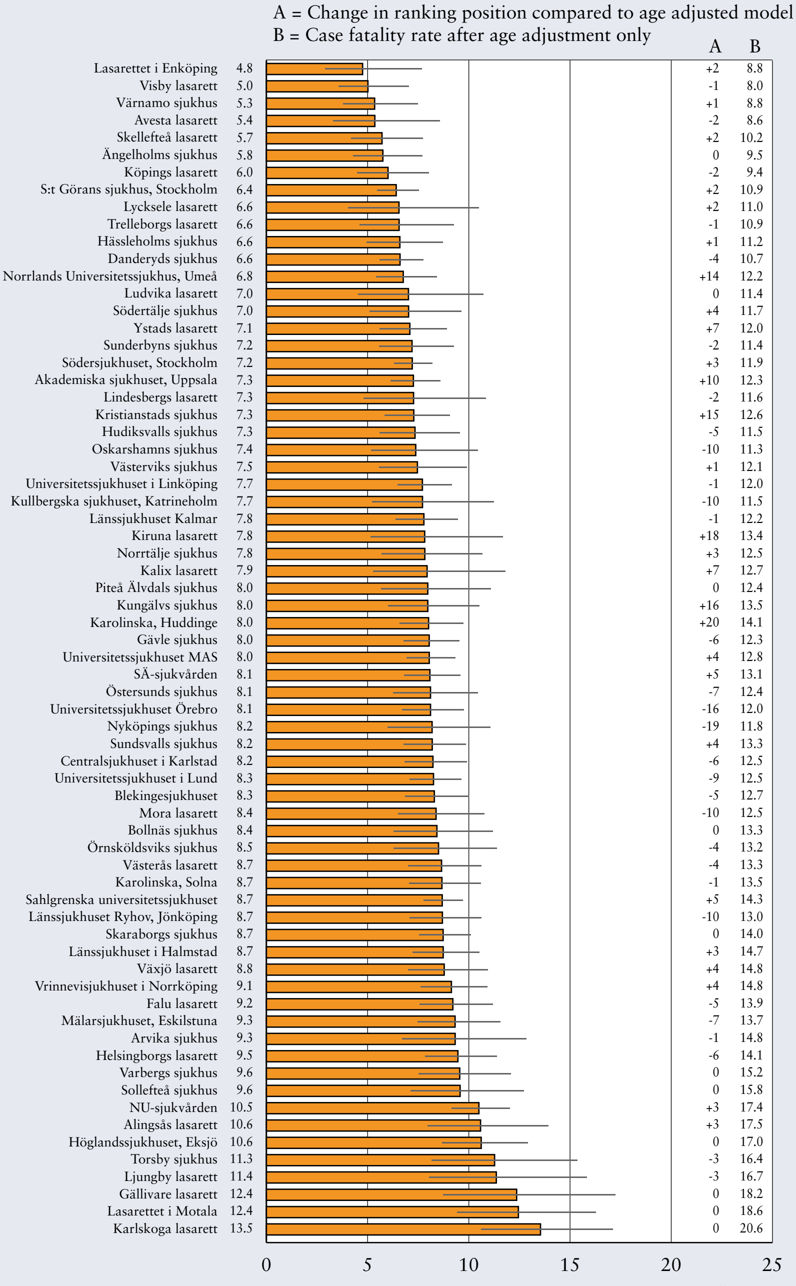
Source: National Patient Register, Cause of Death Register and Prescribed Drug Register. National Board of Health and Welfare and the Swedish Register of Education, Statistics Sweden



Adjusted for age, level of education and comorbidities. The adjusted case fatality rate refer to patients at age 78, with 10-12 years of education and without comorbidities

Figure 64A Men Adjusted 28-day case fatality rate for myocardial infarction (AMI), 2006–2007. Both hospitalised patients and fatal out of hospital cases of AMI are included.

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

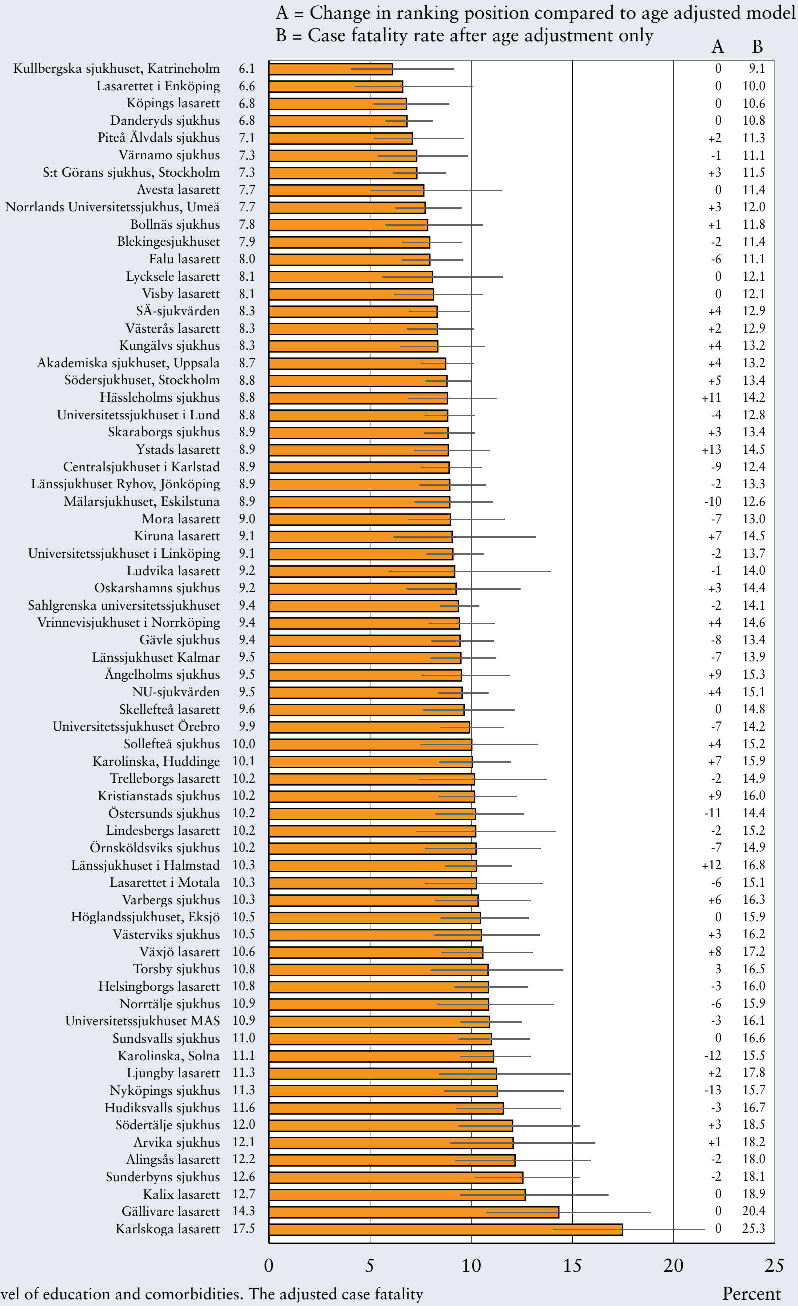


Adjusted for age, level of education and comorbidities. The adjusted case fatality rate refer to patients at age 78, with 10-12 years of education and without comorbidities

Figure 65A
Hospitals
Women

Adjusted 28-day case fatality rate for myocardial infarction, 2006–2008. Hospitalised patients

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



Adjusted for age, level of education and comorbidities. The adjusted case fatality rate refer to patients at age 78, with 10-12 years of education and without comorbidities

Figure 65A
Hospitals
Men

Adjusted 28-day case fatality rate for myocardial infarction, 2006–2008. Hospitalised patients

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

66 Reinfarction 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 had a recurrence may be the result of both acute cardiac care and secondary preventive interventions. The patient's condition before and after the first infarction has a fundamental impact on the outcome.

The comparison involves 21 126 patients of all ages who were hospitalised in 2007 with myocardial infarction as the primary or secondary diagnosis and were subsequently discharged. Only patients without a reported infarction for the past seven years were included. Thus, the indicator reflects care of first-time patients. One reason for including death from other ischaemic heart diseases is to minimise the impact of differences between various diagnoses of the cause of death. Fatality without preceding hospitalisation is also included. The data have been age-standardised. The sources are the Patient Register and Cause of Death Register.

In the country as a whole and for both sexes, approximately 15 per cent of patients had a new infarction or died of ischaemic heart disease within 365 days. By approximately one percentage point, women were less affected. The percentage of both death and recurrence declined somewhat from 1998 to 2007.

The regional variations ranged from 9 per cent for women and 11 per cent for men to 20 per cent for both sexes.

No desirable or optimum outcomes can be specified, but the regional variations provide some guidance. There are considerable differences in the number of patients who died from myocardial infarction without having been hospitalised (see

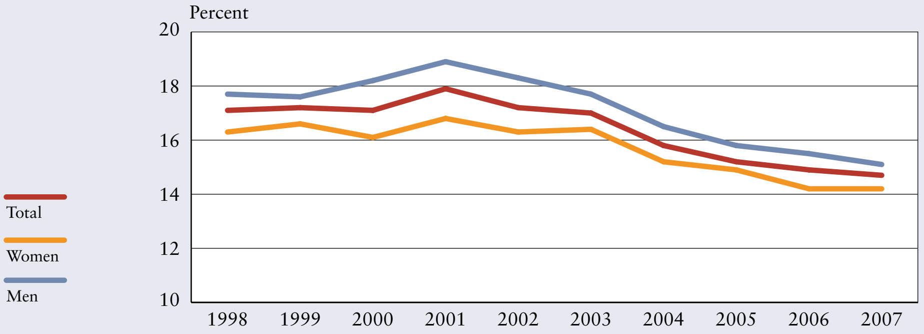


Figure 66
Sweden

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

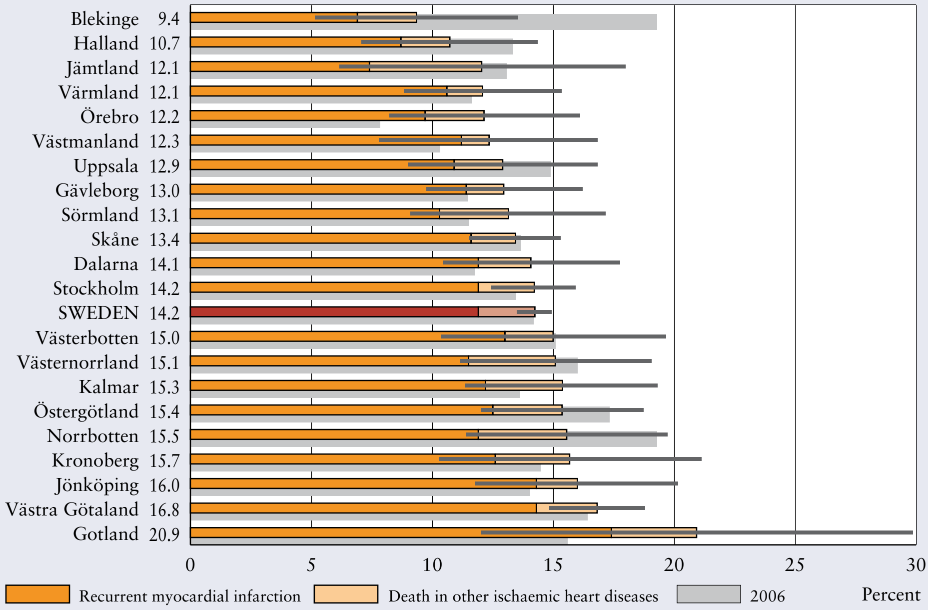


Figure 66
Women

Percentage of patients who had a new myocardial infarction or died of ischaemic heart disease within 365 days, 2007. Age-standardised.

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

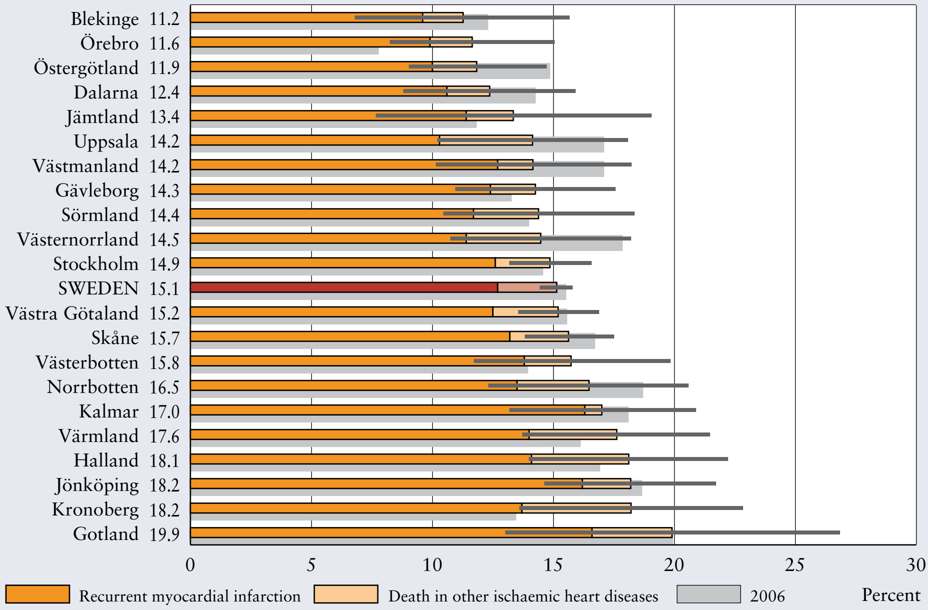


Figure 66
Men

Percentage of patients who had a new myocardial infarction or died of ischaemic heart disease within 365 days, 2007. Age-standardised.

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

Indicator 64). In other words, healthcare advice centres, emergency service centres, ambulance care and other non-hospital measures affect 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 initially been hospitalised. Diagnostic variations affect the results. However, a follow-up of only hospital care for infarction would be affected by the percentage of cases that had never been hospitalised. Thus, a large percentage 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.

67 Reperfusion therapy for patients with ST-segment elevation myocardial infarction

Approximately 29 000 Swedes are hospitalised for myocardial infarction every year. According to the Swedish Heart Intensive Care Admissions (RIKS-HIA) Quality Index – now part of the SWEDEHEART register – which has a good participation rate for this patient population, almost 6 000 of the cases are ST-segment elevation myocardial infarction (STEMI). STEMI is caused by an acute coronay occlusion. The number of cases has declined year by year. Myocardial infarction with concurrent left bundle branch block (LBBB) on the ECG also raises a strong suspicion of acute coronary occlusion. More than 1 200 such infarction cases were reported to RIKS-HIA in 2008.

These patients need immediate primary percutaneous coronary intervention (PCI) or thrombolytic therapy. To minimise damage to the heart, 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 includes primary PCI,

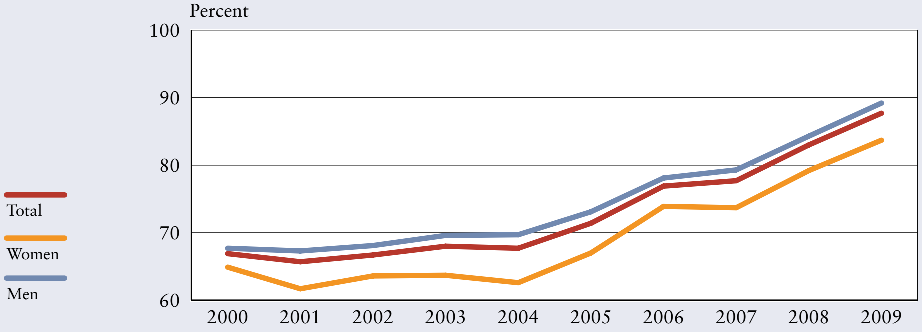


Figure 67
Sweden

Reperfusion therapy for patients younger than 80 with ST-segment elevation myocardial infarction.

Source: SWEDEHEART

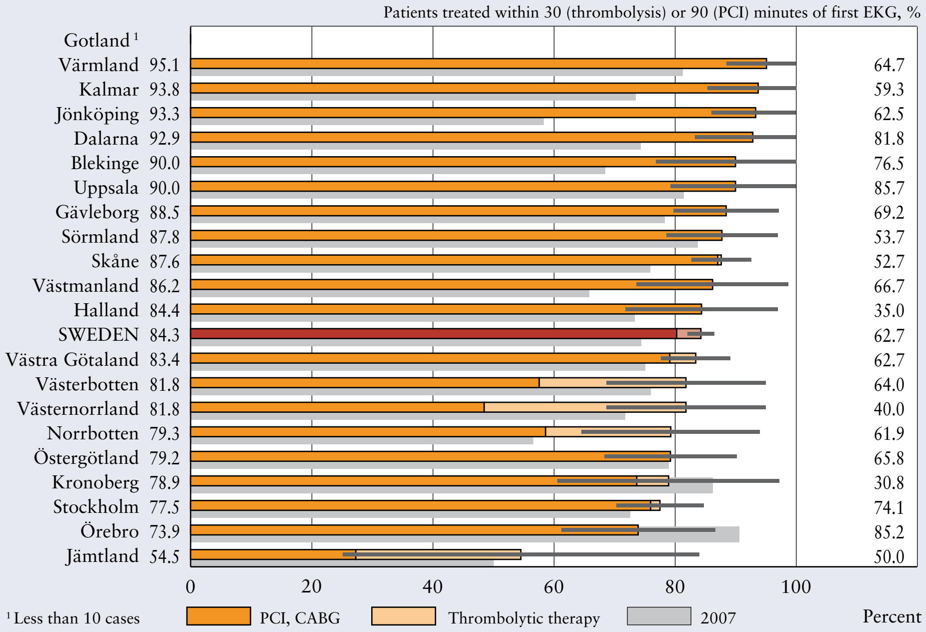


Figure 67
Women

Reperfusion therapy for patients younger than 80 with ST-segment elevation myocardial infarction, 2009.

Source: SWEDEHEART

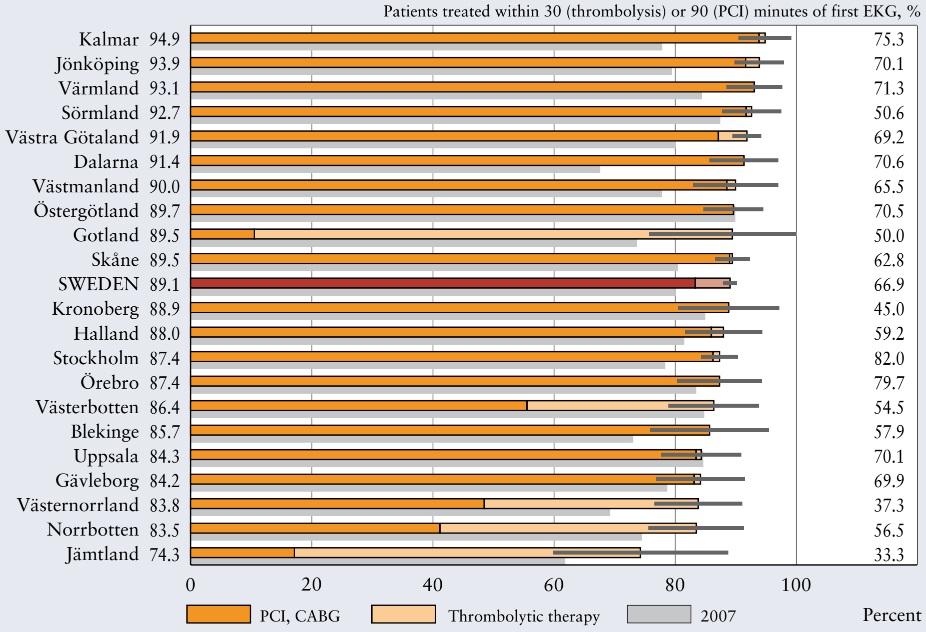


Figure 67
Men

Reperfusion therapy for patients younger than 80 with ST-segment elevation myocardial infarction, 2009.

Source: SWEDEHEART

thrombolytic therapy and coronary artery bypass graft (CABG) surgery. Coronary angiography that does not lead to PCI is also included.

Primary PCI is the predominant treatment in most regions. The procedure was performed at 28 hospitals in 2009. The national guidelines recommend that primary PCI be chosen before thrombolytic therapy, which should be used only when primary PCI 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 ECG who received acute reperfusion therapy, broken down by various types of treatment. The indicator is used by the national guidelines for follow-up purposes and by the RIKS-HIA Quality Index for myocardial infarction care in 2009. The results are reported at the regional level only based on where the patient lives.

The comparison for 2009 included 4 034 patients, including over 1 000 women. All patients were age 79 or younger for whom the time between onset of symptoms and ECG was less than 12 hours. Although many regions had few cases, particularly women, the two sexes are presented in separate diagrams.

Almost 88 per cent of patients nationwide (84 per cent of women and 89 per cent of men) received reperfusion therapy in 2009, an increase of more than 9 percentage points since 2007. The regional differences were relatively large. The RIKS-HIA Quality Index scores levels of 80–85 per cent, making it the de facto target.

The statistical column in Figure 67 also shows the percentage of patients who were treated within the targeted period of time – 90 minutes after the first ECG for PCI and 30 minutes for thrombolytic therapy. The regional variations were large and goal fulfilment was generally low (66 per cent nationwide).

The national guidelines accord high priority to reperfusion therapy. Although the proportion of patients receiving the therapy has increased considerably in recent years, room for improvement remains, particularly in regions where the percentage is low.

68 Coronary angiography after non-ST-segment elevation myocardial infarction in patients with another risk factor

More than 20 000 Swedes have non-ST-segment elevation myocardial infarction (NSTEMI), which is a good deal more common than STEMI, every year. Most patients receive intensive anticoagulant treatment. Patients at moderate to high risk of a new infarction should undergo coronary angiography within a few days to determine any need for PCI or 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 coronary events – those who exhibit ongo-

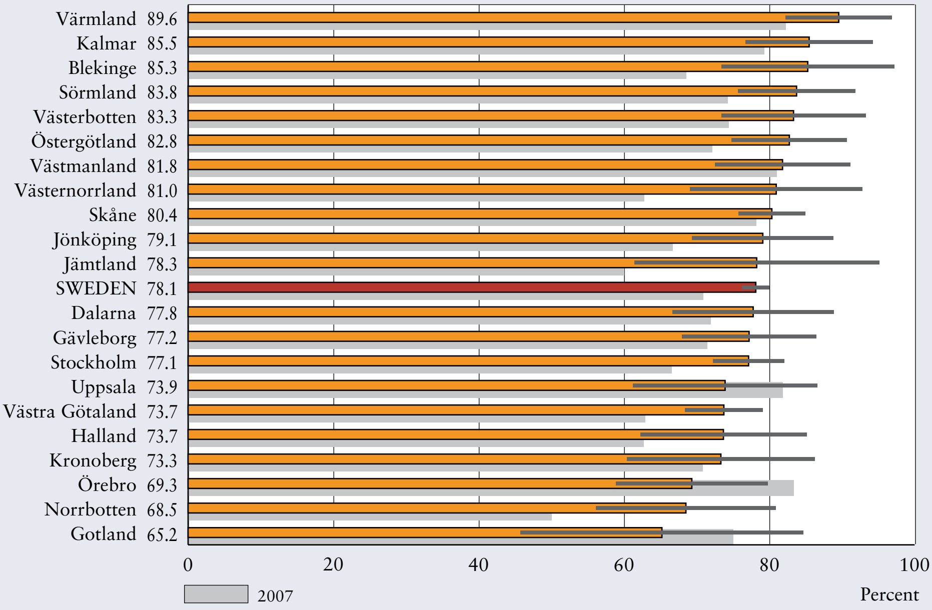


Figure 68
Women

Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor, 2009.

Source: SWEDEHEART

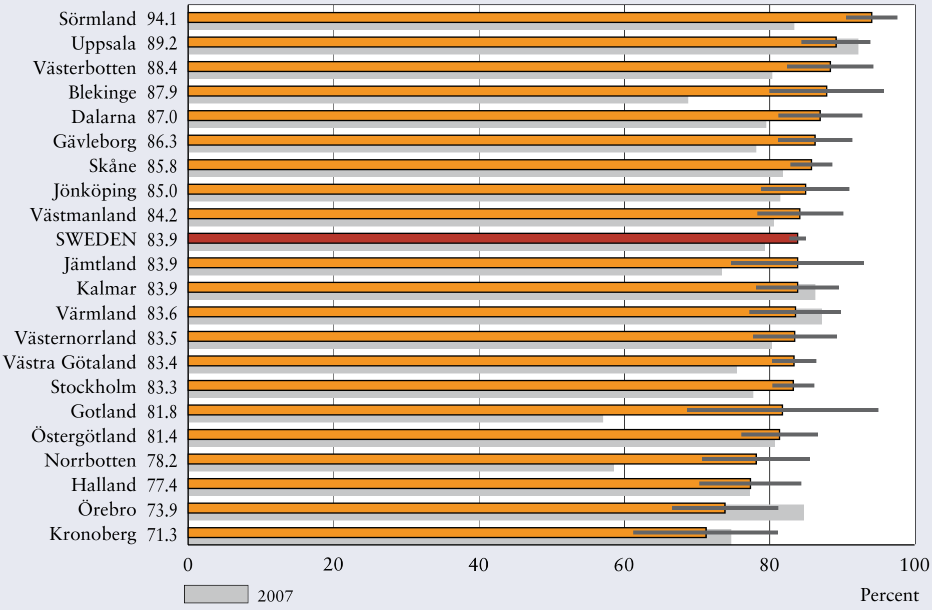


Figure 68
Men

Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor, 2009.

Source: SWEDEHEART

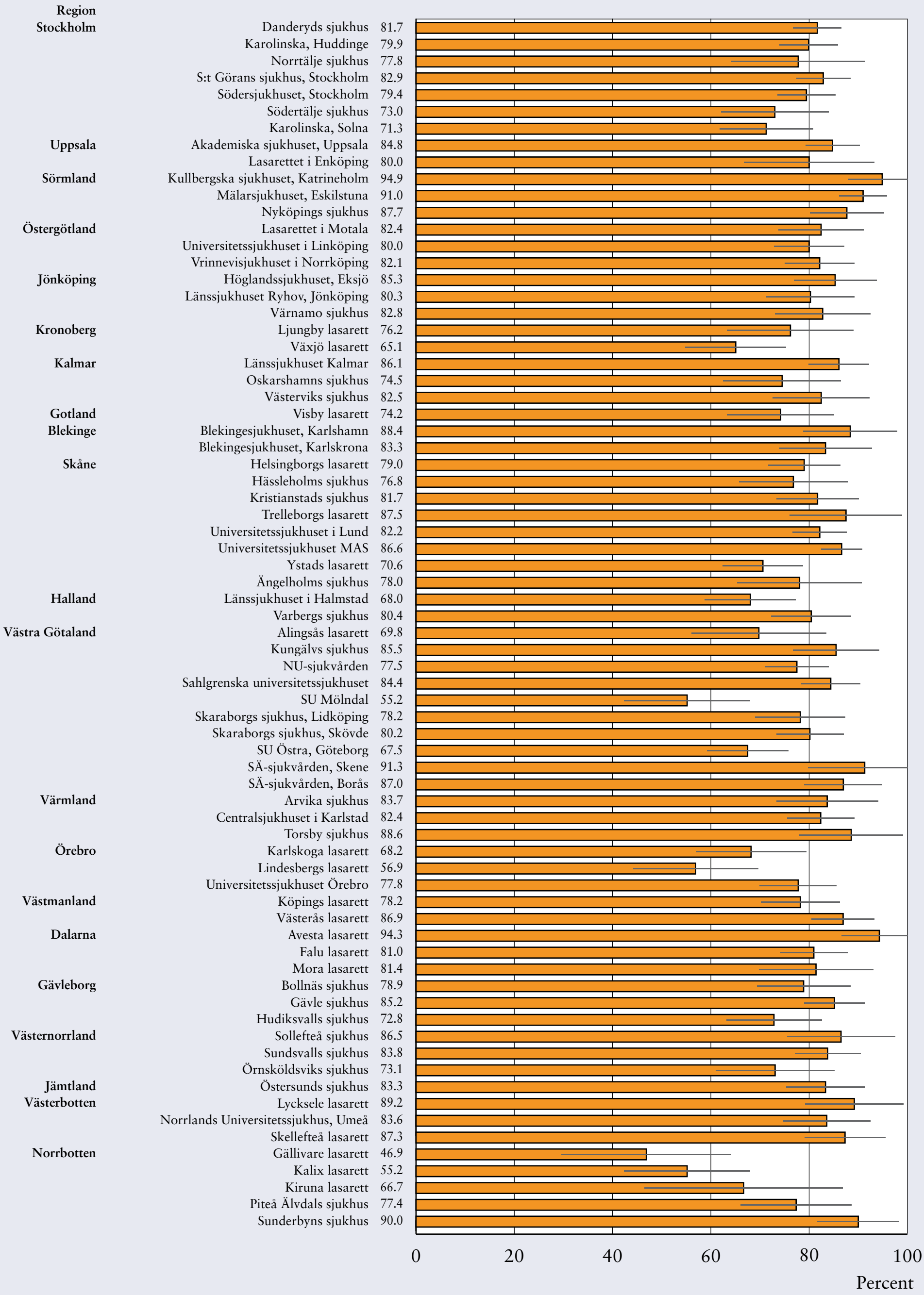


Figure 68
Hosptals

Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor, 2009.

Source: SWEDEHEART

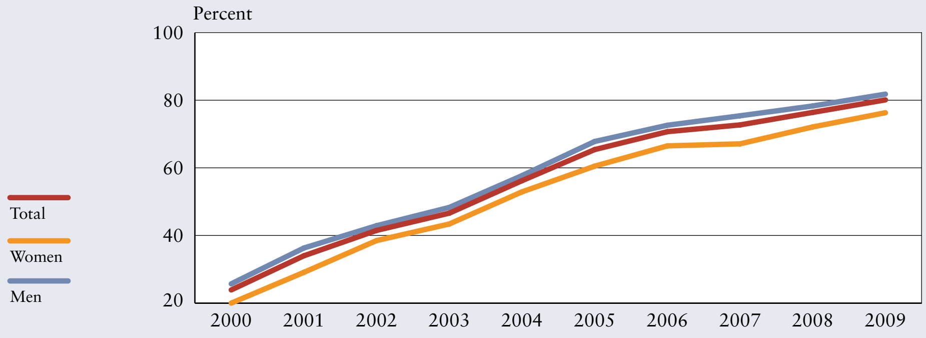


Figure 68
Sweden

Coronary angiography after non-ST-segment elevation myocardial infarction in patients younger than 80 with another risk factor.
Source: SWEDEHEART

ing instability, have at least one additional risk factor (such as diabetes or previous infarction) or show pathological results on a stress test. Nevertheless, the potential benefits for some of these patients are so low that that angiography may not be indicated. Among factors that reduce potential benefits are comorbidity and poor general health. That all such patients receive coronary angiography 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 hospital care. The indicator is used by the national guidelines for follow-up purposes and by the RIKS-HIA Quality Index for hospitals.

The data are based on 5 962 patients age 79 and younger – 1 839 women and 4 123 men.

Coronary angiography was considered for 82 per cent of patients nationwide, 78 per cent of women and 84 per cent of men, in 2009 – an increase since 2007 of more than 7 percentage points for women and 5 percentage points for men.

The percentage for both sexes together ranged from 72 per cent to 91 per cent among the various regions.

More men than women received coronary angiography nationwide by a margin of 6 percentage points. There may be logical reasons for the difference. Some studies suggest that women benefit less from the PCI or coronary artery surgery that angiography might indicate. Furthermore, 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 may also be involved.

Given the recommendations of the guidelines, approximately 80 per cent of this patient population should be given coronary angiography. A number of regions reach that level. Generally speaking, regions with a low participation rate in RIKS-HIA have less reliable results.

69 Clopidogrel therapy after non-ST-segment elevation myocardial infarction

NSTEMI patients are treated with acetylsalicylic acid (aspirin), clopidogrel or Warfarin to prevent blood clots. Adding clopidogrel 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.

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 clopidogrel 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 clopidogrel therapy when discharged from hospital, is part of the RIKS-HIA Quality Index. The data are based on approximately 7 300 patients, more than 2 300 of whom were women.

Eighty seven per cent of patients nationwide – 86 per cent of women and 88 per cent of men – were given clopidogrel in 2009, an increase of more than 5 percentage points since 2007. The regional percentages ranged from 77 to 96 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. Thus, goal fulfilment is fairly good despite regional variations.

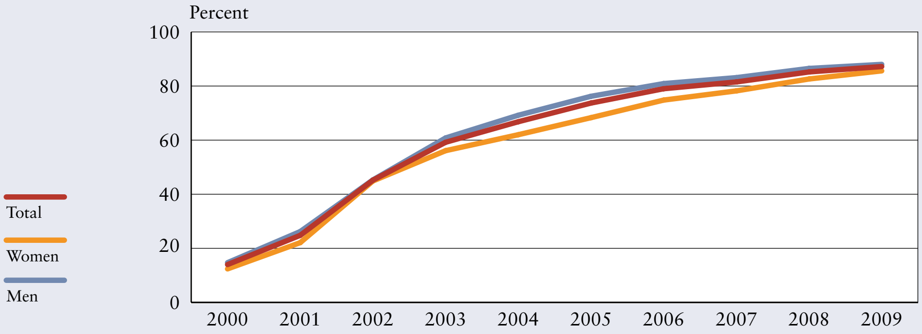


Figure 69
Sweden

Clopidogrel therapy after non-ST-segment elevation myocardial infarction in patients younger than 80.

Source: SWEDEHEART

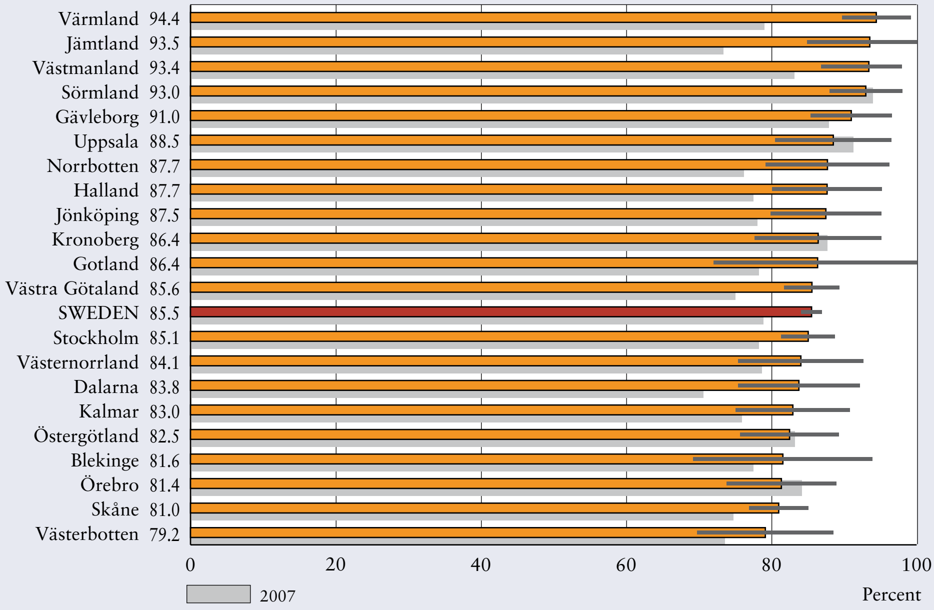


Figure 69
Women

Clopidogrel therapy after non-ST-segment elevation myocardial infarction in patients younger than 80, 2009.

Source: SWEDEHEART

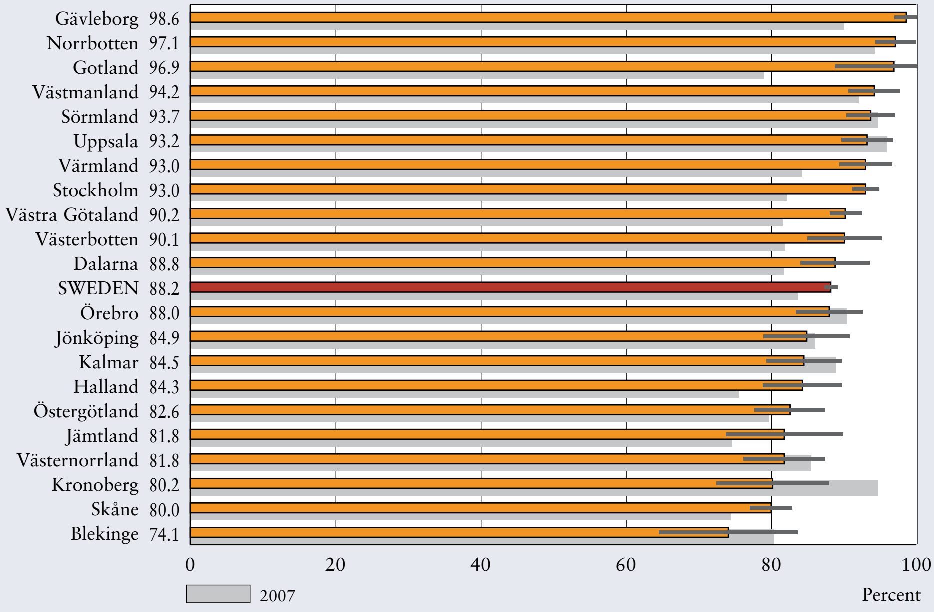


Figure 69
Men

Clopidogrel therapy after non-ST-segment elevation myocardial infarction in patients younger than 80, 2009.

Source: SWEDEHEART

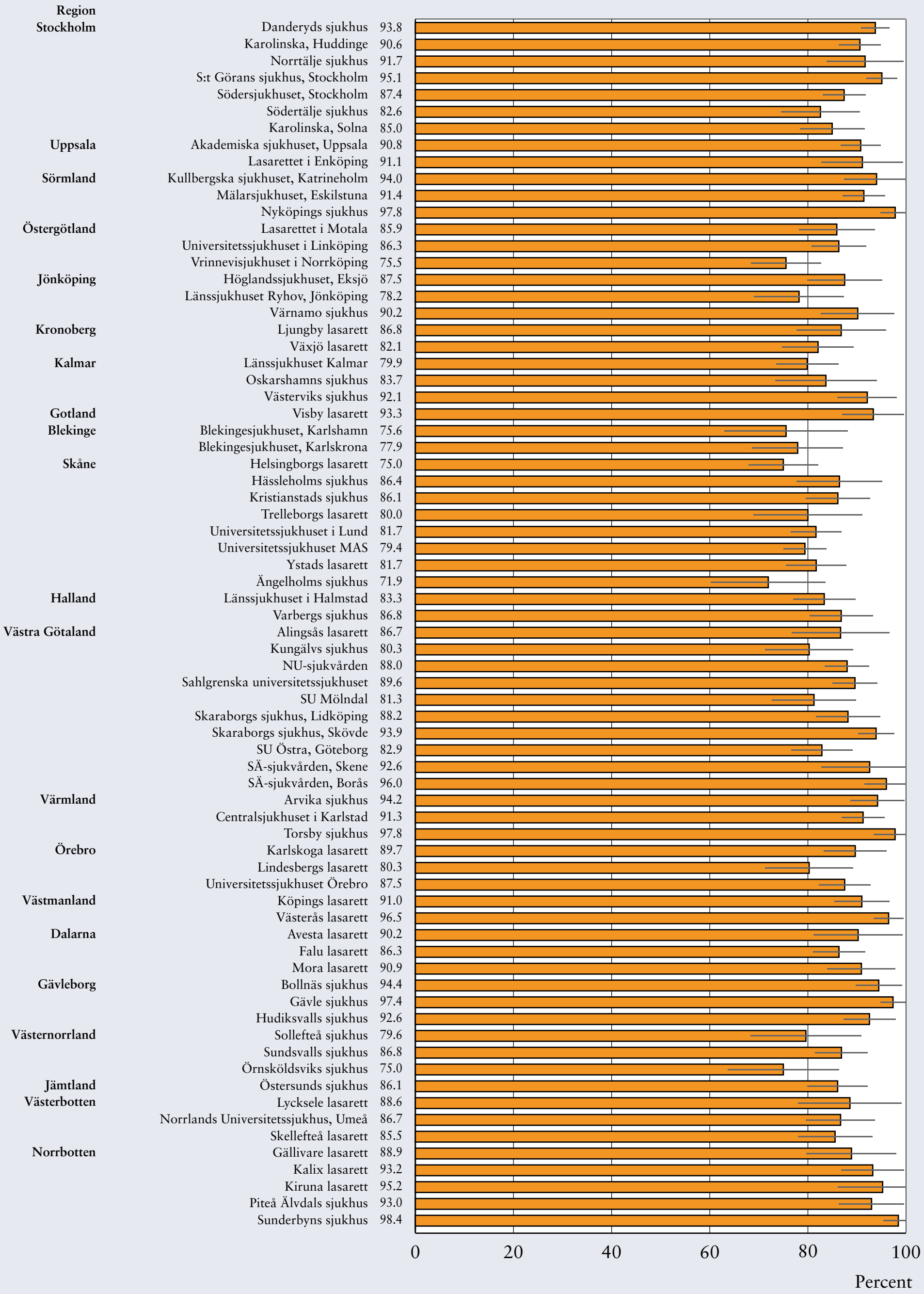


Figure 69
Hospitals

Clopidogrel therapy after non-ST-segment elevation myocardial infarction in patients younger than 80, 2009.

Source: SWEDEHEART

70 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 after hospitalisation. For that purpose, data from the Patient Register and Prescribed Drug Register have been combined. The results cover patients age 40–79 who were hospitalised for myocardial infarction in 2007 and January–June 2008. The data are age-standardised.

Figure 70 shows the percentage of women and men who were treated with lipid lowering drugs after myocardial infarction. Just over 85 per cent of men, somewhat more than women, were treated nationwide. Regional differences were generally modest.

The RIKS-HIA quality index for hospitals, which measures the proportion of patients receiving drug therapy at the time of discharge, assigns scores for 90 per cent and 95 per cent. Given that only Västmanland reached 90 per cent, patients appear to have been undertreated.

Proceeding from the alternate assumption that only patients with elevated cholesterol levels are to be treated would suggest that 80 per cent receive lipid lowering drugs. In that case, patients would not have been undertreated on a nationwide basis.

71 Death or readmission after care for heart failure

Heart failure is one of the most common diagnoses among elderly patients who are hospitalised. Patients frequently die or are readmitted shortly afterwards. Because heart failure is a chronic disease, death after hospitalisation is a complicated quality indicator but nevertheless worth examining. Among the reasons for readmission may be premature discharge, inadequate drug therapy or poor information for patients. Avoidable readmission represents a quality problem that leads to greater suffering for the patient and higher costs for the healthcare system.

This indicator concerns patients who were hospitalised for heart failure. It measures the percentage of patients who either died or were readmitted to hospital within 30 days with the same diagnosis. All ages were included and the data were age-standardised. Almost 74 000 care episodes, with a slight preponderance of men, for which heart failure was the primary diagnosis were reported in 2006–2009. During the first 30 days, approximately 9 000 died and 5 900 were readmitted. The proportion

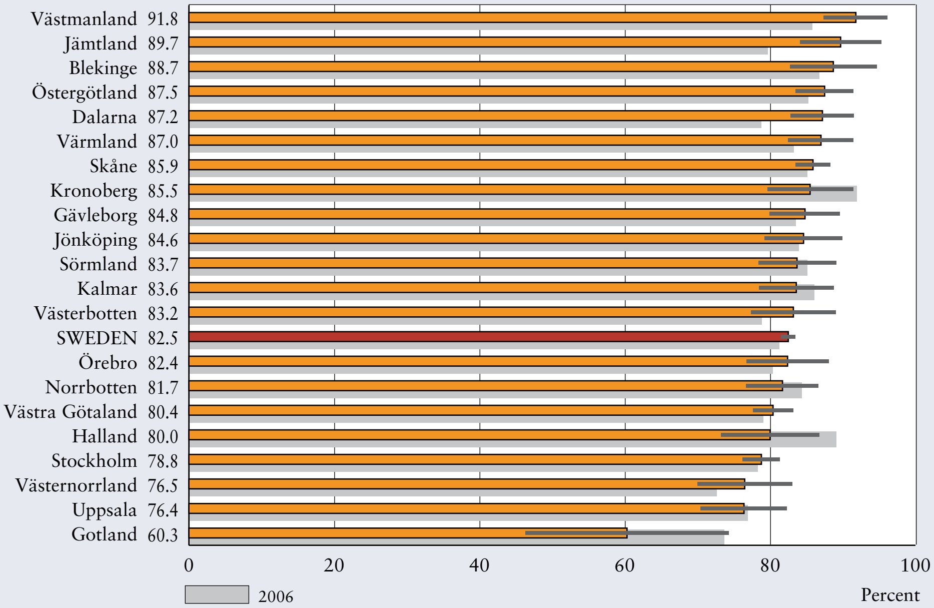


Figure 70
Women

Lipid lowering drug therapy 12–18 months after myocardial infarction, in patients age 40–79, 2007 – June 2008. Age-standardised.

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

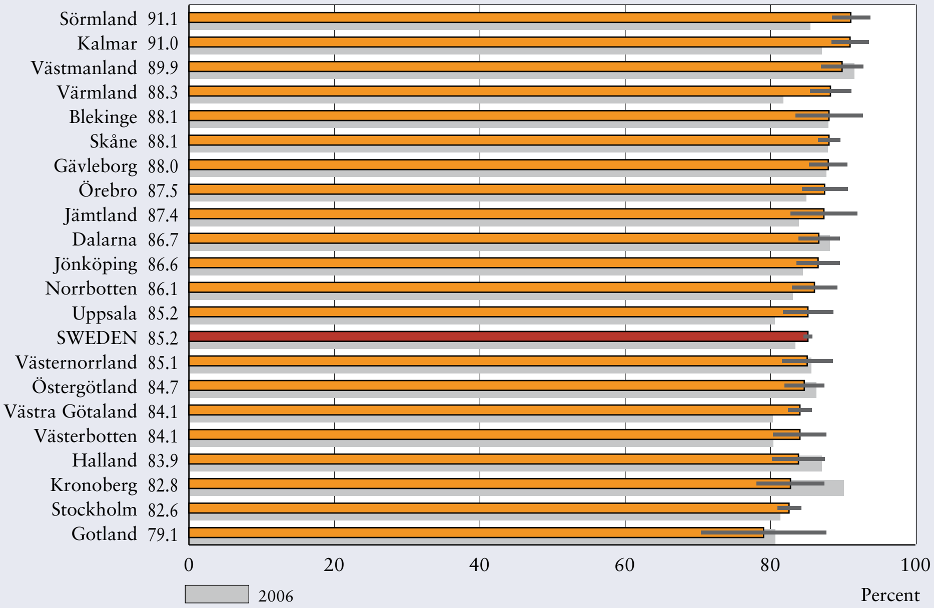


Figure 70
Men

Lipid lowering drug therapy 12–18 months after myocardial infarction, in patients age 40–79, 2007 – June 2008. Age-standardised.

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

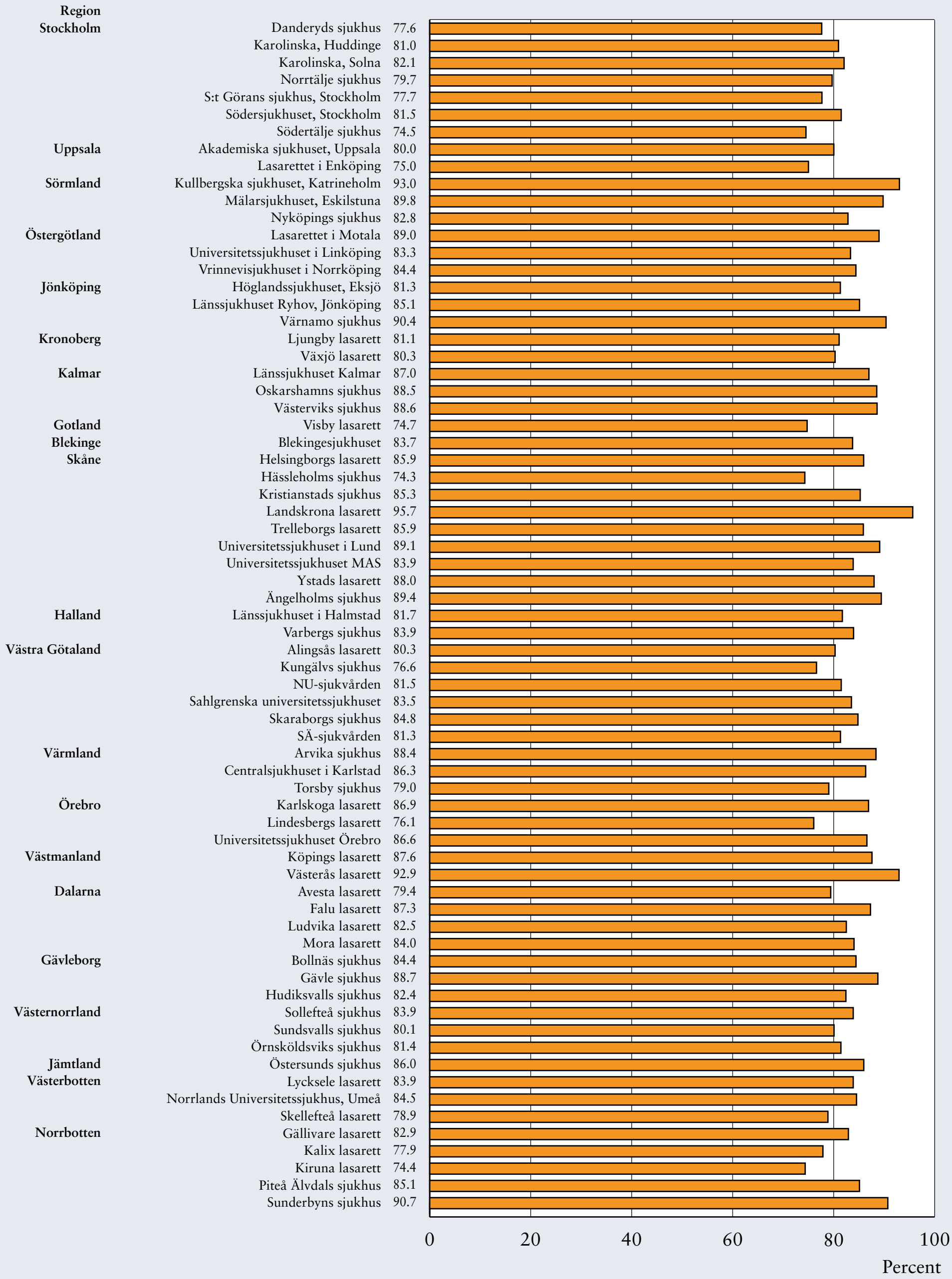


Figure 70
Hospitals

Lipid lowering drug therapy 12–18 months after myocardial infarction, in patients age 40–79, 2007 – June 2008. Age-standardised.

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

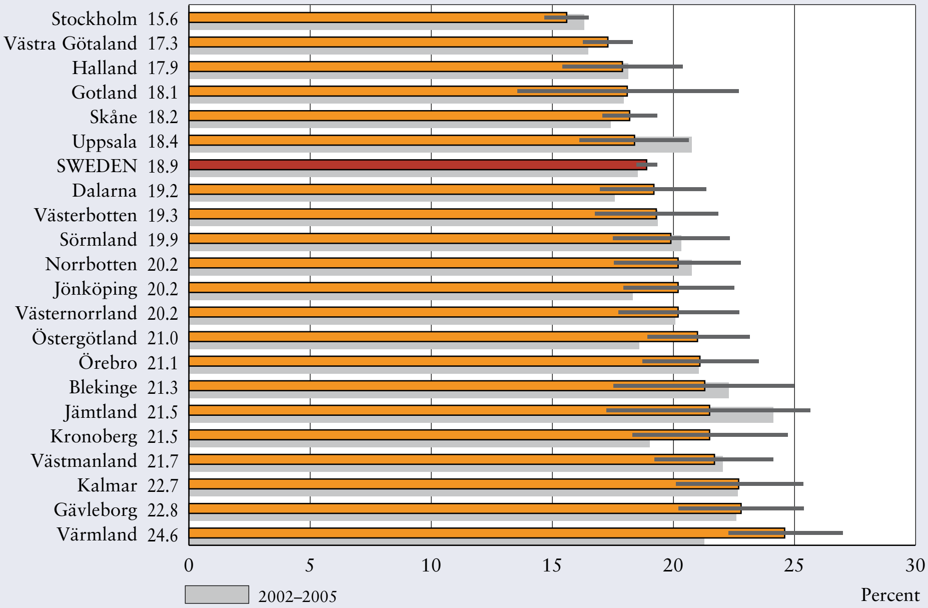


Figure 71
Women

Death or readmission within 30 days in patients hospitalised for heart failure, 2006–2009. Age-standardised.

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

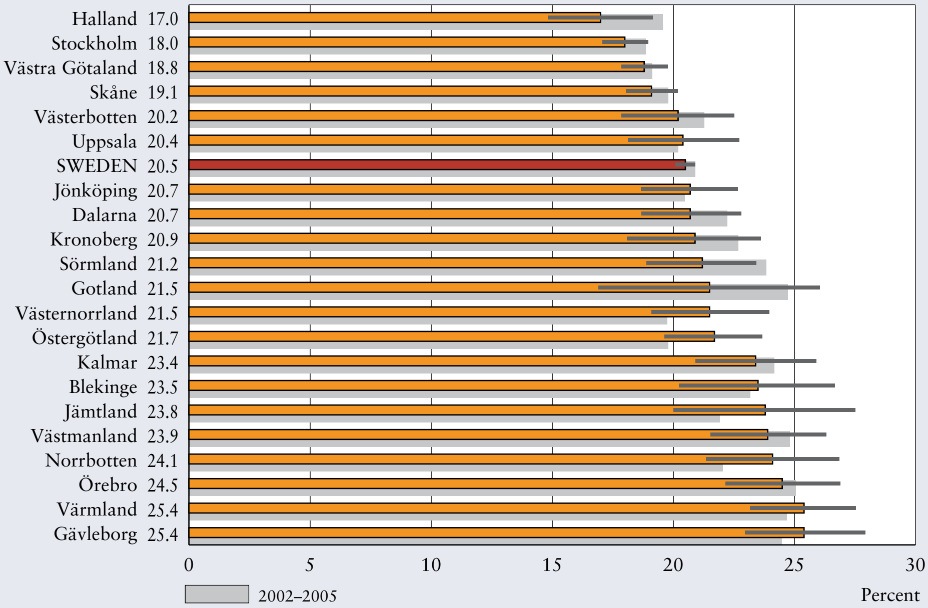


Figure 71
Men

Death or readmission within 30 days in patients hospitalised for heart failure, 2006–2009. Age-standardised.

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

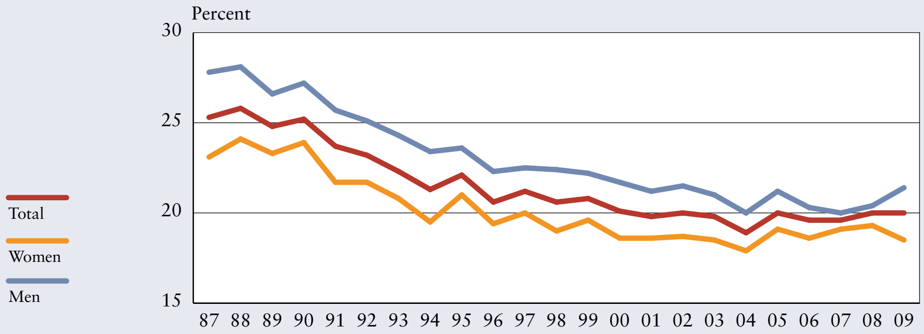


Figure 71
Sweden

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

of deaths or readmissions nationwide was almost 20 per cent; men were somewhat overrepresented. Death was more common than readmission.

The percentage of readmissions has held constant since the early 1990s, while deaths have declined somewhat. Nursing homes and assisted care facilities, which had previously reported to the Patient Register, were transferred to the primary municipality in 1992.

Variations between regions and hospitals may largely reflect factors, such as admission policies, other than care quality. The lower the threshold for severity of disease prior to admission, the better is the reported outcome. Thus, future comparisons should pay more attention to case mix at various hospitals.

The same is true of diagnostic practice. A region or hospital that diagnoses patients with mild heart failure more often will show better results.

72 Waiting times for coronary artery bypass surgery

Surgery is an option for treating stenoses of the coronary artery. Both in absolute numbers and in relation to PCI, coronary artery bypass surgery has declined over the past 15 years. A growing percentage of the operations are performed on patients who have been prioritised due to unstable coronary syndrome.

A long waiting time for coronary artery bypass surgery can lead to myocardial infarction or death. The procedure is covered by the national guarantee for scheduled care and the requirement that all surgery be performed within 90 days. As opposed to most other scheduled treatment, any delay entails a medical risk. Thus, the 90-day limit is less relevant. But no other target has been set. Waiting time reflects several variables: the number of people who need surgery and regional capacity, including intensive care resources, beds and follow-up care. Nevertheless, hospital procedures and priorities can strongly affect waiting times.

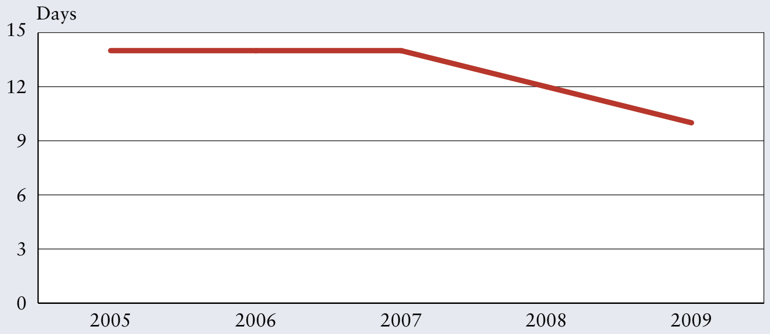


Figure 72
Sweden

Median waiting time between decision to operate and performance of coronary artery bypass graft.

Source: SWEDEHEART

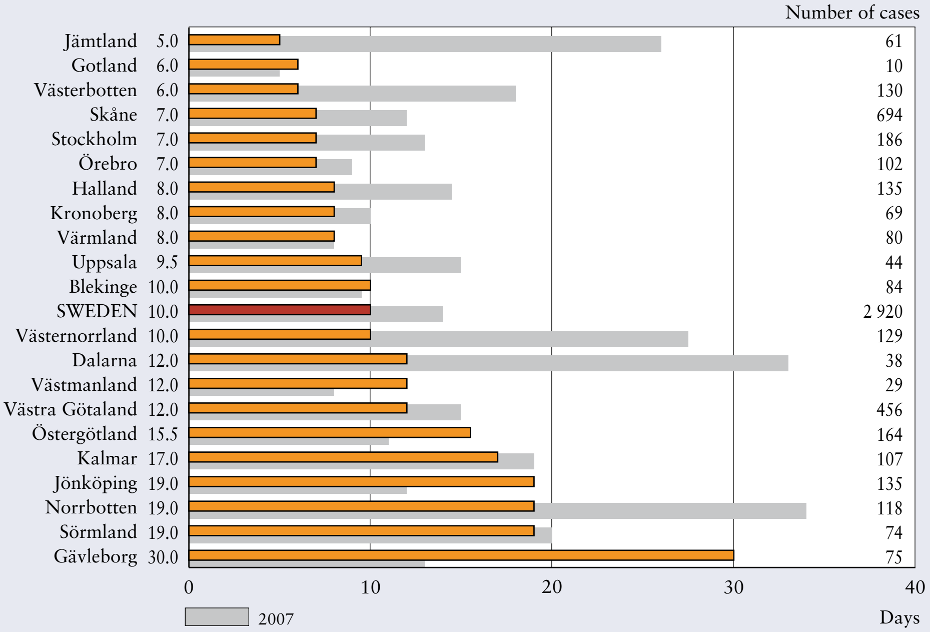


Figure 72
Total

Median waiting time between decision to operate and performance of coronary artery bypass graft, 2009.

Source: SWEDEHEART

The indicator measures the median number of days that patients have to wait from decision to operate until surgery. All patients are reported regardless of age, and they are assigned to the region where they live regardless of the hospital involved. Eight hospitals perform the procedure. Surgery performed at Capio S:t Görans Hospital in Stockholm is included with Karolinska University Hospital.

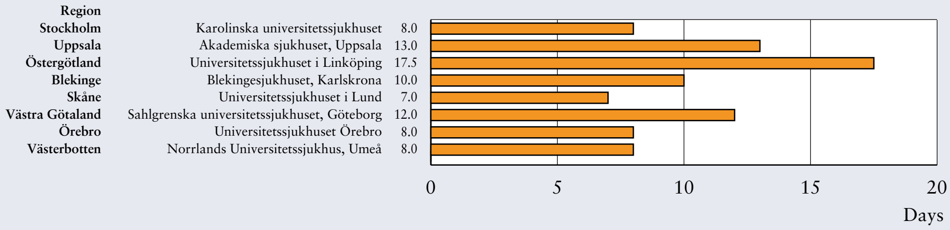


Figure 72
Hospitals

Median waiting time between decision to operate and performance of coronary artery bypass graft, 2009.

Source: SWEDEHEART

The comparison for 2009 covers more than 2 900 operations, approximately 600 on women. Given the low numbers, women and men are presented together. The Swedish Cardiac Surgery Register, now part of the SWEDEHEART Register, is the source of data.

The median waiting time for coronary artery bypass surgery was 10 days nationwide (8 days for women and 11 days for men). The regional results ranged from 5–30 days for both sexes together.

73 Waiting times longer than 90 days for cardiology appointments

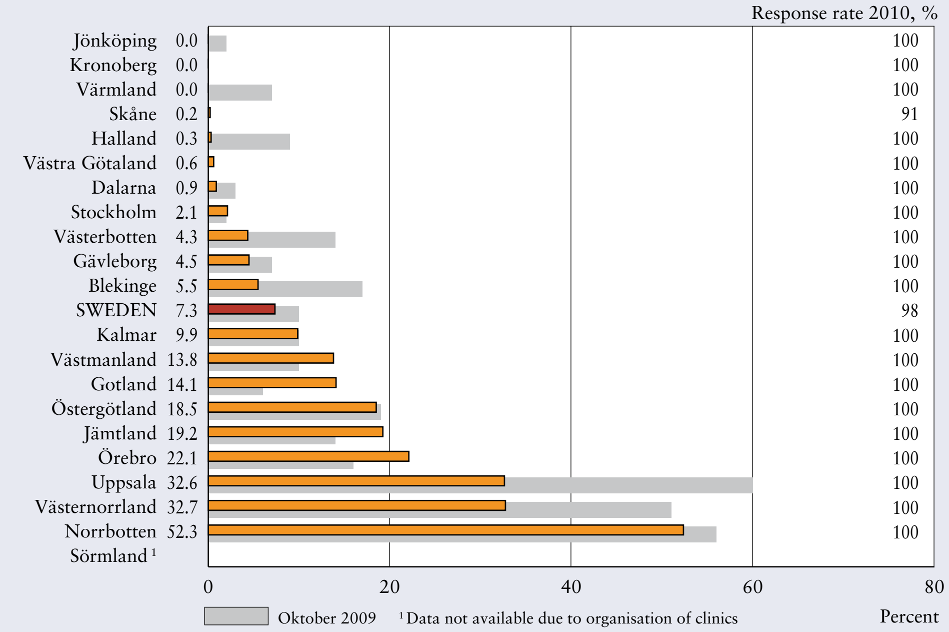
Seven per cent of patients who were waiting for appointments at cardiology clinics in March 2009 had been doing so for longer than 90 days. That represents a modest improvement since October 2009. Uppsala and Västernorrland slowed considerably better results.

The proportion of patients who had been waiting for longer than 90 days ranged from 0 to 52 per cent among the various regions. For the entire country, 486 of 6 619 patients had been waiting for longer than 90 days. Fewer than 20 had been doing so in 12 regions.

The indicator covers 20 regions. Only exclusive cardiology clinics are included. Because cardiology in Sörmland is incorporated into internal medicine, the diagram does not contain any data for the region.

74 Cost per inpatient case for percutaneous coronary intervention after myocardial infarction

Nineteen hospitals in 12 regions reported to the Swedish Case Costing database in 2009. The database contains costs for each unique case 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.

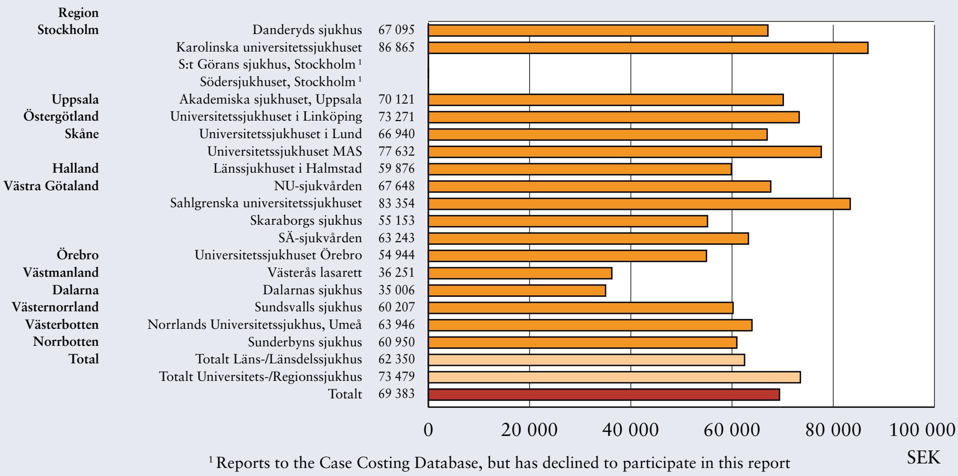


[1] Data not available due to organisation of clinics

Figure 73

Cardiology appointments – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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



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

Figure 74
Hospitals

Cost per inpatient case for percutaneous coronary intervention after myocardial infarction, 2009.

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

Figure 74 shows costs per case for percutaneous coronary intervention (PCI) after myocardial infarction (DRG 112E and 112F). The procedure is performed immediately after STEMI (see Indicator 67), as well as within a few days after NSTEMI has been diagnosed and treated with drugs (see Indicator 68). The purpose is to prevent recurrence.

The Case Costing database for 2009 contains 6 488 inpatient cases for which PCI was performed. The average cost for non-outliers was 69 383 kronor, ranging from 35 000 to 87 000 kronor among the various 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 28 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 Cost Per Patient 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 reason 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. More than 33 100 Swedes, approximately an equal number of women and men, had strokes in 2008. Over 80 per cent of the patients were above age 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.

Hospital admissions in which some type of stroke was the main diagnosis accounted for almost 400 000 days of hospital care. Many patients have 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 eight indicators presented below are the same as in last year's report. Five of them are outcome measures, reflecting fatality, recurrence, function and patient satisfaction. The three process indicators concern care at stroke units, thrombolytic therapy and secondary preventive treatment for atrial fibrillation and stroke. For the first time, the indicator on function after stroke presents data adjusted for age and consciousness upon arrival at hospital.

In 2011, NBHW will publish an indicator-based follow-up of compliance with its stroke guidelines. The indicators in *Regional Comparisons* may be updated accordingly in next year's report.

In addition to the Patient Register and Cause of Death Register, the data were taken from the Prescribed Drug Register and National Stroke Register. All hospitals that care for stroke patients during the acute phase participate in the National Stroke Register. Nearly 25 000 cases were entered in the register in 2009. 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, has recently been adopted as well. The fact that National Health Register data are classified by hospital rather than by the region where the patient lives has no practical impact on the regional breakdown.

The participation rate of the National Stroke Register vis-à-vis the Patient Register is monitored each year. In 2008, the Patient Register had approximately 2 700 more first-ever stroke cases than the National Stroke Register. The National Stroke Register had a participation rate, which varied among regions and hospitals, of 85 per cent in relation to the Patient Register. Given that the Patient Register may contain some misdiagnoses, the actual participation rate may be somewhat higher. All hospitals had a participation rate of 70 per cent or better in 2009. The non-participation rate at three-month follow-up was 11 per cent, the lowest ever reported, in 2009.

75 First-ever stroke – 28-day and 90-day case fatality rate

The OECD uses the case fatality rate for 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 care.

Stroke is defined as all cases that include a diagnosis of cerebral haemorrhage, cerebral infarct or unspecified stroke in the inpatient section of the Cause of Death

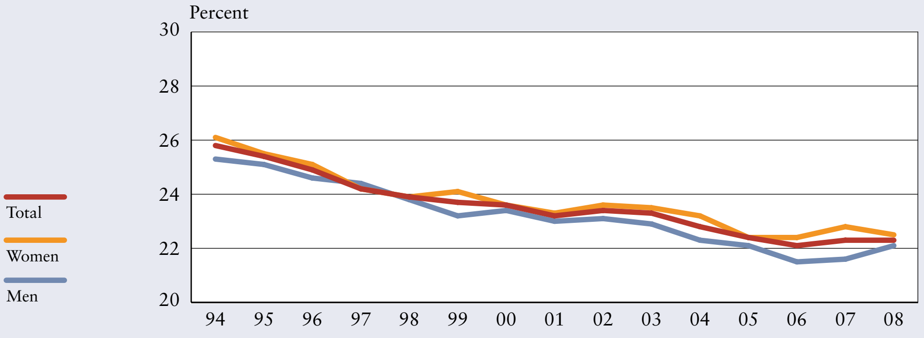


Figure 75
Sweden

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

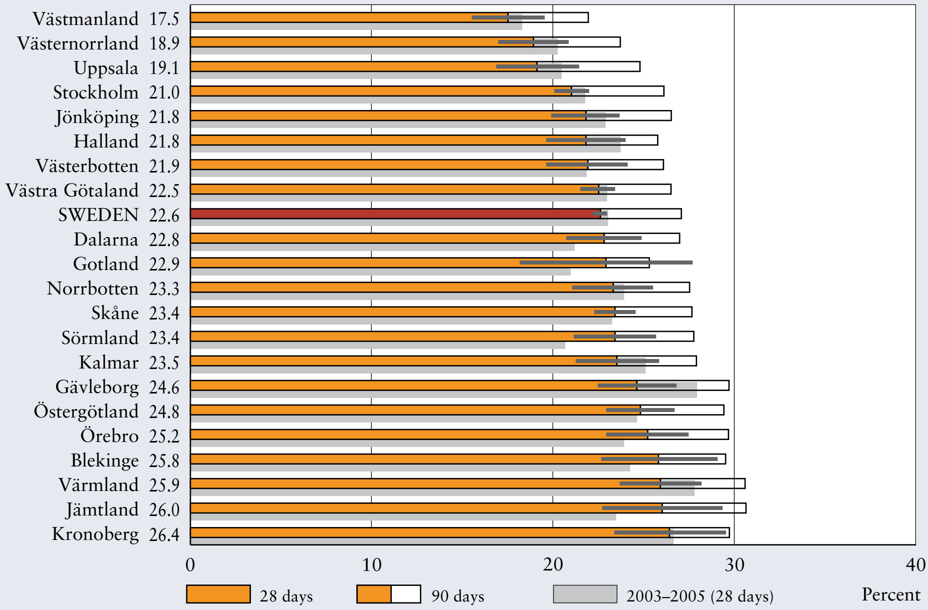


Figure 75
Women

28-day and 90-day case fatality rate for first-ever stroke, 2006–2008. Both hospitalised patients and those who died without hospital care.

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

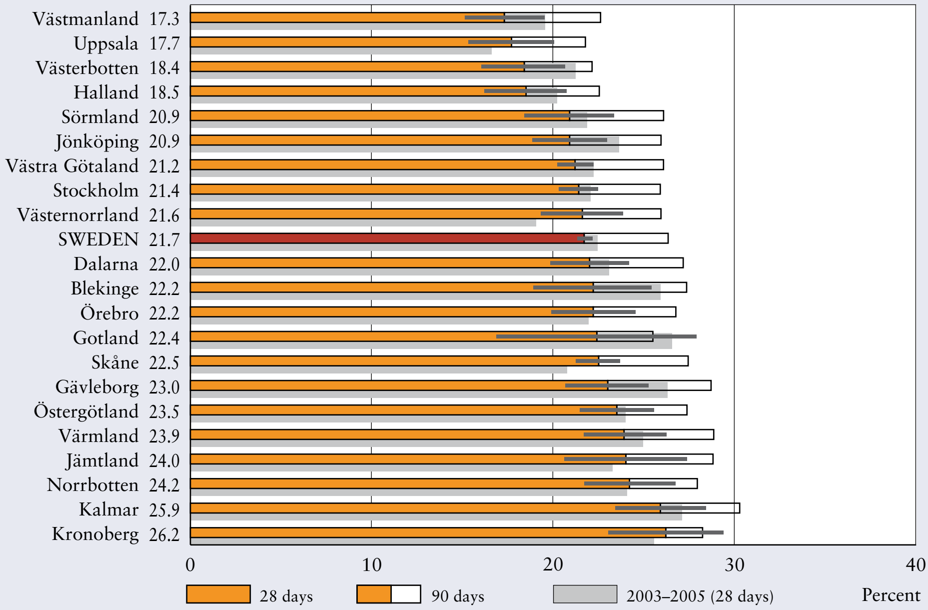


Figure 75
Men

28-day and 90-day case fatality rate for first-ever stroke, 2006–2008. Both hospitalised patients and those who died without hospital care.

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

Register or 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, i.e., people who did not have a stroke during the seven preceding years. They totalled almost 80 000 in 2006–2008.

In 2006–2008, approximately 22 per cent, or almost 6 000 per year, of these stroke patients died within 28 days. Nearly 27 per cent died within 90 days. After adjusting for differing age structures, the case fatality rate was similar for women and men. Fatality within both 28 and 90 days declined by half a percentage point since 2003–2005. The rate decreased in most regions, although to varying degrees.

Figure 75 shows that there was some regional variation in the case fatality rate. Among the possible causes of the variation are diagnostic reliability, background factors such as comorbidity, 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 case fatality rate varied from 18 to 26 per cent for women and 17 to 26 per cent for men among the various regions.

Figure 75 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 with myocardial infarction.

76 Hospitalised first-ever stroke – 28-day and 90-day case fatality rate

This indicator reflects the 28-day and 90-day case fatality rate for hospitalised stroke patients. It focuses on quality in emergency and continuing care at hospital.

International comparisons by the OECD, the Nordic cooperation and other bodies use various indicators of case fatality rates for stroke. Short-term survival among

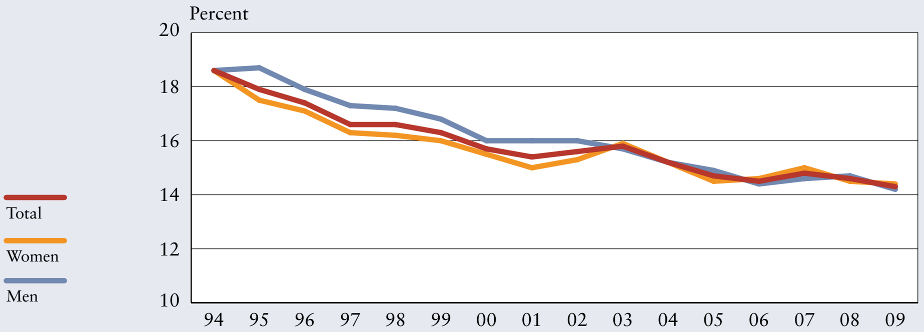


Figure 76
Sweden

28-day 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

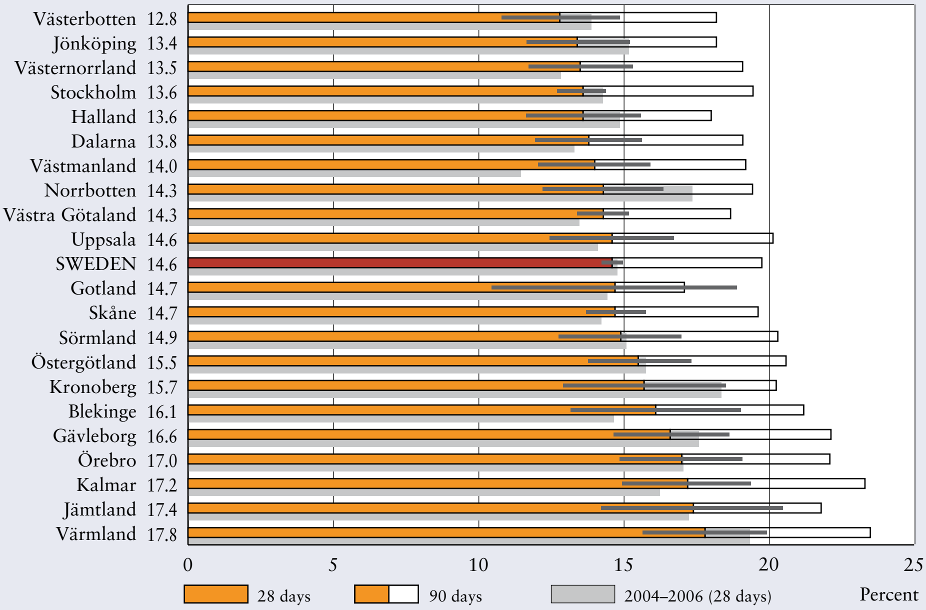


Figure 76
Women

28-day and 90-day case fatality rate for first-ever stroke, 2007–2009. Hospitalised patients. Age-standardised.

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

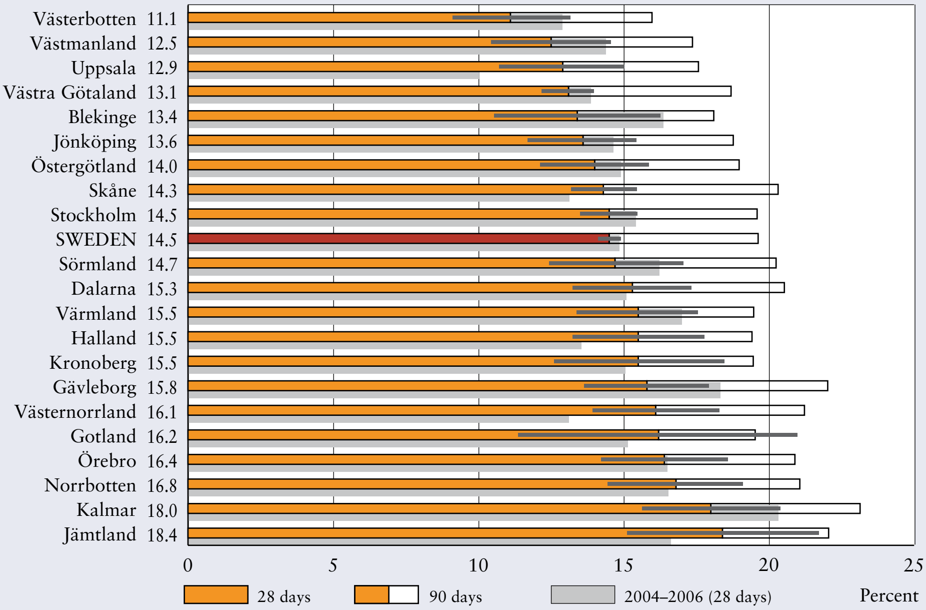


Figure 76
Men

28-day and 90-day case fatality rate for first-ever stroke, 2007–2009. Hospitalised patients. Age-standardised.

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

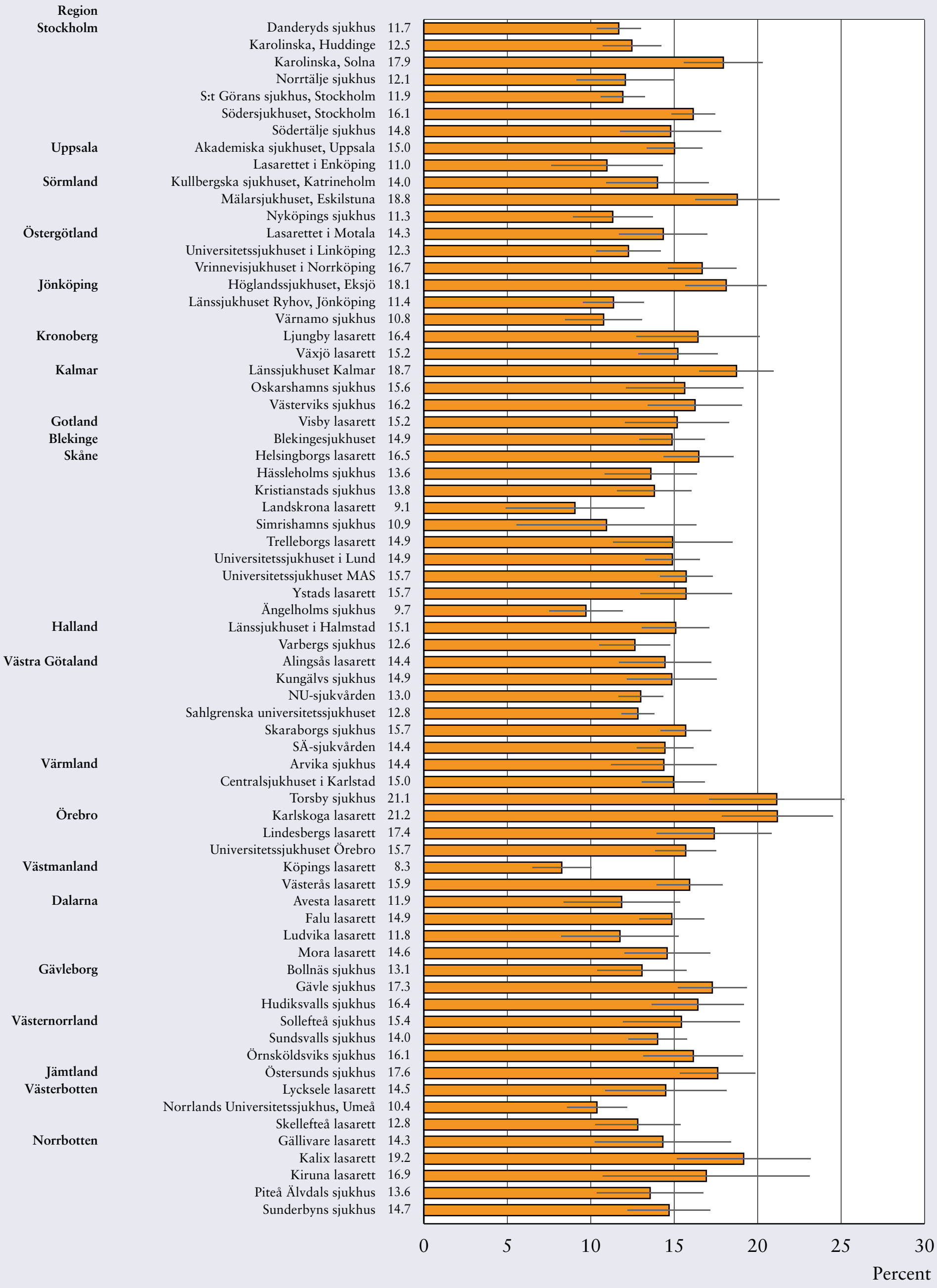


Figure 76
Hospitals

28-day case fatality rate for first-ever stroke, 2007–2009.
Hospitalised patients. Age-standardised.

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

hospitalised stroke cases only is a common indicator and the one that is available in many countries.

More than 29 000 of the 33 000 patients, approximately the same number of women and men, who had a stroke each year were hospitalised. An estimated 3 000-4 000 died without being hospitalised.

Stroke is defined as all cases in 2007–2009 that included a diagnosis of cerebral haemorrhage, cerebral infarct or unspecified stroke in the inpatient section of the Patient Register – in other words, initially hospitalised stroke cases. Only first-ever stroke cases, i.e., people who did not have a stroke for the seven preceding years, are included. Of those cases, everyone age 20 and over is counted. The comparison covers approximately 71 000 cases altogether.

Almost 15 per cent of hospitalised stroke patients died within 28 days and 20 per cent within 90 days. An average of almost 3 400 Swedes died 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. Both the 28-day and 90-day case fatality rate declined slightly nationwide for both sexes.

77 Patients treated at a stroke unit

According to NBHW guidelines, care during the acute phase of stroke is to be provided at stroke units. Each unit has expertise in stroke treatment and rehabilitation. It consists of an interdisciplinary team that includes doctors, nurses, assistant nurses, physiotherapists, occupational therapists, counsellors and speech therapists, as well as access to dieticians, psychologists and psychiatrists. Immediate mobilisation and early rehabilitation are central to the care such a unit provides.

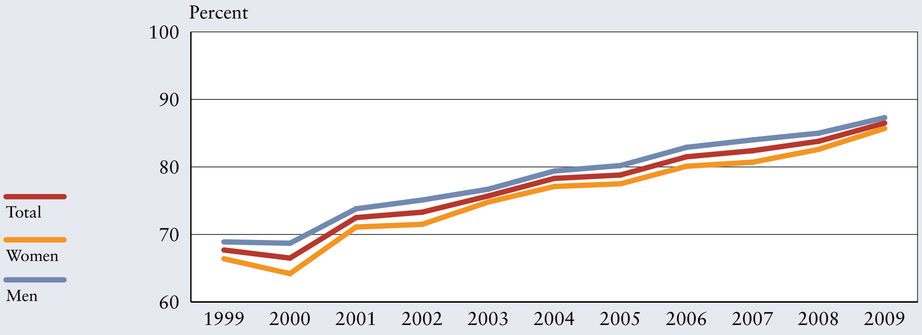


Figure 77
Sweden

Percentage of patients treated at a stroke unit, 2009.

Source: Swedish Stroke Register

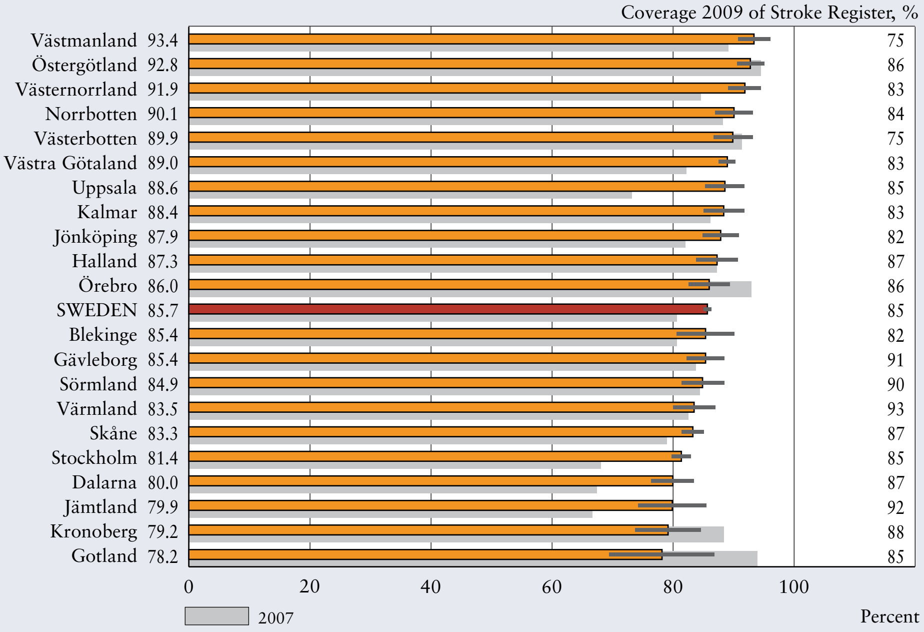


Figure 77
Women

Percentage of patients treated at a stroke unit, 2009.

Source: Swedish Stroke Register

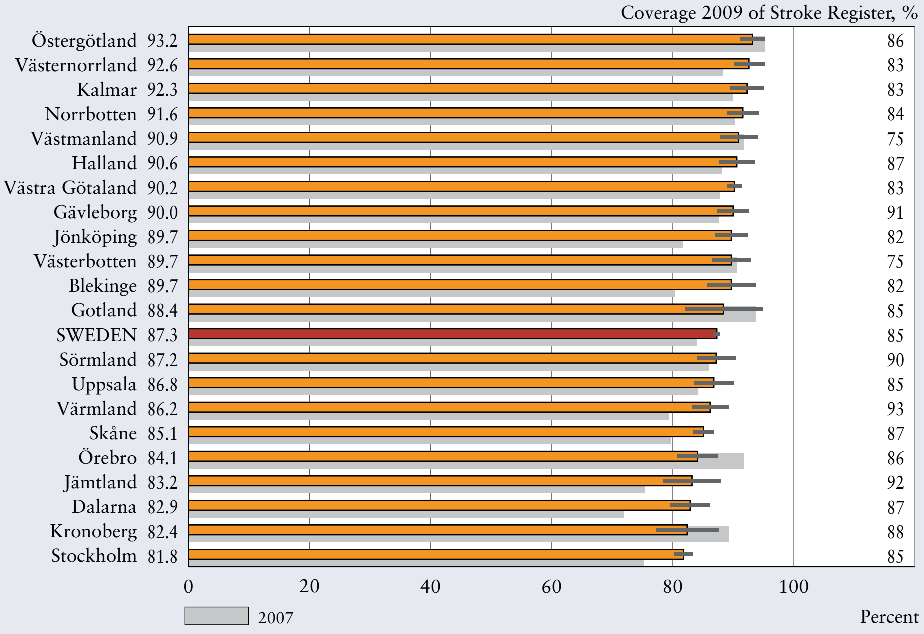


Figure 77
Men

Percentage of patients treated at a stroke unit, 2009.

Source: Swedish Stroke Register

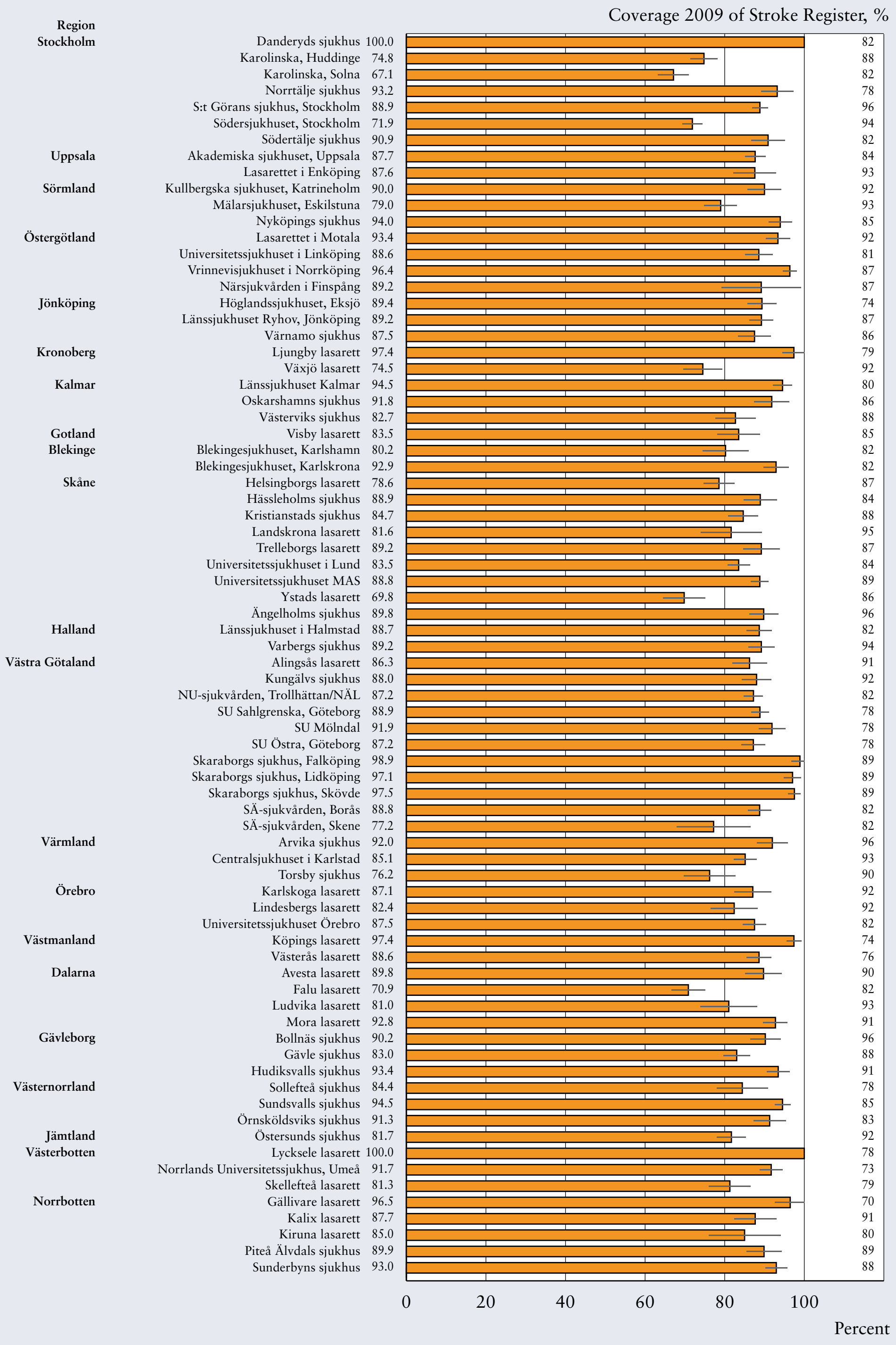


Figure 77
Hospitals

Percentage of patients treated at a stroke unit, 2009.

Source: Swedish Stroke Register

There is a strong empirical basis for maintaining that care at well-functioning 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 injury. Thus, the guidelines give top priority to care at a stroke unit.

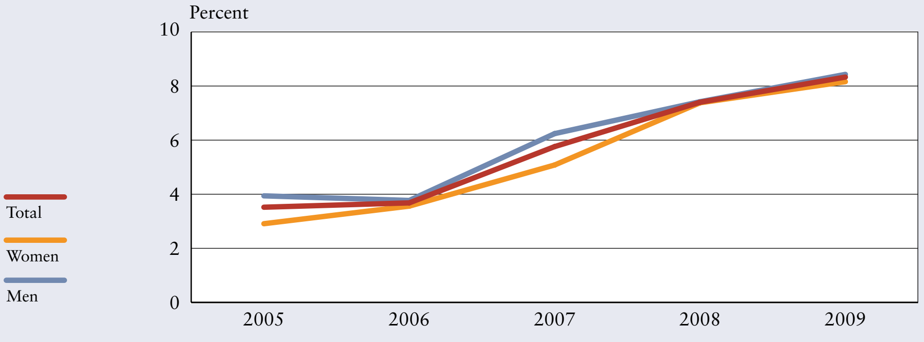
More than 86 per cent of almost 25 000 patients entered in the National Stroke Register were treated at stroke units in 2009, a 4 percentage point increase since 2007. The improvement was even greater among women, 86 of whom were treated at stroke units (as opposed to 87 per cent of men). The regional differences were noticeably smaller than in 2004, the year presented in the original *Open Comparisons* 2006.

The percentage of patients treated at stroke units among those reported to the National Stroke Register can also be related to participation rate, as seen on the right side of Figure 77. A safe assumption is that unreported cases were treated less often at stroke units than those included in the National Stroke Register. Thus, regions with a low participation rate show better results than they actually have.

78 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 infarct patients. The procedure reduces the risk of impaired function. Thus, the national guidelines for stroke assign high priority to thrombolytic therapy.

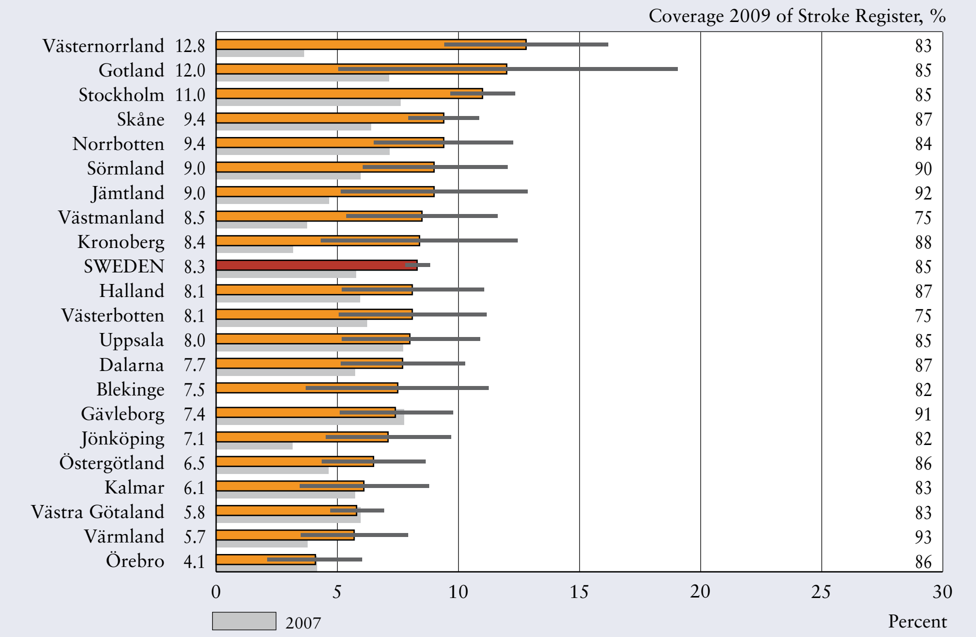
The criteria for commencement of thrombolytic therapy are that the patient experienced the first symptoms no more than 4½ hours before, was previously independent of others for personal activities of daily living (ADLs) and is age 18–80. About 11 300 of the patients entered in the National Stroke Register in 2009 had suffered a cerebral infarction, were age 18–80 and had previously been independent



Patients included: Age 18–80, with cerebral infarction and previously independent in personal ADL.

Figure 78
Sweden

Percentage of stroke patients who received thrombolytic therapy, 2009.
Source: Swedish Stroke Register



Patients included: Age 18–80, with cerebral infarction and previously independent in personal ADL.

Figure 78
Total

Percentage of stroke patients who received thrombolytic therapy, 2009.
Source: Swedish Stroke Register

of others for their personal ADLs. The amount of time between onset of symptoms and treatment limited the percentage that 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, all acute hospitals should be able perform it. The shortest possible delay after the onset of symptoms is crucial to the outcome. Thus, decentralised care is of the essence. That patients and those around them have the ability to recognise symptoms of stroke and promptly obtain medical assistance is also decisive.

Figure 78 presents the percentage of stroke patients (see definition above) who received thrombolytic therapy in 2008. A total of 945 patients nationwide, or 8.3 per cent of the 11 300 people in the studied group, received thrombolytic therapy. Certain gender differences emerged. The large regional variations are somewhat to be expected given that thrombolytic therapy is relatively new and hospitals are adopting it at their own pace.

No target has been set for the percentage of patients who should be given thrombolytic therapy. The regions that report the highest percentages provide some guidance, but improvement is called for everywhere. Sweden has a high percentage compared with other countries.

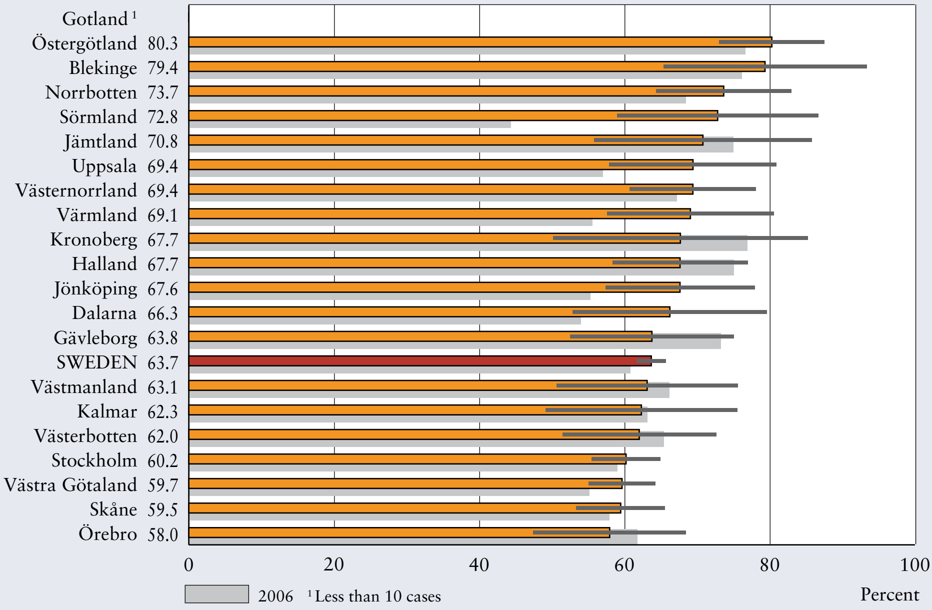


Figure 79
Total

Anticoagulant therapy after 12–18 months for stroke patients age 55–79 with atrial fibrillation, 2007–2008. Age-standardised.

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

79 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 infarct 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 given anticoagulant therapy, after taking comorbidity and very advanced age into consideration.

Figure 79 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 Patient Register and the Prescribed Drug Register. The comparison includes approximately 2 100 patients age 55–79 who were discharged after stroke from June 2006 to June 2008.

Sixty four per cent of patients nationwide received therapy, a small decrease since 2006. Women were given therapy somewhat more often than men (not shown in this report). The large regional variations suggest that the regions have absorbed the guidelines and applied them to stroke and cardiac care at different paces. Nev-

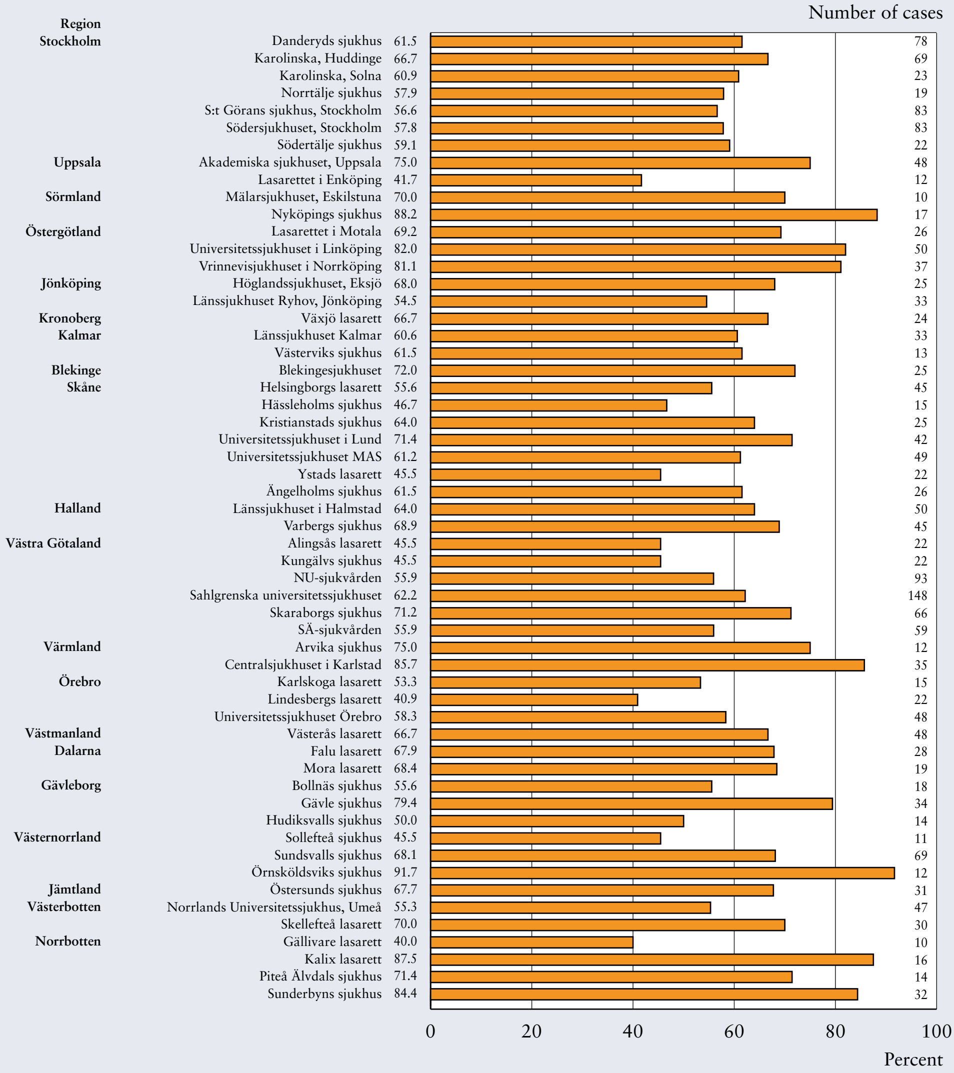


Figure 79
Hospitals

Anticoagulant therapy after 12–18 months for stroke patients age 55–79 with atrial fibrillation, 2007–2008. Age-standardised.

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

ertheless, the percentage of this patient population that should have therapy is difficult to assess.

Warfarin is inexpensive and offers major benefits. The therapy, which requires regular contact with the healthcare system, is associated with some risk of bleeding. The percentage of patients who should be given therapy must be discussed and interpreted in view of the fact that warfarin may be contraindicated in elderly patients due to variables such as dementia and tendency to fall. However, the very oldest patients have been excluded from this comparison.

80 Recurrence of stroke

The percentage of readmissions to hospital among first-ever stroke patients can provide a gauge of the efficacy of secondary preventive interventions after stroke. Among such interventions are influencing lifestyle by smoking cessation, dietary counselling, assistance with physical activity, drug therapy (antihypertensives, lipid lowering drugs and antithrombotics) and carotid endarterectomy. Along with survival and re-adaptation to daily life, recurrence is also a basic outcome measure for stroke care.

Figure 80 shows the percentage of patients who were readmitted to hospital for stroke within 365 days of their initial care episode. The comparison covers more than 81 000 patients in the Patient Register who were treated in 2004–2008 for first-ever stroke with the primary diagnosis of cerebral haemorrhage, cerebral infarct or unspecified stroke. Only first-ever stroke cases and patients who subsequently survived the first year were included. The Patient Register was monitored until the end of 2009.

Just under 10 per cent of stroke patients, approximately the same for women and men, nationwide were readmitted for stroke or its late effects. The regions varied from 7 to 12 per cent. The percentage of readmissions has decreased somewhat over the past 10 years. Eleven per cent of women and 12 per cent of men were readmitted in 2007, as opposed to 9 per cent for women and 10 per cent of men in 2007.

The risk of stroke recurrence is significant. There is also a risk of relapse in another cardiovascular disease. The healthcare system's cumulative secondary preventive measures are vital and can affect the risk of recurrence. If each region is to keep track of the impact of targeted measures and the like, repeated studies over time are required. The healthcare system needs to monitor its patients with respect to recurrence as well.

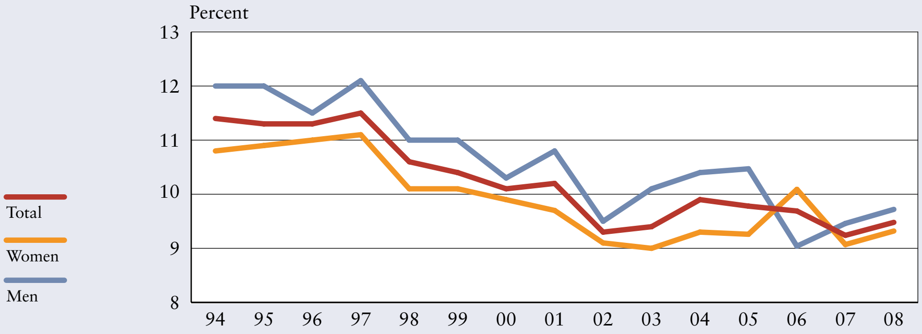


Figure 80
Sweden

Percentage of patients readmitted for stroke within 365 days. Age-standardised.

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

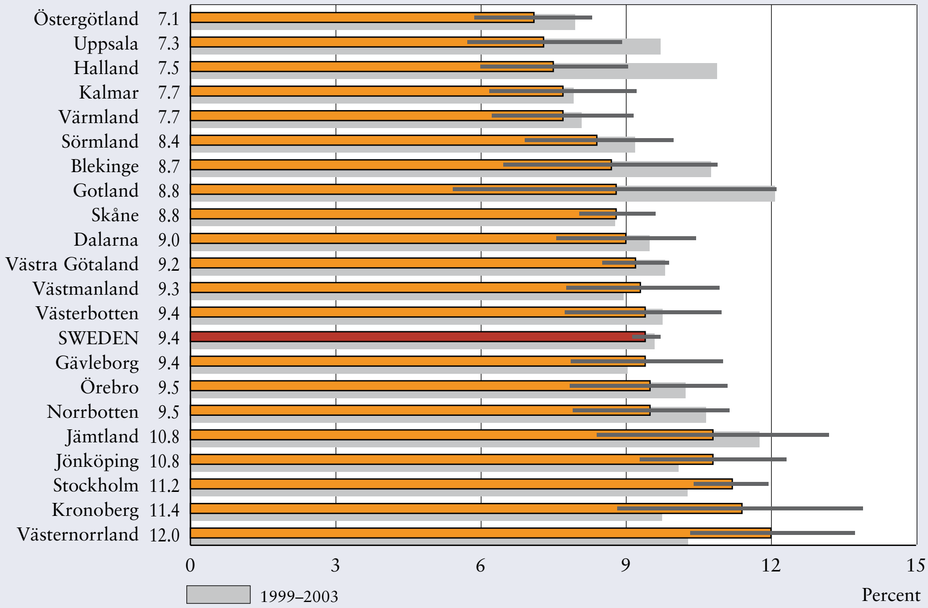


Figure 80
Women

Percentage of patients readmitted for stroke within 365 days, 2004–2008. Age-standardised.

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

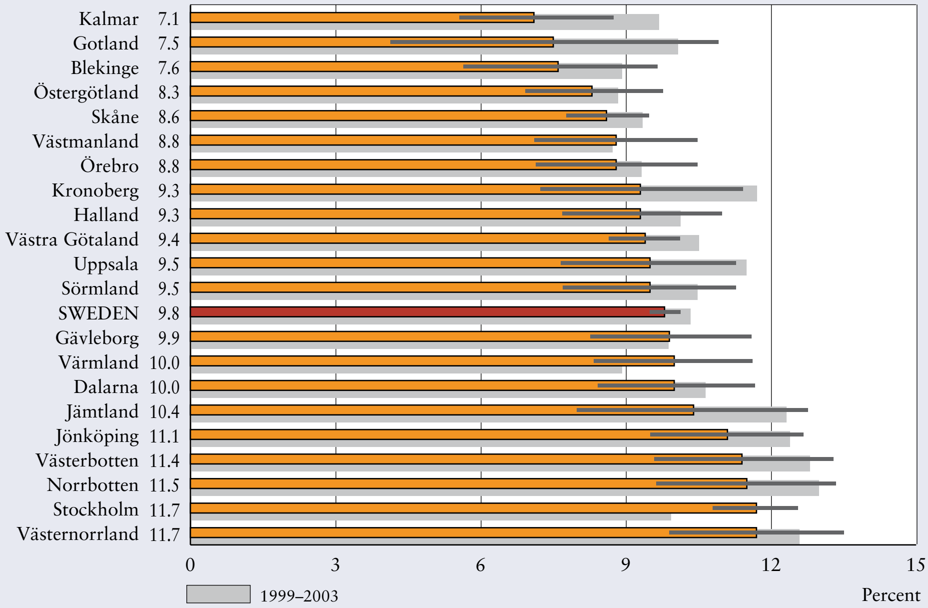


Figure 80
Men

Percentage of patients readmitted for stroke within 365 days, 2004–2008. Age-standardised.

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

81 Activities of daily living ability three months after stroke

Stroke survivors recover pre-disease function to varying degrees. The National Stroke Register collects data about the dependence of patients on others for their personal activities of daily living (ADLs) three months after stroke. Personal ADLs refer 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.

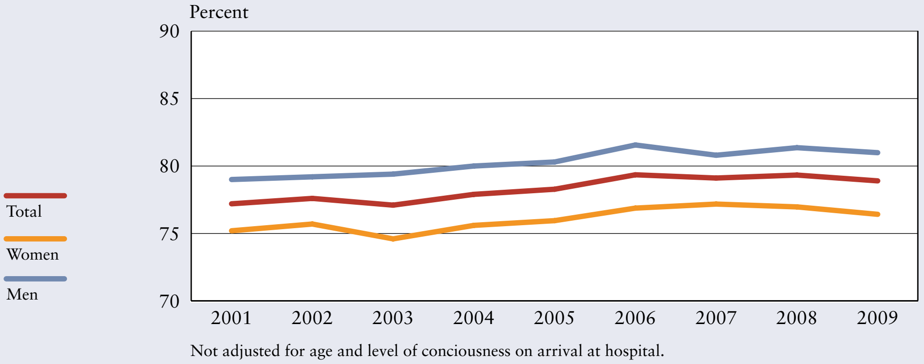
Figure 81 presents the percentage of patients who could handle their personal ADLs by themselves prior to stroke, who survived and who were independent of others for these activities three months after the acute phase. The results have been adjusted for age and consciousness at the time of stroke. Such adjustments allow not only for greater accuracy, but a more correct comparison of hospitals, for which variations are large. The non-participation rate at three-month follow-up appears on the right side of the diagram. The comparison included almost 16 000 patients.

Eighty two per cent of both women and men nationwide were independent of others for their personal ADLs. The regional differences were very modest for men but larger for women.

This outcome measure should preferably be interpreted along with the percentage of survivors. Hospitals and regions achieve the best results when they have a high percentage of patients who survive and a high percentage who are independent when it comes to personal ADLs (recover their pre-disease function to a large extent).

82 Satisfaction with stroke care at hospital

A National Stroke Register three-month follow-up includes questions for patients and their families about how satisfied they were with the care that they received. There are more questions about patient satisfaction than what we present here.



Not adjusted for age and level of conciousness on arrival at hospital.

Figure 81
Sweden

Percentage of stroke patients who were independent in personal activities of daily living (ADL) three months after stroke.

Source: Swedish Stroke Register

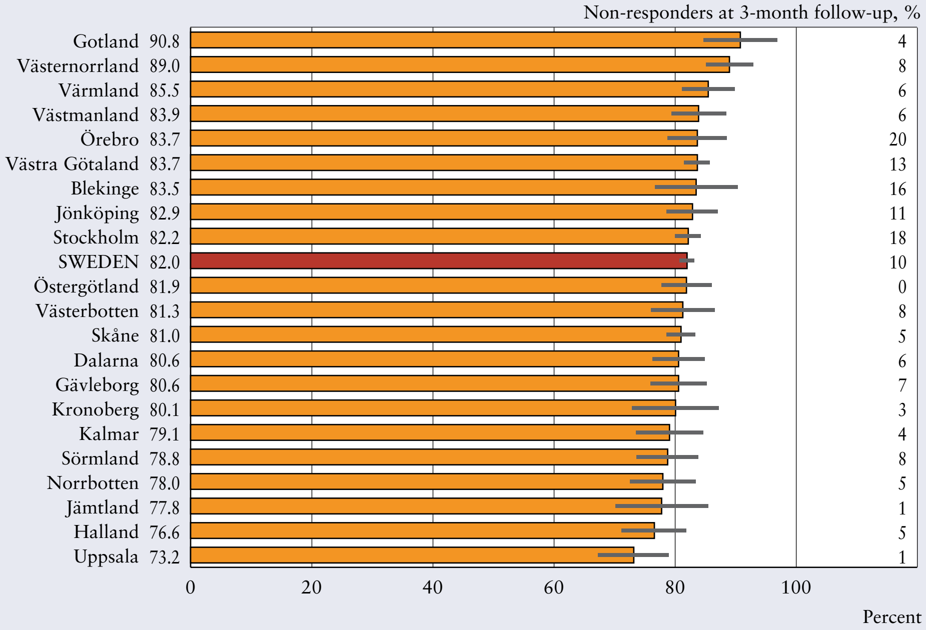


Figure 81
Women

Percentage of stroke patients who were independent in personal activities of daily living (ADL) three months after stroke, 2009. Adjusted for age and level of conciousness on arrival at hospital.

Source: Swedish Stroke Register

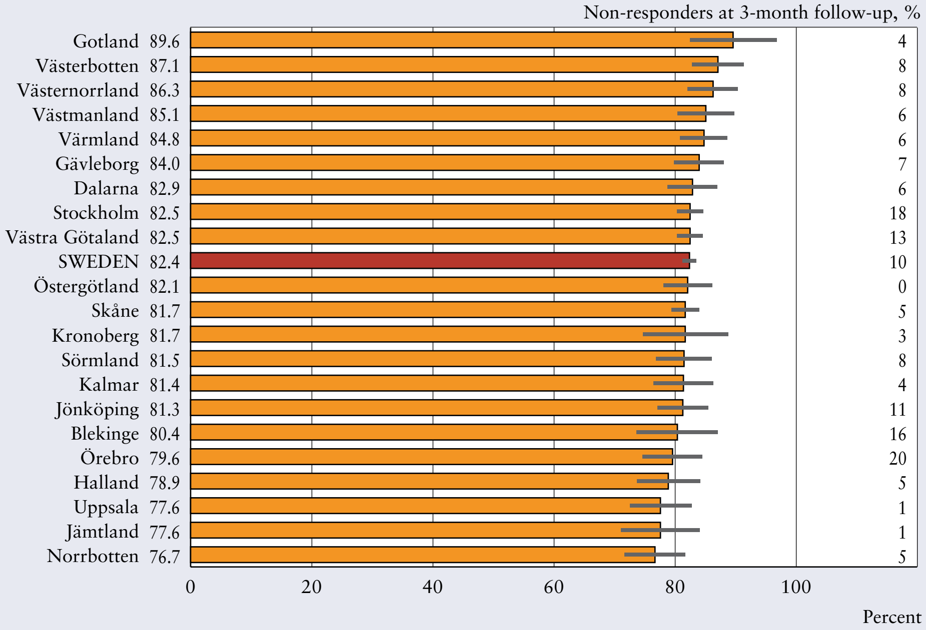


Figure 81
Men

Percentage of stroke patients who were independent in personal activities of daily living (ADL) three months after stroke, 2009. Adjusted for age and level of conciousness on arrival at hospital.

Source: Swedish Stroke Register

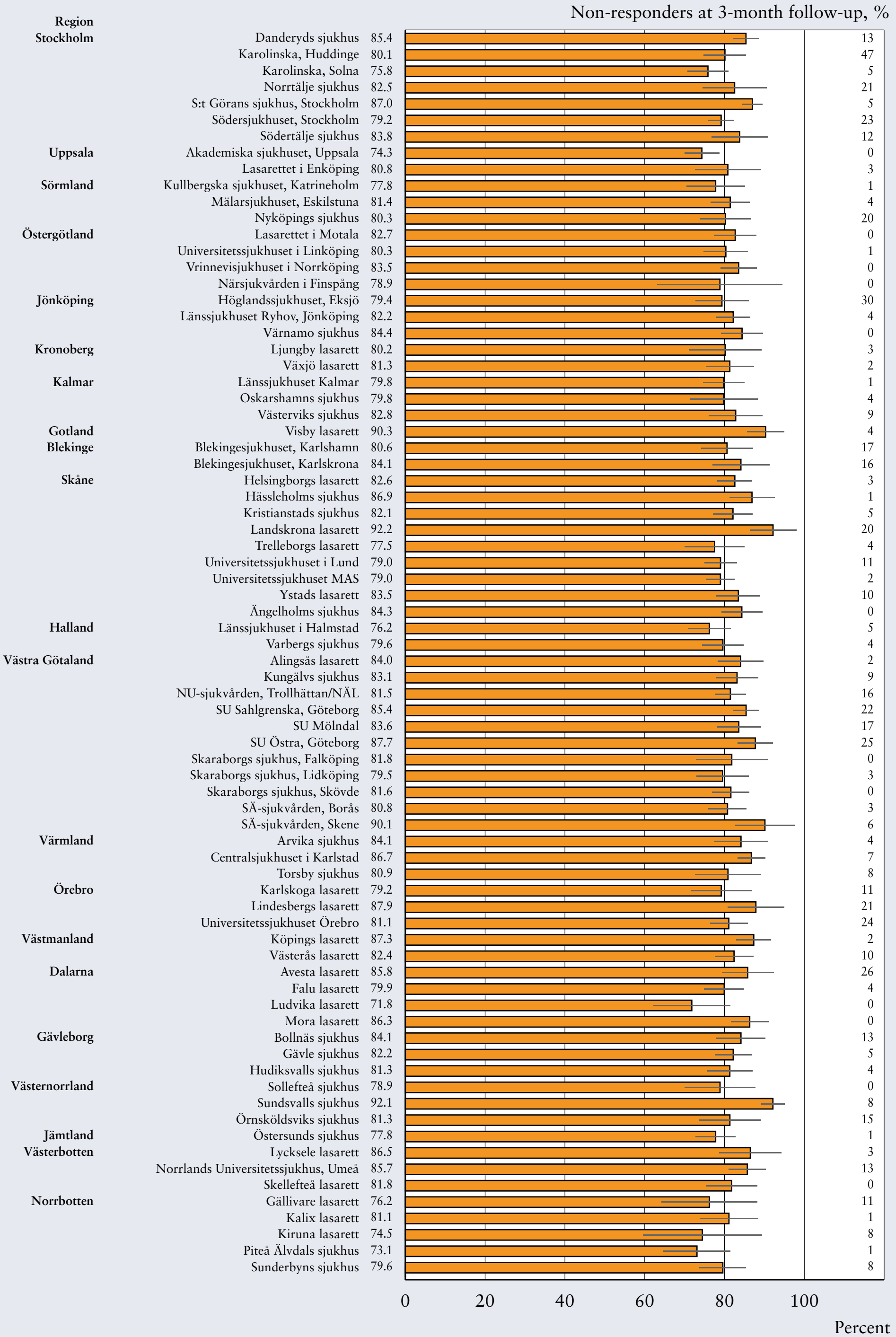


Figure 81
Hospitals

Percentage of stroke patients who were independent in personal activities of daily living (ADL) three months after stroke, 2009. Adjusted for age and level of conciousness on arrival at hospital.

Source: Swedish Stroke Register

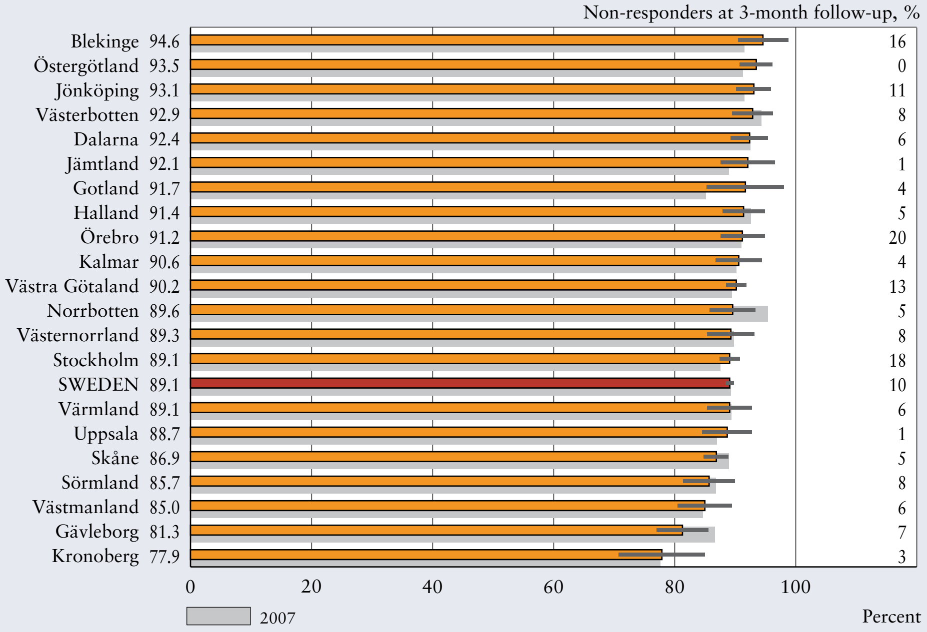


Figure 82
Women

Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received, 2009.

Source: Swedish Stroke Register

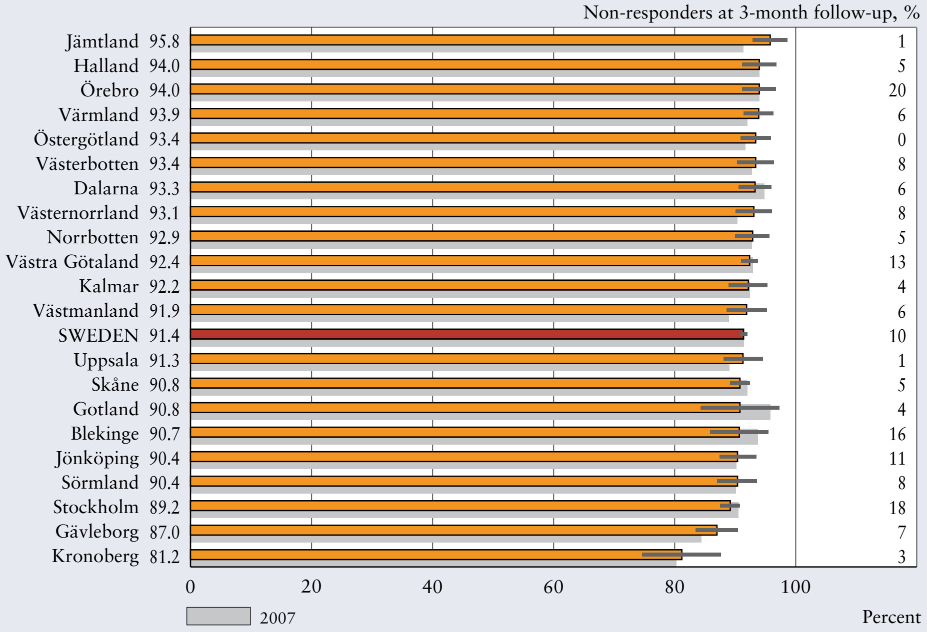


Figure 82
Men

Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received, 2009.

Source: Swedish Stroke Register

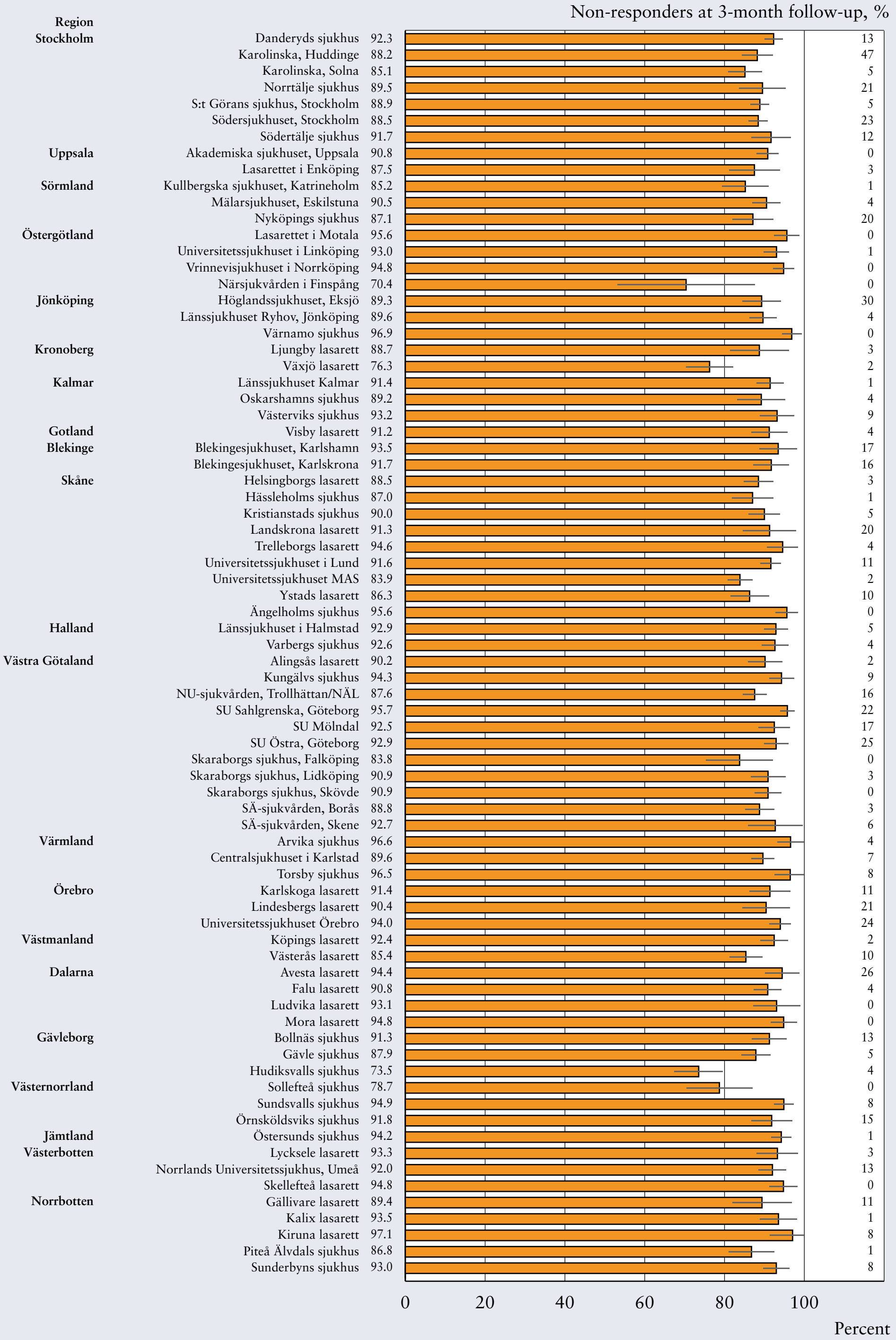


Figure 82
Hospitals

Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received, 2009.

Source: Swedish Stroke Register

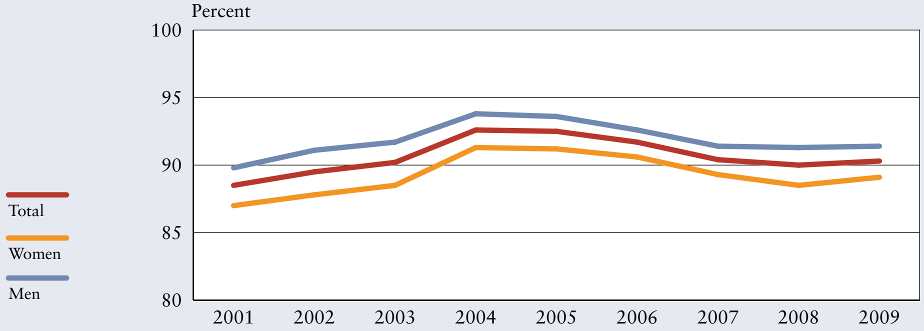


Figure 82
Sweden

Percentage of stroke patients who were satisfied or highly satisfied with the hospital care they received.

Source: Swedish Stroke Register

Figure 82 shows the level of patient satisfaction with hospital care. Patients who did not participate in the three-month follow-up are also covered. Approximately 16 500 of almost 25 000 patients responded and were included in the comparison. Eighty nine per cent of women, and 91 per cent of men, were satisfied or highly satisfied. The nationwide responses have been approximately the same since 2001, peaking at 92 per cent in 2004 and 93 per cent in 2005. Given that the participation and response rates have improved, the current results are more representative.

With an exception or two, the regional differences are modest in view of the highly favourable responses and the uncertainty associated with variations in the percentage of patients monitored. Age and possible functional impairment may affect the ability of patients to assess the quality of care they received three months afterwards.

RENAL CARE

More than four percent of the Swedish population has substantially impaired renal function. Most of them do not face any immediate threat, but renal insuffiency is strongly associated with an increased risk of cardiovascular disease and death. A minor proportion of these individuals later in life develop severe renal failure (End Stage Renal Disease, ESRD) requiring dialysis or renal transplantation (jointly known as Renal Replacement Therapy, RRT). More than one third of all patients who need dialysis or a transplant have diabetes. Other common (15–20 percent) reasons for RRT are atherosclerosis of the kidney and chronic glomerulonephritis, both conditions affecting a considerably more heterogeneous patient population. Hereditary kidney disease accounts for approximately 10 percent. The total number of patients on RRT has risen by approximately three percent annually over the past ten years to more than 8 200 at the end of year 2009. Roughly 1 100 new patients start treatment every year. A gradual improvement in survival is the main reason for the increasing prevalence. 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 among males.

Slightly more than half of the patients on RRT have a functioning transplant and the rest is on dialysis. Sweden has a high percentage of transplanted patients, surpassed only by Norway among neighbouring countries. Approximately three quarters of dialysis patients receive haemodialysis (HD) and the remainder is on peritoneal dialysis (PD). Depending on what is included in the calculation, the total annual cost of Swedish RRT is estimated at 2–3 billion SEK. These patients would die if not treated.

Due to its superior health-related and patient-reported quality of life and low mortality risk, renal transplantation is the treatment of choice. For medical reasons, transplantation is appropriate for less than one quarter of all new patients. Because of the shortage of organs from deceased donors, most transplant recipients must undergo dialysis for an average of 2–3 years before transplantation. Patients who have access to a living donor can receive a transplant just before dialysis is needed or a short time thereafter.

Thus accessible and high-quality dialysis is both life-sustaining for patients who cannot receive transplants and a necessity if transplantation services are to work properly. Four indicators are presented, each based on the Swedish Renal Registry (SRR), to which all clinics report. This registry includes all transplanted patients and at least 95 percent of chronic dialysis patients. The registry collaborates with NBHW for comparisons of coverage and validity. The final indicator reflects costs for renal transplantation at the various hospitals, obtained from the Swedish case costing database.

83 Renal replacement therapy – five-year survival

Figure 83 uses the Kaplan-Meier method to calculate estimated five-year survival for all patients who began RRT in the years 2000–2009. Survival has improved over time for both dialysis and transplant patients. The five year survival of all patients on RRT was 40.3 percent (24.3 in dialysis patients and 87.3 in transplanted patients) during the period 1991–2000. The corresponding figures for the period 2000–2009 were 45.5, 33.4 and 92.6 percent. The exclusion of patients who do not survive more than 90 days after initiation of therapy eliminates the problem of incomplete or inconsistent reporting in the early stages of treatment. The results are not adjusted for age or other case mix variables. The regions are heterogeneous in terms of size, age structure and socioeconomic factors. Furthermore, there are well-known regional differences in background mortality.

While survival data is a fundamental measure of outcome and thus quality of care, regions and hospitals cannot be accurately compared based on current reporting

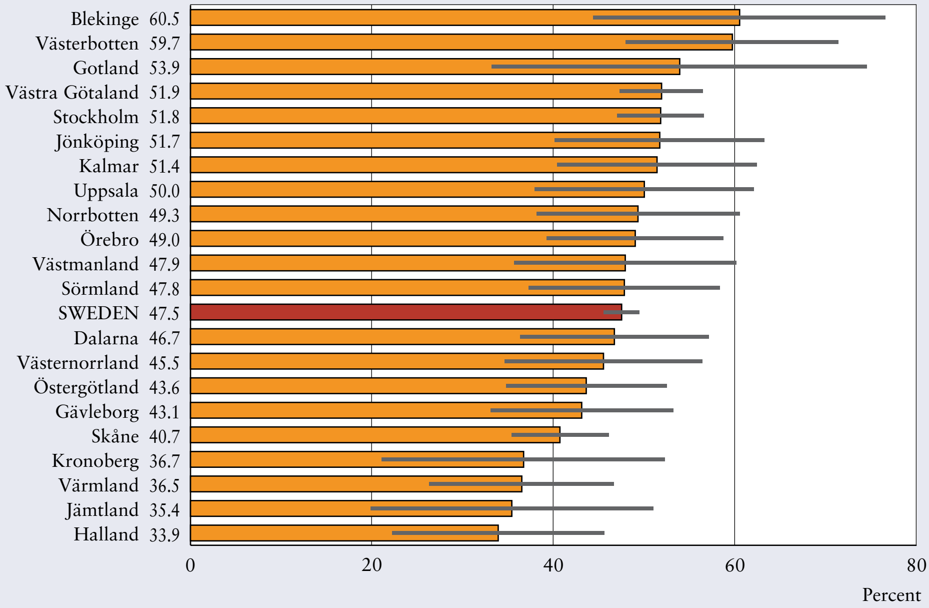


Figure 83
Women

Unadjusted five-year survival for patients in renal replacement therapy, 2000–2009. Adults commencing treatment during the period.

Source: Swedish Renal Registry

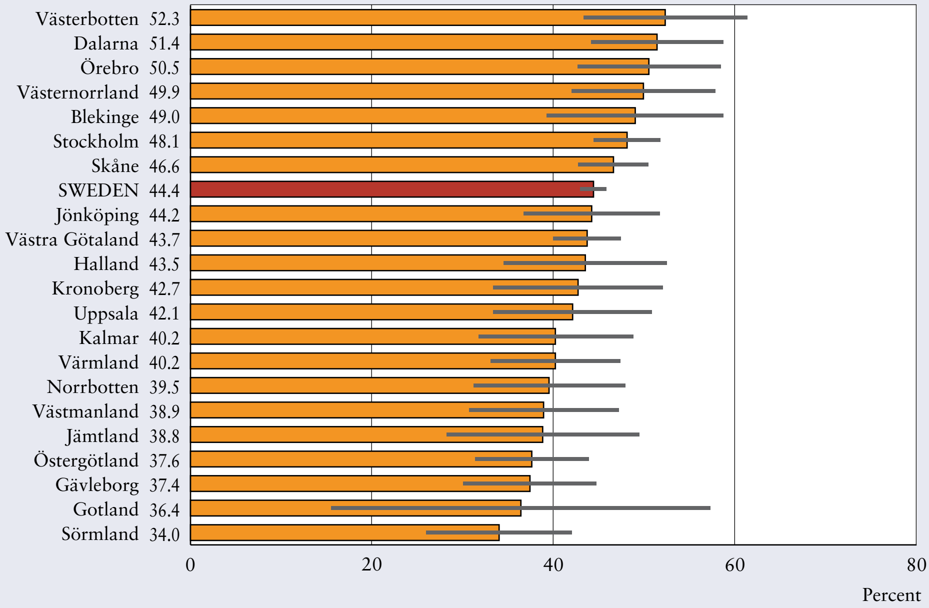


Figure 83
Men

Unadjusted five-year survival for patients in renal replacement therapy, 2000–2009. Adults commencing treatment during the period.

Source: Swedish Renal Registry

methods. There are ongoing discussions within the profession concerning the best way to report survival as a component of quality comparisons. The primary purpose of the indicator at this point is to encourage regions and hospitals to analyse and explain their survival outcomes.

Even adjusted for risk factors, the risk of dying is several times higher in the dialysis population. Thus, survival improves at clinics that provide transplantation as soon as possible. That is why survival following both treatment modalities is reported together.

Renal transplantation, and particularly dialysis, is associated with an increased risk of death despite the fact that they are life-saving procedures. To a large extent, the explanatory factors are not directly related to kidney failure and treatment, but age, co-morbidity, etc. On the other hand it is well known that variation in practice among countries, regions and clinics affect outcomes. The following two indicators are crucial to process quality when it comes to haemodialysis.

84 Target fulfilments 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 percent of HD patients nationwide currently get three sessions per week. Approximately 10 percent have more than three sessions and 10 percent fewer than three. The trend in recent years has been toward more frequent sessions. Thus, overall comparisons should be based on the total weekly dialysis dose. The standard Kt/V is one of the accepted measures of weekly dose, based on urea reduction and fluid elimination during dialysis, the duration of each session and the number of weekly sessions. A standard Kt/V above 2 represents fulfilment of the weekly dose target.

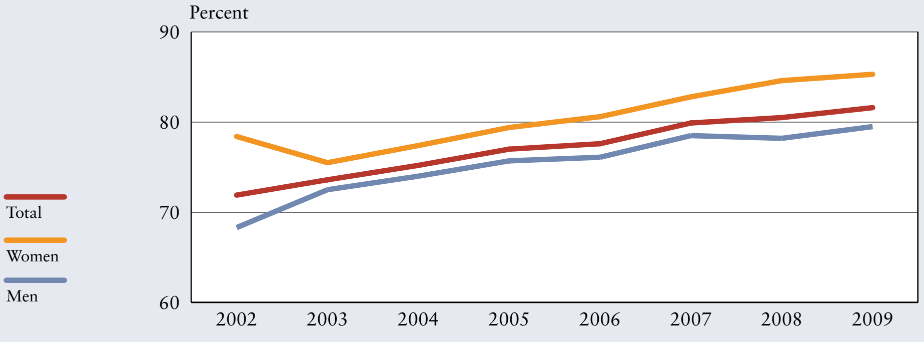


Figure 84
Sweden

Percentage of patients reaching the target (standard Kt/V>2) for haemodialysis dose, 2009.

Source: Swedish Renal Registry

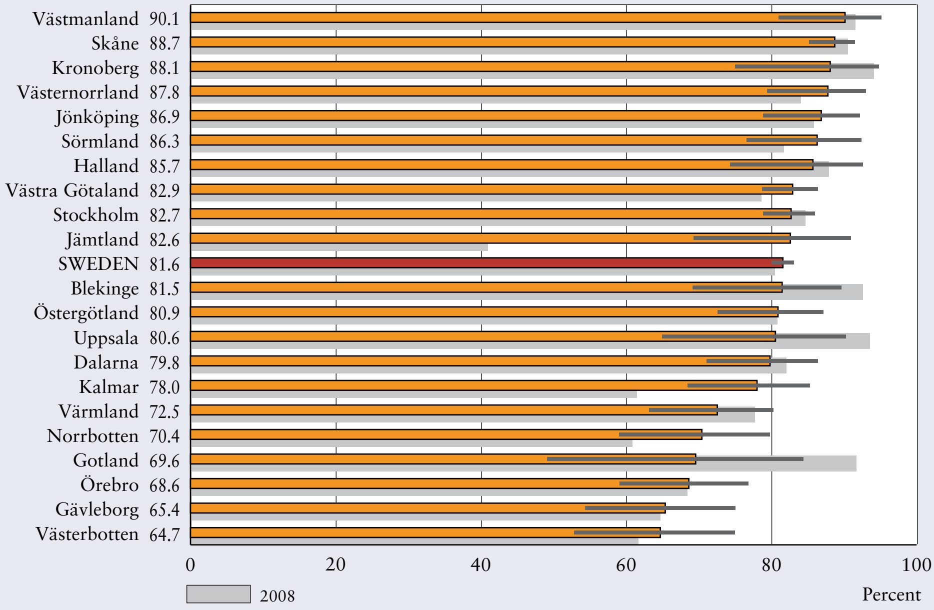


Figure 84
Total

Percentage of patients reaching the target (standard Kt/V>2) for haemodialysis dose, 2009.

Source: Swedish Renal Registry

Figure 84 presents the percentage of patients in each region who met the target for dialysis dose. The data, taken from the most recent Swedish Renal Registry cross-sectional study, covers the autumn 2009. Differences in case mix are unlikely to explain all of the variation that appears in the diagram. Low target achievement in a unit is primarily due to a large proportion of patients getting only two sessions per week. For the country as a whole, target fulfilment has gradually increased since the first study was conducted in 2002. An inherent problem with this indicator is that the study population includes patients for whom targeting full dialysis dose is either unnecessary due to significant residual renal function or inappropriate for some other reason. While both patient categories are small, their percentages among the various clinics at any particular time are unknown. Comparisons of dialysis dose at the clinic level must take this uncertainty into consideration. Given the above reflections, the optimum regional results would be that 80–90 percent 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 clinics and regions. Recent research suggests that women require substantially higher doses than men. Their seemingly better target fulfilment should be interpreted with this in mind.

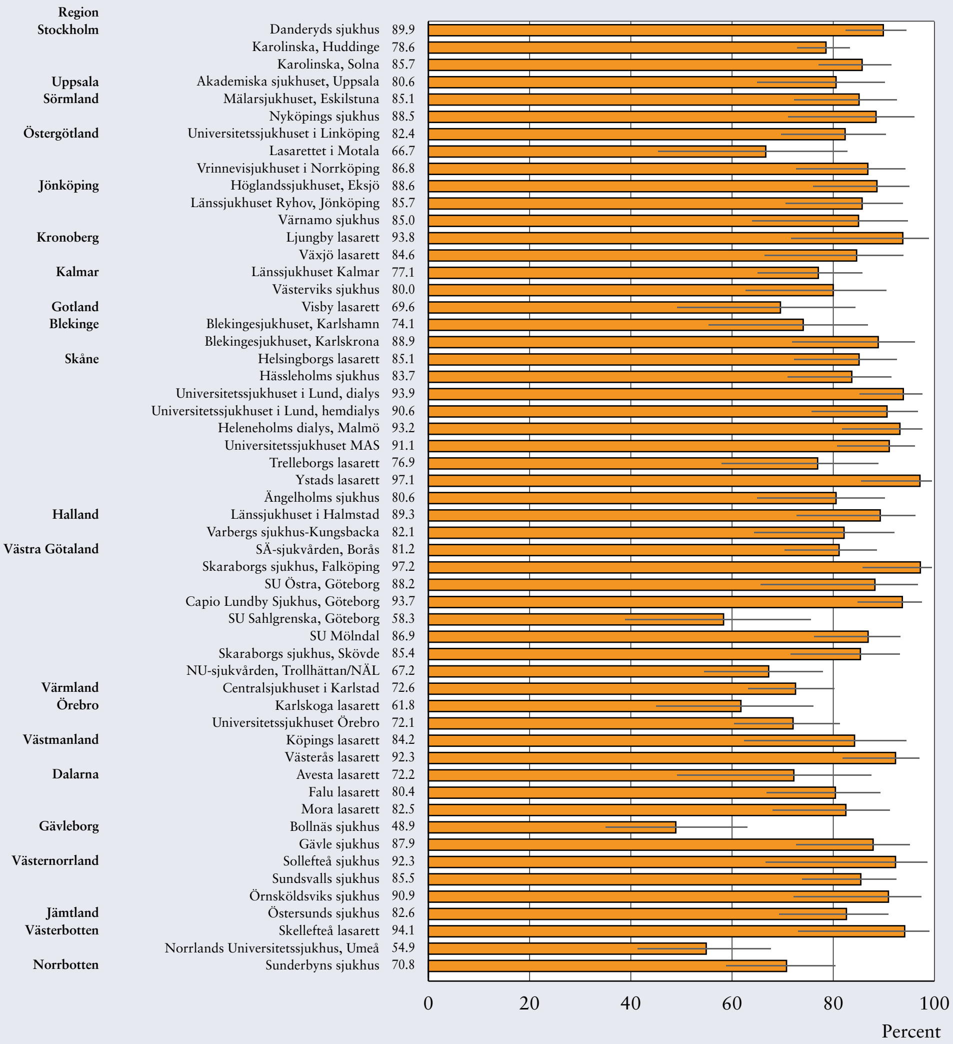


Figure 84
Hospitals

Percentage of patients reaching the target (standard Kt/V>2) for haemodialysis dose, 2009.

Source: Swedish Renal Registry

85 Vascular access for haemodialysis

Access to the blood vessels for HD can be obtained in different ways. An artificial arteriovenous (AV) fistula is the best form of vascular access. An arteriovenous graft (with synthetic vascular material) is somewhat poorer 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 long term central venous haemodialysis catheter, which poses a substantially higher risk of serious infection, and also permits lower blood flow, thereby decreasing the efficiency of dialysis.

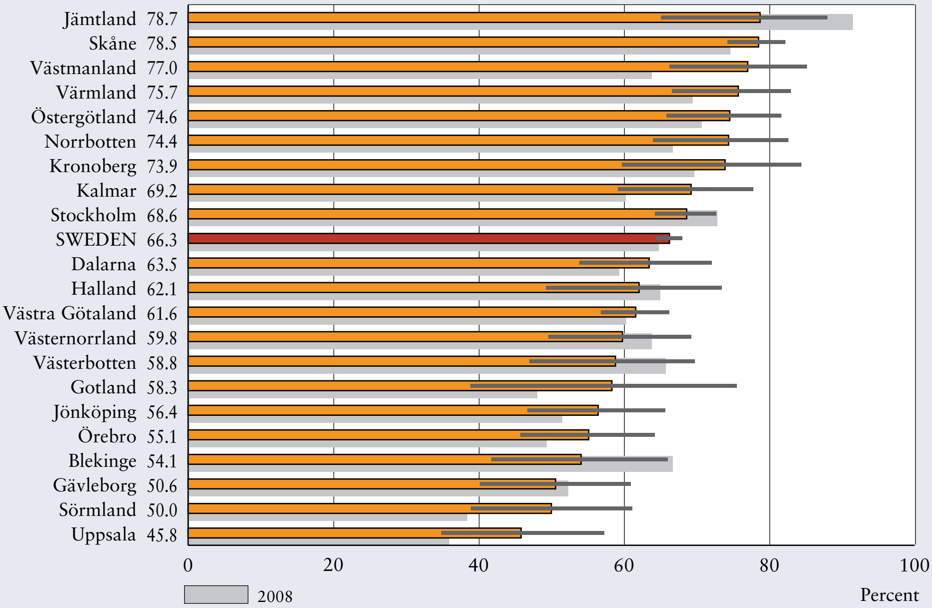


Figure 85
Total

Percentage of dialysis patients with an AV fistula or an AV graft, 2009.
Source: Swedish Renal Registry

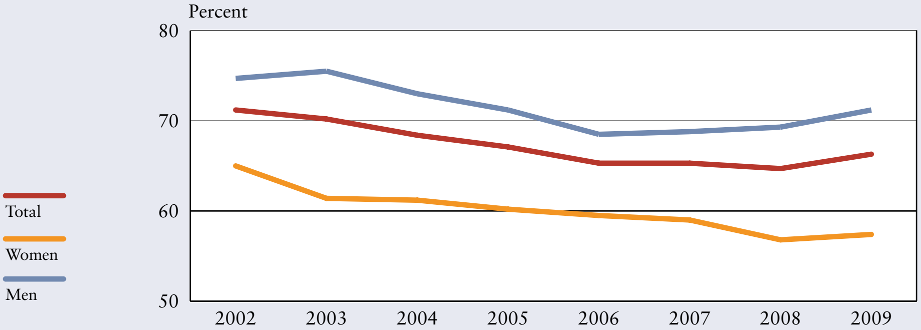


Figure 85
Sweden

Percentage of dialysis patients with an AV fistula or an AV graft.
Source: Swedish Renal Registry

Because well-functioning vascular access is essential to successful HD, the percentage of patients with an AV fistula or graft is an important indicator. This indicator also reflects the result of processes of care that begin even before the initiation of dialysis. The indicator summarises a number of key dimensions of the total quality of kidney care – the availability of access surgery, as well as the degree to which dialysis clinics are able to maintain well-functioning accesses. More than two thirds

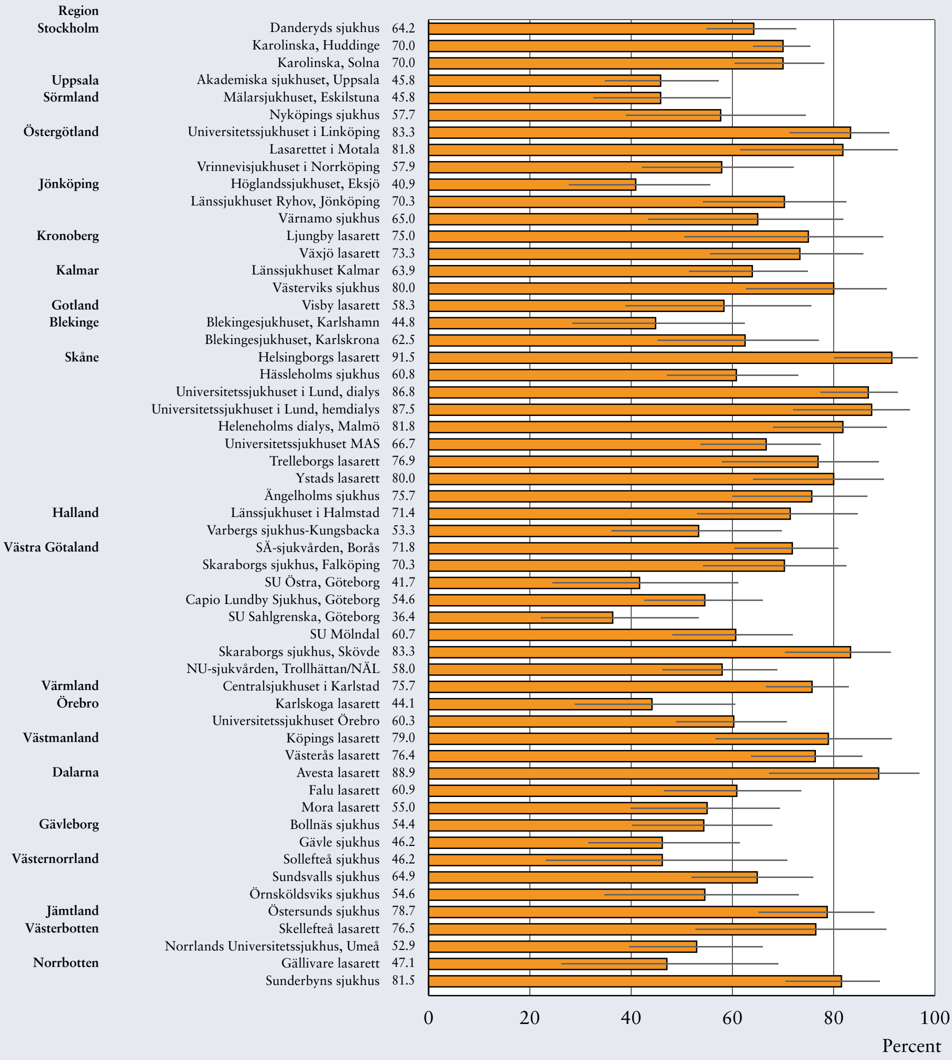


Figure 85
Hospitals

Percentage of dialysis patients with an AV fistula or an AV graft, 2009.

Source: Swedish Renal Registry

of Swedish dialysis clinics now report to the separate database within the Swedish Renal Registry for vascular access that was set up in 2009. Figure 85 shows the proportion of patients who were receiving dialysis using an AV fistula or graft in the autumn 2009. The data are based on annual cross-sectional studies conducted by the Swedish Renal Registry. The percentage of AV fistulas and grafts, which had been declining since the first study was conducted in 2002, increased in 2009. While this is a hopeful sign, future follow-up will show whether the trend continues.

There is excessive regional variation. The results point to an evident opportunity for improvement at both the clinic and regional level. Well-functioning access practice places heavy demands on coordination among vascular surgery, interventional radiology and kidney care. The percentage of women who receive an AV fistula or AV graft is generally lower than men. Part of the reason is that women's blood vessels are anatomically less suitable for creation of AV fistulas. While no specific goal has been established for this indicator, a target of 70–80 percent of the patient with an AV fistula or a graft is reasonable in an unselected patient population.

86 Kidney transplantation

The first Swedish kidney transplantation was performed in 1964. By the mid-1980s, the number had risen to over 300 yearly. Despite extensive efforts to increase the number of organs from deceased donors, not enough kidneys are available. Deceased kidney donors have averaged 120 for the past 20 years and risen only modestly in recent years. The percentage of transplants from living donors has risen to approximately one third of the total. Incompatible blood types no longer represent an absolute obstacle for transplants from living donors, who generate somewhat better results (several percentage points). A total of 392 kidney transplantations were performed in 2009.

As discussed in the earlier section on survival, transplantation outcomes have improved. Comparisons with countries that report reliable data to the European Dialysis and Transplantation Association reveal that both transplant and patient survival is above average in Sweden. Kidney transplantations are performed in Gothenburg, Malmö, Stockholm and Uppsala.

Both pre-transplantation assessment (including living donors) and postoperative follow-up are highly decentralised to the various regions. The common opinion is that all suitable patients should be offered a transplantation. Thus, the prevalence

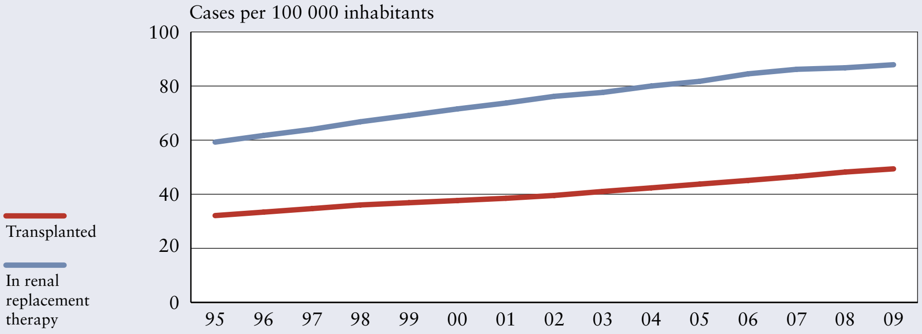


Figure 86
Sweden

Number of patients with functioning transplant and total number of patients in renal replacement therapy per 100 000 inhabitants.

Source: Swedish Renal Registry

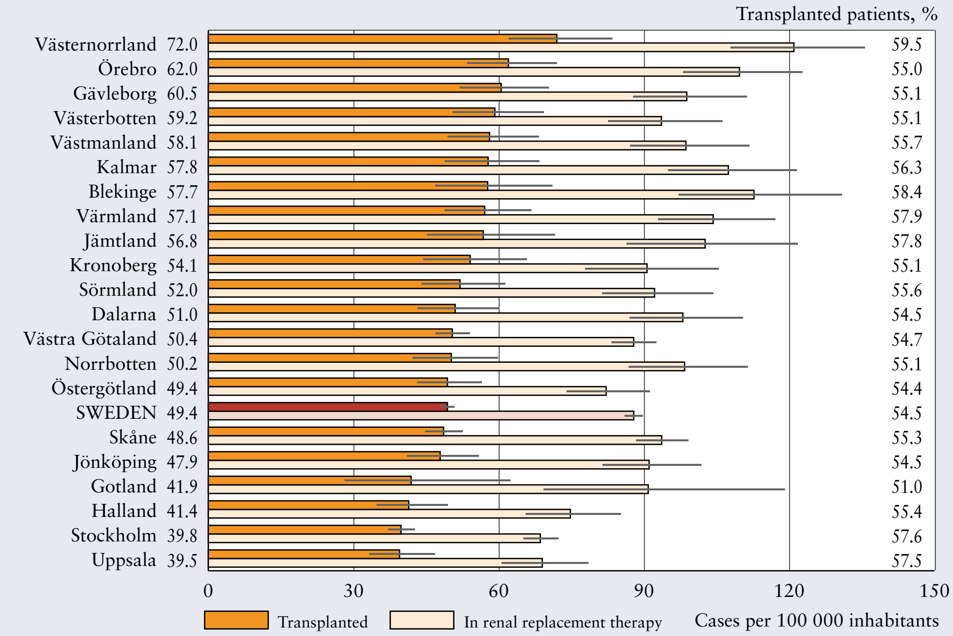


Figure 86 Number of patients with functioning transplant and total number of patients in renal replacement therapy per 100 000 inhabitants, 31 Dec. 2009.

Source: Swedish Renal Registry

of patients with a functioning transplant and its proportion of all renal replacement therapy represent a good indicator of quality.

The upper bar in Figure 86 shows the number of patients per 100 000 inhabitants with a functioning transplant at the end of 2009. The total for the country as a whole was 4 612. The lower bar shows the number of patients per 100 000 inhabitants on any renal replacement therapy (a total of 8 208 for the entire country). Thus, the diagram reflects both the all RRT in the various regions and the substantial differences among them. The numbers at the right side of the diagram shows the proportion of transplanted patients per region, which ranged from 51.0 to 59.5 percent and averaged 54.5 percent nationwide. According to the latest report from the Norwegian kidney registry, the national percentage there was 70.2. This figure represents a useful target. The prevalence statistics were not adjusted for either case mix or background population. Interpretations of regional differences must take that into consideration. These data should provide an incentive for regions and hospitals to review their organisations and ensure that as many kidney patients as possible is offered a transplantation.

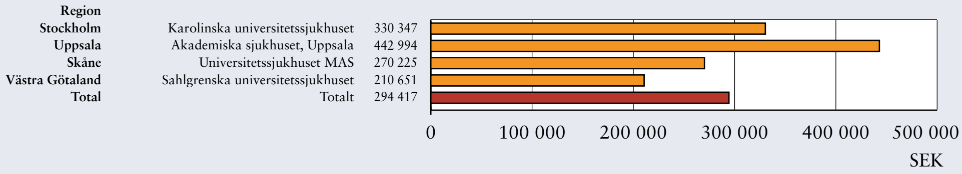


Figure 87
Hospitals

Cost per case for kidney transplantation, 2009.

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

87 Cost per case for kidney transplantation

A total of 392 renal transplantations were performed in 2009. Data for more than 90 percent of them were reported to the Swedish Case Costing Database. The database includes costs for each operation and inpatient care for the transplantation. Costs for follow-up visits or drug consumption in outpatient care were excluded, as were cost outliers. Figure 87 shows costs per case for kidney transplantation. The cost for non-outliers averaged 294 417 kronor in 2009. Differences among hospitals were considerable – anywhere from 210 000 SEK to more than twice that much. Sahlgrenska University Hospital performed most of the transplantations (38 percent) and reported the lowest cost per care event (210 650 SEK) in 2009. One third of all kidneys were from living donors. There are a number of possible reasons for the cost differentials: operating time, case mix and period of care, as well as staff size per bed and hospital. Cost calculations may also be designed in various ways. Thus, the discrepancies should be interpreted with caution.

CANCER CARE

More than 50 000 Swedes are diagnosed with cancer every year. Cancer is the second most common cause of death after cardiovascular disease. But there are many survivors – at the end of 2008, approximately 167 000 Swedes were alive who had been diagnosed since 2004. The survival prevalence is expected to increase due to better diagnosis and treatment. Cancer care, particularly treatment methods and ensuring equal access to them, is a frequently discussed topic.

We present seven indicators of care, six of them for the five common forms of cancer: breast, colon, rectal, lung and prostate. Four indicators concern two-year or five-year survival rate, one concerns active treatment of prostate cancer, and one concerns complications of cancer surgery. The final indicator reflects the assessment period for treatment of malignant head and neck tumours. The data for two-year and five-year survival rates are taken from the Swedish Cancer Registry, while the other data are taken from national healthcare quality registers.

SALAR and NBHW will publish a separate joint report of open comparisons of cancer care in 2011. The report will include a more thoroughgoing examination of the cancer care indicators.

Cancer survival rates

Relative two-year and five-year survival rates were calculated for patients diagnosed with cancer in 2002–2008 and monitored until December 2008. 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 regional differences in life expectancy have been taken into consideration. Patients were assigned to the region where they were registered at the time of diagnosis.

Survival time refers to the period between diagnosis and death. Survival time can be extended by both early detection and proper care or other post-diagnostic developments. Thus, early detection leads to a longer survival time regardless of 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. But because EUROCARE-4 relied on a different analytical method than used when calculating 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 studied 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 Scandinavian 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.

88 Colon cancer – relative five-year survival rates

Although colon and rectal cancer are commonly grouped together as colorectal cancer, their survival rates are presented separately here because of differences with respect to treatment and other factors.

Colon cancer is one of the most common types of cancer. In 2008, colon cancer accounted for 7 per cent of all cancer diagnoses in men and 8 per cent in women. Approximately 4 000 people, a slight preponderance of whom were men, were diagnosed with colon cancer in 2008. Most of them were over age 70 and very few were

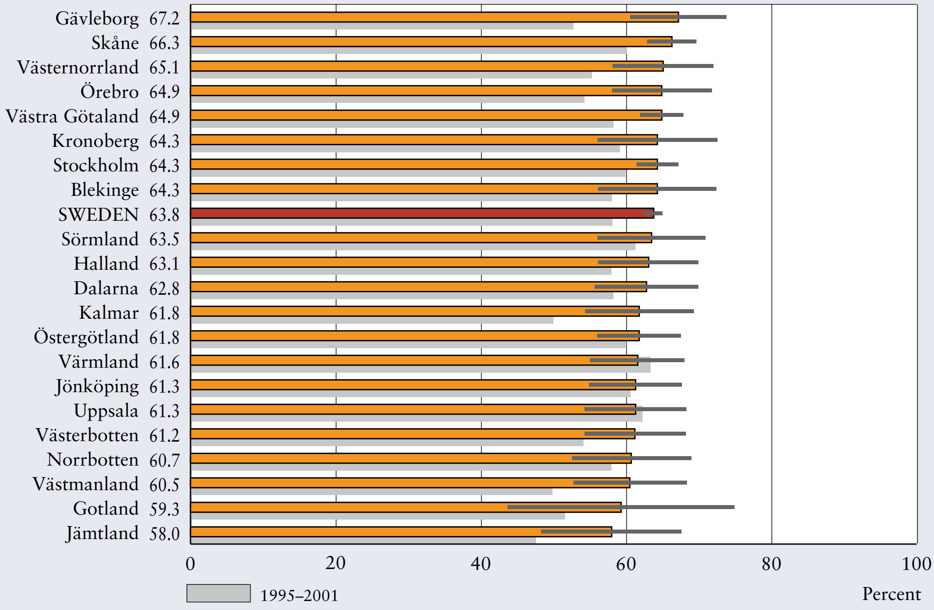


Figure 88
Women

Colon cancer – relative five-year survival rates. Patients diagnosed in 2002–2008 with follow-up until December 2008.

Source: Swedish Cancer Registry, National Board of Health and Welfare

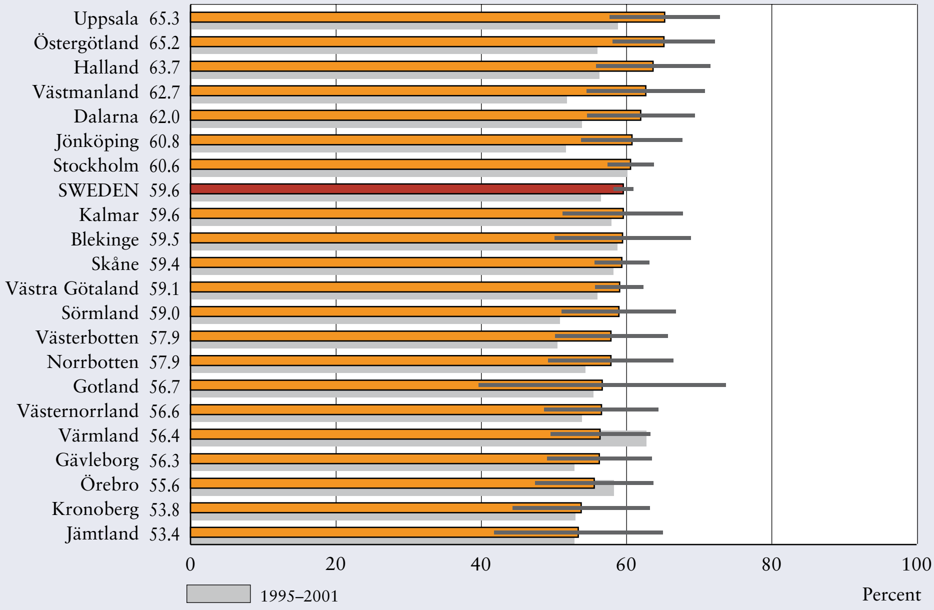


Figure 88
Men

Colon cancer – relative five-year survival rates. Patients diagnosed in 2002–2008 with follow-up until December 2008.

Source: Swedish Cancer Registry, National Board of Health and Welfare

younger than age 30. Total prevalence – the number of people who had been diagnosed with colon cancer – was approximately 27 000 at the end of 2008. More than 12 000 of them were diagnosed in 2004–2008. Over 1 800 people, approximately the same number of women and men, died of colon cancer in 2008.

The relative five-year survival rate for colon cancer was 64 per cent among women and 60 per cent among men nationwide. The regional variations were fairly large: 58–67 per cent for women, and 53–65 per cent for men. Because the number of colon cancer cases is relatively small, the survival figures for some regions are associated with greater uncertainty, as is reflected in the broad confidence interval.

89 Rectal cancer – relative five-year survival rates

Colorectal cancer is among the most common types of cancer. Rectal tumours accounted for a somewhat larger share of all cancer diagnoses in men than women in 2008, though just over 4 per cent for both sexes. Approximately 2 000, or 1 out every 4 300, people were diagnosed. 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 800 people died of rectal cancer in 2008.

The relative five-year survival rate for Sweden as a whole was 63 per cent among men and 59 per cent among women. The fact that many regions have few rectal cancer cases renders the survival figures less certain.

90 Breast cancer – relative five-year survival rates

Breast cancer is the single most common type of cancer among Swedish women, representing 29 per cent of all diagnoses in 2008. Approximately 7 000 women are diagnosed with breast cancer each year. The risk of being diagnosed with breast cancer before age 75 is approximately 10 per cent. Breast cancer is uncommon before 35–40, after which it increases with age. The majority of breast cancer patients are diagnosed before age 65.

More than 85 000 Swedish women have been diagnosed with breast cancer, and approximately 1 500 die each year. The prevalence has been increasing, though slowly, for the past few decades. Male breast cancer occurs but is rare.

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. The current figure is 88 per cent. The improvement is due to early detection by means of mammography screening, as well as better treatment methods.

While all regions now provide mammography screening, they differ in terms of when the service began and the age range of patients who are called in for the examination.

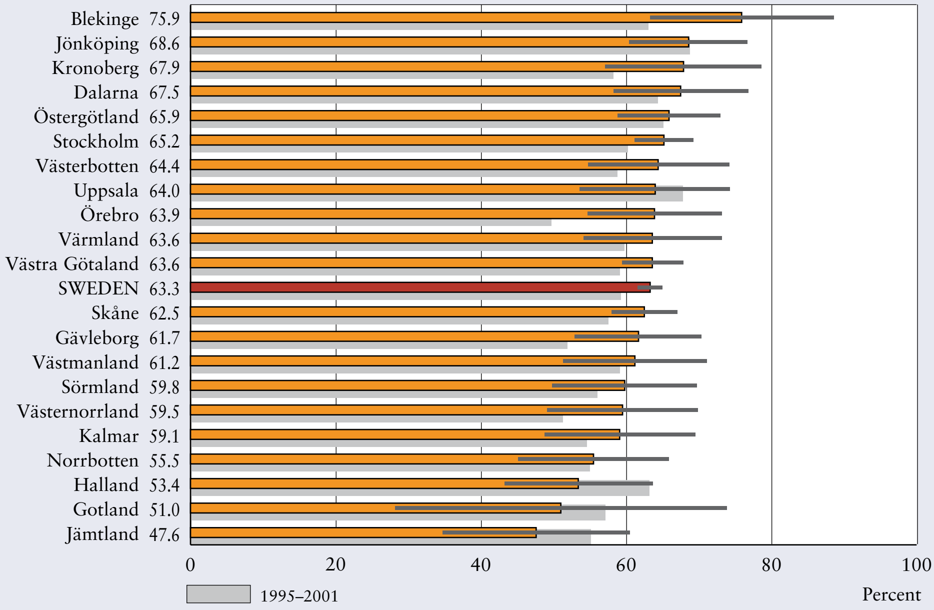


Figure 89
Women

Rectal cancer – relative five-year survival rates. Patients diagnosed in 2002–2008 with follow-up until December 2008

Source: Swedish Cancer Registry, National Board of Health and Welfare

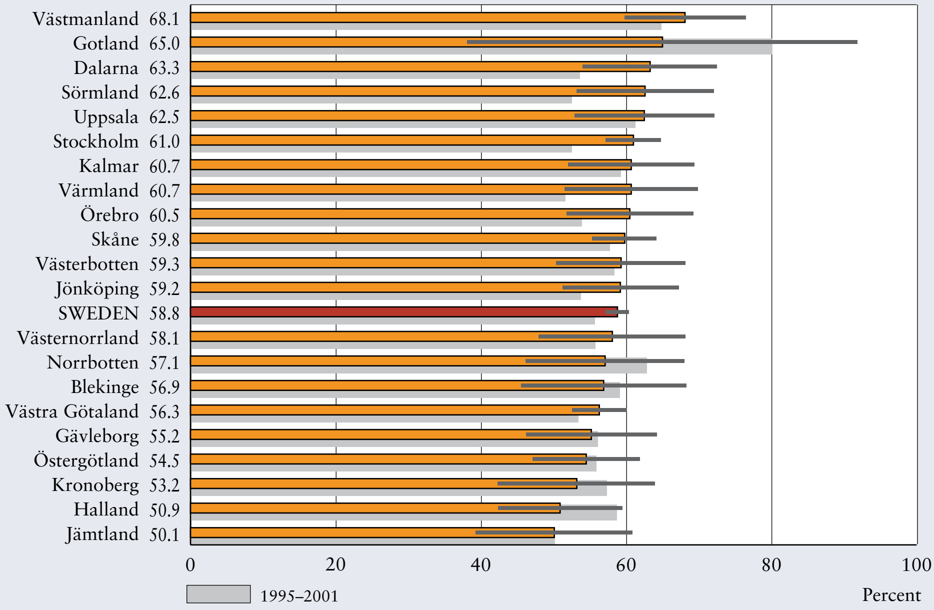


Figure 89
Men

Rectal cancer – relative five-year survival rates. Patients diagnosed in 2002–2008 with follow-up until December 2008

Source: Swedish Cancer Registry, National Board of Health and Welfare

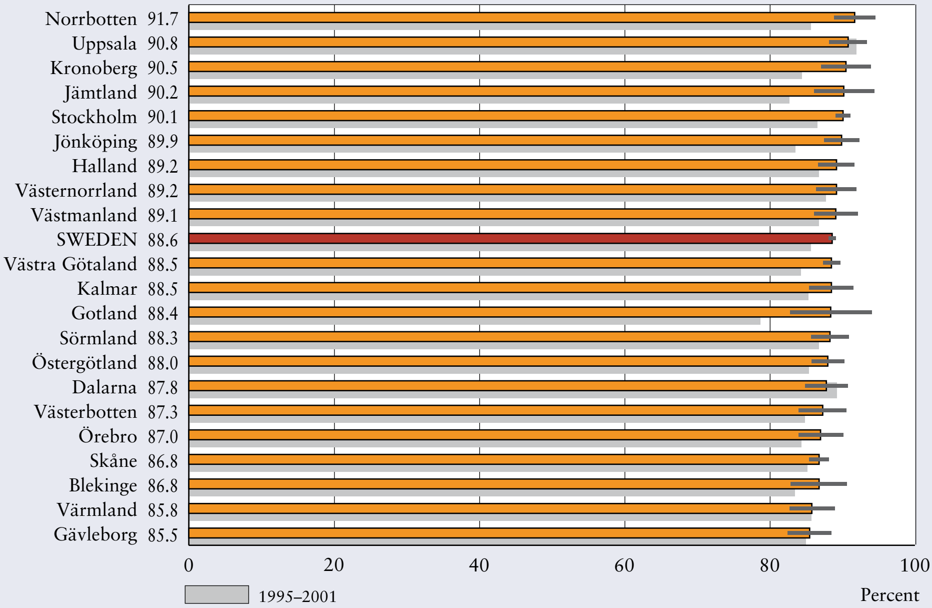


Figure 90
Women

Breast cancer – relative five-year survival rates. Patients diagnosed 2002–2008 with follow-up until December 2008.

Source: Swedish Cancer Registry, National Board of Health and Welfare

Figure 90 shows that regional five-year survival rates were in a narrow range of 85–92 per cent, suggesting that the various regions provide high-quality and fairly uniform breast cancer care. Previous analyses revealed greater regional differences, partly because regions 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 regions represent the most impressive conclusions that can be drawn from this indicator, as opposed to any regional differences.

91 Lung cancer – relative one-year, two-year and five-year survival rates

More than 3 000 Swedes develop lung cancer every year. Lung cancer is the most common cancer-related cause of death. The prognosis is very poor and the disease is extremely difficult to treat.

The number of new cases each year is rather evenly distributed between women and men. Adjusted for the different age structures of the female and male populations, the incidence per 100 000 inhabitants has tripled among women since the early 1970s. The incidence has declined by 30 per cent among men since peaking in the early 1980s. The growing incidence among women is generally ascribable to

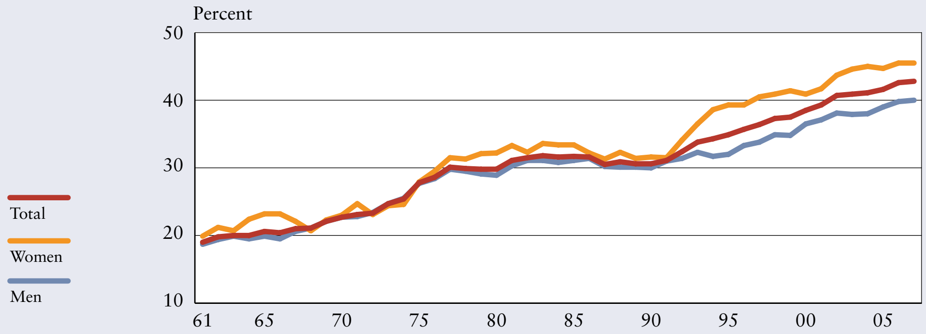


Figure 91
Sweden

Lung cancer – relative one-year survival rates.

Source: Swedish Cancer Registry, National Board of Health and Welfare

smoking. Women tend to be somewhat younger than men when first developing lung cancer.

Women live longer than men with lung cancer, but the percentage of people who recover is very small for both sexes. Figure 91 shows 1-year survival per region for two different periods of time. Approximately 45 per cent of women and 38 per cent of men currently survived for one year. The regional variations were fairly large. For the country as a whole, the survival rate increased by 4 percentage points since the previous period.

The relative 2-year survival rate was approximately 27 per cent for women and 21 per cent for men. The relative 5-year survival rate was approximately 16 per cent for women and 12 per cent for men.

While early diagnosis can affect survival rates, the disease must be primarily combated with prevention measures, particularly smoking prevention.

92 Reoperation for rectal cancer

NBHW guidelines contain a number of key quality indicators for monitoring treatment of rectal cancer. One of them is the percentage of reoperations within 30 days of initial surgery. The source is the Swedish Rectal Cancer Registry, which contains virtually every case in Sweden.

Most rectal cancer patients undergo surgery. Depending on the location and microscopic presentation of the individual tumour, as well as the general health of the patient, surgery can vary in terms of scope and risk. Complications can arise that require reoperation fairly soon after initial surgery. The frequency of reoperation may reflect how initial surgery was performed and how sick the patient was.

Sweden outperforms many other countries in terms of this indicator. But approximately one third of patients have some type of early complication, some of which

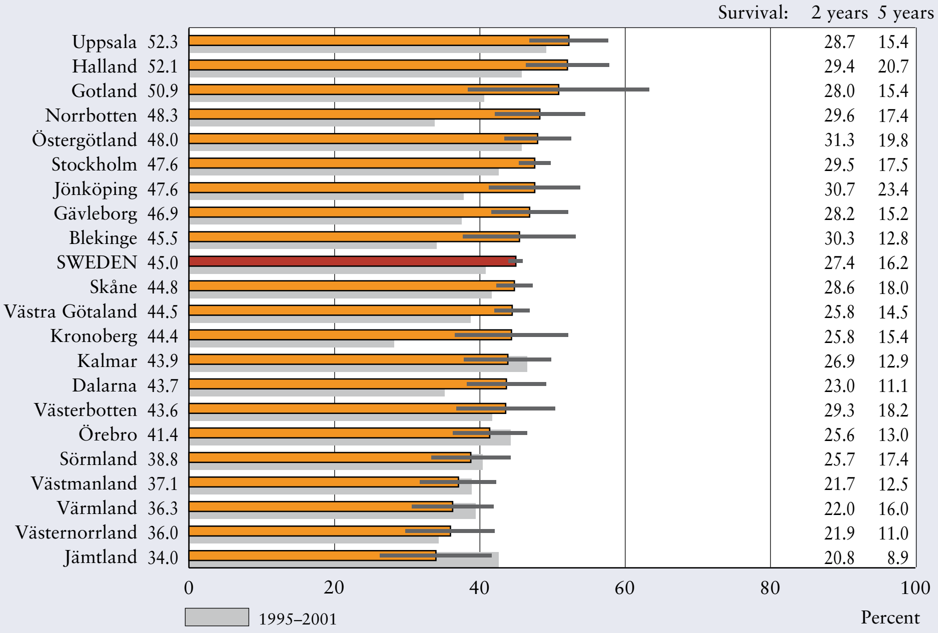


Figure 91 Women

Lung cancer – relative one-year survival rates. Patients diagnosed 2000–2008 with follow-up until December 2008.

Source: Swedish Cancer Registry, National Board of Health and Welfare

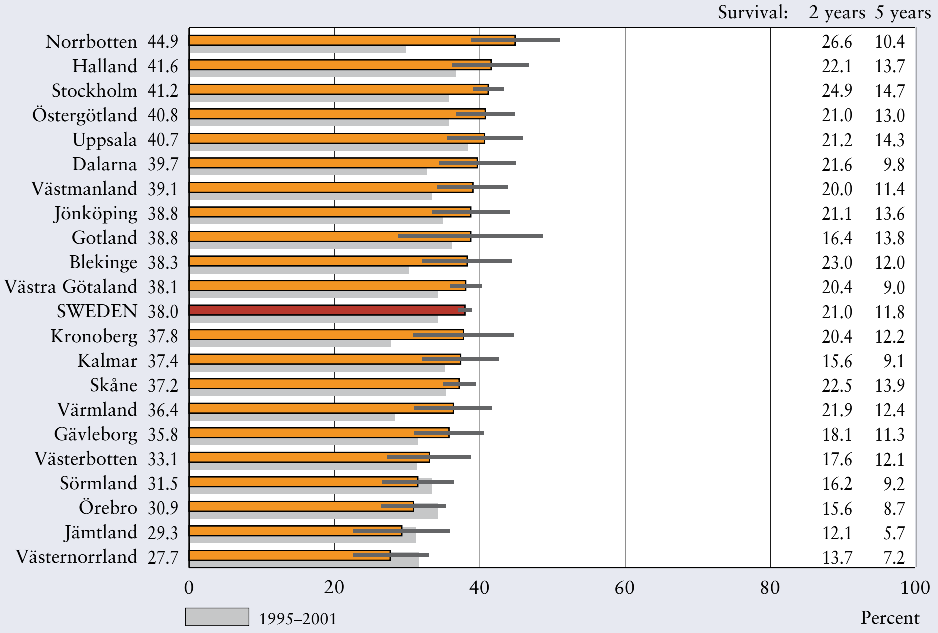


Figure 91 Men

Lung cancer – relative one-year survival rates. Patients diagnosed 2000–2008 with follow-up until December 2008.

Source: Swedish Cancer Registry, National Board of Health and Welfare

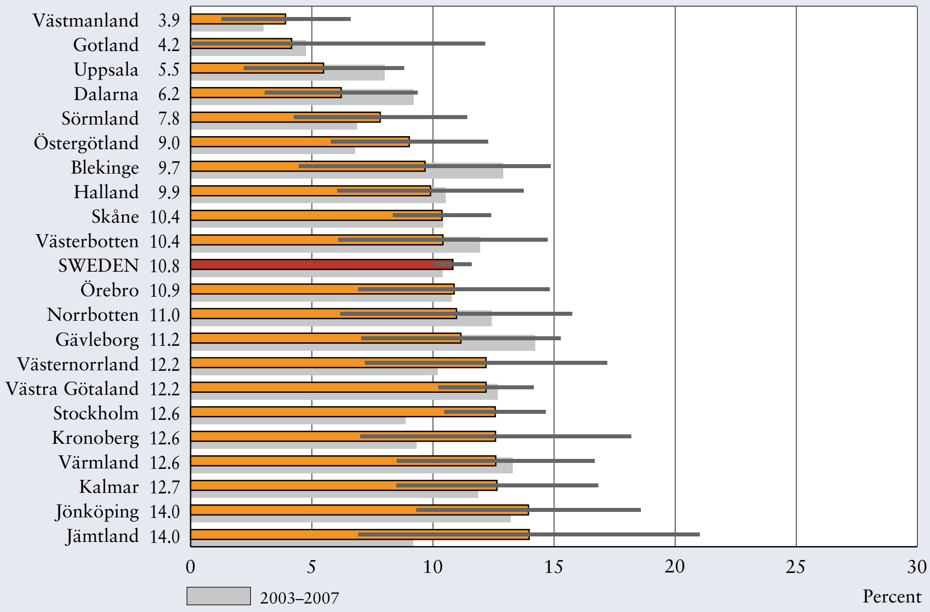


Figure 92
Total

Percentage of reoperations within 30 days after primary surgery for rectal cancer, 2005–2009.

Source: Swedish Rectal Cancer Registry

require reoperation. The frequency of reoperation within 30 days for Sweden as a whole has remained unchanged at approximately 10 per cent for a number of years. Although the percentage may appear to be high, it is not unusual compared with other countries.

The diagram shows the percentage of reoperations in 2005–2009. Of 6 327 primary operations, 685 required additional surgery. The outcome was not unexpected, although the increase for 2007 is difficult to explain. There were major regional differences at the extremes. Nine per cent of women underwent reoperation within 30 days in 2009, as opposed to 12 per cent of men.

The differences among the regions do not necessarily mean that care is better or poorer in some of them. For instance, it is possible that some hospitals report minor interventions as reoperations, whereas others do not. The data have not been validated in that respect.

93 Prostate cancer – curative treatment of patients younger than 70

Prostate cancer is the most common form of cancer among Swedish men. A total of 8 637 new cases were reported in 2008. One out of ten men are diagnosed with prostate cancer during their lifetime, and half of these men are under the age of 70 years at the time of diagnosis. The number of new cases rose quickly in the 1990s

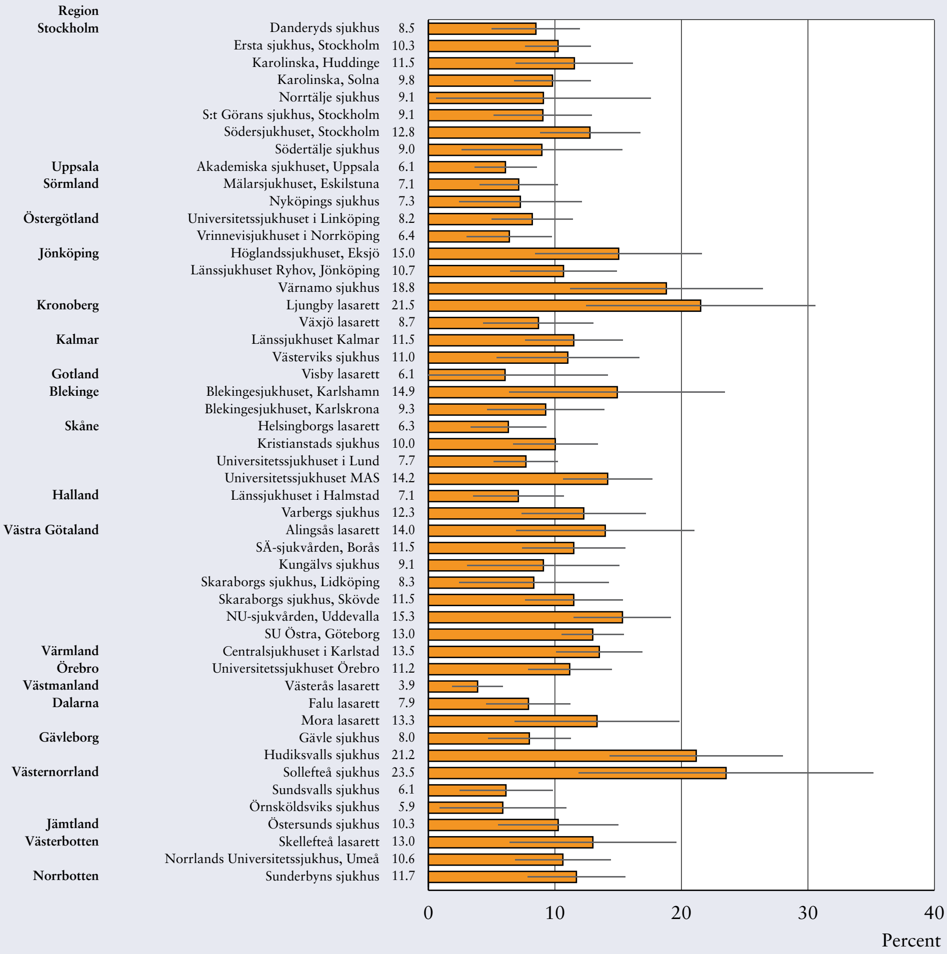


Figure 92
Hospitals

Percentage of reoperations within 30 days after primary surgery for rectal cancer, 2005–2009.

Source: Swedish Rectal Cancer Registry

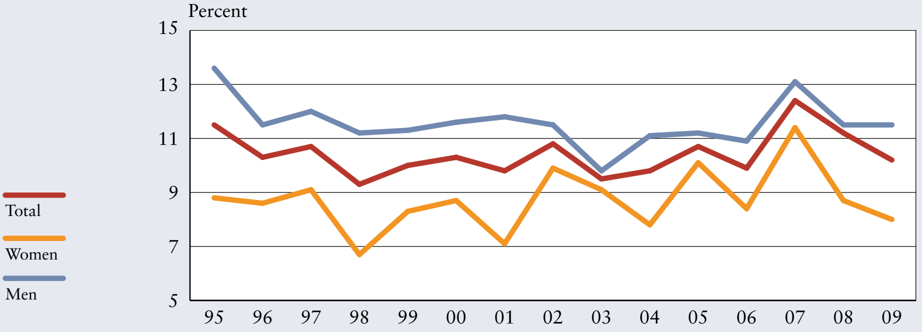


Figure 92
Sweden

Percentage of reoperations within 30 days after primary surgery for rectal cancer.

Source: Swedish Rectal Cancer Registry

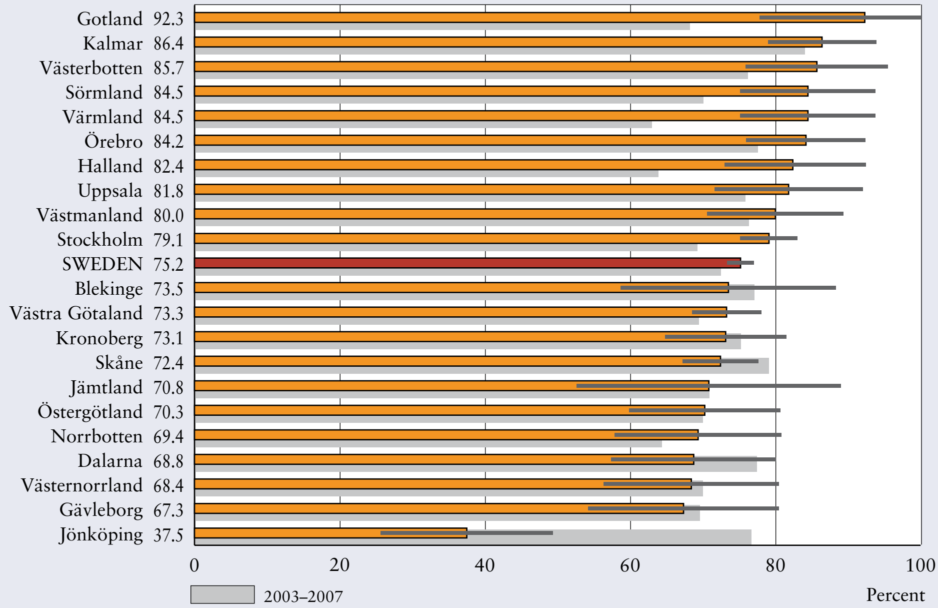


Figure 93
Men

Prostate cancer – percentage of patients under 75 with a local medium-risk or high-risk tumour who received curative treatment, 2008.

Source: National Prostate Swedish Cancer Registry of Sweden

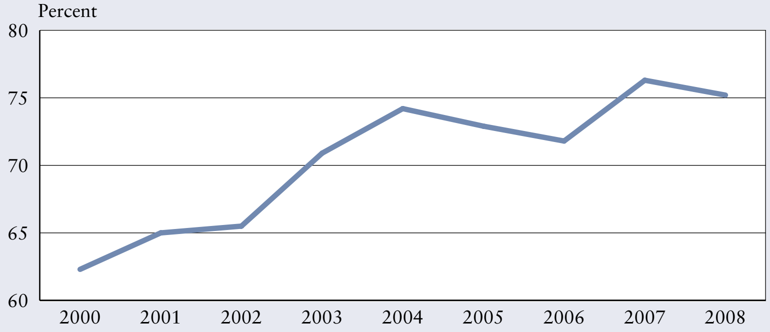


Figure 93
Sweden

Prostate cancer – percentage of patients under 75 with a local medium-risk or high-risk tumour who received curative treatment.

Source: National Prostate Swedish Cancer Registry of Sweden

and early 2000s but the increase is now less pronounced. Most of the increase, as well as younger age at detection, is due to increased use of prostate-specific antigen (PSA) testing. The number of deaths from prostate cancer has been essentially unchanged during the last decade.

The source for this indicator is the National Prostate Cancer Register (NPCR) in Sweden. The aim of the register is to monitor trends and geographical differences with respect to assessment, diagnosis, tumour characteristics and treatment. All clinics that diagnose and treat prostate cancer participate.

Since 2008, the NPCR performs a regular five-year follow-up on patients under the age of 70 years with a localised tumour. The follow-up includes several variables – such as secondary treatment, serious complications to primary treatment, recurrence and progression of disease – that reflect the quality of prostate cancer care. Questionnaires regarding adverse effects such as erectile dysfunction, urinary leakage and rectal problems are distributed before curative treatment and one and five years after treatment.

Outcomes after various treatment methods at different stages of prostate cancer is incompletely known. Publications based on Swedish studies have provided new data in recent years. SPCG-7, a Scandinavian randomised study, found that prostate specific mortality was lower among patients with locally advanced prostate cancer who received both radiotherapy and antiandrogens, than among those who received antiandrogens only. A recently published study from Gothenburg showed that PSA screening reduced prostate cancer specific mortality. Data in NPCR showed that prostate cancer specific mortality at ten years after diagnosis of locally low and intermediate risk cancers was 4 per cent.

Figure 93 shows the percentage of patients under age 75 with localised intermediate or high risk tumours who received curative treatment. The comparison covers 2 077 patients diagnosed in 2008. Data were chosen from only the most recent available year. Overall, 75 per cent of patients in these risk categories received curative treatment in Sweden. Apart from the counties of Gotland and Jönköping, there were only modest regional variations. Random fluctuations can affect outcomes for one single year much more than a five-year period.

The reason for the age limit was that men under age 75 usually have a life expectancy of more than 10 years, and previous studies have shown that in order to benefit from curative treatment a life expectancy above that is needed. Given that biologic rather than chronological age should determine treatment strategy, not all patients in this category should receive curative treatment. A 100 per cent treatment target is thus not a desirable target.

Regions that provide curative treatment to less than 70 per cent of this patient population may have a potential for improvement.

94 Time to decision of treatment – malignant head and neck tumours

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 deter-

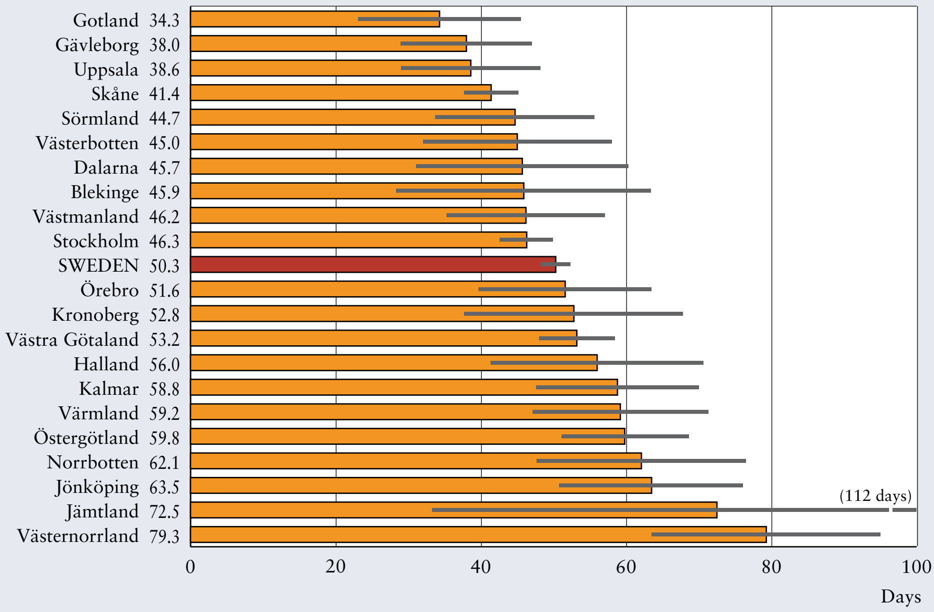


Figure 94 Time between referral and decision of treatment – malignant head and neck tumours, 2008–2009. Average number of days.

Source: Swedish Quality Register of Otorhinolaryngology

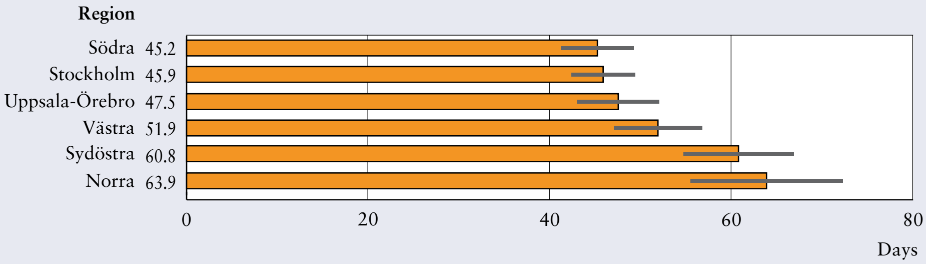


Figure 94A Time between referral and decision of treatment – malignant head and neck tumours, 2008–2009. Average number of days.

Source: Swedish Quality Register of Otorhinolaryngology

mine how long it takes to prescribe treatment after receipt of the referral. While also important, the subsequent period of time until treatment actually starts is not included in this report.

This indicator presents the length of time from receipt of a referral until treatment is prescribed for malignant head and neck tumours. That represents a large percentage of the processing time for ear, nose and throat care. This is a crucial period from the patient's point of view.

The source of the data is a sub-register of the Swedish Ear, Nose and Throat Care Quality Register. The sub-register includes every newly detected malignancy in the lip, tongue, oral cavity, throat, salivary gland, sinus cavities or larynx. Because reporting to the sub-register is mandatory, the participation rate may be 100 per cent.

Figure 94 presents the average number of days per region from receipt of a referral until treatment is prescribed. The comparison covers 2 223 cases, approximately 90 per cent of the patient population in 2008–2009. Patients were assigned to the region in which they were living. Considering that some of the care process from receipt of the referral until treatment is prescribed also involves regional clinics, assessment periods per region are also shown in a separate diagram.

The assessment period for the country as a whole averaged 50 days. The averages for the various county councils ranged from 38 to 79 days, whereas the regional averages were between 45 and 64 days. 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

This year's report contains four additional psychiatric indicators. Three of them are taken from a NBHW report entitled *Öppna jämförelser och utvärdering 2010 Psykiatrisk vård* (Open Comparisons and Evaluation 2010, Psychiatric Care), published in June. The report contained some 30 indicators based on NBHW health data registers, as well as the National Waiting Times in Health Care database and economic statistics from SALAR. One of the new indicators was taken from the National Quality Register for Forensic Psychiatric Care.

Specialised psychiatry accounts for approximately 10 per cent (17.6 billion kronor, or 1 900 kronor per inhabitant, in 2008) of county council healthcare costs. That does not include psychological interventions in primary care. The percentage of total healthcare costs has been stable over the past five years. Nevertheless, the regional differences are considerable. Descriptive systems and indicators need improvement for both psychological disabilities in general and psychiatric care in particular.

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 highly inadequate, particular when it comes to data about diagnoses and measures associated with outpatient appointments. The lack of information about outpatient psychiatric care is partly due to the inability of the NBHW to obtain data about non-medical appointments under the current regulations. Although reporting to voluntary quality registers has improved, the participation rate is generally low. For that reason, this year's *Open Comparisons* has not used any quality register for psychiatric care with the exception of the National Quality Register for Forensic Psychiatric Care.

NBHW pursues a number of efforts aimed at expanding reporting to the Patient Register. The focus is on up-to-dateness, better reporting of diagnoses, institutionalisation and the ability to describe treatment by healthcare professionals other than doctors. Based on an agreement with the Government, SALAR is conducting a comprehensive project to develop psychiatric quality registers.

95 Suicide among the general population

A directive took effect on 1 February 2006 that specifies the duty pursuant to Sweden's Lex Maria system to report suicides committed within four weeks of the victim's last contact with the healthcare system. Among the inadequacies identified were that systematic suicide assessments were insufficient, documentation was incomplete and clinics did not comply with the healthcare programmes of their regions.

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 difficult venture.

Sweden has an average suicide rate compared to the rest of Europe. Suicide is for instance more common in Denmark and Finland than in Sweden. The number of Swedes, particularly men, who commit suicide has declined since the early 1980s. However suicide is still more common among men than among women. A total of 315 women and 855 men committed suicide in 2008. In addition, there were 107 deaths with undetermined intent among women and 199 among men. Finally, approximately 10 000 people were institutionalised in 2008 due to intentionally self-destructive behaviour.

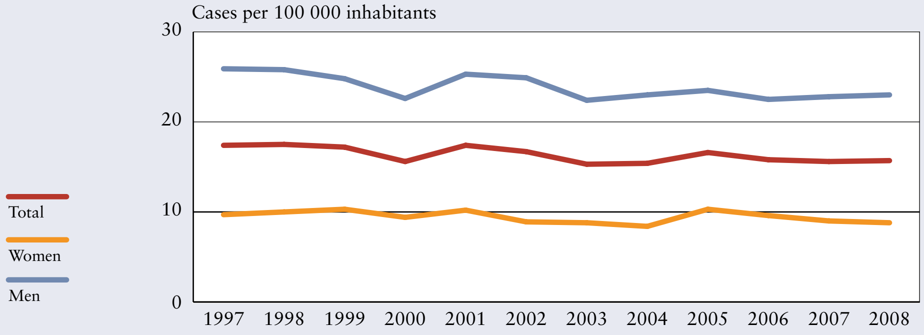


Figure 95
Sweden

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

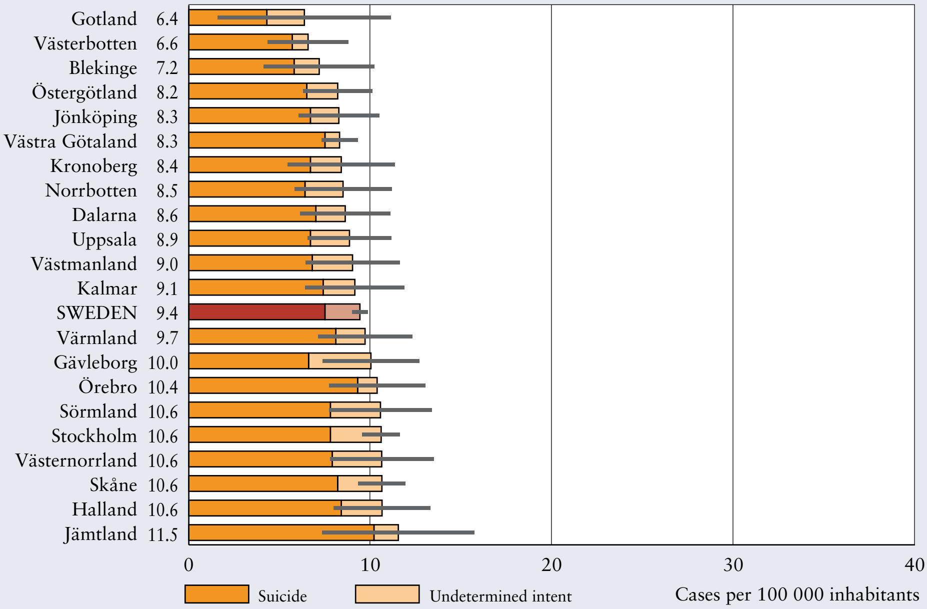


Figure 95
Women

Number of suicides and deaths with undetermined intent per 100 000 inhabitants, 2005–2008. Age-standardised.

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

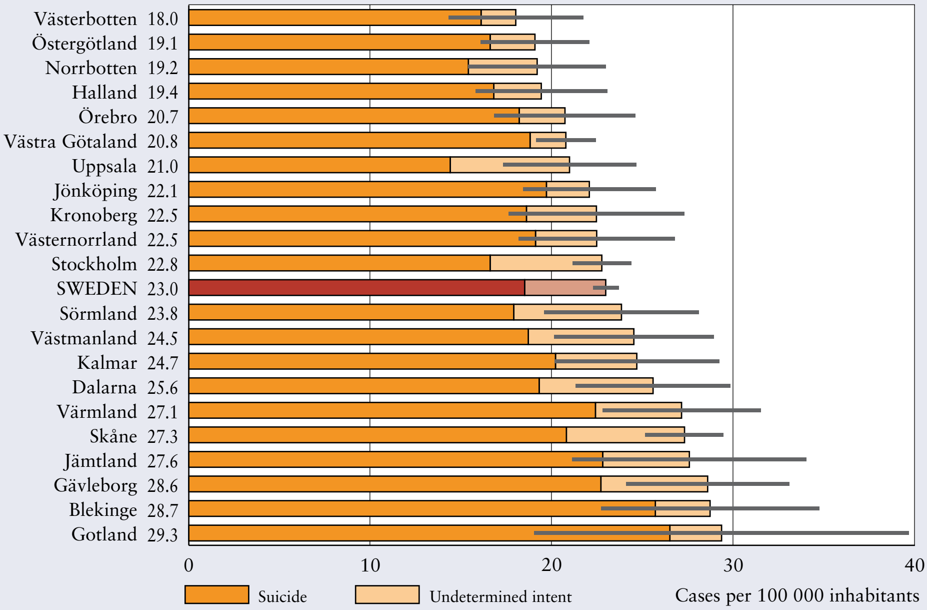


Figure 95
Men

Number of suicides and deaths with undetermined intent per 100 000 inhabitants, 2005–2008. Age-standardised.

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

Figure 95 shows the number of suicides per 100 000 inhabitants in 2005–2008. Suicides and deaths with undetermined intent totalled 5 903 for the whole period. For women and men altogether, the regional variation was 12–19 cases per 100 000 inhabitants (not presented).

96 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.

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.

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 above age 65 account for more than half of their use.

The indicator reflects the number of regular users, those who average at least half a defined daily dose of benzodiazepines per day for a year. High consumption is defined as at least 1½ defined daily doses per day. The source is the Prescribed Drug Register, to which all prescriptions picked up are reported.

A total of 131 000 women and 81 000 men age 20–79 picked up benzodiazepines on a regular basis in 2009. Figure 96 shows that both regular use and high consumption were greater among women than men. The regional variations were substantial. One unanswered question is the extent to which differences in treatment traditions or the psychological health of the general population account for the variations.

Use of benzodiazepines nationwide was unchanged from the previous report. Consumption increased in some regions and decreased in others.

97 Polypharmacy – elderly who consume three or more psychopharmacological drugs

Concurrent treatment with three or more psychopharmacological drugs, either regularly or on demand, 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 NBHW indicators for good drug therapy in the elderly.

Figure 97 presents the proportion of elderly among the entire population who were consuming three or more psychopharmacological drugs on 31 December 2009: 5.4

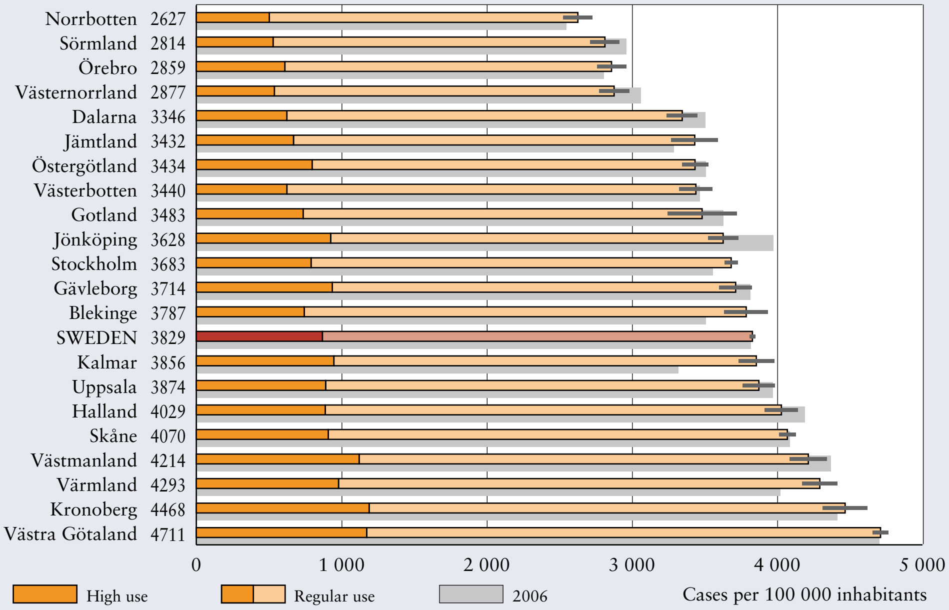


Figure 96
Women

Number of people age 20–79 with regular and high use of soporifics or sedatives per 100 000 inhabitants, 2009. Age-standardised.

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

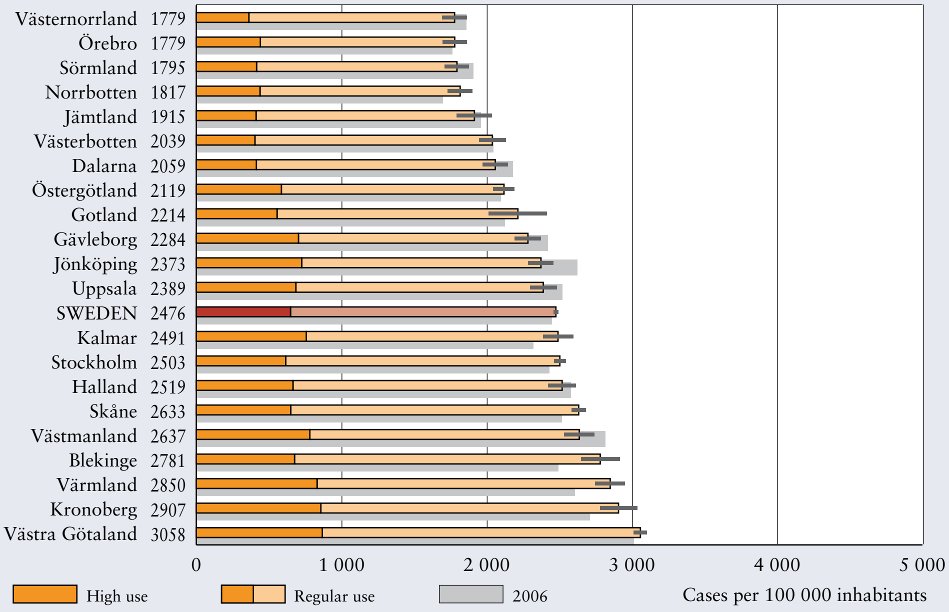


Figure 96
Men

Number of people age 20–79 with regular and high use of soporifics or sedatives per 100 000 inhabitants, 2009. Age-standardised.

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

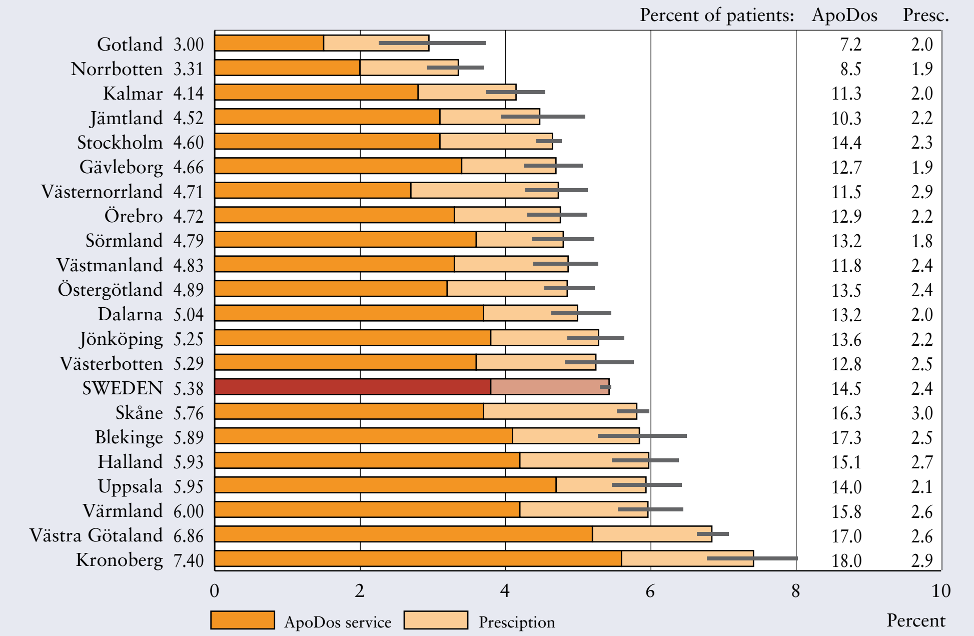


Figure 97
Women

Percentage of people age 80 and older who were consuming three or more psychopharmacological drugs concurrently, 31 December 2009.

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

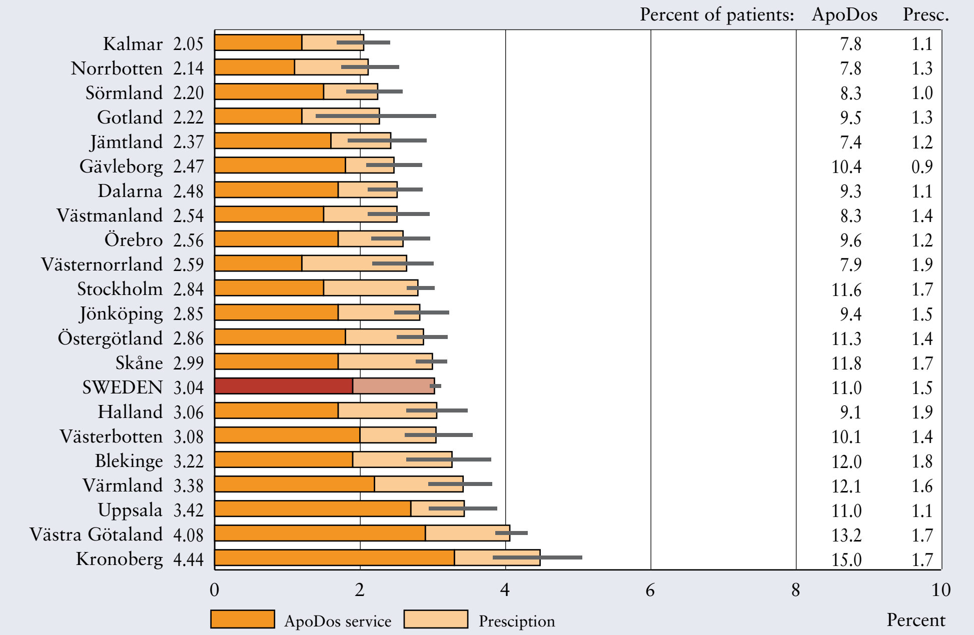


Figure 97
Men

Percentage of people age 80 and older who were consuming three or more psychopharmacological drugs concurrently, 31 December 2009.

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

per cent of women and 3 per cent of men, or almost 22 400 people. The nationwide percentages were the same as in 2008. The regional variations were 3–7 per cent for women and 2–4 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, 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 region to region. Uppsala and Västra Götaland had the highest percentages, whereas Gotland and Stockholm had the lowest. The breakdown 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 13.5 per cent of ApoDos patients were consuming three or more psychopharmacological drugs, as opposed to 2.1 per cent of patients who picked up their medications at the prescription counter. The regional variations were primarily due to ApoDos patients (7.8–17.1 per cent from one region to another).

98 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 fatigue 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 sleeping disturbances in the elderly. Assuming the absence of an underlying cause that demands another medication, NBHW indicators for good drug therapy in the elderly point to zopiclone as the most appropriate choice for elderly patients due to its relative short half life.

Almost 103 000 Swedes age 80 and older were using soporifics on 31 December 2009. According to Figure 98, zopiclone accounted for only half of all soporifics consumed by members of that age group. There were substantial variations among the regions.

99 Avoidable inpatient medical care for people with a psychiatric diagnosis

This indicator reflects the quality of outpatient care, such as primary care and preventive public health efforts, for certain specific conditions. The assumption is that unnecessary hospitalisations can be avoided if patients with the selected conditions receive proper outpatient medical care. A detailed description of the indicator ap-

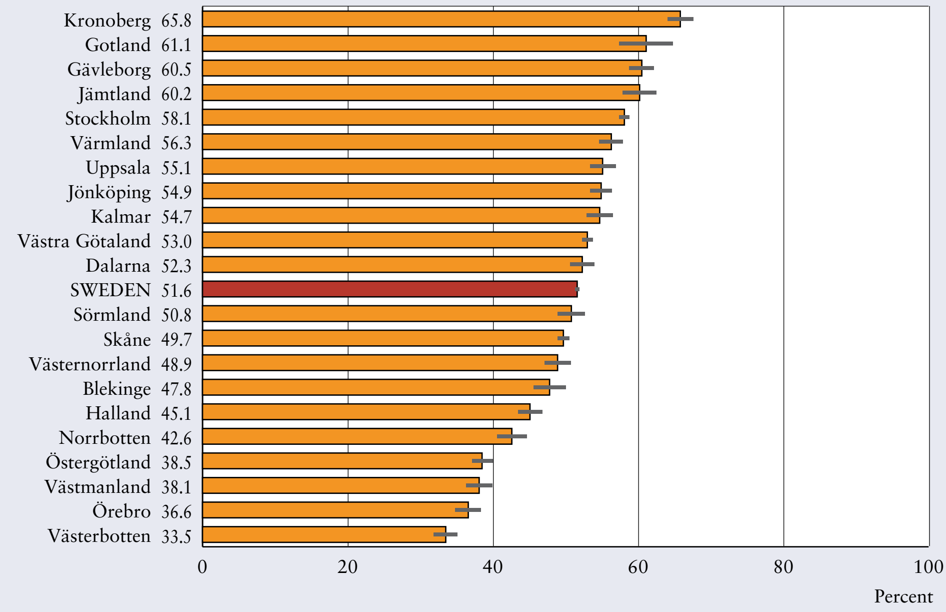


Figure 98 Percentage of soporific users who were using appropriate soporifics (zopiklon), 31 December 2009. Age 80 and older.

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

pears on page 46. The same indicator is presented here, but for people previously admitted to inpatient care with a psychiatric diagnosis.

Based on 1999 data, Figure 99 shows the number of people with avoidable hospital admissions per 100 000 inhabitants age 20–59. Of the approximate 110 000 cases over the past five years in which the primary diagnosis was psychiatric, 2 423 had avoidable hospital admissions. Some 20 000 people, approximately the same number of women as men, among the entire population had avoidable hospital admissions.

The percentage of avoidable admissions was considerably higher among people who had been treated for psychiatric diagnoses. Among the reasons may be that the medical condition was detected later, treatment took longer and patients were not as good at complying with their regimens. In addition, this patient population has a higher occurrence of lifestyle risk factors.

Generally speaking, men had more avoidable hospital admissions. The higher figures for men are probably due to a higher incidence of the medical conditions included, rather than poorer outpatient care.

People with a serious psychological disturbance who have difficulty complying with medical treatment in outpatient care may be hospitalised instead. The reasons that

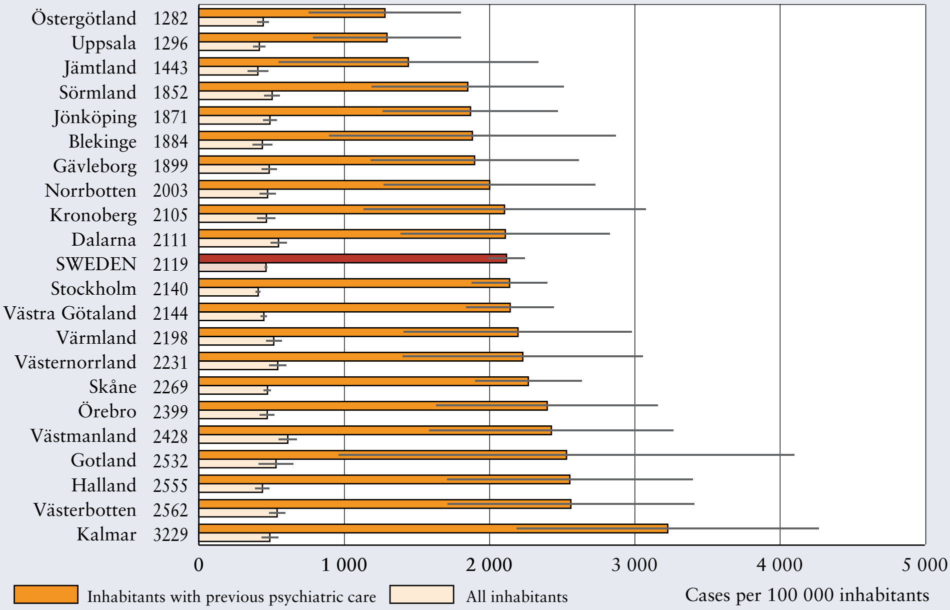


Figure 99 Women Number of people with previous psychiatric care age 20–59 with avoidable non-psychiatric admissions per 100 000 inhabitants, 2009.

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

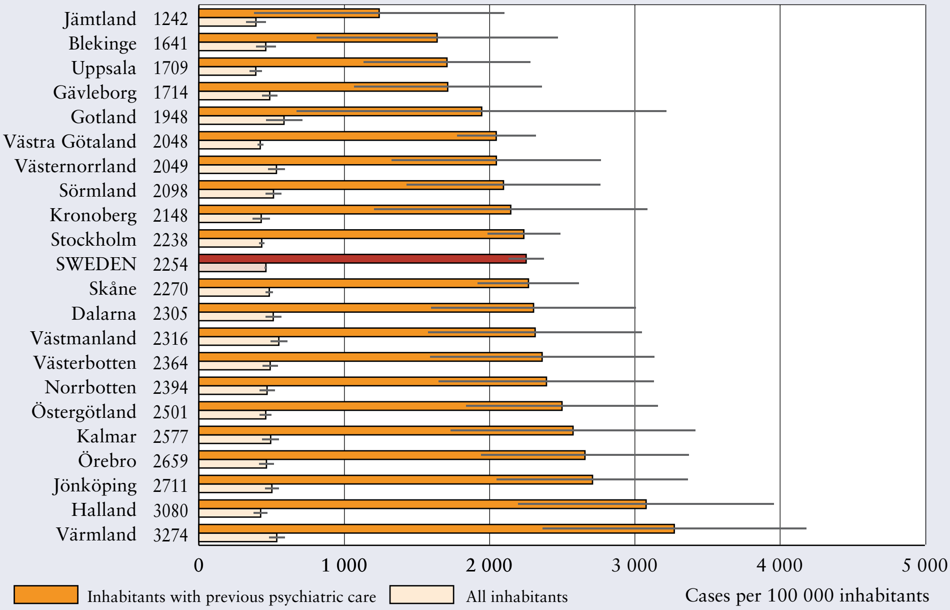


Figure 99 Men Number of people with previous psychiatric care age 20–59 with avoidable non-psychiatric admissions per 100 000 inhabitants, 2009.

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

patients with a psychiatric diagnosis are more likely to receive inpatient medical care deserve further study.

The occurrence of certain psychiatric disorders may vary from region to region 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. That applies to both medical and psychiatric care. Such variables may have affected regional results.

100 Readmission within 14 and 28 days following 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 psychological 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 well-coordinated monitoring and outpatient care. Measuring readmission within one month sheds light on the quality of inpatient care.

Figure 100 presents the percentage of patients with schizophrenia who were readmitted to psychiatric care in 2006–2008. The use of a cumulative annual average over three years reduces the statistical uncertainty associated with a relatively few number of cases. An average of 1 900 women and 2 300 men age 20–59 were treated each year for schizophrenia.

On a nationwide basis, more than 11 per cent of patients were readmitted within 14 days and more than 16 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 difficult. Given differing criteria for admission to inpatient care, the regional variations are also hard to interpret. The indicator needs some work before it can measure quality by shedding light on the degree to which readmission is amenable to influence.

101 Readmission within 3 and 6 months following treament 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 psychological interventions in schizophrenia.

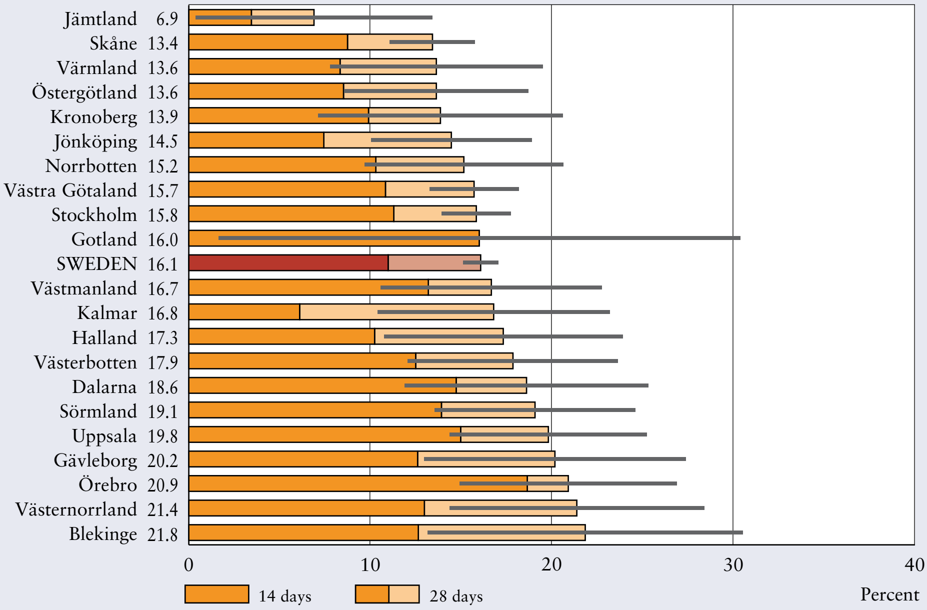


Figure 100
Women

Percentage of patients age 20–55 who were readmitted within 14 or 28 days after inpatient care for schizophrenia, 2006–2008.

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

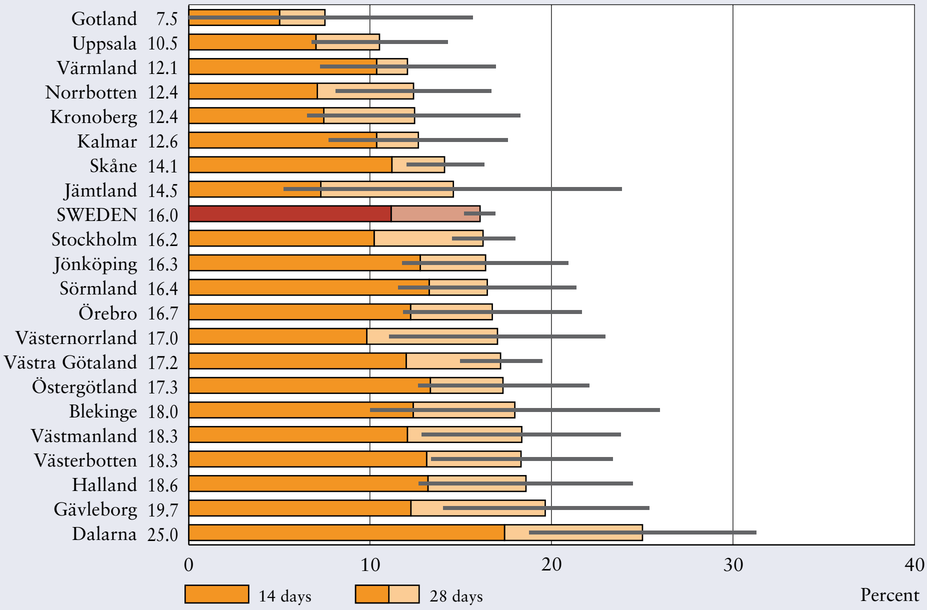


Figure 100
Men

Percentage of patients age 20–55 who were readmitted within 14 or 28 days after inpatient care for schizophrenia, 2006–2008.

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

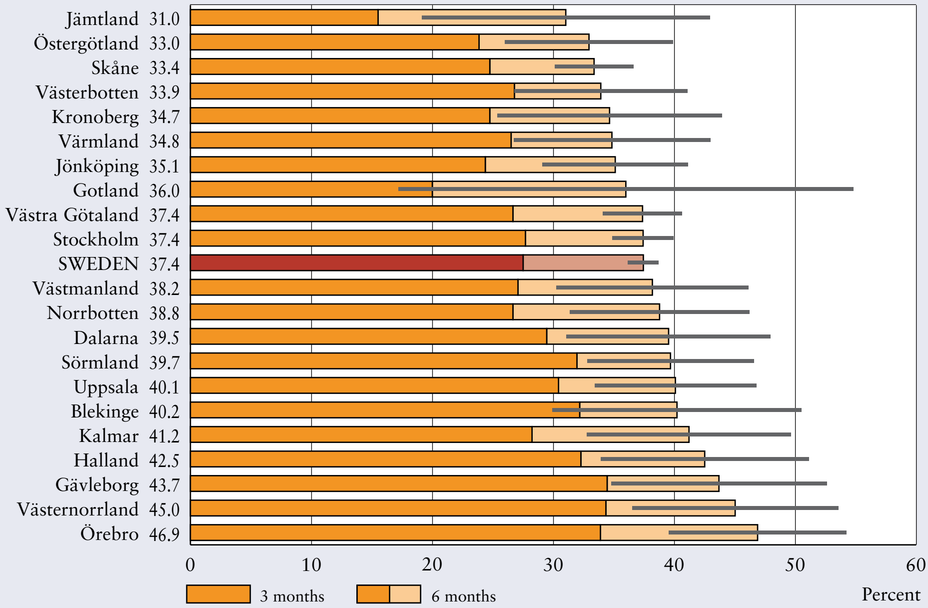


Figure 101
Women

Percentage of patients age 20–55 who were readmitted within 3 or 6 months after inpatient care for schizophrenia, 2006–2008.

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

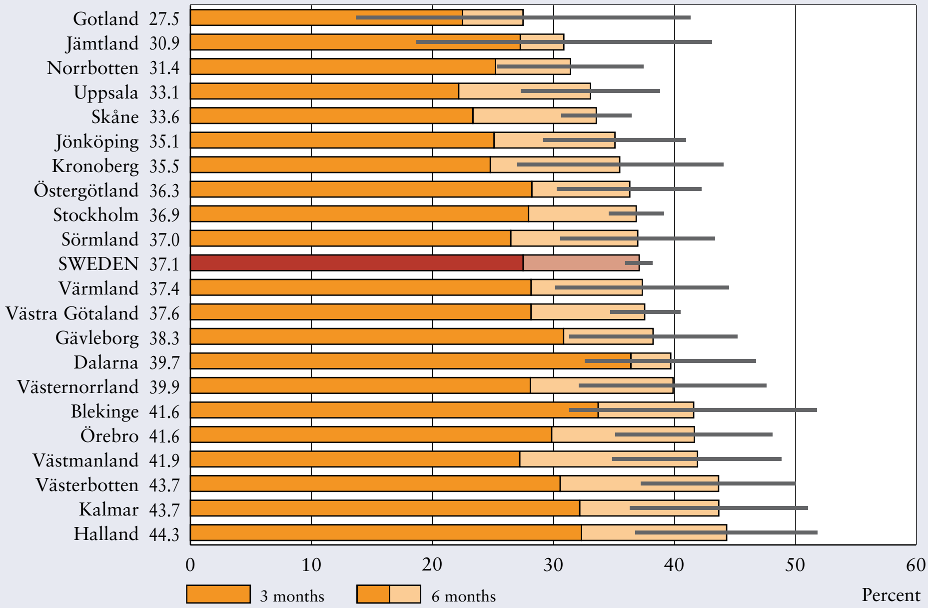


Figure 101
Men

Percentage of patients age 20–55 who were readmitted within 3 or 6 months after inpatient care for schizophrenia, 2006–2008.

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

Figure 101 presents the percentage of patients with schizophrenia who were readmitted to psychiatric care in in 2006–2008. The use of a cumulative annual average over three years reduces the statistical uncertainty associated with a relatively few number of cases. An average of 1 900 women and 2 300 men age 20-59 were treated each year for schizophrenia.

Almost 28 per cent of patients were readmitted within 3 months and more than 37 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 difficult. Given differing criteria for admission to inpatient care and the structure of outpatient care, the regional variations are also hard to interpret. The indicator needs some work before it can measure the quality of outpatient psychiatric care, or its interaction with municipal and social service interventions, by shedding light on the degree to which readmission can be reduced.

102 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 family life or career.

While lithium does not wholly eliminate the risk of recurrence, any episodes are usually shorter and less severe. Suicid rates are lower and cardiovascular deaths fewer. Many patients experience adverse effects, such as fine hand tremor and metabolic disturbances, from lithium. Impaired renal function is common as the result of long-term therapy.

Figure 102 presents the percentage of patients who received regular lithium treatment in 2008 and continued in 2009. The data, which were taken from the Prescribed Drug Register, show 83 per cent for both women and men. Approximately 8 300 women and 5 700 men were given regular therapy in 2008. The regional variations, particularly for women, were modest. The right hand column of the diagram shows that the number of patients receiving lithium differed considerably from region to region.

According to the national guidelines, lithium is effective in preventing recurrence of manic and depressive episodes. The indicator, which attempts to reflect compliance with preventive lithium therapy, is a revised version of the one used in the guidelines for treating depressive and anxiety disorders. Because some patients benefit by termination of therapy and the use of another medication instead, full compliance is not a desirable target.

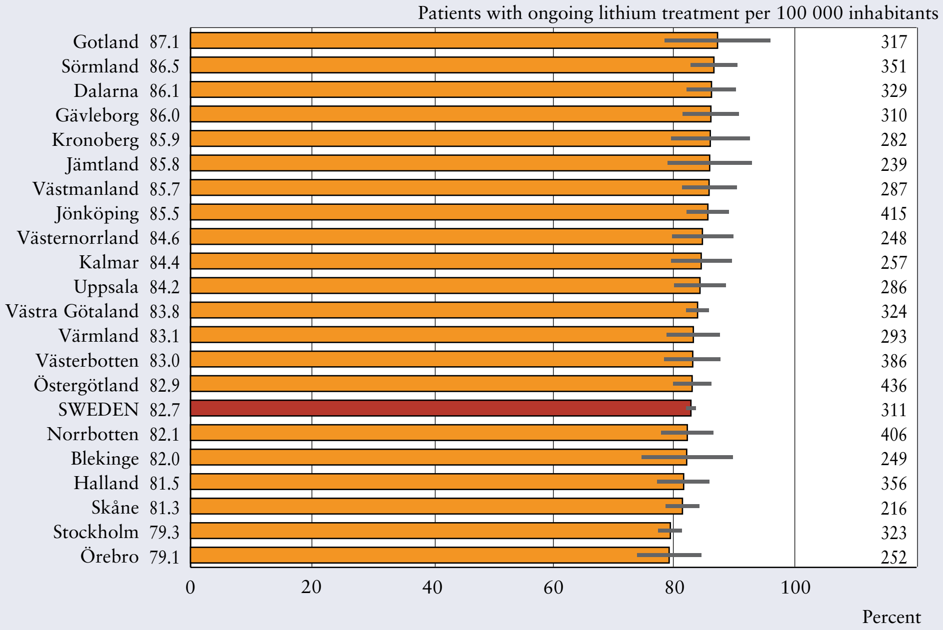


Figure 102
Women

Percentage of patients age 18 and older with ongoing lithium therapy who continued treatment in 2009. Age-standardised.

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

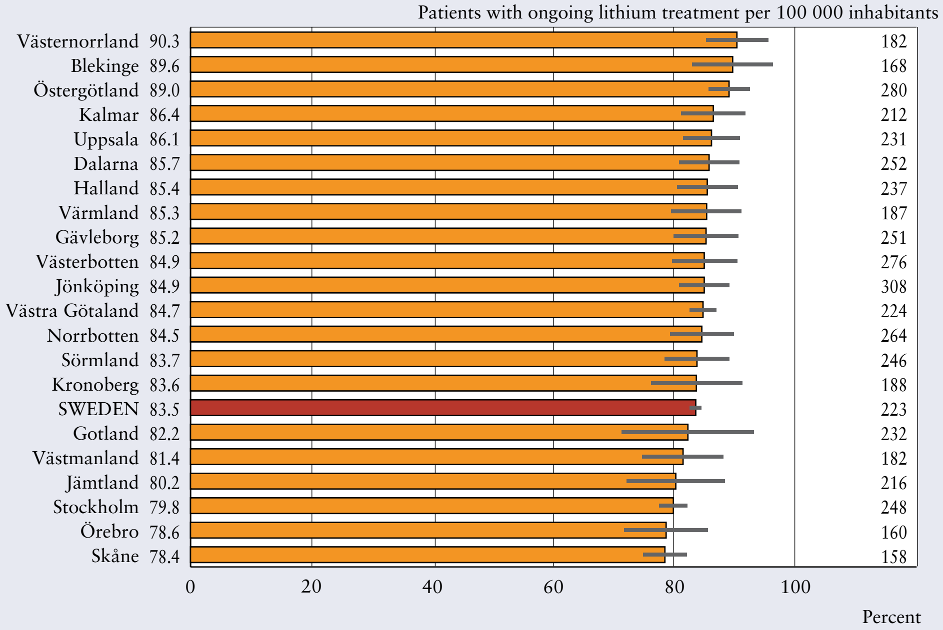


Figure 102
Men

Percentage of patients age 18 and older with ongoing lithium therapy who continued treatment in 2009. Age-standardised.

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

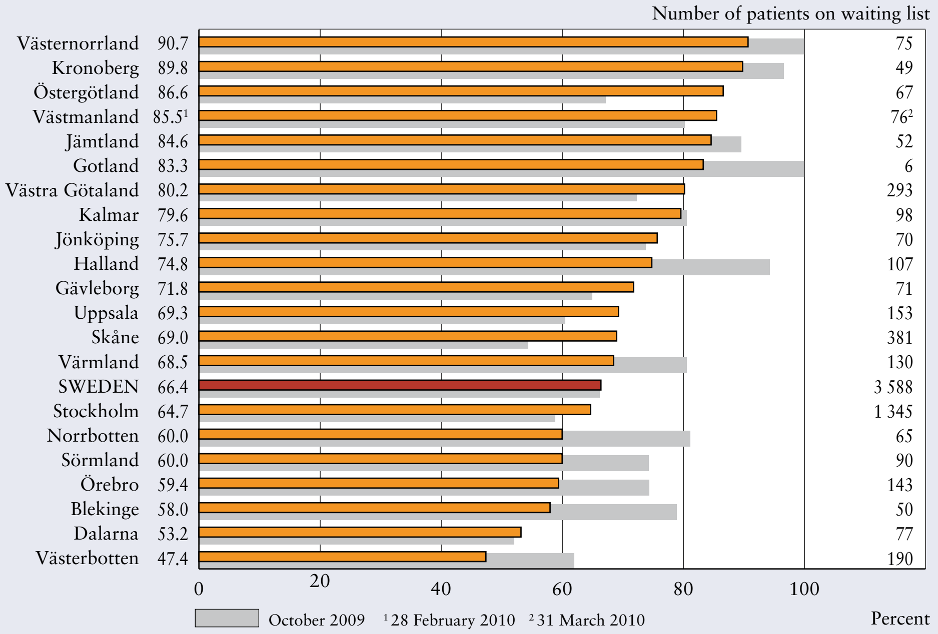


Diagram 103 Appointments at child and adolescent psychiatric clinics – percentage of patients with waiting times longer than 30 days of everyone on the waiting list, 31 March 2010.

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

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 receive lithium therapy. While the registers show how many people are in drug therapy, the total number of bipolar patients remains uncertain.

103 Waiting times no longer than 30 days for appointments at child and adolescent psychiatric clinics

SALAR and the Government reached agreement in February 2009 on a stronger guarantee for child and adolescent psychiatric care. An initial appointment at a specialised child and adolescent psychiatric clinic is to be available within 30 days, as opposed to the 90 days specified by the national care guarantee. Further assessment or treatment is to be available within 60 days.

Financial incentives are provided for regions that reach the above availability goals. The target for initial appointments was 80 per cent for 2009 and 90 per cent for 2010. Patients who chose to wait longer are excluded from the calculation.

On 31 October 2009, the various regions reported fulfilment of the goal for initial appointments. All regions except one reached the goal. Nineteen regions met the goal for further assessment or treatment.

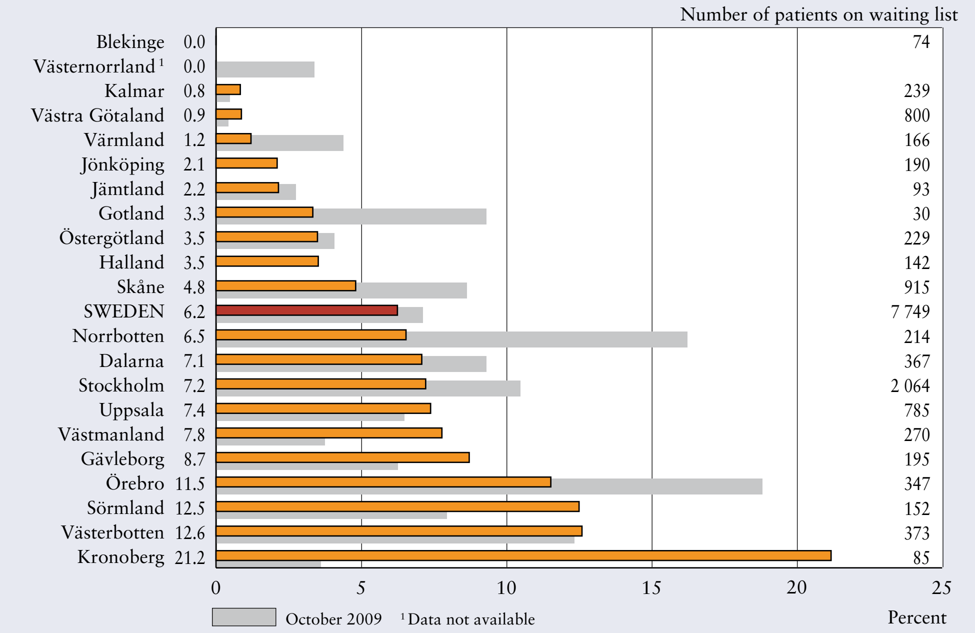


Figure 104 Appointments at adult psychiatric clinics – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

Figure 103 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 2010, including those who were doing so of their own volition or for medical reasons. The results were 66 per cent nationwide.

Some 3 500 patients were waiting for an initial appointment, approximately 2 400 no longer than 30 days. The participation rate was high.

104 Waiting times longer than 90 days for appointments at adult psychiatric clinics

The proportion of adults nationwide who had been waiting longer than 90 days for appointments at psychiatric clinics held steady at around 6 per cent over the past year. The regions ranged from 0 to 21 per cent.

One region met the national care guarantee for all patients. In a number of other regions, only a few patients had been waiting for longer than 90 days For the country as a whole, just under 500 of 7 700 patients had been waiting that long. Many regions showed a definite improvement since the last report, whereas others reported poorer results.

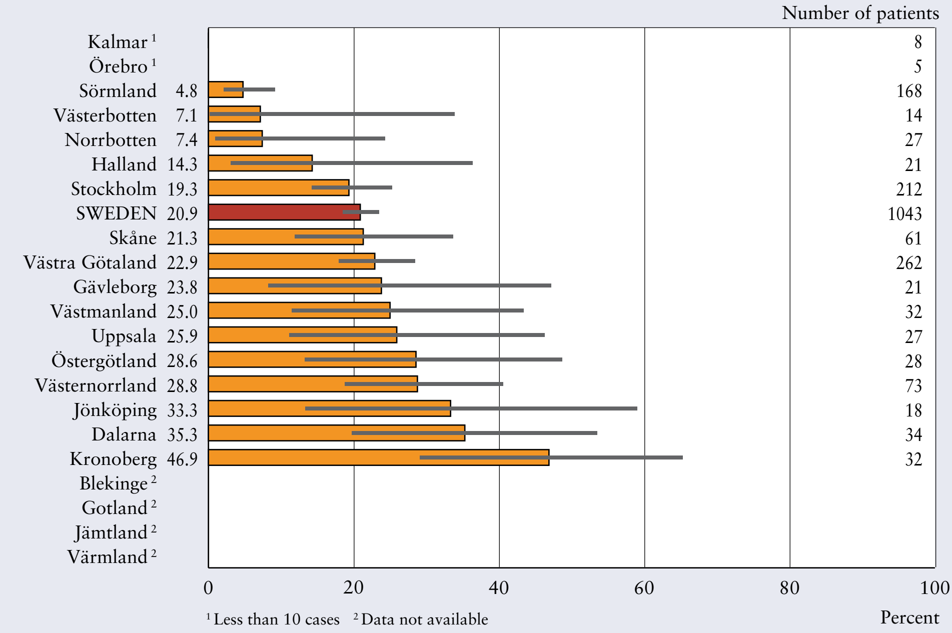


Figure 105 Percentage of recidivists during forensic psychiatric care, 2009.

Source: National Quality Register for Forensic Psychiatric Care

105 Recidivism 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 enables the growth of trusting relationships between patients and caregivers. The compulsory nature of the care makes it particularly important that the patient is willing to cooperate. 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 grow and improve.

Preventing recidivism is a core objective of forensic psychiatric care. This indicator concerns recidivism during the period of care. Access to criminal records would have been desirable in order to follow up on patients after discharge, but is not available under current legislation. The data are based on self-reporting instead. Recidivism includes any reports to the police or grounds for such reports. Violence against caregivers or third parties, as well as other types of criminality, may be involved.

The source of data is the National Quality Register for Forensic Psychiatric Care. Thirty one clinics treat 94 per cent of all forensic psychiatric patients. The remainder are treated at general psychiatric clinics. Twenty six of the 31 clinics reported to the register in 2009. A total of 1 182 patients were reported, representing a participation rate of 81 per cent at the individual level. Almost 90 per cent of the patients in the register are men.

Figure 105 shows the percentage of patients in 2009 who had been recidivists during the period of care. The comparison included 1 043 patients. The recidivism rate was just under 21 per cent nationwide.

Patients were assigned to the region of the clinic at which they were treated. Because a number of regions and clinics had only a few cases, there is great statistical uncertainty. This is the first time that such a follow-up has been performed. While the target is zero recidivism, no expected results can be specified at this point.

SURGERY

This set of indicators concerns surgery. In addition to outcome measures, data concerning waiting times and cost per operation are included. All of the indicators appeared in last year's report. New surgical indicators are presented under *Gynaecological Care*.

106 Reoperation for inguinal hernia

Inguinal hernia surgery is the most common general surgical procedure in Sweden. Almost 20 000 procedures are performed every year. Men are much more likely than women to develop an inguinal hernia and account for 92 per cent of all operations.

Successful surgery is uncomplicated, requiring approximately one week of absence from work, followed by freedom from complaints. But inguinal hernia surgery can lead to recurrence of the hernia and severe chronic pain conditions or feelings of discomfort. There was a time when close to 20 per cent of all operated patients had a recurrence of hernia. Newer surgical methods and materials have sharply reduced the recurrence rate.

This indicator reflects the frequency of successful surgery – the percentage of procedures that did not lead to reoperation within five years in accordance with Kaplan Meier statistics. The comparison is based on operations reported to the Swedish Hernia Register for 2005–2009. The register had almost 14 000 operations in 2008, representing a participation rate of just under 80 per cent. The regions ranged from 70 to 86 per cent. The location of the clinic, not the patient's region of domicile, determines how an operation is classified.

According to Figure 106, differences emerged among the various regions. The nationwide results were essentially unchanged from the previous report. There were major variations from hospital to hospital. The differences among regions and hos-

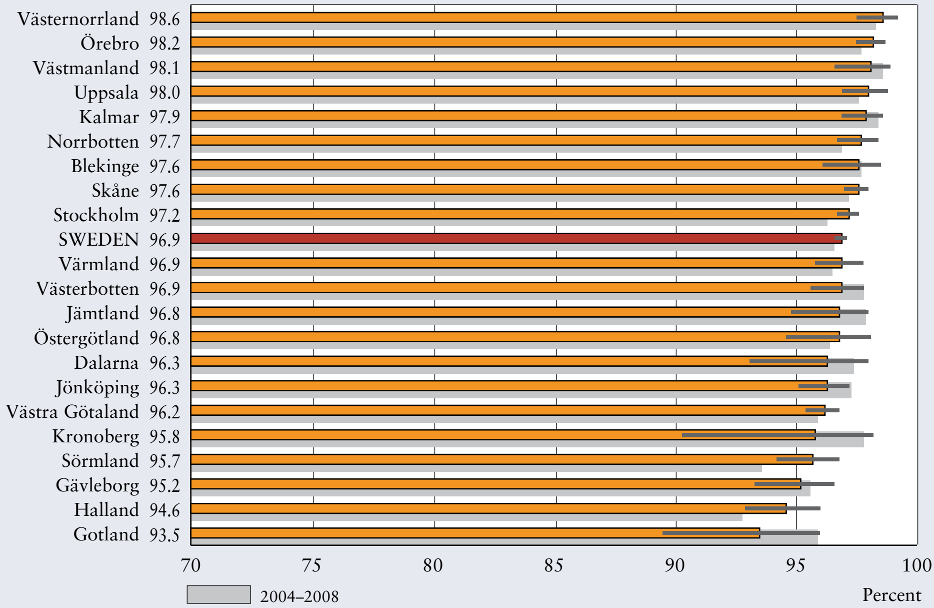


Figure 106 Percentage of inguinal hernia repair cases not reoperated on within five years, 2005–2009.

Source: Swedish Hernia Register

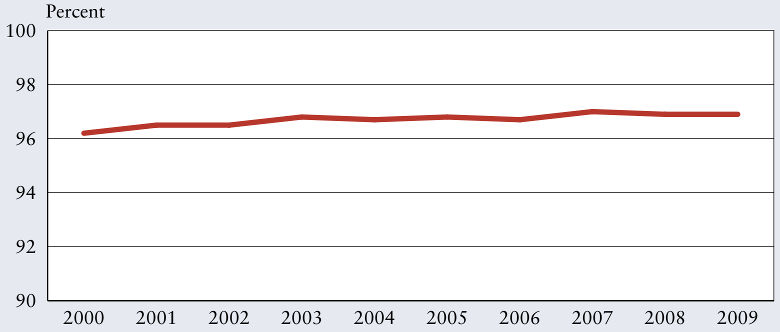


Figure 106 Sweden Percentage of inguinal hernia repair cases not reoperated on within five years.

Source: Swedish Hernia Register

pitals indicate that Swedish inguinal hernia surgery still has considerable potential for improvement. Given that the vast majority of patients are men, no gender breakdown was made.

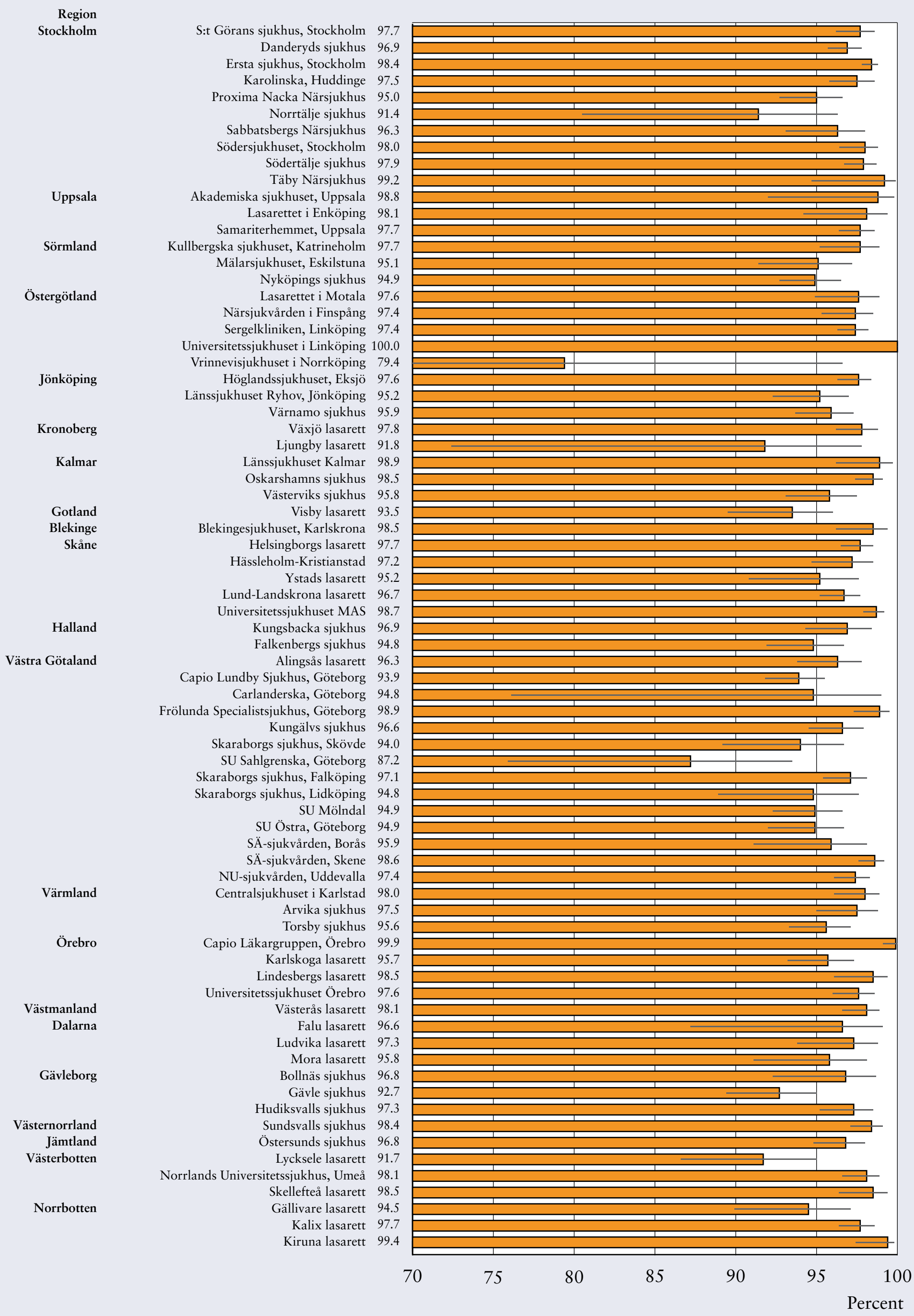


Figure 106
Hospitals

Percentage of inguinal hernia repair cases not reoperated on within five years, 2005–2009.

Source: Swedish Hernia Register

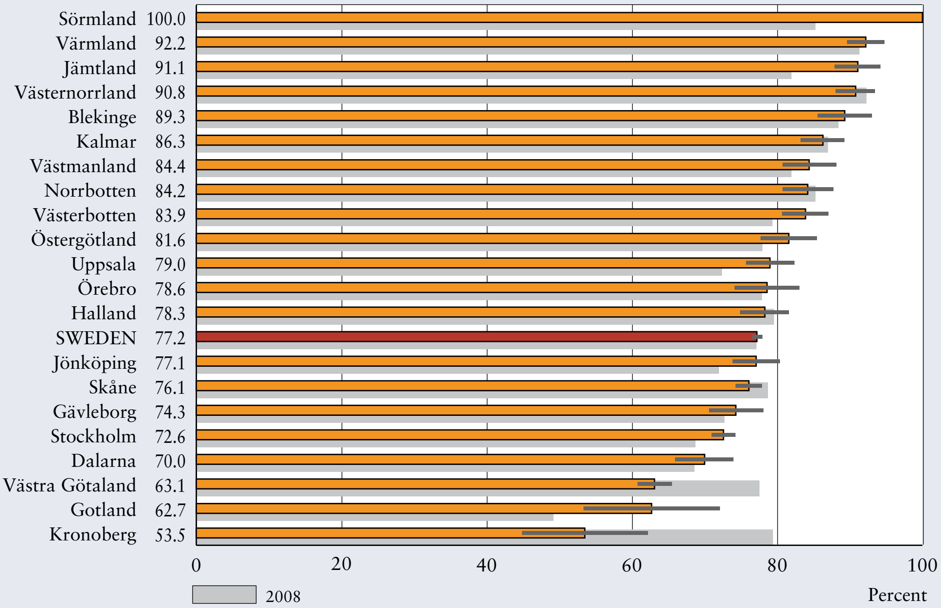


Figure 107 Percentage of day-case operations for inguinal hernia, 2009.

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

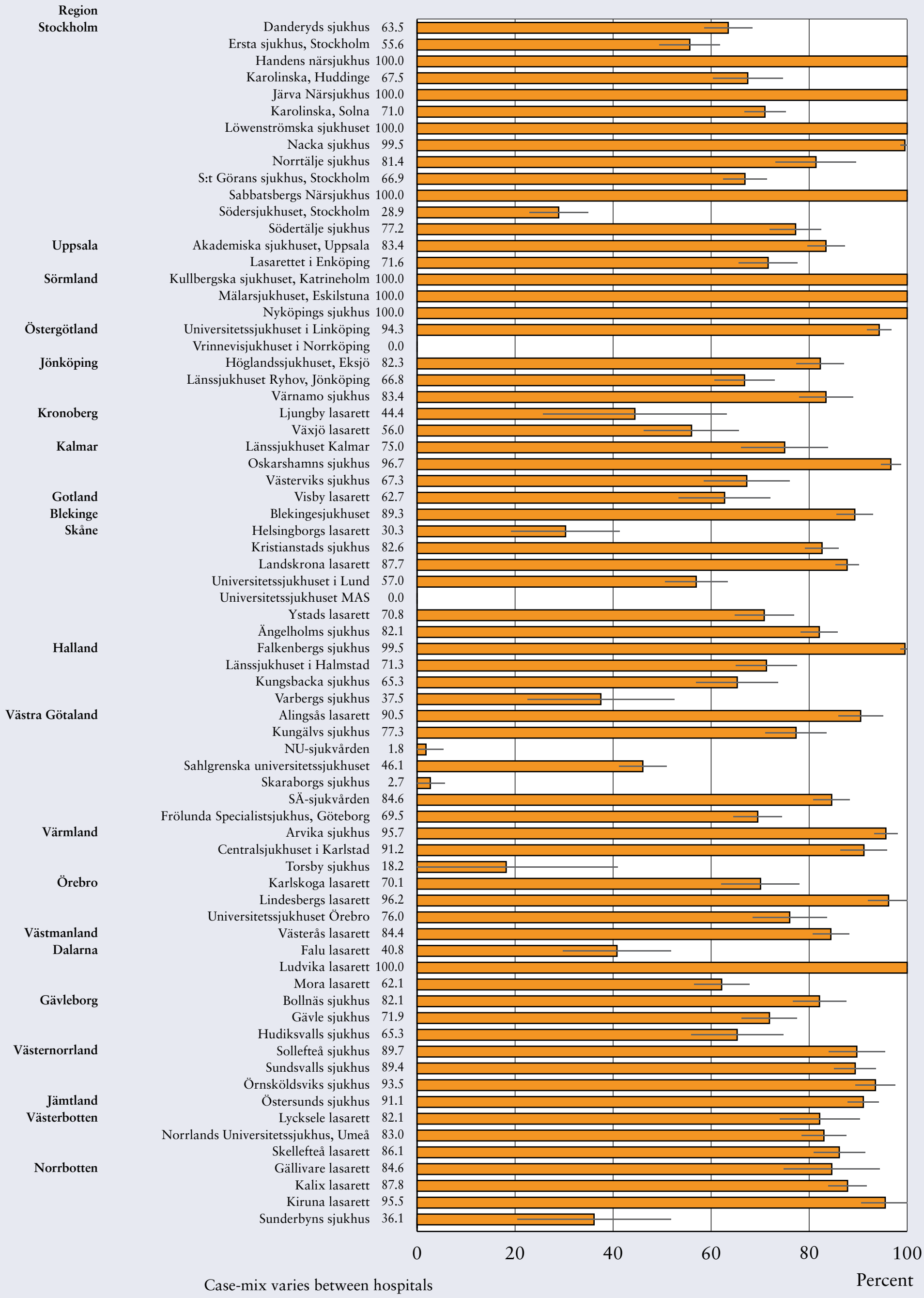
107 Inguinal hernia – percentage of day-case operations

More than 14 000 inguinal hernia operations were reported to the Patient Register in 2009. Considering that surgery performed by private outpatients clinics is underreported, that represents an understatement of the actual number. Day-case operations, which are performed frequently, are less resource-intensive than inpatient care. The purpose of the indicator is to identify variations in resource utilisation.

Almost 11 000 or 77 per cent of all inguinal hernia operations in 2009 were day-case surgery. The percentage was approximately the same as for the base year. One region had a percentage of 100 per cent, whereas most regions were under 80 per cent.

Local differences can affect the percentage of day-case operations. Some clinics operate on more hernias that are technologically demanding, recurrences or acute, whereas others focus on uncomplicated first-time hernias.

The relatively large regional variations suggest that many regions have the potential to perform more day-case operations, which would reduce costs and retain the same level of quality. There is no reason to believe that the particular needs and conditions of individual patients have any significant impact on regional differences.



Case-mix varies between hospitals

Figure 107
Hospitals

Percentage of day-case operations for inguinal hernia, 2009.

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

108 Minimally invasive cholecystectomy

Gallstones are a common condition. Between 25 and 50 per cent of the population develop gallstones at some point in their lives. Most people do not notice gallstones or undergo surgery. Nevertheless, cholecystectomy is one of the most common surgical procedures and 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 risk of postoperative complication. From 0.1 to 0.5 per cent of patients suffer serious complications, such as a damaged bile duct or death. Surgery relieves almost 80 per cent of patients of their discomfort.

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.

We present two indicators from the gallstone register. The indicator on the percentage of minimally invasive cholecystectomy reflects the level of surgical trauma, while the second indicator sheds light on postsurgical complications.

The less the surgical trauma associated with cholecystectomy, the more rapid the recovery and the milder the postoperative stage. The choice of surgical procedure cannot always consider surgical trauma alone, but must examine that which is technically feasible and entails the smallest risk of complications.

Figure 108 shows the percentage of patients in 2009 who underwent either laparoscopic or minimally invasive cholecystectomy. The comparison included 11 300 operations, over 7 600 of which were on women.

A total of 84.3 per cent of all cholecystectomies in 2009 were minimally invasive, up from 80.2 per cent in 2007. Largely as a result of that trend, the average postsurgical period of hospital care declined by 16 per cent from 2.15 to 1.85 days.

The more frequent use of minimally invasive surgery applied to both women and men. Nevertheless, the minimally invasive method was still used more often in women (88 per cent) than men (76 per cent). The reason is unknown and will be a topic for research.

There is no specific optimum percentage of patients who should undergo minimally invasive cholecystectomy. But the large regional variations (74–95 per cent for women and 42–90 per cent for men) indicate that the proportion can further increase without any unfavourable medical consequences.

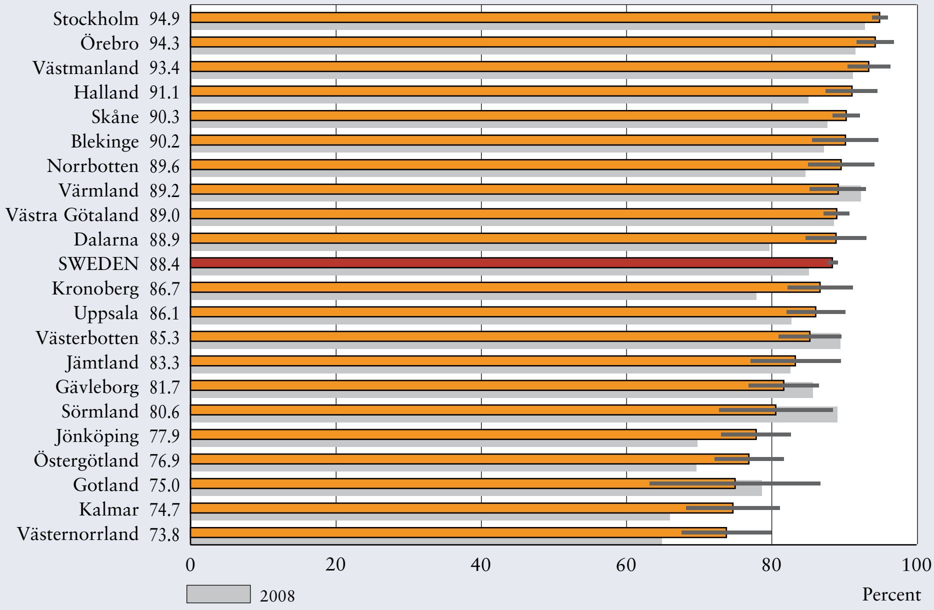


Figure 108
Women

Percentage of cholecystectomies performed as minimally invasive procedures, 2009.

Source: Swedish National Register for Gallstone Surgery and ERCP

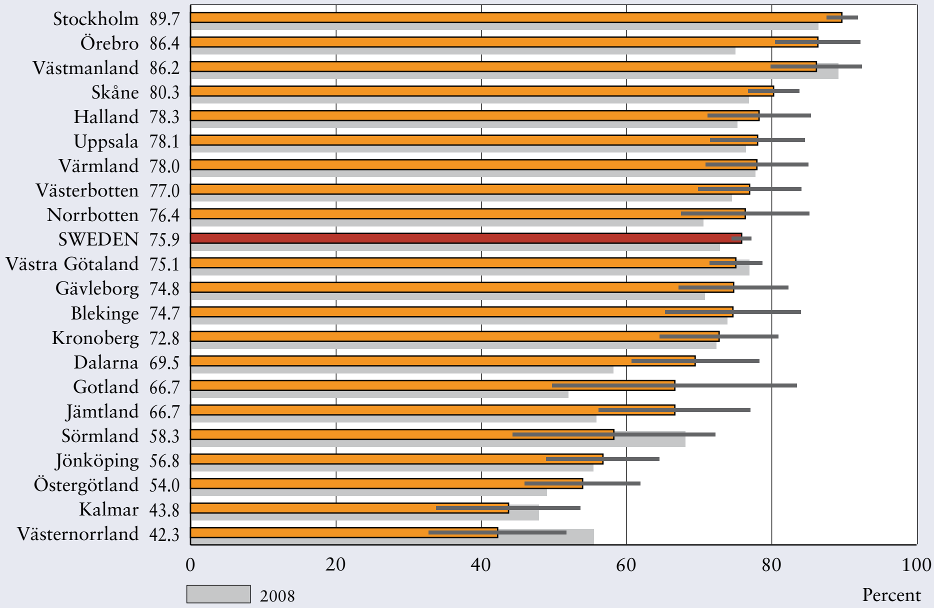


Figure 108
Men

Percentage of cholecystectomies performed as minimally invasive procedures, 2009.

Source: Swedish National Register for Gallstone Surgery and ERCP

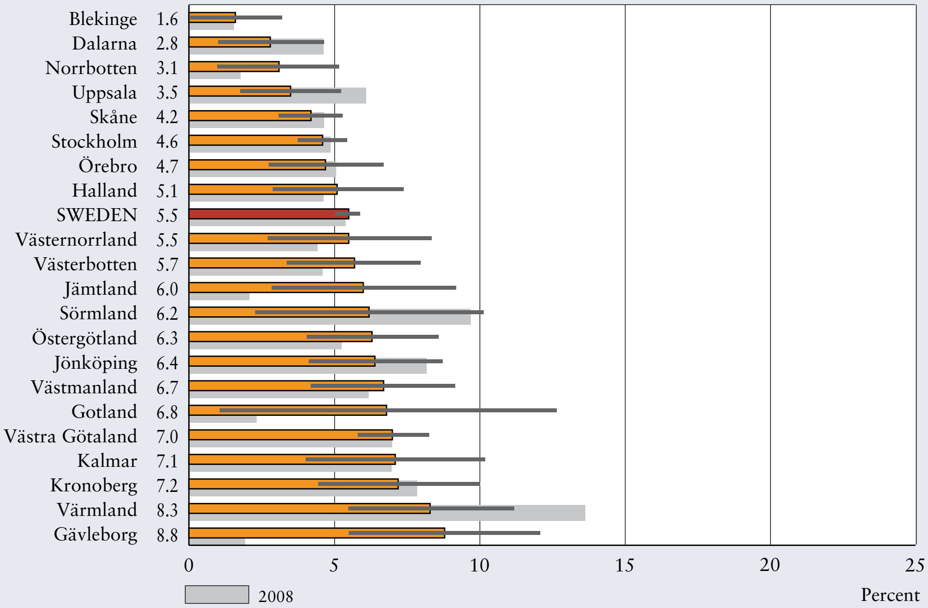


Figure 109
Total

Percentage of postsurgical complications within 30 days of elective cholecystectomy, 2009.

Source: Swedish National Register for Gallstone Surgery and ECRP

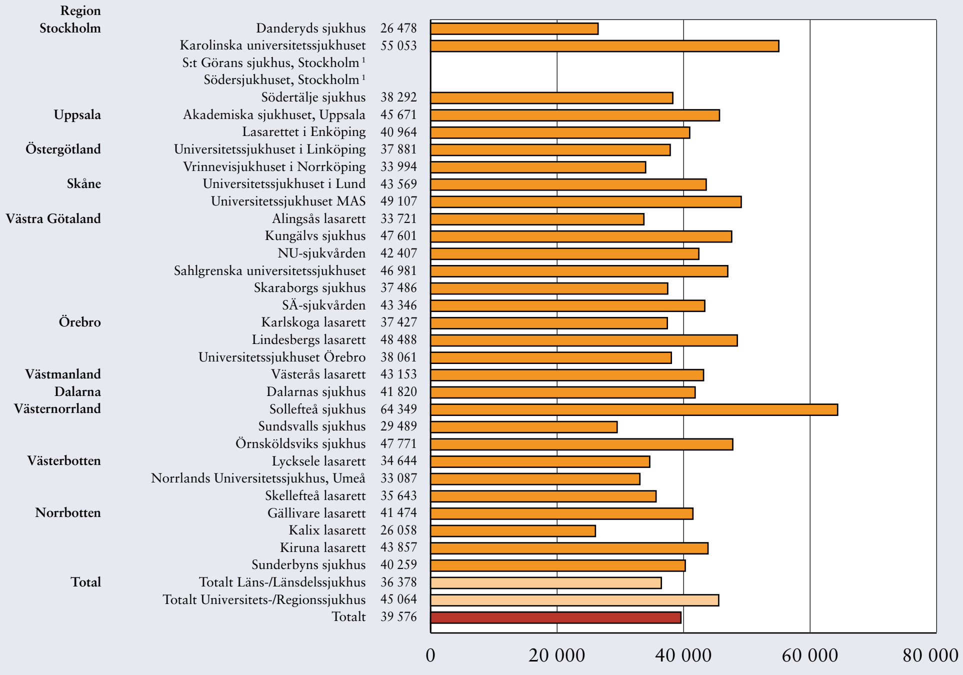
A random sampling of 1 168 case records that were compared with register data showed that the surgical method was reported in 99.5 per cent of cases. At the regional level, the risk of differences in case mix is limited and the participation rate is high. Thus, the results are highly reliable.

109 Postsurgical complications following elective cholecystectomy

This indicator reflects postsurgical complications within 30 days of elective cholecystectomy. Among the 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 2009, 598 of 10 943 (5.5 per cent) of patients experienced some kind of postsurgical complication. The frequency of complications was 6.9 per cent among men and 4.7 per cent among women. The percentages were unchanged from 2008 for both women and men.

There is no acceptable level of postsurgical 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.



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

Figure 110
Hospitals

Cost per DRG point for cholecystectomy, 2009.

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

Given the broad confidence intervals and uncertainties about the validity of this section of the gallstone register, regional variations should be interpreted with great caution.

A comprehensive review of the validity of the gallstone register is under way. The effort has shown that 1.8 per cent of 45 226 entries differ from the case records, which are characterised by high quality. However, reviewers found a number of postsurgical complications that had not been entered. Thirty of the 1 172 case records contained a note about a postsurgical complication that had not been entered. Thus, approximately 30 per cent of complications were not reported. Improving training and devoting more time to follow-up efforts at participating clinics over the next few years should raise the quality of this data.

110 Cost per DRG point for cholecystectomy

Up to this point, the costs associated with various diseases or treatment methods have been reported per case. That approach does not consider case mix or the differing resources required for particular cases even though the basic disease is the same. The section on overall indicators and costs (page 80) describes cost per DRG point, thereby relating costs to performance by considering resource utilisation.

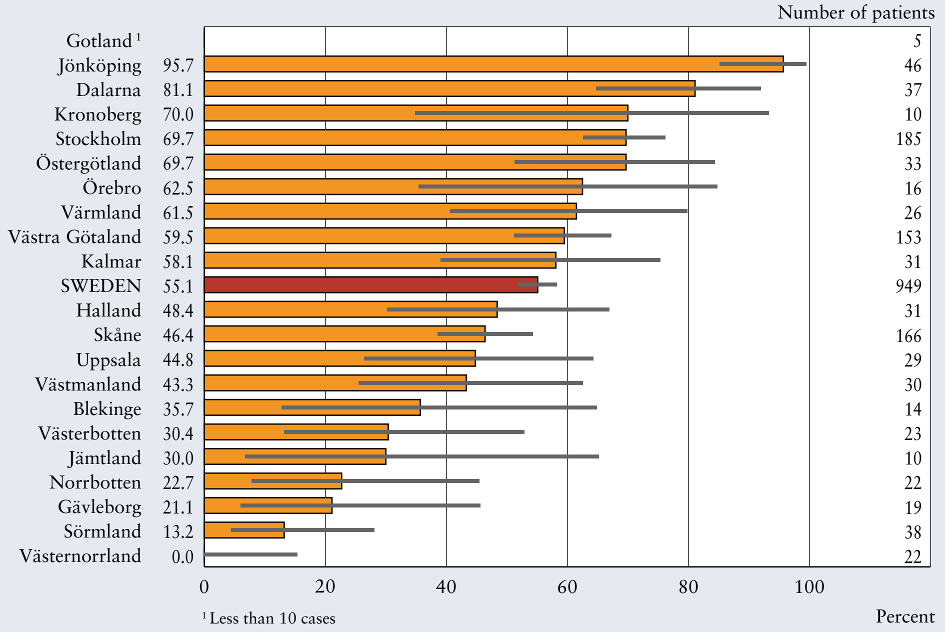


Figure 111
Total

Percentage of carotid endarterectomies performed within 14 days, 2009.

Source: Swedish Vascular Registry

Figure 110 presents costs per DRG point for cholecystectomy. In 2009, the Cost Per Patient database contained 6 182 cases classified as cholecystectomy. Both elective and acute surgery was included. The cost per DRG point for non-outliers in the Swedish Case Costing database averaged 39 576 kronor in 2009. The cost differentials were substantial – as were variations in the period of care, which averaged approximately 4 days.

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, as well as how they are to be calculated. Nevertheless, the calculations may differ from hospital to hospital.

111 Waiting times for carotid endarterectomy

Stenosis of the carotid artery increases the risk of stroke. Carotid endarterectomy surgically removes the stenosis. Most operations are performed as a secondary preventive measure after transient ischaemic attack or cerebral infarct with mild to moderate residual symptoms. The procedure is also performed as a primary pre-

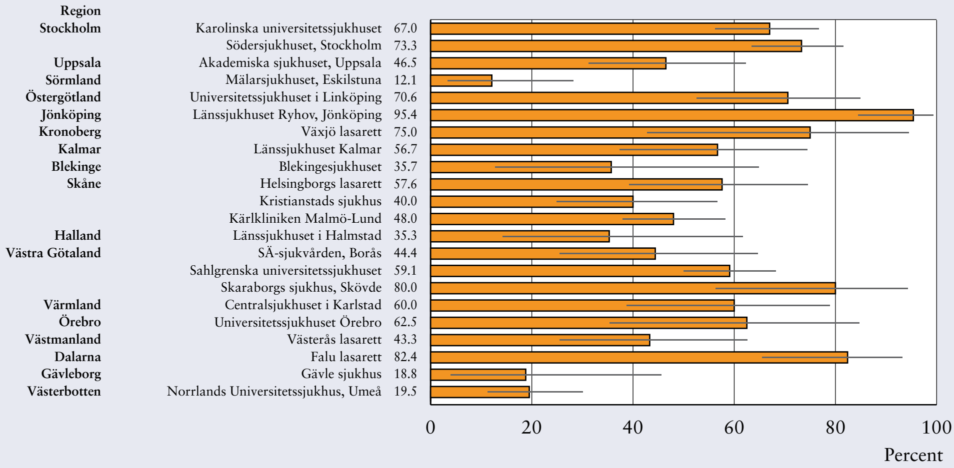


Figure 111
Hospitals

Percentage of carotid endarterectomies performed within 14 days, 2009.

Source: Swedish Vascular Registry

ventive measure on patients who are not experiencing symptoms but have been diagnosed with stenosis.

The surgery significantly reduces the risk of stroke, particularly in patients with symptomatic high-grade stenosis. Statistically speaking, this patient population requires only three operations to prevent stroke. Time is of the essence. A two-week delay reduces the beneficial effect of carotid endarterectomy by 50 per cent.

The indicator is included in the national stroke guidelines It 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 information on waiting times for carotid endarterectomy. The participation rate is good. More than 95 per cent of all operations and associated waiting times are reported. The waiting time is defined as the period from the onset of the stroke symptoms that caused the patient to contact the healthcare system until actual surgery.

Figure 111 presents the number of carotid endarterectomies for symptomatic stenoses that were performed within 14 days of stroke symptoms. The comparison includes 949 operations in 2009. As a result of database restructuring in May 2008, 2009 was the first full calendar year covered by the Swedish Vascular Registry.

Approximately 55 per cent of all surgery for symptomatic stenosis of the carotid artery was performed within 14 days. The percentage of patients who underwent surgery within that period ranged from 0 to 100 per cent. Comparisons are difficult in some regions due to the infrequency of the procedure and statistical uncertainty. Approximately 57.6 per cent of women and 53.9 per cent of men underwent surgery within 14 days after the onset of stroke symptoms.

NBHW 2009 guidelines recommend surgery within 14 days. There is a great need for improvement, and the regional variations suggest that to be fully possible.

112 Death or amputation after infrainguinal bypass surgery

Atherosclerosis leads to narrowing or blockage of the arteries. The condition considerably lowers life expectancy. Circulation in the legs is often impaired. Claudication refers to mild cases when blood flow is insufficient only during exertion, 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 the cases). Scrupulous, continual monitoring of blood glucose levels is vital. Both nonsurgical methods and infrainguinal bypass surgery are available.

Figure 112 shows the percentage of patients who died or underwent amputation above the ankle within 30 days after infrainguinal bypass surgery. The comparison includes 1 745 chronic critical ischaemia patients and all of 2009. The source of data is the Swedish Vascular Registry.

A total of 6.8 per cent of patients nationwide died or underwent amputation within 30 days. The proportion varied between 7 to 11 per cent in 1999–2009. Despite the emergence of new surgical methods, no improvement trend has been spotted. However, the nationwide results have been better the past two years. Half of the patients

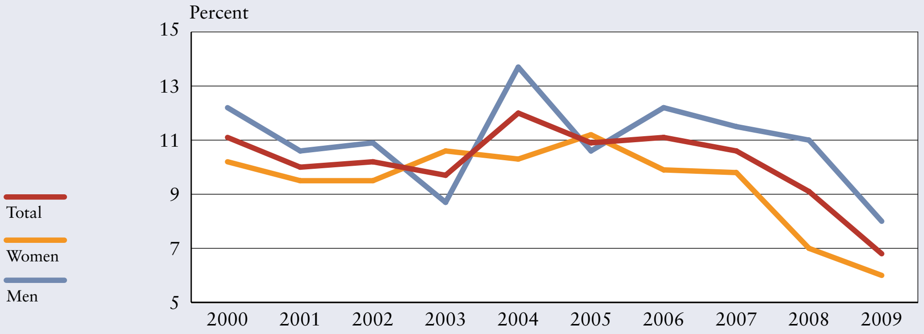


Figure 112
Sweden

Percentage of deaths or major amputations within 30 days after infrainguinal bypass surgery.

Source: Swedish Vascular Registry

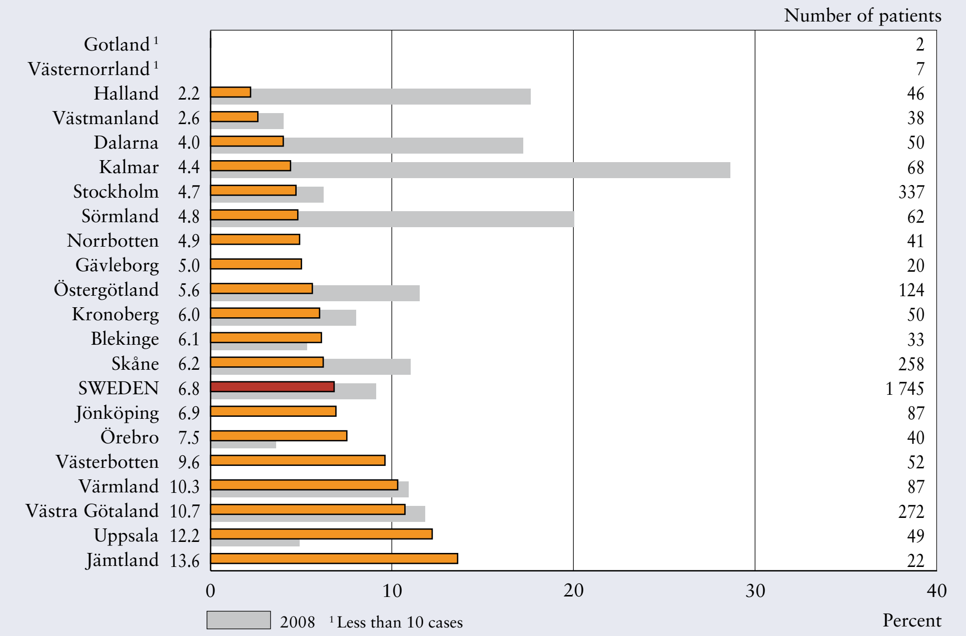


Figure 112
Total

Percentage of deaths or major amputations within 30 days after infrainguinal bypass surgery, 2009.

Source: Swedish Vascular Registry

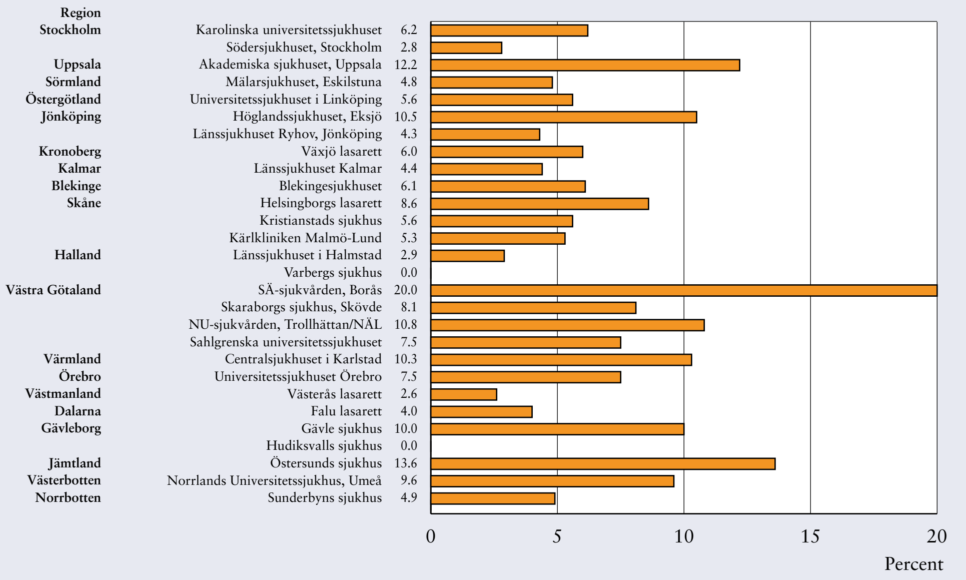


Figure 112
Hospitals

Percentage of deaths or major amputations within 30 days after infrainguinal bypass surgery, 2009.

Source: Swedish Vascular Registry

were women, 6.0 per cent of whom died or underwent amputation – as opposed to 8.0 per cent of men.

The regions ranged from 2 to 14 per cent. Given how infrequently the surgery is performed and the statistical uncertainty involved, the large variation is difficult to interpret. The results for individual regions have fluctuated a great deal over time. The regional differences may also reflect incomplete reporting and case mix factors.

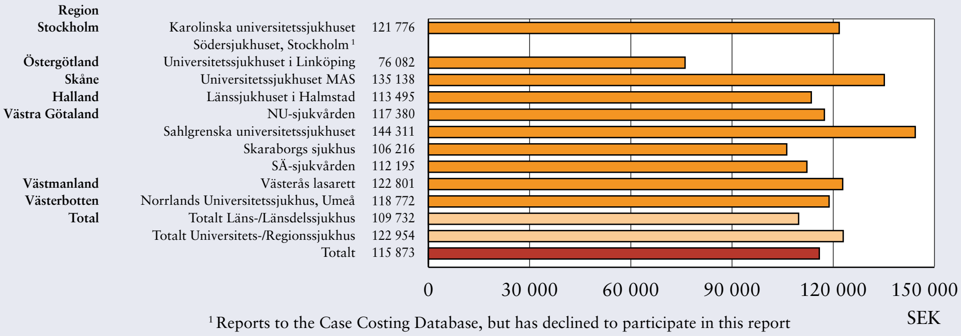
No target has been set for the percentage of deaths or amputations after infrainguinal bypass surgery. No randomised studies have compared nonsurgical and surgical interventions.

113 Cost per case for infrainguinal bypass surgery

For 2009, 16 hospitals in 12 regions reported the costs for interventions associated with 344 cases for infrainguinal bypass surgery. Costs for follow-up appointments or drug consumption in outpatient care were excluded, as were outliers.

Figure 113 presents the costs per case 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 for non-outliers in 2009 was 115 873 kronor. Differences among hospitals were significant – ranging from 76 000 kronor to 144 000 kronor. The average period of care was nine days, but the hospitals varied considerably.

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 calculation methods used by a particular hospital may also have an impact.



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

Figure 113
Hospitals

Cost per case for infrainguinal bypass surgery, 2009.

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

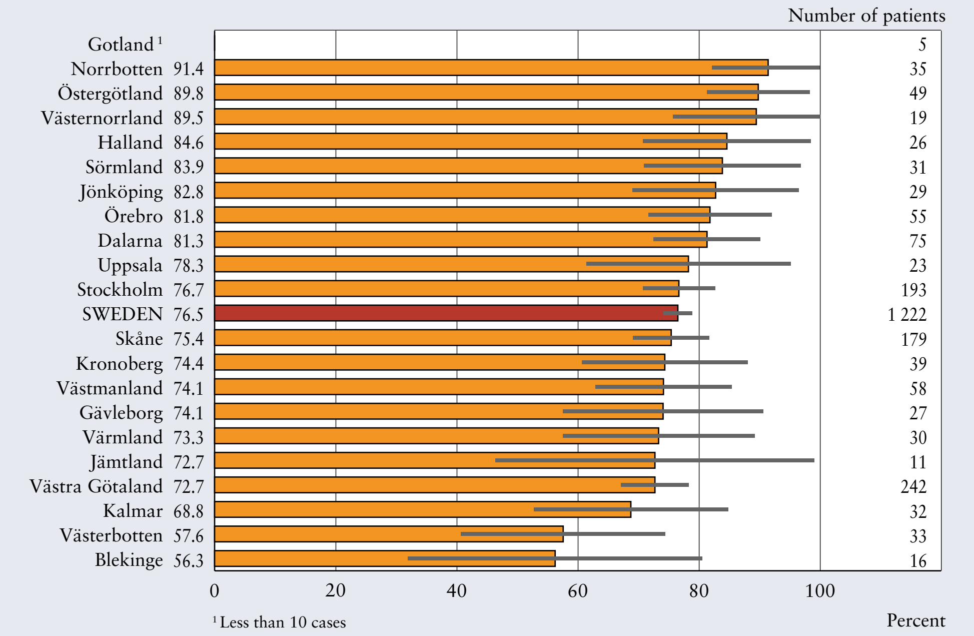


Figure 114
Total

Percentage of patients who were completely or fairly satisfied six months after septoplasty, 2009.

Source: Swedish Quality Register of Otorhinolaryngology

114 Patient-reported outcome of septoplasty

Septoplasty is surgery to correct a deviated nasal septum. The main indications for the operation are nasal congestion and snoring. Nasal congestion can produce a number of secondary symptoms, including dryness of the mouth, snoring and fatigue. Nasal congestion can also lead to considerably reduced health-related quality of life. Eighty per cent of the operations are performed on men. According to the Patient Register, 1 587 procedures were performed in 2009. Most ear, nose and throat clinics perform the operation.

The data are taken from the Septoplasty Register, one of nine that make up the Swedish Ear, Nose and Throat Care Quality Register. The comparison includes 1 222 patients who underwent surgery in 2009 and responded to the questionnaire. The location of the clinic, not the patient's region of domicile, determines how an operation is classified. The register's participation rate for surgery was approximately 90 per cent.

Patients filled out a questionnaire six months after surgery concerning its outcome. Figure 114 shows the percentage of patients who reported that the discomfort was gone completely or that they were fairly satisfied with the outcome. Approximately 76.5 per cent of patients nationwide responded in that manner. No gender differences in patient satisfaction were observed. But satisfaction increased with age.

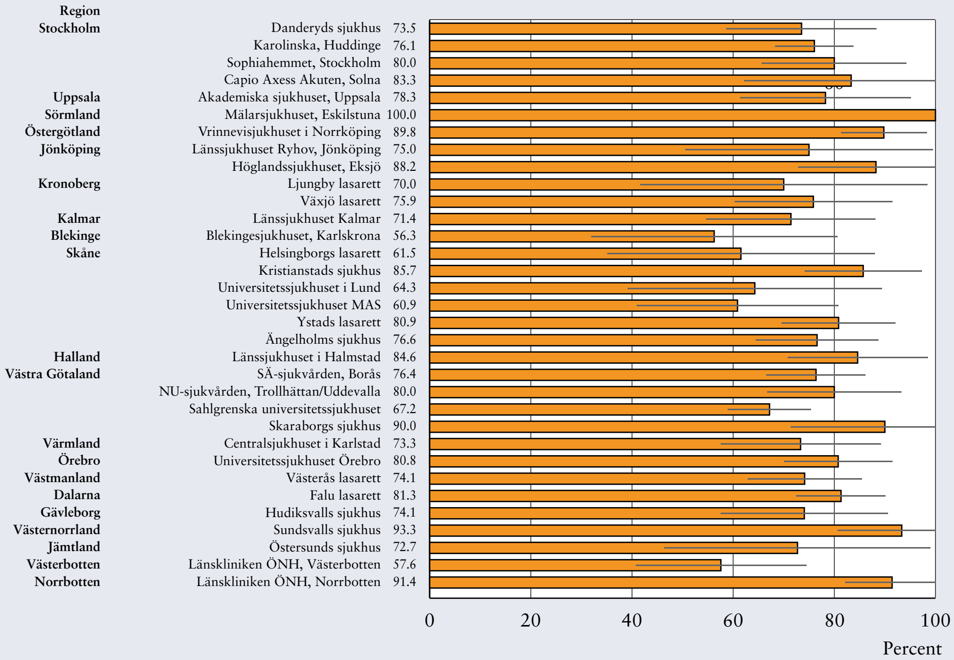


Figure 114
Hospitals

Percentage of patients who were completely or fairly satisfied six months after septoplasty, 2009.

Source: Swedish Quality Register of Otorhinolaryngology

The goal of the association of ear, nose and throat specialists is that at least 90 per cent of patients report that they have improved or recovered completely. Thus, the spread and outcomes presented here are substantially poorer than what the representatives of the specialty expect or target. There is both a need and potential for improvement.

115 Cataract surgery, visual acuity below 0.5 in the better-seeing eye

More than 80 000 cataract operations were performed in 2009, an increase of over 10 per cent from the previous year. The eyesight of a large percentage of the patients improved considerably by surgery.

Data on the patient's visual acuity in the better-seeing eye at the time of cataract surgery is a gauge of its availability in the various regions. If a large percentage of the population is operated on for a number of years, the patients will see comparatively better prior to surgery. More operations on patients previously operated on the other eye will also improve the average preoperative visual acuity in the better-seeing eye.

The data are taken from the National Cataract Register. According to the register, it currently has an excellent participation rate of over 98 per cent of all surgery.

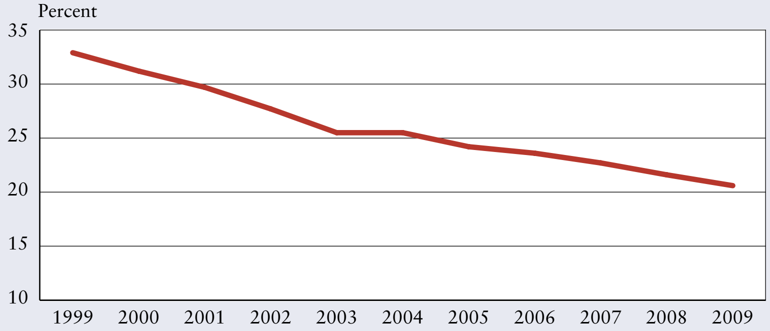


Figure 115
Sweden

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

Although mandatory, reporting of cataract surgery to the Patient Register is much poorer. More than half of the operations not reported to the Patient Register in 2008 were performed by private care providers.

Figure 115 shows the percentage of all operated patients who had visual acuity below 0.5 in the better-seeing eye. A low percentage means that the patients had better vision, and vice versa. The data are for 2009. The regional 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. The largest gender differences in 2009 were in Jämtland and Gotland. But men in Jönköping and Norrbotten had poorer vision than women at the time of surgery. Interpretation of the gender differences is rendered more difficult by disparities in other variables – such as age, surgery on the other eye and driving licence – among operated women and men. Furthermore, women were operated on 1½ times as often as men.

Though large for a number of years, regional differences have narrowed in recent years. One reason for the trend is that the national care guarantee programme has included development of joint indicators for the point at which cataract surgery should be performed.

The long-term nationwide trend shows that patients have better and better vision at the time of surgery. The register demonstrates a clear correlation between frequency of surgery and the degree of visual impairment when it is performed. In other words, county councils can improve their outcomes by increasing the number of operations they finance.

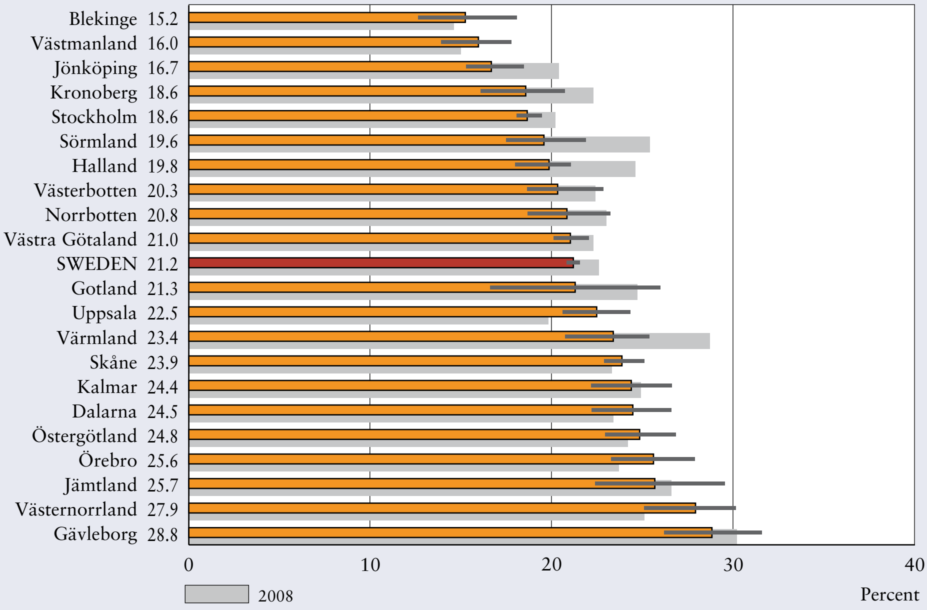


Figure 115
Women

Percentage of patients with visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery, 2009.

Source: Swedish National Cataract Register

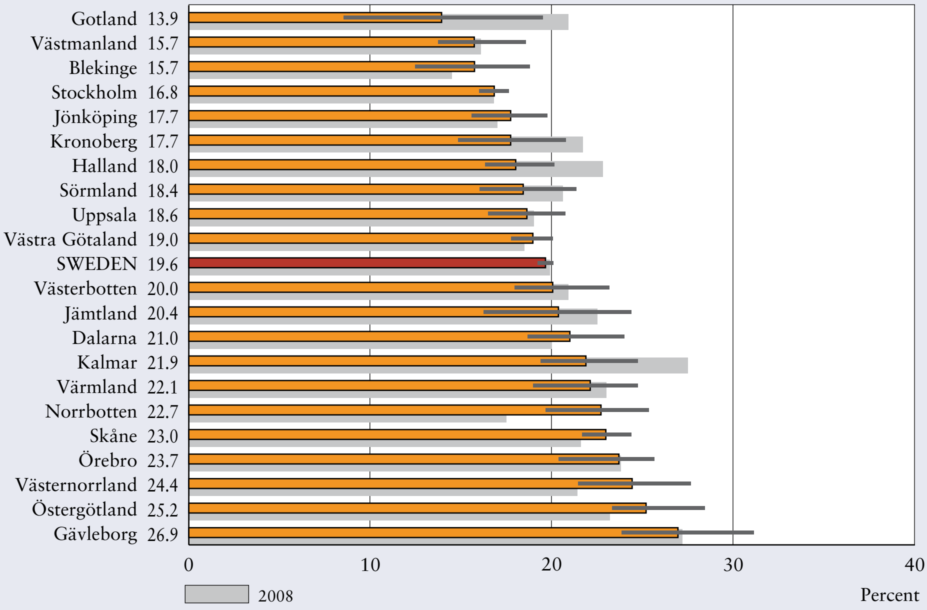


Figure 115
Men

Percentage of patients with visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery, 2009.

Source: Swedish National Cataract Register

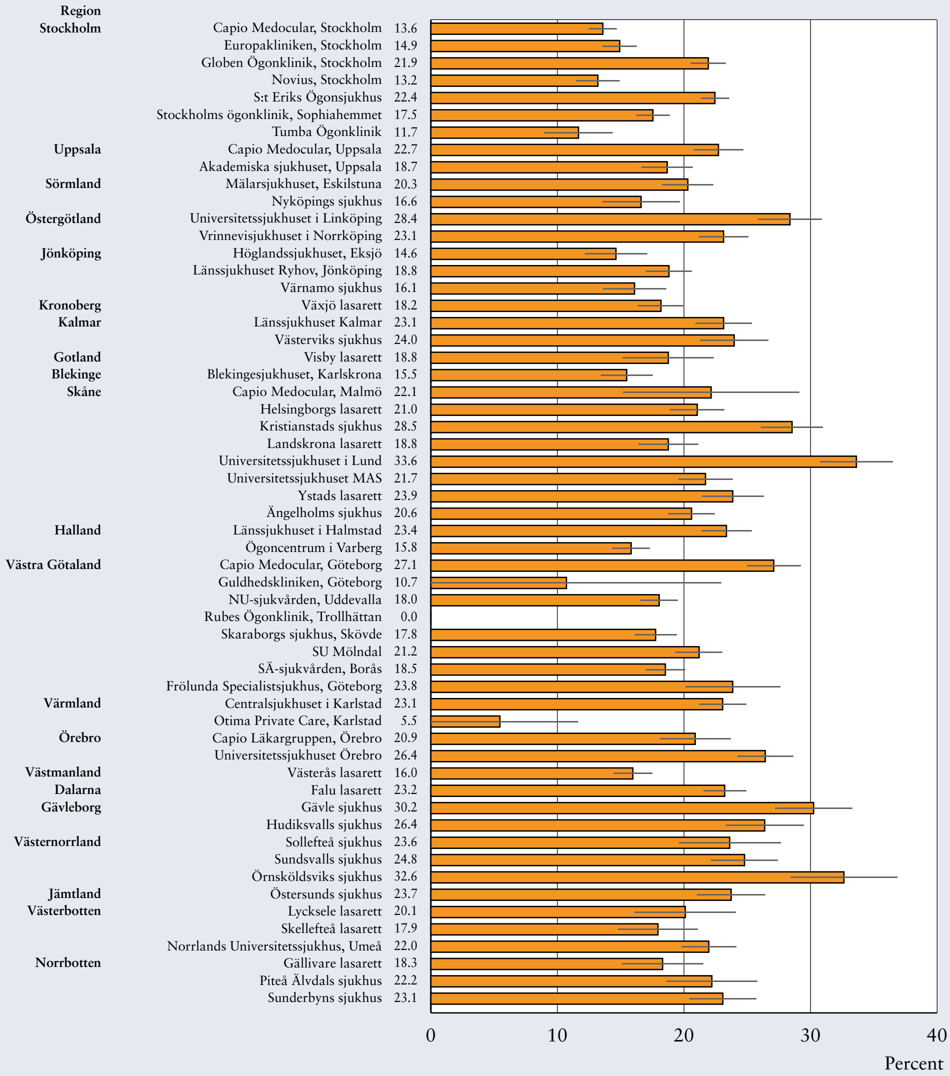


Figure 115
Hospitals

Percentage of patients with visual acuity below 0.5 in the better-seeing eye at the time of cataract surgery, 2009.

Source: Swedish National Cataract Register

116–119 Waiting times longer than 90 days for general surgery appointments – inguinal hernia, cholecystectomy and cataract operations

The response rate for general surgery has greatly improved to 100 per cent in almost all regions.

Several regions had considerable availability problems on 31 March 2010 when it came to initial general surgery appointments (see Figure 116). In five regions, at least

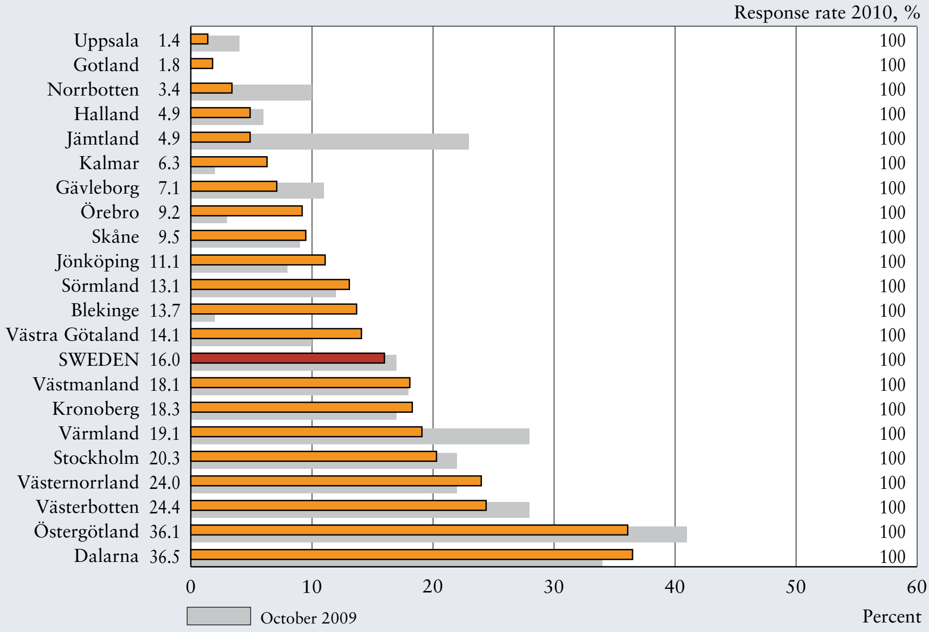


Figure 116 General surgery appointments – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

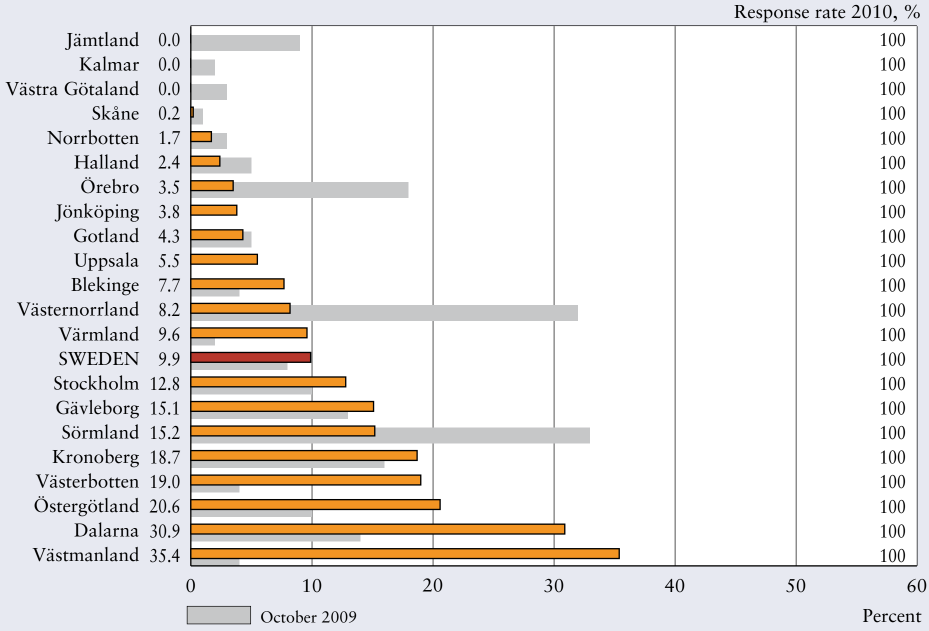


Figure 117 Surgery for inguinal hernia – percentage of patients with waiting times longer than 90 days of everyone the waiting list, 31 March 2010.

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

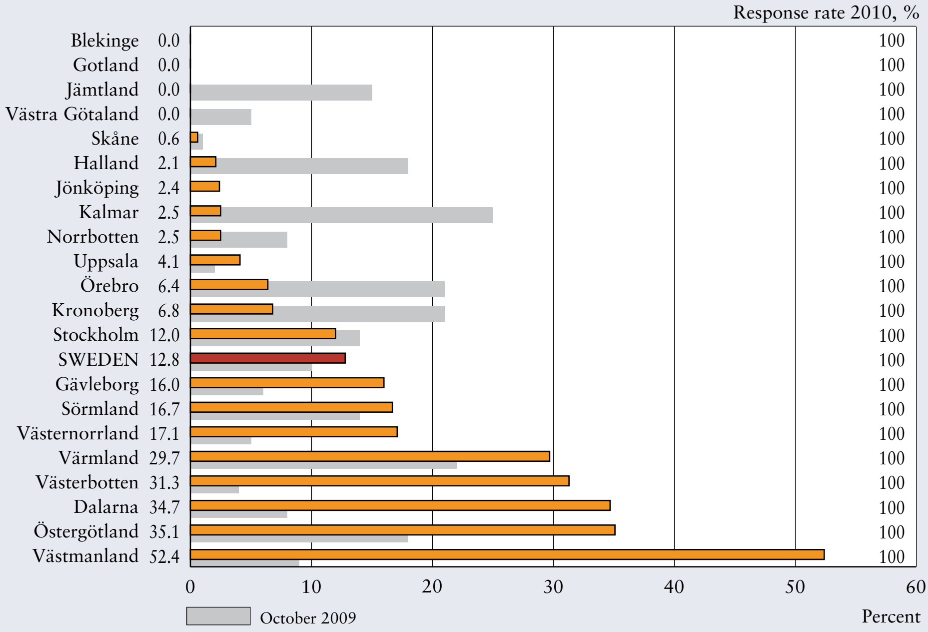


Figure 118 Cholecystectomy/bile duct surgery – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

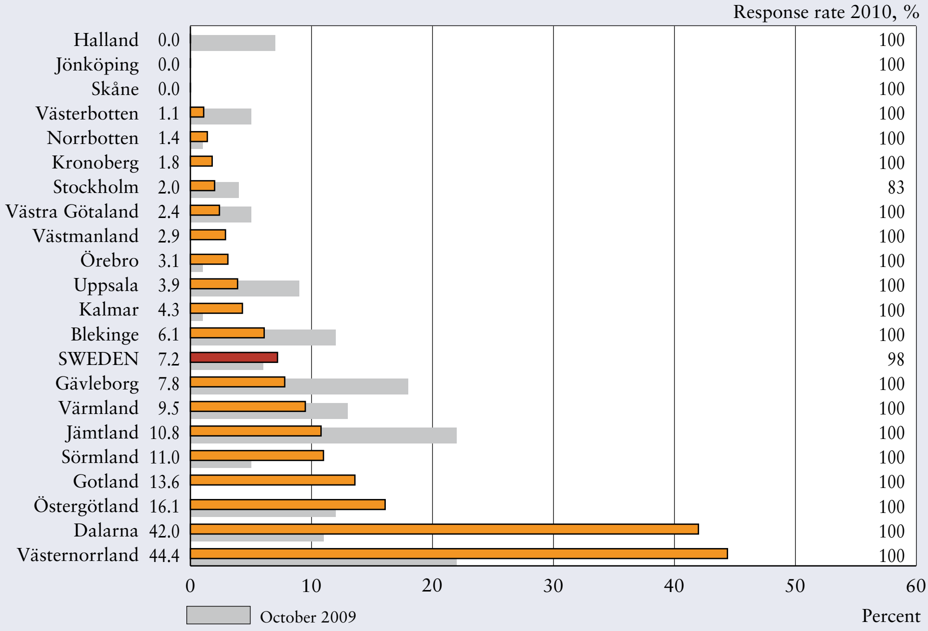


Figure 119 Cataract surgery – percentage of patients with waiting times longer than 90 days of everyone on the waiting list, 31 March 2010.

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

20 per cent of the patients had been waiting for longer than 90 days. The nationwide percentage had not changed significantly since the previous survey.

The surgical procedures involved include a large number of patients. A total of 26 000 were waiting for an appointment, more than 4 000 longer than 90 days. Fewer than 50 had been waiting that long in each of seven regions.

Figures 117–119 show the number of patients who had been waiting for longer than 90 days in connection with inguinal hernia, cholecystectomy and cataract surgery. Waiting times were essentially the same or somewhat longer compared with the previous survey for all three procedures.

Almost 3 500 inguinal hernia patients were waiting, 341 longer than 90 days. Ten or fewer had been waiting that long in each of 13 regions. A total of 272 of more than 2 000 cholecystectomy patients had been waiting for longer than 90 days. A total of 1 024 of more than 14 000 patients had been waiting that long for cataract surgery, the most common procedure by far.

INTENSIVE CARE

Intensive care is defined as advanced surveillance, diagnosis and treatment when vital functions threaten to, or manifestly, fail. Severely ill patients, often with multiple life-threatening conditions, are cared for in a personnel-intensive and high-tech setting. In other words, intensive care demands more resources that most other forms of health care. According to the Cost Per Patient database, intensive care accounts for approximately 8 per cent of costs associated with inpatient medical care at hospitals. Intensive care units treat approximately 40 000 patients every year. Sixty six of Sweden's 86 intensive care units in 2009 were general units at the great majority of Swedish provincial, county, regional and university hospitals, while 20 were specialist units.

The Swedish Intensive Care Registry is a national quality registry that began in 2001. Given the considerable resource utilisation, as well as the high morbidity and mortality rates, associated with intensive care, a single registry was needed that would reflect all possible diagnoses.

The Intensive Care Registry compiles information to support local quality assessment efforts, as well as promoting comparisons within and among the participating units. Seventy six of the 86 intensive care units belonged to the registry. Over 90 per cent of the general units were members. The 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, more than 20 per cent of the members were unable to submit data in 2009. Thus, statistics are unavailable for some regions and intensive care units.

In collaboration with the Swedish Association for Anaesthesia and Intensive Care, the registry develops and provides information about national guidelines for monitoring and reporting intensive care in Sweden. The registry focuses on ten national quality indicators for intensive care. This report presents three indicators: risk-adjusted mortality after treatment at intensive care units, night-time discharge from intensive care units, and unscheduled readmission within 72 hours after discharge from intensive care units.

120 Risk-adjusted mortality after treatment at intensive care units

Patients treated at intensive care units 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 2009 annual report of the Intensive Care Registry found that mortality at one-month follow-up varied from 9 to 28 per cent. Risk adjustment for age, severity of disease and medical history permits more accurate comparison of different units over time.

Risk-adjusted mortality is a composite indicator that reflects the first 30 days of care from the commencement of intensive care to hospitalisation to follow-up care 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 intensive care unit, and the severity and surgical status of the acute condition.

The risk of death within 30 days is calculated from these data. The SAPS3 model 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 = 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 Intensive Care Registry calculates the SMR based on the outcome of living or dead 30 days after arrival at the intensive care unit. The SMR can be affected by caregivers, given that the indicator reflects treatment throughout the care chain until 30 days after admission to the intensive care unit. 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

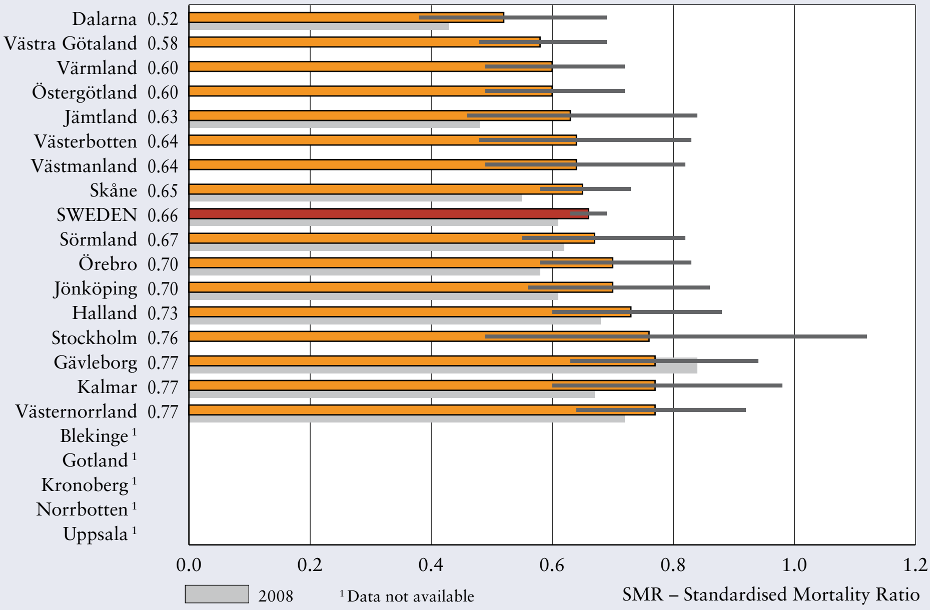


Figure 120
Women

Risk-adjusted mortality within 30 days of arrival at an intensive care unit, 2009.

Source: Swedish Intensive Care Registry

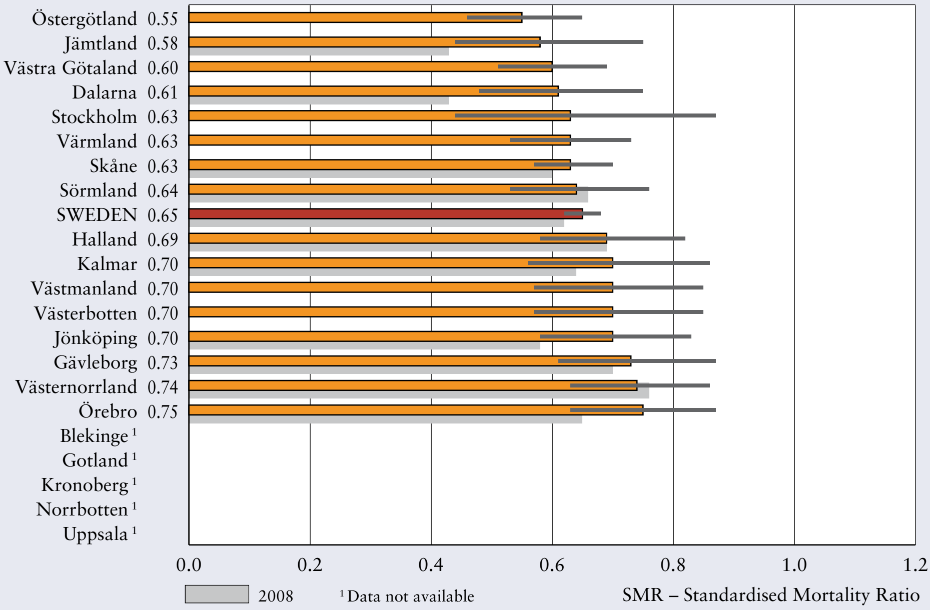


Figure 120
Men

Risk-adjusted mortality within 30 days of arrival at an intensive care unit, 2009.

Source: Swedish Intensive Care Registry

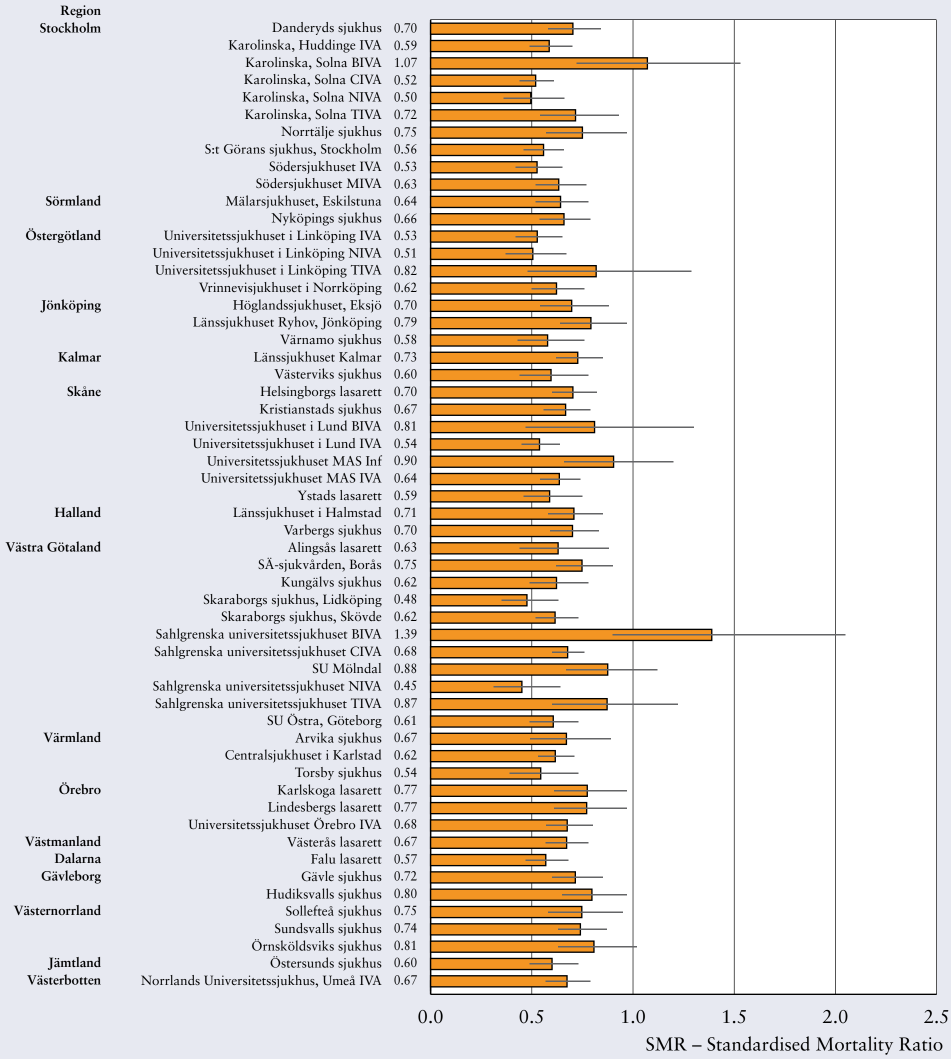


Figure 120
Hospitals

Risk-adjusted mortality within 30 days of arrival at an intensive care unit, 2009.

Source: Swedish Intensive Care Registry

combined with other indicators, such as how often patients drop out of or decline treatment. Once consideration has been paid to variations in data quality, to patient characteristics not captured by the risk-adjustment system, and to chance, discrepancies in quality throughout the care chain are left to explain SMR differences.

Based on SAPS3, the target is an SMR less than 1. An adjustment will be made to Swedish conditions once the Intensive Care Registry has collected sufficient data. The 2009 outcome was 0.66 for women and 0.65 for men, both of which were substantially better than the target. The SMR ranged from 0.52 to 0.77 for women and 0.58 to 0.74 for men in the various regions.

A transition from APACHE to the SAPS3 system is still under way. For some regions in which both systems are used, only the SMR based on SAPS3 is reported. That is why only a small number of Stockholm cases are included. Data for calculating the SMR based on SAPS3 were missing for five of the regions that appear in Figure 210. The problem in each region was lack of IT support for collecting data and/or exporting them to the Intensive Care Registry.

121 Night-time discharge from intensive care units

Patients are normally discharged from intensive care units at night due either to lack of beds or to the need for neurosurgery or other specialist care. Night-time discharge from an intensive care unit to a non-intensive care unit is associated with higher risk of death.

Because non-intensive care units 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.

According to the Intensive Care Registry database, 6.4 per cent of all admissions in 2005–2008 involved discharge to a non-intensive care unit between 22.00 and 7.00. The registry has a target level of less than 5.5 per cent of all discharges at night. A total of 6.2 per cent of all discharges of women, and 5.7 per cent of men, from general intensive care units to non-intensive care units occurred at night in 2009. That represents more than 2 000 patients altogether. The regional variations were very large for both women and men. One third of the regions reached the target for both sexes. The nationwide percentage was lower in 2009 than both 2007 and 2008.

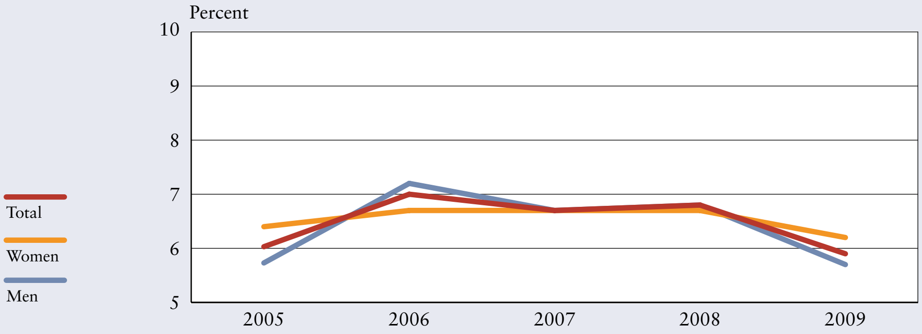


Figure 121
Sweden

Percentage of patients who were discharged from an intensive care unit at night.

Source: Swedish Intensive Care Registry

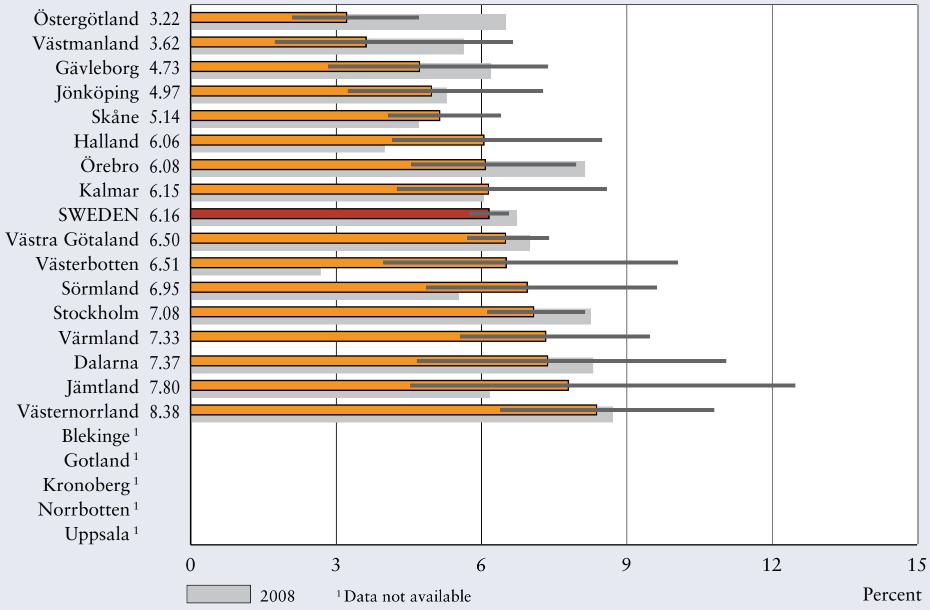


Figure 121
Women

Percentage of patients who were discharged from an intensive care unit at night, 2009.

Source: Swedish Intensive Care Registry

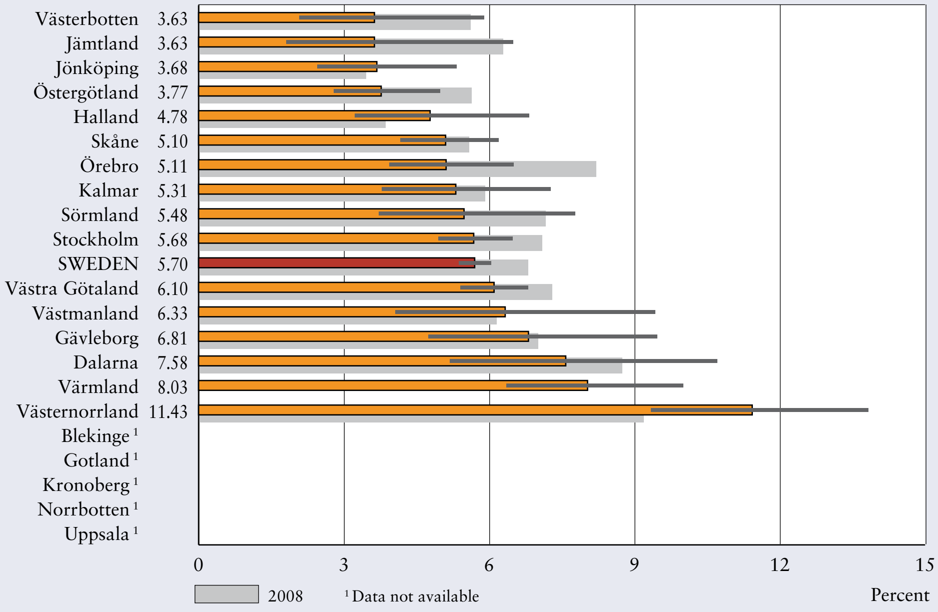


Figure 121
Men

Percentage of patients who were discharged from an intensive care unit at night, 2009.

Source: Swedish Intensive Care Registry

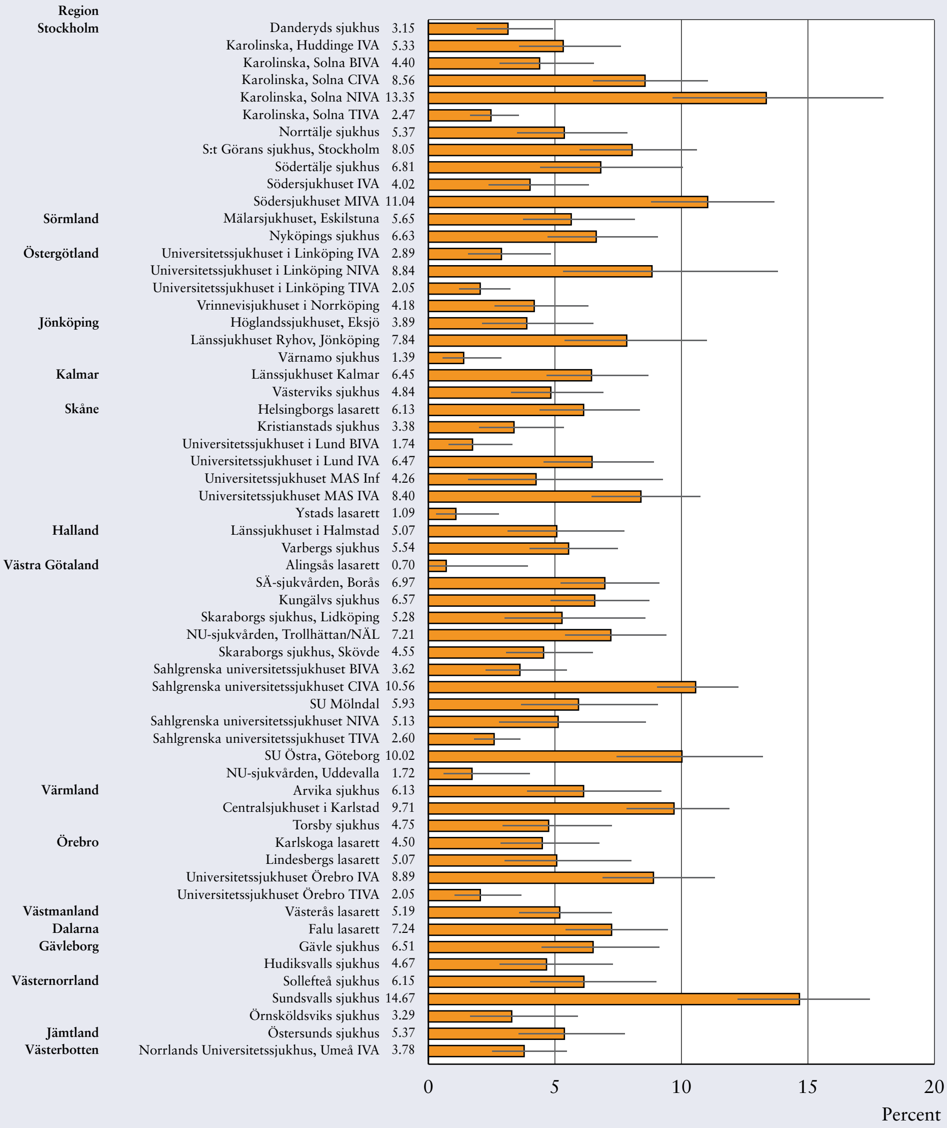


Figure 121
Hospitals

Percentage of patients who were discharged from an intensive care unit at night, 2009.

Source: Swedish Intensive Care Registry

122 Unscheduled readmission within 72 hours after discharge from intensive care units

It is well known that patients who are readmitted to the same intensive care unit on an unscheduled basis within 72 hours run a greater risk of dying. The Intensive Care Registry data for 2005–2008, which show a correlation between readmission within 72 hours and increased mortality, confirm that observation. For an ordinary 75-year-old, the risk of dying within 30 days rises from 15 to 23 per cent. For that

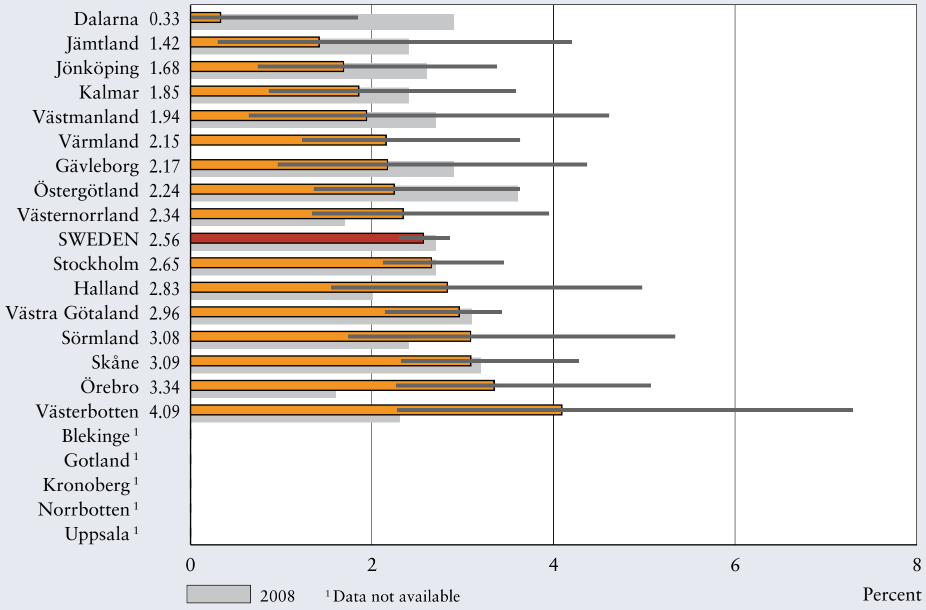


Figure 122
Women

Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit, 2009.

Source: Swedish Intensive Care Registry

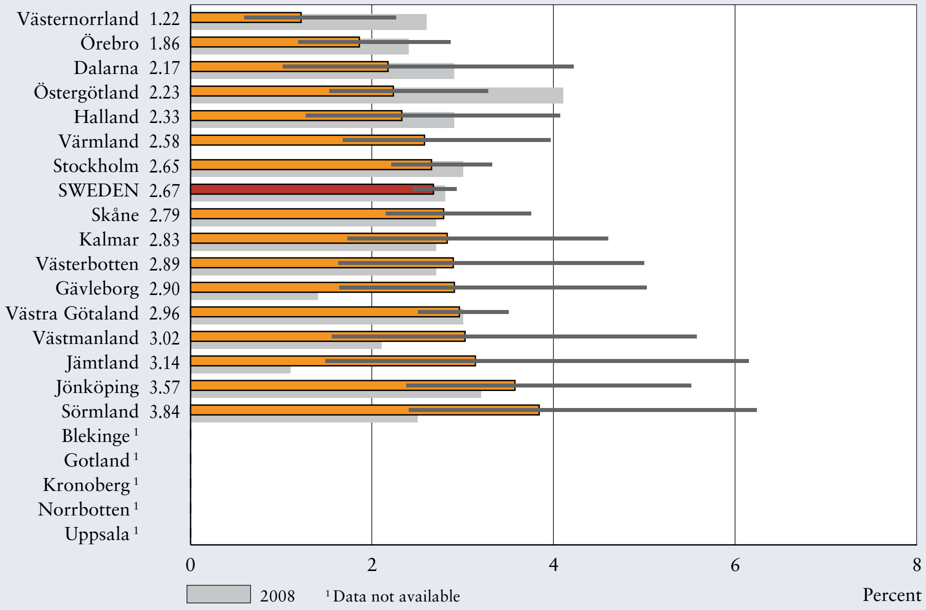


Figure 122
Men

Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit, 2009.

Source: Swedish Intensive Care Registry

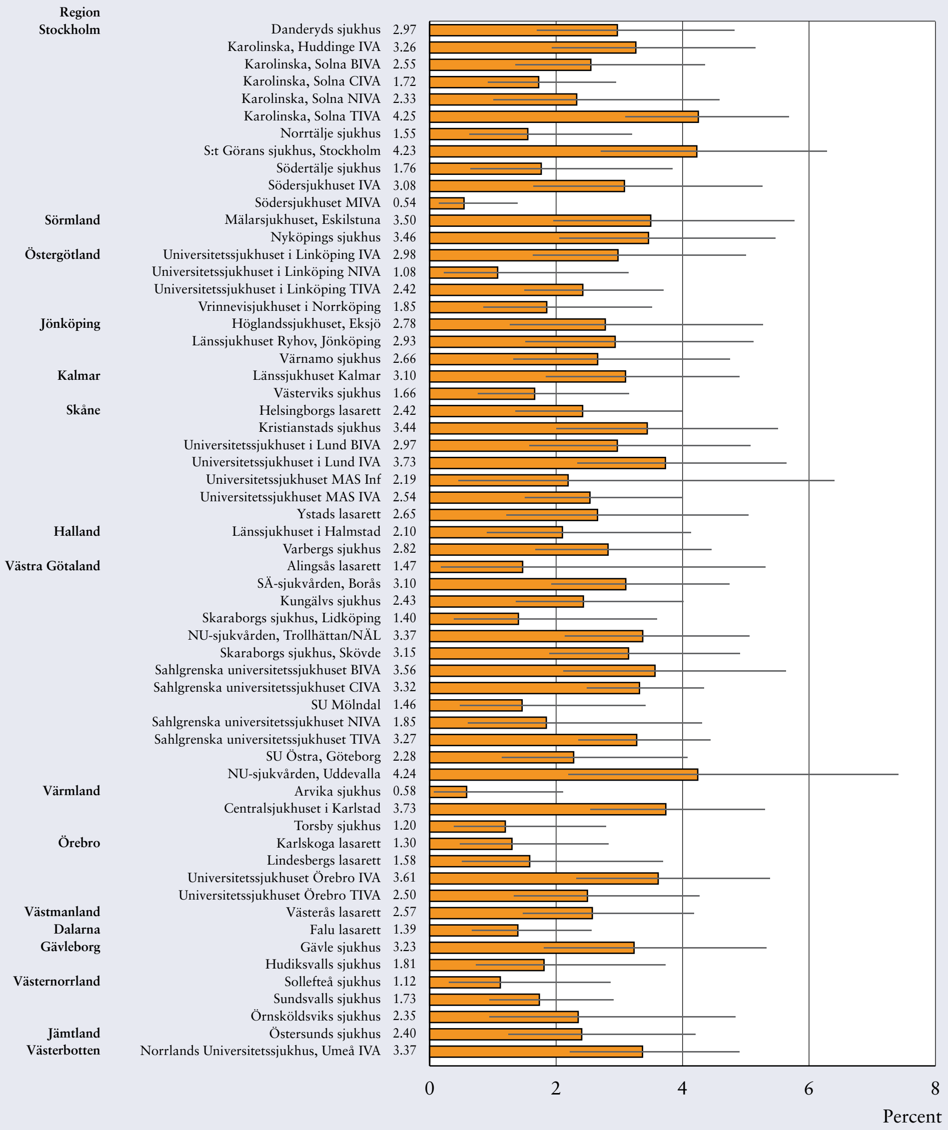


Figure 122
Hospitals

Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit, 2009.

Source: Swedish Intensive Care Registry

reason, the Intensive Care Registry 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 registry targets an unscheduled readmission rate within 72 hours to the same intensive care unit of less than 2.6 per cent.

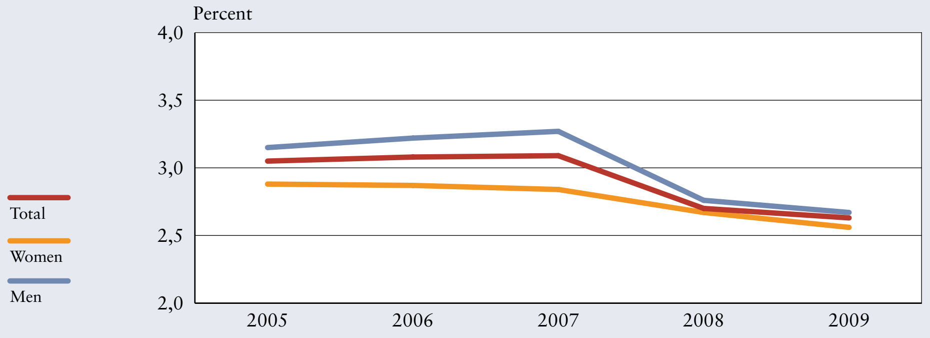


Figure 122
Sweden

Percentage of patients with unscheduled readmission within 72 hours to the same intensive care unit.

Source: Swedish Intensive Care Registry

Figure 122 shows the percentage of patients who were readmitted to an intensive care unit on an unscheduled basis within 72 hours after discharge from the same unit. The nationwide outcome for 2009 was 2.6 per cent, ranging among the various regions from 1.4 to 4.1 per cent among women and approximately the same among men.

Both the percentage of readmissions and the regional variations were somewhat lower in 2009 than 2007 and 2008. No significant gender-related statistical differences have been found at the national level. Five regions were unable to submit data to the registry.

DRUG THERAPY

There are seven indicators in this set. All of them are broad and concern large patient populations. Two of the indicators involve drug therapy for people age 80 and older and relate to patient safety. Three of the indicators deal with antibiotic use (one of them in children), shedding light on the development of resistance and decisions about the appropriate medication. One indicator looks at the costs associated with the choice of antihypertensives, and one examines the extent to which caregivers follow the Medical Product Agency's recommended treatment programme for young people with asthma. All of the indicators appeared in last year's report. Four drug therapy indicators are presented under Psychiatric Care instead.

123 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 is metabolised or acts. 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

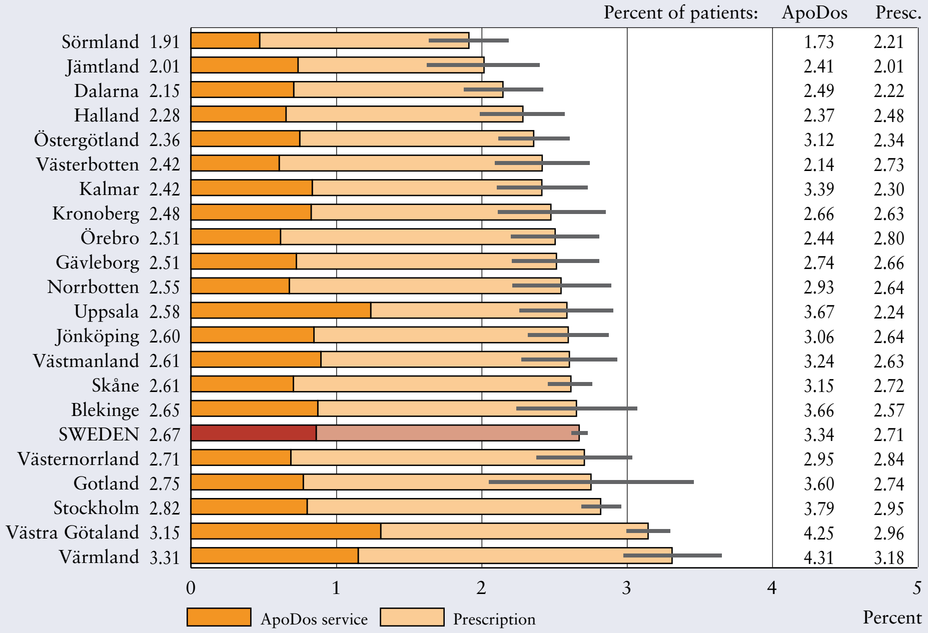


Figure 123
Women

Percentage of people age 80 and older who were using drugs that pose the risk of Class D drug-drug interactions, 31 December 2009.

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

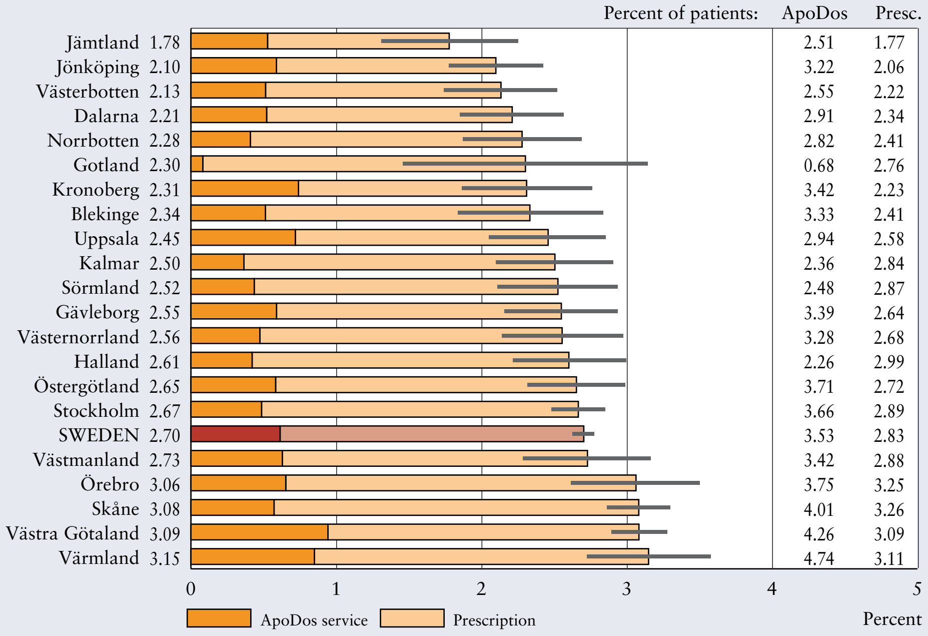


Figure 123
Men

Percentage of people age 80 and older who were using drugs that pose the risk of Class D drug-drug interactions, 31 December 2009.

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

individual doses. Thus, the combination should be avoided." It is one of NBHW indicators for good drug therapy in the elderly.

Figure 123 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 2009. The bars are broken down between patients who received their medication through the ApoDos service or at the prescription counter.

A total of 2.7 per cent of both women and men nationwide, or more than 13 000 patients altogether, were consuming such combinations. The proportion ranged from 1.9 per cent in Sörmland to 3.3 per cent in Värmland for women, and 1.8 per cent in Jämtland to 3.2 per cent in Värmland for men. The nationwide proportion represented a decline from 2.9 per cent in the previous year.

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 region to region. Uppsala and Västra Götaland had the highest percentages, whereas Gotland and Stockholm had the lowest.

That 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.

The regional variation was relatively small (1.9–3.2 per cent for both sexes) but somewhat greater in the ApoDos group. 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.

124 Polypharmacy – elderly who consume ten or more drugs

Polypharmacy refers to the concurrent consumption of multiple drugs. Studies have shown polypharmacy to be associated with noncompliance, 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, it is one of NBHW indicators for good drug therapy in the elderly.

According to Figure 124, 11.8 of women and 9.2 of men in the patient population were consuming ten or more drugs on 31 December 2009. That represents almost 54 000 people nationwide. The regional variations were 9.7–15.6 per cent for women

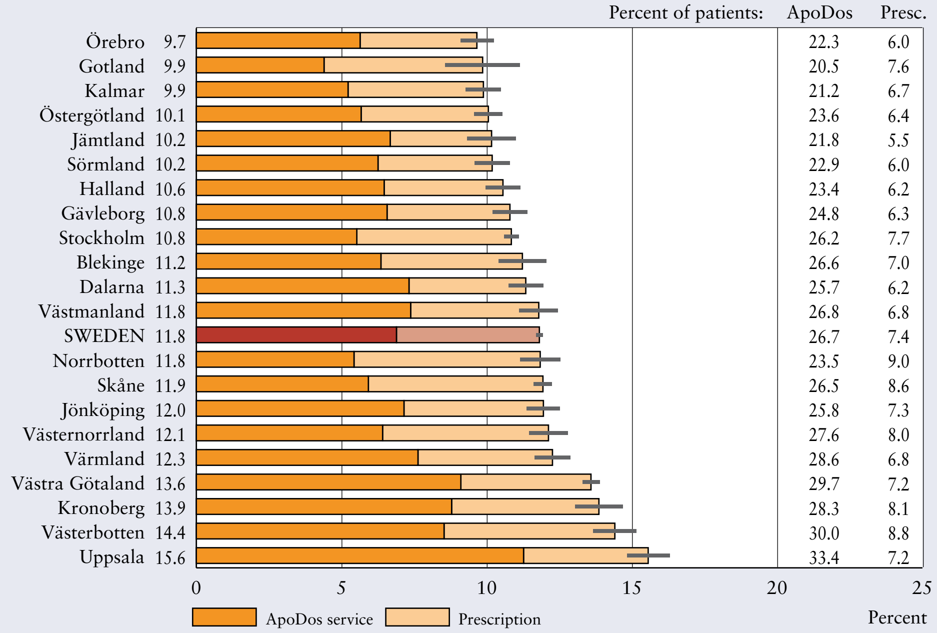


Figure 124
Women

Percentage of people age 80 and older who were consuming ten or more drugs concurrently, 31 December 2009.

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

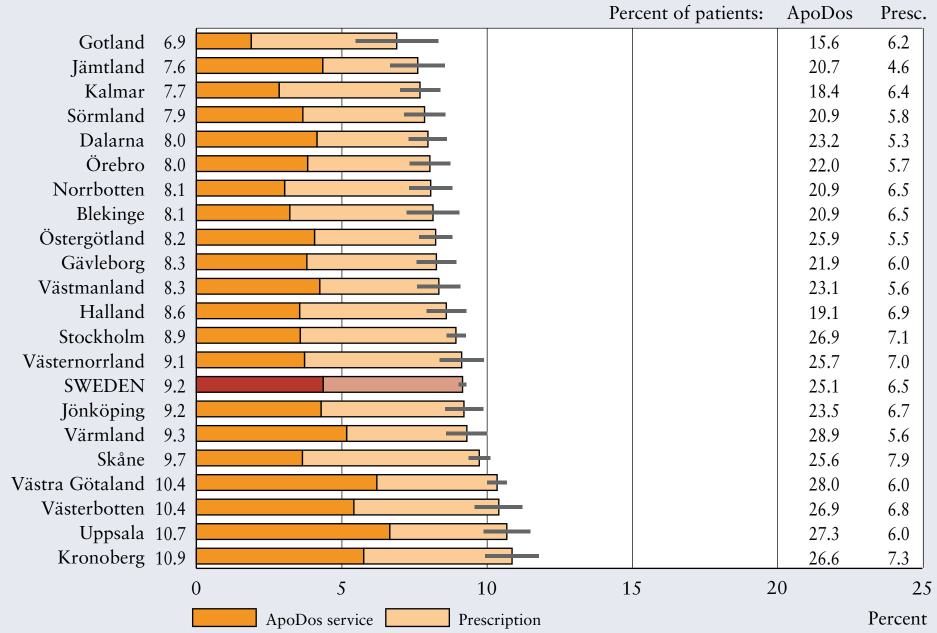


Figure 124
Men

Percentage of people age 80 and older who were consuming ten or more drugs concurrently, 31 December 2009.

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

and 6.9-10.9 per cent for men. Compared with the previous year, that constituted a decrease of several tenths of a percentage point for both sexes.

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 26.2 per cent of ApoDos patients were consuming ten or more drugs, as opposed to 7.0 of those who used the prescription counter. The regional variation was significant (19–32 per cent) for both sexes, particularly in the ApoDos group.

All regions have drug storehouses as part of home healthcare services or assisted living facilities that may have an impact on this indicator. Home health care is by definition an outpatient service. Since the consumption of drugs from storehouses is not entered in the Prescribed Drug Register, however, drug consumption in outpatient care may be underestimated. However, in most cases 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 124.

Many of the other indicators (such as 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 effects. This indicator illustrates the importance of choosing therapies that proceed from an overall assessment of the individual patient's needs.

125 Occurrence of antibiotic therapy

There is a clear correlation between antibiotic consumption in a country and the percentage of resistant bacterial strains. Increasing antibiotic consumption may reach 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.

Antibiotics should not be used needlessly. One way of reducing unnecessary use is to avoid prescribing them right away for mild infections that usually heal completely on their own. The length of the treatment period also affects the total antibiotic pressure. A number of recent studies have found that certain infections, such as those of the urinary tract in women, 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. Broad-spectrum antibiotics disrupt the body's normal bacterial flora more, which increases the risk of adverse effects and the development of resistance among a number of bacterial strains.

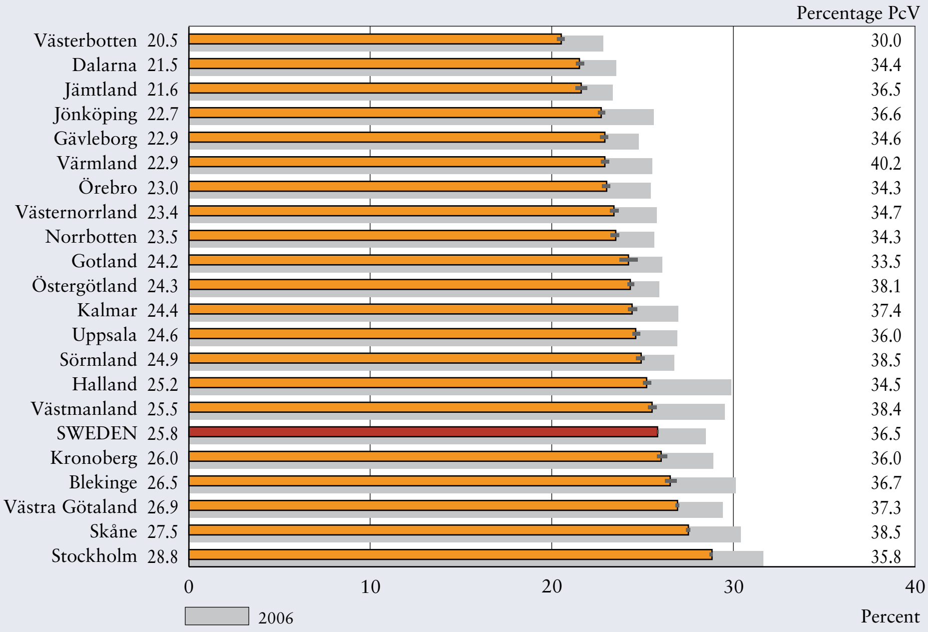


Figure 125
Women

Percentage of the population that received antibiotic therapy, 2009. Age-standardised.

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

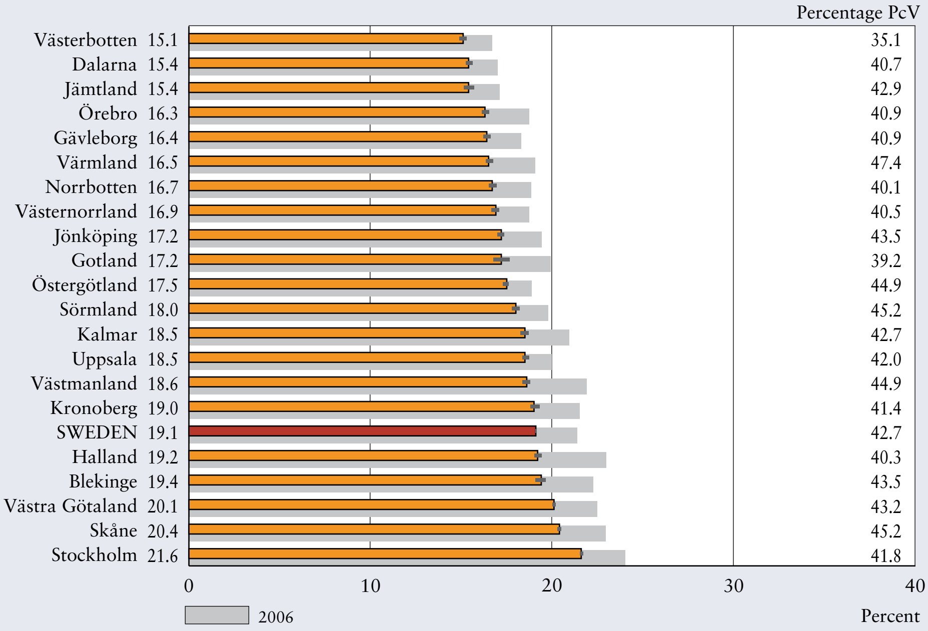


Figure 125
Men

Percentage of the population that received antibiotic therapy, 2009. Age-standardised.

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

Figure 125 shows the percentage of the population that picked up prescriptions for antibiotics in 2009, with 2006 as the base year. The diagram also presents the percentage of people whose first antibiotic prescription for the year was Penicillin V, a narrow-spectrum antibiotic. The source of data is the Prescribed Drug Register, which is complete 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.

An average of almost 26 per cent of women and 19 per cent of men, or over 2.1 million people, picked up an antibiotic prescription in 2009. That represented somewhat of a decrease compared with 2006. Generally speaking, fewer antibiotics are prescribed in northern Sweden than in the metropolitan areas.

The differences between many regions were modest in terms of percentage points but large in absolute numbers. If Stockholm had been in line with the national trend, approximately 55 000 fewer people would have been prescribed antibiotics. The regional variations probably stem from 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 region is currently that low – a 30 per cent nationwide decrease would be required. Keep in mind that the diagram shows the number of people who picked up antibiotics, not the number of prescriptions.

126 Penicillin V in treatment of children with respiratory antibiotics

Most respiratory infections are due to viral infection 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 bacterial flora. See Indicator 125 on choosing antibiotics.

A total of 30 per cent of all children age 6 and younger were given some type of antibiotic for respiratory infection in 2009. Figure 126 shows the percentage of children who received penicillin V among those whose first prescription during the year 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.

Penicillin V was prescribed for 72 per cent of girls and 74 per cent of boys. The regional variations were rather large. The penicillin V percentage was somewhat higher than in the base year. Some regions showed a substantial improvement.

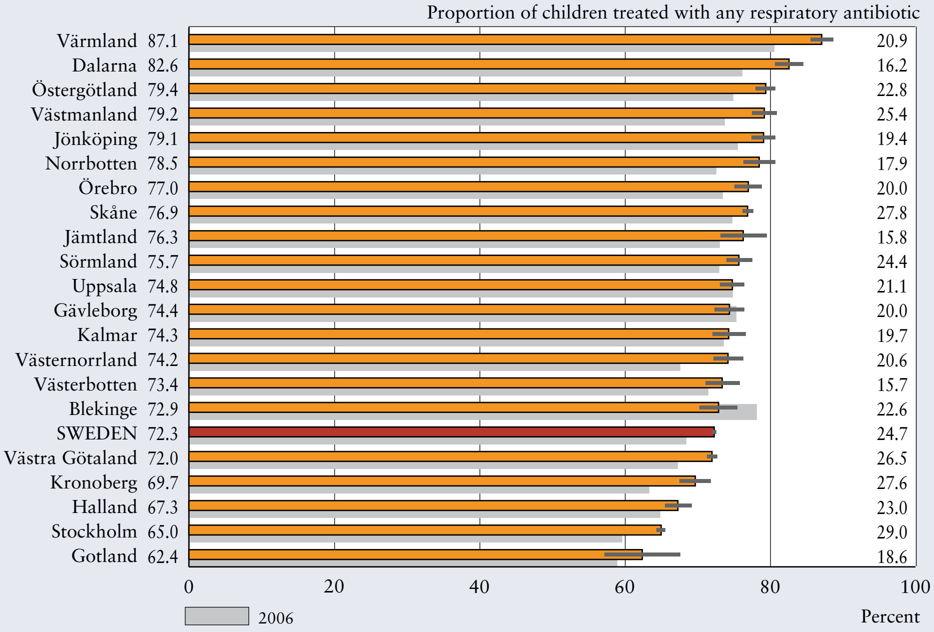


Figure 126
Girls

Percentage of patients receiving Penicillin V of all children age 6 and younger treated with respiratory antibiotics, 2009. Age-standardised.

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

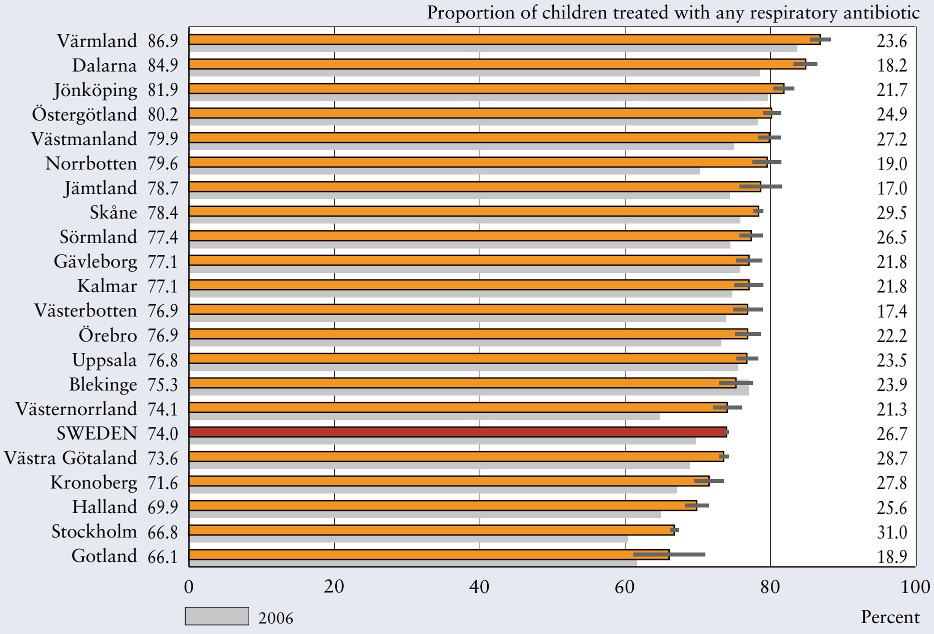


Figure 126
Boys

Percentage of patients receiving Penicillin V of all children age 6 and younger treated with respiratory antibiotics, 2009. Age-standardised.

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

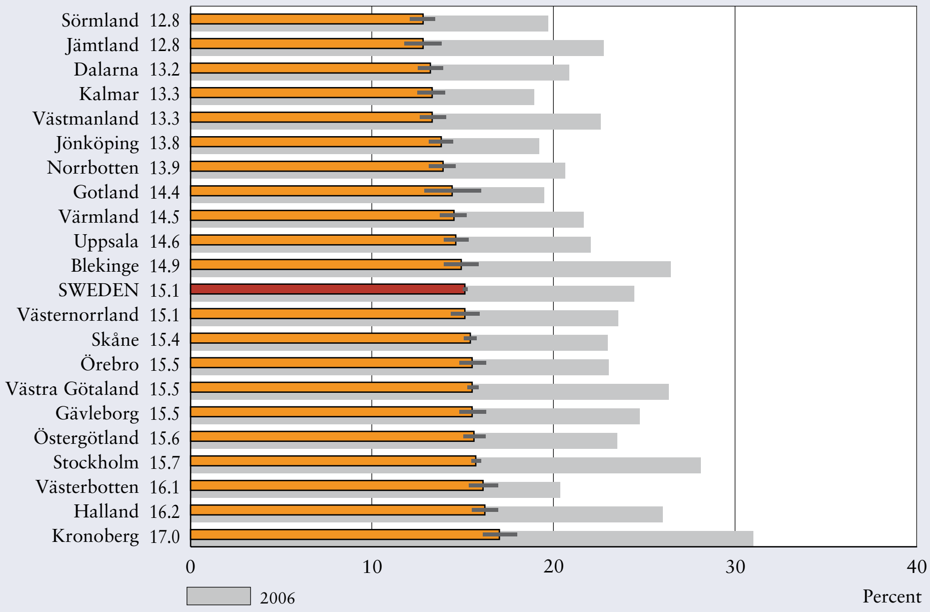


Figure 127
Women

Percentage of patients receiving quinolone therapy of all women treated with urinary tract antibiotics, 2009. Age 18–64. Age-standardised.

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

While no specific target has been set, the regions with the highest percentage of penicillin V use serve as good models of achievable results.

127 Quinolone therapy in treatment of women with urinary tract antibiotics

Sweden and the other Scandinavian 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 2009. Approximately 46 000 of the almost 308 000 women included in the comparison were prescribed quinolones.

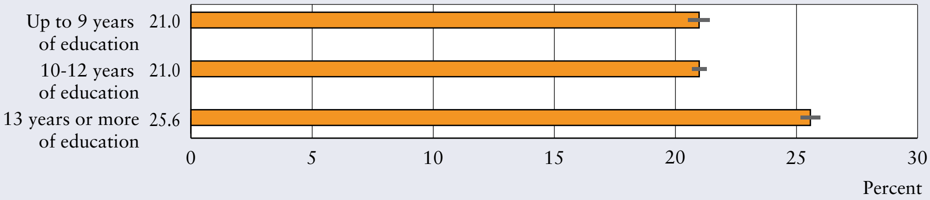


Figure 127A Women Education and percentage of patients receiving quinolone therapy of all women treated with urinary tract antibiotics, 2009. Age 18–64. Age-standardised.

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

Figure 127 demonstrates that all regions were higher than the Strama and SFAM recommendations, varying from almost 13 per cent to 17 per cent. Nevertheless, nationwide use had declined significantly from 24 per cent in 2006. The attention that has been devoted to quinolones for urinary tract infection in recent years appears to have affected prescription rates.

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 regions. The analysis has not taken into consideration any regional differences in the occurrence of resistance.

Use of quinolones partially reflects the patient's educational level. Figure 127 A shows that women with a university education used quinolones more often that those with only a compulsory or secondary school education. There is no reason to believe that medical needs explain the correlation. The more likely explanation is that social mechanisms are involved, such as the patient's ability to articulate her expectation that she will receive a broad-spectrum antibiotic and the doctor's willingness to accommodate her.

128 Combination drugs for asthma

Asthma and asthmatic bronchitis are common among infants. Between 5 and 10 per cent of schoolchildren, and 6 to 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. However, asthma is more common in adult women than men. Smoking, which is more frequent among women, increases the risk of 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 last 50 years. Due to the treatment methods now available, children and adults with asthma rarely require hospitalisation.

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

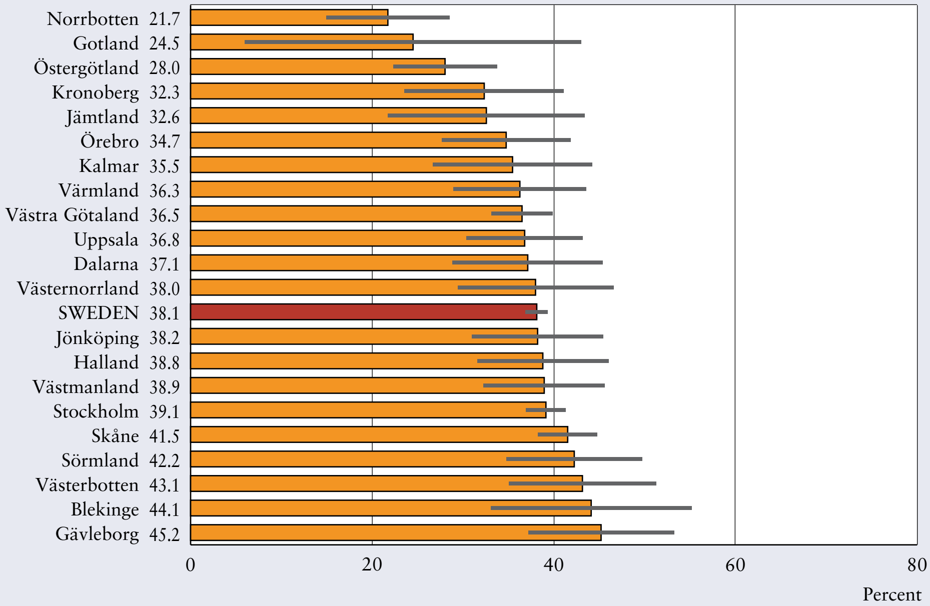


Figure 128
Women

Percentage of new users of fixed combinations of corticosteroids and long-acting beta-stimulants (LABA) not prescribed previously an anti-asthmatic drug, 2009. Age 25–44. Age-standardised.

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

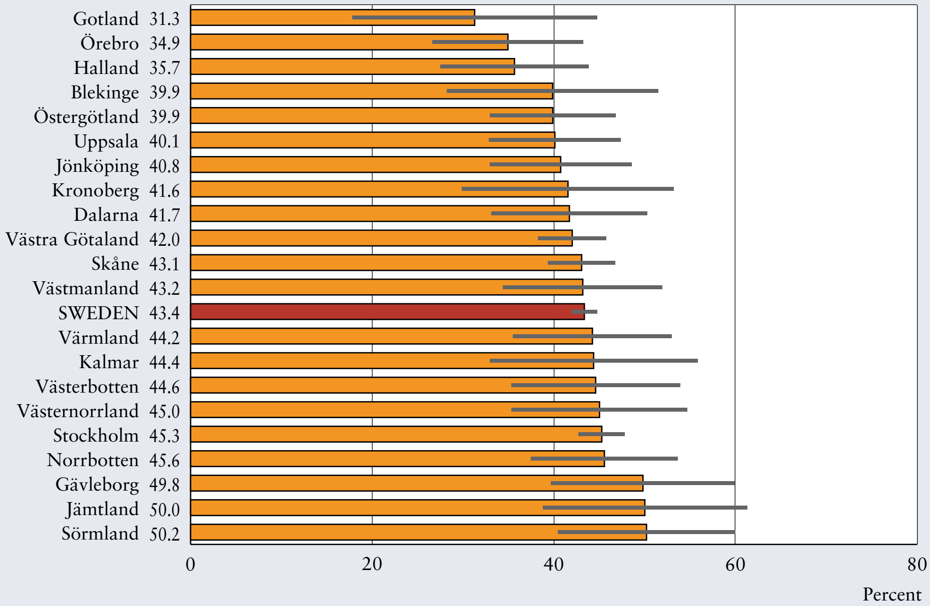


Figure 128
Men

Percentage of new users of fixed combinations of corticosteroids and long-acting beta-stimulants (LABA) not prescribed previously an anti-asthmatic drug, 2009. Age 25–44. Age-standardised.

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

be used only for purposes 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 quick-acting bronchial dilators.

A large percentage of patients who are prescribed asthma drugs do not have asthma, 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, it is difficult to distinguish asthma from COPD patients. If only younger people are included, asthmatics predominate.

The indicator reflects the percentage of patients who started on a combination drug and had not tried another asthma drug previously. Of the approximately 11 000 new users of combination drugs in 2009, more than 4 400 (38 per cent of women and 43 per cent of men) had not previously used another asthma drug. The regional variations were fairly large.

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

129 Percentage of angiotensin II receptor antagonists prescribed for antihypertensive therapy

Sales of antihypertensives totalled 2.4 billion kronor in 2007. Angiotensin II receptor antagonists (ARAs) accounted for approximately 40 per cent. ARA prices are too high for their general use to be as cost-effective as other well-documented, inexpensive drugs.

Under a directive from the Dental and Pharmaceutical Benefits Agency as of 1 September 2008, ARAs are to be subsidised for patients who have tried but cannot use angiotensin-converting enzyme (ACE) inhibitors or as an adjunct to ACE inhibitors. One possible adverse effect of ACE inhibitors is coughing, which is a good reason to switch to ARAs.

The indicator presents the percentage of new ARA users who had previously tried ACE inhibitors in accordance with the guidelines. The comparison covers September-December 2009, with the same months of 2008 as the base period.

Approximately 14 000 patients started on ARAs in September-December 2009. Some 30 per cent, both women and men, had not tried ACE inhibitors earlier. There were considerable variations from region to region.

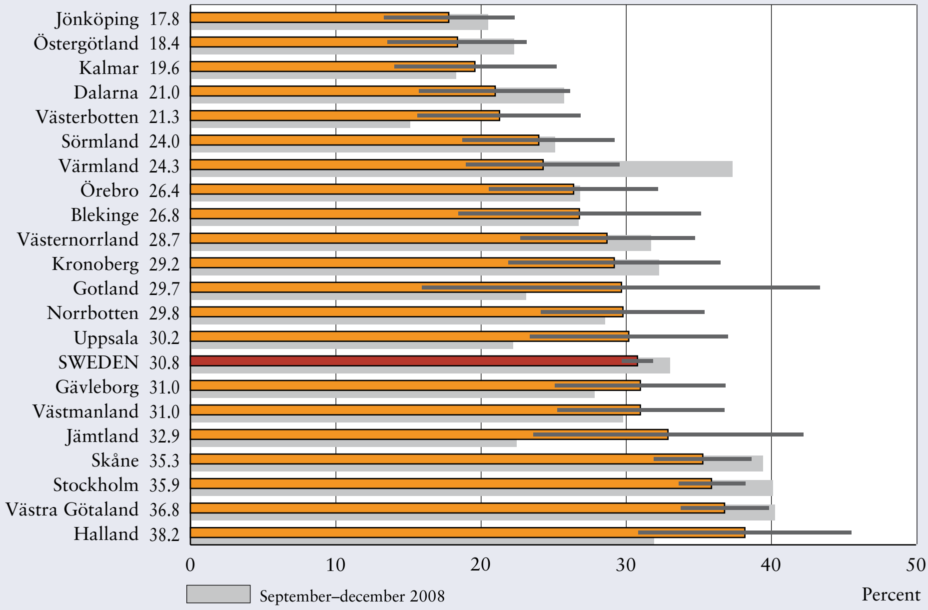


Figure 129
Women

Percentage of new angiotensin II receptor antagonist users who had not previously tried ACE inhibitors, September-December 2009. Age 40–79. Age-standardised.

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

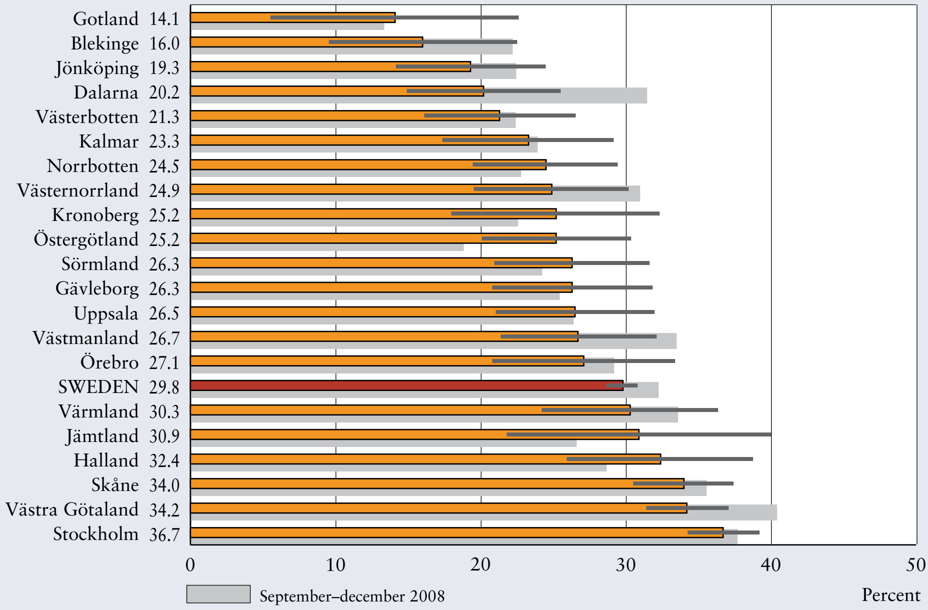


Figure 129
Men

Percentage of new angiotensin II receptor antagonist users who had not previously tried ACE inhibitors, September-December 2009. Age 40–79. Age-standardised.

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

The nationwide percentage was modestly lower than the base period. The change was greater compared with periods before the decision of the Dental and Pharmaceutical Benefits Agency.

Due to patent expiration, ARA prices declined in 2010. The price trend should affect how this indicator is designed in future. But the main question about choosing among equivalent drugs for which there are major cost differentials remains.

OTHER CARE

130 Good viral control for HIV

HIV is a viral infection that leads to acquired immune deficiency syndrome (AIDS) and death if not treated. The lifetime antiretroviral therapy now available offers a normal life expectancy. Most of the 5 300 Swedes who have been diagnosed with HIV live in the metropolitan areas. The patient population increases by 10 per cent every year. Ninety two per cent of the patients who are treated reach the targets and are continuously virus-free.

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 31 clinics that care for 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 < 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 the prospects for survival. It is internationally established and the measure most frequently used by pharmaceutical and treatment studies.

HIV-RNA < 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 insufficient efficacy. Identifying the reasons for such problems is fundamental to affecting and improving outcomes.

Figure 130 shows the percentage of patients with good viral control (HIV-RNA < 50 copies/ml) in 2009. Each patient's last measurement during the period is reported. The comparison included 4 324 patients. A total of 92 per cent of patients nationwide reached the target. The various regions ranged from 80 to 100 per cent. The regional differences narrowed in comparison with the previous survey, while the nationwide results improved by 4 per cent. No gender discrepancies were observed.

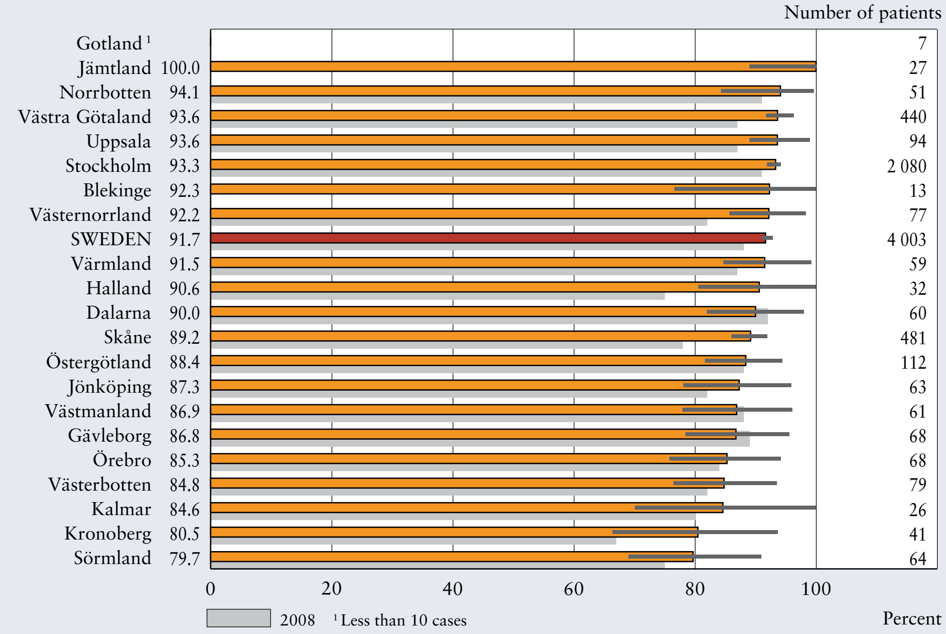


Figure 130
Total

Percentage of HIV patients with good viral control (HIV-RNA<50 copies/ml) of all patients receiving antiretroviral therapy, 2009.

Source: InfCare HIV Quality Register

Figure 130
Hospitals

Percentage of HIV patients with good viral control (HIV-RNA<50 copies/ml) of all patients receiving antiretroviral therapy, 2009.

Source: InfCare HIV Quality Register

A majority of regions 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 regions 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 2008 and 2009.

Even in comparison with typical results of clinical studies subject to strict selection criteria, Swedish outcomes are excellent from an international point of view.

The HIV population has traditionally been described based on route of transmission. The various groups are highly dissimilar when it comes to socioeconomic and cultural variables, not to mention treatment frequency and outcomes. Such case mix differentials can affect regional results. For statistical reasons, the data for small regions are less reliable, as reflected by the broad confidence interval.

131 Assessment of pain intensity at the 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 providers should be able to collaborate such that all patients receive good, equitable care.

The purpose of the Swedish 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, both locally and regionally operated and financed, can report to the registry.

The registry had a 44 per cent participation rate for cancer deaths in 2008, with a regional variation of 26–74 per cent. Figures 131 and 132 present participation rate per region. There has been an improvement in that respect since 2007–2008.

NBHW published guidelines for breast, prostate and colon cancer in 2007. The two national quality indicators for palliative care that were developed during that effort are discussed below.

The indicator in this report measures process, i.e., the percentage of patients who assessed pain intensity on the VAS/NRS scale at least once during their final week of life. Pain is a personal experience. Caregivers have a tendency to underestimate, and family to overestimate, a patient's experience of pain. Routine, systematic pain assessment efforts are required to capture and thereby 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 who are able to communicate.

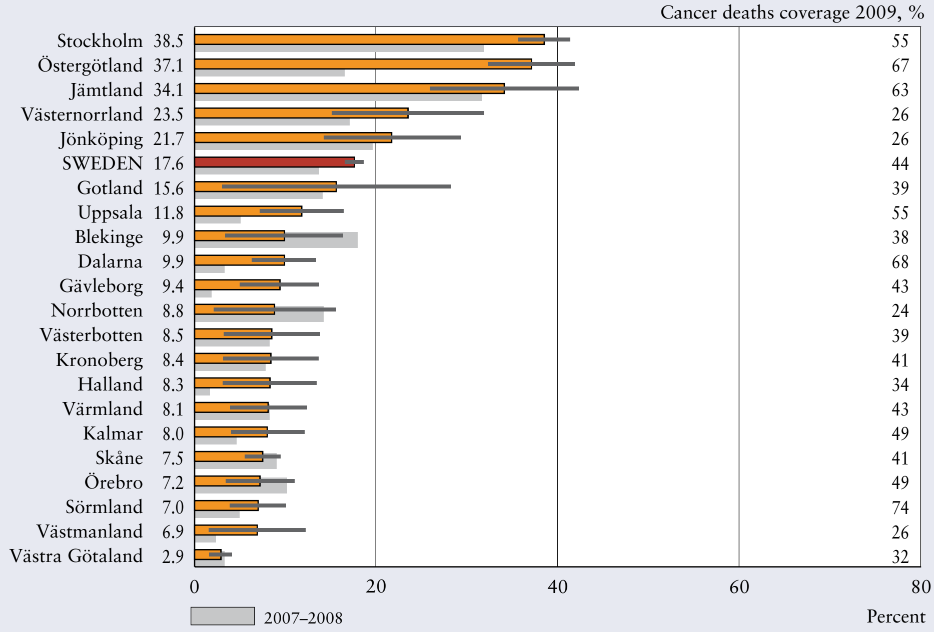


Figure 131
Women

Percentage of cancer patients at the end of life who assessed pain intensity on the VAS/NRS-scale, 2009.

Source: Swedish National Registry of Palliative Care

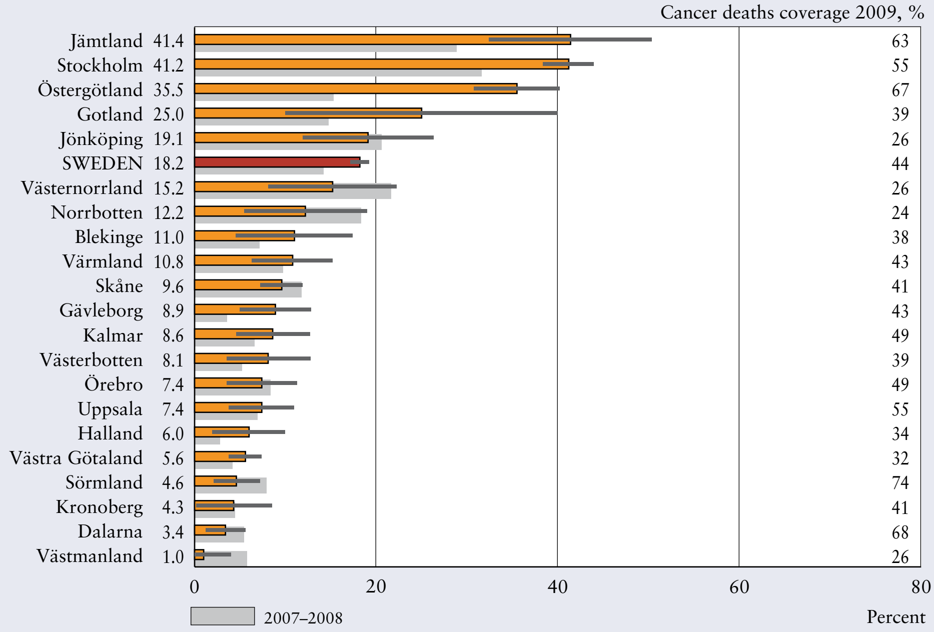


Figure 131
Men

Percentage of cancer patients at the end of life who assessed pain intensity on the VAS/NRS-scale, 2009.

Source: Swedish National Registry of Palliative Care

The palliative registry targets the use of the VAS/NRS scale for at least 60 per cent of all dying patients. The modest target is due to the fact that use of this particular scale relies on the desire and ability of the patient to participate.

According to Figure 131, the VAS/NRS scale was used on only 17.6 per cent of women and 18.2 per cent of men. The comparison includes more than 10 500 cancer patients who were reported to the registry in 2009. The regional variations were 2.9–38.5 per cent for women and 1.0–41.4 per cent for men. While most regions showed an increase, none of them reached the target for either sex. Thus, all reporting caregivers have great potential for improvement.

132 On-demand prescription of opioids at the end of life

Good palliative care at the end of life requires that patients and their families be notified that treatment to cure or arrest the progression of the disease or condition has been terminated. Certain medical and nursing measures must be taken at that point, including assurances that appropriate prescriptions are available in the event of pain. The prescription should be written by the physician who is in charge of the patient. Medical responsibility is sometimes transferred from the specialist to the primary care doctor who oversees home health care or assisted living facilities. Thus, it is particularly important that no vital prescriptions fall through the cracks.

It is well known that the majority of people who are dying of cancer need at least one injection of opioids at the end of life. However, some physicians with medical responsibility are reluctant to prescribe opioids before the need arises.

The time between increased pain and relief can be unnecessarily long. First the patient must realise that she is experiencing enough pain to push the alarm button. The alarm must reach a nurse, who must make an assessment and then have access to a suitable prescription and the drug itself. If the process is not to take an unreasonable amount of time, every step must be well prepared for.

According to the 2008 annual report of the palliative registry, the percentage of prescriptions administered rises if written procedures have been drawn up. The registry's target is that 90 per cent of patients have a prescription for pain relief. Discussions are under way about whether the target should be raised.

Figure 132 shows the percentage of cancer patients in 2009 who had an on-demand prescription for opioids. The comparison included more than 10 000 patients. A total of 96 per cent of patients nationwide had such a prescription. Both the regional and gender differences were small. All regions met the current 90 per cent target.

Over 40 per cent of all cancer deaths in 2009 were reported to the palliative registry. Thus, the results were good for these patients. However, such procedures need to be improved at a few local clinics. Poor medical continuity occasionally accounts for such inadequacies.

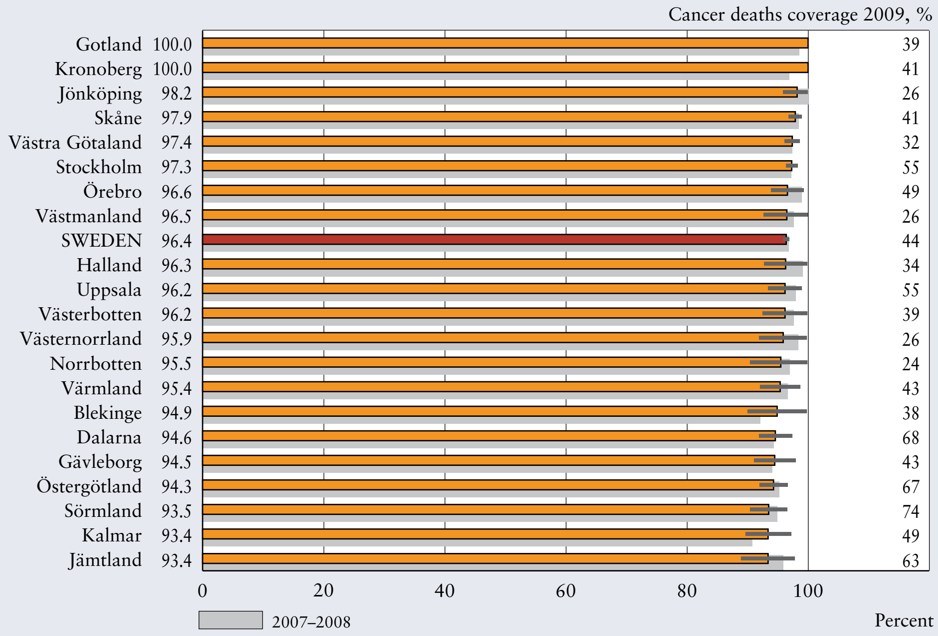


Figure 132
Women

Percentage of cancer patients who were prescribed opioids on an on-demand basis at the end of life, 2009.

Source: Swedish National Registry of Palliative Care

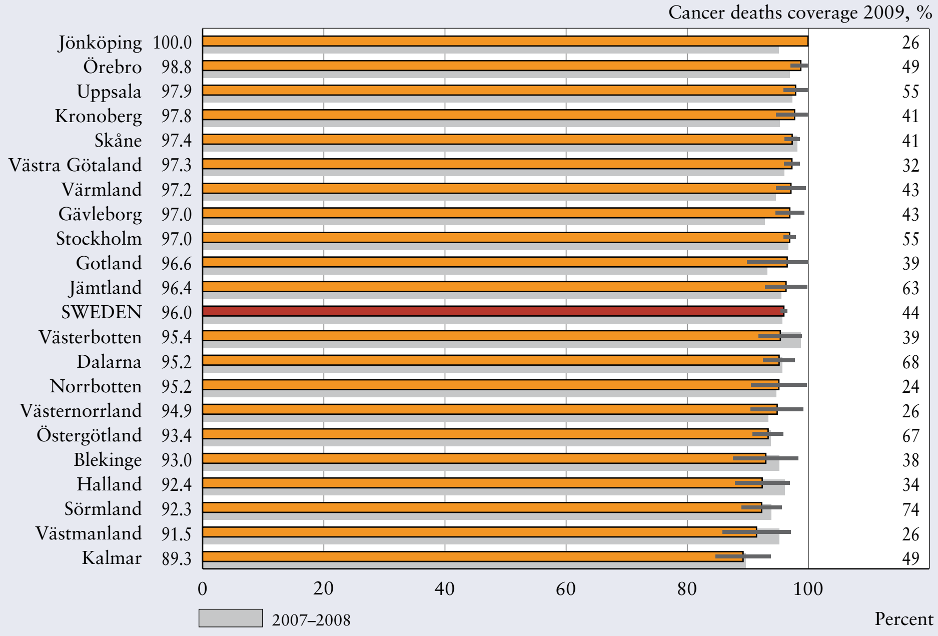


Figure 132
Men

Percentage of cancer patients who were prescribed opioids on an on-demand basis at the end of life, 2009.

Source: Swedish National Registry of Palliative Care

133 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 costs of multiple sclerosis were 5 billion kronor 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 is normally between 20 and 40 years of age. Multiple sclerosis is found most often in northern Europe and appears to be increasingly common. Of the 13 000 Swedes who have the disease at the present time, approximately 4 500 are receiving immunomodulators.

The Swedish Multiple Sclerosis Registry contains data about more than 10 000 patients and their treatment. The participation rate has improved but varies from region to region. A comparison with the Patient Register found that one register or the other had data about 13 500 patients.

Interferon beta and glatiramer acetate have been approved since the 1990s for decreasing the frequency of relapses in multiple sclerosis patients during the first 15 years before the progressive phase normally takes over. Natalizumab was approved for that purpose in 2006. A number of major drug trials in recent years have shown that the effect of the drug on the progress of the disease is insignificant or nonexistent. Many studies have also found that 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 no more than 25 per cent of those with secondary progressive multiple sclerosis. Use of the therapy among the latter patient population is limited to the transition period from the relapsing-remitting stage. That 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 133 shows the percentage of the estimated number of patients with relapsing-remitting multiple sclerosis who were receiving one of the immunomodulators mentioned above among those who had the disease for less than 15 years. Some regions prescribe the therapy often, whereas others do so quite rarely.

Because the occurrence of multiple sclerosis is not known at the regional level, it is assumed to be distributed uniformly. That entails a degree of statistical uncertainty.

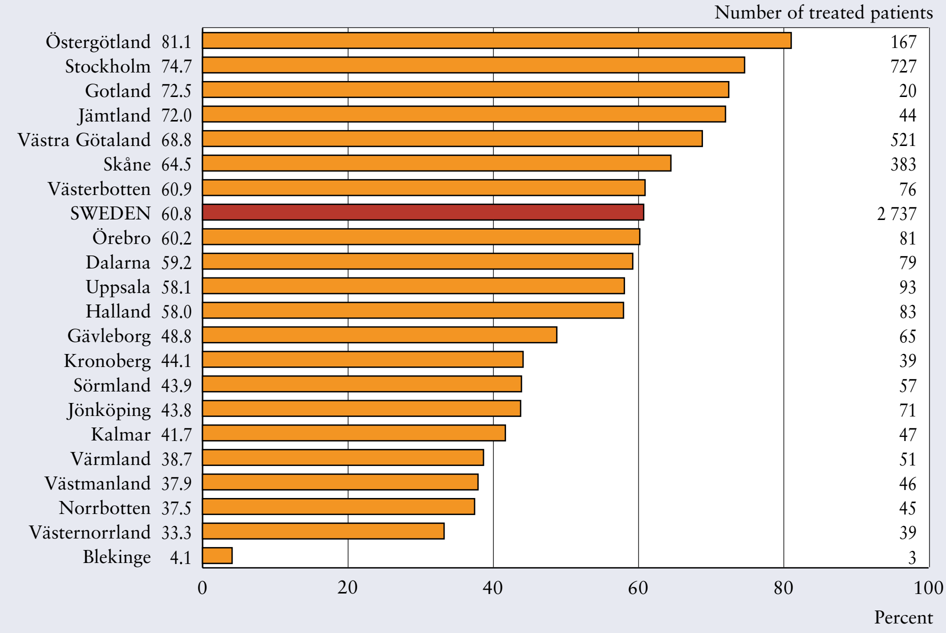


Figure 133
Total

Percentage of estimated number of patients with relapsing-remitting multiple sclerosis who were being treated with immunomodulators, August 2010.

Source: Swedish Multiple Sclerosis Registry

The reason that the analysis has been limited to patients who have had multiple sclerosis for less than 15 years is that it is difficult to determine exactly when the progressive phase begins.

Several regions with university hospitals offer the therapy frequently. The number of patients receiving the therapy may be underestimated, given that such clinics often conduct fairly large clinical trials in which some patients are given another treatment or placebo. Meanwhile, poor reporting from other regions may also lead to underestimates. Nevertheless, the multiple sclerosis registry is fully consistent with prescription data from the pharmacies.

134 Immunomodulators for secondary progressive multiple sclerosis

Figure 134 shows that the frequency of therapy varies when it comes to secondary progressive multiple sclerosis as well. Nine regions use the therapy on fewer than 10 per cent of the estimated number of patients, whereas two are close to or over the recommended limit of 25 per cent. One explanation may be that some clinics 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.

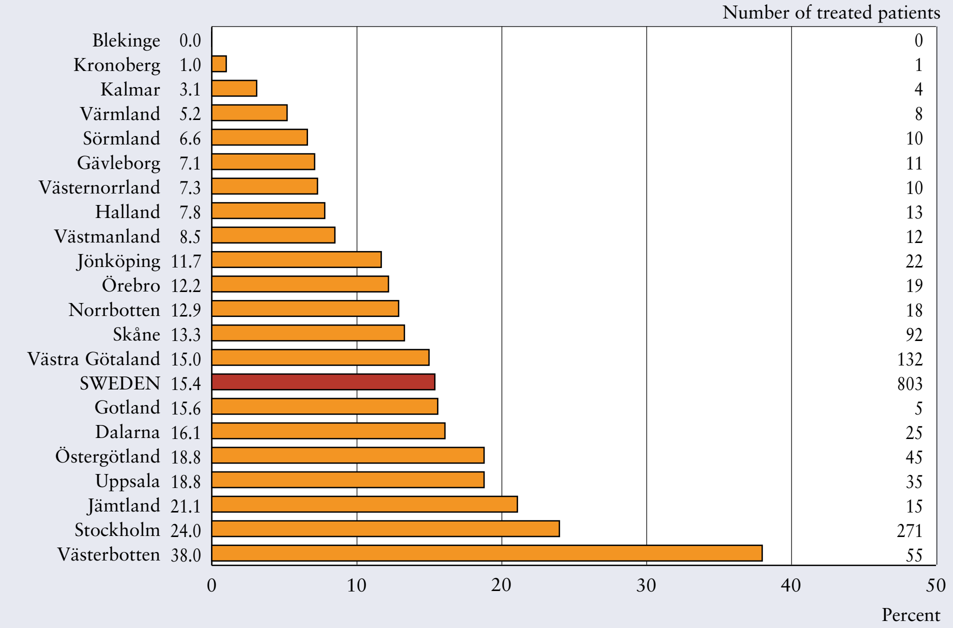


Figure 134
Total

Percentage of estimated number of patients with secondary progressive multiple sclerosis who were being treated with immunomodulators, Aug. 2010.

Source: Swedish Multiple Sclerosis Registry

Ten years ago data from the multiple sclerosis registry showed that the frequency of therapy was essentially independent of disability – in other words, many patients in the early stages were not 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. Nevertheless, there are still differences among regions and clinics. The region in which patients live, or variations in medical practice among clinics, affects their chances of receiving therapy in a way that does not reflect their actual condition. However, the data suggest that some regions overtreat patients in the secondary progressive stage.

Worth noting is that this is the first year that treatment statistics are presented such that frequency is related to the estimated size of the patient population. Because the population base for individual clinics cannot be established, data are presented by region. Furthermore, a single clinic provides most multiple sclerosis care in the great majority of regions, with the exception of Skåne, Västra Götaland and Stockholm.

Thus, the analysis shows 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 should be improved.

Outcomes for all Regions and Indicators

The following section contains a colour-coded chart of regional outcomes for the various indicators. Each row represents a particular indicator and the outcomes of the different regions (columns) in terms of percentages and colour code. When applicable, each indicator has an individual row for women, men and the entire population. The first column (no colour code) is for the country as a whole.

An upward arrow means that the outcome was better than the base period and a downward error that it was worse. The base values are always those presented in this year's report.

Green means that the region ranks 1–7, yellow 8–14, and red 15–21 among the 21 regions. If the cell is blank, no data were available or there were too few cases to report.

Rank 1–7

Rank 8–14

Rank 15–21

If the cell for a particular region is blank, it is automatically ranked last, so that there is one fewer red-coded cell for that indicator.

It must be re-emphasised that the regions cannot be judged on the basis of the number of red, yellow and green-coded cells. Each outcome should be assessed on its own merits rather than the rank of the region involved.

F. = Female
M. = Male

↑ = Better result
↓ = Worse result

		SWEDEN	Stockholm	Uppsala	Sörmland	Östergötland	Jönköping	Kronoberg	Kalmar
	General Indicators								
	Mortality, state of health, etc								
1	Life expectancy at birth, F.	↑ 83.1	↑ 83.4	↑ 83.5	↑ 82.4	↑ 82.8	↑ 83.3	↑ 83.6	↑ 82.8
	Life expectancy at birth, M.	↑ 78.9	↑ 79.1	↑ 80.0	↑ 78.4	↑ 79.3	↑ 79.4	↑ 79.6	↑ 78.4
2	Self-rated general health status, F.	69	71	73	68	70	70	74	72
	Self-rated general health status, M.	73	75	73	72	73	75	71	75
	Self-rated general health status	71	73	73	70	71	73	72	73
3	Self-rated impaired mental wellbeing, F.	20	22	19	22	18	18	19	15
	Self-rated impaired mental wellbeing, M.	14	17	17	13	14	13	12	11
	Self-rated impaired mental wellbeing	17	20	18	18	16	16	15	13
4	Policy-related avoidable mortality, F.	↓ 34.4	↑ 36.7	↓ 32.2	↑ 32.7	↓ 33.0	↓ 26.6	↓ 29.9	↓ 36.3
	Policy-related avoidable mortality, M.	↑ 54.8	↑ 57.4	↑ 52.4	↑ 61.3	↓ 53.6	↑ 45.7	↑ 49.6	↑ 53.6
	Policy-related avoidable mortality	↑ 44.1	↑ 46.3	↓ 42.1	↑ 46.4	↓ 42.7	↑ 35.6	↓ 39.5	↓ 44.5
5	Healthcare-related avoidable mortality, F.	↑ 37.9	↑ 33.9	↑ 34.6	↑ 45.3	↑ 38.2	↑ 43.0	↑ 33.0	↑ 39.6
	Healthcare-related avoidable mortality, M.	↑ 54.8	↑ 50.9	↑ 40.3	↑ 61.3	↑ 55.8	↑ 56.0	↑ 47.7	↑ 59.4
	Healthcare-related avoidable mortality	↑ 45.8	↑ 41.6	↑ 37.3	↑ 53.0	↑ 46.6	↑ 48.9	↑ 39.8	↑ 49.2
6	Avoidable deaths from ischaemic heart disease, F.	↑ 38.0	↑ 33.1	↑ 26.6	↓ 47.2	↑ 43.0	↑ 40.7	↑ 29.2	↓ 49.2
	Avoidable deaths from ischaemic heart disease, M.	↑ 100.9	↑ 93.6	↓ 86.0	↑ 92.7	↓ 106.1	↑ 89.7	↑ 91.2	↑ 105.7
	Avoidable deaths from ischaemic heart disease	↑ 67.8	↑ 61.0	↑ 54.9	↑ 69.0	↑ 73.1	↑ 63.8	↑ 59.0	↑ 76.5
7	Avoidable hospitalisations, F.	↑ 1 051	↑ 989	↓ 1 016	↑ 1 067	↑ 935	↑ 960	↑ 1 013	↓ 1 087
	Avoidable hospitalisations, M.	↑ 1 316	↑ 1 309	↑ 1 244	↓ 1 301	↑ 1 190	↑ 1 231	↑ 1 310	↓ 1 371
	Avoidable hospitalisations	↑ 1 162	↑ 1 121	↑ 1 115	↓ 1 164	↑ 1 044	↑ 1 074	↑ 1 141	↓ 1 208
8	Targeted screening in MRSA detection	↓ 55.9	↓ 57.2	↓ 37.8	↓ 16.7	↓ 50.0	↑ 60.7	↑ 48.0	↓ 58.1
9	Noscomial infections	↓ 9.6	↑ 9.9	↓ 12.1	↑ 7.5	↓ 10.5	↑ 7.1	↑ 7.7	↑ 8.2
10	Vaccination of children (MMR)	96.5	95.3	93.4	98.0	97.9	98.1	98.3	98.6
	Confidence and patient experience								
11	Self-rated access to health care, F.	↑ 77	↑ 79	↑ 79	↓ 70	↑ 81	↓ 81	↑ 85	↑ 84
	Self-rated access to health care, M.	↑ 78	↑ 80	↑ 79	↑ 73	↑ 78	↑ 81	↑ 85	↓ 82
	Self-rated access to health care	↑ 78	↑ 79	↑ 79	↑ 71	↑ 80	↓ 81	↑ 85	↑ 83
12	Confidence in primary care, F.	↑ 55	↑ 54	↑ 57	↓ 53	↑ 54	↓ 59	↑ 58	↓ 61
	Confidence in primary care, M.	↑ 57	↑ 58	↓ 55	↑ 55	↑ 58	↑ 62	↑ 62	↑ 68
	Confidence in primary care	↑ 56	↑ 56	↑ 56	↑ 53	↑ 56	↓ 60	↑ 60	↑ 64
13	Confidence in hospital care, F.	↓ 64	↓ 62	↓ 67	↑ 62	↑ 68	↓ 70	↓ 71	↑ 68
	Confidence in hospital care, M.	↓ 69	↑ 68	↓ 69	↑ 68	↑ 74	↓ 71	↓ 75	↓ 73
	Confidence in hospital care	↓ 66	↓ 64	↓ 68	↑ 64	↑ 70	↓ 71	↓ 73	↑ 70
14	Respect and consideration in primary care, F.	89	91	90	85	88	88	91	92
	Respect and consideration in primary care, M.	91	91	92	88	90	90	92	93
	Respect and consideration in primary care	90	91	90	86	88	89	91	92
15	Patient information, primary care, F.	77	77	78	73	76	75	80	81
	Patient information, primary care, M.	80	77	82	77	77	79	82	84
	Patient information, primary care	77	77	79	75	76	77	80	82
16	Participation in primary care, F.	78	83	81	73	76	76	81	82
	Participation in primary care, M.	78	83	81	75	75	77	80	82
	Participation in primary care	79	83	80	74	76	76	80	82
	Availability								
17	Appointment within seven days, primary care	↑ 92.2	↑ 93.8	85.1	↑ 91.0	↑ 96.3	↑ 89.8	↑ 93.8	↑ 93.9
18	Patient-reported avaliability of primary care, F.	81	83	77	75	80	81	87	86
	Patient-reported avaliability of primary care, M.	80	83	75	75	78	81	84	86
	Patient-reported avaliability of primary care	81	83	76	75	79	81	86	86
19	Telephone accessibility, primary care	↑ 60	↑ 63	↑ 59	↓ 56	↓ 65	↑ 59	↑ 66	↑ 70
20	Telephone accessibility, health care advice centres	↓ 59	↓ 62	↓ 57	↑ 69	↓ 61	↓ 51	↑ 78	↓ 67
21	Waited longer than 90 days, appointments	↑ 10.3	↑ 17.1	↑ 12.0	↓ 10.3	↑ 15.2	↓ 4.3	↑ 3.5	↓ 3.5
22	Waited longer than 90 days, treatments	↓ 11.5	↓ 12.5	↓ 13.2	↓ 15.9	↑ 14.4	↑ 6.7	↓ 13.4	↓ 4.7

	Gotland	Blekinge	Skåne	Halland	V. Götaland	Värmland	Örebro	Västmanland	Dalarna	Gävleborg	Västernorrland	Jämtland	Västerbotten	Norrbotten
	↑ 83.6	↓ 82.8	↑ 83.1	↑ 84.1	↑ 83.1	↑ 82.4	↑ 82.9	↑ 82.7	↓ 82.8	↑ 82.0	↑ 82.4	↑ 82.4	↑ 83.2	↑ 82.5
	↑ 79.2	↓ 79.0	↑ 79.0	↑ 79.9	↑ 78.9	↓ 77.9	↓ 78.5	↑ 78.7	↑ 78.9	↑ 78.1	↑ 77.8	↑ 78.5	↑ 78.9	↑ 78.1
	66	65	69	73	68	70	66	66	69	65	69	67	65	66
	76	71	75	78	72	69	75	72	73	71	73	65	75	72
	71	68	72	75	70	70	70	69	71	68	71	66	70	69
	23	16	20	20	20	16	17	20	21	21	21	17	24	21
	17	12	13	12	14	12	12	17	13	12	13	15	11	12
	21	14	17	16	17	14	15	18	17	17	17	16	17	16
	↑ 35.9	↓ 31.5	↓ 40.1	↓ 27.8	↓ 32.7	↓ 33.5	↑ 35.8	↓ 39.9	↓ 33.2	↓ 38.9	↓ 30.3	↓ 38.1	↑ 24.3	↓ 33.5
	↑ 54.8	↓ 61.4	↑ 64.4	↑ 48.8	↑ 53.4	↓ 52.1	↑ 53.0	↑ 56.1	↑ 49.6	↑ 57.5	↑ 57.8	↑ 48.4	↑ 40.5	↓ 47.7
	↑ 44.5	↓ 46.0	↓ 51.6	↑ 37.8	↓ 42.7	↓ 42.7	↑ 44.1	↑ 47.8	↑ 41.2	↓ 47.8	↑ 43.5	↓ 43.2	↑ 31.9	↓ 40.6
	↑ 39.3	↑ 37.1	↑ 35.6	↑ 29.1	↑ 36.5	↑ 43.4	↑ 43.7	↑ 39.7	↑ 44.7	↑ 44.2	↑ 43.1	↑ 45.7	↑ 36.8	↑ 41.4
	↑ 44.6	↑ 54.5	↑ 51.2	↑ 37.2	↑ 55.9	↑ 65.4	↑ 55.5	↓ 60.7	↑ 61.1	↑ 63.2	↑ 63.5	↑ 55.0	↑ 52.0	↑ 69.5
	↑ 41.7	↑ 45.7	↑ 42.8	↑ 33.0	↑ 45.6	↑ 53.8	↑ 49.5	↑ 49.4	↑ 52.5	↑ 53.0	↑ 52.5	↑ 50.1	↑ 44.0	↑ 54.6
	↓ 37.3	↑ 42.2	↑ 38.4	↑ 27.5	↑ 39.1	↑ 45.4	↑ 39.7	↑ 35.2	↑ 37.4	↑ 33.9	↑ 42.5	↓ 50.2	↑ 35.8	↓ 42.8
	↑ 105.3	↑ 102.3	↑ 101.9	↑ 80.5	↑ 105.0	↑ 108.0	↑ 113.2	↑ 93.3	↑ 101.1	↑ 101.9	↑ 118.5	↑ 107.5	↑ 102.4	↑ 130.0
	↑ 68.7	↑ 71.0	↑ 68.3	↑ 52.9	↑ 70.5	↑ 75.5	↑ 74.6	↑ 62.8	↑ 67.8	↑ 66.4	↑ 78.4	↑ 78.2	↑ 67.7	↓ 84.7
	↓ 1 302	↑ 1 003	↓ 1 056	↑ 958	↑ 1 087	↓ 1 151	↑ 1 042	↓ 1 185	↓ 1 214	↓ 1 052	↑ 1 149	↑ 934	↑ 1 179	↑ 1 077
	↓ 1 604	↓ 1 309	↓ 1 409	↑ 1 153	↑ 1 308	↑ 1 422	↑ 1 302	↑ 1 379	↑ 1 420	↑ 1 263	↑ 1 340	↑ 1 104	↑ 1 344	↑ 1 332
	↓ 1 435	↓ 1 141	↓ 1 204	↑ 1 041	↑ 1 180	↓ 1 267	↑ 1 151	↑ 1 257	↓ 1 294	↑ 1 142	↑ 1 223	↑ 1 010	↑ 1 247	↑ 1 184
	↓ 14.3	↓ 30.0	↑ 66.5	↑ 62.5	↑ 55.3	↓ 54.8	↓ 53.1	↓ 46.3	↑ 51.6	↓ 35.5	↑ 60.8	↑ 70.0	↑ 54.8	↓ 13.3
	↓ 12.6	↓ 11.3	↓ 9.9	↓ 6.9	↓ 11.0	↓ 8.2	↓ 8.2	↓ 9.6	↓ 8.4	↑ 8.4	↓ 8.5	↓ 8.4	↓ 12.1	↓ 7.0
	97.1	98.7	96.0	98.3	96.2	98.1	98.4	97.3	97.0	97.2	97.2	96.7	97.2	97.5
		↑ 82	↑ 76	↑ 86	↑ 77	↑ 72	↑ 79	↑ 77	↑ 79	↑ 68	↑ 73	↓ 73	↑ 82	↓ 73
		↑ 82	↑ 78	↓ 85	↑ 77	↑ 71	↑ 80	↑ 78	↓ 75	↑ 69	↑ 77	↑ 76	↑ 78	↓ 75
		↑ 82	↑ 77	↑ 86	↑ 77	↑ 72	↑ 79	↑ 78	↑ 77	↑ 69	↑ 75	↓ 74	↑ 80	↓ 74
		↓ 55	↑ 55	↓ 62	↑ 55	↓ 57	↓ 55	↑ 58	↓ 52	↑ 57	↓ 53	↑ 57	↑ 55	↓ 52
		↓ 58	↑ 57	↓ 67	↑ 56	↑ 56	↓ 50	↑ 59	↑ 55	↑ 57	↓ 49	↓ 56	↑ 58	↓ 55
		↓ 57	↑ 56	↓ 64	↑ 55	↓ 57	↓ 53	↑ 60	↑ 53	↑ 57	↓ 51	↓ 57	↑ 56	↓ 54
		↓ 65	↓ 63	↓ 64	↓ 63	↑ 66	↑ 74	↓ 63	↓ 65	↓ 57	↓ 62	↓ 64	↓ 70	↓ 64
		↓ 70	↓ 67	↓ 70	↓ 69	↑ 74	↓ 73	↑ 69	↓ 71	↓ 61	↓ 62	↓ 67	↑ 75	↓ 65
		↓ 67	↓ 65	↓ 66	↓ 65	↑ 69	↑ 74	↑ 66	↓ 68	↓ 59	↓ 62	↓ 66	↑ 72	↓ 65
	90	90	89	92	87	88	88	87	89	88	87	88	88	
	91	93	91	93	90	91	90	91	90	90	89	90	90	
	90	91	89	92	88	89	88	89	89	89	88	89	89	
	79	77	78	81	75	77	75	75	74	77	74	77	74	
	81	80	81	84	78	80	78	80	78	78	77	79	74	
	79	78	79	82	76	78	76	77	76	77	74	78	74	
	80	79	78	82	76	77	75	76	77	77	76	77	76	
	79	80	80	83	77	78	76	79	77	78	77	77	74	
	79	79	79	82	76	77	76	77	77	77	76	77	75	
	↑ 96.2	↓ 93.6	↓ 90.0	↓ 97.3	↑ 94.9	↑ 95.0	↑ 92.3	↑ 86.5	↑ 83.1	↓ 88.8	↑ 93.2	↑ 93.0	↑ 90.7	↓ 86.4
	79	82	82	86	81	82	81	79	80	83	84	80	79	
	80	81	79	86	80	80	81	76	79	80	81	80	77	
	79	81	81	86	80	81	81	77	80	82	83	80	78	
		↓ 63	↑ 45	↓ 70	↑ 66	↓ 33	↑ 64	↓ 54	↑ 69	↑ 61	↑ 61	↓ 40	↑ 62	↓ 62
		↓ 67	↓ 56	↑ 78	↑ 50	↑ 58	↑ 74	↓ 50	↓ 61	↓ 48	↓ 53	↑ 65	↓ 51	↓ 64
	↓ 8.0	↓ 12.5	↑ 3.4	↑ 3.5	↑ 9.9	↑ 8.5	↓ 11.8	↓ 7.0	↑ 14.9	↑ 9.7	↓ 34.6	↑ 4.2	↑ 10.7	↑ 5.9
	↓ 8.2	↑ 6.0	↓ 4.1	↑ 2.4	↑ 7.8	↓ 13.7	↑ 11.3	↓ 23.3	↓ 29.8	↑ 10.7	↓ 31.6	↓ 16.7	↑ 13.3	↓ 5.2

F. = Female
M. = Male

↑ = Better result
↓ = Worse result

		SWEDEN	Stockholm	Uppsala	Sörmland	Östergötland	Jönköping	Kronoberg	Kalmar
	Costs								
23	Structure-adjusted healthcare costs	↓ 20 238	↓ 21 585	↑ 19 737	↓ 19 271	↓ 18 283	↓ 19 898	↓ 20 316	↓ 19 027
24	Cost per consumed DRG point	↑ 43 218	↑ 41 889	↑ 41 499	↑ 43 166	↑ 44 745	↓ 43 437	↓ 44 399	↑ 38 320
25	Cost per contact in primary care	↑ 1 283	↑ 1 219	↑ 1 263	↓ 1 547	↑ 1 178	↓ 1 455	↑ 1 176	↓ 1 358
	Indicators by Area								
	Pregnancy, childbirth and neonatal care								
26	Smoking/snuff use during pregnancy, F.	5.54	4.11	3.48	6.36	6.48	6.32	4.69	7.60
27	Early abortions	↑ 77.1	↑ 75.9	↑ 77.0	↑ 81.9	↑ 80.3	↓ 83.0	↑ 79.3	↑ 82.2
28	Foetal mortality rate	↑ 3.03	↑ 2.57	↑ 2.49	↑ 3.11	↑ 2.87	↓ 4.15	↑ 3.03	↑ 3.74
29	Neonatal mortality rate	↑ 1.75	↑ 1.55	↑ 1.50	↑ 2.21	↑ 1.57	↑ 2.55	↑ 2.01	↑ 2.47
30	Low Apgar score at birth	↑ 1.13	↑ 0.93	↑ 0.95	↓ 1.19	↑ 1.30	↓ 1.37	↑ 1.07	↑ 1.35
31	Perineal tears during vaginal delivery	↑ 3.78	↑ 4.64	↓ 2.82	↓ 4.51	↑ 4.11	↑ 2.79	↓ 4.00	↑ 3.80
32	Caesarean section, uncomplicated pregnancy	7.95	9.37	9.26	8.28	7.05	5.93	9.20	7.35
	Gynaecological care								
34	Adverse events after hysterectomy	2.11	3.25	1.24	2.85	1.69	1.36	1.68	1.23
35	Self-reported complications after hysterectomy	71.3		66.0	50.0	70.8	66.7	74.5	80.0
36	Self-reported complications after prolapse surgery	77.3		76.3		76.8	74.9	62.5	79.9
37	Day-cases, prolapse surgery	↑ 17.7	↓ 1.5	↓ 0.5	↑ 70.8	↑ 66.9	↑ 22.8	↓ 4.8	↑ 4.0
39	Waited > 90 days, gynaecological surgery	↑ 7.1	↑ 14.3	↑ 5.7	↓ 13.0	↑ 0.0	↑ 0.0	↑ 0.9	↑ 0.0
40	Waited > 90 days, gynaecological appointment	↓ 5.0	↑ 2.7	↓ 17.4	↓ 7.2	↑ 1.4	↑ 0.0	↓ 2.8	↑ 1.8
	Musculoskeletal diseases								
41	Total knee arthroplasty, 10-year implant survival, F.	96.0	96.0	94.5	97.9	97.8	97.3	95.1	97.3
	Total knee arthroplasty, 10-year implant survival, M.	95.6	96.2	96.6	97.4	93.5	91.3	97.4	95.9
	Total knee arthroplasty, 10-year implant survival	95.9	96.0	95.2	97.7	96.4	95.7	96.1	96.9
42	Total hip arthroplasty, 10-year implant survival, F.	↓ 95.7	↓ 95.4	↑ 94.6	↑ 97.5	↓ 97.9	↓ 96.3	↓ 95.2	↓ 97.8
	Total hip arthroplasty, 10-year implant survival, M.	↑ 93.5	↓ 93.0	↓ 89.4	↑ 96.4	↓ 95.4	↑ 95.5	↓ 91.7	↓ 96.8
	Total hip arthroplasty, 10-year implant survival	↓ 94.8	↓ 94.6	↓ 92.7	↑ 97.1	↓ 96.9	↓ 95.9	↓ 93.7	↓ 97.4
43	Reoperation after total hip arthroplasty, F.	↓ 1.64	↓ 1.88	↓ 1.92	↓ 1.04	↓ 1.55	↓ 2.05	↑ 0.33	↓ 1.64
	Reoperation after total hip arthroplasty, M.	↓ 1.99	↓ 2.28	↓ 2.53	↑ 1.11	↓ 1.94	↑ 1.56	↑ 0.45	↓ 2.49
	Reoperation after total hip arthroplasty	↓ 1.78	↓ 2.04	↓ 2.17	↓ 1.07	↓ 1.72	↓ 1.85	↑ 0.38	↓ 2.00
44	Patient-reported outcome of total hip arthroplasty, F.	0.382	0.373	0.370	0.452	0.304	0.373	0.365	0.334
	Patient-reported outcome of total hip arthroplasty, M.	0.345	0.348	0.324	0.431	0.282	0.324	0.312	0.290
	Patient-reported outcome of total hip arthroplasty	0.367	0.364	0.353	0.442	0.295	0.351	0.342	0.314
45	Adverse events, knee and total hip arthroplasty, F.	↑ 2.92	↑ 2.96	↓ 2.61	↓ 2.46	↑ 3.85	↓ 3.33	↑ 2.42	↑ 2.40
	Adverse events, knee and total hip arthroplasty, M.	↓ 4.06	↓ 4.77	↓ 5.40	↑ 2.83	↑ 4.96	↓ 4.02	↓ 4.10	↓ 4.66
	Adverse events, knee and total hip arthroplasty	↑ 3.36	↑ 3.56	↓ 3.70	↓ 2.61	↑ 4.23	↓ 3.63	↑ 3.09	↓ 3.40
46	Waiting times for hip fracture surgery, F.	↑ 25	↑ 26		↑ 25	↑ 23	↓ 20	↑ 22	↑ 18
	Waiting times for hip fracture surgery, M.	↑ 25	↑ 26		↑ 24	↑ 22	↓ 23	↓ 32	↓ 21
	Waiting times for hip fracture surgery	↑ 25	↑ 26		↑ 25	↑ 22	↓ 21	↑ 25	↑ 19
47	Arthroplasty in femure fracture patients, F.	↑ 61.1	↑ 57.4	↓ 67.7	↑ 50.0	↓ 62.3	↓ 53.6	↓ 64.7	↑ 61.9
	Arthroplasty in femure fracture patients, M.	↑ 53.0	↑ 51.4	↑ 63.9	↑ 32.8	↓ 56.4	↓ 48.9	↓ 54.4	↑ 52.3
	Arthroplasty in femure fracture patients	↑ 58.5	↑ 55.5	↑ 66.6	↑ 44.9	↓ 60.3	↓ 52.2	↓ 61.8	↑ 58.7
48	Osteoporosis treatment after fracture, F.	↑ 13.7	↑ 13.5	↑ 19.2	↑ 16.8	↓ 11.8	↑ 16.9	↓ 15.1	↓ 16.1
49	Frequency of knee artroscopy, F.	↓ 193.1	↓ 310.1	↓ 164.8	↓ 175.4	↑ 131.8	↓ 238.5	↑ 112.1	↓ 338.8
	Frequency of knee artroscopy, M.	↓ 266.9	↓ 406.6	↓ 245.5	↓ 244.3	↑ 149.6	↓ 312.3	↑ 199.6	↓ 445.0
	Frequency of knee artroscopy	↓ 230.5	↓ 358.8	↓ 205.0	↓ 210.2	↑ 141.0	↓ 276.8	↑ 157.0	↓ 393.0
50	Biologic drugs for rheumatoid arthritis, F.	↑ 242.6	↑ 298.2	↑ 207.8	↑ 195.3	↑ 193.1	↑ 215.3	↑ 167.8	↑ 248.0
	Biologic drugs for rheumatoid arthritis, M.	↑ 120.1	↑ 134.9	↑ 107.6	↑ 87.6	↑ 111.1	↑ 90.9	↑ 106.4	↑ 137.7
	Biologic drugs for rheumatoid arthritis	↑ 180.5	↑ 214.7	↑ 156.8	↑ 140.6	↑ 151.9	↑ 152.4	↑ 137.1	↑ 192.3
51	Patient-reported improvement, biologic drugs, F.	↓ 33.3	↓ 37.3	↓ 26.6	↓ 41.8	↑ 33.1	↓ 35.7	↑ 65.5	↑ 28.3
	Patient-reported improvement, biologic drugs, M.	↑ 38.2	↑ 45.1	↓ 44.3	↑ 49.4	↑ 36.4	↑ 44.2	↑ 51.3	↓ 33.0
	Patient-reported improvement, biologic drugs	↓ 34.8	↓ 39.6	↓ 33.2	↑ 44.4	↑ 34.2	↑ 38.6	↑ 59.2	↑ 29.9

Gotland	Blekinge	Skåne	Halland	V. Götaland	Värmland	Örebro	Västmanland	Dalarna	Gävleborg	Västernorrland	Jämtland	Västerbotten	Norrbotten
↓ 22 352	↓ 21 415	↓ 19 552	↓ 19 901	↓ 19 634	↓ 19 827	↓ 20 126	↓ 20 302	↓ 20 614	↓ 20 468	↓ 21 238	↓ 21 068	↓ 20 499	↓ 20 994
↑ 43 203	↑ 44 948	↑ 42 609	↓ 43 610	↓ 45 087	↑ 47 275	↑ 45 411	↑ 41 544	↑ 43 807	↑ 44 537	↓ 51 941	↓ 44 990	↑ 43 031	↑ 47 181
↑ 1 356	↓ 1 373	↓ 1 242	↓ 1 228	↓ 1 328	↑ 1 279	↑ 1 187	↑ 1 238	↓ 1 139	↓ 1 411	↑ 1 437	↓ 1 738	↑ 1 237	↑ 1 369
5.98	6.39	6.03	6.03	5.70	6.66	6.94	6.62	7.65	7.07	7.63	3.60	4.54	4.18
↑ 77.7	↑ 73.5	↑ 73.5	↑ 79.6	↑ 76.7	↑ 78.7	↑ 80.7	↑ 77.1	↑ 74.4	↑ 78.1	↓ 79.4	↑ 77.0	↑ 82.8	↓ 77.9
↑ 2.78	↓ 4.47	↑ 3.05	↓ 2.91	↑ 3.16	↑ 2.64	↑ 3.39	↑ 3.05	↑ 3.44	↑ 3.23	↓ 4.08	↓ 3.57	↑ 3.06	↑ 3.14
↓ 3.19	↑ 2.59	↑ 1.55	↓ 1.94	↑ 1.79	↑ 1.72	↑ 1.49	↑ 1.87	↑ 1.90	↑ 1.15	↑ 1.72	↑ 1.72	↑ 1.14	↓ 2.81
↑ 1.11	↑ 1.33	↑ 1.31	↓ 0.85	↑ 1.22	↑ 1.01	↓ 1.08	↑ 1.56	↑ 0.95	↑ 0.94	↑ 0.88	↓ 1.41	↓ 1.31	↑ 0.99
↓ 4.33	↑ 4.63	↑ 4.08	↑ 3.02	↑ 3.20	↓ 2.94	↑ 3.32	↓ 2.68	↑ 3.24	↑ 2.65	↑ 4.19	↑ 3.07	↑ 4.08	↑ 3.03
9.12	6.28	6.57	8.74	7.05	7.63	7.65	9.53	9.77	9.35	8.95	6.55	7.74	6.73
2.23	2.65	1.85	1.77	2.34	1.83	1.15	1.19	2.62	1.13	0.92	2.25	1.64	1.63
	79.1	74.4	74.2	71.3		72.0	79.2	66.7	75.6	75.2	62.2	64.7	70.3
		83.8	65.2	76.7		77.2	74.4	82.2	77.3	77.8	74.7	78.0	79.4
↑ 0.0	↑ 9.6	↑ 22.2	↑ 5.7	↓ 11.6	↑ 32.2	↑ 20.7	↑ 6.8	↑ 8.1	↓ 31.8	↑ 56.3	↑ 18.5	↑ 10.1	↑ 31.9
↑ 0.0	↓ 3.3	↓ 9.6	↓ 5.3	↑ 0.0	↑ 0.0	↑ 0.0	↓ 13.0	↑ 11.5	↑ 1.8	↑ 0.0	↓ 3.9	↓ 1.9	↑ 0.7
↑ 0.0	↑ 7.2	↓ 7.3	↑ 2.3	↑ 1.1	↓ 3.8	↓ 7.2	↓ 1.9	↑ 2.1	↓ 13.9	↓ 5.9	↑ 2.0	↓ 5.4	↓ 2.4
84.8	97.5	94.6	97.7	96.6	95.8	95.9	97.0	96.4	92.4	97.6	94.5	95.8	96.0
93.0	95.3	95.9	96.2	96.0	93.9	96.2	99.6	97.0	84.3	97.4	96.9	98.7	96.9
88.0	96.6	95.0	97.2	96.4	95.1	96.0	98.0	96.6	89.6	97.5	95.1	97.0	96.3
↑ 94.4	↑ 96.0	↓ 93.3	↓ 91.0	↑ 96.3	↓ 95.9	↑ 96.6	↓ 96.6	↑ 98.1	↑ 96.0	↑ 97.1	↓ 94.0	↓ 97.5	↑ 96.6
↑ 89.4	↑ 93.5	↑ 90.9	↓ 93.0	↓ 92.3	↓ 93.1	↓ 96.7	↓ 93.4	↓ 96.7	↑ 95.2	↑ 95.5	↓ 95.3	↑ 97.8	↑ 95.4
↑ 92.0	↑ 94.9	↑ 92.4	↓ 91.8	↓ 94.7	↓ 94.8	↑ 96.6	↓ 95.1	↑ 97.5	↑ 95.7	↑ 96.5	↓ 94.5	↑ 97.7	↑ 96.2
↑ 2.40	↑ 1.02	↓ 1.42	↓ 1.38	↑ 1.62	↓ 1.95	↓ 1.13	↓ 2.49	↓ 1.28	↓ 2.50	↑ 1.96	↑ 1.21	↓ 0.79	↑ 1.51
↑ 0.90	↑ 2.40	↓ 1.99	↓ 2.58	↓ 1.77	↓ 3.72	↑ 1.95	↓ 2.19	↑ 1.13	↑ 2.29	↓ 1.82	↓ 2.77	↑ 0.66	↑ 1.47
↑ 1.75	↑ 1.62	↓ 1.66	↓ 1.88	↓ 1.68	↓ 2.61	↓ 1.47	↓ 2.37	↓ 1.22	↓ 2.41	↑ 1.90	↑ 1.83	↓ 0.74	↑ 1.49
0.464	0.404	0.402	0.380	0.370	0.396	0.392	0.431	0.411	0.356	0.375	0.480	0.407	0.421
0.306	0.364	0.383	0.323	0.329	0.324	0.320	0.341	0.363	0.364	0.397	0.305	0.369	0.379
0.387	0.386	0.394	0.356	0.352	0.368	0.360	0.396	0.390	0.360	0.384	0.413	0.389	0.403
↓ 2.74	↓ 2.47	↑ 2.74	↑ 3.00	↑ 2.51	↓ 3.58	↓ 3.60	↑ 2.85	↓ 3.02	↓ 3.63	↓ 2.83	↑ 2.15	↑ 3.06	↑ 3.33
↓ 6.10	↓ 4.48	↑ 3.21	↓ 5.78	↓ 3.02	↑ 4.54	↓ 4.53	↓ 3.76	↓ 5.08	↓ 4.06	↓ 4.22	↓ 3.31	↑ 4.01	↑ 2.70
↓ 3.80	↓ 3.34	↑ 2.90	↓ 4.19	↑ 2.73	↑ 4.02	↓ 3.90	↓ 3.18	↓ 3.87	↓ 3.76	↓ 3.27	↑ 2.67	↑ 3.48	↑ 3.00
↓ 23	↑ 24	↑ 27	↓ 37	↑ 26	↑ 24	↓ 26		↑ 23	↓ 14	↑ 14	↑ 25	↓ 19	21
↓ 31	↑ 22	↑ 27	↓ 31	↑ 27	↓ 28	↑ 26		↑ 21	↓ 31	↑ 10	↑ 21	↑ 17	17
↓ 25	↑ 24	↑ 27	↓ 35	↑ 26	↑ 25	↓ 26		↑ 22	↓ 19	↑ 12	↑ 24	↑ 17	20
↑ 54.6	↓ 61.1	↓ 67.8	↑ 66.1	↑ 64.2	↑ 60.8	↑ 58.1	↑ 67.6	↑ 60.9	↑ 61.7	↑ 58.1	↑ 55.5	↑ 44.1	↑ 61.8
↑ 59.2	↓ 54.6	↑ 68.4	↑ 59.5	↑ 57.3	↑ 47.5	↑ 46.8	↓ 44.6	↑ 52.4	↑ 48.4	↑ 45.5	↓ 36.7	↑ 38.7	↑ 47.6
↑ 56.3	↓ 59.1	↓ 68.0	↑ 64.1	↑ 61.9	↑ 56.8	↑ 54.0	↑ 60.6	↑ 58.3	↑ 57.5	↑ 52.9	↑ 49.6	↑ 41.9	↑ 57.5
↑ 9.7	↓ 9.5	↓ 13.2	↓ 14.4	↑ 14.1	↑ 12.3	↑ 13.7	↑ 15.0	↑ 14.7	↓ 11.5	↓ 12.1	↓ 10.8	↑ 14.7	↓ 9.9
↓ 230.8	↑ 148.2	↓ 117.5	↓ 249.7	↓ 168.0	↑ 81.3	↓ 144.0	↑ 138.6	↓ 171.7	↓ 186.7	↑ 80.6	↑ 194.6	↓ 182.9	↓ 159.8
↓ 305.0	↑ 271.4	↓ 165.3	↓ 368.8	↑ 220.3	↑ 128.2	↓ 206.2	↑ 219.8	↓ 293.6	↓ 270.1	↑ 148.9	↓ 241.5	↓ 266.2	↓ 222.3
↓ 268.0	↑ 211.3	↓ 141.6	↓ 309.1	↓ 194.6	↑ 105.5	↓ 175.5	↑ 179.9	↓ 233.7	↓ 229.4	↑ 115.5	↑ 218.5	↓ 225.5	↓ 192.0
↑ 331.7	↑ 233.0	↑ 311.9	↑ 276.5	↑ 192.4	↑ 258.0	↑ 164.6	↑ 244.2	↑ 254.2	↑ 204.0	↑ 140.9	↑ 266.8	↑ 239.5	↑ 187.0
↑ 176.4	↑ 143.8	↑ 146.4	↑ 150.0	↑ 97.8	↑ 172.5	↑ 76.5	↑ 114.9	↑ 130.3	↑ 92.5	↑ 67.1	↑ 137.0	↑ 99.1	↑ 126.5
↑ 252.5	↑ 188.8	↑ 227.5	↑ 212.3	↑ 144.6	↑ 214.8	↑ 119.7	↑ 178.9	↑ 191.8	↑ 147.8	↑ 103.7	↑ 201.5	↑ 169.1	↑ 157.1
↓ 24.5	↓ 20.1	↓ 27.1	↓ 27.4	↓ 33.1	↓ 21.3	↓ 30.2	↓ 27.7	↑ 40.8	↑ 35.9	↑ 35.4	↓ 35.5	↓ 36.1	↑ 37.4
↑ 29.8	↑ 39.5	↑ 33.7	↓ 32.8	↓ 32.0	↓ 20.5	↑ 14.5	↓ 38.0	↓ 34.6	↑ 48.2	↑ 28.3	↓ 29.3	↓ 41.3	↑ 33.9
↓ 26.3	↓ 24.3	↓ 29.5	↓ 29.4	↓ 32.7	↓ 21.0	↓ 25.7	↓ 30.6	↓ 39.0	↑ 39.4	↑ 33.0	↓ 33.4	↓ 37.8	↑ 36.4

F. = Female M. = Male ↑ = Better result ↓ = Worse result		SWEDEN	Stockholm	Uppsala	Sörmland	Östergötland	Jönköping	Kronoberg	Kalmar
52	Patient-reported improvement, rheumatoid arthritis, F.	↑ 40.9	↑ 43.5	↓ 35.8	↓ 41.5	↑ 48.0	↓ 37.6	↓ 34.9	↑ 40.6
	Patient-reported improvement, rheumatoid arthritis, M.	↑ 50.6	↑ 59.0	↑ 57.1	↑ 60.1	↓ 33.9			↑ 46.9
	Patient-reported improvement, rheumatoid arthritis	↑ 44.0	↑ 48.0	↓ 40.2	↑ 49.0	↑ 44.2	↓ 45.2	↓ 45.2	↑ 42.9
53	Waited > 90 days, orthopaedic appointment	↑ 15.5	↓ 34.6	↑ 13.6	↓ 11.7	↑ 9.6	↑ 2.2	↑ 2.6	↑ 0.0
54	Waited > 90 days, knee and total hip arthroplasty	↓ 12.3	↑ 8.5	↓ 27.3	↓ 14.9	↑ 9.6	↓ 4.1	↓ 12.9	↓ 2.4
	Diabetes care								
57	HbA1c in diabetics with nutritional therapy, F.	↑ 86.7	↓ 84.6	↓ 83.7	↑ 88.4	↓ 88.9	↓ 90.7	↑ 92.2	↑ 84.7
	HbA1c in diabetics with nutritional therapy, M.	↑ 83.7	↓ 81.5	↑ 86.1	↓ 85.2	↓ 85.3	↑ 88.1	↑ 87.6	↑ 81.3
	HbA1c in diabetics with nutritional therapy	↑ 84.9	↓ 82.9	↑ 85.0	↓ 86.6	↓ 86.9	↑ 89.3	↑ 89.6	↑ 82.8
58	Blood pressure in patients with diabetes, F.	↑ 61.0	↑ 60.6	↓ 54.3	↓ 58.1	↑ 67.9	↑ 66.7	↑ 61.2	↑ 64.9
	Blood pressure in patients with diabetes, M.	↑ 59.6	↑ 58.2	↑ 54.1	↑ 59.1	↑ 67.9	↑ 65.1	↓ 56.4	↑ 63.8
	Blood pressure in patients with diabetes	↑ 60.2	↑ 59.1	↑ 54.2	↑ 58.7	↑ 67.9	↑ 65.8	↓ 58.4	↑ 64.2
59	LDL-cholesterol in patients with diabetes, F.	↓ 38.9	↑ 35.7	↓ 32.2	↑ 42.6	↑ 45.0	↓ 38.4	↑ 43.9	↑ 40.8
	LDL-cholesterol in patients with diabetes, M.	↑ 43.9	↑ 42.7	↓ 37.2	↑ 47.4	↑ 53.0	↑ 45.7	↓ 48.1	↑ 43.5
	LDL-cholesterol in patients with diabetes	↓ 41.9	↑ 39.9	↓ 35.2	↑ 45.3	↑ 49.7	↑ 42.7	↓ 46.4	↑ 42.4
60	Lipid lowering treatment for diabetics, F.	↑ 59.2	↑ 57.4	↑ 56.6	↑ 62.8	↑ 64.7	↑ 57.7	↑ 67.9	↑ 58.6
	Lipid lowering treatment for diabetics, M.	↑ 61.3	↑ 60.1	↑ 56.7	↑ 65.0	↑ 67.6	↑ 60.2	↑ 67.2	↑ 62.1
	Lipid lowering treatment for diabetics	↑ 60.3	↑ 58.9	↑ 56.7	↑ 63.8	↑ 66.2	↑ 58.9	↑ 67.3	↑ 60.5
61	HbA1c in child and adolescent diabetics, Girls	↓ 29.4	↑ 28.4	↓ 43.9	↓ 20.6	↓ 35.2	↓ 18.0	↑ 67.9	↓ 26.3
	HbA1c in child and adolescent diabetics, Boys	↓ 33.1	↓ 33.8	↓ 44.3	↓ 28.6	↓ 39.9	↑ 28.8	↑ 62.9	↑ 32.3
	HbA1c in child and adolescent diabetics	↓ 31.4	↓ 31.4	↓ 44.1	↓ 24.5	↓ 37.7	↓ 23.7	↑ 65.2	↓ 29.5
62	Type 1 diabetes, insulin pump treatment, F.	↑ 21.7	↓ 19.5	↑ 25.5	↓ 17.4	↓ 15.9	↓ 21.9	↑ 14.9	↑ 19.0
	Type 1 diabetes, insulin pump treatment, M.	↑ 13.8	↓ 11.8	↑ 12.7	↑ 13.8	↓ 7.1	↑ 18.7	↑ 12.1	↓ 15.3
	Type 1 diabetes, insulin pump treatment	↑ 17.4	↓ 15.3	↑ 18.4	↑ 15.4	↓ 10.9	↓ 20.1	↑ 13.3	↓ 17.1
63	Impaired renal function, metformin treatment, F.	↑ 60.6	↑ 56.7	↑ 60.8	↓ 63.2	↑ 60.0	↑ 69.8	↑ 60.3	↓ 63.1
	Impaired renal function, metformin treatment, M.	↑ 38.9	↑ 39.3	↑ 32.8	↓ 45.8	↑ 44.7	↑ 46.4	↑ 29.0	↑ 32.2
	Impaired renal function, metformin treatment	↑ 51.5	↑ 49.6	↑ 50.3	↓ 55.6	↑ 53.9	↑ 61.1	↑ 45.9	↓ 51.9
	Cardiac care								
64	AMI, case fatality rate, F.	↑ 28.1	↑ 27.9	↑ 21.8	↓ 29.8	↑ 29.1	↓ 30.8	↑ 26.1	↑ 29.4
	AMI, case fatality rate, M.	↑ 30.4	↑ 30.7	↑ 24.6	↑ 29.2	↑ 30.3	↑ 31.5	↑ 26.9	↑ 31.7
	AMI, case fatality rate	↑ 29.4	↑ 29.4	↑ 23.3	↑ 29.2	↑ 30.0	↓ 30.9	↑ 26.8	↑ 30.8
65	AMI, case fatality rate , hospitalised patients, F.	↑ 13.5	↑ 13.4	↑ 12.0	↑ 12.0	↑ 13.3	↑ 12.8	↑ 14.6	↑ 12.6
	AMI, case fatality rate , hospitalised patients, M.	↑ 14.1	↑ 14.2	↑ 13.0	↑ 13.1	↑ 13.5	↑ 12.2	↑ 13.5	↑ 13.8
	AMI, case fatality rate , hospitalised patients	↑ 13.7	↑ 13.6	↑ 12.2	↑ 12.3	↑ 13.3	↑ 12.3	↑ 13.9	↑ 13.1
66	Recurrent AMI and IHD-deaths after AMI, F.	↓ 14.2	↓ 14.2	↑ 12.9	↓ 13.1	↑ 15.4	↓ 16.0	↓ 15.7	↓ 15.3
	Recurrent AMI and IHD-deaths after AMI, M.	↑ 15.1	↓ 14.9	↑ 14.2	↓ 14.4	↑ 11.9	↑ 18.2	↓ 18.2	↑ 17.0
	Recurrent AMI and IHD-deaths after AMI	↑ 14.7	↓ 14.6	↑ 13.3	↓ 13.8	↑ 13.5	↓ 17.3	↓ 16.5	↓ 16.3
67	Reperfusion therapy after STEMI, F.	↑ 84.3	↑ 77.5	↑ 90.0	↑ 87.8	↑ 79.2	↑ 93.3	↓ 78.9	↑ 93.8
	Reperfusion therapy after STEMI, M.	↑ 89.1	↑ 87.4	↓ 84.3	↑ 92.7	↓ 89.7	↑ 93.9	↑ 88.9	↑ 94.9
	Reperfusion therapy after STEMI	↑ 87.9	↑ 85.2	↑ 85.5	↑ 91.1	↑ 86.9	↑ 93.8	↑ 86.3	↑ 94.6
68	Coronary angiography after NSTEMI, F.	↑ 78.1	↑ 77.1	↓ 73.9	↑ 83.8	↑ 82.8	↑ 79.1	↑ 73.3	↑ 85.5
	Coronary angiography after NSTEMI, M.	↑ 83.9	↑ 83.3	↓ 89.2	↑ 94.1	↑ 81.4	↑ 85.0	↓ 71.3	↓ 83.9
	Coronary angiography after NSTEMI	↑ 82.1	↑ 81.4	↓ 85.8	↑ 90.8	↑ 81.8	↑ 83.0	↓ 72.0	↑ 84.3
69	Clopidogrel therapy after NSTEMI, F.	↑ 85.5	↑ 85.1	↓ 88.5	↓ 93.0	↓ 82.5	↑ 87.5	↓ 86.4	↑ 83.0
	Clopidogrel therapy after NSTEMI, M.	↑ 88.2	↑ 93.0	↓ 93.2	↓ 93.7	↑ 82.6	↓ 84.9	↓ 80.2	↓ 84.5
	Clopidogrel therapy after NSTEMI	↑ 87.4	↑ 90.4	↓ 92.1	↓ 93.5	↑ 82.5	↑ 85.8	↓ 82.5	↓ 84.0
70	Lipid lowering drug therapy after AMI, F.	↑ 82.5	↑ 78.8	↓ 76.4	↓ 83.7	↑ 87.5	↑ 84.6	↓ 85.5	↓ 83.6
	Lipid lowering drug therapy after AMI, M.	↑ 85.2	↑ 82.6	↑ 85.2	↑ 91.1	↓ 84.7	↑ 86.6	↓ 82.8	↑ 91.0
	Lipid lowering drug therapy after AMI	↑ 84.3	↑ 81.1	↑ 82.4	↑ 89.2	↓ 85.7	↑ 86.1	↓ 83.3	↑ 88.8
71	Death and readmission, heart failure, F.	↓ 18.9	↑ 15.6	↑ 18.4	↑ 19.9	↓ 21.0	↓ 20.2	↓ 21.5	↓ 22.7
	Death and readmission, heart failure, M.	↑ 20.5	↑ 18.0	↓ 20.4	↑ 21.2	↓ 21.7	↓ 20.7	↑ 20.9	↑ 23.4
	Death and readmission, heart failure	↓ 19.8	↑ 16.9	↑ 19.5	↑ 20.8	↓ 21.2	↓ 20.2	↑ 20.7	↑ 22.9

	Gotland	Blekinge	Skåne	Halland	V. Götaland	Värmland	Örebro	Västmanland	Dalarna	Gävleborg	Västernorrland	Jämtland	Västerbotten	Norrbotten
	↓ 34.5		↑ 40.1	↑ 39.6	↑ 45.7	↓ 34.7	↑ 26.4	↓ 41.9	↓ 41.9	↑ 38.4	↑ 58.8		↑ 37.4	23.7
	↑ 54.0		↑ 48.0	↓ 45.7	↑ 48.0	↑ 55.6	↑ 36.3		↑ 59.6	↓ 9.4			↑ 53.1	↓ 21.2
	↓ 44.4		↑ 42.6	↑ 41.4	↑ 46.3	↑ 43.2	↑ 29.0	↑ 43.5	↑ 47.8	↓ 27.3	↑ 37.6		↑ 42.7	22.9
	↓ 4.4	↑ 13.2	↑ 0.9	↑ 6.4	↑ 12.0	↑ 0.0	↑ 6.9	↓ 5.7	↓ 16.0	↑ 11.9	↓ 43.3	↓ 6.1	↑ 4.3	↑ 3.7
	↑ 0.0	↓ 10.4	↓ 3.5	↑ 0.7	↓ 4.3	↓ 15.1	↓ 26.0	↓ 28.7	↓ 21.7	↑ 6.7	↓ 30.1	↓ 21.1	↑ 6.6	↑ 6.7
	↑ 94.1	↑ 90.9	↑ 86.6	↑ 89.5	↑ 87.1	↑ 90.5	↑ 78.8	↑ 81.5	↑ 90.1	↑ 89.2	↓ 84.0	↑ 91.1	↓ 84.8	↑ 83.3
	↑ 91.7	↓ 77.5	↑ 85.7	↑ 82.7	↑ 83.9	↑ 88.1	↑ 76.2	↑ 79.1	↑ 87.5	↑ 87.4	↑ 85.4	↓ 83.8	↑ 80.3	↓ 76.2
	↑ 92.7	↓ 83.6	↑ 86.1	↑ 85.7	↑ 85.3	↑ 89.2	↑ 77.4	↑ 80.2	↑ 88.6	↑ 88.2	↑ 84.8	↓ 87.4	↓ 82.4	↓ 79.4
	↓ 49.0	↑ 49.2	↑ 61.3	↑ 60.0	↑ 62.3	↑ 63.4	↑ 60.3	↑ 51.1	↑ 54.5	↑ 64.3	↑ 59.8	↑ 58.3	↓ 65.3	↑ 56.5
	↑ 58.0	↑ 50.2	↑ 57.9	↑ 61.5	↑ 62.1	↑ 61.4	↑ 60.5	↓ 49.6	↑ 52.7	↑ 61.5	↑ 56.2	↑ 58.2	↑ 65.9	↑ 54.7
	↑ 54.4	↑ 49.8	↑ 59.2	↑ 60.9	↑ 62.2	↑ 62.2	↑ 60.4	↓ 50.2	↑ 53.4	↑ 62.6	↑ 57.6	↑ 58.2	↑ 65.6	↑ 55.4
	↑ 36.2	↑ 35.4	↓ 43.0	↓ 35.2	↑ 40.5	↓ 45.6	↓ 45.9	↓ 38.0	↓ 35.9	↓ 38.5	↓ 35.5	↓ 31.7	↑ 40.7	↓ 32.1
	↑ 39.2	↑ 46.1	↓ 47.5	↓ 40.1	↑ 43.3	↓ 49.3	↓ 48.1	↑ 45.3	↓ 39.4	↓ 41.3	↓ 43.2	↓ 37.9	↑ 45.7	↑ 36.5
	↑ 37.9	↑ 41.5	↓ 45.6	↓ 38.2	↑ 42.2	↓ 47.8	↓ 47.2	↑ 42.4	↓ 38.0	↓ 40.2	↓ 40.2	↓ 35.4	↑ 43.7	↓ 34.8
	↑ 51.4	↑ 56.3	↑ 60.9	↑ 54.0	↑ 56.6	↑ 63.9	↑ 63.6	↑ 63.8	↑ 57.2	↑ 57.8	↑ 61.2	↑ 64.2	↑ 62.6	↑ 55.8
	↑ 55.1	↑ 57.7	↑ 63.7	↑ 57.0	↑ 57.9	↑ 64.5	↑ 63.5	↑ 68.8	↑ 59.2	↑ 60.3	↑ 62.8	↑ 62.4	↑ 65.9	↑ 58.9
	↑ 53.2	↑ 56.9	↑ 62.4	↑ 55.6	↑ 57.3	↑ 64.2	↑ 63.4	↑ 66.4	↑ 58.3	↑ 59.1	↑ 61.8	↑ 63.1	↑ 64.3	↑ 57.3
	↑ 25.0	↑ 26.1	↑ 28.5	↓ 28.3	↑ 25.1	↓ 22.6	↑ 37.6	↑ 48.0	↑ 41.1	↓ 28.1	↑ 33.6	↓ 25.0	↓ 17.0	↑ 24.8
	↓ 30.8	↑ 25.3	↑ 36.4	↑ 27.0	↑ 32.0	↑ 29.2	↓ 22.6	↓ 38.5	↓ 38.4	↓ 30.1	↑ 34.2	↓ 28.6	↓ 19.8	↓ 19.1
	↓ 27.6	↑ 25.7	↑ 32.7	↑ 27.5	↑ 28.8	↓ 26.3	↓ 29.6	↑ 43.1	↑ 39.5	↓ 29.4	↑ 33.9	↓ 26.9	↓ 18.5	↓ 21.9
	↓ 24.3	↓ 19.6	↑ 31.0	↑ 24.9	↑ 19.7	↑ 23.8	↑ 13.3	↑ 13.4	↑ 24.9	↑ 23.2	↓ 28.9	↑ 31.9	↓ 24.7	↑ 37.5
	↑ 9.6	↓ 7.8	↑ 21.9	↑ 18.1	↑ 12.8	↑ 13.4	↑ 10.3	↑ 10.7	↑ 14.6	↓ 16.2	↓ 17.2	↓ 12.6	↑ 13.4	↑ 20.1
	↓ 16.6	↓ 12.7	↑ 26.0	↑ 21.0	↑ 15.8	↑ 17.8	↑ 11.6	↑ 12.0	↑ 19.0	↑ 19.4	↓ 22.5	↑ 20.4	↓ 18.6	↑ 27.3
	↑ 85.7	↑ 60.2	↑ 62.4	↓ 64.8	↑ 60.7	↑ 62.4	↑ 53.9	↓ 66.9	↓ 59.9	↑ 57.5	↑ 49.0	↑ 60.4	↑ 50.4	↓ 68.7
	↑ 38.9	↑ 43.3	↑ 44.9	↓ 37.0	↑ 35.6	↑ 35.9	↑ 36.5	↑ 48.3	↑ 34.4	↓ 46.6	↓ 39.1	↓ 39.7	↑ 25.0	↓ 47.6
	↑ 69.8	↑ 53.6	↑ 54.9	↓ 52.7	↑ 49.3	↑ 51.3	↑ 47.2	↑ 59.0	↓ 49.9	↓ 53.2	↑ 44.4	↑ 52.3	↑ 40.1	↓ 59.0
	↑ 19.6	↓ 32.4	↑ 28.1	↓ 29.1	↓ 29.9	↑ 30.8	↑ 31.6	↑ 23.0	↑ 26.8	↑ 24.0	↑ 26.8	↑ 31.4	↑ 25.5	↑ 24.9
	↑ 26.8	↑ 34.3	↑ 31.2	↓ 30.2	↑ 31.1	↑ 33.0	↑ 34.5	↑ 26.4	↑ 28.1	↑ 28.1	↓ 30.2	↓ 34.0	↓ 29.4	↑ 31.8
	↑ 24.1	↓ 33.7	↑ 29.7	↓ 29.7	↓ 30.7	↑ 32.2	↑ 33.2	↑ 25.0	↑ 27.1	↑ 26.0	↑ 28.4	↑ 32.7	↑ 27.6	↑ 29.1
	↑ 8.6	↓ 15.6	↑ 13.4	↑ 15.3	↑ 14.6	↑ 15.3	↑ 13.1	↑ 12.9	↑ 12.1	↑ 12.8	↑ 13.1	↑ 12.0	↑ 12.3	↓ 15.4
	↑ 12.1	↑ 13.7	↑ 14.9	↑ 15.1	↑ 14.0	↑ 14.7	↑ 15.1	↑ 12.3	↑ 12.8	↑ 14.4	↑ 13.9	↑ 13.6	↑ 14.1	↓ 17.8
	↑ 10.8	↓ 14.5	↑ 14.1	↑ 15.1	↑ 14.1	↑ 14.9	↑ 14.2	↑ 12.5	↑ 12.3	↑ 13.4	↑ 13.3	↑ 12.7	↑ 13.1	↓ 16.7
	↓ 20.9	↑ 9.4	↑ 13.4	↑ 10.7	↓ 16.8	↓ 12.1	↓ 12.2	↓ 12.3	↓ 14.1	↓ 13.0	↑ 15.1	↑ 12.1	↑ 15.0	↑ 15.5
	↑ 19.9	↑ 11.2	↑ 15.7	↓ 18.1	↑ 15.2	↓ 17.6	↓ 11.6	↑ 14.2	↑ 12.4	↓ 14.3	↑ 14.5	↓ 13.4	↓ 15.8	↑ 16.5
	↓ 18.5	↑ 11.4	↑ 14.7	↓ 15.0	↑ 15.8	↓ 15.2	↓ 12.0	↑ 12.8	↓ 13.3	↓ 13.4	↑ 15.1	↑ 12.7	↓ 15.3	↑ 16.5
		↑ 90.0	↑ 87.6	↑ 84.4	↑ 83.4	↑ 95.1	↓ 73.9	↑ 86.2	↑ 92.9	↑ 88.5	↑ 81.8	↑ 54.5	↑ 81.8	↑ 79.3
	↑ 89.5	↑ 85.7	↑ 89.5	↑ 88.0	↑ 91.9	↑ 93.1	↑ 87.4	↑ 90.0	↑ 91.4	↑ 84.2	↑ 83.8	↑ 74.3	↑ 86.4	↑ 83.5
	↑ 80.0	↑ 87.0	↑ 89.0	↑ 87.1	↑ 89.8	↑ 93.6	↓ 82.7	↑ 88.9	↑ 91.7	↑ 85.7	↑ 83.3	↑ 69.6	↑ 85.1	↑ 82.5
	↓ 65.2	↑ 85.3	↑ 80.4	↑ 73.7	↑ 73.7	↑ 89.6	↓ 69.3	↑ 81.8	↑ 77.8	↑ 77.2	↑ 81.0	↑ 78.3	↑ 83.3	↑ 68.5
	↑ 81.8	↑ 87.9	↑ 85.8	↑ 77.4	↑ 83.4	↓ 83.6	↓ 73.9	↑ 84.2	↑ 87.0	↑ 86.3	↑ 83.5	↑ 83.9	↑ 88.4	↑ 78.2
	↑ 75.0	↑ 87.0	↑ 83.9	↑ 76.3	↑ 80.4	↑ 85.6	↓ 72.3	↑ 83.5	↑ 84.3	↑ 83.5	↑ 83.0	↑ 82.4	↑ 86.7	↑ 75.1
	↑ 86.4	↑ 81.6	↑ 81.0	↑ 87.7	↑ 85.6	↑ 94.4	↓ 81.4	↑ 93.4	↑ 83.8	↑ 91.0	↑ 84.1	↑ 93.5	↑ 79.2	↑ 87.7
	↑ 96.9	↓ 74.1	↑ 80.0	↑ 84.3	↑ 90.2	↑ 93.0	↓ 88.0	↑ 94.2	↑ 88.8	↑ 98.6	↓ 81.8	↑ 81.8	↑ 90.1	↑ 97.1
	↑ 92.6	↓ 76.5	↑ 80.3	↑ 85.3	↑ 88.8	↑ 93.5	↓ 85.7	↑ 93.9	↑ 87.2	↑ 96.1	↓ 82.4	↑ 84.9	↑ 86.2	↑ 94.4
	↓ 60.3	↑ 88.7	↑ 85.9	↓ 80.0	↑ 80.4	↑ 87.0	↑ 82.4	↑ 91.8	↑ 87.2	↑ 84.8	↑ 76.5	↑ 89.7	↑ 83.2	↓ 81.7
	↓ 79.1	↑ 88.1	↑ 88.1	↓ 83.9	↑ 84.1	↑ 88.3	↑ 87.5	↓ 89.9	↓ 86.7	↑ 88.0	↓ 85.1	↑ 87.4	↑ 84.1	↑ 86.1
	↓ 73.8	↑ 88.1	↑ 87.2	↓ 83.5	↑ 83.2	↑ 88.0	↑ 86.0	↑ 90.3	↑ 86.4	↑ 87.2	↓ 82.3	↑ 87.6	↑ 83.8	↑ 84.6
	↓ 18.1	↑ 21.3	↓ 18.2	↑ 17.9	↓ 17.3	↓ 24.6	↓ 21.1	↑ 21.7	↓ 19.2	↓ 22.8	↓ 20.2	↑ 21.5	↑ 19.3	↑ 20.2
	↑ 21.5	↓ 23.5	↑ 19.1	↑ 17.0	↑ 18.8	↓ 25.4	↑ 24.5	↑ 23.9	↑ 20.7	↓ 25.4	↓ 21.5	↓ 23.8	↑ 20.2	↓ 24.1
	↑ 19.8	↑ 21.4	↓ 18.7	↑ 17.5	↓ 18.2	↓ 25.2	↑ 23.0	↑ 23.0	↓ 19.9	↓ 24.7	↓ 21.1	↓ 22.9	↑ 20.1	↓ 22.6

F. = Female
M. = Male

↑ = Better result
↓ = Worse result

		SWEDEN	Stockholm	Uppsala	Sörmland	Östergötland	Jönköping	Kronoberg	Kalmar
72	Waiting time, by-pass surgery, F.	↑ 8.0	↑ 6.5	↓ 9.5	↑ 7.0	↑ 11.0	↓ 13.5	↑ 8.0	↑ 14.5
	Waiting time, by-pass surgery, M.	↑ 11.0	↑ 8.0	↑ 10.0	↑ 19.0	↓ 17.0	↓ 20.0	↓ 9.0	↓ 19.0
	Waiting time, by-pass surgery	↑ 10.0	↑ 7.0	↑ 9.5	↑ 19.0	↓ 15.5	↓ 19.0	↑ 8.0	↑ 17.0
73	Waited > 90 days cardiology appointment	↑ 7.3	↓ 2.1	↑ 32.6		↑ 18.5	↑ 0.0	↑ 0.0	↑ 9.9
	Stroke care								
75	Stroke, case fatality rate, F.	↑ 22.6	↑ 21.0	↑ 19.1	↓ 23.4	↓ 24.8	↑ 21.8	↑ 26.4	↑ 23.5
	Stroke, case fatality rate, M.	↑ 21.7	↑ 21.4	↓ 17.7	↑ 20.9	↑ 23.5	↑ 20.9	↓ 26.2	↑ 25.9
	Stroke, case fatality rate	↑ 22.3	↑ 21.1	↑ 18.5	↓ 22.8	↑ 24.3	↑ 21.6	↓ 26.3	↑ 25.1
76	Stroke, case fatality rate, hospitalised patients, F.	↑ 14.6	↑ 13.6	↓ 14.6	↑ 14.9	↑ 15.5	↑ 13.4	↑ 15.7	↓ 17.2
	Stroke, case fatality rate, hospitalised patients, M.	↑ 14.5	↑ 14.5	↓ 12.9	↑ 14.7	↑ 14.0	↑ 13.6	↓ 15.5	↑ 18.0
	Stroke, case fatality rate, hospitalised patients	↑ 14.5	↑ 13.9	↓ 13.9	↑ 15.1	↑ 14.8	↑ 13.3	↑ 15.5	↑ 17.9
77	Stroke unit care, F.	↑ 85.7	↑ 81.4	↑ 88.6	↑ 84.9	↓ 92.8	↑ 87.9	↓ 79.2	↑ 88.4
	Stroke unit care, M.	↑ 87.3	↑ 81.8	↑ 86.8	↑ 87.2	↓ 93.2	↑ 89.7	↓ 82.4	↑ 92.3
	Stroke unit care	↑ 86.5	↑ 81.6	↑ 87.6	↑ 86.1	↓ 93.0	↑ 88.9	↓ 80.8	↑ 90.4
78	Thrombolytic therapy after stroke, F.	↑ 8.2	↑ 10.7	↓ 5.7	↑ 12.3	↑ 5.3	↑ 7.6	↑ 7.3	↑ 6.4
	Thrombolytic therapy after stroke, M.	↑ 8.4	↑ 11.3	↑ 9.3	↑ 6.9	↑ 7.4	↑ 6.8	↑ 9.3	↓ 6.0
	Thrombolytic therapy after stroke	↑ 8.3	↑ 11.0	↑ 8.0	↑ 9.0	↑ 6.5	↑ 7.1	↑ 8.4	↑ 6.1
79	Atrial fibrillation and stroke, anticoagulant therapy, F.	↑ 65.8	↑ 63.8	↑ 65.8	↑ 72.1	↑ 84.9	↑ 67.9		↑ 52.2
	Atrial fibrillation and stroke, anticoagulant therapy, M.	↑ 62.2	↓ 57.7	↑ 64.3	↑ 70.4	↑ 77.5	↑ 63.7	↓ 68.2	↑ 62.9
	Atrial fibrillation and stroke, anticoagulant therapy	↑ 63.7	↑ 60.2	↑ 69.4	↑ 72.8	↑ 80.3	↑ 67.6	↓ 67.7	↓ 62.3
80	Readmission for stroke, F.	↑ 9.4	↓ 11.2	↑ 7.3	↑ 8.4	↑ 7.1	↓ 10.8	↓ 11.4	↑ 7.7
	Readmission for stroke, M.	↑ 9.8	↓ 11.7	↑ 9.5	↑ 9.5	↑ 8.3	↑ 11.1	↑ 9.3	↑ 7.1
	Readmission for stroke	↑ 9.6	↓ 11.4	↑ 8.5	↑ 8.9	↑ 7.6	↑ 10.9	↑ 10.5	↑ 7.5
81	ADL dependency after stroke, F.	82.0	82.2	73.2	78.8	81.9	82.9	80.1	79.1
	ADL dependency after stroke, M.	82.4	82.5	77.6	81.5	82.1	81.3	81.7	81.4
	ADL dependency after stroke	82.2	82.3	75.5	80.2	82.0	82.1	80.9	80.3
82	Satisfaction with hospital care, F.	↓ 89.1	↑ 89.1	↑ 88.7	↓ 85.7	↑ 93.5	↑ 93.1	↑ 77.9	↑ 90.6
	Satisfaction with hospital care, M.	↓ 91.4	↓ 89.2	↑ 91.3	↑ 90.4	↑ 93.4	↑ 90.4	↑ 81.2	↓ 92.2
	Satisfaction with hospital care	↓ 90.3	↑ 89.2	↑ 90.2	↓ 88.2	↑ 93.4	↑ 91.7	↑ 79.6	↑ 91.4
	Kidney care								
83	Survival rate in renal replacement therapy, F.	47.5	51.8	50.0	47.8	43.6	51.7	36.7	51.4
	Survival rate in renal replacement therapy, M.	44.4	48.1	42.1	34.0	37.6	44.2	42.7	40.2
	Survival rate in renal replacement therapy	45.5	49.5	44.8	39.6	39.6	46.3	41.0	44.3
84	Target for haemodialysis dose, F.	85.3	87.2	80.0	80.0	79.4	90.2	93.8	93.1
	Target for haemodialysis dose, M.	79.5	79.7	81.0	90.7	81.6	84.5	84.6	71.0
	Target for haemodialysis dose	↑ 81.6	↓ 82.7	↓ 80.6	↑ 86.3	↑ 80.9	↑ 86.9	↓ 88.1	↑ 78.0
85	Vascular access, AV-fistula or AV-graft, F.	57.4	61.2	24.1	38.7	58.3	43.9	56.3	65.5
	Vascular access, AV-fistula or AV-graft, M.	71.2	73.6	60.5	58.1	82.1	65.0	83.3	71.0
	Vascular access, AV-fistula or AV-graft	↑ 66.3	↓ 68.6	↑ 45.8	↑ 50.0	↑ 74.6	↑ 56.4	↑ 73.9	↑ 69.2
86	Frequency, renal replacement therapy	49.4	39.8	39.5	52.0	49.4	47.9	54.1	57.8
	Cancer care								
88	Colon cancer, five-year survival rate, F.	↑ 63.8	↑ 64.3	↓ 61.3	↑ 63.5	↑ 61.8	↑ 61.3	↑ 64.3	↑ 61.8
	Colon cancer, five-year survival rate, M.	↑ 59.6	↑ 60.6	↑ 65.3	↑ 59.0	↑ 65.2	↑ 60.8	↑ 53.8	↑ 59.6
	Colon cancer, five-year survival rate	↑ 61.8	↑ 62.5	↑ 63.2	↑ 61.2	↑ 63.4	↑ 61.1	↑ 59.3	↑ 60.6
89	Rectal cancer, five-year survival rate, F.	↑ 63.3	↑ 65.2	↓ 64.0	↑ 59.8	↑ 65.9	↓ 68.6	↑ 67.9	↑ 59.1
	Rectal cancer, five-year survival rate, M.	↑ 58.8	↑ 61.0	↑ 62.5	↑ 62.6	↓ 54.5	↑ 59.2	↓ 53.2	↑ 60.7
	Rectal cancer, five-year survival rate	↑ 60.8	↑ 62.9	↓ 63.1	↑ 61.5	↓ 60.0	↑ 63.6	↑ 60.1	↑ 60.0
90	Breast cancer, five-year survival rate, F.	↑ 88.6	↑ 90.1	↓ 90.8	↑ 88.3	↑ 88.0	↑ 89.9	↑ 90.5	↑ 88.5
91	Lung cancer, one-year survival rate, F.	↑ 45.0	↑ 47.6	↑ 52.3	↓ 38.8	↑ 48.0	↑ 47.6	↑ 44.4	↓ 43.9
	Lung cancer, one-year survival rate, M.	↑ 38.0	↑ 41.2	↑ 40.7	↓ 31.5	↑ 40.8	↑ 38.8	↑ 37.8	↑ 37.4
	Lung cancer, one-year survival rate	↑ 41.2	↑ 44.4	↑ 46.4	↓ 35.0	↑ 44.0	↑ 42.6	↑ 40.8	↑ 40.3
92	Reoperation after surgery, rectal cancer, F.	↑ 9.2	↓ 9.8	↑ 4.9	↓ 10.1	↓ 8.3	↓ 11.5	↓ 13.7	↑ 8.1
	Reoperation after surgery, rectal cancer, M.	↓ 11.9	↓ 14.5	↑ 6.0	↑ 6.5	↓ 9.6	↑ 15.6	↑ 11.9	↓ 15.2
	Reoperation after surgery, rectal cancer	↓ 10.8	↓ 12.6	↑ 5.5	↓ 7.8	↓ 9.0	↓ 14.0	↓ 12.6	↓ 12.7

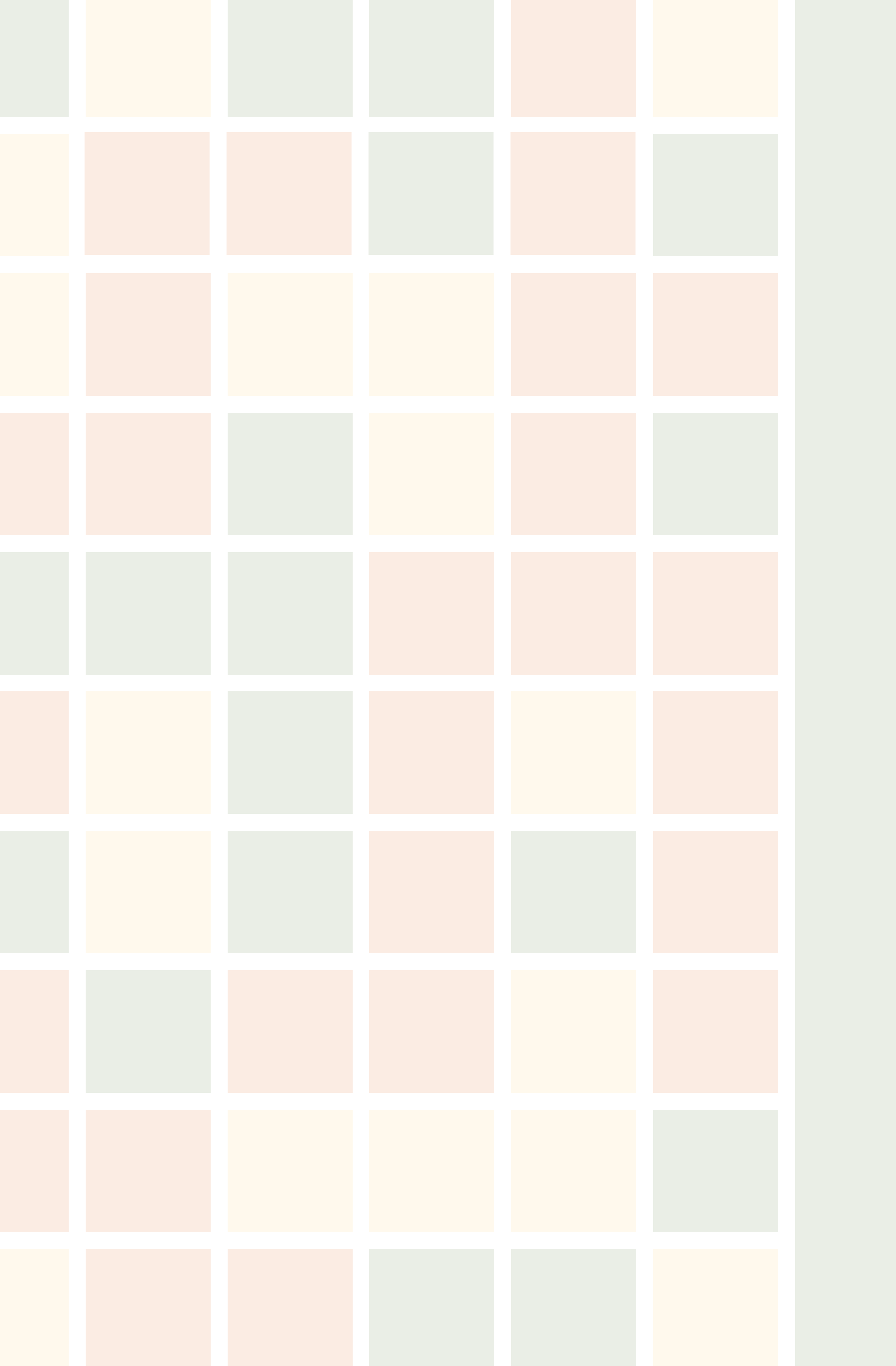
Gotland	Blekinge	Skåne	Halland	V. Götaland	Värmland	Örebro	Västmanland	Dalarna	Gävleborg	Västernorrland	Jämtland	Västerbotten	Norrbotten
	↓ 14.0	↑ 7.0	↑ 7.0	↑ 11.5	↓ 7.0	↑ 7.5		↓ 24.5	↓ 22.0	↑ 6.0	↑ 5.0	↑ 7.5	↑ 13.0
	↑ 8.0	↑ 8.0	↑ 13.0	↑ 12.5	↑ 8.0	↑ 7.0	↓ 14.0	↑ 11.0	↓ 33.5	↑ 10.5	↑ 5.0	↑ 5.5	↑ 20.0
↓ 6.0	↓ 10.0	↑ 7.0	↑ 8.0	↑ 12.0	↑ 8.0	↑ 7.0	↓ 12.0	↑ 12.0	↓ 30.0	↑ 10.0	↑ 5.0	↑ 6.0	↑ 19.0
↓ 14.1	↑ 5.5	↓ 0.2	↑ 0.3	↓ 0.6	↑ 0.0	↓ 22.1	↓ 13.8	↑ 0.9	↑ 4.5	↑ 32.7	↓ 19.2	↑ 4.3	↑ 52.3
↓ 22.9	↓ 25.8	↓ 23.4	↑ 21.8	↑ 22.5	↑ 25.9	↓ 25.2	↑ 17.5	↓ 22.8	↑ 24.6	↑ 18.9	↓ 26.0	↓ 21.9	↑ 23.3
↑ 22.4	↑ 22.2	↓ 22.5	↑ 18.5	↑ 21.2	↑ 23.9	↓ 22.2	↑ 17.3	↑ 22.0	↑ 23.0	↓ 21.6	↓ 24.0	↑ 18.4	↓ 24.2
↑ 22.5	↑ 24.2	↓ 23.1	↑ 20.5	↑ 21.9	↑ 25.0	↓ 23.9	↑ 17.6	↑ 22.2	↑ 24.0	↓ 20.3	↓ 24.9	↑ 20.3	↑ 23.8
↓ 14.7	↓ 16.1	↓ 14.7	↑ 13.6	↓ 14.3	↑ 17.8	↑ 17.0	↓ 14.0	↓ 13.8	↑ 16.6	↓ 13.5	↓ 17.4	↑ 12.8	↑ 14.3
↓ 16.2	↑ 13.4	↓ 14.3	↓ 15.5	↑ 13.1	↑ 15.5	↑ 16.4	↑ 12.5	↓ 15.3	↑ 15.8	↓ 16.1	↓ 18.4	↑ 11.1	↓ 16.8
↓ 15.6	↑ 14.4	↓ 14.7	↑ 14.3	↑ 13.6	↑ 16.6	↑ 16.8	↓ 13.3	↓ 14.3	↑ 16.2	↓ 14.9	↓ 17.8	↑ 11.9	↑ 15.5
↓ 78.2	↑ 85.4	↑ 83.3	↑ 87.3	↑ 89.0	↑ 83.5	↓ 86.0	↑ 93.4	↑ 80.0	↑ 85.4	↑ 91.9	↑ 79.9	↓ 89.9	↑ 90.1
↓ 88.4	↑ 89.7	↑ 85.1	↑ 90.6	↑ 90.2	↑ 86.2	↓ 84.1	↓ 90.9	↑ 82.9	↑ 90.0	↑ 92.6	↑ 83.2	↓ 89.7	↑ 91.6
↓ 83.5	↑ 87.6	↑ 84.2	↑ 88.9	↑ 89.6	↑ 84.9	↓ 85.0	↑ 92.2	↑ 81.4	↑ 87.7	↑ 92.3	↑ 81.7	↓ 89.8	↑ 91.0
↑ 14.3	↑ 10.3	↑ 8.2	↑ 9.8	↑ 5.9	↓ 4.7	↑ 4.2	↑ 6.3	↑ 7.8	↓ 5.5	↑ 15.0	↑ 5.6	↑ 12.0	↑ 8.1
↑ 10.4	↑ 5.5	↑ 10.2	↓ 6.9	↓ 5.7	↑ 6.4	↓ 4.0	↑ 10.1	↑ 7.7	↓ 8.8	↑ 11.3	↑ 10.7	↓ 5.5	↑ 10.3
↑ 12.0	↑ 7.5	↑ 9.4	↑ 8.1	↓ 5.8	↑ 5.7	↓ 4.1	↑ 8.5	↑ 7.7	↓ 7.4	↑ 12.8	↑ 9.0	↑ 8.1	↑ 9.4
		↑ 64.9	↓ 63.4	↑ 62.5	↑ 61.9	↑ 67.4	↓ 60.6	↓ 59.2	↓ 57.6	↑ 72.6	↓ 38.2	↓ 59.0	↑ 77.3
	↑ 88.0	↓ 56.8	↓ 67.8	↑ 57.5	↓ 80.0	↓ 50.4	↓ 57.8	↑ 66.9	↓ 65.5	↑ 67.7	↑ 79.3	↑ 57.6	↑ 70.0
	↑ 79.4	↑ 59.5	↓ 67.7	↑ 59.7	↑ 69.1	↓ 58.0	↓ 63.1	↑ 66.3	↓ 63.8	↑ 69.4	↓ 70.8	↓ 62.0	↑ 73.7
↑ 8.8	↑ 8.7	↓ 8.8	↑ 7.5	↑ 9.2	↑ 7.7	↑ 9.5	↓ 9.3	↑ 9.0	↓ 9.4	↓ 12.0	↑ 10.8	↑ 9.4	↑ 9.5
↑ 7.5	↑ 7.6	↑ 8.6	↑ 9.3	↑ 9.4	↓ 10.0	↑ 8.8	↓ 8.8	↑ 10.0	↓ 9.9	↑ 11.7	↑ 10.4	↑ 11.4	↑ 11.5
↑ 8.8	↑ 8.3	↑ 8.7	↑ 8.6	↑ 9.3	↓ 8.8	↑ 9.2	↓ 8.9	↑ 9.5	↓ 10.0	↓ 12.0	↑ 10.9	↑ 10.4	↑ 10.5
90.8	83.5	81.0	76.6	83.7	85.5	83.7	83.9	80.6	80.6	89.0	77.8	81.3	78.0
89.6	80.4	81.7	78.9	82.5	84.8	79.6	85.1	82.9	84.0	86.3	77.6	87.1	76.7
90.2	82.0	81.4	77.8	83.1	85.1	81.7	84.5	81.8	82.3	87.7	77.7	84.4	77.3
↑ 91.7	↑ 94.6	↓ 86.9	↓ 91.4	↑ 90.2	↓ 89.1	↑ 91.2	↑ 85.0	↓ 92.4	↓ 81.3	↓ 89.3	↑ 92.1	↓ 92.9	↓ 89.6
↓ 90.8	↓ 90.7	↓ 90.8	↑ 94.0	↓ 92.4	↑ 93.9	↓ 94.0	↑ 91.9	↓ 93.3	↑ 87.0	↑ 93.1	↑ 95.8	↑ 93.4	↑ 92.9
↑ 91.2	↓ 92.5	↓ 89.0	↓ 92.8	↑ 91.3	↑ 91.8	↑ 92.7	↑ 88.5	↓ 92.9	↓ 84.3	↑ 91.3	↑ 94.2	↓ 93.1	↓ 91.4
53.9	60.5	40.7	33.9	51.9	36.5	49.0	47.9	46.7	43.1	45.5	35.4	59.7	49.3
36.4	49.0	46.6	43.5	43.7	40.2	50.5	38.9	51.4	37.4	49.9	38.8	52.3	39.5
44.5	51.7	44.7	40.0	47.0	38.8	50.1	41.9	49.9	39.4	48.4	37.6	54.9	42.9
75.0	76.5	90.7	84.2	87.7	81.1	71.1	96.3	84.4	72.0	96.6	89.5	56.5	77.3
63.6	83.8	87.9	86.5	79.5	67.7	67.2	86.4	77.8	62.3	83.6	77.8	68.9	67.4
↓ 69.6	↓ 81.5	↓ 88.7	↓ 85.7	↑ 82.9	↓ 72.5	↑ 68.6	↓ 90.1	↓ 79.8	↑ 65.4	↑ 87.8	↑ 82.6	↑ 64.7	↑ 70.4
46.2	52.6	66.1	65.0	60.5	64.9	42.1	78.6	59.4	40.7	36.7	65.0	52.2	73.9
72.7	54.8	83.8	60.5	62.4	81.8	62.3	76.1	65.3	55.2	71.0	88.9	62.2	74.6
↑ 58.3	↓ 54.1	↑ 78.5	↓ 62.1	↑ 61.6	↑ 75.7	↑ 55.1	↑ 77.0	↑ 63.5	↓ 50.6	↓ 59.8	↓ 78.7	↓ 58.8	↑ 74.4
41.9	57.7	48.6	41.4	50.4	57.1	62.0	58.1	51.0	60.5	72.0	56.8	59.2	50.2
↑ 59.3	↑ 64.3	↑ 66.3	↑ 63.1	↑ 64.9	↓ 61.6	↑ 64.9	↑ 60.5	↑ 62.8	↑ 67.2	↑ 65.1	↑ 58.0	↑ 61.2	↑ 60.7
↑ 56.7	↑ 59.5	↑ 59.4	↑ 63.7	↑ 59.1	↓ 56.4	↓ 55.6	↑ 62.7	↑ 62.0	↑ 56.3	↑ 56.6	↑ 53.4	↑ 57.9	↑ 57.9
↑ 57.9	↑ 61.9	↑ 63.0	↑ 63.4	↑ 62.1	↓ 59.0	↑ 60.7	↑ 61.6	↑ 62.4	↑ 62.1	↑ 60.8	↑ 56.0	↑ 59.6	↑ 59.3
↓ 51.0	↑ 75.9	↑ 62.5	↓ 53.4	↑ 63.6	↑ 63.6	↑ 63.9	↑ 61.2	↑ 67.5	↑ 61.7	↑ 59.5	↓ 47.6	↑ 64.4	↑ 55.5
↓ 65.0	↓ 56.9	↑ 59.8	↓ 50.9	↑ 56.3	↑ 60.7	↑ 60.5	↑ 68.1	↑ 63.3	↓ 55.2	↑ 58.1	↓ 50.1	↑ 59.3	↓ 57.1
↓ 59.5	↑ 65.3	↑ 61.1	↓ 52.0	↑ 59.4	↑ 62.0	↑ 62.1	↑ 65.1	↑ 65.2	↑ 58.3	↑ 58.6	↓ 48.9	↑ 61.2	↓ 56.5
↑ 88.4	↑ 86.8	↑ 86.8	↑ 89.2	↑ 88.5	↑ 85.8	↑ 87.0	↑ 89.1	↓ 87.8	↑ 85.5	↑ 89.2	↑ 90.2	↑ 87.3	↑ 91.7
↑ 50.9	↑ 45.5	↑ 44.8	↑ 52.1	↑ 44.5	↓ 36.3	↓ 41.4	↓ 37.1	↑ 43.7	↑ 46.9	↑ 36.0	↓ 34.0	↑ 43.6	↑ 48.3
↑ 38.8	↑ 38.3	↑ 37.2	↑ 41.6	↑ 38.1	↑ 36.4	↓ 30.9	↑ 39.1	↑ 39.7	↑ 35.8	↓ 27.7	↓ 29.3	↑ 33.1	↑ 44.9
↑ 43.7	↑ 41.1	↑ 40.7	↑ 46.5	↑ 41.0	↑ 36.3	↓ 35.8	↑ 38.1	↑ 41.7	↑ 41.1	↓ 31.5	↓ 31.4	↑ 37.7	↑ 46.6
	↑ 8.0	↓ 10.7	↑ 4.6	↑ 9.9	↑ 6.7	↓ 10.6	↓ 5.6	↑ 5.6	↑ 7.6	↓ 11.4	↓ 13.3	↓ 9.6	↑ 10.5
↑ 5.6	↑ 10.8	↑ 10.2	↑ 13.1	↓ 13.8	↓ 16.8	↑ 11.0	↓ 3.0	↑ 6.7	↑ 13.6	↓ 12.8	↓ 14.3	↑ 10.9	↑ 11.2
↑ 4.2	↑ 9.7	↑ 10.4	↑ 9.9	↑ 12.2	↑ 12.6	↓ 10.9	↓ 3.9	↑ 6.2	↑ 11.2	↓ 12.2	↓ 14.0	↑ 10.4	↑ 11.0

	F. = Female M. = Male ↑ = Better result ↓ = Worse result	SWEDEN	Stockholm	Uppsala	Sörmland	Östergötland	Jönköping	Kronoberg	Kalmar
93	Curative treatment, prostate cancer, M.	↑ 75.2	↑ 79.1	↑ 81.8	↑ 84.5	↑ 70.3	↓ 37.5	↓ 73.1	↑ 86.4
94	Time to decision to treat, head and neck tumours	50.3	46.3	38.6	44.7	59.8	63.5	52.8	58.8
	Psychiatric care								
95	Suicides and deaths with undetermined intent, F.	9.43	10.6	8.9	10.6	8.2	8.3	8.4	9.1
	Suicides and deaths with undetermined intent, M.	23.0	22.8	21.0	23.8	19.1	22.1	22.5	24.7
	Suicides and deaths with undetermined intent	15.9	16.2	14.7	16.9	13.5	15.0	15.4	16.7
96	Use of soporifics and sedatives, F.	↓ 3829	↓ 3683	↑ 3874	↑ 2814	↑ 3434	↑ 3628	↓ 4468	↓ 3856
	Use of soporifics and sedatives, M.	↓ 2476	↓ 2503	↑ 2389	↑ 1795	↓ 2119	↑ 2373	↓ 2907	↓ 2491
	Use of soporifics and sedatives	↓ 3171	↓ 3120	↑ 3150	↑ 2312	↑ 2793	↑ 3018	↓ 3695	↓ 3189
97	Three or more psychopharmacological drugs, F.	5.38	4.60	5.95	4.79	4.89	5.25	7.40	4.14
	Three or more psychopharmacological drugs, M.	3.04	2.84	3.42	2.20	2.86	2.85	4.44	2.05
	Three or more psychopharmacological drugs	4.52	4.00	4.99	3.84	4.13	4.35	6.25	3.35
98	Use of appropriate soporifics	51.6	58.1	55.1	50.8	38.5	54.9	65.8	54.7
99	Avoidable admissions, somatic care, F.	2119	2140	1296	1852	1282	1871	2105	3229
	Avoidable admissions, somatic care, M.	2254	2238	1709	2098	2501	2711	2148	2577
	Avoidable admissions, somatic care	2192	2192	1506	1982	1953	2331	2128	2871
100	Readmissions within 14 and 28 days, schizophrenia, F.	16.1	15.8	19.8	19.1	13.6	14.5	13.9	16.8
	Readmissions within 14 and 28 days, schizophrenia, M.	16.0	16.2	10.5	16.4	17.3	16.3	12.4	12.6
	Readmissions within 14 and 28 days, schizophrenia	16.1	16.1	14.7	17.7	15.8	15.4	13.1	14.4
101	Readmissions within 3 and 6 months, schizophrenia, F.	37.4	37.4	40.1	39.7	33.0	35.1	34.7	41.2
	Readmissions within 3 and 6 months, schizophrenia, M.	37.1	36.9	33.1	37.0	36.3	35.1	35.5	43.7
	Readmissions within 3 and 6 months, schizophrenia	37.2	37.1	36.2	38.3	34.9	35.1	35.1	42.6
102	Continuous treatment, lithium therapy, F.	82.7	79.3	84.2	86.5	82.9	85.5	85.9	84.4
	Continuous treatment, lithium therapy, M.	83.5	79.8	86.1	83.7	89.0	84.9	83.6	86.4
	Continuous treatment, lithium therapy	83.1	79.5	84.9	86.2	85.4	85.4	85.4	85.2
103	Waited > 90 days, visit, child psychiatric clinics	↑ 66.4	↑ 64.7	↑ 69.3	↓ 60.0	↑ 86.6	↑ 75.7	↓ 89.8	↓ 79.6
104	Waited > 90 days, visit, adult psychiatric clinics	↑ 6.2	↑ 7.2	↓ 7.4	↓ 12.5	↑ 3.5	↓ 2.1	↓ 21.2	↓ 0.8
105	Recidivism during care, forensic psychiatric care	↓ 20.9	19.3	25.9	4.8	28.6	33.3	46.9	
	Surgery								
106	Reoperation within five-years, inguinal hernia	↑ 96.9	↑ 97.2	↑ 98.0	↑ 95.7	↑ 96.8	↓ 96.3	↓ 95.8	↓ 97.9
107	Rate of day-case surgery, inguinal hernia	↑ 77.2	↑ 72.6	↑ 79.0	↑ 100.0	↑ 81.6	↑ 77.1	↓ 53.5	↓ 86.3
108	Minimally invasive surgery, cholecystectomy, F.	↑ 88.4	↑ 94.9	↑ 86.1	↓ 80.6	↑ 76.9	↑ 77.9	↑ 86.7	↑ 74.7
	Minimally invasive surgery, cholecystectomy, M.	↑ 75.9	↑ 89.7	↑ 78.1	↓ 58.3	↑ 54.0	↑ 56.8	↑ 72.8	↓ 43.8
	Minimally invasive surgery, cholecystectomy	↑ 84.3	↑ 93.2	↑ 83.3	↓ 73.3	↑ 69.3	↑ 70.5	↑ 81.9	↑ 63.7
109	Post-surgical complication, cholecystectomy, F.	↓ 4.7	↑ 4.4	↑ 3.2	↑ 5.1	↓ 5.8	↑ 5.3	↑ 6.9	↑ 4.7
	Post-surgical complication, cholecystectomy, M.	↓ 6.9	↑ 5.1	↑ 4.0	↑ 8.5	↓ 7.4	↑ 8.6	↑ 7.9	↓ 11.6
	Post-surgical complication, cholecystectomy	↓ 5.5		↑ 3.5	↑ 6.2	↓ 6.3	↑ 6.4	↑ 7.2	↓ 7.1
111	Carotid endarterectomy within 14 days, F.	57.6	68.9		8.3	83.3	100.0		
	Carotid endarterectomy within 14 days, M.	53.9	70.2	45.0	15.4	61.9	93.3		50.0
	Carotid endarterectomy within 14 days	55.1	69.7	44.8	13.2	69.7	95.7	70.0	58.1
112	Death/amputation, infrainguinal by-pass surgery, F.	↑ 6.0	↑ 5.0	↑ 5.0	↑ 6.0	↑ 7.0	↓ 3.0	↑ 4.0	↑ 6.0
	Death/amputation, infrainguinal by-pass surgery, M.	↑ 8.0	↑ 5.0	↓ 17.0	↑ 4.0	↑ 4.0	↓ 10.0	↓ 8.0	↑ 3.0
	Death/amputation, infrainguinal by-pass surgery	↑ 6.8	↑ 4.7	↓ 12.2	↑ 4.8	↑ 5.6	↓ 6.9	↑ 6.0	↑ 4.4
114	Patient satisfaction after septoplasty, F.	76.7	77.3			80.0		70.0	83.3
	Patient satisfaction after septoplasty, M.	76.5	76.5	78.9	83.3	92.3	79.2	75.9	60.0
	Patient satisfaction after septoplasty	76.5	76.7	78.3	83.9	89.8	82.8	74.4	68.8
115	Visual acuity at the time of cataract surgery, F.	↑ 21.2	↑ 18.6	↓ 22.5	↑ 19.6	↓ 24.8	↑ 16.7	↑ 18.6	↑ 24.4
	Visual acuity at the time of cataract surgery, M.	↑ 19.6	↓ 16.8	↑ 18.6	↑ 18.4	↓ 25.2	↓ 17.7	↑ 17.7	↑ 21.9
	Visual acuity at the time of cataract surgery	↑ 20.6	↑ 17.9	↓ 20.9	↑ 19.1	↓ 25.0	↑ 17.1	↑ 18.3	↑ 23.4
116	Waited > 90 days, appointment, general surgery	↑ 16.0	↑ 20.3	↑ 1.4	↓ 13.1	↑ 36.1	↓ 11.1	↓ 18.3	↓ 6.3
117	Waited > 90 days, surgery, inguinal hernia	↓ 9.9	↓ 12.8	↓ 5.5	↑ 15.2	↓ 20.6	↓ 3.8	↓ 18.7	↑ 0.0
118	Waited > 90 days, cholecystectomy/bile duct surgery	↓ 12.8	↑ 12.0	↓ 4.1	↓ 16.7	↓ 35.1	↓ 2.4	↑ 6.8	↑ 2.5
119	Waited > 90 days, cataract surgery	↓ 7.2	↑ 2.0	↑ 3.9	↓ 11.0	↓ 16.1	↑ 0.0	↓ 1.8	↓ 4.3

	Gotland	Blekinge	Skåne	Halland	V. Götaland	Värmland	Örebro	Västmanland	Dalarna	Gävleborg	Västernorrland	Jämtland	Västerbotten	Norrbotten
	↑ 92.3	↓ 73.5	↓ 72.4	↑ 82.4	↑ 73.3	↑ 84.5	↑ 84.2	↑ 80.0	↓ 68.8	↓ 67.3	↓ 68.4	↓ 70.8	↑ 85.7	↑ 69.4
	34.3	45.9	41.4	56.0	53.2	59.2	51.6	46.2	45.7	38.0	79.3	72.5	45.0	62.1
	6.4	7.2	10.6	10.6	8.3	9.7	10.4	9.0	8.6	10.0	10.6	11.5	6.6	8.5
	29.3	28.7	27.3	19.4	20.8	27.1	20.7	24.5	25.6	28.6	22.5	27.6	18.0	19.2
	17.0	17.8	18.6	14.9	14.3	18.1	15.4	16.5	16.8	19.1	16.4	19.4	12.2	13.9
	↑ 3483	↓ 3787	↑ 4070	↑ 4029	↓ 4711	↓ 4293	↓ 2859	↑ 4214	↑ 3346	↑ 3714	↑ 2877	↓ 3432	↑ 3440	↓ 2627
	↓ 2214	↓ 2781	↓ 2633	↑ 2519	↓ 3058	↓ 2850	↓ 1779	↑ 2637	↑ 2059	↑ 2284	↑ 1779	↑ 1915	↑ 2039	↓ 1817
	↑ 2862	↓ 3296	↓ 3374	↑ 3291	↓ 3906	↓ 3588	↓ 2332	↑ 3441	↑ 2712	↑ 3012	↑ 2338	↓ 2676	↑ 2752	↓ 2225
	3.00	5.89	5.76	5.93	6.86	6.00	4.72	4.83	5.04	4.66	4.71	4.52	5.29	3.31
	2.22	3.22	2.99	3.06	4.08	3.38	2.56	2.54	2.48	2.47	2.59	2.37	3.08	2.14
	2.71	4.87	4.75	4.81	5.82	5.02	3.94	3.98	4.08	3.84	3.92	3.71	4.45	2.87
	61.1	47.8	49.7	45.1	53.0	56.3	36.6	38.1	52.3	60.5	48.9	60.2	33.5	42.6
	2532	1884	2269	2555	2144	2198	2399	2428	2111	1899	2231	1443	2562	2003
	1948	1641	2270	3080	2048	3274	2659	2316	2305	1714	2049	1242	2364	2394
	2217	1750	2269	2831	2092	2766	2544	2366	2214	1802	2132	1346	2458	2212
	16.0	21.8	13.4	17.3	15.7	13.6	20.9	16.7	18.6	20.2	21.4	6.9	17.9	15.2
	7.5	18.0	14.1	18.6	17.2	12.1	16.7	18.3	25.0	19.7	17.0	14.5	18.3	12.4
	10.8	19.9	13.8	18.0	16.6	12.7	18.6	17.6	22.4	19.9	19.0	10.6	18.1	13.6
	36.0	40.2	33.4	42.5	37.4	34.8	46.9	38.2	39.5	43.7	45.0	31.0	33.9	38.8
	27.5	41.6	33.6	44.3	37.6	37.4	41.6	41.9	39.7	38.3	39.9	30.9	43.7	31.4
	30.8	40.9	33.5	43.5	37.5	36.3	44.0	40.3	39.6	40.4	42.3	31.0	39.5	34.5
	87.1	82.0	81.3	81.5	83.8	83.1	79.1	85.7	86.1	86.0	84.6	85.8	83.0	82.1
	82.2	89.6	78.4	85.4	84.7	85.3	78.6	81.4	85.7	85.2	90.3	80.2	84.9	84.5
	85.5	85.3	80.6	83.0	84.2	83.9	79.0	84.3	86.0	86.0	86.8	83.2	83.5	83.2
	↓ 83.3	↓ 58.0	↑ 69.0	↓ 74.8	↑ 80.2	↓ 68.5	↓ 59.4	↑ 85.5	↑ 53.2	↑ 71.8	↓ 90.7	↓ 84.6	↓ 47.4	↓ 60.0
	↑ 3.3	↑ 0.0	↑ 4.8	↓ 3.5	↓ 0.9	↑ 1.2	↑ 11.5	↓ 7.8	↑ 7.1	↓ 8.7	↑ 0.0	↑ 2.2	↓ 12.6	↑ 6.5
			21.3	14.3	22.9			25.0	35.3	23.8	28.8		7.1	7.4
	↓ 93.5	↓ 97.6	↑ 97.6	↑ 94.6	↑ 96.2	↑ 96.9	↑ 98.2	↓ 98.1	↓ 96.3	↓ 95.2	↑ 98.6	↓ 96.8	↓ 96.9	↑ 97.7
	↑ 62.7	↑ 89.3	↓ 76.1	↓ 78.3	↓ 63.1	↑ 92.2	↑ 78.6	↑ 84.4	↑ 70.0	↑ 74.3	↓ 90.8	↑ 91.1	↑ 83.9	↓ 84.2
	↓ 75.0	↑ 90.2	↑ 90.3	↑ 91.1	↑ 89.0	↓ 89.2	↑ 94.3	↑ 93.4	↑ 88.9	↓ 81.7	↑ 73.8	↑ 83.3	↓ 85.3	↑ 89.6
	↑ 66.7	↑ 74.7	↑ 80.3	↑ 78.3	↓ 75.1	↑ 78.0	↑ 86.4	↓ 86.2	↑ 69.5	↑ 74.8	↓ 42.3	↑ 66.7	↑ 77.0	↑ 76.4
	↑ 72.0	↑ 85.0	↑ 87.0	↑ 86.7	↑ 84.6	↓ 85.3	↑ 91.9	↑ 91.3	↑ 82.6	↓ 79.4	↑ 62.9	↑ 77.3	↓ 82.5	↑ 85.1
	↓ 8.5	↑ 0.6	↑ 3.5	↓ 5.0	↓ 6.3	↑ 4.7	↓ 4.5	↓ 5.5	↑ 2.3	↓ 6.9	↓ 4.9	↓ 3.6	↓ 5.5	↓ 3.5
	↑ 3.8	↓ 3.6	↑ 5.7	↓ 5.4	↑ 8.6	↑ 15.1	↑ 5.3	↓ 9.5	↑ 3.9	↓ 12.5	↓ 6.7	↓ 10.3	↓ 6.0	↓ 2.3
	↓ 6.8	↓ 1.6	↑ 4.2	↓ 5.1	↓ 7.0	↑ 8.3	↑ 4.7	↓ 6.7	↑ 2.8	↓ 8.8	↓ 5.5	↓ 6.0	↓ 5.7	↓ 3.1
			42.9		61.0				84.6					
			48.2	36.0	58.5	61.1	54.5	45.5	79.2	23.1	0.0		25.0	21.4
		35.7	46.4	48.4	59.5	61.5	62.5	43.3	81.1	21.1	0.0	30.0	30.4	22.7
			↑ 7.0	↑ 4.0	↑ 10.0	↓ 7.0	↓ 5.0	↓ 7.0	↑ 0.0	↑ 0.0		↓ 9.0	↓ 4.0	↑ 0.0
		↓ 8.0	↑ 6.0	↑ 0.0	↑ 11.0	↑ 14.0	↓ 11.0	↑ 0.0	↑ 8.0	↓ 10.0		↓ 18.0	↓ 17.0	↓ 9.0
		↓ 6.1	↑ 6.2	↑ 2.2	↑ 10.7	↑ 10.3	↓ 7.5	↑ 2.6	↑ 4.0	↓ 5.0		↓ 13.6	↓ 9.6	↓ 4.9
			77.3		75.0		94.1	66.7	78.3				50.0	
		70.0	74.8	88.2	72.2	73.9	76.3	77.5	82.7	65.0	83.3		60.9	93.5
		56.3	75.4	84.6	72.7	73.3	81.8	74.1	81.3	74.1	89.5	72.7	57.6	91.4
	↑ 21.3	↓ 15.2	↓ 23.9	↑ 19.8	↑ 21.0	↑ 23.4	↓ 25.6	↓ 16.0	↓ 24.5	↑ 28.8	↓ 27.9	↑ 25.7	↑ 20.3	↑ 20.8
	↑ 13.9	↓ 15.7	↓ 23.0	↑ 18.0	↓ 19.0	↑ 22.1	↑ 23.7	↑ 15.7	↓ 21.0	↑ 26.9	↓ 24.4	↑ 20.4	↑ 20.0	↓ 22.7
	↑ 18.7	↓ 15.4	↓ 23.5	↑ 19.2	↑ 20.2	↑ 22.9	↓ 24.8	↓ 15.9	↓ 23.1	↑ 28.1	↓ 26.6	↑ 23.6	↑ 20.2	↓ 21.6
	↓ 1.8	↓ 13.7	↓ 9.5	↑ 4.9	↓ 14.1	↑ 19.1	↓ 9.2	↓ 18.1	↓ 36.5	↑ 7.1	↓ 24.0	↑ 4.9	↑ 24.4	↑ 3.4
	↑ 4.3	↓ 7.7	↑ 0.2	↑ 2.4	↑ 0.0	↓ 9.6	↑ 3.5	↓ 35.4	↓ 30.9	↓ 15.1	↑ 8.2	↑ 0.0	↓ 19.0	↑ 1.7
	↑ 0.0	↑ 0.0	↑ 0.6	↑ 2.1	↑ 0.0	↓ 29.7	↑ 6.4	↓ 52.4	↓ 34.7	↓ 16.0	↓ 17.1	↑ 0.0	↓ 31.3	↑ 2.5
	↓ 13.6	↑ 6.1	↓ 0.0	↑ 0.0	↑ 2.4	↑ 9.5	↓ 3.1	↓ 2.9	↓ 42.0	↑ 7.8	↓ 44.4	↑ 10.8	↑ 1.1	↓ 1.4

F. = Female M. = Male ↑ = Better result ↓ = Worse result		SWEDEN	Stockholm	Uppsala	Sörmland	Östergötland	Jönköping	Kronoberg	Kalmar
	Intensive care								
120	Mortality within 30 days, F.	↓ 0.66	0.76		↓ 0.67	0.60	↓ 0.70		↓ 0.77
	Mortality within 30 days, M.	↓ 0.65	0.63		↑ 0.64	0.55	↓ 0.70		↓ 0.70
	Mortality within 30 days	↓ 0.65	0.67		↓ 0.65	↑ 0.57	↓ 0.70		↓ 0.73
121	Discharged during night, F.	↑ 6.2	↑ 7.1		↓ 6.9	↑ 3.2	↑ 5.0		↓ 6.1
	Discharged during night, M.	↑ 5.7	↑ 5.7		↑ 5.5	↑ 3.8	↓ 3.7		↑ 5.3
	Discharged during night	↑ 5.9	↑ 6.2		↑ 6.2	↑ 3.5	↓ 4.2		↑ 5.7
122	Unscheduled readmission within 72 hours, F.	↑ 2.56	↑ 2.65		↓ 3.08	↑ 2.24	↑ 1.68		↑ 1.85
	Unscheduled readmission within 72 hours, M.	↑ 2.67	↑ 2.65		↓ 3.84	↑ 2.23	↓ 3.57		↓ 2.83
	Unscheduled readmission within 72 hours	↑ 2.63	↑ 2.65		↓ 3.48	↑ 2.24	↑ 2.79		↑ 2.40
	Drug therapy								
123	Class D drug-drug interactions, F.	2.67	2.82	2.58	1.91	2.36	2.60	2.48	2.42
	Class D drug-drug interactions, M.	2.70	2.67	2.45	2.52	2.65	2.10	2.31	2.50
	Class D drug-drug interactions	2.68	2.77	2.53	2.14	2.47	2.41	2.42	2.45
124	Concurrent use of ten or more drug, F.	11.8	10.8	15.6	10.2	10.1	12.0	13.9	9.9
	Concurrent use of ten or more drug, M.	9.2	8.9	10.7	7.9	8.2	9.2	10.9	7.7
	Concurrent use of ten or more drug	10.8	10.2	13.7	9.3	9.4	10.9	12.7	9.1
125	Antibiotic therapy, F.	↑ 25.8	↑ 28.8	↑ 24.6	↑ 24.9	↑ 24.3	↑ 22.7	↑ 26.0	↑ 24.4
	Antibiotic therapy, M.	↑ 19.1	↑ 21.6	↑ 18.5	↑ 18.0	↑ 17.5	↑ 17.2	↑ 19.0	↑ 18.5
	Antibiotic therapy	↑ 22.4	↑ 25.2	↑ 21.6	↑ 21.4	↑ 20.8	↑ 19.9	↑ 22.5	↑ 21.4
126	Penicillin V as respiratory antibiotics, children, Girls	↑ 72.3	↑ 65.0	↓ 74.8	↑ 75.7	↑ 79.4	↑ 79.1	↑ 69.7	↑ 74.3
	Penicillin V as respiratory antibiotics, children, Boys	↑ 74.0	↑ 66.8	↑ 76.8	↑ 77.4	↑ 80.2	↑ 81.9	↑ 71.6	↑ 77.1
	Penicillin V as respiratory antibiotics, children	↑ 73.2	↑ 66.0	↑ 75.9	↑ 76.6	↑ 79.8	↑ 80.6	↑ 70.7	↑ 75.8
127	Quinolone therapy as urinary tract antibiotics, F.	↑ 15.1	↑ 15.7	↑ 14.6	↑ 12.8	↑ 15.6	↑ 13.8	↑ 17.0	↑ 13.3
128	Choice of drug therapy, asthma, F.	38.1	39.1	36.8	42.2	28.0	38.2	32.3	35.5
	Choice of drug therapy, asthma,, M.	43.4	45.3	40.1	50.2	39.9	40.8	41.6	44.4
	Choice of drug therapy, asthma,	40.4	41.9	38.1	45.2	33.4	39.2	36.0	39.1
129	Use of ARB without prior ACE-therapy, F.	↑ 30.8	↑ 35.9	↓ 30.2	↑ 24.0	↑ 18.4	↑ 17.8	↑ 29.2	↓ 19.6
	Use of ARB without prior ACE-therapy, M.	↑ 29.8	↑ 36.7	↓ 26.5	↓ 26.3	↓ 25.2	↑ 19.3	↓ 25.2	↑ 23.3
	Use of ARB without prior ACE-therapy	↑ 30.4	↑ 36.4	↓ 28.6	↓ 24.9	↓ 22.8	↑ 18.5	↓ 27.3	↓ 21.7
	Other care								
130	Good viral control in HIV-patients, F.	90.7	92.2	92.7	80.6	86.4	87.1	95.5	91.7
	Good viral control in HIV-patients, M.	92.1	93.8	94.3	78.8	90.6	87.5	63.2	78.6
	Good viral control in HIV-patients	↑ 91.7	↑ 93.3	↑ 93.6	↑ 79.7	↑ 88.4	↑ 87.3	↑ 80.5	↑ 84.6
131	Assessment of pain, cancer patients, F.	↑ 17.6	↑ 38.5	↑ 11.8	↑ 7.0	↑ 37.1	↑ 21.7	↑ 8.4	↑ 8.0
	Assessment of pain, cancer patients, M.	↑ 18.2	↑ 41.2	↑ 7.4	↓ 4.6	↑ 35.5	↓ 19.1	↓ 4.3	↑ 8.6
	Assessment of pain, cancer patients	↑ 17.9	↑ 39.9	↑ 9.5	↓ 5.8	↑ 36.3	↑ 20.4	↑ 6.5	↑ 8.4
132	Opiods on an on-demand basis, cancer patients, F.	↓ 96.4	↑ 97.3	↓ 96.2	↓ 93.5	↓ 94.3	↓ 98.2	↑ 100.0	↑ 93.4
	Opiods on an on-demand basis, cancer patients, M.	↑ 96.0	↑ 97.0	↑ 97.9	↓ 92.3	↓ 93.4	↑ 100.0	↑ 97.8	↓ 89.3
	Opiods on an on-demand basis, cancer patients	↓ 96.2	↑ 97.1	↓ 97.1	↓ 92.9	↓ 93.9	↑ 99.1	↑ 99.0	↑ 91.3
133	Immunomodulators, relapsing-remitting MS, F.	62.1	73.7	58.5	43.7	77.1	44.8	47.2	40.4
	Immunomodulators, relapsing-remitting MS, M.	56.9	75.1	56.5	43.9	88.7	41.2	37.4	44.4
	Immunomodulators, relapsing-remitting MS	60.8	74.7	58.1	43.9	81.1	43.8	44.1	41.7
134	Immunomodulators, secondary progressive MS, F.	14.8	23.9	18.7	2.8	16.4	12.6	1.4	3.2
	Immunomodulators, secondary progressive MS, M.	16.5	23.8	19.0	16.4	24.8	9.3	0.0	2.7
	Immunomodulators, secondary progressive MS	15.4	24.0	18.8	6.6	18.8	11.7	1.0	3.1

	Gotland	Blekinge	Skåne	Halland	V. Götaland	Värmland	Örebro	Västmanland	Dalarna	Gävleborg	Västernorrland	Jämtland	Västerbotten	Norrbotten
			↓ 0.65	↓ 0.73	0.58	0.60	↓ 0.70	0.64	↓ 0.52	↑ 0.77	↓ 0.77	↓ 0.63	0.64	
			↓ 0.63	↑ 0.69	0.60	0.63	↓ 0.75	0.70	↓ 0.61	↓ 0.73	↑ 0.74	↓ 0.58	0.70	
			↓ 0.64	↓ 0.70	0.59	0.61	↓ 0.72	0.67	↓ 0.57	↑ 0.75	↓ 0.76	↓ 0.60	0.67	
			↓ 5.1	↓ 6.1	↑ 6.5	7.3	↑ 6.1	↑ 3.6	↑ 7.4	↑ 4.7	↑ 8.4	↓ 7.8	↓ 6.5	
			↑ 5.1	↓ 4.8	↑ 6.1	8.0	↑ 5.1	↓ 6.3	↑ 7.6	↑ 6.8	↓ 11.4	↑ 3.6	↑ 3.6	
			↑ 5.1	↓ 5.4	↑ 6.3	7.7	↑ 5.5	↑ 5.2	↑ 7.6	↑ 5.8	↓ 10.1	↑ 5.4	↑ 4.3	
			↑ 3.09	↓ 2.83	↑ 2.96	2.15	↓ 3.34	↑ 1.94	↑ 0.33	↑ 2.17	↓ 2.34	↑ 1.42	↓ 4.09	
			↓ 2.79	↑ 2.33	↑ 2.96	2.58	↑ 1.86	↓ 3.02	↑ 2.17	↓ 2.90	↑ 1.22	↓ 3.14	↓ 2.89	
			↓ 2.91	↓ 2.55	↑ 2.96	2.39	↓ 2.45	↓ 2.57	↑ 1.39	↓ 2.59	↑ 1.71	↓ 2.40	↓ 3.37	
	2.75	2.65	2.61	2.28	3.15	3.31	2.51	2.61	2.15	2.51	2.71	2.01	2.42	2.55
	2.30	2.34	3.08	2.61	3.09	3.15	3.06	2.73	2.21	2.55	2.56	1.78	2.13	2.28
	2.59	2.53	2.78	2.41	3.13	3.25	2.71	2.65	2.17	2.52	2.65	1.93	2.31	2.45
	9.9	11.2	11.9	10.6	13.6	12.3	9.7	11.8	11.3	10.8	12.1	10.2	14.4	11.8
	6.9	8.1	9.7	8.6	10.4	9.3	8.0	8.3	8.0	8.3	9.1	7.6	10.4	8.1
	8.8	10.1	11.1	9.8	12.4	11.2	9.1	10.5	10.1	9.8	11.0	9.2	12.9	10.4
	↑ 24.2	↑ 26.5	↑ 27.5	↑ 25.2	↑ 26.9	↑ 22.9	↑ 23.0	↑ 25.5	↑ 21.5	↑ 22.9	↑ 23.4	↑ 21.6	↑ 20.5	↑ 23.5
	↑ 17.2	↑ 19.4	↑ 20.4	↑ 19.2	↑ 20.1	↑ 16.5	↑ 16.3	↑ 18.6	↑ 15.4	↑ 16.4	↑ 16.9	↑ 15.4	↑ 15.1	↑ 16.7
	↑ 20.7	↑ 22.8	↑ 23.9	↑ 22.2	↑ 23.5	↑ 19.7	↑ 19.6	↑ 22.0	↑ 18.4	↑ 19.6	↑ 20.1	↑ 18.5	↑ 17.7	↑ 20.0
	↑ 62.4	↓ 72.9	↑ 76.9	↑ 67.3	↑ 72.0	↑ 87.1	↑ 77.0	↑ 79.2	↑ 82.6	↓ 74.4	↑ 74.2	↑ 76.3	↑ 73.4	↑ 78.5
	↑ 66.1	↓ 75.3	↑ 78.4	↑ 69.9	↑ 73.6	↑ 86.9	↑ 76.9	↑ 79.9	↑ 84.9	↑ 77.1	↑ 74.1	↑ 78.7	↑ 76.9	↑ 79.6
	↑ 64.1	↓ 74.1	↑ 77.7	↑ 68.7	↑ 72.9	↑ 87.0	↑ 76.9	↑ 79.6	↑ 83.8	↑ 75.8	↑ 74.2	↑ 77.6	↑ 75.3	↑ 79.1
	↑ 14.4	↑ 14.9	↑ 15.4	↑ 16.2	↑ 15.5	↑ 14.5	↑ 15.5	↑ 13.3	↑ 13.2	↑ 15.5	↑ 15.1	↑ 12.8	↑ 16.1	↑ 13.9
	24.5	44.1	41.5	38.8	36.5	36.3	34.7	38.9	37.1	45.2	38.0	32.6	43.1	21.7
	31.3	39.9	43.1	35.7	42.0	44.2	34.9	43.2	41.7	49.8	45.0	50.0	44.6	45.6
	30.1	42.0	42.2	37.4	39.1	40.0	34.5	40.1	39.4	47.1	41.9	41.6	43.7	33.8
	↓ 29.7	↓ 26.8	↑ 35.3	↓ 38.2	↑ 36.8	↑ 24.3	↑ 26.4	↓ 31.0	↑ 21.0	↓ 31.0	↑ 28.7	↓ 32.9	↓ 21.3	↓ 29.8
	↓ 14.1	↑ 16.0	↑ 34.0	↓ 32.4	↑ 34.2	↑ 30.3	↑ 27.1	↑ 26.7	↑ 20.2	↓ 26.3	↑ 24.9	↓ 30.9	↑ 21.3	↓ 24.5
	↓ 19.7	↑ 21.0	↑ 34.5	↓ 35.6	↑ 35.6	↑ 27.0	↑ 26.7	↑ 29.1	↑ 20.6	↓ 28.9	↑ 27.5	↓ 31.8	↓ 21.5	↓ 27.5
			89.4	75.0	91.9	88.5	88.6	85.7	93.8	87.8	87.9	100.0	83.3	100.0
			89.1	100.0	94.6	93.9	81.8	88.5	85.7	85.2	95.5	100.0	86.5	89.3
		92.3	↑ 89.2	↑ 90.6	↑ 93.6	↑ 91.5	↑ 85.3	↓ 86.9	↓ 90.0	↓ 86.8	↑ 92.2	100.0	↑ 84.8	↑ 94.1
	↑ 15.6	↓ 9.9	↓ 7.5	↑ 8.3	↓ 2.9	↓ 8.1	↓ 7.2	↑ 6.9	↑ 9.9	↑ 9.4	↑ 23.5	↑ 34.1	↑ 8.5	↓ 8.8
	↑ 25.0	↑ 11.0	↓ 9.6	↑ 6.0	↑ 5.6	↑ 10.8	↓ 7.4	↓ 1.0	↓ 3.4	↑ 8.9	↓ 15.2	↑ 41.4	↑ 8.1	↓ 12.2
	↑ 20.3	↓ 10.5	↓ 8.5	↑ 7.0	↑ 4.2	↑ 9.5	↓ 7.3	↓ 3.8	↑ 6.7	↑ 9.1	↓ 19.3	↑ 37.6	↑ 8.3	↓ 10.8
	↑ 100.0	↑ 94.9	↓ 97.9	↓ 96.3	↓ 97.4	↓ 95.4	↓ 96.6	↓ 96.5	↑ 94.6	↑ 94.5	↓ 95.9	↓ 93.4	↓ 96.2	↓ 95.5
	↑ 96.6	↓ 93.0	↓ 97.4	↓ 92.4	↑ 97.3	↑ 97.2	↑ 98.8	↓ 91.5	↓ 95.2	↑ 97.0	↑ 94.9	↑ 96.4	↓ 95.4	↑ 95.2
	↑ 98.3	↑ 93.9	↓ 97.7	↓ 94.2	↑ 97.3	↑ 96.4	↓ 97.7	↓ 93.9	↓ 94.9	↑ 95.9	↓ 95.4	↓ 94.8	↓ 95.7	↓ 95.3
	71.7	5.9	63.8	58.5	71.2	43.2	68.3	44.6	64.2	51.4	38.9	79.4	65.5	39.8
		0.0	65.2	56.1	62.2	27.9	40.0	22.0	47.5	42.6	19.9	54.5	50.5	32.8
	72.5	4.1	64.5	58.0	68.8	38.7	60.2	37.9	59.2	48.8	33.3	72.0	60.9	37.5
	13.0	0.0	12.7	9.2	13.3	7.3	11.5	6.0	18.1	6.3	8.2	17.8	36.9	15.3
	22.1	0.0	14.9	4.2	19.2	0.0	13.6	15.0	11.3	9.1	5.2	29.6	40.9	7.4
	15.6	0.0	13.3	7.8	15.0	5.2	12.2	8.5	16.1	7.1	7.3	21.1	38.0	12.9



Quality and Efficiency in Swedish Health Care

This is the fifth 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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