THE WHIPLASH COMMISSION FINAL REPORT

Klara Norra kyrkogata 33
111 22 Stockholm
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SUMMARY

Terms of reference of the Whiplash Commission

The Whiplash Commission was appointed in the summer of 2002 on the initiative and with the financial support of Sweden's four big insurance companies: If, Folksam, Länsförsäkringar and Trygg-Hansa. The background to its inception was that there had been a rapid increase in the number of whiplash-related injuries reported during the 1990s, with both human suffering and increased cost to the community as a result. The mandate of the Commission was formulated as an examination over a period of three years of the problems of whiplash-related road accident injuries from the road safety, medical care and insurance aspects. The proposals presented in the Commission's final report are based on scientifically established knowledge in all of these areas and on the extensive discussions that the Commission has conducted with interest groups and the public.

A number of authorities and organizations concerned in various ways with whiplash-related road accidents have been represented on the Commission. The members of the Commission have been: Ingvar Carlsson, chair; Marika Hedin, head secretary; Jan-Åke Brorsson, former director of the Federation of Social Insurance Offices; Siwert Gårdestig, director of the sickness benefits department of the National Social Insurance Board (the Social Insurance Agency from 1 January 2005); Maria L. Lundgren, lawyer, the National Association of Traffic and Polio Victims; Nina Rehnqvist, director of the Swedish Council on Technological Assessment in Health Care; Håkan Danielsson, managing director, Länsförsäkringar Liv, and Annika Lundius, managing director, Swedish Insurance Federation (permanently co-opted).

Frequency of whiplash-associated disorders

Every year, more than 30 000 people involved in road accidents report neck problems to Swedish insurance companies, which represents more than half of all injuries reported. According to Swedish Road Traffic Injuries Commission statistics, approximately 1 500 people per year are left with a degree of disability of at least 10% after the accident. Social Insurance Agency statistics show that at least 500 people per year are assessed as totally incapable of work as a result of whiplash-associated disorders.

The risk of suffering long-term effects is statistically small. This picture is not altogether consistent with the message put out by the media and Internet sites in Sweden today, where whiplash-associated disorders are often depicted as very common. The concept of "suffering a whiplash injury" is well rooted in public consciousness and the perception of the risk is generally much exaggerated. Several researchers have shown that expectations are an important factor in the prospects for recovery after a road accident.

It is in other words unusual for initial problems to develop into chronic symptoms. Most of those who experience neck pain after a road accident make a full recovery after a few weeks or months.

That the number of people with permanent disadvantage is nevertheless large is due to the fact that road accidents are so common. For this reason whiplash-related road-traffic injuries are a social problem in Sweden today.

A social problem – a social responsibility

The whiplash-related injuries that occur this year will cost Sweden more than SEK 4bn. The overwhelming part of these costs is made up of payment for loss of income, as a result of incapacity for work. The problem is growing and in recent years increasing numbers of people have reported whiplash injuries to their insurers. This is a large and expensive problem, which requires Swedish society to accept a communal responsibility.

Whiplash-related injuries differ from other neck and back problems: they cost society three times as much in relation to their number and all this additional cost can be explained by the high payments for loss of income. There are several reasons for the size of the loss of income caused by these injuries. Those injured are relatively young compared with other back and neck patients. The need for early attention by the medical services was often poorly met in many places in Sweden in the 1990s. And rehabilitation of people with long-term whiplash-associated disorders has proved difficult – especially as far as their return to work is concerned.

A major saving, both to the individual and to the community, would be achieved if fewer people sustained road accident injuries that risk leading to such problems. If those who nonetheless do experience acute problems received rapid and consistent treatment, fewer of them would risk suffering long-term symptoms. And if those who nevertheless developed chronic symptoms received effective rehabilitation, more of this group would return to work.

What are whiplash-associated disorders?

Car accidents with indirect cervical spine impact resembling a whiplash have long been described in the medical literature. But whiplash-associated disorders only became a problem affecting large numbers of people in the 1980s, both in Sweden and abroad. The diagnosis was disputed right from the start, because it was seldom possible to confirm any objective findings at clinical examination. At the same time many of those affected show a series of symptoms: neck pain, stiffness, loss of sensation, memory impairment and concentration difficulties. In many cases, moreover, the symptoms develop over time, still without any medical injury being observable. As with all illnesses, there is also a mental component in whiplash-related disorders, which is particularly important to take into account in the case of chronic pain and aching. In this respect whiplash-associated disorders resemble other pain conditions, such as fibromyalgia – with the difference that they begin with a trauma, namely the road accident.

As yet there has been no general agreement among doctors on how to diagnose and describe whiplash-related injuries. Nor is there any consensus among experts concerning injury mechanisms. Although experimental diagnostic methods have been tried, medical science cannot today determine with certainty what causes the symptoms. As a result it has not been possible to make any uniform diagnosis of the injury and there are differences in the view of what whiplash-related injuries are.

The problem of a rise in the number of whiplash-related injuries has not been unique to Sweden; it has made its mark on the road accident statistics in many countries. At the same time, comparisons have revealed large differences. In some countries neck injuries account for 75% of reported road accident injuries, whereas in others they do not feature in the statistics at all. There are also differences between countries in the incidence of chronic injury – in some countries, such as Germany, researchers expect the problem to clear up after a few months. In other countries, such as Norway, unusually many people have reported lasting symptoms.

The Whiplash Commission has noted the different interpretations of the rapid increase in the number of whiplash-related injuries in recent years. However we reject the idea that the whiplash-related injuries do not exist. A number of explanations for the rise in the number of injuries reported may be suggested, such as changes in traffic environment, car design and recording procedures. Where differences between countries are concerned, care and compensation systems also play a part. We consider it reasonable to assume

that a whiplash-associated disorder may be caused by a number of different injury mechanisms, and that a functioning method of diagnosing acute problems must be based on the perceived symptoms. However, we consider that long-term whiplash-associated disorders show such great similarities to other chronic pain conditions that they should not be singled out and treated differently.

Living with a whiplash-related injury

The Whiplash Commission has had continuous contact with private individuals, associations and organizations in order to obtain a picture of what it is like to live with a whiplash-related injury. Whiplash-related disorder may today be regarded as an unclear diagnosis with diffuse methods of treatment. Frustration and, perhaps, anger in both the person suffering an accident and in relatives are not uncommon: they feel that they are not believed or taken seriously. The person suffering often wants a biological, or mechanical, explanation of the symptoms – "something that isn't working". Even if the symptoms may perhaps have come and gone, and developed with time into a form different from their original one, the person affected feels that there is a definite starting point for the complaints: a "before" and an "after". The hope will then be that something can be "repaired", and also that it should not be necessary to demonstrate the illness to those around. Encountering doctors and nursing staff who talk about diffuse pain problems, chronic complaints and rehabilitation where psychological components play a significant part may reinforce the feeling that the injury is not being acknowledged.

From a medical point of view it is important for the person injured to embark quickly on a constructive process of rehabilitation. But today the medical services cannot always offer encouragement for such a course. The risk is, therefore, that the person suffering a whiplash-related injury finds himself in a complicated invalid role, where it becomes more important to obtain acknowledgment of a claimed injury than to focus on recovery. The consequence of this may be that the symptoms become worse.

Road safety an important part of the solution

There are today excellent opportunities for reducing the number of whiplash-related accidents by means of different types of road safety measures. The greatest potential is in making consequences of the accidents less serious. The focus is on car seat design. The protective measures that work are based on

advanced technical adaptation to the various patterns of movement that may arise in car drivers and passengers at the moment of collision, a change in the geometry of the seat and/or the headrest. The risk of serious consequences after a crash with whiplash impact may at best be reduced by as much as 40%. Even if not all protection shows the same potential, it is the view of the Whiplash Commission that an important part of the solution to whiplash problems lies in the technical development of vehicles.

It will be many years before most of the cars on the roads are ones with new forms of protection. It is therefore important for retrofit whiplash protection that exists on the market to be monitored and tested more consistently. The motor industry should also be thinking of how it can develop different forms of retrofit headrest that change the geometry of the seat. As the rests are adjusted to the height and weight of the driver, the motor industry needs to note that the rests available must be effective for all drivers, including women. Unlike other road accident injuries, whiplash-associated disorders are more common among women than men.

The Commission would emphasize that the major international consumer testers, such as EuroNCAP, need urgently to include whiplash protection when testing the safety of vehicles. Here Sweden ought to be well placed to pursue the question effectively, as we have a prominent position in road safety in international terms. In this way we could encourage more consumers – not least companies and public authorities – to buy cars with effective whiplash protection. The results of the large consumer tests would also provide assistance to the insurance industry in the calculation of its premiums on the basis of the car's road safety characteristics. In due course common European laws ought to require efficient whiplash protection systems.

Right diagnosis and early treatment

Several studies show that people suffering acute whiplash-related symptoms ought to be active rather than passive. Trying to overcome pain and other symptoms by resting may in the long run prove harmful, as the tissues benefit from movement. But the person who is experiencing pain may instinctively incline towards "taking it easy" and moving as little as possible. Patients in this group therefore need to be able to receive a diagnosis where it is stressed that recovery may be accelerated by the patient's own behaviour.

The patient's experience of reception by the medical services is also relevant to the likelihood of becoming free from symptoms. Quick and accurate assessment, with the patient's symptoms being taken seriously and seen in a

wider context, is a necessary part of the whole process that should follow a road accident.

Early diagnosis is also important because of the particular insurance situation that prevails after road accidents. Even if only a small proportion of those who suffer neck pain after a collision impact will suffer lasting damage, it is important for this group to be able to show that the symptoms are connected with the accident. Long-term whiplash-associated disorders do not differ from the symptoms that affect other patients with chronic back and neck problems. But from an insurance point of view there is a big difference between symptoms arising from a road accident and those resulting from other causes.

The Whiplash Commission has therefore worked to encourage a consensus in Sweden on diagnosis and treatment of both acute and long-term whiplash-related symptoms. The Commission has joined with the Swedish Society of Medicine in assembling a task force, appointed by representatives of the nine sections of the Society that are regarded as possessing most expertise in the field. The task force has drawn up a consensus document which doctors and nursing staff all over Sweden should be able to use. The document is being published as a special offprint. It will be available at pharmacies, health centres and hospitals.

Here a simple and consistent method of diagnosis is recommended, based on a simplification of the most common classification system in Sweden: the patients are classified by WAD grade. This is supplemented with a system of self-assessment of pain and an identification of whether the patient belongs to a group with a special risk of long-term problems. The idea in the document is to build on the many studies that have shown a connection between severe initial pain and later symptoms, and also an increased risk of long-term symptoms in certain groups. It is therefore at the time of the accident – within a few days – that the diagnosis ought to be made.

The consensus document also emphasizes the importance of a patient-centred method, where a discussion with the person who has suffered a collision involving whiplash impact constitutes an important part. Accurate documentation at the time of examination is essential, both in order to identify any risk of later problems, and to emphasize that the patient's symptoms are being taken seriously.

The consensus document is of assistance in enabling an early, relatively reliable, diagnosis to be made. The majority of those seeking accident and emergency care do not actually need any special care and do not have to be sicklisted. They just need to be given accurate information on the prognosis and the possibility of follow-up in the event of the symptoms failing to disappear.

For the smaller group of people who are regarded as at risk of longer-lasting symptoms, the consensus document offers concrete procedures for follow-up and further treatment.

With such a uniform procedure for diagnosis early attention can focus on principles of self-activation and rapid follow-up. The number of people with long-term symptoms will in all probability be reduced significantly by these measures.

Treatment of long-term problems

The Whiplash Commission recommends that people with long-lasting whiplash-associated disorders be rehabilitated in accordance with the same principles as are applied to chronic pain conditions. A multi-disciplinary rehabilitation has proved effective with chronic pain conditions, at least with regard to pain management and perceived quality of life. It is particularly important to give women better prospects of effective rehabilitation, as they are over-represented among patients with chronic whiplash-associated disorders. A survey of the rehabilitation offered to patients with whiplash-associated conditions in Sweden today shows that most clinics offer such treatment, but that the waiting times are too long and that there are shortcomings with regard to research and evaluation. The Whiplash Commission therefore recommends more resources for clinical research and better evaluation of the rehabilitation currently being given.

Most people suffering neck pain after a road accident are restored to health after a few weeks or months. Vocational rehabilitation may possibly be indicated. The officer at the Social Insurance Agency ought to cooperate with the injured person, his or her doctor and the employer in making rehabilitation as effective as possible.

The Whiplash Commission is therefore of the opinion that the work that the Social Insurance Agency has now begun in an effort to reduce absence due to illness will also assist the situation of those affected by whiplash-associated disorders. But it is important to note the complex situation in which the injured person is placed. The staff of the Social Insurance Agency have a central role with regard to coordination of road accident injury cases. It is important that the granting of sick leave, work-oriented rehabilitation and investigations of work capacity take place with the co-operation of the injured person and of the treating doctor, the employer and the claims adjuster at the insurance company of the injured person.

Standard compensation in motor insurance

To the insured person it is not only the Social Insurance Agency's processing of his or her case but also the way motor insurance works that is important. Over the last ten years the system has been under pressure from the growing number of road accident injuries reported, with the greater part being of a whiplash-related nature. Far too many of those suffering initial problems develop a permanent pain syndrome. Unresolved insurance problems impede rehabilitation, while at the same time the design of the compensation system today provides no incentive for a return to active life.

The present compensation system may appear unpredictable, difficult for the individual to grasp and sometimes liable to give rise to conflict. The Whiplash Commission therefore proposes that the possibility of increasing the use of standardized compensation amounts in motor insurance be specially looked at. Certain standard compensation rates are already in use today, and experience elsewhere in the Nordic countries shows that there are solutions of different types that may be used within the framework of tort law. The purpose of a greater standardization would be to accelerate the claims settlement process, and also to make it more transparent and predictable to the individual.

It is also important to reduce the potential conflicts that exist today in claims settlement. There is a problem in the position of the medical advisers. The Commission recommends further investigation of the question; here the various solutions that we find in Denmark, Norway and Finland represent interesting alternatives to the Swedish system.

Need for more and better scientific knowledge

One of the greatest obstacles to the work of the Commission has been that knowledge of whiplash-associated disorders and their consequences is at present inadequate. We believe that this inadequacy has to be seen in a wider context: insufficient medical research resources are devoted to the subjects of sick leave and insurance medicine.

The Whiplash Commission would concur with the conclusions already drawn by a number of other parties, namely that Sweden ought to augment its research resources in the field of insurance medicine. Research into the consequences of sicklisting, the possibility of effective rehabilitation and return to work ought to receive priority and the current draft research bill *Forskning för ett bättre liv* [Research for a Better Life] gives scope for such priorities.

Until we know more about how sicklisting and insurance circumstances interact with the medical diagnosis, it is difficult to discuss solutions and improvements to current rules and practice. As so many people today experience long periods of sick leave caused by whiplash-associated disorders, more scientific knowledge of better quality is very urgently needed.

There is also a great need for more research into basic factors behind the occurrence of pain and functional disorders and into methods of diagnosis and principles of treatment of whiplash-associated disorders.

Conclusion

Whiplash-related injuries now cause much suffering to many people, and cost society large sums. But the Whiplash Commission has found in the course of its work that there are good prospects for improving the situation.

First, we have been able to show that most of those who experience initial symptoms do not risk more persistent problems – contrary to the impression that sometimes dominates public discussion of the subject. *Second*, we have been able to see that an important part of the solution lies in the new, effective whiplash protection that more car manufacturers are now offering. *Third,* we have assisted in the preparation of a Swedish consensus document for whiplash diagnosis that offers simple and effective advice on early attention. We have also found that among the wide range of treatments for persistent symptoms, multimodal pain rehabilitation has proven to show lasting results. *And fourth,* we have noted new solutions to the problem of the current long processing times for road accident cases, both in the national insurance system and in motor insurance. We suggest that more use should be made of payment of standardized amounts in traffic damages law as this will result in an appreciable acceleration of claims settlement and make it more predictable for the individual.

If the measures proposed by the Commission are implemented, we hope that the consequences of whiplash-related injuries in Sweden will be alleviated, to the benefit of the many individuals involved in whiplash car accidents and of society in general.

1. THE WORK OF THE WHIPLASH COMMISSION, 2002–2005

Introduction

Whiplash-related injuries developed into a social problem in Sweden in the 1990s. Of the total of approximately 50 000 people who report road accident injuries to insurance companies every year, people with whiplash-related symptoms account for more than half. Of these, more than 6 000 take sick leave for a lengthy period. At least 1 500 people suffer ill effects of a more permanent character, according to the statistics of the Road Traffic Injuries Commission.

Even if the risk of long-term ill effects from a road accident with whiplash impact is relatively small statistically, the large number of road accidents reported means that many people are affected. Severe whiplash-related symptoms mean much personal suffering, and can in many respects be life-changing. Swedish motor insurance is generous by international standards but nevertheless the future private finances of those affected may not perhaps be what they might have been.

Whiplash-related injuries lead to expense to the community, for example for treatment and rehabilitation. However the heaviest costs arise in the form of various kinds of income compensation, which burden the national insurance system and the insurance companies. This causes substantial cost to the Swedish taxpayer and policyholder, for example in the form of higher insurance premiums. Moreover the cost of whiplash-related injuries is rising year by year.

Terms of reference of the Whiplash Commission

As a reaction to the big increase in the number of whiplash-related injuries in recent years the Whiplash Commission was appointed on 1 July 2002. Its mandate was to examine the problems of whiplash-related injuries over a period of three years and propose how these problems might be dealt with. The initiative and the financing came from the four big insurance companies in Sweden: If, Folksam, Länsförsäkringar and Trygg-Hansa. Authorities and organizations which were considered in various ways to be affected by the problems of whiplash-related injuries were invited to sit on the Commission. Only injuries connected with road accidents have been considered by the

Commission, despite the fact that other types of accidents may be regarded as causing whiplash-associated disorders. The terms of reference were wide-ranging, nonetheless: road safety, treatment and rehabilitation, as well as insurance questions, have been included in the Commission's field of responsibility.

Brief formulation of the tasks of the Commission:

- monitoring the trend in the number and consequences of whiplash-related injuries
- initiating research into how whiplash-related injuries can be prevented
- initiating research into how individuals with whiplash-related symptoms are best treated medically
- initiating research into rehabilitation suitable for people with whiplash-related symptoms
- initiating and developing collaboration between different actors in the field
- contributing to a spread of information on whiplash-related symptoms and their treatment
- assisting in making use of international experience
- evaluating the measures that have been taken
- if necessary proposing rule changes in order to create better opportunities for preventive measures and treatment
- preparing annual interim reports on the work
- summarizing the results in a more extensive final report

Members of the Commission

The Commission has seven regular members and one permanently co-opted member:

- **Ingvar Carlsson**, chair
- **Marika Hedin**, head secretary

- **Jan-Åke Brorsson**, former director, Federation of Social Insurance Offices
- **Siwert Gårdestig**, head of sickness benefits section, National Social Insurance Board (now the Social Insurance Agency)
- **Maria L. Lundgren**, lawyer, National Association of Traffic and Polio Victims
- **Nina Rehnqvis**t, director, Swedish Council on Technological Assessment in Health Care
- **Håkan Danielsson**, managing director, Länsförsäkringar Liv
- **Annika Lundius**, managing director, Swedish Insurance Federation (permanently co-opted)

Work of the Commission

The focus of the first year of the Whiplash Commission's work was on defining the Commission's mandate, obtaining a general view of the knowledge that exists in the field and identifying the areas where new knowledge was needed.

As an important starting point for the Commission it was laid down that measures proposed must be based on sound scientific knowledge. A number of experts on medical research, road safety and insurance matters have therefore been heard by the Commission during the period 2002–2005, either at meetings of the Commission or at special meetings with the head secretary and the chair. Contact was established at an early stage with leading experts in the fields of medical research and road safety.

After an initial formulation of the problem, the Commission was able to work on proposals for concrete solutions. The Commission set about this both by engaging in more specific discussions with various interest groups and also by ordering a number of research projects and evaluations. Mention may be made heard of a hearing in April 2004 on the need for increased research resources and an active participation in the National Social Insurance Board's discussions on investment in insurance medicine. There was a major meeting with representatives of patients' associations and their equivalent in December 2004 with a focus on early care and rehabilitation.

Another approach from the Whiplash Commission has been to invite in members of the community who have been affected by whiplash problems. Contact was therefore made at the outset with representatives of insurance companies, the national insurance system, patient organizations, road safety organizations, the legal profession, the medical profession, car manufacturers and rehabilitation centres. The Road Traffic Injuries Commission and the Financial Supervisory Authority were also consulted. The Commission monitored a large number of conferences and symposia. In this way the Commission was quickly able to obtain an idea of the problem areas and of different theories explaining the occurrence, causes and treatment of whiplash-related injuries.

The Commission has also considered it important to communicate with the general public. An information brochure and a website at **www.whiplashkommissionen.se** has led to the receipt at the Commission offices of several hundred letters, e-mails and telephone calls during the three years of its business, contacts that have given additional breadth and depth to the picture presented by the different interest groups. The chair has also been interviewed by the press on repeated occasions and the head secretary

has given information on the Whiplash Commission's mandate and work at conferences and seminars.

The information work will continue after publication of the Commission's final report. The website will remain open for a year and a consensus document on the whiplash diagnosis is being published and distributed to pharmacies, health centres and hospitals. Both the consensus document and the final report (both its full text, including appendices, and a summary) may be ordered free of charge from the Swedish Insurance Federation or downloaded from the website. Collaboration with the Pharmacy and County Council website *Infomedica* is also intended to give wider dissemination of the Commission's conclusions.

Co-opted experts

The Commission decided not to co-opt a permanent expert group but that different experts would be heard according to the questions being dealt with by the Commission. The following people have assisted the Commission at meetings: Dr **Maria Krafft**, Folksam Research, Professor Emeritus **Åke Nygren**, Karolinska Institute; Associate Professor **Charlotte Sachs**, Karolinska Institute; Dr **Mats Hamberg**, senior physician, Alfta Rehab Center; Professor Emeritus **Marian Radetzki**, Stockholm University; Associate Professor **Marcus Radetzki**, Örebro University; Associate Professor **Malin Lindh**, Östra Hospital; **Eva Ekström**, Assistant Head of Department, Swedish Financial Supervisory Authority; Dr **Anne Söderlund**, Uppsala University; Dr **David Cassidy**, Canada; **Lena Holm**, doctoral student, Karolinska Institute; Professor **Karin Johannisson**, Uppsala University; Dr **Artur Tenenbaum**, Mösseberg Rehab Center and **Mark Rosenfeld**, registered physiotherapist and doctoral student at Gothenburg University; **Kajsa Hallberg**, attorney, chair of the Road Traffic Injuries Commission, and **Solveig Almblad**, office secretary of the Commission; **Erik Reveman** and **Christer Magnergård**, attorneys, Swedish Bar Association; **Håkan Billig**, secretary-general, Swedish Research Council; Professor **Inge-Bert Täljedal**, Rector, Umeå University; Professor **Kristina Alexandersson**, Karolinska Institute, and the whiplash-prevention group led by Professor **Claes Tingvall**, National Road Administration.

In addition there has been contact with a number of researchers: Dr **Anita Berglund**, Karolinska Institute; Dr **Anders Kullgren**, Folksam Research; Dr **Lotta Jakobsson**, Associate Professor **Janusz Kaijser**, and Associate Professor **Mats Y. Svensson**, together with **Ahtesham Asad Khan** and **Manuel Forero**, Department of Machine and Vehicle Systems, Mechanical Engineering Section at Chalmers University of Technology – **Mats Y. Svensson** is also the

Swedish representative in the EU project *Whiplash 2: Development of new design and test methods for whiplash protection in vehicle collisions;* Associate Professor **Olle Bunketorp**, Östra Hospital; Professor **Jan Kleineman**, Stockholm University; Associate Professor **Olof Nilsson**, Akademiska Hospital and **Ola Schönning**, lawyer, National Society for Road Safety.

Drs **Bengt H. Johansson** and **Thomas Timander** have been in contact with the Commission concerning different matters.

An advisory group consisting of Dr **Göran Blennow**, senior insurance medical officer, the Social Insurance Agency, Professor **Björn Gerdle**, Linköping University, Dr **Magnus Fogelberg**, senior physician, Uddevalla Hospital, and Dr **Peter Henriksson**, Senior Physician, Danderyd Hospital, has advised on the matter of carrying out a survey of Swedish rehabilitation of people with whiplash-related symptoms. A task force set up in collaboration with the Swedish Society of Medicine has produced a Swedish consensus document on the whiplash diagnosis. The force has consisted of the following experts: **Ulf Måwe, Ylva Sterner, Per Grane, Hans Link, Christer Hildingsson, Mikael Karlberg, Gunilla Brodda Jansen, Curt Edlund** and **Kamilla Portala**. The group has been led by Professor **Björn Rydevik**, Sahlgrenska University Hospital.

The Whiplash Commission has also met and/or corresponded with representatives of a total of eight associations, foundations or Internet portals who represent people with whiplash-related injuries: **The Swedish Associaton of Survivors of Traffic Accidents and Polio (RTP), Pisksnärten** [Whiplash], **Whiplashskadades rättsförening (WRF)** [Whiplash Injury Legal Association], **De whiplashskadades förening (DWF)** [Association of the Whiplash-Injured], **Whiplashstiftelsen** [The Whiplash Foundation], **Whiplash Info/ Whiplashfonden** [Whiplashinfo/the Whiplash Fund], **Riksföreningen Hjärnkraft** [National Brain Injury Association] and **Whiplashgruppen** [the Whiplash Group].

Questionnaires from the Commission

The Commission has carried out three major questionnaire surveys. Questionnaires were sent out to the four large insurance companies with a view to improving whiplash statistics, because the calculations made by the Swedish Insurance Federation are based on estimates. The study was then continued by Professor Marian Radetzki in his calculation of the social cost of whiplash-related injuries.

The Commission has also distributed questionnaires to the clinics who have agreements with the Social Insurance Agency on rehabilitation of sufferers of whiplash injuries. The study was then continued by Professor Björn Gerdle

and Dr Michael Peolsson in a major survey of Swedish rehabilitation of whiplash-related injuries.

In addition the Commission has contacted the eight Swedish patient associations that represent people with whiplash-associated disorders. Here a continuation of the dialogue has enabled the Commission to gain an overview of the problems that can be encountered in the medical services and the insurance system by a person suffering a whiplash-related injury. The survey is reported in Chapter 3 and has been important in the Commission's own formulation of the problems.

Conferences and seminars

The Commission has taken part in a large number of conferences and seminars: RTP's conference for lawyers on 31 January 2003; Länsförsäkringar's seminar on whiplash at the Stockholm International Motor Show on 9 April 2003; Trygg-Hansa's meeting for medical advisers on 10 April 2003; the National Assembly on Road Safety on 15 May 2003; the Nordic Road Safety Medical Conference in Umeå on 2–3 June 2003; the Road Safety Conference of the Union of Temperance Drivers in Sweden (MHF) in Tylösand on 18–20 August 2003; Pisksnärten's Whiplash Symposium in Uppsala on 10 October 2003; the Institute of Insurance Education (IFU) injury claim settlement seminar at Rånäs on 27 November 2003; a seminar at the Swedish Institute for Disability Research, Linköping University, on 13 February 2004; the Swedish Insurance Federation and Swedish Bar Association joint conference on injury settlement in Gothenburg on 16 March 2004; IF's seminar for medical advisers at Bergshamra on 22 April 2004; the working meeting on *The Bone and Joint Decade*... at Bordeaux on 5–7 June 2004; MHF's road safety conference in Tylösand on 17–19 August 2004; the Whiplash Conference at the Centre for Musculoskeletal Research in Gävle on 28–29 October 2004 and the Motor Insurance Bureau of Sweden's seminar on 2 December 2004. On these occasions the chair or the head secretary of the Commission has given information on the terms of reference and work of the Commission. The Commission cooperated with the National Road Administration Whiplash Prevention Group by acting as main organizer of a workshop at the MHF Road Safety Conference on 17–19 August 2004. Two sub-committee hearings in the Swedish Riksdag have also been monitored, one on road safety and one on the causes of the high rate of sick leave in Sweden.

Research projects and evaluations

Taking stock of the state of knowledge and the conflicts of interest concerning whiplash-related injuries enabled the Whiplash Commission to formulate a number of questions to which it was urgent to obtain an answer. Some of these questions could be answered by limited evaluations, such as the question of how effective certain retrofit headrests are in comparative crash tests. Other questions were of wider scope and of the type that can really only be answered by extensive research projects, such as the question of how effective certain types of rehabilitation are with regard to the patient's work capacity and the quality of life. Such projects have been outside the Commission's financial terms of reference and time frame.

In order to approach relevant questions constructively, however, the Commission has set up a number of small research and evaluation projects. In some cases the projects have been able to give definite answers and in others they have shed light on trends and possible opportunities for further research. In addition the Commission has seen it as important to assist in the financing of two major research projects associated with the medical aspect of whiplash-associated disorders. The results of all these projects and evaluations form a basis for the final report's recommendations and proposals, but are reproduced in full in the Appendices, which constitute the second part of this report, (as at 2005 only avilable in Swedish). In the main report we have tried to be economical in our use of references. These are given in the appendices to the final report.

The Bone and Joint Decade 2000–2010 Task Force on Neck Pain and its Associated Disorders

The Commission was a co-financer of the international research project *The Bone and Joint Decade 2000–2010 Task Force on Neck Pain and its Associated Disorders,* on which Professor Åke Nygren at the Karolinska Institute is the Swedish representative. The project involves collaboration between Swedish, American and Canadian researchers, and is a continuation of *The Quebec Task Force on Whiplash Associated Disorders* which gave an account of the state of medical research on whiplash injuries in 1995.

Evaluation of retrofit whiplash protection (neckrests)

The Commission requested Dr Anders Kullgren, Folksam Research, and Anders Lie, of the National Road Administration, to lead an evaluation of retrofit collision guards. Two types of neckrest were tested for their collision-damping effects. The intention here was to assess the effectiveness of the

less expensive alternatives which the market at present supplies to the more advanced whiplash protection systems that can be obtained in cars from the factory. The results are set out in Appendix 1 to the report.

Influence of Seat Optimization Based on one Dummy Size on the Risk of Whiplash Injury for Different Sized Occupants

The Commission requested Dr Janusz Kajzer at the Department of Mechanical and Vehicle Systems, in the Mechanical Engineering Section of Chalmers University of Technology, to adjust calculations from various collision tests of new whiplash protection. The project leaders were Ahtesham Asad Khan and Manuel Forero. The Commission wanted to know how effective current crash protection is with smaller and lighter drivers: women. The project examined how the crash tests worked with a very tall man. As research has been able to show that women experience severe symptoms after collision impacts to the neck more frequently than men, it is urgent for the new protection to be effective for all drivers regardless of size and weight. The results are set out in Appendix 2 to the report.

A Swedish consensus document on the whiplash diagnosis

The Commission collaborated with the Swedish Society of Medicine on the appointment of a task force with a brief to draw up a Swedish consensus document on the whiplash diagnosis. The group has worked under the direction of Professor Björn Rydevik at Sahlgrenska University Hospital, Gothenburg. Nine sections of the Swedish Society of Medicine have been represented in the task force – specialities that come into contact with patients with whiplash-associated disorders. The consensus document will offer Swedish doctors a common view of how whiplash-related injuries are to be diagnosed and treated initially. The results are set out in Appendix 3 to the report, and also published as an offprint.

Evaluation of early attention in the Västra Götaland region

The Commission requested Associate Professor Olle Bunketorp and Associate Professor Malin Lindh to carry out an evaluation of the early attention programme that had been devised in the Västra Götaland region. The evaluation covered almost 300 patients who had come to Sahlgrenska/Östra Hospital in Gothenburg about neck pain caused by trauma. Some of the patients had been able to make use of the attention programme, others had not. The outcome in the two groups was compared from the point of view of medical recovery and patient satisfaction. The project may be seen as a preliminary study preceding a larger evaluation. The results are set out in Appendix 4 to the report.

Whiplash-associated conditions and their rehabilitation

The Commission requested Dr Björn Gerdle, professor of rehabilitation medicine at the Linköping University, to compile a literature-based review of what scientists at present know about whiplash-related conditions and their rehabilitation. The review of existing research provides a basis for recommending certain principles for rehabilitation work. The results are set out in Appendix 5 to the report.

Survey of rehabilitative efforts in connection with whiplash-related conditions

Professor Björn Gerdle and Dr Michael Peolsson were requested to lead a survey of rehabilitation methods used for whiplash injuries at Swedish clinics, starting from an inventory carried out by the Commission in the spring of 2004. The evaluation consisted of an extensive questionnaire survey to the clinics that offer rehabilitation to people with whiplash-associated disorders. The results are set out in Appendix 6 to the report.

Microdialysis of trapezius in patients with chronic pain after whiplash trauma and in healthy experimental subjects

The Commission was the co-financer of the project where Professor Björn Gerdle investigated the possibility of measuring whiplash-related pain in patients with chronic symptoms. The Commission financed the taking of measurements in female patients who have been diagnosed with chronic pain as a result of whiplash impact. The measurements helped develop a method which in the long term may give more exact measurements for checking the incidence of pain than those we have today. The results are set out in Appendix 7 to the report.

Compensation system design as an explanation for increased costs

The Commission requested Associate Professor Marcus Radetzki to carry out an examination of the extent to which a claimant can receive compensation for a whiplash-related injury and how this compares with the compensation for neck injuries from other causes (accidents at work or recreational accidents, or illness). The rules concerned were compared here with the conditions that applied in the early 1990s. The results are set out in Appendix 8 to the report.

Total cost to society of whiplash-related injuries in Sweden

The Commission requested Professor Emeritus Marian Radetzki to calculate what whiplash-related injuries cost Sweden. The project examined the annual

cost to the community of whiplash-related injury at the present time, and how much new injuries occurring in one year cost the community in total. The results are set out in Appendix 9 to the report.

Increased use of standard payments in injury claim settlement

The Commission requested Professor Jan Kleineman and Ola Schönning, lawyer at the Motor Insurers' Bureau of Sweden, to analyse traffic damages law in Sweden in a memorandum. The problems in the current system were identified and possible paths for change were outlined. The project may be seen as a preliminary study preceding a fuller report. The results are set out in Appendix 10 to the report.

Evaluation of Swedish media descriptions of whiplash-related injuries

The Commission requested Bernd Schmitz to collaborate with the head secretary of the Commission in assessing Swedish press articles on whiplash-related injuries over the period 1980–2004. The study was carried out at Sweden's three largest medical archives (*Mediearkivet, Bibliotekstjänst Artikelsök* and *Presstext*) and by free-text search of individual newspapers. A total of 19 newspapers were examined. The analysis provided a picture of the information on whiplash-related matters in the Swedish press today, and how this picture has developed over the last 24 years. The material has acted as a starting point when the Commission has designed its own information activities. The results are set out in Appendix 11 to the report.

PROBLEM DESCRIPTION

2. WHAT ARE WHIPLASH-RELATED INJURIES?

Summary

Whiplash-related injuries were described in a road safety context as early as 1928, but they have increased markedly in the last few decades. Some researchers consider for this reason that the whiplash diagnosis does not correspond to any real pathological or injury condition. This assumption does not have the support of the Whiplash Commission. It is of course important to consider whiplash-related injuries in a cultural perspective – but this applies to all pathological conditions. Traffic environment, car design and recording procedures may have contributed to the fact that we are only now seeing this type of injury in the statistics. Most of those who report initial problems make a full recovery, but the number of people with lasting damage is nevertheless relatively large because road accidents are so common. There is no consensus among experts on the injury mechanisms that underlie the symptoms, but different classification models have been used in an effort to identify the syndrome. The most widely used of these is the Quebec Task Force division of Whiplash Associated Disorders grades 0–4. Long-term whiplash-associated disorders do not differ from other chronic neck and back problems, which makes early diagnosis important, for both medical and insurance reasons. The research that has been published in recent years ought to be able to be used as a basis for a greater consensus within the medical profession on a diagnostic method that is serviceable in practice.

Introduction

To obtain a picture of how the concept of whiplash-related injuries has developed and how the research world views it today, the Whiplash Commission has joined with the Swedish Society of Medicine in commissioning a task force to formulate a Swedish consensus document on whiplash diagnosis, and also requested Professor Björn Gerdle to discuss the way medical science sees more protracted symptoms. The results of these two projects form the basis for the reasoning in this chapter. The two studies are reported in full in Appendices 3 and 5 to the report.

Origin of the "whiplash" concept

The term *whiplash* was first used – according to the literature – at a symposium in San Francisco, USA, in 1928. It was used by the American physician H.E.Crow at a conference at which he discussed neck injuries following road accidents. Crow was not referring to the injury that had arisen, but was trying to describe the movement of the head and neck.[1]

This was not the first time that scientists and commentators had argued on the danger of neck and back injuries in passenger traffic but previously the main focus of discussion had been on rail passengers. Around the start of the twentieth century railway and tram accidents received great attention, which formed a part of an anxiety about modern society and its mobility and rapid pace. There was even considered to be a pathological condition, nostalgia, which could afflict the individual who was too rapidly jerked from his context. In this connection special attention was paid to those who had been involved in accidents: they could suffer from "railway spine", which was incapacitating for a long time afterwards. Here doctors pointed to symptoms such as aching and restricted mobility, and also to anxiety, insomnia and dread. A person who had been involved in a rail accident had not suffered only a mechanical injury but also an injury to the soul. "The fear of an event could trigger psychological mechanisms of far greater scope than the incident itself", is intellectual historian Karin Johannisson's summary of the phenomenon, and she mentions a Swedish rail accident of 1875 that attracted the attention of the medical experts.[2]

Neck injury in connection with car traffic

In other words, neck injuries were nothing new. Back in 1919 other observers had noted that motorists could sustain neck injuries in car accidents, but at the 1928 symposium they were linked to a specific type of collision impact for the first time. It was also in the 1920s that car traffic really exploded in the USA, and with this the number of car accidents rose quickly. However it was some time before the problem attracted attention again.

When the term *whiplash* next cropped up in the medical literature – after almost 20 years – it was used as an actual designation of an injury, and since then the term has become the normal medical designation of a certain type of injury to the cervical spine. When in 1953 Americans J.R. Gray and K.H. Abbott published an article on car accidents involving rear-end impact, they used the term *whiplash* in their title, and a couple of years later came the first study where scientists took photographs of living experimental subjects and

were in this manner able to obtain a picture of the actual whiplash movement, i.e. extension followed by bending of the neck after collision at relatively low speed. It was found here that the symptoms could appear a few hours after the actual impact.[3]

The whiplash movement

The movement described by the term "whiplash" is thus an attempt to identify the injury mechanism involved in indirect violence to the cervical spine. The language committee of the Swedish Society of Medicine has in fact recommended that the Swedish word *piksnärt*, with the same meaning, should be used instead of the English word "whiplash". The application of a modest force to the shaft of a whip leads, as is well known, to a larger and more rapid movement of the top of the whip. There is, however, an essential difference between an ordinary crack of a whip and the movement to which the cervical vertebrae are subjected in connection with a "whiplash" movement in a collision: at the end of the cervical spine is the head, weighing 4–5 kg. This augments and complicates the forces that affect the structures of both the cervical spine and the brain.

As the movement is so complicated to describe, and can show major variations from case to case, "whiplash" has acquired an increasingly wide-ranging meaning. The term has been used for both the injury mechanism and the syndrome, and several authors have also used "whiplash impact" to describe direct violence to the cervical spine – with or without fractures. Both in Sweden and in other countries, public discussion of "whiplash-related injury" has often implied an evaluation: a condition that is difficult to treat and has a poor prognosis.

To sum up, the imprecise definition of "whiplash" has permitted a wide range of interpretations, which has probably been a cause of many misunderstandings, to the consequent disadvantage of patients.

Frequency of whiplash trauma

There are no studies systematically examining how common it is to suffer whiplash trauma – i.e. an event where head and neck are subjected to whiplash-like impact. Swedish insurance companies estimate that of the total of more than 50 000 people who claim for injuries in road accidents each year, well over half report neck problems. But there are no statistics on how many more sustain a whiplash trauma without suffering symptoms. Of at least 30 000 people per year reporting initial problems, roughly 1 500, i.e. 5%, suffer more serious disability, according to the statistics of the Road Traffic

Injuries Commission. A larger number, approaching 20%, however, suffer problems that result in a lengthy period of sick leave.[4]

Other calculations have produced a conclusion that the incidence of whiplash-related trauma is at least three times as high as the incidence of acute symptoms.[5] So it is not the case that anyone experiencing whiplash impact ought to expect to suffer neck pain; and of those who suffer neck pain in connection with a collision it is only a small proportion that suffer lasting injury.

However this does not mean that whiplash-associated disorders are a negligible problem: as car accidents with whiplash impacts are so common, many individuals are affected. In recent years there have been calculations in various countries of the incidence of acute problems after whiplash trauma. The results show wide differences: a range from 0.8 to 4.2 per thousand of the population per year. Part of the explanation for the variations may be differences in the design of the studies. Other possible explanations lie in differences in geography, social structure, insurance system design, type of accident covered in the survey, etc.

There are thus no definite figures showing how common it is to suffer the actual whiplash movement in connection with road accidents, nor are there reliable figures on the size of the risk of suffering neck pain after being subjected to such a movement. However, most studies and available figures show that the risk of lasting problems is statistically small.

Whiplash-related injuries becoming more numerous

The number of whiplash-related injuries has grown over the last twenty years, not only in Sweden but also in other countries. Previously, they did admittedly attract some notice in a research context, but they made little mark on confirmed traffic injury statistics. It was only in the 1970s that whiplash-related injuries began to show in the statistics. There have been a number of hypotheses concerning why this type of injury began to increase in number.

One concerns the volume of car traffic and its character; it took a long time for the western world to develop a sufficient number of the urban environments with heavy traffic, which constitute the setting in which most whiplash-related accidents occur.

Another factor was that for a long time cars were designed in a way that did not result in whiplash movements when a vehicle was run into, because panelling and members gave way and this led instead to different injuries of a more serious nature. As cars have become safer, they have also become more rigid, and as the number of accidents with serious consequences has declined in

the 1980s and more particularly in the 1990s, the number of whiplash-related injuries has risen. In a more stable car the collision force is transmitted in a different manner, and the driver and passengers absorb a part of this force at the same time as they avoid being seriously crushed.

Furthermore, different methods of collecting statistics have probably influenced our picture of the situation. For many years the only car accidents monitored in Sweden were those where the car had to be repaired, which happens less frequently in the case of a whiplash-related collision. This group of patients was scarcely noticed by the hospitals, because they were seldom admitted for emergency care at the time of the accident. The mild neck injuries were not picked up by the systems we used for collecting knowledge of road accidents. Similar circumstances prevailed in other countries.

When the new Traffic Damage Act was introduced in Sweden in 1976, this meant that for the first time insurance companies obtained information on all road users who had been involved in a car accident. And now the minor neck injuries began to be visible in the Swedish material. The increase continued in the 1980s and 1990s; in a study of Road Traffic Injuries Commission material for the period 1989–1994 the proportion of people with whiplash-related injuries among those injured rose from just over 15% to just over 28%. These figures related only to those with a relatively serious injury. The great majority of insurance claims are not shown in the Commission's material.

A number of factors may explain in, other words, why whiplash-related injuries are a relatively new phenomenon in our society.

New diagnoses

The argument has also been heard that whiplash-related injuries ought not really to be taken seriously, since the diagnosis is so new and since the number of such injuries differs so much between countries. In a study carried out in Lithuania in 1996 that has often been quoted, a group of people who had been involved in road accidents in vehicles hit from behind was compared with a control group, and the researchers believed that they could show that only those who had had previous neck trouble risked suffering whiplash-related symptoms. At this time, Lithuania had no general motor insurance, and the level of public knowledge of whiplash-related injuries was low. A later study appeared to confirm the results. The researchers therefore concluded that it is first and foremost *the perception of risk* of a chronic pain condition that has caused the increase in whiplash-related injuries in other countries. The pos-

sibility of receiving compensation from motor insurance was also considered to play a part.[6]

Other studies have attempted to demonstrate a connection between the incidence of long-term symptoms and the design of the insurance system; if the system is based on a protracted settlement process, where it "pays" the individual to be allowed to show symptoms over a long period, the complaints will also be long-term. In a Canadian study, researchers were able to show that when the insurance system changed in such a way that the likelihood of larger amounts after a protracted legal process was reduced, patients with whiplash-associated disorders also recovered faster. This study, too, has been cited by those wishing to assert that whiplash-associated disorders "really" do not exist.[7]

The rapid rise in the number of whiplash-associated disorders in recent years could be explained, in the view of some researchers, by describing whiplash-related injuries as a "cultural malady".

The concept of "cultural malady"

"Cultural malady" is a term which has been used in research into medical history to identify a number of symptoms and syndromes that are appear possible to relate to something as diffuse as "the spirit of the age".

The intellectual historian Karin Johannisson has described the criticism of modern society that was expressed at the end of the nineteenth century, the period that is often known as *fin-de-siècle*. Alongside a firmly rooted optimism regarding progress, based on the enormous technical and scientific advances of the nineteenth century, there developed a general cultural malaise. The changes in people's way of life were too rapid. Urbanization and industrialization had had fateful consequences. "In a society where all social roles were suddenly detached from their secure and comprehensible framework the pace of life was accelerated/.../People found themselves in a chronic state of competition, rivalry and struggle for social survival."

Around 1900 there also came reports of a number of new maladies in Europe and the USA, and the explanations were increasingly sought outside the individual and focused instead on society. Infectious diseases such as tuberculosis and syphilis, or the increasingly observed abuse of alcohol, were explained in terms of the conditions of life in modern society. Medical science agreed: humanity lived in an "age of nervousness". The price of progress was an increasingly exhausted and vulnerable individual.[8]

How are these new pathologies to be interpreted – as signs of ignorance and imagination? Johannisson takes the view that pathologies arise and become

institutionalized precisely because they are needed. The period around 1900 gave rise to a series of reactions and symptoms, and the people of that time needed a way of interpreting them. They required a name and they needed to be granted legitimacy from the scientific establishment, because people really were affected.

Illness as a psychological condition

In a similar manner, a number of new diagnoses of our own time have been labelled "cultural maladies". Parts of the world of research and some social commentators have wanted to use this designation to indicate certain diagnoses, such as "burnout" and "exhaustive depression" – and also whiplash-related injuries. These conditions have sometimes been described as reactions to the conditions of modern life, not as "purely" medical states. In that case the treatment of such "cultural maladies" ought to lie in changing the conditions in which people live rather than in medical diagnosis and treatment. Some commentators claim that culturally related maladies actually consist in the mental inability of the individual to cope with his or her life situation, and that the symptoms disappear if this ability can be strengthened.

The fact that body and soul are connected is no new idea, nor is it unfamiliar to medical science. Psychological factors are an important part of all pathological states – not least the pain to which a whiplash-related injury may give rise. However there is a difference between discussing a pathology as culturally related and with psychological components, and asserting that it is an invention. Indeed all pathological symptoms have to be interpreted culturally and psychologically. And it is also interesting that some of the new diagnoses which arose at the end of the nineteenth century, and which later disappeared from the medical literature, resemble the "cultural maladies" described today.

The Lithuanian study – as is often the case with studies of whiplash-associated disorders – is based on a small selection of people injured in road accidents, a couple of hundred people. And actually the risk of suffering long-term symptoms is also small in countries like Sweden. To the researchers who prepared the Canadian report, the purpose was not to point to those injured as financially rational exploiters of a system. Instead the study wished to point to the value of early treatment and a psychosocial situation where the focus was to be on quick recovery, rather than on a need to give repeated demonstrations of one's symptoms.

To summarize, a relatively new diagnosis such as "whiplash-related injury" contains both cultural and mental components, like other pathological conditions. This is how things have been throughout medical history. Diagnoses have

kept appearing and sometimes they have later disappeared, which is not to be interpreted as meaning that from a medical perspective they do not "exist", or that the symptoms experienced by the person affected are imaginary.

Manifestation of an acute whiplash-related injury

In the acute stage, stiffness of the neck is often a first symptom, followed by pain in the neck and/or the head. Sometimes the pain comes first. Clinical experience shows that most symptoms arise within 24 hours, and many experts believe that a possible whiplash-related injury will somehow have revealed itself within 72 hours.[9] The idea here is that the initial symptoms are signs of some form of tissue injury. At a later stage other symptoms and problems may develop, but these have then been preceded by an acute syndrome. This is what has given rise in Sweden to the "72-hour rule", i.e. that a person wishing to be able to show that later problems have some connection with a road accident (e.g. to his or her insurance company), must point to some sort of acute symptom in connection with the accident. Many experts assert that there should be a *reasonable temporal association* between the road accident and the syndrome. We will return to this question in Chapter 7.

Possible causes of acute whiplash-related symptoms

It is rare to be able to discover skeletal and ligament changes with ordinary x-rays after a road accident with whiplash impact. Sometimes certain x-ray examinations may show that segments of the neck are unstable, i.e. that the neck ligaments show injury. Studies of deceased persons have used microscopic methods to confirm minor damage to the neck, discs and facet joints. These injuries might possibly be able to cause pain and other symptoms, and are not visible on an ordinary x-ray.[10] Other experts have proposed after diagnostic trials involving blocking different parts of the neck that the facet joints in the neck may actually be a cause of pain.[11]

In the clinical examination of patients with whiplash-associated disorders it is not infrequently assumed that the problems come from muscles or connective tissue, i.e. soft tissue injuries. It is then reasonable to assume that these injuries will heal in accordance with what is known as the traumatic principle, i.e. the patient ought to be fully restored to health after a few weeks. Some doctors are therefore reluctant to speak of whiplash-related injuries, and use instead the term "neck sprain". Longer-lasting complaints would then be more likely to be due to the patient's expectation of the possibility of recovery, and to the patient's life situation.[12]

However, such a description does not discuss a possible relationship between an acute pain condition and subsequent chronic pain. Other studies, based on extensive Swedish insurance material, have succeeded in showing a statistical connection between those demonstrating acute pain in the neck, back and head after an accident, and those who later develop long-lasting symptoms.[13] In later assessments this coupling of sharp early pain and later problems has received a lot of support.[14]

There is also research that has discussed whether the cognitive complaints often reported by people with whiplash-related conditions may be connected with injury to the brain in connection with the accident. The blow which the head may have suffered in a road accident may then have injured the nervous system, which affects brain function.

To summarize, in all probability, many different types of injury to the neck may arise after a whiplash trauma, and, despite the fact that some research has claimed the opposite, we cannot today link a clinical picture to a particular type of injury. Nor are the injury mechanisms clarified. Traffic experts who have studied the movement of the head and neck have not been able to demonstrate that there is *one* type of movement that causes *one* type of injury. Rather, it is reasonable to assume that whiplash-associated disorders may arise as a result of a number of different injury mechanisms.

Relationship between acute and lasting symptoms

Whiplash-related injuries are also complicated by another cause. The relationship between acute problems and more lasting ones is often diffuse. An acute pain in the neck may often spread to larger areas of the back and arms. It may become more of a chronic ache which in turn leads to greater sensitivity to pain. Stiffness may turn into greatly restricted mobility. Cognitive complaints – memory and concentration problems – are described by many people with this syndrome, as are a number of mentally defined problems.

The research literature contains a number of symptoms described in patients with chronic whiplash-associated disorders. These include:

- pain and spread of pain
- restricted neck movement
- disc degeneration
- increased muscular tension
- neurological symptoms, such as loss of sensitivity in the arm
- otoneurological symptoms, which present as eye movement disturbances
- psychological problems, such as depression and post-traumatic stress
- cognitive difficulties

However, in the opinion of many researchers, all these symptoms may be described as conditions resulting from chronic pain.

This syndrome becomes even more complex if the neck and back problems that occur in large parts of the population are compared with complaints that are preceded by a road accident. It then proves to be hard to distinguish between those patients showing symptoms as a result of road accidents and those presenting "ordinary" back and neck problems. The symptoms coincide. Some studies show that a third of Sweden's population say that they suffer such problems at regular intervals. According to other studies, as much as a tenth of the Swedish population suffers neck problems continuously. Many experts consider that the older a person is, the greater the risk of this type of symptom occurring – and being due to degenerative skeletal changes.

To summarize, one of the effects of this problematic syndrome is that it is difficult to show that long-term neck and back trouble comes from a road accident. There are sometimes disagreements between insurance companies, treating doctors, and patients. The connection between acute problems and more protracted complications then becomes important to demonstrate. Accurate diagnosis and classification in the acute stage become essential in this process – even if only a small proportion of those who experience problems immediately after the collision later develop chronic symptoms.

Attempts at classification

The American articles of the 1950s attracted a lot of attention in the research world, but the number of confirmed injuries that could be related to the whiplash movement was not particularly high. When insurance companies and health care personnel began to notice the injuries, from the 1980s onwards, this early research proved a rather blunt instrument for the purpose of diagnosis and classification. Gradually the need grew for more precise classification systems, and several attempts were made. In the Swedish National Board of Health and Welfare classification of illnesses and health problems, "whiplash injury" is now described as a particular type of sprain and strain of the cervical spine (S13.4), distinct from other neck dislocations. However, this designation does not give any guidance on how doctors ought to set about diagnosing the injury.

In 1995 the Quebec Task Force (QTF) published a monograph on the whiplash concept where a definition and a classification were presented that would be serviceable in practical clinical activity. This classification system aroused much attention in many countries and led to an increased general

consciousness of the problems of the existing inadequate definitions and thus a qualitative improvement in the scientific discussion. Even if not all researchers agreed with the QTF, the classification system became a way of structuring symptoms and classical findings.

The QTF defined "whiplash-related injury" as follows:

> Whiplash is an acceleration-deceleration mechanism of energy transfer to the neck. It may result from rear-end or side-impact motor vehicle collisions, but can also occur during diving or other mishaps. The impact may result in bony or soft-tissue injuries (whiplash injury), which in turn can lead to a variety of clinical manifestations (Whiplash-Associated Disorders, WAD).[15]

Whiplash-related injuries were then classified using a five-grade scale, with WAD "0" representing absence of symptoms and clinical findings, "1" that the patients felt aching, stiffness or tenderness but that no clinical findings could be demonstrated, "2" that the patient experienced pain and that the examining doctor was able to make musculoskeletal findings (such as limited mobility and tenderness on touch), "3" that the patient felt pain while at the same time the examining doctor was able to confirm neurological findings (such as poorer reflexes), and WAD "4", finally, as neck pain in the patient together with confirmed fractures and/or luxations of the cervical spine. With all these grades, the authors considered, more diffuse symptoms such as hearing problems, tinnitus and memory disturbances could also occur. In particular, grades 1–3 were discussed in the monograph and the QTF also presented a time axis to indicate the time of classification of the injury.

Criticism of QTF classification system

The classification system has been criticized on the grounds that the divisions are too detailed: when the patient does not experience symptoms and the doctor cannot confirm objective findings it is difficult to speak of a "whiplash-related injury". If, on the other hand, luxations or fractures can be confirmed at clinical examination, argue these critics, medical intervention is required that differs from the treatment and rehabilitation that ought to commence in the case of musculoskeletal or neurological findings.

There are also observers who believe that the QTF does not take into account those neurological symptoms which are hard to detect but which they consider characteristic of whiplash-related injuries. An early indication of

such symptoms would, in the view of these experts, indicate the patients who run an increased risk of lasting problems.[16]

Another point on which the QTF system has been criticized is the temporal axis. After a period of problems, the patient's symptoms often coincide with those shown by other patients with chronic neck trouble. A number of doctors have therefore considered that the QTF classification may be valuable in the acute stage, but that it becomes less useful as time passes after the accident. As it is the long-term whiplash-related injuries that form the real core of the problem, the division into WAD 0–4 becomes less useful.

Other groups have taken the view that a more detailed classification system is required, partly for the purpose of picking up the patient's mental state. Fear and stress are considered to affect both pain perception and other symptoms, and one researcher has proposed that WAD grade 2 ought to be divided into several sub-groups. Such a classification requires a very extensive examination which may be complicated to carry out in practice in general medical care.

Other proposed classifications of whiplash-related symptoms

One problem connected with whiplash-related symptoms is that it is difficult to confirm objective findings, while at the same time patients display a range of symptoms. One research team has therefore suggested classifying whiplash-related injuries solely on the basis of the perceived symptoms, and has produced two groups: lower cervical spine syndrome (LCS) and cervicoencephalic syndrome (CES).

A later Swedish classification system is based instead on placing symptoms and clinical findings in the anatomical areas that may be involved. This includes a calculation of how long the symptoms last and a description of whether they spread to other parts of the neck and back.

To summarize, it has been difficult to devise practical classifications that are actually useful for a quick diagnosis and description of whiplash-related injury. There is an urgent need for such methods to be focused on the acute stage, because the symptoms of the person suffering chronic complaints need not differ from those of the person suffering from more general neck and back problems.

Patients suffering long-term problems

Initial pain is an important prognostic factor for doctors trying to assess the risk of an injured person suffering longer-term complaints. Many studies also emphasize the fact that there are differences between women and men with

regard to whiplash-associated disorders. The risk of long-term problems is higher for women.[17] Other risk factors are the place in the car – the driver runs the highest risk – and how the head and headrest are positioned when the collision occurs. Type of car and available safety mechanisms are also very important – some traffic experts claim that the best new cars reduce the risk of long-term problems by as much as 40%, a question to which we will return in Chapter 6. Age, level of education and previous pain problems have been identified as factors pointing to later problems.[18]

The possible consequences of lasting problems are poorly defined in the research. A persistent ache does not necessarily mean loss of work capacity and substantially impaired quality of life – but clinical follow-up often focuses on self-reported symptoms without assessing how they affect the life of the person suffering them more generally.

Frequency of permanent ill effects

As we have noted earlier, the figures from Swedish insurance companies show that roughly 5% of those reporting initial pain to their insurance company are later assessed as having serious permanent ill-effects as defined in the Road Traffic Injuries Commission material. This figure tells us little for several reasons. First of all, it does not take into account those who may have complaints without being assessed as invalids. Secondly, a symptom picture categorized as "chronic ache" often implies a relatively low level of disability, below 10% – and these hardly ever show in the Commission's material. And, thirdly, a number of policyholders are likely to report problems to their insurance company "just in case". This in turn may be explained by the attention paid by the companies to early symptoms before accepting a causal connection between road accident and later problems.

Clinical medical research has instead monitored small groups of patients from the point of view of medical recovery. Here there are wide variations: at a six-month follow-up the number reporting persistent pain ranged between 18% and 60%. The figures for reduced working capacity are much lower. Only 5%–8% of those suffering acute symptoms have substantial problems affecting work capacity, according to a number of studies.[19] However, there is generally a link between work capacity and the prospects of obtaining compensation from society, which makes comparison between different countries more difficult.

To summarize, intense aching in the acute stage may be a signal warning of lasting problems. Other risk factors are gender, age, position in the car at the time of the accident, type of car and occurrence of pain earlier. But there is

no infallible method in the acute stage of identifying the victim who risks suffering long-term symptoms – which makes the need for a simple but effective diagnostic method even more pressing.

Discussion

As we have been able to see in this review, there is at present no consensus regarding how whiplash-related injuries should be described. Nor is there agreement between different doctors on injury mechanisms. This has made it impossible to give a consistent diagnosis and led to differing views of what whiplash-related injuries actually are. There are several problems in the fact that it has proved difficult to make quick and reliable diagnoses of whiplash-related injuries.

One concerns the question of speedy and effective medical treatment. Most studies show that people who have suffered acute whiplash-related symptoms ought to be active rather than passive. Trying to get rid of aches and other symptoms by resting may in the long run prove harmful, because the tissues benefit more from being in motion. The muscles are strengthened and mobility improves with training. Using a cervical collar is now considered pointless by most doctors. It may even aggravate the symptoms in the long run.[20] But the people experiencing the aches may themself have an inclination to "take it easy" and to move as little as possible. For this group of patients, therefore, it is important to be able to obtain a diagnosis quickly where the examining doctor emphasizes that recovery may be accelerated by the patient's own behaviour.

The matter of the patient's own perception of the reception given by the medical services is important – also with regard to the possibility of becoming free from symptoms quickly. An accurate, quick assessment, where the patient's symptoms are taken seriously and put into a larger context, is an important part of the whole process that follows involvement in a road accident. "Not being believed" is a recurring experience of many people suffering from whiplash-associated symptoms, according to the contacts that the Whiplash Commission has had with patient associations and the general public. Better and more uniform methods of diagnosis would make a big difference.

A further problem concerns the special insurance situation that prevails after road accidents. Even if only a small percentage of all those who suffer neck pain after a violent collision experience more lasting ill effects, it is important to this group to be able to show that the complaints are linked to the accident. We have earlier discussed the fact that the long-term whiplash-

associated disorders do not differ appreciably from the symptoms that affect other patients with back and neck problems. But from an insurance point of view there is a big difference between whether the symptoms arise from a road accident or whether they arise from other causes. An early and correct diagnosis becomes important.

It is therefore urgent to obtain greater clarity with regard to the nature of whiplash-related injuries and how they should be diagnosed. More research is needed. At the same time, a substantial amount of good quality research, based on both research literature and clinical experience, has in fact been published over the last ten years that may be conducive to a greater degree of consensus on the whiplash diagnosis. We shall return to this question in Chapter 7 of this report.

Notes

1 Nygren et al, Nackskador efter trafikolyckor (Lund 2000).
2 Karin Johannisson, Medicinens öga (Stockholm 1990).
3 Severy et al 1955.
4 Source: Swedish Insurance Federation statistics for 2003.
5 Otremski et al 1989; Ryan, 2000.
6 Schrader et al 1996; Obelieniene et al 1999.
7 Cassidy et al 2000.
8 Johannisson 1990.
9 Deans et al 1987, Dvorak et al 1989, Hildingsson et al 1990, Spitzer et al 1995.
10 Taylor et al 1993, Schonstrom et al 1993, Taylor et al 1996, Uhrenholt et al 2002.
11 Barnsley et al 1995, Lord et al 1996.
12 Schrader et al 1996, Obelieniene et al 1999.
13 Nygren et al 2000, Berglund et al 2001.
14 Cote et al 2001, Gwendolinje G.M Scholten-Peeters et al 2003, Sterner et al 2003.
15 Spitzer et al 1995.
16 See, for example, Hildingsson et al 1990.
17 Spitzer et al 1995, Versteegen et al 1998, Mayou & Bryant 1996, Dolinis 1997, Berglund 2002.
18 Berglund 2001.
19 Spitzer et al 1995, Herrström et al 2000, Kasch et al 2001, Hartling et al 2002, Sterner et al 2003.
20 Rosenfeld et al 2000, Söderlund 2001.

3. LIVING WITH A WHIPLASH-RELATED INJURY

Summary

A person living with a whiplash-related injury today often feels that a lot of time has to be spent "proving" the injury. Many whiplash sufferers tell of how important it is to be taken seriously and for doctors and insurers not to question the seriousness of the symptoms. From a medical point of view it is probably unfortunate that the patient gets too preoccupied with "proving" the injury – it makes it more difficult to concentrate on a constructive rehabilitation process. But the social security network as constructed at present gives little encouragement to rapid recovery. The systems may give the impression that help is given only to those who need acute medical care and a long period of sickness absence. There is therefore a risk that the person suffering a whiplash-related injury feels that he or she has landed in a complex invalid role. The patients' associations who represent whiplash victims in Sweden work in somewhat different ways and with differing aims. But they agree in arguing that it is important for Sweden to improve its care and rehabilitation of whiplash-injury sufferers, for the division of responsibility between different agencies to be clarified, for respect to be shown to the patient, for doctors and insurance company staff to let them take an active part in shaping their lives after the injury, and for Swedish society to exercise more consistent control of those professional groups – medical and legal advisers – that in various ways influence the victim's life and living conditions.

Introduction

When the Whiplash Commission set up its office it was regarded as urgent for as many people as possible to be able to contact the Commission to report experiences and opinions. On its website and elsewhere the Commission has exhorted the public to contact the office and describe their experiences, pinpoint the problems that exist and suggest solutions.

The Commission also regarded it as a matter of priority to make early contact with associations and organizations representing people suffering from whiplash-related injuries. A total of eight such associations and organizations have at different times met representatives of the Commission and reported on their

work, described their problems and suggested remedies. Ongoing contact with the associations has resulted in the Commission being able to obtain a more detailed picture of what it is like to live with a whiplash-related injury.

Perception of whiplash-related injuries

The accounts that have been heard by the Commission are of various kinds, describing different types of experiences and problems. The following are a few anonymous examples from victims, relatives and those whose work involves dealing with the consequences of whiplash-related injuries.

- **[Injured]** "I am a 37-year-old woman. I have had a whiplash-related injury since '97 and been off work sick from time to time for just over three years. I am a police inspector. And enjoy my job and intend to do all I can to come back. I have tried nearly everything you can think of in the way of rehabilitation here in Sweden. And unfortunately NOTHING has succeeded yet."

- **[Injured]** "I am 41. Have a wonderful wife and 2 children. Since being injured in a road accident caused by the lorry in '00, I have lived with my pain day and night. Having to battle with my disability every day, because that is what it is. Whatever I try to do, the pain slows me down. And always having to break off what you are doing, just to rest but that isn't so easy either when you start to ache from lying down too long as well and have to get up again to straighten your back and neck. Then having to sit down or lie down again. If I go anywhere in the car I'm worn out both physically and mentally, it's deadly. But I still try and fight it every day. I go to the rehabilitation clinic to use the bath and the sauna. I try to go every day, to relieve my symptoms a little [...] The worst thing is when you want to do something but you can't. You have to give up activities that you've always been involved in. I now have the help of a physiotherapist, doctor, home help and I have a disabled person's permit, transport service for the disabled, lawyer, they all help me, but they can't take the pain away, you just have to keep taking the medicine and hot baths every day which I've been doing ever since I came to the rehabilitation clinic."

- **[Injured]** "Where whiplash injuries are concerned, nobody can really say what the future will bring for the individual. My experience is that professional help *(SmärtRehab)* has to be given relatively quickly. Three months after the injury may be a limit (if the suffering persists). Being injured is a trauma that takes time to get over. Healing is a process

that is different for each individual [...] There is often a time limit on rehabilitation. According to doctors 2 months is a satisfactory time for whiplash rehabilitation. I do not consider it reasonable for the purpose of rehabilitation to be confined to making the individual "fit" to return to working life. The primary objective must be to reduce pain and to teach the individual to handle the new life situation and to improve the quality of his life."

• **[Relative]** "When an injured person has got the pension decision from the social insurance they [the social insurance office] start again with their questions with new officers and new long processing times, nearly a year in our case, before the annuity enquiry was complete. The cash shortage gets pretty acute in this time. Sickness allowance and pension are not the same amounts. I think the social insurance should change the procedures so the pension and the annuity are done at the same time. It ought to save money for the office if the same person finished the case when they've already collected all the information they need and have the case on the table. At the other end the client will be spared unnecessary waiting and running out of money."

• **[Lawyer]** "I have thought about the criticism of the medical specialists that the insurance companies use to assess cause and effect, degree of disability etc. The claimant often tends to claim that the doctors are in the pay of the insurance companies while the doctors say they aren't. And the medical experts aren't under the supervision of the National Board of Health and Welfare. If these doctors were in some kind of pool, where the companies could send questions without actually knowing in advance who would be answering them (although they could choose which speciality they are applying to), wouldn't that improve the credibility of the medical experts? The pool could be financed by the companies jointly or by the state, to ensure the independence of the doctors. Moreover the doctors would not work 'at home in their living room', they would instead be paid for the time they were at the pool, and not, like today, on a basis of one fee per question."

Problems taken up in the reports

A common theme of the reports received is people's experience of not being believed and taken seriously, either in the health service, or by representatives of the Swedish social insurance system, or by their own insurance company. Those writing have felt that although they themselves experience symptoms that in their opinion make life difficult to bear, doctors and insurers/social insurance officers meet them with a "shrug of the shoulders" and think that

"it will get better". Exhortations to return to as normal a life as possible have been interpreted by many patients to mean that their symptoms have not been taken seriously. The action of the doctors and officials can be explained on the basis of current statistics and research: it is reasonable to assume that most of those suffering pain in connection with a road accident will make a full recovery. But even if the victims are informed of this, they often seem to feel that they are disbelieved.

Later, if contrary to expectations the problems have persisted, a wider range of symptoms often develops. Many of those who have contacted the Commission report dizziness, insomnia, problems of concentration and loss of sensation. It is not unusual for the patient then to start on a trawl through the health system in search of explanations of the particular symptoms: many people think the worst thing is that they cannot get a real physical explanation of what they are feeling. They wonder about the reason for their complaints: dizziness may perhaps come from problems with the sense of balance, difficulty in concentrating from mild brain injury, numbness from a trapped nerve. Many sufferers do not accept the explanations often given by the Swedish health service: that all these symptoms can be regarded as secondary to the pain. Instead it is common to look for alternative ways of obtaining diagnoses, possibly even abroad – which the Swedish county councils and the Social Insurance Agency will not pay for unless the method is considered scientifically assessed. Once again the injured person may feel that he or she is not being taken seriously and is being met with suspicion.

Another important theme of the reports received is the perception of living with permanent pain. For many people life is quickly changed to hopelessness. Life becomes one long pursuit of periods of relative pain relief. The unpredictable nature of chronic pain conditions is a major problem to many who have contacted the Commission. Even if one day seems relatively free from symptoms, the next day may bring such pain that it is difficult to get out of bed. Patients say that they find it hard to plan their lives with regard to either work or social relations. Victims express profound anxiety about the future. The chronic pain affects everything in their lives: not only work capacity, but also relationships with family, friends and the world beyond. Most of the letters that have come in describe a gradual withdrawal: quite simply being unable to mix with other people, because the pain constantly determines how one feels.

The reports received describe how the feeling of not being believed may lead both the victim and the family to devote a lot of time to arguing with representatives of health and social insurance systems. Sometimes this grows into a big job with hours being spent chasing certificates, filling in applica-

tions and making phone calls. The waiting times for specialist clinics for pain relief in the health service are long. Applications for reimbursement of costs of treatment abroad take time for the county councils or the Social Insurance Agency to process. The Agency's investigations of work capacity also take time. So does claims settlement by the patient's insurance company – particularly if the sufferer decides to engage a legal assistant to review a decision on compensation. Nor do several of those who have written to the Commission understand how responsibility is divided between the national sickness insurance system and the private insurance company, and they state that the questions and decisions seem "offensive".

Throughout these accounts there is the feeling that the various social systems are opaque and poorly synchronized. When injured, one has to do far too much of the work oneself, in the opinion of many who have been in touch with the Commission.

"Proving one's injury"

The Whiplash Commission has discussed the picture that emerges from accounts received of the way in which the Swedish care and insurance systems function, and how a person suffering a whiplash-related injury may experience the situation. On the basis of this material, the system appears unfortunate in several respects. What is in itself a perfectly reasonable attitude from doctors and insurers – that the initial problems will probably pass – may lead victims to feel that they have to "prove" their injury. Such an approach does not assist the process towards a rapid recovery and risks aggravating the problems experienced. The absence of structured collaboration between, for example, the Social Insurance Agency and the care system leads to many victims unnecessarily ending up with protracted periods of sickness absence without any help other than the financial security comes with being on sick leave. The lack of easily accessible information on how the national and private insurance systems work may increase the feeling of having been —"cheated". Such a feeling is probably reinforced by the sometimes erroneous picture that the Swedish media and Internet sites give of rights and obligations in the insurance system.

Identity of the disease

In a discussion of how the Swedish security systems function – both national insurance and the health service – commentators have sometimes seen a problem in the fact that the individual does not expect to have to take any

responsibility for his or her situation. The systems have also long been constructed so that in theory they will function identically and to some extent automatically for everybody. However, this should be regarded as a generalization which does not apply to everybody, nor to all situations. In particular, those suffering a pathological condition that is more difficult to diagnose or a complex injury with a prognosis that is difficult to assess may feel that they themselves have to ask for referrals to different specialists within the care system and that it can be difficult to gain access to costly methods of investigation. This is reasonable on the basis of medical priorities – specialist skills should only be used on particular medical indications. But many patients themselves want to have access to different specialists because this may feel as if the injuries are "being taken seriously". Furthermore the Swedish health service has in recent years made active efforts to strengthen the role of the patient, because studies have shown that this also improves the prospects of medical recovery.[21]

In order to gain access to care and financial compensation from the security systems, the patient has to be properly defined by a doctor as ill. In this case diagnoses and different forms of treatment, together with medical certificates from doctors, become essential. For the person on sick leave for a long period, contact with the workplace is often lost, while at the same time the Social Insurance Agency will want after a year or so to investigate work capacity in order to take a longer-term decision on return to work or sickness benefit. In addition, road accident victims often become involved in a protracted claims settlement process – a process that may also take additional time because the insurance company wants to allow for a possible recovery, before deciding on compensation.

As the system is now designed, the incentive to return to work (despite certain continuing problems) as soon as possible is limited. The injured person may feel that he or she is continually "forced" by the system to "prove" the injury in order to obtain the help the system can offer. Always having to show how bad they feel and bring constantly aware of changes in the symptoms crops up repeatedly in the letters, e-mails and phone calls that have been received at the Whiplash Commission office. One consequence of this is that the creation of a sickness identity risks taking an increasingly prominent place in the whiplash sufferer's life.

Role of illness

Researchers into what it means to be ill are often anxious to make it clear that the role of illness has different dimensions that affect people in different

ways. They speak of the difference between the illness of biological origin, the sick person's perception of his or her condition, and society's conception of the pathological picture.[22] According to the letters and phone calls reaching the Commission the experience of being sick consists in trying to translate one's own perception of the pathological condition into a biological definition, i.e. in confirming that one really is injured with a diagnosis of a biological nature (e.g. that something in the neck has "broken". As we have seen in the previous chapter, it is difficult to establish such injury mechanisms, and the diagnostic methods for whiplash injuries, in particular, have instead been primarily based on the symptoms experienced by the patient.

The search for a more biological, even mechanical, explanation of one's symptoms is on the other hand characteristic of the lives of many victims, at least as indicated by the descriptions received by the Commission. This is consistent with the descriptions given by many researchers of our modern perception of illness. We want, in order to obtain acknowledgment, it to be possible to consider the body as a sort of apparatus where one's own perceptions are not paramount but where "objective findings" have to be possible.[23] This is also because society's conception of whiplash-related injuries is so complicated today. The cultural component of the perception of a whiplash injury varies from the descriptions of disasters in the evening press to an established suspicion in some quarters that the symptoms have no real basis.

The perception of constant pain expressed by many whiplash victims affects the identity of the condition. The philosopher Fredrik Sveneaus has said that illness leads to a disintegration of "the physical pattern of meaning", and that the individual loses a feeling of being meaningful and belonging to society.[24] Other authors have described how, paradoxically enough, chronic pain conditions can offer a way into the creation of a new meaning in life. But this can only happen if the symptoms can be connected to a "real" and "recognized" diagnosis – such as a whiplash-related injury confirmed by doctors.[25] And for the person who feels that he or she encounters both scepticism and opposition, everything else eventually comes to be overshadowed by the single consideration: "proving" that he or she is ill.

From patient to disabled person

When does a person with a whiplash-associated disorder stop being a patient and become a person who can be considered to have a permanent functional disability? To conclude the claim settlement process after a road accident, such an assessment has to be made if the injured person wants compensation for some degree of invalidity after the injury.

There is also a medical rationality in regarding a person after a while as "fully medically treated". This term is used to mean that a complete recovery is not possible, but not that the prevailing state of ill health will never change. It is also regarded from a treatment aspect as positive if patients with some form of chronic symptom focus their own rehabilitation on different ways of improving the quality of life despite the fact that some symptoms will remain.

From a purely organizational point of view, however, the person who is "fully medically treated" enters a different patient category in Sweden. Examinations and treatments no longer imply an expectation of full recovery. Instead the focus is on lifelong rehabilitative measures, and which agency is responsible for such measures is not always clear. As long as "work-oriented rehabilitation" is involved, the employer and the Social Insurance Agency are responsible. But when a person loses his or her employment and is considered by the Social Insurance Agency incapable of work for a long time to come, this type of rehabilitative measure is no longer justified.

So what in one part of the system gives entitlement to benefit – namely being declared permanently disabled – implies a different type of assistance from the health services. When the Social Insurance Agency confirms a long-term incapacity for work, the higher sick pay is replaced by a lower sickness benefit. In addition there is the difficult process that many people have to go through of realizing that they will never again feel as they did before the accident. This means that the patient identity may gradually become quite complex. Many whiplash sufferers have said that on the one hand they want an ongoing possibility of treatment where the aim is to become fully restored to health, together with continuous sick pay from the Social Insurance Agency, but on the other hand that they want an assessment of the degree of disability from their insurance company as soon as possible.

Seeing oneself as disabled after a whiplash-related injury

This ambivalent attitude may also have other consequences. Several of those who have contacted the Whiplash Commission have expressed hesitation with regard to the organizations for the disabled that exist in Sweden. They see the disabled person as ending up in a "victim role". Here the view is that only a person who has "given up" receives support from society.

Traditionally, Swedish organizations for the disabled pursue their aims on the basis of a confirmed disability (e.g. a spinal injury) where the right to participation in the life of the community on as equal conditions as possible is the prime consideration. Admittedly they work for the right to lifelong rehabilitation, but the focus is not on "being cured" but simply on improving the

quality of life. A person suffering a spinal cord injury after a road accident, for example, may not have gone through the types of discussions of symptoms and causes with doctors, the insurance office or his or her private insurance company that are often reported by people with whiplash-related injuries. From this way of looking at the matter, whiplash-related injuries could be defined as a more invisible disability.

To many people in the whiplash injury group this seems to constitute a problem. They see themselves more as patients than as disabled persons, at least in certain situations, and therefore do not wish to deal with matters in the same way as traditional organizations for the disabled. This may be one reason for the fact that people with whiplash-related injuries are represented by at least eight associations or similar organizations in Sweden, which do not always agree on which matters are to be given priority.

Organizations for patients and the disabled in Sweden

Patient associations are a relatively new occurrence in Sweden. They were initially a part of the disabled persons' movement. This has its roots in the late nineteenth century when the first associations were formed for people with visual and auditory impairments. The oldest association today organizing people with whiplash-related problems is the National Association for Traffic and Polio Victims (RTP). RTP is the organization that represents patient interests in the work of the Whiplash Commission.

Organizations for the disabled are constructed on a popular movement model, where a national association with a nationally elected committee organizes its members in local or regional branches. The primary aim of the work is to improve the everyday lives of members and to produce concrete changes in society's view of functional disabilities and care at a local and national level. Contact with experts and authorities is intended to give better information, and the Swedish state has eventually given limited financial support to many associations. With the aid of funds collected, a number of organizations have also supported medical research which is of relevance to members. Gradually the organizations have also engaged in positive disability policy work, and several organizations have come to act as consultative bodies in disability and health service policy inquiries at municipal, county council and state level.

Development of patient associations

During the 1980s and 1990s the number of Swedish patient associations grew. New medical diagnoses have given rise to new associations and federations

of various kinds. It is now quite usual for there to be more than one organization intended for people with the same symptoms, injury or disease. The new patient associations often have a character different from that of the established ones, and work rather as networks than as traditional popular movements. New information technology has made it relatively simple and inexpensive to establish and maintain such networks. The new associations work in a different way from the traditional disability policy way. They gather and disseminate information through the Internet, they are generally more sceptical of authorities and politicians and turn instead to newspapers, the radio and TV to get their message across.

In the health service and in health policy matters, patient interest has also found greater space over the last 20 years. This is partly a result of the greater media-centred nature of politics generally; by working through the media patient associations become more visible than previously. Swedish medical care has come to take more notice of patients' own experience when dealing with different symptoms. One example is the change in the direction of pain research, with the patient's experience being in the centre with regard to diagnosis and treatment.

People who have suffered a whiplash-related injury can today turn to a number of patient associations or similar organizations, to some extent with different specializations. The Whiplash Commission has talked to eight of them: *De Whiplashskadades föreningen, Pisksnärten, Riksföreningen Hjärnkraft, Whiplashgruppen, Whiplashskadades rättsförening, Whiplash Info/Whiplashfonden, Whiplashstiftelsen* and *Riksförbundet för Trafik- och Polioskadade.*

***De whiplashskadades förening* (DWF) [Association of the Whiplash-Injured]**

De whiplashskadades förening was formed in 1993, under the name *Piteå Whiplashförening*, PWF. When the number of members rose and the geographical coverage expanded, the association changed its name to *PWF Norr- och Västerbotten*, and later to *De whiplashskadades förening* (DWF). In 1995 the association opened its own website on the Internet and this is now the main channel through which it conducts its activities. But the association is active all over the country through its local branches. DWF reports its membership as approximately 2 000. The website address is
http://user.tninet.se/~pbz623s.

DWF describes its aim as assisting those suffering from whiplash injuries with information on care, rehabilitation, technical aids and legal matters. Collaboration with other associations is limited. This is, in the view of DWF, partly

due to differences in approach to various issues. The association has for example criticized RTP (The Swedish Association of Survivors of Traffic Accidents and Polio) for, as it says, "concentrating its resources on printing information texts and books". In DWF's opinion, RTP ought to use its role as a consultative body to work more actively for the rights of injury victims in the community than, DWF believes it, does today. Despite this basic difference of views on how associations of the disabled ought to work, DWF contends that RTP, together with *Whiplashskadades rättsförening* and *Pisksnärten*, are the associations that work seriously for the category of people with whiplash-related injuries.

Pisksnärten [The Whiplash]

Pisksnärten was formed in 1993 and describes itself as a financially independent patient association based in Uppsala. Pisksnärten puts its membership at just over 4 000, of whom 3 300 are on the association's mailing list – the number of paying members is smaller, however. *Pisksnärten* has a website at: **www.pisksnarten.com .**

Pisksnärten describes itself as a "rehab association" and arranges courses, training and activities for members, publishes a members newsletter and has information and links on its website. The association considers that one of its most important tasks is to advise and support people with whiplash-related problems who contact the association with questions on various subjects. *Pisksnärten* gives advice on rehabilitation, for example, and recommends legal advisers. The chairman of *Pisksnärten*, Rolf Jonsson, argues that it is important for people who have been involved in a whiplash-related accident to talk to someone else who has been injured. Telephone advice is therefore also focused on specific suggestions, such as reducing the number of pain relief tablets per day or contacting a good pain clinic.

Pisksnärten describes its collaboration with other associations as limited, but mentions that there is contact with WRF and *Whiplashgruppen*. Many of the association's members are also members of RTP. *Pisksnärten* defines itself as "a small and unbureaucratic association" that "can act quickly on various matters".

Riksföreningen Hjärnkraft [National Brain Injury Association]

Hjärnkraft was formed in 1988 by relatives of patients who had suffered brain injuries. Many relatives felt that there was a lack of knowledge in the medical services of the opportunities for rehabilitation of brain injury sufferers. Based on the model of foreign patient associations *Hjärnkraft* has worked to follow research into head injury rehabilitation and criticized the fact that people who

have suffered head injuries have been cared for in long-stay or psychiatric wards. The association now provides both injured patients and relatives with information on opportunities for rehabilitation and also works actively on lobbying politicians responsible for medical services. An integrated chain of rehabilitation for the person who has suffered a head injury is an important objective.

Hjärnkraft says that the association has approximately 2 800 members, of whom about 900 are injury sufferers, 1 000 are relatives and the rest are support members. *Hjärnkraft* is organized in the form of 22 county associations and three local associations. The national association's office is in Stockholm. The association issues a members' bulletin and has a website at **www.hjarnkraft.nu**. The association is a member of the Coordination Committee for the National Swedish Associations for Disabled Persons (HSO). *Hjärnkraft* collaborates with RTP on various matters, as it does with the Workers' Educational Association.

Whiplashgruppen [The Whiplash Group]

Whiplashgruppen is behind an Internet portal that supplies information on whiplash injuries, in the form of texts and video interviews with experts. The individuals who have founded *Whiplashgruppen*'s portal come originally from a Whiplash mailing list which was also responsible for *Uppropet*, a petition on the Internet calling for a supervisory authority for the medical experts employed by insurance companies and the Social Insurance Agency. The petition, bearing 3 500 different names, was handed to the Government on 18 June 2002. *Whiplashgruppen*'s website address is **www.whiplashgruppen.info**. The portal is owned by Kia Temmes and Chris Hilli. *Whiplashgruppen*'s info portal is also linked to a forum and an e-mail list. *Whiplashgruppen* describes itself as "a voluntary group with a varying number of members"; it mentions some collaboration with *Pisksnärten* in Uppsala, and also has links with a number of other organizations on the website.

Whiplashskadades Rättsförening [Whiplash Injury Legal Association]

Whiplashskadades rättsförening (WRF) was formed in 1992 by a group of people who had suffered whiplash-related disorders and who felt the lack of an organization focused on the legal opportunities and problems of those injured. Having originally been based on the West Coast, WRF states that it now has 3 500 members in all parts of Sweden. The association issues a members' newsletter and also has a number of local branches, which arrange monthly meetings and other activities. The association has also acted as a referral body for different municipalities on disability matters.

The main emphasis of WRF's work is on the legal aspects of the problem of whiplash-related injuries. The association has a network of 60–70 legal representatives, who have particular knowledge of whiplash issues, and a list of some 300 lawyers whom the association recommends its members to contact. WRF also supplies a list of doctors with specialist expertise in the field and collaborates with selected physiotherapists.

The association is non-profit-making but receives a grant for the salary of a full-time secretary. There is a website at **www.wrf.se**. WRF states that collaboration with other patient associations is limited, but that many of the association's members are also members of RTP.

Whiplashfonden-Whiplash Info [The Whiplash Fund/Whiplashinfo]

Whiplashfonden is a new fund (started in 2002, but currently dormant) which has been formed to support research into whiplash-related injuries. The fund was started by Tomas Alsbro, who also runs the *Whiplash Info* website. Tomas Alsbro has also been active as a commentator and was consulted in the preparation on the National Financial Supervisory Authority's report *Stärkt skydd för trafikskadade* [Improved protection for road accident victims] (2003).

The purpose of *Whiplash Info* is stated to be to help victims and relatives with treatment, care and insurance issues, to monitor authorities and others in power, to identify the problems affecting those with whiplash injuries, to disseminate information and to create opinion. The portal opened in May 2000 and has since recorded 700 000 visits, according to Tomas Alsbro. In addition there is a "help forum" connected to the portal, which Alsbro reports has 1 100 members connected. The address of Whiplash Info is **www.whiplash.pp.se** . This website has links to a number of patient associations concerned with whiplash-related injuries, including *Riksförbundet för Trafik- och Polioskadade* (RTP), *Whiplashskadades förening* (DWF) and *Pisksnärten*. There is no collaboration of a more formal nature.

Whiplashstiftelsen [The Whiplash Foundation]

Whiplashstiftelsen was started in 1995 by Gunilla Sogell, and states that its aim is to collect knowledge of whiplash-related injuries, to engage in preventive activity and to spread knowledge to other victims. It is also Gunilla Sogell who does most of the work, together with a network of doctors and legal experts. The foundation states that more than 3 000 people have contacted it since it started, most of them victims and relatives, but also others such as carers, employers, legal experts and the media. The foundation also has a website at **www.mkb.se/whiplash**.

The foundation also tries to participate in discussions on whiplash-related injuries and monitors research developments. There have also been study visits to a number of rehabilitation clinics. The foundation also hopes that in the future it will be able to collect funds for research. Phone advice accounts for most of the contact with whiplash-injury sufferers, according to Ms Sogell.

Gunilla Sogell is herself a member of RTP, but feels that it is not always easy to collaborate when "visible" and "invisible" functional disabilities are represented in the same organization. It is actually difficult to fit whiplash-related injuries into the social structure that exists for other disabled groups, she says. The advantage of a small association, foundation or portal is that it can work in a less bureaucratic manner that permits quick decisions and direct information.

Riksförbundet för Trafik- och Polioskadade (RTP) (The Swedish Association of Survivors of Traffic Accidents and Polio)

The Swedish Association of Survivors of Traffic Accidents and Polio (RTP) has represented road accident victims since it was reorganized in 1970 and in the last 15 years people with whiplash-related injuries have become an interest group within RTP. The association has approximately 20 000 members all over Sweden, organized in about 60 branches.

RTP describes its aim as being to work for participation in and access to society for those injured in road or other accidents or by polio, and to "strengthen members with a view to enabling them to influence their life situation and attain a good quality of life." Its operations are conducted both through the activities of local branch members and through the central office in Stockholm, where the association participates in commissions of enquiry and acts as a consultative body on disability policy matters. RTP has a network of lawyers, issues books on different subjects and the magazine *Liv* five times a year. Activities are financed by membership fees and government grants, and the central office has a number of full-time employees. There is a fund to support research. RTP is a member of the Swedish Co-operative Body of Organizations of Disabled People – HSO – and is responsible for the rehabilitation association *Mälargården*. The association's website address is **www.rtp.se**.

Collaboration with other patient associations varies. As mentioned above, many members of other associations are also members of RTP.

Wishes and recommendations of the patients' associations

The eight patient associations/equivalent organizations have been asked to state which whiplash-related problems they consider most important to deal with. One important distinction between the different associations relates to the discussion of whether whiplash-related injury is to be regarded as a functional disability or as an injury that will heal – and what implications this has for how victims should proceed in dealing with the health and insurance systems.

Right to rehabilitation

One point that keeps coming up in the wishes of the eight patients' associations is that the right to rehabilitation has to be given greater prominence. The associations are of the opinion that as the law stands at present, rehabilitation is something that may be offered, but not in any way a right. According to the associations the level of knowledge and the willingness to discuss rehabilitative efforts vary between the different local insurance office branches. Over the last year several associations feel that they have noticed that the Social Insurance Agency invests more in assessments of work capacity than in occupational rehabilitation, and the associations see this as a problem.

Several associations consider that the Swedish social system makes a distinction between medical and occupational rehabilitation. The associations feel that this is not fundamental from the point of view of the injured party but that its practical significance is all the greater. Responsibility for the rehabilitation of the individual is shared between several bodies, according to how much time has elapsed since the road accident. In addition the associations consider that the victims ought to have a definite right to be included in deciding on the type of rehabilitation that ought to be attempted, and when. Several associations consider that the Social Insurance Agency is quick to opt for "an inexpensive alternative that is close at hand geographically". In the associations' opinion, the right of victims to take their own initiatives and shoulder responsibility ought to be an important part of recovery after the accident.

Better coordination

Greater coordination between the different social facilities involved after a road accident would be desirable in the opinion of the associations: medical services, the workplace, the Social Insurance Agency, and the private insurance company. They feel that the "coordinating interviews" that take place at present are not adequate, because they involve both too many and too few

actors. The fact that many people have to take part means that in practice the interviews are difficult to arrange. But the fact that the employer is not usually present means that what is perhaps the key piece in the puzzle of the individual's life situation is missing: the link to the workplace. Here the patient associations would like to see the coordinating interviews always designed to match the needs and capacities of the individual.

Agent for the victim

Questions of quality of life need to be kept in mind when discussing rehabilitation following a whiplash-related road accident, say the associations. It may be difficult for victims to find their way through the medical services and the insurance system. Here some of the associations believe that a local network of patient associations would be of great assistance, rather than the appointment of "grievance officers" for individual patients by the authorities. Other associations would prefer to see a government or local authority representative. The associations also differ in the emphasis they place on trying to help the individual to take the initiative, and to take a more active part in his or her own recovery – and if assistance in liaison with authorities and insurance companies "so justice can be done" is more important.

Quality assurance of insurance medicine

A recurring problem raised in discussion with patient associations is the role of the medical advisers, whether those of insurance companies or of the Social Insurance Agency. Several associations have felt that the responsibilities of medical advisers are diffuse, and that they show "loyalty to their employers rather than to the victim." The argument put forward by the Financial Supervisory Authority in 2003 in favour of a new type of supervision of these advisers, possibly by the National Board of Health and Welfare (a proposal now being discussed by the bodies concerned – Whiplash Commission note), is one that has won the support of several patient associations. Others point to the need for improved training in insurance medicine, not only for the medical advisers but also for the treating doctors. The ability of the doctor to provide a correct certificate is a matter of importance to the patient. Better training in insurance medicine and some sort of quality assurance for medical advisers are therefore seen as urgent.

The time aspect and legal protection

Ought it to be possible to conclude the treatment and insurance processes quickly after a whiplash-related injury? To some extent the different

associations give different answers. All parties are agreed that quick medical attention is important. One proposal that has been made is that all patients with symptoms that persist beyond a couple of months should be offered special rehabilitation focused on whiplash-associated disorders. But some associations warn that treating doctors should be wary of confirming a chronic condition before substantial time has elapsed. "One must never give up hope of returning to full health," WRF explains. RTP, on the other hand, regards it as important to obtain help in ascertaining whether the symptoms risk becoming permanent. Rehabilitation can then focus on making the new life easier, rather than continuing to hope for a full recovery, year after year, RTP argues.

A quick final settlement of the insurance question is not as important as quick medical attention, several associations observe, even if they feel that the private insurance companies ought to be more generous in their "interim" payments. RTP tries to clarify this by pointing out that it is the reason for the length of time taken in reaching a settlement, rather than the length of time itself, that is important.

Several of the associations also consider that the Social Insurance Agency has become too quick in investigating and reaching a decision on long-term incapacity for work. Sickness benefit is lower than sick pay, and if the claimant is in dispute with his or her private insurance company at the same time as the Social Insurance Agency decides on sickness benefit, there is a risk of an adverse effect on the patient's finances, say several associations.

A desire for greater legal protection and more help in legal disputes is repeatedly expressed by patient associations. Here however RTP differs in explaining that the number of disputes between insurance companies and policyholders is small, approximately 150 per year. It is not in anybody's interest for the number of cases to increase dramatically, in the association's opinion, which might be the consequence of a much enhanced legal protection. One idea the association has put forward is that the individual policyholder ought to be able to purchase a higher degree of legal protection with a higher premium.

Another view expressed by some of the patient associations is that the claimant ought to have the right to have the final settlement of a road accident injury constantly reviewed. RTP is doubtful about this, however, because the association suspects that the premiums would then become far too high. RTP has been able to ascertain that knowledge of how the insurance system works is poor among the general public and that expectations with regard to the indemnity to be provided from the motor insurance are often unrealistic.

Better supervision of legal experts

Several patient associations discuss the legal proceedings that sometimes begin when policyholders and insurers do not agree. It is vital that the legal advisers who undertake to represent the policyholder act correctly and efficiently. But it is difficult to be sure in advance that the legal representative will work with the policyholder's total situation in mind. Litigation is sometimes protracted and may become costly. Better supervision of legal experts working on whiplash-related cases is therefore desirable, say the associations.

Health service attitudes

As regards treatment and care, all patient associations state that knowledge of whiplash-related conditions in the health services needs to be improved. "The most important thing is to be seen and believed", is a repeated demand of the patient associations. Several of them consider that the level of knowledge and the degree of interest shown by the Swedish health services is poor, not only with regard to whiplash-related injuries but also in general to the care of people who risk suffering a permanent disability. The area between acute and chronic complaints has been poorly researched and there are no procedures for monitoring the injured person until it is too late.

Some associations claim that when there is a risk of the injury becoming chronic, doctors and other nursing staff must be confident enough to tell the patients this. Other associations, as already stated, would like to see the concept of "chronic symptoms" treated with the greatest care. At the same time the associations believe that the patient needs to be stiffened in his or her resolve to deal with the condition, both in the acute stage and later. Several of the associations state that in practice Swedish health services put their patients in the victim role.

Road safety

Whiplash-related injuries attract little notice by compared with other road accident injuries in the context of road safety work, say the associations. Advertising, information campaigns and national road safety campaigns focus on Vision Zero with regard to fatalities, and whiplash-related injuries risk being overlooked in the context of this target. Here all those involved in road safety issues in Sweden have to make more conscious efforts to improve safety with regard to so-called minor injuries in road accidents, say the associations. Certain suggestions as to how those injured might themselves be involved in such work on a local level, by giving information on their own accident, have

also been received by the Whiplash Commission. Several of the associations have themselves been involved in earlier initiatives in this direction.

Discussion

This chapter has allowed those suffering a whiplash-related injury to be heard – both as private individuals and through the eight associations and organizations that represent people with whiplash injuries today.

A picture emerges of a condition – whiplash-associated disorder – which is characterized by an indefinite diagnosis, diffuse treatment methods, frustration and perhaps rage in both the person suffering an accident and his or her relatives. People who have suffered such an injury may feel that they are not believed or, as they see it, that they are not taken seriously. This is partly because the injury mechanisms are so unclear that the injury cannot be diagnosed from objective findings, and that research has shown that a vast majority make a full recovery without medical treatment. But it may also be connected with the wish of the sufferer for there to be a biological or mechanical explanation – "something that is broken".

Long-term problems following a road accident with whiplash impact resemble other diffuse pain conditions but to the person injured in a road accident there is a perception of the trauma, the crash, as a precondition of the experience of illness. Even if the symptoms have come and gone, or developed over time into something different from what they originally were, the road accident victim feels that there is a definite starting point: "a before and an after". The hope is then that something can be "mended" and also that it will not be necessary to prove one's illness to all and sundry. Encountering doctors and nursing staff who discuss diffuse pain problems, chronic complaints and rehabilitation where psychological components account for an appreciable part may reinforce the feeling that the injury is not acknowledged.

The sufferer has to assert his or her injury not only to the health service but also to the national insurance and private insurance systems. Everybody in Sweden who suffers chronic pain problems that affect work capacity has to comply with Social Insurance Agency rules and procedures, but people injured in a road accident also have to discuss their symptoms with the insurance company. Perhaps it is not so surprising that for many people life seems in the end to be concerned with one question: proving that one is as ill as possible.

Patient associations and organizations for the disabled have to some extent differing aims in their activities, but repeated contact with those representing people with whiplash-related injuries in Sweden has given the Whiplash

Commission a relatively coherent picture of the problems experienced by members. The concern is to obtain better care and rehabilitation, to clarify the division of responsibility between different bodies, to respect the injured person as an active party in the recovery and rehabilitation process and to increase control of the professional groups – medical and legal advisers – who in different ways influence the life and conditions of the injured person.

Notes

21 Svenaeus, *Sjukdomens mening* (Stockholm 2003).
22 Svenaeus, p. 34.
23 Lise Ehlers, *Ont i livet* (Smedjebacken/Lidingö 2000), p. 29.
24 Svenaeus, p. 74 ff.
25 Ehlers, p. 52-54. See also the historian of ideas Roger Qvarsell: "When life seems to be going nowhere, illness may be the least bad and least painful alternative. And society rewards the invalid in different ways by providing a guaranteed sustenance and sympathy. Entering into an invalid role may be easier than tackling problems at work or in one's marriage." from "Om nyttan av att vara sjuk" in Hälsa och existentiella frågor. Synsätt på hälsa, ohälsa och livsfrågor, FRN report 95:8 (Stockholm 1995).

4. COSTS TO SOCIETY

Summary

The whiplash-related injuries that occur this year will cost Sweden a total of more than SEK 4 billion, which is equivalent to SEK 1 000 per car throughout the country. The overwhelming proportion of these costs take the form of compensation for loss of income, as a result of incapacity for work. Whiplash-related injuries cost the society three times as much as other back and neck problems, and the whole of this additional cost can be accounted for by the high amount of compensation for loss of income. Both the individuals suffering whiplash-associated disorders and society as a whole would benefit greatly if more people with whiplash-related symptoms returned to work.

Introduction

How many people suffer from whiplash-associated disorders in Sweden, and what is the cost to the society? How do the costs of this type of injury compare with those for other back and neck problems? To answer these questions the Whiplash Commission has asked Marian Radetzki, Emeritus Professor of Economics, to examine the social cost of whiplash-related injuries in Sweden today. The study is reproduced in full in Appendix 9 of this report.

Costs to society

During the 1990s all the major insurance companies reported a rise in the number of whiplash-related road injury claims. Both Länsförsäkringar and Folksam, who each insure roughly a quarter of Swedish car owners, have estimated that the number of such cases has increased by at least 50% since the mid-1990s. Furthermore, the expenditure of the insurance companies represents only a part of the total cost to society. Medical care, rehabilitation, individual costs, payments of compensation for loss of income by employers and the national insurance system – all this has to be taken into account when assessing what whiplash-related symptoms cost Sweden.

Calculation of cost to society

It is difficult to calculate the total cost of sickness. For one thing, there are many different types of expenses to be included in the calculation, and there are objections to all the methods that have been devised for balancing the various factors. Moreover it is difficult to obtain fully comprehensive statistics. For example, the costs of medical care for a diagnosis such as "whiplash-related injury" are very different from those for "broken leg" – the person injured often spends no time at all in hospital in the acute stage, but may later be forced to spend a lot of time on various forms of rehabilitation. Depending on how medical care statistics are collected, "whiplash-related injuries" may then appear to cost society very small amounts or very large amounts.

Here, what is known as the "cost-of-illness" method has been used to calculate how much society pays for whiplash-related injuries. This is a method that has been generally accepted by economists since the 1980s for calculating the cost of illness. The method may focus either on the total cost to society for the illness/injury over one year, or be based on what all the people who fall ill/are injured in a particular year will eventually cost society in total, i.e. also in the future. The two ways of calculating have different advantages. The first method gives the sum concerned, and all the sick and injured who make use of medical services, insurance schemes and so on are included. But the method is static. It gives no indication of whether the costs will rise or fall. On the other hand this can be calculated with the aid of the second method. Here the *numbers* of sick and injured will be smaller, as only new cases in one particular year are included. But *the costs* of their illness or injury are calculated for life, thus giving an estimate of how social costs may rise – or fall.

Both calculation methods are included in the study in order to show what whiplash-related injuries cost society. The intention is to show what the injuries cost Sweden today, but also to capture the special aspect of whiplash-related symptoms: the number of sufferers seems to rise from year to year, and many of those suffering long-term problems are relatively young, which will have serious implications from the point of view of cost to society.

Cost components

In the cost-of-illness method, the costs are divided into three parts. There are *direct costs,* by which is meant medical care costs(diagnosis, treatment, medication and rehabilitation), direct cover by insurance companies of costs for legal aid to the policyholder etc. *Indirect costs* are also calculated. These include the costs that result from incapacity for work and disability: payment of compensation for sickness and loss of income by the Social Insurance

Agency and insurance companies, and also the cost to employers of reduced output due to sick leave and additional costs for replacement labour. Finally, *psychosocial costs* are computed: this is an attempt to include the cost to the individual who may lose his or her livelihood and must then change lifestyle. This last component is very difficult to calculate and in many studies is omitted. But there are certain definite costs in connection with whiplash-related injuries that fall into this category: insurance company payments for "pain and suffering" and for "disadvantage and disability". Thus, the calculation here contains some of the psychosocial costs, even if the total psychosocial cost is presumably substantially higher.

Basis for the calculations

It is difficult to collect reliable material as a basis for a computation of what whiplash-related injuries cost. The idea of preparing an entirely new type of register to include all the costs to society of this sort of injury was unrealistic. Instead, the statistical information already available in various places has been used. These figures have been collected using different selection criteria. The calculation therefore includes material which was not originally collected for the purpose of depicting the costs of whiplash-related injuries.

For example, the regional or locally based material that has been used has been extrapolated to give a picture of the situation in Sweden as a whole. There may be problems in this, because both the frequency of whiplash-related injuries and the cost of, for example, sick leave differ between different parts of the country.

One recurrent problem is that "whiplash-related injuries" is a relatively new diagnosis, and a vague one. This causes various difficulties when assessing the cost to society. During the 1990s the whiplash diagnosis was used on many sick notes in connection with neck problems – and these need not necessarily have resulted from a road accident. The diagnosis – for example from particular medical services districts – sometimes shows systematic errors that are reproduced in the statistics, and the number of whiplash-related cases originating from road accidents is really smaller than the number reported. In the case of statistics from, for example, the National Social Insurance Board (now the Social Insurance Agency), the problem may be the opposite one: the diagnosis "whiplash-related injury" is not shown separately but under headings relating to neck and back problems more generally. Here the whiplash-related cases may disappear completely, and the proportion represented by whiplash-related back problems has to be inferred from other statistics. But this cost

breakdown becomes more difficult when whiplash-related symptoms and other injuries or illnesses occur together – which is relatively common.

To summarize, it has to be emphasized that calculations of the costs of whiplash-related injuries to society have not arrived at any reliable figure. The calculations, both of costs to society over one year and of total current and future costs of whiplash-related injuries occurring in a particular year, are an approximate, but qualified, estimate based on the statistical information available. At present, however, it is not possible to obtain more reliable statistics.

Earlier studies

In Sweden a number of cost-of-illness studies have been carried out in recent years in an effort to calculate the cost of various illnesses, such as rheumatic disease, heart disease and multiple sclerosis (MS). In the mid-1990s the National Board of Health and Welfare attempted to assess the cost to society of all illnesses in a study in which 17 groups of illnesses were included, among them being "diseases of the musculoskeletal system and connective tissues" – a group in which whiplash-associated disorders and symptoms are included. What is interesting about this group is that the cost breakdown between different categories differs from that in other groups of illnesses. The statistical material, dating from the early 1990s, shows that more than 90% of the cost to society consists of compensation for loss of income, whereas the cost of treatment and medication is relatively small. It is therefore reasonable to assume that whiplash-related injuries show this cost breakdown – i.e. that they cost society relatively little for medical care and rehabilitation, but a great deal more in the form of indirect costs in connection with incapacity for work and disability.

The Swedish Council for Technological Assessment in Health Care (SBU), published a study of neck and back disease in 2000, in which a cost-of-illness calculation was included. Here, too, it is the cost of income compensation and loss of production that predominates. The total cost of care and treatment of people with neck and back problems (of which whiplash-related injuries form a part) was estimated in 1995 at SEK 2.4 billion, whereas the *indirect costs* were estimated at SEK 16.8 billion. The total cost of back and neck problems in the Swedish population in 1995 would thus have been SEK 19.2 billion.

There are two earlier studies which concentrate specifically on whiplash-related injuries and which have tried to calculate their cost. Ulf Björnstig at the University of Umeå studied the number of new whiplash-related injuries in Umeå in 1990-1991. His material is comparatively small – 141 cases – but he nevertheless produced some interesting figures with regard to the expected

cost of sick leave and sickness benefit for this group. A total of 63 people reported sick for various lengths of time. Five years later, no fewer than 9 people were receiving benefit for permanent incapacity for work (some of them half-time or part-time), and another 7 were still on sick leave and would most likely also receive sickness benefit for permanent incapacity for work. The average age of the *total of 16 people* who were already drawing or would draw permanent sickness benefit was low, 41 years. This means that the total cost of these benefits to society would eventually be high.

Åke Nygren at the Karolinska Institute has also analysed the cost of whiplash-related injuries in a study carried out in 2000. On the basis of figures from 1997 Nygren concludes that the increment of people with chronic whiplash-associated disorders is approximately 500 per year, and that between 300 and 500 people have a medical disability of 10% or more confirmed each year. Even if these figures do not automatically agree with the number of people who have a confirmed incapacity for work with consequent costs to society, they nevertheless give an indication of the size of the problem.

Factual basis of this study

Whiplash-related injuries affect many different parts of the community, which is also reflected in the statistical material used in the study presented here.

The Road Traffic Injuries Commission keeps statistics of whiplash-related cases where either the level of disability is over 10% or the injured person and his or her insurance company are in dispute about whether there is medical disability or not. Most cases with a degree of disability lower than 10% are therefore not included in the material. The National Social Insurance Board (now the Social Insurance Agency) has kept statistics of newly granted temporary disability pensions and the number of pensioners with neck complaints – but with broader diagnostic categories than "whiplash-related injuries". The National Board of Health and Welfare maintains a register of patients showing the number of occasions of residential care, but here too whiplash-related injuries account for a portion that has to be estimated. The Federation of County Councils also has regional statistics showing cases of residential care. The Skåne Region has kept more detailed statistics and can therefore show both how many people received in-patient and how many received out-patient care with a diagnosis of "whiplash-related injury". The region has shown in a health economics survey that the recording of whiplash-related diagnoses is very uncertain. Stockholm County Council has also contributed figures.

Insurance company statistics are also important in calculations of the costs of whiplash-related injuries to society. As many as 30 000 people per year inform their insurance company that they are suffering neck problems in connection with a road accident – a figure far in excess of those seeking out-patient or in-patient treatment for their complaints. In other words, whiplash-related injuries account for more than half of the injuries reported from road accidents. However it is probable that many of these complaints are registered "to be on the safe side", as most of the neck problems reported disappear after a few weeks. It is likely that media focus on what is referred to as the "72-hour rule" – that injuries ought to produce symptoms within a maximum of three days after the accident – explains many of the reported cases. The statistics furnished by the insurance companies differ with regard to selection methods and period of time: *Länsförsäkringar* (with whom about 25% of Swedes have their motor insurance) have estimated what all cases of whiplash-associated disorders reported in 1995–2000 will cost, including costs in the future. Folksam (accounting for about 23% of motor insurance) has given information concerning the whiplash-related cases resulting in some form of disability benefit and finally settled during the period 1996–2003. And *Trygg-Hansa* (representing 16% of the motor insurance market) has given information concerning the whiplash-related cases reported in 2002 and the current and future costs that the company estimates it will incur for these injuries.

There have also been figures that have been impossible to use: the National Road Administration STRADA project for road accident injury data which has not been reported for reasons of confidentiality, and statistics generated by an analysis of treatment care costs for injuries in road accidents occurring in Gothenburg in 1990, where the material contains such a high dropout that it has not been regarded as reliable.

Provisional health economics calculation

Most of the problems reported cost small amounts

The statistics are not entirely unambiguous with regard to the number of people who report neck trouble in connection with road accidents each year. Swedish Insurance Federation statistics based on estimates by the different insurance companies show just over 30 000 cases reported in 2002, whereas Åke Nygren's estimates from 1997 – based in part on insurance company figures – indicate 21 000 people per year. The estimates of the three insurance companies that have supplied figures for this survey fall somewhere between these two figures, if adjusted to apply for the whole of the country.

However, there is agreement that the great majority – approaching 90% – of those who report symptoms recover fully within a few weeks. As stated earlier in this report, only a small proportion of all those experiencing neck pain in connection with a road accident have prolonged difficulty. This fact deserves repeating, as the general perception appears to be different.

The cost of these transient neck complaints is relatively small. Average payments by the insurance companies for whiplash-associated disorders that did not lead to disability came to just over SEK 2 000 in the late 1990s, and for many of those reporting neck pain the symptoms are not of a nature that leads to insurance benefits at all. Åke Nygren's study points out that only half of those who experience neck pain after a car accident seek some form of medical care.

Cost of disability and long-term incapacity for work

As stated earlier, the greater part of the cost of whiplash-related injuries is accounted for by the cost of loss of output – indirect costs – occurring when there is long-term incapacity for work, and particularly in cases where the incapacity for work is permanent and leads to disability. When costs to society are calculated it is therefore necessary to focus on the annual number of new cases of people with permanent incapacity for work, and on how many such people there already are in the community. Other costs connected with whiplash-related injuries are relatively small, and can therefore be treated more superficially.

As there is no clear information concerning the number of people who now have confirmed incapacity for work as a result of whiplash-related injuries and as it is difficult to make correct estimates of the number of new cases each year, the calculations presented here are based on a combination of different statistics, and on estimates and assumptions. It is therefore important to remember that the figures below have to be seen as informed estimates.

A combination of the statistical material supplied by the National Board of Health and Welfare and the National Social Insurance Board (now the Social Insurance Agency) and a calculation of the number of whiplash-related patients from the larger group to which the diagnosis belongs leads to the following estimate: the cost in one year of the whiplash-related cases that have been confirmed is approximately **SEK 1.5 billion**, while calculations looking forward – i.e. what new whiplash-related injuries arising in a particular year will cost society by the time the victim is pensioned – amount to **SEK 4.6 billion**.

If this calculation is compared with the other material, Nygren's study gives a substantially lower sum – but his figures derive from an earlier period than

the results obtained from the material of the Board of Health and Welfare and the Social Insurance Board. The Road Traffic Injuries Commission also quotes a lower figure, which might be explained by the fact that their statistics include only cases of severe disability and/or cases where there have been disputes between policyholder and insurance company. Björnstig's study from Umeå, on the other hand, corrected to give costs for the whole of Sweden, gives a considerably *higher* figure than the National Social Insurance Board does, which may be partly because the patients in his material were younger than those in the Board's, and partly because of the reflection of regional differences in Björnstig's study. Other statistics from the National Social Insurance Board show that costs of sick leave and sickness benefit are higher in Norrland (which includes Umeå) than in other parts of Sweden.

A calculation based on the figures given by the insurance companies gives differing sums in total, due to differences in the material and in the nature of the statistics. Länsförsäkringar's figures, converted and corrected to apply to the whole of Sweden, show a current and future cost for one year's whiplash-related injuries of SEK 5 billion, Folksam's SEK 1.2 billion and Trygg-Hansa's SEK 2 billion, differences which can probably be explained by differences in the methods used to collect the figures. The material provided by Länsförsäkringar is the most relevant to this survey, and it confirms the calculations based on the material from the National Board of Health and Welfare and the National Social Insurance Board.

Cost of sick leave

Compared with the cost of a permanent loss of work capacity a cost-of-illness calculation should also include the indirect costs arising from shorter periods of sick leave. This supplement is probably of limited significance in the case of whiplash-related injuries. Nygren agrees that most of those who take sick leave are away from work only for a few days, and Björnstig's calculations support this impression, because the majority of the loss of income that he takes into account comes from those whose symptoms persist. A conversion and correction of Björnstig's material to relate to the whole of Sweden would give the following figures: those people who suffer a whiplash-related injury in any one year will, in total, cost society **SEK 50 million**, while the costs of all those injured amount for one year to a total of **SEK 100 million**.

Medical care costs

The Federation of County Councils has calculated how much those people who have received in-patient treatment for a whiplash-related injury have

cost society. Corrected for the whole of Sweden, this treatment cost society no more than SEK 24 million in 2001. For purposes of comparison we can use the figures from the Skåne Region that relate to the costs for those who have received both in-patient and out-patient treatment (for example, by first being admitted to hospital and then visiting the health centre – or vice versa), and then obtain a lower figure, whereas Stockholm County Council's material adds figures for out-patient care alone, which after correction indicate that these are three times as high as those for in-patient care.

The figures for the cost of medical care for whiplash-related injury have been criticized by a few researchers, who consider that this type of injury actually costs society little for in-patient care. It is rare for patients with whiplash-related injuries alone to be admitted to hospital at all. If this criticism is taken into account, and at the same time the corrected figures for treatment costs are adjusted, it becomes reasonable to assume that the cost to society of out-patient and in-patient care of people suffering whiplash-related injuries in one particular year will be **SEK 50 million**, and that the greater part of this will arise in the year of the actual injury. If we consider what all whiplash-related injuries cost society in one year we arrive at double this figure, i.e. **SEK 100 million**.

Psychosocial costs

As stated above, it is difficult to calculate the third factor in a cost-of-illness study, namely the psychosocial cost. In this study these costs have been taken to be represented by the sums paid by insurance companies for "pain and suffering" – which relates to discomfort caused by an injury in the short term – and for "disfigurement and disadvantage" – a sort of permanent continuation of "pain and suffering". One problem here is that the three insurance companies supplying statistics differ in their information. Länsförsäkringar sees between 7% and 9% of the total cost of whiplash-related injuries as falling into this category. Folksam reports that "pain and suffering" accounts for 2–3% of the same costs but that "disfigurement and disadvantage" accounts for between 29% and 61% of the costs. Here it should be emphasized that the figures supplied by Folksam relate to whiplash-related injuries that have resulted in some form of disability being confirmed, whereas Länsförsäkringar's material covers all cases of whiplash-related injury that have been reported (i.e. including those that do not result in permanent disability). It will therefore become reasonable here to use Länsförsäkringar's figures, which, corrected to apply to the whole of Sweden, would be SEK 92 million over a year.[26]

Comparison with other costs

It is important to begin by repeating that the calculations of the cost to society of whiplash-related injuries are affected by the fact that the statistical material is of varying character and quality. The uncertainty in the data on which the study is based is evident, and the sums quoted have to be regarded as the centre of a range that extends both upwards and downwards. This does not render a calculation of this kind valueless. A well-founded opinion is delivered here of the magnitude of the costs to society of whiplash-related injuries, whether these costs can be expected to rise or to fall, and which parts of the social economy are most affected.

The calculations are presented using the two methods referred to in the preceding analysis.

Current and future costs to society of injuries sustained in the course of one year in the early 2000s:

Permanent loss of production	SEK	4000 million
Temporary loss of production	SEK	50 million
Costs of medical care	SEK	50 million
Psychosocial costs	SEK	100 million
TOTAL	**SEK**	**4200 million**

Costs to society in one year of all existing whiplash-related injuries in the early 2000s:

Permanent loss of production	SEK	1500 million
Temporary loss of production	SEK	100 million
Costs of medical care	SEK	100 million
Psychosocial costs	SEK	100 million
TOTAL	**SEK**	**1800 million**

As the figures show, the future cost of whiplash-related injuries occurring in one year – more than SEK 4 billion – is considerably greater than the total cost to society per year that the injuries cost today, which is barely SEK 2 billion. It is reasonable to assume that today's figures include many years of injury costs from a time when whiplash-related injuries were less frequent than they are today. A number of old injuries that would today be classed as whiplash-

related may have been given a different name. The big difference between the two figures underlines the fact that the cost of whiplash-related injuries is rising and rising significantly.

If these figures are compared with the cost-of-illness analysis carried out by the Swedish Council on Technological Assessment in Health Care (SBU) in 2000, interesting differences appear. As regards the number affected, and the cost to society in one year, whiplash-associated disorders represent just under 10% of the part of the population who are suffering from various kinds of back and neck problems. As regards treatment costs, people with whiplash-associated disorders account for barely 5% of total costs to society. So far the figures obtained are unremarkable. But when we look at the total cost of one year's new injuries in terms of loss of production – in other words projected also into the future – we see that whiplash-related injuries account for nearly 35% of the total cost to society. With the reservation that the calculations that have been made are estimates, and that there are differences in the method of computing loss of income between the SBU report and this study, this percentage is nonetheless remarkable. *Despite the fact that people with whiplash-associated disorders do not account in number for more than 10% of the number suffering from neck and back problems in Sweden, they are expected to cost society three times as much as those suffering from other back trouble*. And the overwhelming portion of these costs to society is made up of loss of income as a result of permanent incapacity for work.

Discussion

The whiplash-related injuries that occur today will in total cost Sweden more than SEK 4 billion. In recent years growing numbers of people have reported a whiplash-related injury to their insurance companies. By far the greater part of these costs is for compensation for loss of income resulting from incapacity for work. Whiplash-related injuries cost society three times as much as other back and neck problems, and the whole of this additional cost can be explained by the high compensation for loss of income.

There are several possible reasons for the fact that whiplash-related injuries cause such loss of income. Those injured are relatively young compared with other back and neck patients. Early medical attention was not always provided in the Sweden of the 1990s. The benefit systems have not offered any incentive for a quick return to work. And rehabilitation of people with long-term whiplash-associated disorders has so far proved to be very difficult – especially when it comes to restoring work capacity. We will return to a

discussion of the opportunities for rehabilitation in Chapters 7 and 8 of the report.

But whatever the causes, a cost-of-illness calculation shows that whiplash-related injuries are a type of neck and back complaint that is very costly to society. A sum of more than SEK 4 billion is equivalent to a cost of SEK 1 000 per car in Sweden. The fact that one type of injury burdens the benefit system so heavily has significant implications for motor insurance, affecting all policyholders in Sweden. Road accident injuries also cost Swedish employers large sums, especially when they lead to long periods of full-time sick leave. The number of people receiving sickness benefit from the national insurance scheme after road accidents is increasing all the time, which places a heavier burden on the country's economy for every year that passes.

If just half of the people who have today been declared unfit for work due to whiplash-associated disorders could return to work, the country would save billions of kronor every year – resources which could be used for more effective care and rehabilitation. This would permit a more bearable existence for even more people with long-term whiplash-related symptoms.

Notes

26 There is an additional cost component shown by the insurance companies in their statistics that falls under the heading of "costs". Some of these costs may be included in the item "direct costs" in our analysis – lawyers' fees, home help and medication. However, it seems unreasonable for as much as 20–25 % of Länsförsäkringar's and 24–54 % of Folksam's total costs to be shown by this item. The conclusion is that certain costs, such as purchase of annuities, come under this item, although they should really be included as "indirect costs", in other words, as compensation for loss of income. These figures are not included under the item "indirect costs" in this cost-of-illness analysis.

5. WHIPLASH-RELATED INJURIES IN OTHER COUNTRIES

Summary

Whiplash-related injuries are not unique to Sweden. The number of whiplash-associated disorders rose in many western countries in the 1990s, and in many places they came to dominate road accident statistics. But there are big differences in the incidence of whiplash-related complaints in different parts of the world, and there is a difference between whether the injuries are transient or develop into a chronic problem. The density of traffic, the form of the statistics, and public awareness that whiplash-associated disorders may result from road accidents are often proposed as partial explanations of the difference in the frequency and character of such injuries. However one of the most important explanations offered is differences in compensation systems. The three neighbouring Nordic countries have systems resembling the Swedish one. In Finland, Norway and Denmark a quicker and simpler handling of whiplash-related road accident injuries has been considered one of the most important measures for reducing human suffering and the cost to society. Alongside more effective treatment and rehabilitation measures, the three countries have tried different forms of standardized compensation in motor insurance in order to achieve this end.

Introduction

Whiplash-related injuries are not unique to Sweden. Large parts of the western world have noted an increase in this type of road accident injury in recent decades, and the interest of researchers has grown; a search of the biggest medical databases today yields more than 2 000 hits on the term “whiplash”. The terms of reference of the Whiplash Commission include making use of other countries’ experience. This chapter therefore contains a look at the world around, with particular focus on Finland, Norway and Denmark, where traffic patterns, legislation and medical care systems resemble those in Sweden.

Varying number of whiplash-related injuries

Whiplash-related injuries account for the majority of road accident injuries reported in a number of countries today, and in most places the trend is towards an increase rather than the opposite. A recently published study in the UK stated that 85% of all reported road accident injuries today are whiplash-related. Financial compensation for whiplash-related injuries is calculated to be more than £3 billion per year.[27] In Canada whiplash-associated disorders over the last 15 years have made up between 60% and 75% of all reported road accident injuries, with certain regional variations. In the USA 13 million road accident injuries are reported each year, of which one million are whiplash-related, costing the US an estimated USD 29 billion annually.[28]

Elsewhere, on the other hand, the number of whiplash-related injuries has been low. In the two Lithuanian studies discussed in Chapter 3, the researchers could not find that people injured in road accidents suffered from long-term neck complaints to a greater extent than the population in general.[29] These studies have been quoted because they compared those injured in road accidents with a control group – which is very unusual with regard to studies of whiplash-related symptoms.[30] In Greece two other studies have shown that of those reporting neck complaints after a road accident, 91% recover after three weeks, and the remainder within three months.[31]

The great difference between the situation in Lithuania and Greece and that in, for example, the UK, has sometimes been explained in terms of differences in the design of the insurance system and the fact that the populations of those countries have been unaware that a road accident may lead to long-term whiplash-associated disorders.[32]

In particular it is the incidence of long-term complaints in connection with whiplash-related road accidents that has been questioned in national comparisons.[33] In Germany, for example, the period 1985–2005 saw a rapid rise in the number of short-term whiplash-associated disorders after road accidents; on the other hand the occurrence of long-term problems was rarer. Some researchers believe they have shown that the German public's knowledge of chronic whiplash-associated disorders is relatively small, for example, as compared recently with Canada.[34] Another explanation put forward is that the possibility of obtaining compensation for long-lasting complaints in the German insurance system has been small, whereas the possibility of compensation for acute symptoms has been so good that the German insurance system has been severly stained by whiplash-related cases. The expected recovery time in Germany after neck pain following a car accident is today 12 weeks.[35]

Several international comparisons of the incidence of whiplash-related injuries have been attempted, as different countries show such different accident figures. Explanations have been sought in differences in diagnostic criteria, insurance system design, traffic density and public knowledge of the occurrence of whiplash-associated disorders.

But comparison of the frequency of both acute and long-term whiplash-associated disorders in different countries remains difficult. It has been pointed out in several places in this report that Swedish statistics with regard to whiplash-related injuries in road accidents are very uncertain. The same applies to statistics in the rest of the world. For example, Norway's official road accident statistics a few years ago showed 6 000 people injured after collisions from the rear, whereas there were more than 42 000 claims to insurance companies. A consistent aspect of the picture is that official road accident statistics differ from the figures presented by the insurance companies – whiplash-associated disorders are not as visible in health service and police material as in claims to insurers.

Importance of the compensation system

One of the most important factors discussed in connection with the prognosis for whiplash-associated disorders is the design of the compensation system. A recent British study compared patients who had suffered different types of neck and back injuries in road accidents. Patients with whiplash-associated disorders of grades I–II, where no objective findings could be confirmed, were compared with patients who had suffered confirmed fracture of the neck (*cervical spine fracture)*, a more serious injury from a medical perspective. After just over three years the latter group had made an appreciably better recovery than the patients with whiplash-associated disorders who were still involved in a claim settlement process. The pain problems had diminished and the degree of perceived disability was lower. The British researchers conclude that the long-term complaints may be explained by the psychological strain that is entailed in being occupied with a claim process.[36] A current Swedish review of research into acute and long-term disorders queries however whether the compensation system does play a vital role in the prospects of recovery where there are long-term symptoms.[37] It may therefore be interesting to look more closely at one of the larger studies that have claimed such a connection in recent years.

The Saskatchewan example

In the Canadian state of Saskatchewan a group of researchers are of the opinion that the number of long-term whiplash-associated disorders declined when the state insurance system was modified. Saskatchewan's motor insurance had previously been based on the principle of personal liability. A small financial payment to all policyholders could here be supplemented with large payments for non-financial damage (for "pain and suffering" and "disadvantage and disability"), if the claimant could bring legal proceedings against the driver who had caused the accident. Following a rapid rise in the number of whiplash-related injuries reported from the mid-1980s onwards, the state introduced a new kind of motor insurance in 1995 that resembled the Swedish one. The question of blame became immaterial. The insurance company pays a larger sum in benefit more quickly, but the possibility of taking action against the party causing the accident has been greatly reduced.[38]

One difference between Sweden and Canada is that the Saskatchewan state insurance company is directly involved in treatment and rehabilitation. The company has medical experts who draw up a treatment plan in consultation with the treating doctors. The claimant who is unwilling to follow the rehabilitation plan may have less possibility of compensation. (A system that resembles Finland's, see below.)

The new system has radically changed the distribution of the cost to society of road accident injuries. Today 40% of insurance company payments go to rehabilitation, 36% to compensation for loss of income and the remaining 24% to payment for non-financial damage. Under the old system only 8% went on rehabilitation, 22% on payment for loss of income, and no less than 70% of insurance payments were for non-financial damage. The frequency of legal proceedings has decreased, as has the total cost to society. Under the earlier system, whiplash-related injuries represented the overwhelming proportion of reported road accident injuries, but under the new system the number of whiplash-related cases has been reduced by 28%. Nowadays 60% of reported road accident injuries in Saskatchewan are whiplash-related and there has been no increase over the last nine years.[39]

However, the reform came in for a good deal of criticism, and after a few years the old system was reintroduced as a parallel system; policyholders may now choose which kind of motor insurance they want. Of the state's population of one million, only 4 700 had chosen the old system by the summer of 2004.

What is interesting here is that, at the same time, the number of people with long-term symptoms resulting from whiplash-related injuries has decreased.

By means of a medical follow-up of the several thousand reported claims over a period of two years, the Canadian researchers could show that the state of health of those injured improved when motor insurance was made more efficient. Policyholders had used the more generous payments under the new system for more intensive treatment at an earlier stage. As they had not become involved in a lengthy claims settlement process they were able to focus on their recovery. The Canadian researchers therefore considered that they had succeeded in establishing that the compensation system has an influence on health.[40]

However, it is difficult to translate the Canadian experience into a Swedish one, partly because our care and compensation system is constructed differently, and because we do not have state motor insurance.[41] Similarly we cannot discuss conditions in the USA or Greece without reservation if we want to use the foreign examples to consider how it might be possible to change the situation in Sweden. For this reason, it is conditions in Finland, Norway and Denmark that have most to offer when comparison is made with other countries. Here, traffic patterns are similar to those in Sweden, our welfare systems and health services are constructed in a similar fashion and the motor insurance of the Nordic countries is based on principles of tort law.

Finland

In Finland the number of whiplash-related injuries has been proportionately smaller than in Norway, Sweden and Denmark. Compensation for injury or death has been paid for some 14 000 cases per year in Finland, but there is no information on how large a proportion of these are whiplash-related injuries. The number of road accident deaths per year is around 400 and an almost equal number of people sustain permanent injury, i.e. some form of medical disability.

However, two studies based on the figures of the Finnish insurance companies have shown that of a number of people reporting neck problems after road accidents in Finland in 1998, more than 10% stated that they still had symptoms one year after the injury, a figure which when checked three years later turned out not to have fallen but rather to have risen somewhat. As many as between 10% and 17% were receiving “some form of medical care” for their symptoms. On the other hand, the number on sick leave was small, only 1.5% one year after the accident and even fewer thereafter. The researchers who had carried out this study considered that the figures demonstrated a big discrepancy between how patients and doctors in Finland assessed the state

of health.[42] In a later study the same material was used to determine whether sociodemographic factors played any part. Here the researchers discovered that low level of education and high age (over 60) were the most important factors predicting the risk of long-term problems. Other factors lacked statistical significance.[43]

Traffic damages law in Finland

Finland has a system of rules agreeing in all essentials with the Swedish system with regard to determination of compensation on tort law grounds in the event of injury. However there is a fundamental difference in that motor insurance in Finland is primary in relation to the compensation from public funds, i.e. the claimant receives *all* his or her compensation for injury and loss of income from the motor insurance. This fact has had certain consequences with regard to the relationship between the individual, the general social security system and private motor insurers.

Standard rates are used in claims settlement in Finland in a similar way to that of Sweden, i.e. for "pain and suffering" and for "disfigurement and disadvantage" (disability). However the standard scale is not so detailed as in Sweden, and no payment is made at all unless the injury is considered "serious", i.e. in excess of 15% disability. The Finnish equivalent of the Road Traffic Injuries Commission issues an annual table of "standards and instructions", for guidance in the assessment of road accident injuries.

Under the Finnish system compensation is reduced or not awarded at all when a person has been drunk at the wheel, or travelled as a passenger with a drunken driver or when use of the vehicle has been "unauthorized". Compared with its Nordic neighbours, Finland has been more restrictive in granting long periods of sick leave and sickness benefit, which means that there is less likelihood of obtaining compensation for long-term symptoms after a road accident.

Rehabilitation supervised by the insurance companies

As from 1 January 2005 costs of acute treatment are to be covered by the motor insurance, which is invoiced for these treatment costs by the health services. In addition, Finnish motor insurers have been given greater power to select and procure occupational rehabilitation services for those injured in road accidents. It is hoped that this will lead to more effective treatment. The person injured has little scope for choosing other forms of treatment than the rehabilitation to which he or she is directed, even if the law explicitly states that "patients injured in road accidents retain the right to the care they

need". This means that the staff of the insurance companies and their medical experts are those with whom road accident patients have most contact.

Finnish insurance companies have a joint centre for investigation of the rehabilitative needs of people injured in road accidents, *Försäkringsbranschens Rehabilitering* [Insurance Industry Rehabilitation]. The centre states that its mission is "in consultation with the client, the insurance company/occupational pensions institution, the employer and different services to draw up a rehabilitation programme for the client. The aim is to improve the client's functioning and/or work capacity and to help the client back into working life in cases where this is possible."[44] The investigations are advisory, but in practice they play a large part in the determination of the rehabilitation strategy for the individual concerned. One reason for the introduction of the new law may be that the cost of rehabilitation under motor insurance policies has risen steadily from the mid-1990s, while the cost of compensation for loss of income has remained constant.[45]

Norway

Norway was the Nordic country that reported the most rapid rise in the number of whiplash-related injuries in the 1990s, and Norwegian experts reported in several studies an unusually high number of people with some form of chronic problem, almost 58%.[46] This led *Social- och helsedepartementet* [the Norwegian Ministry of Health and Social Affairs] to commission a report on diagnostic and assessment criteria with regard to *nakkeslengskader* [whiplash injuries], which was submitted in 2000. The report stated that the problem lay in WAD injuries of grades I and II under the Quebec classification, as these do not result in objective findings. The diagnostic group stated that the symptoms ought to appear at the time of the accident but queried the occurrence of chronic symptoms, as it is difficult to establish a medical link between these and the road accident. "We therefore still have an incomplete explanation of this state of affairs."[47] However, the report expressed the view that any initiative intended to limit the occurrence of chronic complaints would be valuable.

Traffic damages law in Norway

Standard compensation and standardized methods of calculation are used more extensively in Norway than in Sweden. In the case of compensation for *loss of income* the payment is a lump sum. For *disfigurement and disadvantage,* compensation is determined by the degree of disability and the age of the injured person. The degree of disability is decided with the aid of tables prepared

by *Folketrygden* (the Norwegian equivalent of the Sweden's Social Insurance Agency), and these tables are also used for national work injury insurance assessments. Norway has a number of specialist doctors who pronounce on the degree of disability an injury may be considered to have caused (these doctors are not attached to individual insurance companies). Even if the doctors' opinions are advisory, they are usually accepted in practice both by insurance companies and by claimants and their representatives. There is no equivalent to the Finnish and Swedish road traffic injuries commissions in Norway.

Although, the basic assumptions resemble Swedish conditions in several ways, the Norwegian disability tables are constructed somewhat differently, making them more complex to apply than the Swedish ones.[48] Like Finland, Norway has done away with compensation for medical disability not in excess of 15%.

Active injury treatment

In the 1990s a number of Norwegian insurance companies introduced a system for making quick contact with people who reported neck problems after road accidents. As soon as a notification is received, the insurance company offers an appointment with a specialist with whom the company has a special agreement. The injured person will be given an appointment within a fortnight, after which the doctor will make a diagnosis and a prognosis. The Gjensidige insurance company has stipulated in its agreement with the doctor that the first examination should take about 60 minutes – a good deal longer than is normal in primary care. This time is also used to give concrete advice on how the injured person ought to act to avoid aggravating and prolonging the symptoms. The Norwegian doctors attached to the insurance companies generally take the line that a quick return to work is a way of recovering.

In case the doctor considers that there is a need for further rehabilitative measures, the insurance companies have entered into agreements with a number of treatment centres. However, Gjensidige is of the opinion that the quick action and the focus on patient self-activation, has reduced the need for longer and more intensive rehabilitation. The sums paid out by the company for road accident injuries have fallen since the late 1990s. The cases are dealt with more rapidly – the average period having fallen from 3 years to 2 – but the number of court cases and appeals has not risen.

The Ullevål project

Nakkeslengsprojektet [Whiplash Project] at Ullevål Hospital was the first Norwegian health service project to focus directly on the problem of whiplash-related injuries. A method of ensuring early attention was developed based on

principles of accurate documentation, identification of patients with a risk of long-term symptoms, and information to the patient. One of the assumptions behind the Ullevål Project was that the fear of long-term problems was one of the major risk factors predicting the development of chronic symptoms. Easily accessible informational material was distributed to Norwegian nursing staff. The project has inspired several of the treatment programmes that have been developed by Swedish county councils.

Denmark

In Denmark the number of whiplash-related injuries relative to the number of road accident injuries reported has been lower than in Sweden and Norway. There has been some increase in recent years. A few years ago Danish road accident statistics included an estimate of between 5 000 and 10 000 people suffering initial whiplash-associated disorders each year, but it was emphasized that the figures were unreliable. At the same time the number of road accidents reported to the police has decreased. The *Danish Sundhedsstyrelse* [National Board of Health] estimates that only 30% of all actual road accidents are reported to the police, but that more than 5 000 people seek medical help each year for neck pain following a road accident. Of these, between 5% and 10% will probably suffer some form of lasting problem. The Danish insurance information service calculated in 2000 that whiplash-related injuries were costing insurance companies DKK 500 million per year, a figure that was then thought to be rising.

Traffic damages law in Denmark

Like the other Nordic countries, Denmark's road accident legislation is based on tort law. Compensation is paid for the equivalents of pain and suffering and of disfigurement and disadvantage according to a standard that structurally agrees with that in Sweden, but in Denmark no compensation is paid if the degree of disability is below 5%. In one important area, however, Denmark has for some years differed from the other Nordic countries with regard to personal injury compensation, and that is in respect of *compensation for loss of income*. In Denmark this type of loss, too, is indemnified in accordance with a strictly standardized system. No compensation at all is paid for loss of income of less than 15% of the annual income. (Special standard scales apply to children aged under 18.)

Arbejdsskadestyrelsen [National Board of Industrial Injury] has an important role in the settlement of injury claims in Denmark. A provision of the

Danish tort law allows both the negligent party and the injured party to obtain a statement from *Arbejdsskadestyrelsen* concerning the occupational degree of disability. This opinion is only advisory and hence not binding on the parties, but in practice the courts seldom go against it. There is no equivalent in Denmark of the Swedish and Finnish road traffic injuries commissions.

The Århus Project

In 2000 the Danish insurance industry invested more than DKK 8 million in a major project for treating and rehabilitating whiplash-related injuries. No fewer than 1 600 people were included in the study, which tested three relatively simple methods of treatment for people with acute whiplash-associated disorders. The project is intended in this way to be able to establish which recommendations primary care services ought to make to people who report neck problems after road accidents. The study will be unique of its kind in that the researchers have been able to use such a large patient material; a final report is expected in mid-2005.[49]

Discussion

There are major differences in the incidence of whiplash-associated disorders in different parts of the world, and also in whether the injuries are transient or lead to some form of chronic problem. These differences are often attributed to differences in the compensation systems. The study from the Canadian state of Saskatchewan shows that the compensation system is also of relevance to the medical recovery of the people concerned.

Comparison with Finland, Norway and Denmark – all of which have traffic injury legislation resembling our own – reveals that within the framework of similar compensation and care systems countries can to some extent choose different ways of managing road accident injuries. Although the Nordic road accident legislation is based on tort law principles, a start has to varying degrees been made on using standardized compensation scales. In this respect, Denmark has gone furthest, having standardized all compensation, including compensation for loss of income, for which, moreover, no indemnity is paid when the amount lost is less than 15% of annual income. Norway and Finland (like Sweden), on the other hand, have standardized compensation for pain and suffering and for disfigurement and disadvantage – in other words compensation for non-financial loss. Our three Nordic neighbours have all chosen to put a minimum limit to the degree of disability that gives entitle-

ment to compensation for non-financial loss: 5% in Denmark, 15% in Finland and Norway. We shall return to the discussion of standardized payments in Chapter 9 of the report.

The Nordic countries have also looked for different methods of improving the efficiency of medical attention given to people with whiplash-associated disorders. As has been stated with regard to Swedish conditions, one of the biggest problems in connection with whiplash-related injuries is that they take so long to investigate, treat and pay compensation for. In Sweden, as in the Nordic countries generally, the medical services have had difficulty in finding effective treatment strategies, while at the same time the tort law principle has become cumbersome as the number of injuries has risen dramatically. Quicker and simpler handling of whiplash-related road accident injuries, both in the medical system and in the compensation system, has been regarded in Finland, Norway and Denmark as one of the most valuable measures for reducing human suffering and the cost the community.

The Whiplash Commission believes that Sweden ought to be inspired by how our Nordic neighbours deal with the problems of whiplash-related injuries. We shall develop our proposals in the part of the report comprising Chapters 6–11.

Notes

27 Joslin CC, Khan SN, Bannister GC, "Long-term disability after neck injury: a comparative study", J. Bone Joint Surg. Br. 2004 Sep; 86 (7): 1032-4.
28 Young WF, "The enigma of whiplash injury: current management strategies and controversies", Postgrad Med 2001;109(3):179-86.
29 Schrader et al 1996, Obelieniene et al 1999.
30 The international project The Bone and Joint Decade 2000-2010 Task Force on Neck Pain and its Associated Disorders is currently reviewing published medical literature, partly in order to assess how serious the problems of neck aches and pain are in other countries, irrespective of cause. The assumption is that diagnosis and, more especially, treatment ought to take place in a similar manner, regardless of the cause of the symptoms. See the presentation of this project at website: www.nptf.ualberta.ca
31 Partheni M et al 1999; Partheni M et al 2000.
32 As discussed in Chapter 3 of this report, several critics have considered the studies too small for the drawing of such far-reaching conclusions. See, for example, Nygren et al (2000).
33 Pearce JM, "The myth of chronic whiplash syndrome", Spinal Cord 1999;37(11):741-8; Panjabi MM, Cholewicki J, Nibu K, et al. "Simulation of whiplash trauma using whole cervical spine specimens", Spine 1998;23(1):17-24.
34 Ferrari, Robert, BC Medical Journal Vol. 44, No. 6, July/August 2002, p. 307-311; Ferrari R, Lang C, "A cross-cultural comparison between Canada and Germany of symptom expectation for whiplash injury", J Spinal Disord Tech. 2005 Feb;18(1):92-7.
35 Bonk A, 2000.
36 Joslin CC, Khan SN, Bannister GC, "Long-term disability after neck injury. A comparative study", J. Bone Joint Surg. Br. 2004 Sep:86 (7):1032-4.

37 Sterner Y, Gerdle B, "Acute and chronic whiplash disorders – a review", J. Rehabil. Med. 2004 Sep; 36(5): 193-209.
38 The legal terms for the systems are "tort" and "no fault" respectively.
39 Saskatchewan Auto Fund 2003 Annual Report; letter from Jon Schubert, President of SIG, 4 August 2004.
40 Cassidy JD, Carroll LJ, Cote P et al. "Effect of eliminating compensation for pain and suffering on the outcome of insurance claims for whiplash injury." N. Engl. J. Med. 2000;342(16):1179–86.
41 The Saskatchewan study has attracted some criticism, partly because it has been financed with funds from the insurance company, partly on account of the nature of the selection criteria: for example claimants who had reopened their claims were excluded. There has also been criticism of the Canadian authors' definition of "recovery". See, for example, H. Merkey, Robert Teasell & D. Nussbaum, "Science, Whiplash, Insurance and Minimizing Pain", unpublished article from the University of Western Ontario (2001); unpublished letter from M. Freeman & A. Rossignol, Submission to NEJM Sounding Board Editorial, (2000). The articles can be accessed on Thomas Alsbro's internet portal at whiplash.pp.se. The original study was published in the New England Journal of Medicine, however, which entailed rigorous scrutiny before publication. The results have therefore to be regarded as relevant.
42 Finnish studies parts 1 & 2 in here.
43 Finnish study part 3 – follow up after 3 years.
44 See website: www.vkk.fi
45 Example: according to the Finnish motor insurance association, rehabilitation costs rose from FIM 47 million to 59 million between 1993 and 1997.
46 Borchgrevink et al, 1996.
47 SMM report no. 5/2000: Nackeslengskade. Diagnostik og evaluering.
48 The Norwegian tables contain ten groups, each of which contains 10 percentiles. For example, Group 2 covers the degrees of disability from 35–44%. Each group corresponds to a certain percentage of the "base amount", which is at present (2005) equivalent to SEK 55 000.
49 According to Bank & Forsikring, the study has been concluded, but will first be reported in a scientific journal before being made public.

SUGGESTIONS FOR ACTION

6. PREVENTIVE ROAD SAFETY

Suggestions for action

Improvements in road safety should stop the increase in the number of whiplash-related injuries, and considerably alleviate the consequences of those accidents that still do happen. An important part of the solution to whiplash problems lies here.

The Whiplash Commission proposes that:

- within the context of Vision Zero, Swedish road safety work give prominence to the fact that whiplash-related road accidents can have far-reaching consequences for the individual;
- efforts in connection with Vision Zero to improve the traffic environment and behaviour also focus on situations that are typical of whiplash-related accidents;
- new whiplash protection systems be evaluated in independent consumer tests at European level;
- the motor industry and consumer tests take note of the fact that serious whiplash-associated disorders are more common among women – which ought to affect the design of protective devices and and tests;
- the motor industry and consumer tests take note of the development of retrofit whiplash protection systems;
- the insurance industry place a premium on cars with effective whiplash protection;
- Swedish traffic researchers and authorities take the initiative in reaching quicker European agreements on standard crash testing and statutory requirements.

Introduction

Throughout the twentieth century, the century of the car, awareness of road safety has grown steadily. This has meant that safety features in cars have improved, that a safer traffic environment has developed, and that driver behaviour has changed. At the same time the number of cars and the volume

of traffic have also risen, which despite preventive action has led to an ever-increasing number of accidents. The number of whiplash-related accidents has accounted for such an increase. This chapter discusses how various road safety measures may both reduce the number of collisions occurring, and also reduce the frequency of serious and protracted difficulties after accidents involving whiplash impacts. The Commission has taken an initiative in launching two minor projects in the field: an evaluation of retrofit whiplash protection and a mathematical adjustment of crash testing. The projects are described in full in Appendices 1 and 2, respectively, to this report.

Vision Zero

Sweden has for many years been among the leading countries with regard to safer vehicles and better traffic environments. Over the last few decades Sweden has also succeeded in reducing the number of fatal accidents by means of a series of road safety measures. In 1997 the Riksdag adopted what is known as Vision Zero, which is based on reducing the number of fatalities and severe injuries occurring in traffic. Traditionally, "severe injuries" has meant injuries requiring immediate hospital care. The National Road Administration website defines as "severely injured in a road accident" a person

> who has sustained a fracture, crushing injury, tear, serious cut, concussion or internal or other injury expected to entail admission to hospital.[50]

For some years Swedish road safety work has concentrated on achieving this target by means for example of increased cooperation between the motor industry, various authorities and the organizations that represent car drivers. So although Vision Zero includes severe injuries, the focus of the political debate on the initiative has mainly been on the number of road accident deaths. An intermediate target has been formulated to achieve a halving of the number of deaths by 2007, from 500 per year to 250.

Whiplash-related injuries in Vision Zero

But how relevant is Vision Zero to whiplash-related injuries? An acute need for treatment seldom arises after a collision with a whiplash impact. Applying the National Road Administration definition, therefore, it is not always obvious that a whiplash-related injury can be considered "severe", even if the symptoms may later give rise to very serious problems. As the question of blame is usually clear, the police are not always called. One study has estimated

that only about 10% of accidents are reported to the police.[51] Published car accident statistics do not therefore pick up the sharp rise in the number of whiplash-related injuries that has actually taken place over the last 15–20 years. This may have led to this type of injury not receiving adequate attention in Swedish road safety work.

As noted earlier in this report, the Road Traffic Injuries Commission reckons that in Sweden about 1 500 people a year are assessed as suffering a disability of 10% or more as a result of a whiplash-related accident. To this figure may be added the many people who are assessed as having a lower degree of disability, but who may perhaps nonetheless be affected by incapacity for work for the rest of their lives. The Social Insurance Agency estimates that at least 500 people per year suffer lifelong incapacity for work as a result of a whiplash-related injury. The Whiplash Commission wishes therefore to stress the need to focus on whiplash-related injuries in the course of work to realize Vision Zero.

Road safety and whiplash

The road environment

As far as the *road environment* is concerned, work towards the Swedish Vision Zero has focused on the building of motorways with separate carriageways. But whiplash-related injuries often occur in urban traffic, and road safety measures of a totally different type are needed in order to prevent them. Most accidents occur at rush hour, when the vehicle that is struck is stationary or travelling at low speed.[52] Traffic lights, left turns and, to some extent, roundabouts are common accident sites, as are intersections. The greatest risk of collision causing whiplash impacts arises in situations where queues and congestion produce jerky driving, but the most serious collisions occur at intersections where the speed limit is high and where left turns take place.[53]

In recent years, the STRADA project – collaboration between police, Swedish health services and the National Road Administration – has provided material for an improved road traffic environment, in the form of a follow-up of car accidents reported to the police. But as we have already observed, this material does not give adequate information on collisions where whiplash impacts occur. We need to know more about, for example, whether even more stringent speed limits where low speeds already apply can improve the situation, or what effect the many new roundabouts have on the Swedish urban environment.

In an analysis of accident notifications carried out by Folksam, traffic expert Liselott Söderström at Lund University proposes a number of measures to improve the road environment with particular regard to whiplash-related

car accidents. She believes that the number of accidents of this kind would decline if traffic planning concentrated on:

- reducing congestion in heavy urban traffic
- improving warning systems to alert drivers to tailbacks, for example, by means of variable speed signs[54]
- reducing speed at intersections and also at access and exit roads from motorways
- reducing the risk at left turns: making intersections larger and more visible, providing separate lanes for vehicles turning left.

Road user behaviour

Vision Zero has also led to attempts to alter the *behaviour of road users*, in particular by means of closer monitoring of speed on main roads. Here, too, Vision Zero is not of the greatest relevance to whiplash-related collisions. During the 1990s the National Road Administration tried by various means to encourage drivers to "keep their distance", a type of behavioural change which directly addressed the problem of collisions from the rear.[55] In her analysis, however, Söderström states that keeping a certain distance is not such a fundamental concern as some researchers used to think.[56] A further attempt to change driver behaviour has been the introduction of higher brake lights, which are now standard in most cars.

The campaigns, however, do not seem to have affected the number of collisions – the number reported to the insurance companies has risen every year for the last ten years. But the actions of drivers play their part in reducing the risk of serious problems. Experts who have analysed accident notifications and collision patterns have drawn up some simple rules that drivers and passengers ought to observe:[57]

- Adjust the headrest to the right level. This means that the top of the headrest should be level with the top of the head.
- Reduce the distance between head and headrest by straightening up the back of the seat.
- Keep a proper distance from the car in front.
- If you should see in the mirror that you are going to be struck from behind, press your head back against the headrest and do not turn your head.

Importance of the vehicle

Improvements to the road environment and changes in behaviour in traffic can probably bring about some reduction in the number of whiplash-related injuries. But the great potential for improvement with regard to whiplash-related collisions is in the design of the car, and especially of car seats.

Since the 1970s the motor industry has developed safer and safer cars with regard to withstanding collisions at high speeds. Car bodies have become stiffer and harder, which has led to a decrease in the number of fatal accidents. But, paradoxically, this development has probably increased the risk of whiplash-related injuries. This is because the more rigid vehicles subject the driver and passengers to a less resilient type of impact, one of the risks of which is injury to the neck.

That is why car design should be given particular attention in safety work on whiplash-related injuries. There are a number of innovations which may be very important in this connection. *Current studies show that effective whiplash protection devices can reduce the risk of long-term problems by as much as 40%.*[58] Steps to introduce protective devices have been taken in recent years in several places, and many kinds of cars now have active whiplash protection as standard or as an option in their newer models. Since 2002 the National Road Administration has assembled a Whiplash Prevention Group comprising representatives of the motor industry and the insurance industry, which has tested new protection systems in an effort to improve car safety. The group may be seen as a new initiative within the framework of Vision Zero.[59]

New technology to prevent whiplash-related injuries

Using the design of the vehicle to prevent whiplash-related injuries is not an entirely simple matter, partly because we do not know today at what point in the accident the injury occurs. The movement to which the neck is subjected in the course of rear-end impact contains several different components: the head is thrown forwards, then back, and sometimes there is a whiplash-like movement in the vertebrae. As stated in Chapter 2 of this report, the cause of the injury may differ between different individuals – and the possibility of preventing injury has to take this into account. To identify the different strains to which the neck is subjected, traffic experts have developed a number of injury criteria, and effective crash testing usually requires more than one. For example it has been found that the need for protection from impacts from the rear varies according to the speed and size of the vehicles. It has also been found that many whiplash-related injuries occur in collisions from the front or from the side, which makes designing effective crash tests even more problematic.

The Whiplash Commission emphasizes that the crash tests that are carried out must be based on scientifically established knowledge of what happens to the vehicle and its occupants in a whiplash-related collision. That this may be complicated is demonstrated by the fact that a number of car manufacturers

have produced new cars with whiplash devices that have been found in independent tests to be virtually useless. Collaboration at European level on the devising of a common crash test standard is in progress. The aim is to be able to use common test methods for whiplash protection in collisions from the rear, from the front and from the side.[60]

Neck restraint

As the injury mechanisms regarding whiplash-related injuries are so unclear and as the effects vary according to the collision situation and the characteristics of the driver, whiplash-prevention measures need to consider several possible injury mechanisms. Attempts to help reduce the risk of neck problems arising from road accidents by modifying car design began in the 1970s. At that time the headrest, or neck restraint, in certain cars was developed. The idea was to prevent the neck from being bent too far backwards in a collision. The headrest has gradually come to be incorporated in all seats in the car. The effect of long-term whiplash-associated disorders has been found to be relatively small, however, between 5–10%. One explanation for this may be that many road users are setting their headrests incorrectly for the sake of comfort.

Protection by change of seat geometry

Now that the motor industry has begun to develop special whiplash protection systems, it has instead developed the principle of compensating for the more rigid car design: by activation of the backrest or headrest the relative velocity between chest and head is reduced.

These more advanced whiplash protection systems were introduced by some car manufacturers in the late 1990s. There are differences between them, but the common denominator is that the geometry of headrest or backrest changes at the moment of collision. The idea is that the seat will contribute to a controlled braking of the upper body, reducing the force of acceleration on the person. In some models the headrest moves forward to protect the neck when the head is thrown back. The Swedish car manufacturer Saab makes use of this model. In other models it is instead the seat that changes form and position in order to reduce the effect of the collision impact on the neck. The Volvo WHIPS protective system is based on this principle. Both of these principles have been shown in collision tests to reduce the whiplash effect by approximately 40%.

New crash tests

The Whiplash Commission has been working with the Whiplash Prevention Group continuously since 2003. That was when the Group initiated a series of crash tests designed to evaluate new whiplash protection in a number of car models. At the same time there were tests of certain new cars without whiplash protection devices. So far there have been three such series and a total of forty different cars have been tested. The crash tests have been carried out pending the introduction by the big European consumer tests – such as EuroNCAP – of standardized collision tests of whiplash protection in new cars, and as a further development of the early tests done in the USA. The tests have been made public both in brochure form, and also as a report published jointly by Folksam Research and the National Road Administration. The results are an important step in the work to reduce the number of whiplash-related accidents in Sweden. They are therefore presented in brief here.[61]

Conduct of crash tests

Swedish researchers have been leaders in basing their collision tests on data collected from "black boxes" mounted in cars that have been involved in collisions. By ascertaining how the cars – and the car seats – behave in a number of real accidents, traffic experts are able to recreate typical collision situations in a test laboratory with greater precision. In 1995 Folksam Research fitted about 40 000 cars with "black boxes" containing crash pulse meters in order to be able to analyse the connection between collision impact and personal injury, in both rear-end and front-end collisions.[62]

As it is in the car seats that the new whiplash protection devices have been incorporated, it is also the car seat characteristics at the moment of impact that have been evaluated in the tests. With the cooperation of the manufacturers, Folksam Research has been able to use seats from a large number of models.

The protective characteristics of the car seat have been evaluated at three different levels of impact in collisions from the rear. In addition three different injury criteria have been used. The risk of impact was measured at the beginning of the crash process (NIC/neck impact), in the middle (Nkm/- neck force) and at the end (rebound). The method was developed somewhat between the tests carried out in 2003 and those done in 2004, but even if the test series are not entirely comparable they still give a good indication of the ability of the car seats to prevent serious whiplash-related injuries from occurring.

Summary of the results

The crash tests show a large variation in level of safety between different cars and seats. There are car seats that subject their occupants to heavy loads in several areas of impact in the tests. Other seats succeed in protecting the occupants well. Some models with built-in whiplash protection obtained poor results in their tests. Some cars that did not claim to have built-in protection against whiplash impact still came through quite well.

Two good examples are Volvo and Saab, where the new whiplash protection reduced the risk of long-term problems by up to 40% (+/–21%). Basically protection against whiplash impact in the new cars was effective, but big differences remain between models. The differences recorded show that the risk of lasting whiplash-related problems varies from low to relatively high.

One of the cars tested in the first series of crash tests in 2003, and scoring poor results, was the Audi A3 – despite the fact that the car was equipped with special whiplash protection. After publication of the tests Audi carried out an audit of its whiplash protection, and in a later series of tests the model scored considerably better results. In the series of collision tests presented in April 2005 the whiplash protection of another car was deemed unacceptable, but this manufacturer then decided to refer to tests performed in Germany which had earned good marks for the same protection.

The conclusion is that independent consumer tests of the new systems are crucial before their effectiveness can be demonstrated. The most influential test is EuroNCAP. The Whiplash Commission supports the National Road Administration's efforts to have whiplash protection included in EuroNCAP's tests. *Consumer tests show that the best systems on the market are very effective with regard to reducing the risk of serious problems.* The fact that some forms of protection can reduce the risk by as much as 40% is impressive. If we could obtain protection that is even half as effective in more of the cars on the roads of Sweden we would break the rapidly rising trend in whiplash-related injuries. This would mean that fewer people would suffer long-term problems and that the cost to society of whiplash-related disorders would be much reduced.

Mathematical models

Swedish researchers have been able to recreate typical collision situations in a test laboratory with great precision. In recent years a research group at the Department of Neuronics at the Royal Institute of Technology in Stockholm has carried out tests in the opposite direction: they have tried, using mathematical models, to recreate an accident process retrospectively. The method

has given rise to hopes that it will be possible to determine correlations with regard to road accidents. As yet, however, the reliability of the reconstruction depends on the accuracy of the input data – and this means that the method is not yet possible to use in practice to answer questions of cause and effect.

But purely generally, traffic experts have begun to make increasing use of mathematical models in road safety work. They may, for example, be used to compensate for what are seen as the inadequacies of crash dummies, as it has been found difficult to produce crash dummies that can imitate all the movable parts of the human neck. There has been parallel development of a number of different dummies. Today experts are trying to agree on which models work best, for example in the EU project "Whiplash 2", where European road safety experts are collaborating on crash testing (the project is expected to be completed before the end of 2005).[63]

When discussing road safety methods it is important to distinguish between *development tests*, where safety experts use advanced methods to understand how the car and the person behave and what happens during the collision situation, and *consumer tests*, which involve verifying the functions of the car (such as EuroNCAP). Development of mathematical models is a cost-effective method of reducing the risks entailed in using a crash dummy that is too static and unidimensional, and which may not react in every situation in the way that a human body may be expected to do.

Road safety – only for men of "average build"?

The ability to use mathematical calculations to compensate for the shortcomings of crash dummies is also important from another point of view. The Whiplash Commission has drawn attention to the fact that the crash dummies that have been developed for whiplash-prevention work certainly have different characteristics, but one thing they have in common is that they are all based on the average man.

Road safety work has to be based on a common standard. Where road safety methods are concerned, it has often been reasonable to start from the position of the average man. Men drive more than women do, they are more often involved in road accidents, and protection for the average man has often protected women equally well. But in the case of whiplash-related collisions, this picture is not correct.

Women and men are different: the average man is both taller and heavier than the average woman. If the car manufacturer designs crash protection on the basis of a certain height and weight, this may mean that a person who does not conform to these measurements does not enjoy the same protection.

This is what has happened in the case of some whiplash protection systems, which have been designed based on tests on "average" male crash dummies where height and weight have been important. For a person who is either taller or heavier than average – which applies to a large group of men – or shorter and lighter – which applies to most women – the protection does not work as intended. Some car models have in fact developed protection systems that are not even activated by a short, light driver.

As discussed earlier in the report, several studies have shown that long-term problems after a crash with whiplash impact are more frequently experienced by women than by men. A number of reasons have been suggested in explanation of this: women drive more in urban traffic, they more often drive older cars that are more dangerous, and women's physique is different from men's: the neck muscles are weaker. It should therefore be regarded as urgent to develop functional whiplash protection for everybody – including women.

Mathematical adjustment of crash tests

Developing a female model of a crash test dummy for testing whiplash protection has not been possible within the Whiplash Commission's terms of reference. Such a project would have required too much time and extensive resources. But as it is extremely urgent to draw attention to the matter of women and road safety, the Whiplash Commission has requested Dr Janusz Kajzer, Athesham Khan and Manuel Forero at the Department of Mechanical Engineering, Chalmers University of Technology, to carry out a series of crash test adjustments whose results will also be relevant for women. In addition the project has made adjustments so that the crash tests will also be correct for a man who is taller and heavier than average. The full calculations are presented in Appendix 2 to this report.

The adjustment of crash tests is based on several mathematical models. The three researchers have used models of the BioRID II crash dummy, and of a typical car seat (from Toyota Yari's Maydamo model) and also models of different kinds of collision pulses, based on data from real accidents. The collision pulses represent whiplash impacts of various degrees of force such as can occur in different types of collisions.[64] The two main types of whiplash protection were tested: an active headrest which moves in towards the back of the head at the moment of impact (this principle is used by Saab and others), and also a seat back recliner where the seat moves backwards (Volvo's WHIPS is designed like this).

Using such mathematical models gives approximate results that can indicate certain probable associations – associations which ought to be examined

more closely. Calculations of this type can therefore be described as development tests. But in order to be able to use them as consumer tests the collision tests have to be conducted on real cars, with real dummies and in recreated collision situations.

Results of the calculations

When the calculations had been performed, it was found that the two types of whiplash protection show differing degrees of effectiveness for people of different sizes. *Both types of protection work least successfully for the lighter and shorter woman.* This may be partially explained by the fact that the woman's body represents a smaller mass. When the principle behind the whiplash protection is that the geometry of the seat changes, the mass of the driver/passenger is an important factor. The calculations showed that the female crash dummy absorbed a greater force, which may potentially cause more severe injury. This was true for all types of collision pulse. The very tall, heavy man also found less protection than the average man, although not as little as that afforded to the woman. Here, moreover, the different collision pulses differed: in some situations the man's size did not make much difference.

Measurements of how much worse the effect on the different dummies was showed an interesting difference with regard to the two types of whiplash protection. The *active headrest* gave somewhat better protection to all three dummies, even if the protection was best for the average man. The seat back recliner where the *seat moves backwards* showed large differences, however. Kajzer, Khan and Forero believe that this kind of whiplash protection is more difficult to design in a manner that suits many types of drivers and passengers.

The conclusion is that the driver's size is very relevant to the effectiveness of the new whiplash protection, and that the principle involving active head support is easier to adapt to drivers of several types. This naturally does not mean that car manufacturers should abandon the protection that is based on movement of the seat, but they should be aware of the greater difficulty of compensating for the size and weight of different people.[65]

Other protection

New cars may, with effective whiplash protection, offer a substantial reduction in the risk of serious injury after a collision with a whiplash impact. But even if all new cars were fitted with effective protection, it would take many years for all the cars in Sweden to be replaced. It is therefore important to test protection that can be retrofitted to existing vehicles.

Test of two retrofit cushions

At present there is one such type of protection, namely a cushion that can be fitted to the car seat. The idea behind the cushion is simple and is actually based on the same principle as that of an efficient headrest – correctly fitted the cushion brings the restraint closer to the head. However a detachable cushion needs to be simple to attach correctly – if it is incorrectly fitted it will have no effect at all. It also risks ending up in the wrong position in a more complex collision process.

A newly published American study from the Insurance Institute (IIHS) has shown that cushions that can be retrofitted may help to reduce the risk of long-term whiplash-associated disorders. And indeed, good results have been reported to the Whiplash Commission by the Swedish manufacturer Whipguard. The Whiplash Commission has therefore tested two types of cushions of this kind in collaboration with the Whiplash Prevention Group. The results are set out in full in Appendix 1 to this report.

In order to give as comprehensive a test situation as possible, the cushions were tested on three car seats of different make, all without active whiplash protection. The collision impact used resembles a typical rear-end collision, and three types of collision impacts were tested with a BioRID crash dummy. Two kinds of evaluation were carried out, using both the National Road Administration/Folksam model and that of IIWPG (International Insurance Prevention Group).

The tests have, in other words, been designed to give thorough documentation and a fair check of the effectiveness of the cushions. However, the results show that the effectiveness of the neck cushions depends entirely on the design of the seat. Therefore the measured effect differed considerably between the seats. In this connection there is no difference in the design of the cushion – none of the cushions was better than another. Even if the cushions cannot be said to reduce safety (except in one case, where the cushion had slipped down), they cannot be generally recommended either. They can only be effective if they are specially adapted to each car seat, which means that in the present situation they do not fulfil the role of an inexpensive, easily accessible protective device that can be fitted to existing vehicles. *From the research results that are available today, it has to be concluded that effective whiplash protection should be based primarily on changes in the geometry of the seat.*

The “Capsule”

Folksam Research and Autoliv have worked together on the development of a different type of retrofit device, known as the “Capsule”. As yet this exists only

as a prototype and it has been designed only for the driver's seat (i.e. the place in the car where the risk of suffering a serious whiplash-related injury is greatest). The "Capsule" incorporates the same principle as the new seats, namely that of making the seat – and not the person sitting in it – absorb some of the force of a collision. A small metal structure is attached between the drivers seat and the floor of the car. In the event of a rear-end collision, the system is activated, partially detaching the seat and tipping it gently backwards. With this relatively simple device, crash tests have shown that the acceleration forces experienced by the occupant are lessened and that the velocity of the head relative to the rest of the body is reduced – in other words, there is less risk of a whiplash-like movement.

The "Capsule" has also been tested in ordinary collision situations. Approximately 3 000 Toyota Corollas built in 1993–1997 were fitted with the device in 2001, while 12 000 cars of the same make without protection were already included in the study. Data was collected after two years, and of the 58 drivers who had been subjected to whiplash impacts in cars with protection, only one suffered long-lasting problems (over 6 months). Corresponding figures for the control group were 82 collisions, and 9 drivers who experienced long-lasting disorders. Even if the statistical material is small, researchers can confirm that the risk of serious problems is also reduced by this retrofit protection.[66]

The Whiplash Commission notes that there is now a principle on which retrofit devices protecting against serious whiplash injury might be based. More tests are necessary, and there may turn out to be hitherto undiscovered problems in working on car seats once in place. In this field a research and development initiative on the part of the motor industry is desirable. In the case of some cars, the adjustments that would be needed to the existing prototype are relatively small. If working from this prototype the car manufacturers can develop adaptations that can be fitted to a larger number of the Swedish stock of cars, the effects of many whiplash-related accidents would probably be considerably milder.

Conventional airbags

Today virtually all new cars on Swedish roads are equipped with airbags. In a number of crash tests it has been found that the conventional airbag has a favourable effect in preventing serious whiplash-related injuries. Airbags were designed primarily to reduce head injuries in head-on collisions, but do at least as much to reduce the effect on the neck, at least in frontal impacts. A study by Folksam Research shows that the airbag reduces the risk of serious

whiplash-related injury by, on average, 60% at changes in velocity of between 20 and 40 km/hr, in other words in the speed range where the risk in frontal collisions is greatest. Altogether, airbags reduce the risk of long-term whiplash-related problems by approximately 40% in frontal collisions.

Importance of European collaboration

Work on including protection against whiplash impact in the main consumer tests is now in progress. The Swedish National Road Administration has worked through various channels to spread knowledge of the tests carried out in collaboration with Folksam Research. The Road Administration has concentrated its efforts on EuroNCAP. Through its participation in CEA, the organization that represents the European road safety industry, the Swedish insurance industry has also written to EuroNCAP and recommended continued testing of the whiplash-preventing qualities of vehicles.

EuroNCAP's results in particular are often considered very important in making the world aware of the road safety characteristics of different cars. However, it takes time to establish a general safety-mindedness with regard to whiplash-related injuries at European level. The car industry represents a powerful lobby, with not only European but also global interests. And it has been shown consistently that, for example, road safety measures are less popular with the average American consumer than with the average European consumer; this is something that the motor industry has to take into account when designing new models.

However, road safety is never a purely national issue. People in Europe travel more today than they did 20 years ago, and it is increasingly common to take one's car abroad. Moreover the rise in the number of whiplash-related injuries is not a specifically Swedish problem. All over the world, but particularly in Europe, this type of injury is becoming more frequent.

This means that road safety measures taken in one country are also relevant to citizens of other countries. Collaboration between the European road authorities in EEVC is becoming increasingly common. The new directive with regard to road traffic insurance that the EU has proposed also brings the different national road safety issues closer together. In these circumstances it is important for ideas on road safety to be developed in a larger context than a purely Swedish one. The Whiplash Commission regards it as important for Swedish authorities and organizations to continue to intensify their European road safety perspective, and for the Swedish Government consciously to pursue questions of increased road safety in European contexts. Our long

tradition of effective road safety work in Sweden – from the motor industry, and also independent road safety experts and authorities and organizations – ought to qualify us to play an important role in this sphere.

Discussion

There are good prospects for reducing the number of whiplash-related accidents with the aid of different types of road safety measures. We need to know more about the significance of the traffic environment, but the main emphasis of work should be on minimizing queue formation and congestion in urban areas and removing dangerous left turns. Various means of improving the concentration of drivers in urban traffic are desirable, so that unexpected stops are better anticipated. This work differs somewhat from the initiatives that have previously arisen from Vision Zero, i.e. the national road safety campaigns intended to reduce the number of people killed or seriously injured in traffic. But the wording of Vision Zero also leaves scope for a better focus on whiplash-related road accident injuries – if statistics are compiled that reveal how seriously many people are in fact affected.

The greatest potential, however, lies in preventing accidents from having serious consequences, and here it is car design that holds centre stage. It has been difficult to devise international standard tests specifically for whiplash-related collisions, as the injury mechanisms can vary so much from case to case. The protection that has been developed is often based on advanced technical adaptation to the different patterns of movement to which car drivers and passengers may be subjected at the moment of collision. At worst this may lead to the protective devices being poorly adapted to users who are not of average measurements. As "average" in road safety work is usually based on the male body rather than the female one, it has already led to some protection systems being ineffective for more women than for men – which is serious when whiplash-related injuries are more frequent in women than in men.

But both the car industry and road safety experts in all parts of the world have made progress in recent years. Some of the new whiplash guards that are based on a change in car seat geometry have given outstandingly good results in independent tests. The risk of serious consequences following a collision may in the best cases be reduced by as much as 40%. Even if not all of the new forms of protection that have been developed show the same potential, it is the view of the Whiplash Commission that *an important part of the solution to whiplash problems lies in the technical development of cars.* It is therefore important for the major international consumer tests, such as EuroNCAP, to

include whiplash protection as soon as possible when testing car safety. In this way we might be able to induce more consumers – not least corporate and public sector ones – to buy cars with effective whiplash protection. The results of the major consumer tests would also give material which, for example, would enable the insurance sector to calculate its premiums with regard to the safety of the car.[67]

But it will be many years before most cars on the roads are new vehicles with new protective systems. This makes it important to monitor the retrofit devices that are on the market today and to test them more consistently. The motor industry should develop different kinds of protection for fitting to existing vehicles that will modify the geometry of the seat. Here the prototype of the "Capsule" has shown one possible route.

There is also an urgent need on the part of Sweden to continue the work that has already begun on influencing European road safety so as to reduce the seriousness of the consequences of whiplash-related collisions. Here Sweden should have good prospects for promoting the questions effectively, as we are prominent in an international road safety perspective. Among other things, we need to agree on which crash dummies are used and how tests are to be conducted. Eventually it ought to be possible to devise a common European statutory requirement with regard to effective whiplash protection.

Notes

50 www.vv.se, "Trafiksäkerhet-statistik om trafiksäkerhet-definitioner inom statistiken". "Road accident fatality" is the designation given to the case of a person dying within 30 days from the effects of direct or indirect injuries sustained at the time of the accident.
51 Liselott Söderström, Väg- och trafikmiljöns betydelse för whiplashskador vid påkörning bakifrån. (Unpublished report from Avd. för Trafikteknik, Institutionen för Teknik och samhälle, Lund University, 2004), p. 55.
52 Söderström, p. 58 f; Cedersund, Olyckor i tätortskorsningar, VTI meddelande nr. 362.
53Jenssen Deinboll, Gunnar & Saukshaug, Kristian, Studium av olykker med påkjöring bakfra, NTH, SINTEFF Bygg- og miljoteknikk, Rapport STF22 A96604 (Trondheim 1996).
54 Trials of variable speed limit signs in German have been found to have a good effect on the number of accidents, as they increase driver awareness of the traffic situation.
55 Rydén & England, Avståndsprojektet, Slutrapport 1999, Vägverket rapport 1999:0361.
56 Söderström, p. 55 f.
57 The recommendations are based on, among other studies, Berglund A et al, "Occupant- and Crash-Related Factors Associated with the Risk of Whiplash Injury", Elsevier, Vol. 13, Nr1, 2003, and Krafft M, Non-Fatal Injuries to Car Occupants (Stockholm, 1998). The rules are reproduced in *Bilstolars skydd mot pisksnärtskada*, Information Brochure publ. in 2004 by Folksam and the National Road Administration.
58 Lotta Jakobsson, *Whiplash Related Disorders in Frontal and Rear-End Car Impacts* (Gothenburg 2004).

59 The whiplash-prevention group was formed after the Swedish insurance industry had drawn the attention of the National Road Administration to the large number of whiplash-related accidents which are never reported to the police but which are seen in the statistics of the insurance companies.
60 Work has been under way for some years in the European collaborative organization for road authorities, EEVC, with a view to drawing up a statutory European test for whiplash protection. The current European collaboration on "Whiplash 2" is developing test methods for collision from the front and from the side from the point of view of whiplash impact. The results are expected to be available in 2005. See also the project website, www.passivesafety.com/whiplash2.
61 The report "Assessment of Whiplash Protection in Rear Impacts" may be downloaded from the National Road Administration website, www.vv.se, or Folksam's website, www.folksam.se.
62 Kullgren et al, "Validation of Neck Injury Criteria Using Reconstructed Real Life Rear-End Crashes with Recorded Crash Pulses", Proceedings of the ESV Conference (Nagoya, 2003); Krafft et al, Assessment of Whiplash Protection in Rear Impacts. Crash Tests and Real-life Crashes. Report from Folksam & the National Road Administration (2004).
63 See the project website, www.passivesafety.com/whiplash2 for more information. The Swedish representative is Associate Professor Mats Y. Svensson, Chalmers University of Technology.
64 This seat was developed by Linda Ericsson in 2000. The crash test dummy has been developed by the department of mechanical engineering, and has since been adjusted to three different sizes using the Madyscale method. The three collision pulses are used in the European road authority joint project on whiplash collisions, EEVC WG 20, working document 54. No adjustment was made in the calculations for the effect of the seat belt.
65 Lotta Jakobsson's recently issued thesis confirms that WHIPS has the highest protective effect for women. This may mean that Volvo has actually optimized its whiplash guard for a driver who is somewhat smaller and lighter than the average man.
66 The results of the "Capsule" test are presented on Folksam's website, www.folksam.se
67 Swedish insurance company Folksam already gives a certain discount to those who insure a car that has scored good results in the tests initiated by the Whiplash Prevention Group.

7. IMPORTANCE OF EARLY ACTION

Suggestions for action

A small minority of all those who suffer whiplash-related symptoms in connection with a road accident experience lasting problems. Early attention based on principles of self-activation and quick follow-up may reduce the number of people with chronic problems.

The Whiplash Commission proposes that:

- use of the method of diagnosing whiplash-associated disorders that has been drawn up by the medical task force of the Swedish Society of Medicine begin in Sweden: WADs be divided into grades 1–3, with a special focus on neurological problems and stress symptoms;
- patients be divided into three groups according to the risk of long-term problems, based on self-assessed pain and clarification of the patient's general health;
- whiplash-associated disorders be assumed to give some sort of symptom in connection with the accident;
- advice on self-activation be accepted as sufficient for most of those concerned;
- risk patients be identified and monitored before the symptoms have become chronic;
- implementation and evaluation of early attention measures be given priority by Swedish county councils to a higher extent than at present.

Introduction

One of the problems that the Whiplash Commission has been able to identify with regard to acute whiplash-associated problems has been the lack of uniform attention by the medical services and the difficulty of making a diagnosis. The Commission has therefore joined the Swedish Society of Medicine in setting up a task force to work on a consensus document dealing with the whiplash diagnosis and the principles for early attention. In addition the Commission has followed up the medical attention problem which was

introduced in the Västra Götaland Region in 2003 and based on ideas that resemble those of the consensus document. The evaluation is reported in full as Appendix 4 to this report, and the consensus document as Appendix 3 and also as an offprint.

Principle of early medical attention

Roughly 20% of those who state that they have neck pain after a car accident are sicklisted for a short period (from a couple of days up to a couple of months). Of these, a smaller group still have problems a year after the injury. About 30 000 people per year report that they have been subjected to whiplash-related collision impacts in Sweden. Every year at least 1 500 people are assessed as having lasting ill effects of a serious nature (10% medical disability or more) as a result of such an impact, and of these, about 500 people are considered permanently incapable of work. In other words no more than 6% of all those reporting their injury suffer long-lasting problems, and no more than just over 1.5% become totally incapable of work. *We have on several occasions in this report been able to confirm that even if there is a hidden figure, the risk of suffering long-term problems is small following a collision involving whiplash impact.*

When doctors and health service staff argue for greater efficiency in giving early attention to people with whiplash-associated disorders, the relationship between those who have initial symptoms and those who experience chronic difficulties is important to bear in mind. In most cases no special action is required, and the symptoms will disappear spontaneously when the initial injury has healed. This first period may of course be unpleasant, as it may involve pain. But subjecting all those suffering neck pain after a car accident to a series of medical treatments at this early stage is pointless. It may even aggravate the situation of the injured party, as the meeting with the health services may give the person the impression of being on the way to lifelong problems, which will cause unnecessary anxiety and stress – factors which may in turn have a negative effect on the state of health.

However, to the small group that risks suffering long-lasting symptoms, it is important to obtain adequate help at an early stage. Early, limited pain symptoms may in effect be aggravated by the fact that the sufferer may try in various ways to compensate for the pain – for example, by inactivity. As far as neck and back pain is concerned, it is important to keep moving, if only because certain groups of muscles need continuous exercise. Weakening of the muscles may in the long run lead to an aggravation of the problems. At the same time

many people with whiplash-related disorders testify to the fact that certain patterns of movement cause sharp pain and fatigue. For a small group of those who report whiplash-associated problems, therefore, it becomes important to receive early follow-up and help within the primary care system.

Treatment programme for people with whiplash-associated disorders

In several parts of Sweden county councils have developed special treatment programmes for those who report neck problems after car accidents – two early examples are provided by Östergötland County Council and the Gotland Region. The Whiplash Commission has followed one of the latest initiatives in the field, namely the Västra Götaland Region guidelines for attention to patients with whiplash-associated disorders, introduced in 2003. The programme has been developed by a group comprising doctors and physiotherapists with extensive experience of whiplash-associated disorders, under the leadership of Associate Professor Malin Lindh. The treatment programme is available on the Västra Götaland Region website, **www.vgregion.se/whiplash**.

Västra Götaland programme guidelines

The idea behind drawing up these guidelines has been that despite the different circumstances in different parts of the region, medical services ought to strive for consistency in the reception and early treatment of people suffering neck problems following a car accident. It has also been considered important to document the problems correctly from the outset, as this "creates security for both the patient and for the carer where reception, examination, investigation, treatment and rehabilitation take place on the same grounds regardless of geographical origin." More specifically, the treatment programme implies

- achieving uniform procedures for both emergency attention and monitoring and rehabilitation on a needs basis
- identifying risk factors predicting long-term problems
- obtaining uniform documentation
- establishing integrated cooperation with the Social Insurance Agency and insurance companies both for coordination of rehabilitation and for issuing reports and certificates

The ambition of the programme is also to create a regional contact network for medical personnel who are involved in the reception of patients with

whiplash-associated disorders. Such a network may then lead to a better monitoring, further training and research in the field, with a view to improving the care of whiplash-associated disorders and making it better and more cost-effective.

Design of the early attention programme

The programme sets out procedures for how people received by the health services should be dealt with so that serious injury can be excluded. Only after that should examination concentrate on whiplash-related symptoms and findings. The mobility of the neck and the perception of pain are examined, including signs of stress, which are common after a car accident and may sometimes develop into a post-traumatic condition that affects the pain in the neck. Careful documentation becomes important in the small number of cases where the problems become long-lasting. It is also important for patients to be able to talk about the accident, about their previous state of health and their symptoms. Special forms have been designed, one representing a procedure for the doctor to follow and one with questions to be answered by the patient. With the aid of examination, the forms and interviews the doctor can note whether the patient falls into any of the categories where there is a higher risk of chronic problems. In such cases a follow-up appointment with the doctor can be planned from the outset. Extra time, equivalent to two patients' appointments, should be set aside for this first consultation, and should be offered to all people experiencing neck problems directly following a car accident.

Follow-up by physiotherapist and doctor

Within 10 days after this first visit to a doctor, a physiotherapy examination should be carried out. By this time, in most patients, the healing process has begun. There are two reasons for this visit. The first is to give definite advice on how the patient should move in order to assist in his or her quick recovery. Secondly, the visit to the physiotherapist acts as a follow-up at which any need for further medical care can be identified. The physiotherapist, too, will document his or her findings and follow a recognized procedure at the examination, using a specially designed form.

Following their visit to the physiotherapist, the majority of patients should be well on the way to ridding themselves of their symptoms, especially if they have followed the advice on self-activation that has been given. For the minority who have not shown an improvement, there will be follow-up and examination by the physiotherapist about six weeks after the trauma. If the

patient is still having trouble after this time, perhaps with more symptoms, there should be a new medical examination – this time in order to assess the patient's prognosis and possible future rehabilitative action. At this second doctor's examination the report should take account of the patient's life situation and mental state. There may also be a need here for a more detailed examination, with professionals other than doctors being involved.

There will then be a group of patients who will need more extensive rehabilitation. This should be given with the aid of special teams and be based on methods that have proved effective with regard to treating people with whiplash-associated disorders at an early stage. If despite these early measures the symptoms persist, and are assessed as chronic after 6–12 months, a different type of rehabilitation should begin, focusing on more chronic problems.

Implementation of the programme

The treatment programme in Västra Götaland is therefore based on a clear structure, previous experience and current research. The Whiplash Commission has observed this work with interest and has seen here the possibility of gaining a picture of how better attention might be given in practice by the Swedish medical services. But as at spring 2005 the treatment programme had not yet been implemented throughout the Västra Götaland Region. Despite help from the regional office in identifying one medical services area, Södra Älvsborg, where the programme has been applied, it has not proved possible to produce a large-scale evaluation within the time available to the Commission. One problem may reside in the fact that the programme requires the doctor to set aside so much time and such resources for the patient's first visit, even if the statistics show that most patients recover without treatment. At times of shrinking resources in the health service it may appear more urgent to the staff to give priority to other patient groups. Paradoxically, in 2004 the Region closed a neck injury clinic in Gothenburg, which was intended in the treatment programme to be the very place where patients in the risk zone with regard to chronic problems were to be cared for.

The working party which has drawn up the programme has paid informational visits to the Region, but the dissemination of the guidelines has nevertheless remained limited. It has to be seen as an important signal that the Västra Götaland Region chose to invest substantial resources in drawing up the programme. That makes it remarkable that the Region has not accordingly facilitated the implementation and spreading of information to all treatment

units. It may be added that both health centres and hospitals have a certain degree of independence with regard to working methods and priorities. A number of treatment units explain that they quite simply do not have the time to work to the guidelines.

Follow-up of 299 patients

All the same, to gain some understanding of how the treatment programme has been working, the Commission has asked Associate Professor Olle Bunketorp and Associate Professor Malin Lindh to carry out a small-scale follow-up of the people who were admitted to the emergency department at Sahlgrenska University Hospital/Östra (SU/Ö) in 2004.[68] The follow-up has several limitations. The patient material is relatively small, 299 people, of whom roughly half have been informed of the treatment programme. It is not ideal for the people who have helped devise a care programme to take part in a follow-up, which has happened here. Patients who go to an emergency hospital may to some extent represent a different category from those who turn to primary care. And the follow-up has been done relatively quickly, which has limited the number of factors that could be investigated. But despite these limitations the Commission has found it useful to gain an overview of how the treatment programme has been used and what the implications of this have been for the patients. It is hoped that this first provisional evaluation can soon be followed by a larger evaluation carried out by the Västra Götaland Region itself.

Design of follow-up

Patients reporting to the emergency department at Sahlgrenska/Östra for whiplash-associated disorders over a period of a year were followed up by means of questionnaires for up to a year after the accident. A number of questions have been asked to determine the extent to which the programme has been used, what sort of contact there has been with the medical services during the acute period, the duration of the problems and the course of sick leave. The reply rate was 77% and the questionnaire was answered between eight weeks and a year after the first visit to hospital. As less than half of the patients examined have been dealt with entirely according to the treatment programme guidelines, the follow-up has been able to identify a control group and compare the two groups.

The answers to each individual question in the questionnaire were analysed with a view to filtering out the people who might give a misleading reply to questions of the effectiveness of the treatment programme. For example, with regard to the question of sick leave tendencies, a number of people fell out of

the group "sicklisted after six weeks" when it was found that they had been sicklisted full-time or half-time even before the accident. For other questions, on the other hand, this group could be included in the replies.[69]

Results of follow-up

Of those dealt with entirely according to the programme – and seen by doctors where a thorough examination was carried out – 46% had made contact with a physiotherapist after the first ten days. A further number of patients visited the physiotherapist somewhat later. Contact with physiotherapists was less frequent in the control group.

Among the patients dealt with according to the programme, satisfaction with treatment at the acute stage was significantly better than among the control group, especially with regard to the question of the doctor's information and advice (the group was somewhat less satisfied with the thoroughness of the examination). Those who had been dealt with according to the programme reported persisting symptoms six weeks after the accident to a somewhat lesser extent than those in the control group, but the difference is too small to be statistically significant. There was also a corresponding tendency to differ with regard to need for sick leave, but again only a slight one.[70] But for the smaller group of patients who could be monitored after six months, the difference between the two groups had disappeared with regard to frequency of symptoms and sick leave – which ought to indicate that the acute treatment has influenced the earlier process.

As the group was small, the conclusions that can be drawn might rather be described as tendencies. In summary, the results of the questionnaire suggest that it is possible for the treatment programme to influence both patient satisfaction and the early course of symptoms and sick leave. Even if the results can only be described as statistically confirmed tendencies, they underline the need for a broader evaluation.

Swedish Society of Medicine task force

If the principles developed by the Västra Götaland Programme are in themselves right, the demands of the programme for accurate documentation and general monitoring by a physiotherapist have made it difficult to manage in practice. Mindful of the experience of a number of Swedish attempts to start early attention programmes, a task force from the Swedish Society of Medicine has tackled the problem of formulating a practical Swedish consensus document for the whiplash diagnosis. The document is shown in full as

Appendix 3 to this report, and is being issued by the Whiplash Commission as an offprint addressed to Swedish health care.

Diagnostic procedure

The task force confirms that the injury mechanisms may vary in the case of whiplash-related injuries, as may the nature and severity of clinical symptoms, objective examination findings, mental and physical patterns of reaction and occurrence of factors indicating possible development of long-term problems. All this makes it difficult to treat patients with acute whiplash-related symptoms according to a uniform pattern. The diagnosis and the early attention ought therefore to be based on the symptoms and how these are to be set in the context of the risk of long-term problems. But one important principle is that the diagnosis ought to be made when, or shortly after, the accident occurs.

The document of the Commission and the Swedish Society of Medicine task force states that in some contexts it has been asserted that the onset of symptoms must occur within 72 after the accident if the symptomatology is to be seen as connected with the whiplash impact. There is no scientific evidence for a definitive time limit, however. Nevertheless, the task force considers it reasonable to maintain that symptoms and clinical findings related to whiplash impact should appear within a few days after the trauma.

The working party emphasizes that the meeting with the patient is very important. Here the term that has been chosen is "patient-centred methodology". The doctor must allow time to listen actively to the patient's fears and expectations, and also to form a complete picture of the patient's state of health and life situation. If the doctor listens actively and asks the right kind of questions, the group believes that such a consultation need not take too long.

The description of the accident is important and initiates the diagnosis. Next, the extent of pain, stiffness, numbness or other neurological symptoms are considered. Signs of stress and anxiety are noted, as is insomnia. It is important for the patient himself/herself to assess his/her pain at the time of examination, because severe pain at the time of the accident is one of the most important prognostic factors indicating later problems. Any previous pain or neck trouble is clarified, together with the current work situation. It is also important to obtain a picture of the patients' contact network within the medical care system – is there previous family doctor contact? What is the possibility of a follow-up appointment? The emergency doctor is also responsible at the time of the examination for making sure that such contact is established if it does not already exist.

This is fo llowed by an estimate of the WAD grade using a simpler model than that proposed by the QTF (see the presentation of this classification system in Chapter 2 of this report). WAD 0 (no symptoms and no objective findings) and WAD 4 (fractures and/or luxations) are not regarded as signs of a whiplash-associated disorder. The group of symptoms traditionally attached to the three remaining groups is augmented by greater awareness of neurological disorders. Where such disorders are considered serious, the medical group recommends special measures.

Careful documentation is essential at this initial visit.

Processing and action

Generally the measures that can be recommended increase with the WAD grade and the intensity of pain. In the case of the largest group of patients, who have been given the diagnosis WAD 1 or 2 and have themselves estimated a maximum intensity of pain of 4, the patient is told that the prognosis is good and that no restrictions apply to recreational activity and work.

The smaller group that has been given the diagnosis of WAD grade 2 or 3 (which implies neurological symptoms and findings) and a self-assessed intensity of pain of 5–6 is told that recovery may take some weeks. A few days' sick leave may be considered. Head-turning exercises and other gentle self-activation – such as brisk walks – may accelerate the healing process, whereas harder training and vigorous sporting activity ought to be avoided at first. Ordinary pain-relief tablets may help for a week or so, and if no improvement in the symptoms has begun after this first week, the patient should contact his or her own doctor for follow-up. The doctor giving emergency treatment should make sure that information from the diagnosis is forwarded to that doctor.

Those patients who have WAD grade 2 combined with severe pain, 7–10, and perhaps also stiffness, run a higher risk of suffering prolonged symptoms – but even in this group most people recover, although it may take a little longer. Here, however, the information to the patient becomes particularly important in order to avoid negative expectations and anxiety. Stronger pain-relief preparations may be given for a couple of weeks in order to prevent sleeplessness, for example, and short periods of sick leave may be granted if the patient's job is a heavy one. In the case of the group with WAD grade 3 and severe pain, the same type of advice and pain relief are applicable, but here a return appointment with the doctor ought to be planned for within a week, sick leave in the intervening period is recommended, and it may be a good idea to have telephone contact after only a few days. It is in this group that

there may presumably be patients with the highest risk of developing long-term problems, and it is therefore important to carry out an early follow-up examination and to monitor the development of the symptoms.

The diagnosis ought also to raise awareness in patients who display other risk factors: those with neck pain before the accident, those on sick leave when the accident occurs, those with concentration difficulties and anxiety or signs of stress symptoms. Such patients should always be advised to contact their own doctors after a week for monitoring and possible further examinations.

Follow-up

For those patients who do not improve, showing continued and possibly aggravated symptoms, further examinations are needed in order to rule out neurological damage, to confirm any need for further pain relief and perhaps also to form a basis for referral to a physiotherapist. Mobility and fitness training, relaxation exercises and self-activation have been found in current studies to be effective if started at an early stage. Passivity and rest do not work as well in the long run. Mobilization and manipulation are not recommended, nor are cervical collars.

When the acute injury can be assumed to have healed, pain-relieving medication should generally cease. Most medicines that are used for pain today are in fact intended for inflammatory nociceptive pain conditions, and they cannot be regarded as effective for more long-lasting problems (the exception is neurogenic pain on grounds of nerve damage). Those patients who still have pain after 1–3 months and difficulty in returning to work ought to be assessed at a health centre by a multimodal team. Not only doctors but also physiotherapists, psychologists and cognitive behavioural experts ought ideally to be included in this group, because there is now a risk of the acute pain phase developing into problems of a more chronic nature. It is important for the patient to be involved in this assessment process and for any decision to refer to a pain clinic to be made jointly. Responsibility for sending the referral and for follow-up of pain treatment must also be clear to all concerned.

To summarize, the consensus document is based on similar principles to the early attention programme in the Västra Götaland Region, and also earlier Swedish initiatives involving structured care of patients with acute whiplash-associated disorders. Patients who have pain and other symptoms after a road accident ought to be examined at the time of the accident by a doctor who will try by means of thorough examination and documentation to identify patients who are at greater risk of developing long-term problems. Such patients should be followed up quickly if the symptoms do not disappear.

But documentation and monitoring in the consensus document do not follow the same detailed agreed pattern as in the Västra Götaland programme, and monitoring by a physiotherapist occurs only in the case of those still showing symptoms at the time of the return visit. Moreover the WAD grades are fewer and self-assessment of the pain forms an important part of the diagnosis. It is therefore hoped that the consensus document will prove easier to work to, so that it can soon be used in primary care all over the country – even in counties where time and other resources are felt to be at a premium.

Discussion

In this chapter we have discussed principles underlying diagnosis and early attention to people with acute whiplash-associated disorders. One important precondition for this work is that all those involved – both patients and doctors – are made aware that the prognosis is very good, but *for the small group who risk long-lasting problems, action should begin at an early stage*. Correct and early diagnosis intended to identify patients in the risk groups is therefore of the greatest importance. Patient-centred methodology, careful documentation and a sorting of patients by WAD grade and self-assessed pain ought to form the basis of the first contact with a doctor, which ought to happen at the time of the accident. The consensus document produced by the task force of the Swedish Society of Medicine and the Whiplash Commission may serve as simple guidance for Sweden's county councils when they devise procedures for early attention.

The fact that it takes time to change the way of thinking about treatment and care is natural. However the Whiplash Commission believes that all nursing programmes decided at regional level – such as that in the Västra Götaland region – must be followed by a conscious implementation and evaluation process. If there is no deliberate follow-up of the treatment programme, there is a risk that this good initiative will have only temporary and sporadic effects on how medical care functions. It may be difficult for a primary care unit to take decisions which seem in the short term to involve reducing resources – for example by allocating extra time for the first doctor's appointment – despite the fact that early action may reduce the need for care in the long term. The Whiplash Commission is convinced that early attention based on a conscious structure and early follow-up may reduce the number of people with long-term symptoms and thereby eventually save resources for Swedish medical care.

The discussion of financial resources also has a broader dimension. The prime task of the Swedish health service is to reduce human suffering. Making

people with whiplash-associated disorders aware, from the time of the accident, of the good prognosis and the importance of self-activation, and following up the healing process, increases the likelihood of more patients than today being completely cured of their symptoms. Far too many people affected by whiplash-related collision impact finish up in a vicious circle of passivity, sick leave and increasing pain, which may also have some of its origin in stress. This suffering could be appreciably reduced if all patients were received in a constructive manner at an early stage – precisely in the way outlined in the Swedish Society of Medicine and Whiplash Commission task force's consensus document on whiplash diagnosis.

Notes

68 The study is reported in full in Appendix 4 to this report.
69 The results of the questionnaire have also been processed by statistician Anders Odén, who has also calculated the number of patients that would have been needed in order to achieve statistically confirmed replies to a number of questions.
70 Odén calculates that patient material 35 times as great could have given clearer information.

8. REHABILITATION OF PEOPLE WITH LONG-TERM PROBLEMS

Suggestions for action

After 6–12 months, a whiplash-associated disorder is assessed as chronic, which means that some symptoms will probably persist. In that case, another principle is applied to their treatment. Today there are many Swedish clinics that can offer good pain rehabilitation, but places are too few and waiting times are long.

The Whiplash Commission proposes that:

- people with long-term whiplash-associated disorders be rehabilitated according to the same principles as other patients with chronic pain conditions;
- multidisciplinary pain rehabilitation be practised with a view to stimulating a return to work;
- the special conditions and problems of women be considered when rehabilitation is being planned;
- waiting times for rehabilitation be cut, especially at public sector clinics;
- the clinics engage in more research and produce better evaluations of existing rehabilitation;
- inclusion in a national quality register should be increased, especially among private clinics.

Introduction

Is there any effective rehabilitation of people with long-term whiplash-associated disorders? The Whiplash Commission has requested Björn Gerdle, Professor of Rehabilitation Medicine at the Faculty of Health Sciences at Linköping University, to examine the scientific knowledge that exists concerning rehabilitation and together with Dr Michael Peolsson survey and evaluate the rehabilitation offered by Swedish clinics that treat patients with

chronic WAD. The results of the studies form the basis for the conclusions in this Chapter, and the study in its entirety is in Appendices 5 and 6 to this report.

Difference between rehabilitation and treatment at acute stage

In the preceding chapter we have discussed how acute whiplash-associated disorders ought to be diagnosed and treated. We have referred to the task force of the Swedish Society of Medicine, which has drawn up a consensus document relating to the whiplash diagnosis, and to the experience gained from the treatment programme of the Västra Götaland Region. It is hoped that with a clearer diagnostic instrument and more effective early attention the number of people with long-term whiplash-associated disorders might be considerably reduced. However, a small number of those who suffer neck pain and/or stiffness after a road accident involving whiplash impact will also suffer long-term symptoms in the future, and it is the treatment of this group that we will discuss in this chapter. As we have already established, this group constitutes a minority of those who experience neck pain following a car accident. Of those who suffer acute symptoms, relatively few are still troubled by the problems six months later. Only 5–8 % report problems concerning capacity for work, whereas the literature shows a wider variation with regard to the number still experiencing pain now and then.

The treatment that is initiated at the acute stage differs from that given at the chronic stage. At the acute stage efforts are concentrated on healing any injuries and thereby eliminating the symptoms. When the symptoms have become chronic – and a rule of thumb here is approximately 6 months – the treatment is changed. The doctors then calculate that the symptoms are not the result of the acute injury and therefore need to be treated differently.

Treatment of chronic whiplash-associated conditions

The prognosis for acute whiplash-associated disorders is good, and would probably be even better if an activating treatment of those showing acute symptoms began at an early stage. But some patients who still report symptoms 6 months later develop long-term or even lifelong problems. As we mentioned in the previous chapter, intense pain at the acute stage may be a warning of later problems. One of the special aspects of whiplash-associated disorders is that they may involve unresolved insurance questions. The literature is not altogether consistent in its depiction of whether, and, if so, how, insurance aspects influence whiplash-related symptoms, but those working in clinical rehabilita-

tion regard unresolved insurance problems as an obstacle to rehabilitation. It is likely that social contexts and expectations also influence the patients' condition, and also what the health care system is prepared to diagnose and treat. The relationship between acute and chronic symptoms can be diffuse.

A number of different symptoms are liable to occur in cases of chronic whiplash-related syndrome, but it is reasonable to assume that all of them – reduced mobility in the neck, loss of sensation, psychological problems and cognitive difficulties – may be connected with the pain perception. *It is therefore reasonable to treat people with whiplash-associated disorders with the same methods as are used with other people with chronic pain conditions.* In connection with such treatment it is important to describe the extent and consequences of the chronic condition so that the rehabilitation that is commenced is of sufficient breadth.

Patients who are considered to be suffering from some form of post-traumatic stress following the accident constitute an important exception to this principle. Unfortunately, it is not unusual to suffer such symptoms after a car accident. Untreated stress symptoms make it impossible to concentrate effective pain rehabilitation, and need first to be identified and treated. This makes it very important to involve several different professions in the examination and rehabilitation of people with whiplash-related symptoms.

A new view of pain

The old view of pain, based on the idea that it activated certain nerves that sent signals to a special pain centre in the brain, has come increasingly to be questioned. With this older model it was assumed that the perception of pain would be in relation to the seriousness of the injury that caused it. People who had pain without it being possible to demonstrate tissue damage were therefore dismissed with the argument that their pain was "really" a psychological condition. Nowadays pain research is based instead on the idea that the brain has an active role in determining how pain impulses are perceived by the individual. Different parts of the brain are activated by pain. Psychological factors are in fact a part of all pain perception and this means that it is impossible to distinguish between physically and psychologically caused pain. This is one established definition of pain:

> Pain is an uncomfortable sensory and/or emotional perception combined with tissue damage, or potential tissue damage, or described in terms of such damage. Pain is always subjective and may occur in the absence of tissue damage.

Chronic pain

More is known today about chronic pain and what distinguishes it from an acute pain condition. Chronic pain is not merely acute pain extended in time: in some cases there are also changes in the nature and causes of the pain. The nervous system may be affected, and the longer the pain persists, the more probable it is that these changes will remain. Pain of a long-term nature is associated with plastic changes in, for example, the cerebral cortex. Normally the brain exercises control of the spinal cord, but the balance between inhibiting and stimulating mechanisms may be disturbed by chronic pain. For that reason, long-term pain associated with whiplash-related conditions has to be treated as a complex and multi-faceted problem.

Definitions of rehabilitation

There are several definitions of rehabilitation. In 1960 the WHO defined it as

> all measures intended both to reduce the effect of functionally impairing and disabling conditions and to integrate the individual socially.

A later, Swedish, definition, formulated by the National Board of Health and Welfare, the County Councils and the Swedish Association of Local Authorities, describes rehabilitation as

> early, coordinated and all-sided input from different areas of expertise and activities that involves combining medical, psychological, educational, social and technical action on the basis of the needs, capacities and interests of the individual.

Differently expressed, the aim of rehabilitation is to help people who are sick and injured to recover the best possible functioning and capacity and to improve their prospects of full participation in the life of the community.

Regardless of how rehabilitation is defined, it is important to work towards a goal, so that doctor and patient together can decide when rehabilitation has achieved its purpose. The goal may be described in more general terms as that of creating well-being in the context of a new life situation with persisting symptoms, but after this a more individually related specific goal has to be formulated. For most of those suffering whiplash-associated disorders a return to work in some form becomes an important aim.

Treatment terminology usually makes a distinction between rehabilita-

tion and reactivation – the latter means restoring functions and abilities, for example by means of physiotherapy and occupational therapy.

Different treatments for chronic whiplash-associated disorders

Many different types of treatment have been tried for patients with chronic whiplash-associated disorders, but there is no convincing evidence of the superiority of any single somatic method. Most of the studies performed have been of low methodological quality, and more research is required. In Australia, doctors have developed a method based on *radio frequency neurotomy*, where it is assumed that it is the facet joints that cause pain. The method is said to give good pain relief, but needs to be confirmed by other studies that compare it with other methods.

German radiologist Eckhardt Volle has developed a magnetic resonance imaging method that is said to permit diagnosis of injuries to ligaments and joint capsules that stabilize the head. The patient is then operated on by Volle's colleague Abbas Montazem, so that the head is stabilized (a sort of immobilization of the damaged ligaments). A few studies have been published and much has been written about the method by the Swedish media. However it has been pointed out by back surgeons, neuroradiologists and otoneurologists that this investigative method is poorly controlled, and that the proposed operating method is associated with considerable risk.

Another method that has also attracted a lot of media attention involves removing certain trigger points on the muscle fasciae. This operating method is employed by the Swedish doctor Åke Nyström, who works in the USA, but has not been evaluated with, for example, a control group and long-term follow-up. Until such an evaluation has been carried out, it is impossible to pronounce on the effects of the method. The fact that an operation may have a favourable short-term effect on a chronic pain condition does not mean that it works well in the longer term. Furthermore, operations always involve a risk to the patient.

To summarize, knowledge of the effect of this type of targeted treatment method on chronic whiplash-related disorders is very limited. Until evaluations, follow-ups and comparative studies are available, the Whiplash Commission cannot recommend the use of any of the methods described above.

Long-term rehabilitation

Diagnosis

All rehabilitation ought to begin with careful diagnosis. Such diagnosis differs from that carried out at the acute stage, most often by doctors, for the purpose of identifying possible treatments that will heal the injury and eliminate the symptoms. *The diagnosis with regard to longer-term rehabilitation is instead based on the assumption that the symptoms are of a chronic nature.* Somatic, psychological, social, financial, cultural and personality aspects all have to be established, because whiplash-associated disorders – like all chronic pain conditions – have a significant complexity. As has been emphasized above, attention ought to be given to symptoms of untreated post-traumatic stress – a condition that sometimes arises in people who have been involved in a road accident. (All rehabilitation of patients who are considered to have some form of post-traumatic stress reaction must first take account of and treat these symptoms. This also means that more different professions need to be involved in the diagnosis.)

Such a multiprofessional (multidisciplinary) assessment ought to be made earlier and on broader indications than is done at present. On a national level we propose an earlier assessment of those patients considered to have chronic symptoms, in order to examine what prospects of rehabilitation there are and how this rehabilitation ought to be arranged. Specialist clinics dealing with pain relief should not be the only ones able to offer such multidisciplinary investigations.

New diagnostic methods

Knowledge of which factors increase and which reduce the risk of chronic development of whiplash-related pain is at present very limited. Nor is it unusual in clinical work to encounter the conception that chronic pain has no neurobiological basis (i.e. that there are no changes in the painful musculature). But from studies in animals it is known that certain metabolic changes and increases in different markers which are elevated by injury may produce pain. It is also believed that the sensitivity of nerve tissue that signals pain may be increased by the presence of certain substances and by release of different compounds in the body (e.g. lactic acid), as happens when the muscles are working.

When a person is suffering from a chronic pain condition, this is often accompanied by repeated muscular contractions. There is therefore an urgent need to develop new diagnostic methods that attempt in various ways to

determine what substances are released by the body in chronic pain conditions, and how these affect the perception of pain. It would improve today's diagnostic methods if it were possible to pinpoint the nature of the pain by means of such objective findings. It would also be a great help in the planning and implementation of better and more effective rehabilitation.

The Whiplash Commission has assisted in the financing of an experiment at the Faculty of Health Sciences at Linköping University (in collaboration with a research team in Copenhagen) in which different substances have been measured in the bodies of twenty experimental subjects with chronic whiplash-associated disorders. The study is reported in full in Appendix 7 to this report.

The experimental subjects have been checked both at rest and in static work, and they have been compared with a healthy control group and a group with chronic occupationally related trapezius myalgia, which is a general pain condition originating in, for example, stress injuries. The question asked was which substances could be observed and how these could be related to the intensity of the pain. The study showed several differences in the musculature of patients with chronic WAD by comparison with a healthy control group. The differences were related to metabolism, cell damage and anti-inflammatory activity. One interesting observation was that the WAD group does not have the same pattern of changes as people with chronic pain resulting from stress injuries. This might indicate that whiplash-related pain looks different – but as yet the material is too small for it too enable any conclusions to be drawn from these observations.

Rehabilitation plan

It is important for the patient to be involved in the work of drawing up a rehabilitation plan, and for him or her to be clearly informed that the investigative phase has been completed and what may be expected of the rehabilitation programme. It may be important, for example, to make it clear that even if a certain pain may persist, the aim of rehabilitation may be to learn to cope with this pain and to live an active life. It is also important to regard rehabilitation as a process which may take time, and which in the last resort is geared to giving the person concerned another and a better approach to life. Primary care resources are often inadequate for implementing such a plan, and specialist expertise may therefore be needed. To increase the chances of successful rehabilitation both the Social Insurance Agency and the employer (through the industrial health service) ought to be involved from the time of formulating the plan, which should be in writing in order to give it a clear structure.

Special aspects of rehabilitation of people with chronic WAD

As has been stated above, people with chronic pain ought for purposes of rehabilitation to be treated as one group, regardless of whether the pain is due to whiplash impact or to some other cause. However there are certain aspects which have been pointed out as specific to the whiplash-related conditions. We have already emphasized the importance of establishing whether the patient appears to be suffering from post-traumatic stress symptoms. Another important aspect of the rehabilitation of this group is that a high proportion of people with chronic complaints are women. This may have different causes, which are also relevant to how the rehabilitation plan is designed: women more often have a double work load, working both at home and at work, have less opportunity of being moved to a different position at work, and are also less able to obtain early and intensive treatment.

Another observation is that people with whiplash-related injuries have been found in some studies to be sicklisted/incapable of work to a higher degree than other pain patients, despite effective pain management and an otherwise successful rehabilitation.

An additional factor to be taken into account, which has also already been mentioned, is that an ongoing insurance case may be regarded as an obstacle to effective rehabilitation. It becomes difficult to focus on adaptation to the new life situation before the insurance questions are settled.

Multifactorial rehabilitation

As chronic pain conditions are complex, rehabilitation should also consider the physical, psychological and social situation of the patient. However, only a few studies analyse the effects of multidisciplinary rehabilitation of people with whiplash-associated disorders, and the results are contradictory. Even rehabilitation that has been assessed as successful in dealing with pain and improving the patient's quality of life has seldom led to a return to work.

Several studies have examined the effects of multidisciplinary rehabilitation on people with chronic pain conditions generally. Here researchers have been able to show that both functions and pain management work better with a broader approach to rehabilitation, and that this should preferably be intensive. On the other hand, the effect on return to work has been difficult to demonstrate.

Rehabilitation of people with whiplash-associated disorders at Swedish clinics

What type of rehabilitation is offered, then, to Swedish patients who suffer from chronic whiplash-related pain and its secondary symptoms? A survey of Swedish clinics has been carried out by the Faculty of Health Sciences at Linköping University. The selection of care providers was made in order to include both private and local authority clinics. One reason for this was that the Commission has been informed in conversations with patients' organizations that private clinics meet patients' needs better than those run by the county councils. A total of 82 units or clinics were identified. Of these, 53 (65%) were run by the county councils, and 29 (35%) were private. All the clinics were contacted and asked to answer a questionnaire covering number of patients/year, waiting times, treatment methods, evaluations, research and whether the clinic was linked to a national quality register. Of the clinics identified, 76% replied, which may be considered enough to give a picture of the rehabilitative efforts made in Sweden in connection with whiplash-related conditions. However, it is essential to note that the private clinics sometimes chose not to answer or sometimes quite simply had too few patients per year for it to be considered meaningful for them to take part in the evaluation.[71]

Multidisciplinary treatment

It emerges from the questionnaire that irrespective of the form of organization the clinics generally use a multi-theoretical and multiprofessional team when dealing with WAD patients. Swedish treatment clinics have thus noted the complexity of chronic pain in whiplash-associated disorders. But the clinics are not entirely consistent in their attention to the particular criteria that ought to apply in the case of WAD-related conditions (the underlying trauma, focus on the differing situations of women and men, etc.). The Whiplash Commission considers that if such criteria are clarified and become uniform, treatment will probably be more effective. Comparisons between different clinics would also be facilitated.

Waiting times

The waiting time for treatment at clinics is long, but there are significant differences between the different organizations. Waiting times of between a few weeks and a year have been reported. The results show that the waiting time may be up to twice as long in county council pain units as in private ones, and up to three times as long when it comes to waiting for a WAD-specific

rehabilitation programme. As we have already stated that quick rehabilitation is an important factor in the prospects for recovery after a road accident, this is unfortunate. In addition, many WAD patients have visited one or more treatment centres before receiving a referral to a pain clinic. The actual waiting time has then been longer than is shown by the material. The number of symptoms usually increases with the time it takes for patients with whiplash-associated disorders to receive treatment.

At the same time several clinics point out that it is important for rehabilitation to take place at a stage when the patient is receptive and can play a positive part in his or her own treatment. Research shows that after a road accident with lasting consequences, it may take time for the individual to work through the trauma so that effective treatment can begin.

How many receive help?

The clinics report that they can examine most of the patients referred to them. Approximately 85% of the estimated treatment requirement is investigated, according to the replies. On the other hand the clinics, both county council and private, consider that only every second patient receives the treatment that is deemed necessary. This is very unfortunate, from several points of view. First of all, these figures imply that something approaching 1 500 people per year with chronic pain problems following whiplash-related injury are not receiving the treatment they are considered to need. Secondly, this probably leads to a situation where some of these people will continue to develop secondary symptoms, such as greater spread of pain and sensitivity.

Evaluation and research

The results show that four out of five clinics evaluate their own treatment activities in some way. The privately run clinics are somewhat more ambitious than the county council clinics. The same applies to research – here, too, the private clinics reportedly carry out research more often than the county council clinics. But when the field is narrowed to WAD-specific evaluation and research, the results are poorer. Moreover, the replies contain little information about the nature of "evaluation" and "research". All that can be said on the basis of the material is that the proportion of "minor evaluations" is twice as common in the private clinics as in the county council clinics. This means that when county council run units carry out evaluations, these are generally of a more extensive and comprehensive character.

The rate of affiliation to a national quality register is low, especially among the private clinics. Only 20% of the privately run clinics were affiliated, and

50% of the county council clinics. This may mean that there are shortcomings in the systematic quality assurance of the clinics. This is unfortunate for several reasons. The register has been set up in order to facilitate comparison between different care providers, to improve the quality of treatment, to permit evaluations and to facilitate research. They are registered with the National Board of Health and Welfare and it is relatively simple to join. The quality register forms one of the most important instruments for improving treatment in Sweden.

In Sweden there is a national quality register for pain rehabilitation (NRS) in the Västra Götaland Region, primary care unit in Gothenburg. Associate Professor Harold Sanne at the Work Rehab Centre is in charge of it. The register estimated in 2003 that roughly 70% of units providing pain rehabilitation are included – which is not confirmed by the evaluation by Gerdle and Peolsson in 2004. In a description of the register, the National Board of Health and Welfare says as follows:

> There is a limited flow of patients at each rehabilitation clinic, which makes evaluation more difficult. With a national register it is possible to obtain patient information for description of precise and relevant data on rehabilitation that makes evaluation easier. A nation-wide register is significant in assisting the development of the field, i.e. improving work at rehabilitation units, but it will also give knowledge of and lead to improvements in primary care and more generally.

The Whiplash Commission believes that undertaking clinical research and evaluation designed to improve the quality of the work done should be a policy goal of those clinics that receive and treat patients with long-term pain problems. If these clinics can cooperate with the national pain register and thereby improve their evaluation procedures, this may in future enable us to compare the treatment given by different clinics, and their results, which would be of benefit to patients suffering from whiplash-associated disorders.

Discussion

To summarize, we can repeat that by rehabilitation we mean measures addressed to people with chronic problems – and that this group constitutes a small proportion of those who suffer problems at an early stage. The goals of rehabilitation should be designed for the individual, but a more general objective is an adjustment to a new life situation and active participation in the life of the community.

People with whiplash-associated disorders may be compared with other people with long-term pain conditions, and the pain should be seen as a complex state, where psychological factors play a part. The multiplicity of symptoms which certain people with whiplash-related injuries describe – cognitive disturbances, loss of sensation in arms and hands, insomnia – may have their roots in the pain. A long-term pain condition has been shown to be capable of giving permanent changes in, for example, the body's nervous system, and rehabilitation has to be adapted to the particular character of long-term pain.

Operations intended to alleviate whiplash-associated disorders are still too poorly documented to enable the Whiplash Commission to recommend them, as are a number of experimental methods of diagnosis. Operations always involve a risk to the patient, which makes it particularly remarkable that scientific evaluations and follow-ups are not carried out.

Comprehensive diagnosis is needed before rehabilitative measures begin, with different professions taking part. The Commission therefore recommends that people with long-term pain conditions should be examined by multidisciplinary teams. It is also important for the patients to be active in the formulation of a rehabilitation plan, and for others concerned – for example the Social Insurance Agency and the employer – to take part in the process.

Multidisciplinary rehabilitation has proved effective with chronic pain conditions, at least with regard to pain management and perceived quality of life. On the other hand, it has been difficult to find effective rehabilitative measures that lead to a return to work. This applies even more to people with whiplash-associated disorders, where a number of studies show that despite better pain management and perceived quality of life than among other pain patients, the frequency of sick leave is higher in this group. A survey of the rehabilitation offered to patients with whiplash-associated conditions in Sweden today shows that most clinics are aware of the complexity of the condition, and that they offer multidisciplinary treatment. However, the clinics are not as good at systematically mapping out the particular circumstances that may prevail in the case of a person who has suffered a trauma as compared with a "normal" pain patient. The need for examination is met to a satisfactory degree, but the relationship between the estimated need for treatment and the treatment actually given is poorer. Only half of those needing treatment receive help. Waiting times are long and research and evaluation display deficiencies. This particularly applies to affiliation to a national quality register.

The differences between the county council and the privately run clinics are primarily in the waiting time – much shorter at private clinics than at county council clinics – and in evaluation. The private clinics appear to eva-

luate their activities more often than county council clinics, but the majority of their evaluations are described as “minor”. This means that they do not carry the same weight as the fewer, but larger, evaluations conducted by the county council units. One way of raising the quality of evaluation work is by affiliating to the national pain register at present kept by the Work Rehab Centre in Gothenburg. The rate of affiliation to the quality register was more than twice as high in the county council run clinics than in the privately run clinics, although still no higher than 50%, which is far too low.

Notes

71 A limit of 10 patients/year was set for the clinics taking part in the evaluation.

9. SIMPLIFIED CLAIMS SETTLEMENT

Suggestions for action

There is a danger that whiplash-associated disorders will become worse and permanent unless claims settlement is quick and effective. Motor insurance is today burdened by the growing number of whiplash-associated claims received, while at the same time the compensation system is hard for the individual to comprehend and may give rise to disputes. A simplification of claims settlement would improve the situation and this ought to be achievable by increased use of standard payments.

The Whiplash Commission proposes that:

- processing of national insurance claims and motor insurance claims be better synchronized, leading to more consistent assessments;
- the question of connection (cause and effect) be made dependent on an early medical diagnosis;
- changes be made to the way the insurance company's medical experts are organized;
- guidelines for the reports of the treating doctors and the medical advisers be clarified;
- possible greater use of standard payments under the Traffic Damage Act be specially investigated.

Introduction

All available research shows that it is important for persons suffering from whiplash-related symptoms to receive help quickly. Carrying on for a lengthy period with untreated pain problems may lead to an aggravation of the problems and to their becoming chronic. From the health point of view, it is therefore important to receive help quickly in dealing with the problems and for this help to be focused on a return to a functioning life.

In an earlier chapter, we proposed principles of early attention and the rehabilitative measures to be offered to people with whiplash-associated disorders. But therapeutic and rehabilitative efforts have to be supplemented

with a compensation system that also works quickly and effectively. This chapter therefore discusses the compensation system as it is today, its consequences, and how it could be made more effective. The arguments in the chapter are based in part on Marcus Radetzki's report on possibilities of obtaining compensation for neck problems and the memorandum of Ola Schönning and Jan Kleineman on standard payments under the Traffic Damage Act, which are presented as Appendices 8 and 10 to the main report.

Motor insurance today

Most of the more than 50 000 personal injury claims received annually by Swedish insurance companies are settled quickly and effectively. Approximately 65% of the claims involved are settled within a few months, partly because the symptoms suffered by the claimant immediately after the accident have subsided. In addition roughly 25% are settled within a few years – these are less severe injuries leaving less severe effects. Here part of the delay is caused by the need for the insurance company to wait for the injury to be deemed chronic by the treating doctor, which most experts say is possible after about a year – in other words, it is possible that this process could be accelerated.[72] *The great majority of the road accident claims reported are thus settled relatively quickly, which is beneficial to the claimant's state of health.*

The problem of long processing times therefore applies to a small proportion of the road traffic injuries reported, about 10% of the total. The great majority of these are whiplash-related injuries. In this group we find processing times of many years, right up to a decade. And it was indeed principally the implications for this group that were discussed in the Financial Supervisory Authority's report *Stärkt skydd för trafikskadade* [Greater Protection for Road Accident Victims] in 2003, where insurance company processing procedures were discussed and criticized.

Benefit principles

Compensation for an injury in a road accident comes from private motor insurance. If sick leave is needed, payment is also made by the employer and by the state sickness insurance system. Most people are covered by collective insurance policies, which are based on agreements between the employer and employee organizations. The law requires the employer to pay sick pay for the first two weeks, followed by an extra sickness insurance contribution of 15% during the period of full sickness allowance. For the sake of simplicity all these types of benefit are referred to in this chapter as "national insurance".

Private motor insurance and national insurance are based to some extent on different principles.

The private road accident insurance system is based on tort law principles. This means in legal terms that a road traffic injury is dealt with in accordance with the Tort Liability Act, where the principle is to *compensate the claimant financially as if the injury had not taken place*. In practice this means that private motor insurance has to supplement those sums that are paid from the national insurance system, so that the principles of tort liability law are followed. In addition traffic damages legislation also provides for compensation for non-financial loss, i.e. for "disfigurement and disadvantage" and special costs.

Under the Tort Liability Act, financial compensation has to be calculated separately for each individual concerned. This means that every person injured in a road accident is to be compensated by applying an individual calculation of the extent and nature of the injury, the degree of incapacity for work and the financial situation of the claimant as it would have been if the injury had not occurred. For more serious road traffic injuries we have in Sweden a special legal body, the Road Traffic Injuries Commission, which makes an independent assessment of the payment from the private motor insurance policies. There is a similar arrangement in Finland.

Medical disability

If after a road accident a person suffers lasting disadvantage, the motor insurance assesses how disabling the permanent injury is considered to be from a medical point of view. This need not coincide with the degree of incapacity for work. The injured person may, for example lose, a hand and still be able to work full-time. The text of the act defines medical disability as

> physical and/or mental impairment of functioning independent of cause without regard to the occupation, recreational interests or other special circumstances of the claimant.

In practice, medical disability has acquired direct relevance to compensation for non-financial loss – e.g. loss of a hand – which gives a lasting "disfigurement and disadvantage" and may also lead to "particular disadvantage" (for example strain at work). In addition, it is possible to obtain compensation for "pain and suffering". This item sometimes includes compensation for "physical and mental suffering" during the acute sickness period, which is usually the same as the period of sick leave. There are medical tables that state percentages for functional disability for a number of different injuries. These percentages

are linked to a number of standard amounts of compensation for non-financial loss. Quite simply the claimants receive different amounts for different types of injuries. The item "particular disadvantage" is more difficult to standardize, as it has to take into account the situation of the individual – e.g. at the place of work. In practice fixed annual amounts linked to different degrees of disability have come to be used here, too. The system has worked according to these principles since the first work injury legislation came into force in 1901.

However, it has not been possible to connect medical disability to the question of incapacity for work – and thus to loss of income – in the same simplified manner. For some people an injury which the tables regard as slight may lead to almost total incapacity for work. According to a review carried out in 2001, for example, something as minor as an assessed degree of disability of 15% may mean that a road injury victim never returns to work. In other cases a major injury (for example loss of sight, which is equivalent to 68% medical disability) may nevertheless allow the injured party to continue working. Here an assessment is made in each individual case.

National insurance

Occupational injury legislation is based on the principles of tort law. Collective insurance has similarities to motor insurance. But other parts of the national insurance system are not based on tort law principles. Therefore the legal principle on which the national insurance is based, the principle of income compensation, may be generally characterized as

> Social security by means of social insurance and some contributory systems.

Here the aim is to give people financial security. When the national insurance system calculates what a person injured in a road accident is to receive in compensation, it is the degree of incapacity for work, and not the medical disability, that is assessed. If after a road accident a person cannot work at all, the national insurance works as follows: For an initial period of two weeks the employer pays sick pay at 80% of the person's income. The injured party then receives compensation for loss of income from the national insurance up to an amount of 80% of the qualifying income up to a ceiling of 7 ½ times the base amount under the National Insurance Act. During this period, the employer pays a contribution equivalent to 15% of the sickness allowance to the Social Insurance Agency. In many cases this is augmented with a collective payment

from the employer which raises the amount of benefit, at least during the first year. If the person concerned then becomes incapable of work for at least a year, sickness benefit or activity allowance is instead paid to an amount equivalent to 64% of the income qualifying for sickness allowance up to a ceiling of 7 ½ times the base amount (these used to be called temporary disability pension and disability pension).

If the injury has occurred as a result of an accident at work or on the way to or from work, the injury and the loss of income can be considered under the work injury insurance. If the injury is regarded as a work injury, an annuity may be paid together with sickness benefit and activity allowance as in the example above. The annuity makes up the difference between the income the claimant would have had if uninjured and the sickness benefit, but a limit of 7 ½ times the base amount under the National Insurance Act applies to work injury annuity (see, also, the list in Table 1 below).

If an annuity is granted from the work injury insurance, the motor insurer will adjust the payment made for the same injury with the individual.

The difference between the private motor insurance and the national insurance is thus in part due to the fact that they follow separate legal principles: tort law and the principle of social security. The question of the difference in legal basis between the systems has been discussed on a number of occasions since the Traffic Damage Act was passed in 1976. This has been partly on account of the long processing times and the confusing situation that may prevail after a road accident for which compensation is to be paid under two different systems. There has been a change in the view taken in Swedish society of tort law since the middle of the 1970s – among other things the payments for non-financial loss (pain and suffering) have gradually risen in recent years. However, it is probable that the system of two parallel principles will survive for the foreseeable future.

The Whiplash Commission nevertheless considers it essential to maintain a continuous discussion of the design of the system and its consequences for the individual. The fact that people injured in road accidents are compensated in accordance with two different legal principles calls for close cooperation between the Social Insurance Agency and the insurance company of the claimant.

Work capacity

The Social Insurance Agency assesses the work capacity of the individual. This assessment is sometimes complicated. A particular occupation may be so demanding that the person cannot work at all. But if given other duties, it is possible that the injured person can work half-time or more. The assessment

is made with the aid of a seven-stage model, where the first stage is that the injured person can return to his or her regular employment and the seventh is that he or she cannot return to work at all. The assessment takes account of the rehabilitation measures that may be needed. The role of the Social Insurance Agency is to coordinate the rehabilitative measures provided by other agencies. In a road accident case it is therefore important for the Social Insurance Agency to cooperate with the insurance company concerned to enable the question of compensation to be coordinated and quick decisions to be taken. Otherwise there is a risk of a dispute arising with the injured person because of lack of clarity. This may involve the matter of compensation, rehabilitation or help in returning to the labour market. A conflict sometimes arises when the Social Insurance Agency wants to decide on sickness benefit or activity allowance, whereas the injured person wants to continue to take sick leave. Potential reasons for this disagreement are that the benefit paid is higher on sick leave, and that the possibility of rehabilitation and assistance in returning to the labour market is seen as better in the case of a person on sick leave than of one receiving sickness benefit or activity allowance.

Private motor insurers have to compensate the individual for the calculated total loss of income. It is always difficult to calculate what a person would have earned if an accident had not happened. Here it is not only the income on the actual occasion of injury that is relevant. The insurance company has also to take account of a general rise in the salary level, of future career and promotion possibilities. It is extra difficult for those people who have a low income at the time of the accident, but who would hopefully earn substantially more in future – two common examples are self-employed people who have just started up, and students who have not yet graduated. This type of calculation takes time and not infrequently causes conflict between policyholder and insurance company.

Problems of the present system

Compensation for road traffic injuries is therefore complicated by the fact that the claimant is to receive payment under two different insurance systems. These systems have to be reconciled, which means that claims adjusters in private companies have to collect information concerning the payments that an injured person received from the national insurance scheme and also, where applicable, from the employer. Only then can the company calculate the amount of the compensation from the motor insurance – a calculation that is not without its complications.[73] Here is one of the many explanations for

the long processing times in road accident cases, and also one of the reasons for payments being so difficult for the claimant to calculate in advance.

One serious problem connected with long processing times and differing assessments may be that the person suffering an injury does not dare try to go back to work, because he or she feels that there is a risk of losing the possibility of future compensation for loss of income. Where sufferers from whiplash-associated disorders are concerned, there is evidence that the problems may subside for a while and then return. This is not unusual where chronic pain symptoms are concerned, but the injured person may feel that there is less hope of financial compensation from the motor insurer if periods of work are interspersed with shorter periods of sick leave. Seen in this light, a long period of sick leave may be a way of emphasising the seriousness of the injury. But medical experience has shown that in this way there is a risk of health deteriorating as a result of inactivity. Long sick leave may therefore act as a way into permanent incapacity for work.

Different bases for calculation

The national insurance system and private insurance companies also have, to some extent, different bases for calculating incapacity for work. The Social Insurance Agency assesses the ability to work and to earn money. Private insurance companies, on the other hand, make first and foremost an assessment of *functional disability* in relation to the strain in pursuing the normal occupation, i.e. the medical disability. This means that the medical tables are far more important to private insurance companies and they also depend on a number of medical advisers, whose task is to pronounce on the functional disability of every claimant. Conflict may occur with regard to the assessment of how disabling an injury really is – the treating doctor may reach a conclusion different from that of the medical advisers.

This is fully consistent with the different purposes of the two insurance systems in Sweden, but may appear unfair to a person being compensated in accordance with differing principles. The different bases for assessment in the national insurance system and in the private system also contain a possible cause for conflict between the claimant and his or her insurance company. Here, too, the ability of the injured person to predict in practice how much the final compensation ought reasonably to be is very limited.

Role of certificates

The certificates that medical advisers issue become very important in determining how the claimant's case will be dealt with. Similarly, the reports from the Social Insurance Agency advisers play a key role in the assessment of a

person's work capacity. There is not infrequently a difference between how the medical advisers and the treating doctor assess questions of disability and capacity for work.

The question of how medical certificates and reports should be written and how those concerned should be trained in issuing them has been discussed in recent years both within the Social Insurance Agency and in the insurance industry. The in-service training that is arranged is intended to make the writing of certificates more consistent and to assure its quality. Reports from the Financial Supervisory Authority in 1998 and 2003 on the Traffic Damage Act have also discussed the certificates. It is pointed out in these reports that it is important for case notes and medical certificates forming a basis for medical assessment in claims settlement to satisfy the qualitative requirements of the National Board of Health and Welfare, but also that it is the responsibility of the insurance companies not to make assessments on a qualitatively unsatisfactory basis. The Financial Supervisory Authority therefore proposes that the companies draw up guidelines for the design of the medical documentation and also consider guidelines regarding the expertise required of the medical advisers. Such guidelines are now being prepared.

As the Financial Supervisory Authority points out, there are both specific requirements for the settlement of road traffic injury claims and also general requirements with regard to reports and certificates. The former are a matter for the insurance companies to decide, although in consultation with the companies' medical advisers. However, the general requirements are today governed by National Board of Health and Welfare directives to health and medical service personnel on the writing of certificates etc.[74] These directives, according to the National Board of Health and Welfare, are planned for review and will eventually be replaced by new rules.

The question of cause and effect

For compensation from the road accident insurance to be payable the cause of the injury has to be a road accident. In many cases this question of cause and effect is relatively unproblematic. In the case of whiplash-related injuries it has proved more difficult. This applies particularly when the symptoms only appear a long while after the accident and where documentation of initial injuries is lacking. As has been discussed earlier in the report, whiplash-related injuries may give rise to a whole series of diffuse symptoms: pain, dizziness, insomnia, cognitive difficulties etc., which can vary over time in the same person. Long-term chronic pain affects the body's various systems, which can cause all these symptoms, and it is therefore reasonable to treat

protracted whiplash-associated disorders as chronic pain conditions. The problem is that the symptoms are not unique to those with whiplash-related injuries: about 10% of the Swedish population suffers from some form of recurring neck pain, with symptoms similar to those of whiplash-associated disorders, but caused by age, incorrect working posture, overexertion during recreation, stress, etc.

The fact that whiplash-associated disorders coincide with the neck problems suffered by many other Swedes presents no difficulty from the point of view of treatment, as we have discussed in Chapter 8. However, the cause of the problems cannot be determined from a study of the symptoms. *Despite certain attempts at magnetic resonance imaging and mathematical calculations based on the nature of the accident, there is today no reliable method of demonstrating any particular "whiplash-related injury" other than through the symptoms.* And this collection of symptoms is shared by many other Swedes with neck trouble. This means that the private insurance company and the policyholder must reach agreement that it really is a road accident that is causing the problems – not working posture, age-related wear and tear, etc.

To many people with whiplash-related injury this is not a problem, because there is documentation from primary care and early contact with the insurance company where an early pain can be used as an indication that the problems have arisen from the road accident. But to people who, for some reason have had no disorders documented in connection with the accident, and who after a long period of time – sometimes several years – experience neck pain, loss of sensation and dizziness, it may be more difficult. How is the insurance company to decide whether this is "ordinary" neck trouble or a symptom following an accident?

The insurance companies' medical advisers have a crucial role, and their work has been widely discussed in recent years. Their role has been questioned because they are not under the supervision of the National Board of Health and Welfare.[75] Several patient associations have levelled criticism at the present system and expressed a wish for some sort of state supervision of medical advisers, and in 2003 the Government asked the National Board of Health and Welfare whether such supervision ought not to exist. The question has been considered by the Board, which concludes that the work of medical advisers is of an administrative nature. They ought not therefore to fall under the Health Care Control Act. The Board recommends instead that the Judicial Council should be able to review cases where disagreement arises concerning assessment of the degree of disability or the question of cause and effect.[76] At the same time there is discussion within the insurance industry of a com-

mon "pool" of medical advisers, which would not therefore be attached to an individual company. The Whiplash Commission is of the opinion that this idea ought to be pursued further.

As far as the complex question of cause and effect is concerned, there is therefore an additional unfortunate incentive for the person injured in a road accident to look for a long continuous period of sick leave – which may lead to early symptoms becoming chronic. If after several years of awaiting settlement a claimant receives a decision that the symptoms are not considered to have been caused by a road accident, the financial situation becomes very different from what it would have been if the link had been accepted. A discussion of the differences in the possibility of compensation is included later in the chapter.

Importance of quick settlement

During the days when injuries from road accidents were less numerous in Sweden, the motor insurance system worked reasonably well. It always takes time to calculate future loss of income, but for as long as Sweden had a small number of road accidents, there was still room in the system to maintain a claims settlement process that, on average, took a couple of years. During the 1990s, however, this balance was shaken. This is because the number of road traffic injuries reported to the insurance companies has risen rapidly in recent decades. This increase has caused the insurance companies to fall behind and some settlements have taken a long time. The overwhelming proportion of road traffic injuries reported in Sweden today are whiplash-associated disorders. The companies report that well over half of the injuries nowadays relate to neck troubles after a road accident. And as we have mentioned several times in this report, it is important for the person suffering from whiplash-related disorders to return rapidly to an active life. *A long drawn out settlement process, where there is no incentive to return to an active life, hits the victim hardest.*

Possibility of appeal against insurer's decision

Our Swedish road traffic injury insurance system allows the individual to appeal against insurance company decisions. The motor insurance also contains an item for "lawyer's costs" which varies between insurers, but which is today around SEK 100 000. Some patient associations and the Swedish Bar Association have sought an increase in this amount with a view to making it easier for the claimant to pursue his or her case through the courts. The legal cases that have arisen so far largely concern whiplash-related injuries and the causes of conflict that we have discussed earlier. The compensation amount is contested, because the claimant does not agree on the degree of

disability that the insurance company has calculated. Sometimes the question of cause and effect leads to proceedings, because the insurance company may argue that neck problems have no connection with a road accident while the claimant asserts that they have. No more than about 150 cases per year go to court, but they receive a lot of media attention. Here the medical advisers to the insurance companies are also often discussed, because their opinions are often opposed to certificates issued by other doctors who assess the degree of disability differently.

In those judgments that have been made it has proved that the courts usually find the insurance companies' decisions reasonable. The three whiplash-related cases that have been dealt with by the Supreme Court confirm this impression. Moreover the scope for materially changing the financial situation of the claimant by means of legal proceedings is limited. The amounts for non-financial loss are so small that a change in the disability percentage has only a marginal effect. It is also difficult to see any dramatic change in the functional disability in relation to the loss of income. Where legal proceedings may have a decisive importance is with regard to the cause and effect question, as this is so central to the prospect of obtaining compensation from the motor insurance at all. It is important from the point of view of legal certainty that the individual has access to the legal system, and that possibility exists in Sweden today. But experience shows in practice that the Swedish courts have often agreed with the insurance companies' conclusions regarding cause and effect. *For this reason the Whiplash Commission is of the opinion that legal proceedings in the individual case are not the course to be chosen from the point of view of simplifying and improving the effectiveness of claims settlement under the Traffic Damage Act.*

Furthermore, many of the claimants who have contacted the Whiplash Commission are not fully aware that as an individual there is a financial risk involved in taking legal proceedings in Sweden. One risks having to pay large amounts for one's own and the insurer's legal expenses if the case is lost. The fact that legal consideration often continues for several years may also undermine the health of the claimant, and his or her financial situation may become even more constrained.

Significance of the compensation system

One of the matters that has caused conflict with regard to whiplash-related injuries is the question of cause and effect. But how much does the insurance company's view of the cause of the problem matter to the individual? By looking at the possibility of obtaining compensation given three different

possible causes of neck pain, it is possible to give a quick overview of the situation. Associate Professor Marcus Radetzki at Örebro University has at the request of the Whiplash Commission carried out a review of how the system functions; this is set out in Appendix 8 to this report. The question which is considered concerns possible compensation in the event of:

- illness/recreational accident
- occupational injury or illness
- road traffic injury

As the cover that many people have through their employer plays a part in determining the compensation amount, the financial levels have been analysed for three groups of employees: privately employed blue-collar workers, privately employed white-collar workers, and public sector employees. Three occupational categories have been amalgamated for the sake of simplicity, but the conditions differ.[77]

Table 1: Possibility of compensation in 2004 for neck disorders – an average of three occupational categories

(In the occupational injury column, compensation in the event of accident is given without brackets and compensation for occupational illness is in brackets)

AVERAGE COMPENSATION									
	Illness/recreational accident			**Occupational injury**			**Road traffic injury**		
Loss of income									
Income level	**< 7.5 pbb**	**> 7.5 pbb < 20 ibb**	**< 20 ibb < 30 ibb**	**< 7.5 pbb**	**> 7.5 pbb < 20 ibb**	**< 20 ibb < 30 ibb**	**< 7.5 pbb**	**> 7.5 pbb < 20 ibb**	**< 20 ibb < 30 ibb**
Day 1	0%	0%	0%	100% (Special work injury compensation (Qualifying income/365) x 2)	100%	100%	100%	100%	100%
Day 10	80%	80%	80%	100% (80%)	100% (80%)	100% (80%)	100%	100%	100%
Day 50	approx. 87.6%	60%	60%	100% (ca 87.6%)	100% (60%)	100% (60%)	100%	100%	100%
Day 100	approx. 80.9%	48.3%	37.5%	100% (ca 80.9%)	100% (48.3%)	100% (37.5%)	100%	100%	100%
Day 1000	approx. 81%	48.7%	24.3%	100% (100%)	100% (100%)	100% (100%)	100%	100%	100%
Cost									
Stay in hospital	NO[i]			YES[ii] (YES)[b]			YES[b]		
Other med. care	NO[a]			YES[iii] (YES)[c]			YES[c]		
Travel	YES[a]			YES[c] (YES)[c]			YES[c]		
Medicine purchased	NO[a]			YESc (YES)[c]			YES[c]		
Other expenses	NO[a]			YESc (YES)[c]			YES[c]		
Non-financial loss									
Pain and suffering	NO			YES[iv] (NO)			YES[d]		
Disfig. and disadvant.	NO			YESd (YES)[d]			YES[d]		
Special inconven.	NO			YES[v] (YES)[e]			YES[e]		

i Compensation may however/also be payable under certain collective agreements.
ii No compensation, however, is paid for living costs saved.
iii Compensation at 100% is payable.
iv Compensation is payable as per standard scale.
v Compensation is determined individually.

Loss of income

As the table clearly shows, road traffic injuries and work injuries give the highest compensation. In these cases, compensation is paid at 100% of the injured person's loss of income, when the national insurance and the private motor insurance are totalled. For occupational disease, compensation is more limited – a person who develops neck pain as a result of illness at work (in the form of long-term wear and tear) receives lower compensation for loss of income. And where the cause is illness or recreational accident compensation for loss of income is lowest – this category never gives more than a maximum of 87.6% of income, for a limited time, as compensation.

The differences in compensation for loss of income following a road accident and as a result of illness/recreational accident are significant. The table shows that average compensation in the event of illness/recreational accident varies between 0% and 87.6%, whereas compensation in the case of a road accident is always 100% of the actual loss of income. In the case of long-term incapacity for work the classification of the injury becomes particularly important, and the greatest difference is noted in those earning more than 7 ½ times the base amount under the National Insurance Act. For the person earning most, the average level of compensation for neck troubles after illness/recreational accident is between 24.3% and 28.5% of income.

Expenses

In the case of both road accident and work injury a person with neck trouble receives full payment for expenses which have arisen as a result of the injury. For illness/recreational accident the possibility of compensation on the other hand is limited: travel costs, but no other expenses, are paid. The amounts are small compared with the loss of income, as Sweden has state-subsidized medical care and also subsidized pharmaceuticals – but there is still a difference in principle where road traffic injuries, and work injuries, give better possibilities of compensation.

Non-financial loss

As has been discussed above, and as the table shows, a road traffic injury also gives a right to compensation for non-financial loss, i.e. what is known

as "disfigurement and disadvantage", "pain and suffering" and "particular disadvantage". For the first two benefits the standard scale provided by the medical table and the recommendations of the Road Traffic Injuries Commission are relatively unproblematic, and efforts are also being made to introduce a kind of standard in the case of "particular disadvantage". Almost the same rules apply to a person who suffers neck pain as a result of an accident at work, with the exception that there is no compensation for "pain and suffering". In the event of illness/recreational accident, on the other hand, no compensation for non-financial loss is paid at all.

By international standards, compensation paid in Sweden for non-financial loss is relatively low. But the amounts are totalled and can therefore become financially important to the individual. The concept of "particular disadvantage" includes an item for "increased strain in everyday life" – e.g. caused by continuous pain. For this strain a claimant may expect a few thousand kronor per year, which has then to be added to other payment for "pain and suffering", "disfigurement and disadvantage", and other aspects of "particular disadvantage" (such as "strain at work"). In the case of serious accidents, with significant degrees of disability, it is therefore apparent that even compensation for non-financial loss can acquire considerable financial significance.

Summary of comparison

A comparison of the possibilities of compensation for neck pain reveals that if the cause of the problem is a road accident, the possibility of compensation is *quite different* from that applicable to other causes. Full compensation is paid for both loss of income – which becomes particularly noticeable in the case of a person earning more than 7 ½ times the base amount per year – and also for expenses and non-financial loss.[78] Should the neck trouble have arisen as a result of an accident at work, compensation is almost as good, whereas occupational illness does not give the same favourable conditions. The possibility of compensation is lowest if the neck trouble has arisen as a result of other illness or recreational accident. *It is therefore of crucial financial importance to the individual whether the symptoms of neck pain are due to a road accident or whether they have been caused by other means.*

It has been mentioned several times in this report that the number of reported whiplash-related injuries increased rapidly throughout the 1990s. Whether there is a direct link between this and changes in the compensation systems is an interesting question. But the possibility of compensation has been roughly the same for the last ten years. The conditions with regard to neck trouble caused in an accident at work have been improved, with the claimant now

receiving compensation to the amount of 100% of the loss of income. If the neck trouble has been caused by occupational illness, on the other hand, the possibility of compensation is somewhat less: lower compensation is paid for loss of income and payment is no longer made for "pain and suffering". But none of these adjustments to the prospects of compensation is of major importance. Changes in the compensation systems cannot explain why the number of whiplash-related injuries reported rose during the 1990s.

Significance of financial incentives

Modern research on the welfare state and social insurance systems often discusses the question of how financial incentives affect individual people's behaviour. How do we act as aware and rational players in economic systems, where we can obtain advantages by behaving in a particular way? An article written in 2004 by Per Johansson and Mårten Palme discusses these problems and emphasizes that the question of what is rational is a problematical one. Something that is a gain for some people – for example staying at home and receiving sick pay – may be a loss to other people, who go to work whatever the circumstances even when they are not really well. To the latter group, the cost of absence from work seems a greater cost than the gain of being at home, perhaps in the form of career prospects. This means that the discussion of what guides people in insurance systems must always be conducted with caution.

Johansson and Palme nevertheless believe that by means of a larger empirical study they have been able to establish that the financial prospects of compensation play a part in people's behaviour with regard to sick leave and their participation in the workforce generally. They also refer to a number of international studies that confirm that this is the case. However, they are reluctant to assert in the same way how great a concrete effect changes in the compensation system may have, only that there is a difference between women and men, with women's behaviour being more closely linked to the question of financial compensation from different insurance schemes, while men's behaviour is affected to a higher degree by other factors (e.g. career opportunities).[79]

Significance of norms

Assar Lindbeck, Sten Nyberg and Jörgen Weibull have suggested in two articles that not only financial incentives, but also our standards and conceptions affect how we behave when faced with financial systems such as social insurance and motor insurance. They claim that as more and more people

live with some sort of support from the national insurance scheme, norms are changing. Gradually other incentives, such as consideration of one's own career prospects, become less important. The financial impulse connected with the possibilities of compensation is becoming the dominant consideration of more and more people. For example, where the effects of sick leave are concerned, this would mean that the more people in the community who are on sick leave instead of at work, the more there will be. To Lindbeck and his colleagues, the increases in sick leave in Sweden between 1997 and 2004 are a sign of just such a shift in norms. [80]

SBU's conclusions

Economists who study the effects of financial impulses and the significance of norms have not taken into account actual health questions. Sick leave is after all connected with illness and the question of illness affects the capacity for work. The Swedish Council on Technological Assessment in Health Care (SBU) has recently considered current international research into the taking of sick leave. The aim has not been to explain why the frequency of sick leave in Sweden has risen, but to show what modern research knows about the causes and effects of sick leave. Here SBU states that there are quite good grounds ("moderately strong evidence") for concluding that the design of the sickness insurance scheme influences sick leave, irrespective of the nature of the disease or the symptoms. However, researchers cannot say anything about the extent of this influence. Other factors that affect sick leave, sickness benefit and activity allowance are the possibility of influencing one's work situation, gender, age, home surroundings, where the person on sick leave lives and the situation on the labour market.[81]

Increased use of standard scale compensation

The number of road traffic injuries reported today brings significant problems, because the demand for individual consideration under the Tort Liability Act may make the compensation system excessively slow. But the large number of cases reported also has one advantage: the fact that as many as 30 000 whiplash-related cases are dealt with by the motor insurance companies every year means that a large number of cases are similar. There are therefore opportunities for developing the use of certain standard-scale solutions in the system.

At the request of the Whiplash Commission, Professor Jan Kleineman, Stockholm University, and Ola Schönning, legal expert of the Motor Insurers'

Bureau, have discussed in a memorandum the possibility of increasing the use of standard scales within the framework of current Swedish traffic damages legislation, a text that is reproduced in its entirety in Appendix 10 to this report.

Advantages of standard compensation

Standard scales may also be described as assessments and norms that are based on certain rates established by experience. They may be fixed – as in the table where degrees of disability are assessed for particular functional impairments. Even if the table is continuously reviewed and revised, it forms a type of simple agreed standard. But standard scales may also take the form of consistent assessments in different claims where the circumstances are largely similar. The legal text dealing with road traffic injuries gives no guidance on how the different compensations are to be calculated, only that it is to be done on a tort law basis.

The common purpose of using standard scales is to accelerate claims settlement and to increase legal reliability by ensuring that similar cases are dealt with similarly. Predictability, both for the claimant and the insurer, increases. If the standard scales are uniform and fair, there is less need to question the fairness of insurance company assessments. In order to achieve these advantages, however, it is important for the standard scales to receive broad support in the community – it must be possible to continuously change them if society's view of what are reasonable standards changes.

Standard compensation today

Standard scales are used in motor insurance in other Nordic countries to a varying degree, as discussed earlier in Chapter 5 of this report. In Sweden, too, a series of standard scales are used in traffic damages law. A simple table shows how today's Traffic Damage Act works in practice:

Table 2: Use of standard compensation in today's Swedish Traffic Damage Act

Type of compensation	Standard	Whether used	Exceptions from standard	Remarks "informal" standards?
Pain and suffering	Yes	Theoretically no	No	
Pain and suffering (mental distress)	Yes	Theoretically no	No	Higher standard amount is paid when death has been caused intentionally (rare in traffic)
Disfigurement and disadvantage (earlier injuries)	Yes	No	No	Compensation itself seldom queried – only degree of disability
Disfigurement and disadvantage (incl. part. disadv. = new injuries)	Yes	No	No	Same situation as with earlier injuries
Particular disadvantage (new injuries)	No	No	No	Increasing numbers expected to claim this compensation
Scars and changes in appearance	Yes	No (table allows flexible solutions)	No	
Amputations	Yes	No (table allows flexible solutions)	No	
Costs	No	—	Yes	Severity of injury is relevant
Loss of income	No	—	Yes, for children injured before starting working life	Individual assessment "normal salary" for full-time employee is usually the guideline when assessing young people's loss of income
Drunken driving combined with negligence	Yes	No	No	Burden of proving negligence rests with insurance company
Compensation to survivor for loss of support	Yes (for surviving child etc.)	No (?)	No (?)	
Inflation-proofing of annuities	Yes, by law (and in accordance with guarantee)	No	No	New rules from 2004

As the table shows, standard scales are compensation already used, and there is reason to consider whether their use within the framework of traffic damages law might be increased in order to improve the efficiency of the claims settlement process. The aim of the standard compensation scales is clear, therefore, whereas their content needs to be developed in such a way that they will be accepted as fair.

Principles of increased use of standard compensation

The most radical solution would be to include provisions on standard compensation in the actual text of the Act. Swedish patient insurance may serve as a comparison. Such a solution would be alien to Swedish legal tradition, however, and would not give the desired flexibility. One important precondition for standard scales is that they must be generally accepted in Swedish legal consciousness, and this means that they need to be quickly adjustable if there is a change in the view of what is fair and reasonable. A lesson may be drawn from the Danish example. The highly standardized compensation model for road traffic injuries that has been in use there for some years has been criticized as altogether too static – not least in the standardized payments that apply for loss of income.

Another alternative would be to allow the standard scales to develop gradually from case law. The rules would then – once the Supreme Court had given them its blessing – have such an impact that they would in practice be equivalent to rules of law. The only problem is that this process takes a long time. It is possible today to refer particularly interesting cases to the Supreme Court by what is known as "the lift", but the parties in a case cannot influence such a procedure. It is the Supreme Court that decides when a case is taken up for an assessment on a matter of principle. Such assessments take place only when the Supreme Court considers that a new principle can be tested, which happens relatively seldom. For this reason a gradual growth of case law cannot be regarded as a realistic way of developing standardized compensation in the application of the Traffic Damage Act.

The third alternative is to create a basis in practical claims settlement for greater standardization with the assistance of different representative, case-law-creating bodies in the personal injury field. A natural starting point for such work would be existing standards and the way in which these had been arrived at. As the table shows, there are already a large number of such standards in today's Swedish claims settlements. The Road Traffic Injuries Commission has so far played a leading role in this work. Its composition reflects the different groups that are stakeholders in traffic damages law. It

is also possible to consider whether a separate independent body, appointed on a more clearly political basis, should have responsibility for the work of devising standard compensation.

Risks in greater use of standard compensation

It is important for all types of standard scales to be seen as fair, consistent and reasonable. As the table above and the Nordic examples discussed in Chapter 5 show, all kinds of non-financial compensation are relatively simple to standardize. In countries with other types of legislation, compensation for "pain and suffering", for example, may be large, because the injured person can sue the person who has caused an accident. But traffic damages law in Sweden is based on a "no fault" principle, which makes the question of causality relatively unimportant.[82]

The fact that there are standard scales in the form of tables for disability compensation ("disfigurement and disadvantage") is today regarded as relatively uncontroversial – on the other hand, the assessment of the degree of disability is more problematic. An increased use of standard compensation must take account of the possible problems that may arise. A concrete example might be, for instance, a decision within the framework of the existing system to assess whiplash-related injuries as giving two or three different degrees of disability, instead of the current system with its single percentage points up to approximately 18%. Such a standard scale would admittedly lead to quicker assessments, but it would also increase the risk of disputes between claimants and insurance companies, which might well be expressed in more legal proceedings than today. It would therefore be important when introducing the standard scale to find a way of increasing acceptance of the body making the assessment (in this case the medical advisers). This could be done either by means of greater supervision, by a company-financed "pool" of doctors, or by giving more scope for appealing against the insurers' decision. As we have discussed earlier, there have been proposals to give the Judicial Council such powers, or to extend the field of responsibility of the Road Traffic Injuries Commission.

Need for further investigation

To summarize, it seems clear that greater use of standard compensation within today's tort law principles would be a feasible way of improving the efficiency and speed of the claims settlement process without jeopardizing fairness. This conclusion has also been reached by our Nordic neighbours, as greater standardization has been developed in Norway, Finland and Denmark

in recent years. As we discussed in Chapter 5 of this report, Sweden can find good examples here from which to learn. The Nordic countries have also shown that standard scales may differ in various ways and affect different parts of tort law, both non-financial compensation and compensation for loss of income.

Standardized scales ought to be worked out in such a way as to be seen as reasonable and fair by the public, and they must be flexible enough so that they can be amended when legal perceptions change. It would therefore be reasonable to appoint a task force or a commission representing the different groups that are affected by the provisions of the Traffic Damage Act. *The Whiplash Commission therefore recommends a formal examination of the possibility of increasing the use of standard compensation in the Swedish Traffic Damage Act.*

Discussion

To reduce the number of whiplash-related symptoms and improve the situation of people suffering long-term symptoms, we have stated earlier in this report that quick and effective medical attention would considerably improve the situation in many cases. This also applies with regard to the question of financial compensation following a road traffic injury. Quick, fair claims settlement makes it easier for the individual to decide at an early stage on his or her financial situation. This makes it easier to work constructively to reduce the health effects of the injury. A long and protracted claims settlement, with an uncertain outcome, on the other hand, is regarded as having an adverse effect on the recovery process. Living for years in financial uncertainty and always feeling compelled to prove one's injury puts physical and mental pressure on the individual. The many statements from injured people that have been received by the Commission emphasize this.

From a financial point of view it is advantageous in Sweden for neck trouble to be classified as being the result of a road accident. The absence of reliable instruments for determining the cause of such neck problems opens the way to disputes between policyholders and insurers – disputes that risk being prolonged on account of the complex and diffuse character of whiplash-related injuries. The Whiplash Commission anticipates that the consensus document formulated by the Swedish Society of Medicine task force (see Chapter 7) will to some extent deal with the problem, as the document has clearly established medical criteria for an early diagnosis. But as the system functions today, the claimant who is drawn into a dispute with the insurance company feels that it is better to be on sick leave for a long time than to go back to work. Sick leave itself may be a way of "proving" the injury. The result may be that the symp-

toms become more severe and last longer than they need have done. *If the compensation system more clearly encouraged the individual to return to work and/or an active life, this would be to the benefit of both the sufferer of whiplash-associated disorders and the economy generally.* A person who works actively to live a full life even with recurring pain would not need to lose financial compensation. The Traffic Damage Act will presumably continue to be based on tort law. For this reason parties concerned ought within the framework of this legislation, to reflect on how the use of standard scales may increase. The gain in a greater use of standard compensation is in the speed of settlement and its predictability from the point of view of the claimant, which permits a reasonable planning of private finances. If the system becomes more predictable and is based on experience from a large number of legal cases, on established legal practice and on agreements between the stakeholders concerned, it would nevertheless in total give fair compensation for road traffic injuries. And this compensation can be paid quickly and thus help to eliminate prolonged and unreliable claims settlements or legal proceedings. This gives less scope for long, drawn-out and irreconcilable conflicts.

The winners in such a revised system of compensation are first and foremost the group of claimants with whiplash-associated disorders. One of the most important reasons why these problems can cloud existence over a long period, namely unresolved insurance questions, disappears and the person who has been involved in such an accident can concentrate fully on building up his or her life again.

Notes

72 It is also possible to include in this group injuries that are serious but that quickly stabilize and where there is no difficulty in calculating the degree of disability and incapacity for work.
73 A comparison with other Nordic countries shows that Finland leaves it entirely to the motor insurers to be responsible for financial compensation to the person injured, and also for acute care and rehabilitation.
74 SOSFS 1981:25.
75 Norway and Denmark have a system where individual assessments – which, however, are only recommendations – are made by doctors appointed by government bodies.
76 The report was published on 20 January 2004 and bears number Dnr 00-10798/03. It now looks as though review by the Judicial Council will become practice.
77 The review is given in its entirety, along with tables where the three occupational categories are reported separately, in Appendix 8 to this report.
78 Here, compensation is generally provided by a collective insurance contracted at the workplace.
79 Per Johansson & Mårten Palme, "Påverkar ekonomiska incitement sjukskrivningsbeteendet och deltagandet i arbetskraften?", in Varför är svenskarna så sjuka? ed. Birgitta Swedenborg (Stockholm 2003).

80 Assar Lindbeck et al. “Social Norms and Economic Incentives in the Welfare State”, Quarterly Journal of Economics 114 (1), 1999. Also Lindbeck “Välfärdsstat och sociala normer” in Varför är svenskarna så sjuka? ed. Birgitta Swedenborg (Stockholm 2003).
81 SBU report no. 167: Sjukskrivning, konsekvenser och praxis (2003).
82 A person who, for example, has caused an accident by driving under the influence of alcohol may have his or her compensation somewhat reduced. Finland, for example, has even greater limitations on compensation of a party who causes an accident when driving under the influence of alcohol or through negligence, despite the fact that the legislation resembles Sweden’s.

10. A NEW FIELD OF RESEARCH

Suggestions for action

Research into whiplash-associated disorders and their consequences is at present inadequate and flawed. This should be seen as part of the general lack of knowledge concerning sickness absence and insurance medicine that prevails in Sweden.

The Whiplash Commission proposes that:

- increased government resources give priority to cross-disciplinary research into the causes and consequences of absence due to sickness in line with the discussion of ill health and sick leave in the latest research bill;
- the quality of statistics currently kept by private insurance companies, the national health services and the national insurance system be improved;
- research sponsors in the medical field focus on insurance medicine
- research sponsors in the social sciences field focus on social medicine;
- investment in clinical research be concentrated on questions of treatment and rehabilitation where long periods of sick leave are accompanied by uncertain diagnoses;
- research sponsors from different areas initiate multidisciplinary collaboration intended to increase knowledge of the causes and consequences of long-term sick leave.

Introduction

The Whiplash Commission has carried out an inventory of Swedish medical and insurance research into whiplash-related injuries. This research has then formed a basis for the conclusions of the various chapters of the report. But in several areas there is a lack of high-quality scientific knowledge. Although whiplash-related injuries constitute a serious problem to Swedish society, and cause considerable human suffering and substantial expense in consequence, researchers have not given priority to this area. We know too little today about

the causes of long-term whiplash-associated disorders and how they are best dealt with. This chapter gives guidelines for a programme of research into whiplash-associated disorders and their treatment.

State of current research

About a dozen theses have been published in Sweden on possible injury mechanisms, diagnostic criteria and risk factors applicable to whiplash-related injuries. In addition, a hundred or so articles have been published since the late 1980s. Several of these studies are epidemiological analyses of insurance company material intended to show which factors may be relevant to the medical prognosis following a car accident. Access to insurance company material of good quality has enabled Swedish researchers to publish studies that have attracted international interest. For example, they have succeeded in establishing a clear connection between reports of early pain and persisting problems. Nevertheless, knowledge of the medical factors involved in whiplash-related symptoms remains limited and sometimes contradictory, as has been discussed in Chapter 6 of the report.

Other researchers have attempted to trace possible injury mechanisms, either by clinical studies or by analyses of the anatomy of the neck and comparison with experimental animals. Here contributions have been made from both the medical and the engineering field, for example in the development of refined criteria showing in detail the movement of the cervical spine and the head during whiplash in a collision. Most experts today agree that several different injury mechanisms underlie the whiplash-related symptoms. Studies of the pattern of movement of the neck and head have led to a number of different measurements which together are considered to give a picture of the risk elements during the collision phase. Where such technical definitions are concerned, Swedish researchers are very prominent in an international perspective, as is described later in the report.

Studies of medical treatment and rehabilitation are less common. The few that have been done in Sweden are generally based on small patient groups (fewer than 100 people) and have seldom included the possibility of any lengthy follow-up. It has been difficult to adjust the treatment methods examined to the randomized control groups, which has made it necessary to regard the results of the studies as provisional. The evaluations made by pain clinics which treat patients with whiplash-related symptoms are also generally small-scale and seldom quality-assured. Swedish county councils do not allocate any great resources to evaluations, even of treatment programmes

and guidelines that county councils have themselves helped to draw up (see discussion of the Västra Götaland programme in Chapter 7 of this report).

There is a tradition of high-quality clinical research in Sweden, but such research is expensive and complicated to organize. Other types of research are often seen as more interesting and many clinics lack the skills and resources to carry out major research projects. The result is a lack of clinical studies of sufficient standing to be seen as giving reliable results. Several of the Swedish studies of diagnosis and treatment of whiplash-related injuries that are published today are actually based on such a small selection of patients that their results have to be considered uncertain. This applies not only to Sweden but also to other countries. Clinical studies of high quality and reliability are rare in this field generally.

Employers today have a duty to offer their employees occupationally oriented rehabilitation. Such rehabilitation has not been systematically studied and evaluated, even if some workplaces report good results. The Social Insurance Agency is responsible for offering rehabilitation and/or investigation in order to ascertain a person's capacity for work. Here, too, researchers have not been able to carry out more comprehensive evaluations, partly because the statistics have been inadequate. We still know far too little about what might lead to better prospects of a return to work of people with long-term pain problems.

The Whiplash Commission has used part of its allotted resources on evaluations to serve as a basis for the present report. For example, the Commission has sought information regarding how various treatment and care programmes have worked in practice – a type of follow-up which takes place far too seldom. The knowledge that the Commission has managed to generate in this way has led to recommendations and proposals. But the projects that managed to be completed within the financial limits and the time available to the Commission are of such restricted scope that they do little more than emphasize the need for more research and better knowledge.

Multidisciplinary research

One complication in this context is that specialized medical research alone cannot clarify the whole whiplash-related injury syndrome. A number of studies show a connection between medical symptoms – such as long-term pain – and the design of the insurance system. There are also studies that indicate that although patients with whiplash injuries have been able to reduce their pain by means of "coping strategies", they have continued to be on long-term sick leave to a higher degree than other pain patients. Recently there has also been discussion of the effects of the actual sick leave on various states of health.

A broader approach to research would need to balance different types of factors which together could illuminate and explain the effects of whiplash-related injuries. But this type of research requires a cross-disciplinary or multidisciplinary approach that takes more time and more resources. In that case, medical researchers may need to cooperate with behavioural scientists, lawyers and sociologists.

Research resources

Those researchers who have nevertheless dedicated their attention to whiplash-related injuries have pointed out that it is difficult to obtain financial resources for larger and more far-reaching research projects. Those who have chosen to defend doctoral theses based on research in this field attest to the difficulty of obtaining credit for further research, irrespective of whether the individual researcher has focused on risk factors, diagnosis, or treatment and rehabilitation. One reason may be that the projects are by their very nature too large and extensive to be financed by one sponsor, another that both researchers and research sponsors are unused to the multidisciplinary approach that may be required. Those who nonetheless defend theses based on research into whiplash-related injuries often turn to other career paths, which in practice means that advanced research expertise in the subject does not develop.

But the problem also involves the interest of those who might do research. It has proved difficult to recruit capable young research workers in the field, which is in fact a pattern that is also observed with regard to other complex, insurance-related illnesses and conditions such as emotional exhaustion and burnout. The Whiplash Commission has asked why whiplash-related injuries attract so little research interest. Is the whiplash diagnosis simply too controversial to interest young researchers? Does research require too broad an approach to stimulate exciting research projects?

However the questions are answered, it is clear that Sweden society needs more and better knowledge of whiplash-related injuries, of their causes, effects and treatment. This new knowledge is necessary in order to reduce both suffering and the cost to society of whiplash-associated disorders. There is a great need for more research into basic factors behind the development of pain and functional impairments, and into diagnostic methods and treatment principles for whiplash-associated disorders. There is, in other words, an urgent need to give greater encouragement to scientific research in the field.

Research into absence due to sickness

The problems of whiplash-related injuries are connected with the wider problems of diffuse pain symptoms that underlie many of today's long periods of sick leave. The new authority that was formed in 2005 when the country's insurance offices and the National Social Insurance Board were amalgamated, the Social Insurance Agency, has announced that it intends to tackle the problems of long-term sick leave in a number of ways. These involve a change of processing practice and procedures, quicker follow-up and efforts to increase knowledge. More resources will be devoted in the future to investigations into work capacity rather than rehabilitation programmes, as in the new system the employer has to take a larger responsibility.

Today there is a shortage of basic facts concerning long-term sick leave. Researchers do not know why people are sicklisted, because there is an absence of reliable registration of this in the health services and the national insurance system. Nor do researchers know enough about the measures that may lead to a quicker return to work – systematic follow-up of sick leave is lacking. Here the new Social Insurance Agency has formulated a strategy for changing registration and statistics, which will hopefully lead to improvements in the future.

Despite the rapid rise in absence due to sickness in Sweden since 1997, and the fact that it affects many people, there is hardly any medical knowledge of the actual causes and consequences of *sick leave absence*. As we have discussed in Chapter 9, the Council on Technology Assessment in Health Care (SBU) published a report on absence due to sickness in 2003, where it was stated that knowledge today is very limited. The area is theoretically, methodologically and conceptually underdeveloped:

> There are surprisingly few studies of the causes and consequences of absence due to sickness and of doctors' sicklisting practice, and extremely few of high methodological quality.

SBU notes also that with such a poor basis, politicians and decision-makers cannot obtain answers to the questions that need to be answered in order to plan a reasonable health and medical care policy.

Bearing in mind the new Social Insurance Agency procedures for the processing of sick leave and sickness benefit – precisely the policies that require a sound basis for decisions – the Whiplash Commission considers it of the greatest importance that better research in the field quickly become available.

Investment in insurance medicine research

Whiplash-related injuries are, then, linked to the question of sick leave generally and of the insurance system as a whole. In 2004, at the request of the Government, the National Social Insurance Board drew up an action plan for the strengthening of insurance medicine in Sweden. But what is insurance medicine? In *Folkhälsovetenskapligt lexikon* the concept is defined as follows:

> Insurance medicine is an area that deals with and studies questions connected with the forms of insurance that affect the sick and the disabled, particularly as relating to social insurance (sick leave, disability pension, work injury compensation etc.). Insurance medicine has its origins in late nineteenth-century Germany, when it became apparent that administration of the insurance for the sick and disabled that Bismarck introduced required the participation of doctors.

The textbook *Försäkringsmedicin* published in 2002 defines clinical insurance medicine as follows:

> Insurance medicine is the clinical activity that may lead to assessments and certificates which are then used in the processing of insurance claims.

After discussing definitions of insurance medicine, the National Insurance Board's document describes the concept as follows:

> The concept of insurance medicine is now being used increasingly often in Sweden as a general term for the processing and study of insurance matters that concern sickness and disability, such as sicklisting, work injuries, disability/temporary disability pension/sickness benefit, disability allowance, care allowance, patient insurance, medical expenses insurance, life assurance and accident insurance, independent of whether these are general or individual.

The Board's document shows that insurance against financial consequences of illness, injury or disability is a central part of the development of the welfare society, but that it can also contribute to a marginalization from working life and the isolation of some individuals. It is therefore important that the issue of sick leave and the design of the insurance scheme be handled in "an optimal

manner", as the Board puts it, so that the interests of individuals, employers and society can be catered for.

The Board is also of the opinion that the few research groups in Sweden that have a longer experience of sick leave have no secure long-term financing, which leads prominent researchers eventually to choose to work in other fields. The action plan proposed by the National Social Insurance Board implies professorships, regional teaching posts, research posts and earmarked funds for research in insurance medicine.

Whiplash-related injuries as an insurance medicine problem

A whiplash-related injury may lead to long periods of sick leave, without us really knowing what effect the sick leave has on the general state of health. We need to know what sick leave means in the way of opportunities and risks, just as SBU states in its evaluation in 2003.

There is also a connection between whiplash-related injuries and the lack of knowledge of insurance medicine to which the Board refers. People with a whiplash-related diagnosis may become involved in a complicated claims settlement process, which affects their health and their prognosis. The diffuse syndrome, the consequences of sick leave and the link between the insurance scheme and the possibility of a rapid return to work are vital matters we need to know more about. *It is therefore the Whiplash Commission's opinion that a broader approach is required in order to explain the problems of whiplash-related injuries.* The Whiplash Commission shares the view that Swedish expertise in insurance medicine has to be strengthened.

Small sums for insurance medicine research can today be applied for from sponsors within the insurance industry. However, these amounts are too modest to give scope for the long-term major efforts that are required. The projects that the insurance company foundations support are rather of a fact-finding nature and thus lack the multidisciplinary breadth that is required in order to secure scientific knowledge of high quality. The research appropriations that the National Social Insurance Board and the insurance offices (the Social Insurance Agency as from 2005) have available have so far not been used for research in either general or insurance medicine.

Investment in major insurance medicine projects must in all probability come about on the initiative of the main research sponsors – the Government (the research councils) and the major research foundations. One possible model that the Whiplash Commission has discussed is one where the Social Insurance Agency and the private insurance industry might be able to contribute a small part of the financing of relevant projects. For example, projects

connected to return to work after whiplash-related problems could be financed in roughly the same proportions as the responsibility for compensation for loss of income, i.e. a state research sponsor could be responsible for 80% of the project costs and the private insurance industry for 20%.

Such cooperation might open up a number of new possibilities, which involve not only increased resources but also access to a new type of question and material. Another advantage is that the results of research are quickly available to those parties that have to take decisions based on such knowledge – such as the Social Insurance Agency and the private insurance companies.

Prioritization of resources

Today the general allocation of public resources to medical research in Sweden is being strengthened. Such a government investment secures continued research opportunities for those who are not favoured by the pharmaceutical industry – for example, researchers in the field of insurance medicine. The Whiplash Commission considers it possible to maintain the principles of freedom of research even if resources are earmarked for particular areas. Indeed we have seen throughout the post-war period a series of such priority research efforts that have come about because society has needed new knowledge in various areas. Within the framework of today's research policy, the government research councils are increasingly frequently charged with formulating strategic documents where particularly topical areas are identified. This is a way of indicating that society needs knowledge within a particular area – and this need is expressed as a dialogue between research and the outside world. As the Commission has noted, both a lack of resources – in other words interest from research sponsors – and a lack of interested researchers are behind the insufficient research into whiplash-associated disorders today.

A strategic Swedish investment in insurance medicine is badly needed, and the Whiplash Commission considers that such an investment ought to be begun and administered by the major research sponsors in the field: the Swedish Research Council and the Swedish Council for Working Life and Social Research. In the course of such an investment, certain funds can also be reserved for studies of particular diagnoses, such as whiplash-related injuries. Clinical research is far too seldom given priority today, and the result is that we know far too little about how medical treatments work in practice.

Stimulation of research into whiplash-associated disorders

In March 2004 the Whiplash Commission arranged a discussion of the possibility of stimulating more research into whiplash-associated disorders. Representatives of the Swedish Research Council, the National Social Insurance Board, Umeå University and various departments of the Karolinska Institute took part. Later, representatives of the Swedish Council for Working Life and Social Research (FAS) were consulted and gave their comments on the question of how best to work to stimulate research into whiplash-associated injuries.

Swedish researchers are agreed that it is difficult today to obtain funding for research into sickness absence. The field is underdeveloped and research on the subject is often of poor quality – as SBU noted in its report in 2003. One way of illustrating the problem is by distinguishing three parts of the pathology: "illness" (the subjective perception), "sickness" (the social role allotted to the sick person) and "disease" (the medical diagnosis). All three components affect the individual, but research at present concentrates almost exclusively on "disease".

From society's point of view, it is important to concentrate on research that reduces human suffering and cuts costs to society – and in this perspective a widespread diagnosis such as "whiplash-related injury" needs to be studied more closely. One way of doing this is by consciously extending the area of "medical science" so that research resources are allocated to a wider portion of the health and medical field. This calls for a multidisciplinary research contribution that focuses more on health or life science. Such efforts are being made today in, for example, Holland and Australia. For Sweden's part, this might mean that medical researchers should be able to work more closely with social science researchers working in the field of social medicine – a type of research dealt with by FAS and others. Those scientists who took part in the discussion said that the Government has indicated its willingness in the next few years to devote resources to this field of medical research.

New research strategies

What, then, are future Swedish research strategies with regard to complicated insurance medicine diagnoses, their origins and treatment? The important parties here include the Ministry of Education, Research and Culture the new Social Insurance Agency and the major research councils.

A new research bill, *Forskning för ett bättre liv* [Research for a Better Life] (prop. 2004/05:80), was presented by the Ministry of Education, Research

and Culture in March 2005. This announces an increase in the allocation of resources to medical research in Sweden, and one of the priority areas is "Research into ill health and absence due to sickness". The bill underlines the high social cost of sickness allowance and disability pensions – SEK 110 billion in 2003 – and the lack of knowledge of the causes and consequences of absence due to sickness. It emphasizes that more authorities and other agencies ought to collaborate in building up better knowledge of the field, which ought also to be an asset from a purely research point of view. The bill specifically mentions the Swedish Council for Working Life and Social Research (FAS) as responsible for the coordination of research in the field. The Government stresses that SEK 10 million was allocated to FAS in 2003 and 2004 for intervention research into sickness absence and a longitudinal database has been created at Statistics Sweden. In 2008 an extra SEK 5 million will be allocated to FAS for a special investment in research into ill health and sickness absence, an allocation of resources which may, however, be brought forward within existing frameworks.

The Social Insurance Agency

The new authority known as the Social Insurance Agency describes its research role as focusing on social insurance, and as areas for priority it mentions theories on the functioning of social insurance, administration, distribution effects, incentive structures and behavioural change, financing and financial effectiveness and public attitudes to welfare systems. Project grants that are distributed are usually linked to a particular person and granted for one year at a time.

This focus is also highly relevant in the case of whiplash-related injuries, which of course often raise questions concerning the functions of the insurance system and its effect on people's physical and mental health. But the new research function has not been given any greatly improved resources compared with the situation that prevailed under the National Social Insurance Board and the local social insurance offices. Funds there were usually granted for minor projects in single disciplines, such as economics or sociology. There was no room for larger cross-disciplinary projects. As the resources have not basically changed, an increase in major research investments from the Social Insurance Agency cannot really be expected following the amalgamation. If the new authority is to be involved in the financing of major projects, for example those with an insurance medicine orientation – such as research into whiplash-associated disorders – this must entail collaboration with other agencies.

Swedish Council for Working Life and Social Research

The Swedish Council for Working Life and Social Research, FAS, has recently adopted a new research strategy document for 2005–2008, *Forskning om människors arbete och livsvillkor* [Research on People's Work and Living Conditions]. This opens the way to a new type of research into sickness absence and sickness benefit, within the field of social medicine.

Research is needed into how conditions in working life and society affect sickness and sick leave, how sickness absence, disability pensioning and unemployment – and associated costs – are related to the design of the social insurance system and unemployment support as well as to Social Insurance Agency practice, and how the return to work of those on sick leave is related to rehabilitation and other measures during the period of sick leave.

FAS also writes that the Council wants to make greater investments in joint projects with other research sponsors, especially concerning

> interventions intended to find ways of preventing people from needing to leave working life for short or long periods and effective forms of rehabilitation of those who have been sicklisted or awarded disability pensions.[83]

FAS therefore argues in its strategic document for the next few years from the point of view of the high Swedish incapacity rates: a social problem that requires greater scientific knowledge. There is room here, in other words, for a conscious concentration on an area of insurance medicine – particularly if FAS makes its intention to support cross-disciplinary collaborative projects a reality. The Whiplash Commission also notes that there ought to be good prospects for increased collaboration with the Social Insurance Agency as the Council is now giving priority to projects designed to lead to an increased return to work. The resource allocation announced in the research bill ought also to facilitate such an investment.

Swedish Research Council

The evaluation of Swedish medical research which the Swedish Research Council (VR) published in 2003 claims that during the period 1993–2001 Sweden tended to lag behind in the international research arena. VR stated in its analysis that with its earlier strong investment in medical research Sweden could have had what it calls a "leading position", which would also have led to the favourable economic development of the pharmaceutical industry, for

example. But in recent years many other countries have devoted a lot of energy to the field, while the Swedish Government has reduced its involvement. This relates both to actual reductions in research appropriations to the medical faculties and also to unfinanced reforms and cost increases – altogether VR calculates that resources for medical research have diminished during the period by as much as 20%. Instead, non-government sources, such as the pharmaceutical industry, have come to be responsible for increasing parts of medical research funding. In practice, this means that a particular type of medical research is favoured – namely research that can lead to profitable medicines.

Research becomes of the highest quality when the resources allocated to the area are used mainly for projects initiated by scientists, in the opinion of VR. This approach means that medical research has to take place outside the spheres of interest of the large drug companies. VR wishes therefore to see investments from the Government, and this should be in the form of resources that are not directed towards particular research but channelled through government research sponsors. Within the medical area, moreover, a concentration of existing research resources on a few, major research centres is required, with better prospects of carrying on clinical research of high quality in collaboration with the Swedish health services.

In the very introduction to its strategic document for 2005–2008, *Medicinsk forskning för hälsa, god sjukvård och ekonomisk tillväxt* [Medical Research for Health, Good Medical Care and Economic Growth], VR discusses Sweden's high incapacity rates, and compares the cost of ill health – not only for care but also for social insurance compensation for incapacity for work and indirect costs such as loss of output – with the cost of medical research. Here it is argued that Swedish medical research needs more resources if the Council is to be able to cut the growing social costs of ill health.

VR, too, therefore, argues in its strategic document for the coming years on the basis of the high rates of Swedish ill health when it asserts the need for increased investment in medical research. The description of the problem in the document presents incapacity rates as one of today's most important social problems – a problem that calls for greater scientific knowledge. But in its specific proposals, VR does not then develop the discussion of a broadening of the term "medical research", which would have permitted a focus on insurance medicine. Instead, the Council points to areas such as genetic technology and argues for a concentration of resources as a guarantee of quality improvement.

One of the areas VR wishes to prioritize has, however, a direct relevance to the high incapacity rates: an improvement in the quality of clinical research:

> Close-to-the-patient clinical research is necessary in order to evaluate the medical effects of different nursing and treatment measures /.../ It is therefore important to create good research environments and financial preconditions which enable the quality of clinical research to be strengthened.[84]

As VR is the largest single research sponsor with the capacity to support such research, it is extremely important for the Council to decide to strengthen clinical research over the next few years.

The Government's current research bill *Forskning för ett bättre liv* [Research for a Better Life] also allocates increased resources to the medical research field, an investment which in part follows the guidelines sought by VR in the evaluation of Swedish medical research. As the Whiplash Commission has pointed out, we need more and better knowledge of how medical care and rehabilitation function in practice. The investment in clinical research may contribute not only to greater knowledge, but also to a higher quality in the care that is offered. *It is therefore the hope of the Whiplash Commission that VR will now give priority to such clinical research as may be of direct relevance in reducing the costs of the high incapacity rates in Sweden*. In its strategic documents, VR refers specifically to these costs as an argument for a general increase in research resources. In that case, over the next few years, we will see clinical studies of the diagnoses which are behind these incapacity rates and high costs – such as whiplash-related injuries.

Discussion

Knowledge of whiplash-related injuries and their consequences is today inadequate, and this inadequacy needs to be seen in a wider context. Within the medical research field no priority has yet been given to research into sickness absence and insurance medicine.

The Whiplash Commission agrees with the conclusions already reached by several other actors, namely that *Sweden should invest in better scientific knowledge of this field*. Private research sponsors, for various reasons, have no interest in or possibility of favouring research in insurance medicine, and therefore it is, in practice, within government research policy that responsibility for generating such knowledge has to be taken. Such a government investment is

now strengthening the allocation of resources to the medical area. However, the Whiplash Commission is of the opinion that the medical field ought to be broadened to give insurance medicine an accepted place. In the Government's coming research bill, the social sciences are allocated increased resources, which are to be devoted to research in the field of social medicine on the consequences of sickness absence, and the possibility of effective rehabilitation and return to work.

It is one of the tasks of the Social Insurance Agency to improve knowledge of how social insurance is working, by supporting research projects that analyse different aspects of the national insurance system. It is the view of the Whiplash Commission that if such projects are to acquire sufficient relevance and authority, the Social Insurance Agency should cooperate with other research sponsors. The private insurance companies represent one such potential partner, the state research councils another. Both the Swedish Council for Working Life and Social Research, and the Swedish Research Council have formulated research strategies for the years ahead. Both research councils refer to the large and costly incapacity rates in Sweden and discuss the research that is needed in order to address the problems.

The Whiplash Commission believes that the type of research that is needed for a better understanding of the problems of sickness absence has to have a broad, multidisciplinary base. It is therefore our hope that the major research sponsors will be able to see the potential of cooperation to enable such projects to be carried out. The problems underlying, for example, whiplash-associated disorders and their consequences need to be analysed from an insurance medicine angle, a social medicine angle and a clinical angle. Only collaboration between several different research sponsors would permit such an approach.

The lack of knowledge also makes the need for better statistics more urgent. Statistics Sweden has begun investing in a longitudinal database, the Social Insurance Agency is working to build up more uniform statistics – both of these initiatives are important. The private insurance industry can, in the case of road accident injuries, considerably improve its procedures for collecting and reporting relevant statistics in collaboration with other bodies. Until we know more about how sickness absence and insurance circumstances interact with the medical diagnosis, it is difficult to discuss solutions and improvements to the present system of rules and its application in practice. As so many people today are on long periods of sick leave, greater and more reliable scientific knowledge becomes vital. And there is no time to waste; we have to work to reduce the great human suffering that is reflected in the high rates of sick leave in Sweden.

Notes

83 FAS, Forskning om människors arbete och livsvillkor. Forskningsstrategi för åren 2005 till 2008, p. 2f.
84 VR's strategic document Medicinsk forskning för hälsa, god sjukvård och ekonomisk tillväxt (2004).

11 ACCESS TO KNOWLEDGE

Summary

Research has shown that people's expectations constitute an important factor in the prospects for recovery from whiplash-related disorders. If the injured person is anxious and worried, the prognosis is worse. But the message to the public is often difficult to interpret. The information from pharmacies is brief. Few of the websites on the Internet that deal with health questions offer quality-assured information. The newspapers write about whiplash-associated disorders in a manner that may create negative expectations. The Whiplash Commission wants to encourage a more nuanced picture of whiplash-related injury, for example by providing good quality information on the Internet and by making the final report available, both in full and in summary.

Introduction

In Chapters 5–10 of this report we have discussed what researchers know today about whiplash-related injuries and their treatment. We have mentioned the good results that can be achieved through preventive road safety measures and suggested a simplified claims settlement that will make it easier for injured people to receive fair compensation quickly.

Suffering from a long-term whiplash-associated disorder can change a person's life in many ways. But the risk of this happening after a whiplash accident is statistically very small. To judge from the many letters, e-mails and phone calls received by the Commission, this picture does not reflect the general perception of whiplash-related injuries. On the contrary, the anxiety felt by many people about the future after a whiplash accident and their idea of the likely consequences are often greatly exaggerated.

In the final chapter of this report, we therefore wish to discuss the impression received by the Swedish public from newspaper articles and the Internet with regard to preventive road safety, treatment and terms of compensation in connection with whiplash-related injuries. We then present some measures proposed by the Commission to establish a more differentiated public discussion of these subjects.

Role of psychological factors in recovery

In Chapter 8 we have established that research has come to take increasing account of psychological factors in the discussion of pain conditions. As SBU stated back in 1994, all the factors that may affect the state of health after a road accident need to be taken into account.[85] When doctors make a diagnosis, prepare treatment or make a prognosis, psychosocial factors play a large part. A number of international studies have emphasized that psychological problems are common after road accidents.[86] In recent years a number of experts have tended to use the term "post-traumatic stress symptom."[87]

As far as the consequences of whiplash-related car accidents are concerned, expectations have been underlined by several experts as a partial explanation of the psychological problems that may arise. In a study made at Ullevål Hospital in Norway, Monica Dronning and her team showed that immediate fear of the future directly after the accident was one of the factors that indicated that the pain problems would last for a period of longer than four weeks.[88] Conversely, it was asserted in a Lithuanian study that one reason for the lack of long-term problems after collisions from the rear was that public awareness of risk and sequelae was low.[89] In a study of 134 patients with road traffic injuries in Gothenburg (where 13% were people with whiplash-related injuries), Anna-Lena Andersson has shown that the perception of not receiving satisfactory medical information affects physical recovery.[90]

Expectations

The perception of the accident is therefore significant to the prospects of restoration to health afterwards. Anne Söderlund has shown that negative expectations with regard to the future are important in explaining the poor prognosis of some people who have suffered whiplash-associated disorders. With the support of other research, she defines patients' ability to deal with their symptoms themselves as one of the keys to successful rehabilitative work. An individual's *perception* of his or her situation and the ability to handle and influence it has, quite simply, a medical significance.

In her survey of 59 WAD patients in Uppsala, Söderlund divided the patients into two groups, those who had acute problems and those who had a more long-lasting pain condition. A smaller group of chronic WAD patients was also included. She drew up two courses of physiotherapy, one of which focused on building up patients' ability to develop their own methods of dealing with their pain perception.[91] The other course

concentrated solely on the patients' physical condition with a number of physiotherapeutic treatments.

To ascertain patients' own attitudes and abilities Söderlund considered a number of factors, including the expectations they expressed. They were asked to reply to the question of whether they expected to become fully healthy, or partially improved, or to continue to suffer from the symptoms. Söderlund's results show that patients with low expectations of their future and their own capacity have a poorer prognosis. They found the pain more disabling, whatever type of treatment they were offered. This group was also less able to learn the techniques that had proved effective in treatment.

After only a few weeks, moreover, the expectations of many patients changed for the worse. When hopes of a quick disappearance of pain were not realized, faith in the future turned into great anxiety and uncertainty.[92] Studies in other countries, too, have shown that patients with pain symptoms, in particular, quickly become pessimistic, and that the prospects for recovery then decline radically.

Influences on expectations

Those engaged in medical research have asked what it is that influences the way WAD patients see the future. Here, social factors have been given prominence – the whole life situation of the patient becomes relevant to an understanding of the attitude to the future. Living with pain for a long period has also been shown to increase anxiety about the future. But the patient's knowledge of his or her own condition is also important. Anna-Lena Andersson's study found that patients saw lack of concise medical information as a problem. In the study from Lithuania, on the other hand, the absence of information on whiplash-related conditions was regarded as an asset, which according to the researchers formed one of the explanations for the absence of people with long-term problems in the country. Other studies have warned that excessive information about future risks may have an undesirable effect on expectations, and thus worsen the prognosis for patients who have been involved in road accidents.[93]

Information on whiplash-associated disorders

The knowledge that an individual possesses concerning the symptoms that may follow a road accident has a bearing on how he or she views the situation and on the prognosis. If the information that has reached the injured person gives rise to strong anxiety about the future, it is also probable that this

anxiety will have a negative effect on the condition. A perception of receiving inadequate, or perhaps incorrect, information may also give rise to anxiety and stress.

But what is the level of knowledge about whiplash-related injuries among the Swedish general public? This naturally differs between groups. Those who have reason to engage in a detailed study of whiplash problems – e.g. patient associations, health professionals, lawyers and insurance company claims adjusters – can acquire the detailed knowledge that is offered in the literature and at research symposiums. But for those without a special interest, commonly available brochures generally, Internet searches and information in the daily press, on TV and on the radio normally determine the level of knowledge.

Information from Apoteket (National Corporation of Swedish Pharmacies)

For a number of years, Apoteket has been supplying a free leaflet with the title *Apotekets råd när du har ont i nacken* [Advice from Apoteket when you have neck pain]. The leaflet has been produced by Apoteket and checked for factual accuracy by Hans Lingfors, district medical officer in Habo and Jönköping, and was preceded by a leaflet produced by Alf Nachemsson and others.

Apoteket's leaflet states that as many as one in ten of the Swedish population experiences some kind of neck pain, and that this is a condition that affects every second Swede at some time or another. The pain is hardly ever a sign of any serious injury, says the leaflet, and it usually disappears within a week. Activity is conducive to a quick recovery: "if you try to live as normal as possible and move more or less as usual". For cases of acute neck pain, Apoteket recommends pain-relief tablets, movement, hot baths, and cervical collars. A simple diagram illustrates exercises that strengthen the neck muscles. There is also a brief description of the anatomic structure of the neck. Apoteket then lists possible causes of neck pain, and says when a doctor should be consulted. One of these conditions is pain arising after a road accident: "if you think you have suffered a whiplash injury it is important to see a doctor to obtain a diagnosis."[94] The leaflet on back pain, *Apotekets råd när du har ont i ryggen* [Advice from Apoteket when you have back pain], is related to the one on neck pain. Here it says that eight out of ten Swedes have a bad back at some time or other. Here, too, a short course of pain-killers, activity and planned patterns of movement is what Apoteket recommends, and that a doctor should be consulted in case of back pain after an injury or an accident. There is no discussion of the perception of pain itself, of the difference between acute and chronic pain or of the connection between them.[95]

Infomedica, the health information website run by Apoteket and the

Swedish county councils, also discusses neck and back pain. The texts have been written by an editorial group and checked by a number of doctors. Unlike the two leaflets, this site gives more space to a detailed discussion of different aspects of back and neck pain. A third of all Swedes in the studies undertaken state that in the "last half year" they have at some time had neck or back pain. In more or less the same terms as Apoteket's leaflets, the importance of activity and of some planning of the daily pattern of movement is recommended. And, just as in the leaflets, it is emphasized that the pain is not normally a sign of any serious pathological condition, but that there are times when the person suffering pain should consult a doctor; pain in connection with an accident is one of them. The anatomical structure of the neck is briefly depicted and a number of injuries and pathological conditions are described. Concerning whiplash-related injury *Infomedica* writes:

> Whiplash injury is a special injury that generally does not indicate that a bone has been broken. The complaints come instead from damaged muscles, connective tissue and nerves.

The website presents a detailed account of the diagnostic methods used in medical care for cases of back and neck pain and it is underlined that the patient's account of the symptoms is a vital part of this diagnostic work. *Infomedica* also refers to more detailed information on pain and pain perception on the website and discusses briefly how the perception and interpretation of pain also affects the degree of pain experienced.[96]

To summarize, Apoteket gives advice resembling that given to patients seeking help for neck and back pain from the Swedish primary care services. The information emphasizes that this form of pain is very common and that it is not often a sign of serious injury or illness. But the material also lays emphasis on the fact that a person suffering pain in connection with an accident should consult a doctor, and the specific discussion of "whiplash" is quite brief. The conclusion that may reasonably be drawn by a person seeking advice on whiplash-associated disorders then seems to be that this is a fairly serious condition that requires medical diagnosis and that general advice on activity, care with the pattern of movement and so on is less relevant than with other neck and back pain.

Whiplash information on the Internet

An Internet search of Swedish websites containing the term "whiplash" today gives more than 35 000 hits. Many of these are of course sub-sections of the

same site, but the number still indicates the enormous unsorted volume of information that meets anyone who looks independently for knowledge of this particular type of injury.

Information is available on sites of many different types. These include information from disabled people's and patient associations, and from general "health sites" – a phenomenon that has developed over the last ten years. *Hälsoguiden* [Health Guide], *Netdoktor* [Net Doctor] and *Praktisk medicin* [Practical medicine] may be mentioned as examples. Articles from the daily press are also often accessible to the search engines. Personal websites are also common. An additional category is made up of sites that are actually advertisements for private companies in health and legal fields (e.g. the website of the Staywell company, which offers help with examinations and certificates for the claims process). Some information also comes from conferences, research reports and research seminars, but material of this type does not seem to be equally prominent.

Information from disabled people's and patient associations

Those associations (and equivalent organizations) that represent people with whiplash-associated disorders have told the Commission that information on whiplash-related injuries has been inadequate. Several of them have stated, as we discussed in Chapter 3 of the report, that the need for information has been one of the driving forces in the work of their own association.

The eight associations with which the Commission has been in contact also have their own websites (their addresses are given in Chapter 3). However, the information on whiplash-associated disorders varies, both in extent and in quality. Some of the websites have contacted experts in the field and obtained signed articles written specifically for the website, others have put out articles and interviews obtained from other sources.

A number of short information brochures and leaflets have also been produced by the different patient associations. One example of the more carefully planned and expensively produced sources, not freely available on the Internet but available for purchase, is RTP's *Kunskap är Makt – att gå vidare efter en whiplashskada* [Knowledge is Power – Going on after a Whiplash Injury] (2004). Representatives of patients, various authorities and doctors are interviewed in the book, and RTP discusses questions of quality of life and also treatment and insurance problems. Several patient associations also take up common questions affecting whiplash-related injuries in their members' magazines and newsletters.

As the information from patient associations is at the same time both extensive and varied, it is difficult to generalize about the content and the quality.

However, it is evident that the picture of what a whiplash-related injury is, the symptoms that are manifested and the type of treatment that may help vary considerably. Some associations also collaborate with private treatment clinics that have links and advertisements on the actual website.

Health sites

Several Swedish health sites discuss whiplash-related injuries in varying degrees of detail. One example is *Helhetsdoktorn* [The Holistic Doctor], where Dr Bertil Dahlgren reports on some of the research into whiplash-related injuries, discusses possible injury mechanisms, refers to other websites, quotes press cuttings and adds his own reflections. The focus of the discussion is on the anatomical structure of the neck and the different parts that can be injured. Another example is *Smärtguiden* [The Pain Guide], a site to which users can report and become members. Comprehensive information is available to members, together with hints and advice on treatment and "patients' accounts", but the non-member is offered briefer information written by pain expert Dr Björn Bragée, who is also responsible for the total content. The main theme of this website is perception and treatment of pain. The *Netdoktor* website contains a brief description of whiplash in an article by Drs Helge Kasch and Troels Staehelin Jensen, who refer to international research when emphasizing how small the risk of long-term problems actually is and also how important the patient's own activity is to rapid recovery.

To summarize, the information offered on health sites is likewise variable in quality and direction. If a doctor has written the article concerned, it is likely that different types of injury mechanisms, symptoms and treatment will be emphasized, according to the doctor's speciality.

Quality control of Internet information

The quality, up-to-dateness and credibility of health information on the Internet are questions that have received increasing attention in recent years. In 2002 the National Board of Health and Welfare examined *Hälsa på Internet* [Health on the Internet], with the aid of the EU's proposed directive. The EU's directive mentions six quality criteria that should be met:

- transparency (openness) and honesty concerning informant, purpose, target group and financing
- reference to sources used
- personal integrity, security and confidentiality
- up-to-dateness (date of updates)

- information concerning webmasters and possibility of contact
- accessibility (search opportunities, legibility and comprehension)

A total of 35 Swedish websites were then examined on the basis of these quality criteria. The National Board of Health and Welfare concluded that

> There are a number of Swedish websites making good efforts to give their users information which satisfies the quality criteria proposed by the EU Commission. As yet, however, no website fulfils all the criteria. At the same time the review of the 35 Swedish sites shows that it is often difficult to find and/or interpret the information that may exist concerning a website and its content. This applies particularly to information regarding financing, treatment of personal data, sources and updating.[97]

In its discussion of the results of its review, the National Board of Health and Welfare argues that better control of health information on the Internet is urgently needed, as such information is sought by growing numbers of people. Even if responsibility for meeting a number of agreed criteria rests with the party named as the responsible publisher of a website, authorities should also become involved in monitoring and inspection. The Board also points out that the different groups in society that deal with health issues – in other words not only health professionals but also, for example, patient associations – have a responsibility for making the public aware that a website should satisfy certain criteria to be considered as supplying information of good quality.

Assessment of press treatment of whiplash-related injuries

To many people, the Internet is an important source of information, which is supplemented with brochures and other information material that is easily available from pharmacies, health centres and patient associations. But for most Swedes the press treatment of a subject is still definitely the main source of community information.

To obtain a picture of how whiplash-related injuries, their causes and consequences are described in the mass media, the Whiplash Commission has analysed articles in the daily press between 1980 and 2004, which is the period during which "whiplash" has become established as a concept in the Swedish language and when this type of injury has begun to be visible in insurance company statistics. The study has been carried out through Sweden's three largest

media archives (*Mediearkivet, Bibliotekstjänst Artikelsök* and *Presstext*) and by means of free text searches of individual newspapers. A total of nineteen newspapers have been examined. Even if this represents a selection, the analysis gives a general overview of what has been written about the whiplash problem – and, with that, the information that the newspaper-reading public has been able to obtain. The study in full is contained in Appendix 10 to this report.

Volume and subject of coverage

The total number of articles during the period was 426. Over the first fifteen years covered by the study, the number of articles is relatively small, between three and ten per year. But there is a sharp increase after 1995. Over the last nine years, an average of forty articles per year have been written on whiplash-related injuries and their consequences.

The articles may for simplicity be divided into five categories, even if many of them deal with subjects that overlap. The largest number of articles, altogether 104 of them, have been on the subjects of *traffic and technical matters:* car design, whiplash protection and crash tests. *Research findings and presentations* is the second largest category: 98 articles during the period. But this field is closely connected with *treatment and care*, represented by a total of 77 articles. *Insurance questions* account for a substantial part of the written material, 87 articles. And insurance matters also play a recurring part in the final category, which we have called *personal portraits/miscellaneous*. There are frequent accounts here of individuals who have suffered whiplash-related injury – in which insurance questions play an important part.

Content of the articles

What do the newspapers say about whiplash problems? Articles in the traffic and technical field often contain practical advice to the reader, about driving position and about cars with the best whiplash protection. Typical headlines may be "Driving position decides injury" (DN 27 October 1993) or "Swedish car seats halve risk of neck injury" (SvD 24 June 2003). The articles are often written after press conferences with car manufacturers or with the National Road Administration, and report current research findings and crash tests. More infrequently they contain interviews and the journalist's own analyses.

The articles on medical research often point out that whiplash-related injuries are puzzling. "Difficult to discover whiplash injury", writes *Dagens Nyheter* on 1 June 1996, and goes on to assert that many injuries can only be discovered at a post-mortem (which in turn strengthens the impression of the seriousness of the injury). "Truth about whiplash not known", says

Helsingborgs Dagblad on 30 March 1996, whereas Aftonbladet describes whiplash-related injuries with the characteristic "The injury that cannot be cured" (5 March 1995).

The articles on care and treatment provide most descriptions of what are called breakthroughs and effective new methods. "Whiplash injury cured by operation", writes *Sydsvenska Dagbladet* on 29 August 2004, joining the many other papers that had written in 2003 and 2004 about operations on whiplash-related symptoms by the US-based surgeon Åke Nyström. "Breakthrough in fight against whiplash injuries" (SvD 9 November 2004) describes the method of tracing whiplash injuries with the aid of MRI, and the article goes on "many people injured in road accidents encounter scepticism, but now there is evidence". Other forms of treatment also receive attention. "Therapy new aid for whiplash victims", writes *Aftonbladet* on 25 February 2003, referring to a combination of coping methods and physiotherapy. Different treatment programmes have also been noted, with the differences between treatments in different counties being emphasized.

The description of compensation issues is consistent. Nearly all the articles in the selection describe individual policyholders who feel that they have been unfairly treated by their insurance company. "One doctor's word against another. Her long struggle was in vain", says, for example, *Barometern/ Oskarshamns-Tidningen* on 9 September 2004 after a judgment in the Svea Court of Appeal. "Time ran out for legal protection," writes *Göteborgsposten* on 19 March 2003, going on to quote the lawyer Jonas Lundberg: "An awful decision". "She is condemned to eternal suffering by the court of appeal" (*Aftonbladet*, 16 May 1999), "Many have to accept disgraceful offers" (*Aftonbladet*, 4 March 1995), and "Folkshame" [playing on the name of the insurance company Folksam] (*Expressen,* 14 February 1992) are examples of headlines of articles dealing with insurance matters arising in whiplash-related cases.

The portraits of individuals who have suffered from whiplash-related symptoms often contain, in addition, a discussion of the actions of the insurer. What the articles have in common is that they portray whiplash-associated disorders as serious and lifelong. "A simple collision ruined Jan-Olov's life" (*Gefle Dagblad*, 17 January 2004), "One second changed Maria's life forever" (*Östgöta-Correspondenten*, 22 October 2004), "The worst thing is not being believed" (*Östgöta-Correspondenten*, 3 September 2002) and "Life will never be the same", (*Värmlands Folkblad*, 28 February 2002) are examples of the way articles containing personal portraits are often headlined in the Swedish daily press.

Summary

The number of articles in the Swedish daily press that deal with different aspects of whiplash problems rose sharply during the second half of the 1990s. Interest in whiplash-related injuries has grown during the same period as the number of insurance claims has risen. One general observation is that whiplash-related injuries are described in the material as a mysterious, as yet unexplained, type of injury. The sufferer has to live with lifelong problems, even if new methods of treatment are highlighted at regular intervals as the solution. Differences in treatment and care in different parts of Sweden are depicted from the point of view of fairness. The injured person should expect a negative reception from the insurance company and unfair treatment from the Swedish legal system.

Reporting of road safety is in contrast with this picture. Here the press has drawn attention to the potential in new whiplash protection systems for improving the prognosis of people suffering a whiplash injury. Specific hints on driving position and on different car models give the reader a feeling that the solution may lie in improved technology.

Importance of press writings

A media analysis can of course be enlarged, and take account of more variables (for example, distinguish between the approach of different papers, their circulation etc.). But the articles that have been examined here show that the public perception of whiplash-related injury in Sweden, as shaped by the Swedish daily press, can be seen as excessively pessimistic. As we have been able to demonstrate with the aid of available statistics, the risk of suffering long-term problems after a collision involving whiplash impact is actually small. But a reader of articles in the Swedish daily press may easily draw the conclusion that the risk is in fact great, and that the consequences of such a collision will be very serious.

The problem can largely be explained by the fact that, for natural reasons, the daily newspapers concentrate their reporting on conflicts, new developments, legislative proposals and initiatives from private individuals and organizations. The tendency is reinforced by the headlining and the introductions – parts of the text of the article for which the journalist is not always responsible, and which are written to attract the reader's attention quickly. Even if many of the articles commented on above contain information to the effect that the risk of long-lasting problems is actually small, a person who glances quickly through the material may easily form an impression different from that intended by the journalist: the disorders change life forever, the

reasons are an enigma, there is little chance of getting proper treatment and fair compensation. This means that the relatively limited number of cases that go to court every year – about 150 – receive disproportionate attention. Quick methods, such as operations, are given space, whereas longer-term pain treatment, with results that are difficult to evaluate, is not equally visible.

Discussion

As several researchers have shown, the expectations of the individual are an important factor in the prospects for recovery from a pain condition. Such psychological factors have proved particularly important after road accidents. Even if expectations after a road accident depend on several factors connected with the situation of the individual, the "general" opinion of whiplash-related injuries must play a certain part. To the general public, it is difficult to obtain a simple and easily understood picture of what science at present knows about the causes, consequences and treatment of whiplash-related injuries. Information on the Internet is multifaceted, inconsequential and not always quality-assured. This picture is supplemented by reports in the Swedish press that focus on certain aspects of the whiplash problem – aspects that give an exaggeratedly negative picture of how the injured party risks being affected after a whiplash accident.

The Whiplash Commission therefore regards it as an urgent matter to work in various ways for the establishment of a more differentiated picture of whiplash problems in Swedish society.

Internet information

The Whiplash Commission is publishing web-based information via two channels. The Commission's enquiries and proposals are presented on its own website at **www.whiplashkommissionen.se** Here we will also answer the questions most frequently put to the Commission by the public during the period 2002–2005. It will also be possible to download the Commission's report, as well as the summary and appendices, in pdf-format from the website.

The Whiplash Commission has also worked with **www.infomedica.se** to supplement and update the information on whiplash problems already offered on the website. The task force of the Commission and the Swedish Society of Medicine has written an article on whiplash-related conditions based on the task force's consensus document – an easily understood and accessible summary of what experts know today about whiplash-associated disorders and their treatment.

The Commission also supports the criteria that the National Board of Health and Welfare and the EU have laid down for the quality-assurance

of Internet information. It is important for not only authorities and health service representatives, but also Swedish patient associations, to be helped to inform the public of the factors to be kept in mind when seeking relevant information on the Internet.

Pharmacies, health centres and hospitals

The task force group of the Whiplash Commission and the Swedish Society of Medicine has compiled a brochure which clearly summarizes what is known today about diagnostic criteria and early treatment of whiplash-related injuries. It contains concrete advice and proposals for a consistent method of diagnosing whiplash-related injuries in Sweden. The brochure will be available at Swedish pharmacies, health centres and hospitals. It can also be downloaded from **www.whiplashkommissionen.se** or ordered from the head office of the Swedish Insurance Federation in Stockholm.

It is the hope of the Whiplash Commission that by means of information on the Internet and dissemination of printed material we will contribute to a more differentiated discussion of whiplash-related injuries, and thus reduce the anxiety that many people experience when they have been involved in a road accident involving whiplash-related impact.

Notes

85 SBU's report on road accident injuries, no. 122 (1994).
86 Mayou R. et al, "Psychiatric Consequences of Road Traffic Accidents", BMJ 1993; 307:647-51; Malt U et al, Bedre fore vár, Nordbyhagen 1982; Brom D et al, "Victims of Traffic Accidents", Journal of Clinical Psychology 1993;49:131-140; and Blanchard E et al, "Psychological Morbidity Associated with Motor Vehicle Accidents", Behav. Res. Therapy 1995;33:529-534.
87 See for example Blanchard et al, and Söderberg (2001).
88 Drottning et al (1995).
89 Schrader et al (1996).
90 Anna-Lena Andersson, *Psychosocial Factors and Traffic Injuries* (Gothenburg 2003).
91 This capacity is often described in English as "coping".
92 Anne Söderlund, *Physiotherapy Management, Coping and Outcome Prediction in Whiplash Associated Disorders (WAD)* (Uppsala 2001).
93 For a discussion, see Västra Götalands regionens omhändertagandeprogram för personer med whiplashrelaterade besvär, *www.vgregion.se/whiplash*
94 Apotekets råd när du har ont i nacken (2001), p. 15.
95 Apotekets råd när du har ont i ryggen (2001). The leaflet has been checked for accuracy by Hans Lingfors in collaboration with physiotherapists Per Skarrie (Jönköping) and Irene Tengberg Herrstedt (Huskvarna).
96 See www.infomedica.se . A special article on whiplash-related injuries has now been written by the task force of the Swedish Society of Medicine and the Whiplash Commission, based on the conclusions of the task force's consensus document.
97 The report may be found on the National Board of Health and Welfare website. The summary is on www.sos.se/fulltext/103/2002-103-4/sammanfattning.htm.

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The Swedish Whiplash Commission was appointed in the summer of 2002 on the initiative of, and with funding by, the four big insurance companies in Sweden: If, Folksam, Länsförsäkringar and Trygg-Hansa. The background to the initiative was the rapid increase in the number of reported whiplash-related injuries during the 1990s, and the resulting human suffering and cost to society. The Commission's terms of reference were defined as examining, over a period of three years, the problems of whiplash-related road traffic injuries, from the point of view of road safety, medical care and insurance.

The Final Report of the Commission presents conclusions and recommendations based on sound knowledge in all of these areas and on the extensive discussions that the Commission has held with interest groups and the general public.

The report of the Swedish Society of Medicine and the Whiplash Commission task force: a Swedish consensus document on the whiplash diagnosis, may be downloaded or ordered from the Commission's website, www.whiplashkommissionen.se.

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