Sint Maartenskliniek

MaartensFacts 2016/2017

Results of treatments
performed at the Sint Maartenskliniek

Introduction

Eighty years ago, the nuns at the Choorstraat convent established the Sint Maartenskliniek in order to provide good care that would help people move forward. This is still what we aim for in 2016, even though the actual care we provide has changed enormously. To help bring about such changes and keep on improving care, we measure the outcomes of our treatment and present the details clearly in our MaartensFacts guide.

This is the third edition of MaartensFacts. MaartensFacts are objectively recorded outcomes and features of the treatments we perform at the Sint Maartenskliniek. We present clinical outcomes, outcomes reported by patients and key characteristics of the patients treated. Unlike in the two previous guides, we have focused in this edition on the outcomes of just a few of the Sint Maartenskliniek's spearheads: complex and unique treatments that we specialise in. This MaartensFacts guide can therefore be considered as more of a supplement to the previous one, or a more in-depth edition.

MaartensFacts shows how we are aiming to be transparent about how we provide care and about the results we achieve. Do patients experience less pain after treatment and is their function improved? Do they have a better quality of life? We use MaartensFacts within the organisation to keep on improving the care we provide. We also use the outcomes to provide our patients with information, for example about what they can expect from our treatments.

In 2015, patients voted the Sint Maartenskliniek the most patient-friendly hospital in the Netherlands. While this is of course fantastic, we see the accolade above all as an additional encouragement to become even more patient-friendly, for instance by providing relevant treatment information based on treatment outcomes. We can only do this with input from our patients. Without the details they give us, we would not be able to improve our care and the information we provide. We would therefore like to thank the patients of the Sint Maartenskliniek for their amazing cooperation!

Dr Bart Swierstra
Chairman of the MaartensFacts board

Prof. Mark Van Houdenhoven
Dr Gert van Enk
Board of directors of the Sint Maartenskliniek

Mark Van Houdenhoven

Gert van Enk

Bart Swierstra

Moving forward

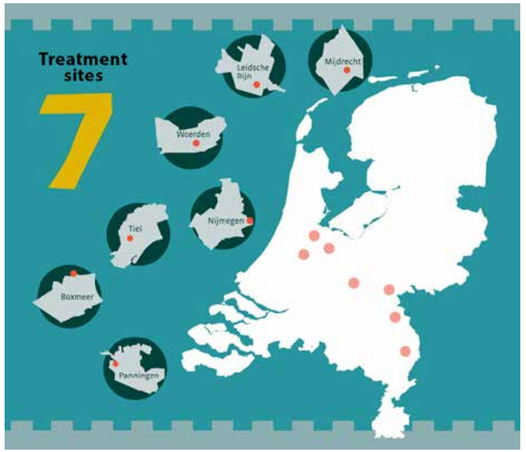
The Sint Maartenskliniek is the largest specialist hospital in the Netherlands and focuses entirely on the treatment of conditions relating to posture and movement. Providing everything from complex to routine care, the Sint Maartenskliniek has four basic specialisms — orthopaedics, rheumatology, rehabilitation medicine and pain management — which are accompanied by all of the necessary supporting specialisms. Here at the hospital, we have a specialist pharmacy and a research department, and we are constantly investing in research, development and education to make sure that the care we provide really does set us apart from the rest.

Mission
The Sint Maartenskliniek is acknowledged as the leading hospital for posture and movement by patients, referrers, our partners and health insurers alike. We offer our patients outstanding specialist medical care in order to improve their movement and function and ensure that they are able to take part in the activities of everyday life. We systematically quantify the results of our work, which enables us to demonstrate our value and constantly make improvements. We work together with partners in the care chain, provided that this collaboration results in improved or more efficient care for our patients. We also accept our social responsibilities and make efforts to reduce health-care costs.

Sint MaartensKinderkliniek
The Sint MaartensKinderkliniek is our specialist children's unit, based at the Maasziekenhuis Pantein. Children from all over the Netherlands with posture and movement problems are examined and treated in this unit. Doctors, nurses, operating theatre staff and plaster technicians from the Sint Maartenskliniek work together with their colleagues from Maasziekenhuis Pantein, and also with specialists from the Radboudumc Amalia children's hospital in the case of exceptional care issues or complex problems.

Treatment sites

The Sint Maartenskliniek provides care at seven sites. Orthopaedic and rheumatology care, rehabilitation care and pain management are available in Nijmegen, and there is also a site at the Zuwe Hofpoort Ziekenhuis in Woerden that delivers rheumatology and orthopaedic care. Based at the Maasziekenhuis Pantein, our Boxmeer site provides orthopaedic care and outpatient treatment for rheumatology and rehabilitation. Patients can also visit our Mijdrecht, Panningen and Leidsche Rijn sites for outpatient rheumatology care.



Zorgkaart Nederland

Patients can rate health-care providers and/or health-care organisations on the website of ZorgkaartNederland (Care Map of the Netherlands - an initiative by Bohn Stafleu van Loghum and the NPCF patients' federation). This provides useful information for people looking for a health-care provider, as well as practical suggestions for care institutions on how to further improve their services. ZorgkaartNederland offers an objective and reliable reference platform for consumer experiences in the health-care sector and is supported by the major health insurers, patients' associations and interest groups.

The Sint Maartenskliniek actively encourages patients to give their opinions and rate the hospital and its doctors on ZorgkaartNederland. Patients can rate various sites and units, and they can also rate a specific doctor. We consider the ZorgkaartNederland ratings during the improvement cycle. When we receive a negative review or suggestions for improvement, we contact the patient through ZorgkaartNederland.

'Most patient-friendly hospital in 2015'
In 2015, patients voted the Sint Maartenskliniek the most patient-friendly hospital in the Netherlands. This public award is an initiative by ZorgkaartNederland and the NPCF patients' federation, and the result was based on patients' ratings given on www.zorgkaartnederland.nl. Focusing on people is one of our core values and this award shows that we are certainly on the right track. However, it goes without saying that we are constantly looking for ways to fulfil our patients' needs and wishes even better.

The table below shows the average rating (on a numeric scale from zero to ten) given by patients in 2015 for the care provided by the Sint Maartenskliniek.

Specialism:	number	average	treatment	information	listening	staff	facilities	appoint-ments
Anaesthesiology	14	8.2	8.4	8	8.5	7.6	8.9	7.6
Orthopaedics	933	9.0	9.3	9.0	9.0	9.1	8.7	8.8
RealHealth	114	9.1	9.1	9.1	9.2	9.3	9.0	8.9
Rheumatology	45	8.5	8.5	8.3	8.6	8.6	8.6	8.3
Rehabilitation	11	8.1	8.1	8.0	8.1	8.3	8.5	7.7
Other/unknown	24	9.1	9.4	9.0	9.0	9.1	8.8	8.9
Total/average	1141	9.0	9.2	9.0	9.0	9.1	8.7	8.8

ZorgkaartNederland is the largest independent care rating site and it makes a major contribution towards health-care transparency by providing qualitative and quantitative information about care, along with the ratings for that care.

MaartensFacts

In 1936, the nuns at the Choorstraat convent established the Sint Maartenskliniek. Over the last eighty years, 'our' professional fields – orthopaedics, rheumatology, rehabilitation medicine and pain management – have changed a lot and now, in 2016, care is continuously 'in motion'. We need to move with the times and keep things in motion ourselves, and this publication is a good example of that.

MaartensFacts is a collection of clinical outcomes, outcomes reported by patients and key characteristics of the patients treated (such as their age). When collecting treatment outcomes, we focus primarily on the improvement noticed by patients. Patients fill in scientifically validated questionnaires prior to receiving treatment and several times during or after the treatment. The questionnaires emphasise the four main reasons why patients come to the Sint Maartenskliniek:

- Experiencing pain
- Restricted function
- Restricted mobility
- Reduced perceived quality of life

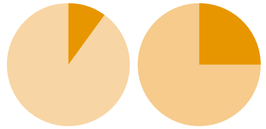
In this publication, we present the MaartensFacts for several complex and unique treatments that the Sint Maartenskliniek specialises in. We call them our 'specials':

- hindfoot surgery
- revision of total knee and hip prostheses
- scoliosis
- RealHealth
- neuromodulation
- spinal cord injury rehabilitation
- use of biologics in rheumatology care

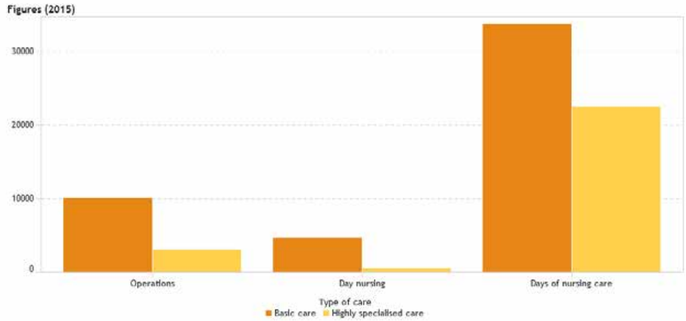
Numbers

All medical specialists at the Sint Maartenskliniek are employed by the hospital. At the end of 2015, our medical specialists made up 105 FTEs, while the total staff level came to 1735 FTEs. The Sint Maartenskliniek distinguishes between basic care and highly specialised care. It is striking that patients with complex problems not only undergo surgery relatively more often, but in particular that they also stay in the hospital much longer after surgery.

In 2015, 98% of our patients said they would recommend treatment at the Sint Maartenskliniek to their relatives. Over 44% of our patients travel more than 50km for treatment.



Turnover: 176.1 million euros
Number of beds: 222
Number of PhDs: 13
Number of scientific publications: 104



Notes for the reader

The aggregate data presented here is derived from prospective records from daily clinical care, without further selection. The data has been recorded at the source, in line with the recommendations for quality records issued by the Dutch Federation of Medical Specialists (*Federatie van Medisch Specialisten*, FMS).

For each patient group and treatment, the text gives information about the background of the condition or clinical picture in question, what the treatment involves and the composition of the patient group (population and demographics). The figures are for 2015. They illustrate the number of patients from the group concerned who attended the outpatient clinic, the characteristics of that patient population, the number of procedures/treatments carried out and the origins of these patients. The results presented are also given in order of the key treatment outcome domains: alleviation of pain, improved function, quality of life and satisfaction with the treatment.

The patients

We have decided to measure and evaluate various distinct groups of patients, with the distinction often based on the diagnosis (such as rheumatoid arthritis) or a specific treatment (such as a total joint replacement/arthroplasty of a particular joint). We have assessed and presented the treatment outcomes in two different ways:

1. For some treatments, the outcomes have been measured for all patients (e.g. patients treated with biologics or given a hip joint replacement).
2. For other treatments, a random sample has been taken (e.g. rehabilitation after spinal cord injury).

The domains

The domains measured relate to outcome metrics and sometimes to key process metrics. MaartensFacts also features information about subjective patient experiences and their satisfaction with the treatment outcomes.

Notes for the reader

The selected domains show what the Sint Maartenskliniek is all about - we specialise in conditions relating to posture and movement. This is why we assess pain, everyday function and quality of life. We have specifically avoided choosing structural metrics (for example the numbers of specialist nursing staff), process metrics that are less important to the patients (such as average sedimentation rates and numbers of transfusions after surgery) or other operational information.

The measurement tools

The measurement tools selected are validated, reliable and widely accepted metrics. These tools are also used internationally as outcome metrics. On top of that, they are often preferred by the relevant professional associations, which also use them in developing national guidelines. The measurement tools used are explained at the end of this guide.

Limitations and the development process

Several general limitations should be noted when interpreting the information. For instance, comparisons between hospitals may be difficult, given the variability in patient characteristics (known as "case-mix differences"). Since we only present average values, the information should be interpreted with caution. It is a snapshot of a certain time and place and cannot therefore be used for generalisations. In addition, response rates in research using questionnaires are never one hundred per cent, so the presented results may be distorted.

Results are not yet available for all outcome domains. Outcome measurement is still being developed and implemented at the Sint Maartenskliniek. We have decided to present the results within the outcome domains as absolute improvements here. This can give a positive impression of the outcome of the treatment. In some cases, a standard or a measure for relevant improvements is shown; this is stated in the text. A sound, responsible methodology for presenting the degree of improvement for each measure of outcome is currently being developed.

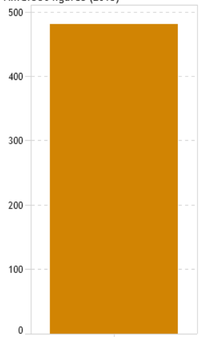
Hindfoot

The tarsal joints play a key role in assisting movements such as pressing a car's accelerator pedal, crouching, standing on tiptoes, pushing off and jumping. The foot can be braced entirely using muscular strength. Thanks to the tarsus, we can also stand on the insides or outsides of our feet. This is how the feet help us keep our balance and make allowances for uneven surfaces.

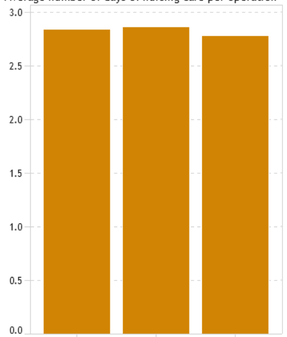
The tarsus consists of four bony elements and three joints. The main reasons for treating one or more of these joints are pain, deformation and instability, and these problems often go hand in hand. Pain can also be caused by wear and tear, for example after breaking the tarsal bone or because of rheumatic diseases. Sometimes we do not know what has caused the wear and tear (osteoarthritis). Pain can be also caused by malalignment, severe or otherwise, such as in cases of extremely flat or arched feet or a club foot.

Treatment
Pain in the affected joint is treated by fusing the joint together (arthrodesis). Wherever possible, only the affected joint is fused, but sometimes it is better to fuse two joints. These operations are performed not only to alleviate pain, but also to restore the shape of the foot. In cases of severe abnormality, all three tarsal bone joints are often fused. This is called a triple arthrodesis. These arthrodeses are often combined with operations on the tendons and the forefoot.

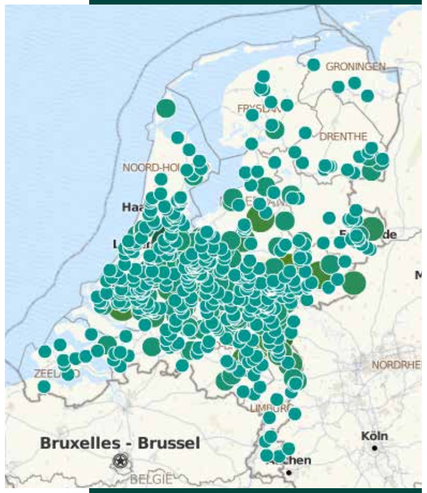
Hindfoot figures (2015)



Average number of days of nursing care per operation



Distribution of patients in the Netherlands

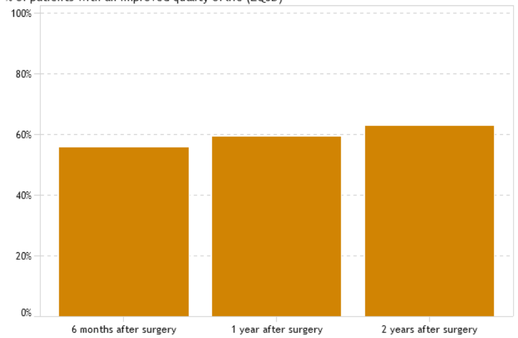


- avg. 1 patient
- avg. 3 patients
- avg. 5 patients

Facts & figures

63% of patients who underwent hindfoot surgery at the Sint Maartens-kliniek reported an improvement in their quality of life two years after surgery.

% of patients with an improved quality of life (EQ5D)

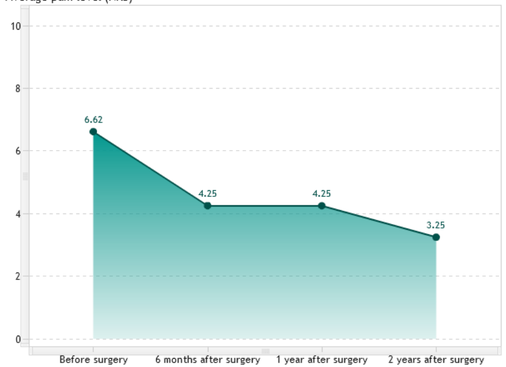


EQ5D scores

time of measurement	number of patients	average score
before surgery	217	0.78
6 months after surgery	217	0.82
1 year after surgery	217	0.83
2 years after surgery	100	0.83

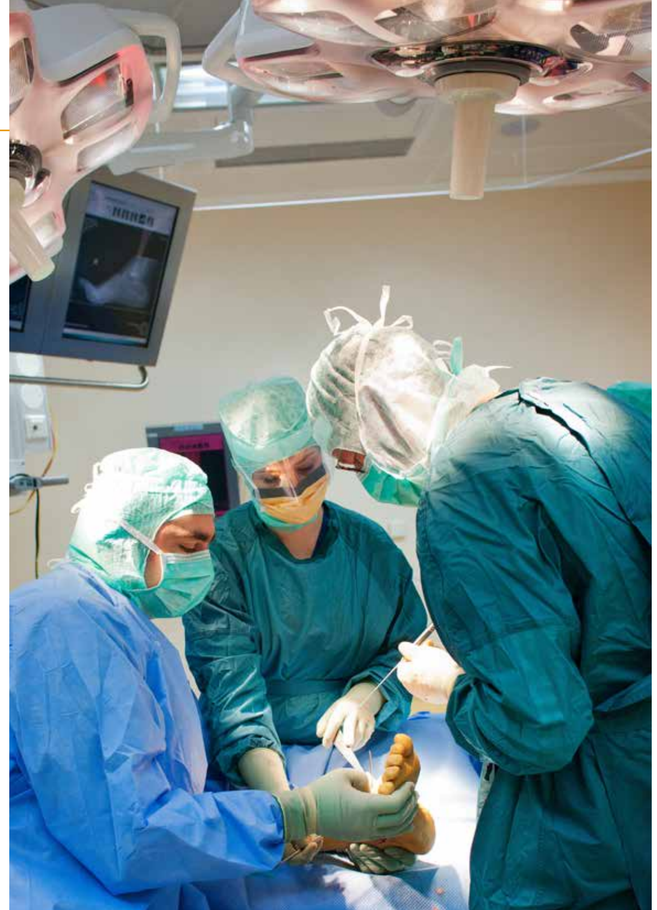
Hindfoot

Average pain level (NRS)

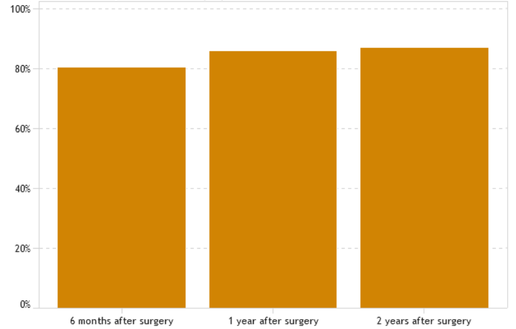


NRS scores

time of measurement	number of patients
before surgery	94
6 months after surgery	95
1 year after surgery	96
2 years after surgery	65



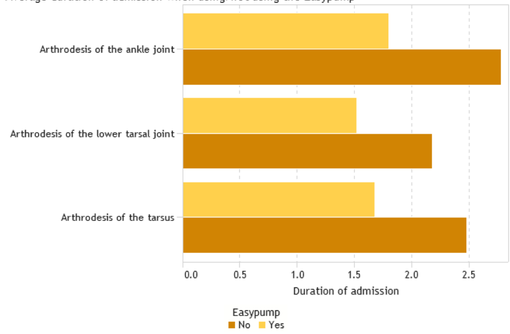
% of patients with improved function (FFI)



FFI scores

time of measurement	number of patients	average score
before surgery	217	50.79
6 months after surgery	216	34.90
1 year after surgery	215	35.26

Average duration of admission when using/not using the Easypump

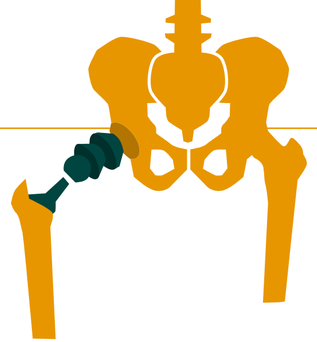


Hindfoot

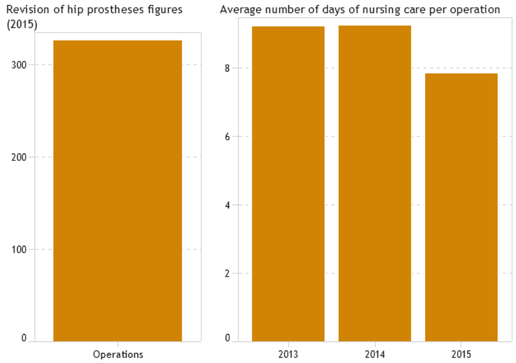
Easypump
Patients who undergo painful surgery on the foot/ankle are given a nerve catheter in the back of the knee for pain management. This enables the administration of local anaesthesia around the nerve for a few days. The Easypump is a pump with liquid anaesthetic that we connect to the catheter one day after surgery. The patient can then recover at home without any pain, instead of staying in hospital. Once the pump is empty, the patient can remove the catheter independently.

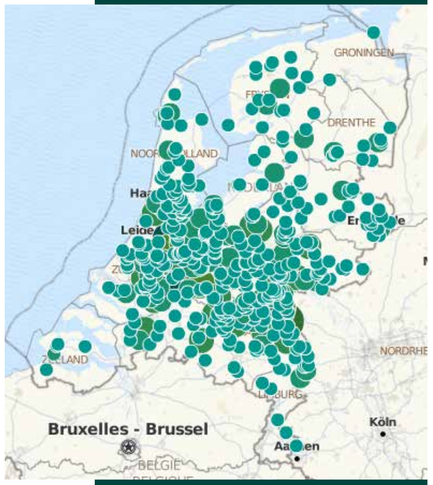
Revision of hip prostheses

If a hip prosthesis functions improperly or not at all, it must be replaced with a new prosthesis. Compared to all other hospitals in the Netherlands, the Sint Maartenskliniek performs by far the largest number of revision operations for hip prostheses. Patients largely come from other hospitals.



Treatment
Revision surgery means another operation. During the revision, the old artificial hip is partially or completely removed and replaced with a new one. Revision operations on the hip are generally complex procedures and therefore take a long time. The surgery often consists of a number of phases. First of all, the old prosthesis and bone cement (if used) must be removed. Any areas where the bone has seriously weakened must then be reinforced with, for instance, bone grafts. Following that, the new artificial hip can be inserted.

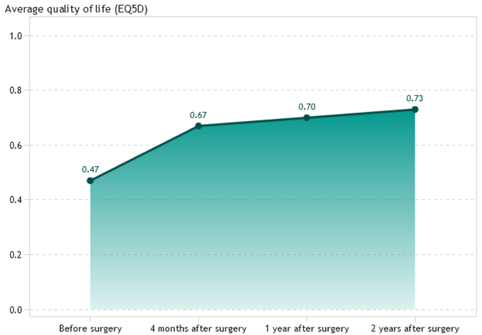




Distribution of patients in the Netherlands
- avg. 1 patient
- avg. 3 patients
- avg. 5 patients

Infections
The revision surgery that the Sint Maartenskliniek performs also includes a larger number of complex procedures than at other hospitals in the Netherlands. An example of these procedures is the treatment of an infection in the prosthesis. In 2013, the Sint Maartenskliniek opened a periprosthetic joint infection (PJI) unit, which provides multidisciplinary treatment covering infectiology, microbiology and sometimes also plastic surgery for all prosthesis infections. The Sint Maartenskliniek treats 80 - 100 prosthesis infections every year, which makes it the front runner in the Netherlands. Most patients who undergo these treatments are referred from other hospitals.

The Sint Maartenskliniek started measuring the clinical outcomes of hip revisions in 2013. A better understanding of the clinical outcomes may improve the success of revision surgery, which could in turn reduce the number of repeat revisions required. It can also help us to provide patients with better information.



EQ5D scores

time of measurement	number of patients
before surgery	341
4 months after surgery	289
1 year after surgery	248
2 years after surgery	102

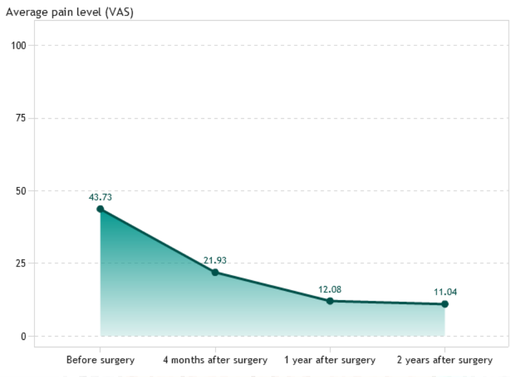
Revision of hip prostheses

Facts & figures

The patients' quality of life improves. On a scale of -0.33 to 1.00 (EQ5D-3L), patients' average score before surgery was 0.48. Four months after surgery, it rose to 0.67, then to 0.70 one year after surgery, and to 0.73 two years after.

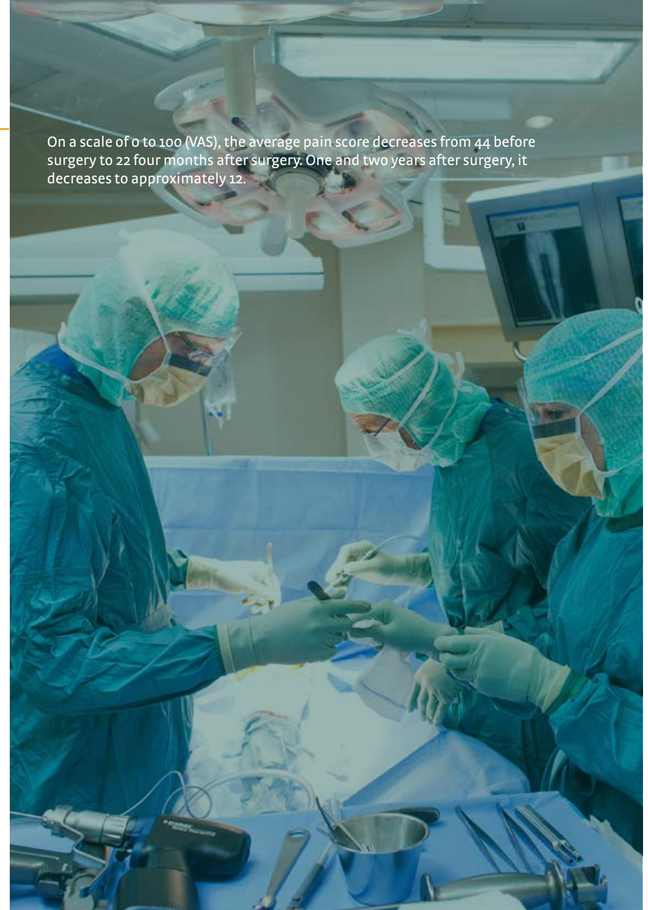
Revision of hip prostheses

Average pain level (VAS)



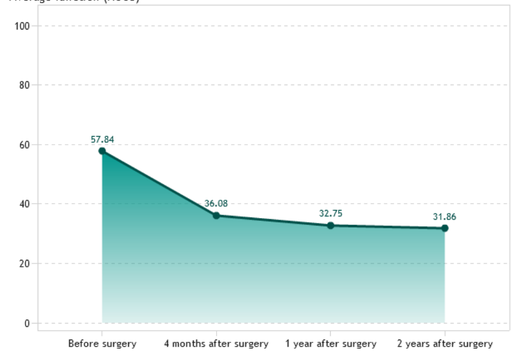
VAS scores

time of measurement	number of patients
before surgery	334
4 months after surgery	295
1 year after surgery	252
2 years after surgery	102



On a scale of 0 to 100 (VAS), the average pain score decreases from 44 before surgery to 22 four months after surgery. One and two years after surgery, it decreases to approximately 12.

Average function (HOOS)



HOOS scores

time of measurement	number of patients
before surgery	279
4 months after surgery	213
1 year after surgery	180
2 years after surgery	79

Revision of hip prostheses

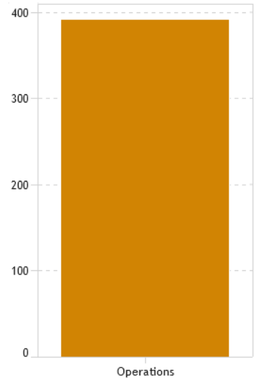
Patients' function improves from 58 before surgery to 36 after four months, on a scale of 0 to 100 (HOOS-ps). After one and two years, it improves to an average of 32.

Knee replacement revisions

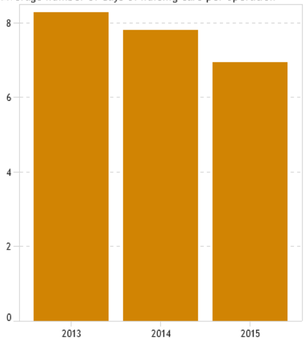
If a knee prosthesis functions improperly or not at all, it must be replaced with a new prosthesis. Nationwide, the Sint Maartenskliniek's knee team performs the largest number of knee replacement revisions by far. Patients largely come from other hospitals.

Treatment
During knee replacement revisions, the orthopaedic surgeon removes the previously implanted knee prosthesis and replaces it with a new one, using the old scar. If the revision operation is required because of an infection, the infection is treated before a new prosthesis is put in place.

Knee replacement revision figures (2015)

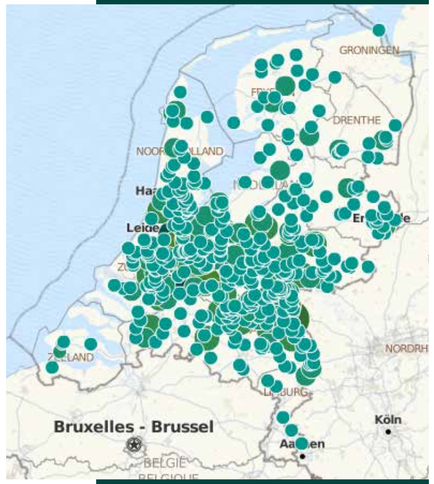


Average number of days of nursing care per operation



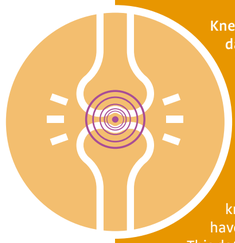
Distribution of patients in the Netherlands

- avg. 1 patient
- avg. 3 patients
- avg. 5 patients



Knee replacement revisions

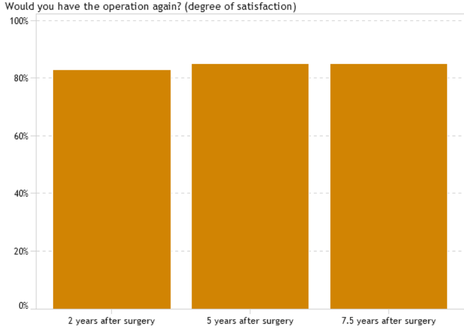
Facts & figures



Knee revision database
The Sint Maartenskliniek has been gathering data on treatment results for twelve years now for patients whose knee prostheses have been revised. This database is now the largest of its kind in the whole world. The data shows how the treatments went and has been used by the Sint Maartenskliniek to perform various scientific studies, which have helped to improve the treatment.

Infections
The revision surgery that the Sint Maartenskliniek performs also includes a larger number of complex procedures compared to other hospitals in the Netherlands. An example of these procedures is the treatment of an infection in the prosthesis. In 2013, the Sint Maartenskliniek started a periprosthetic joint infection (PJI) unit, which provides multidisciplinary treatment covering infectiology, microbiology and sometimes also plastic surgery for all prosthesis infections. The Sint Maartenskliniek treats 80 - 100 prosthesis infections every year, which makes it the front runner in the Netherlands. Most patients who undergo these treatments are referred from other hospitals.

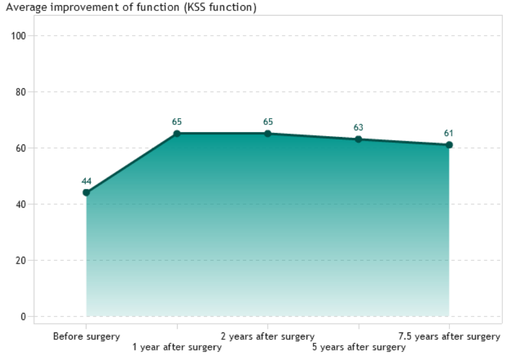
Would you have the operation again? (degree of satisfaction)



Five years after the operation, 85% of patients stated that they would undergo the surgery again if their preoperative condition was the same.

Knee replacement revisions

Average improvement of function (KSS function)



Five years after surgery, 69% of patients showed a measurable improvement in their function.

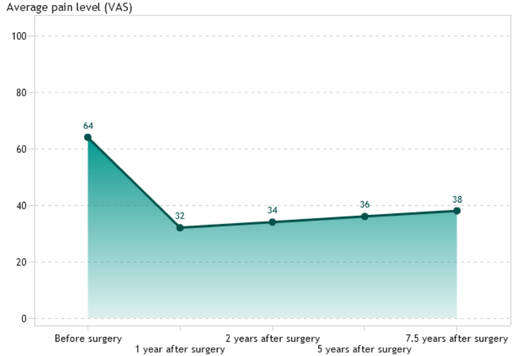
69%

Patients' function improves from 44 before surgery to 65 after one year, on a scale of 0 to 100 (KSS). After five years, it rises to 63 on average, and after seven and a half years to 61. Five years after surgery, 69% of patients who underwent surgery stated that their function had improved.

KSS function score

time of measurement	number of patients	improvement percentage
before surgery	276	-
1 year after surgery	260	74%
2 years after surgery	240	77%
5 years after surgery	199	69%
7.5 years after surgery	79	64%

Average pain level (VAS)



VAS scores

time of measurement	number of patients	improvement percentage
before surgery	268	-
1 year after surgery	257	84%
2 years after surgery	245	80%
5 years after surgery	199	73%
7.5 years after surgery	75	77%

Knee replacement revisions

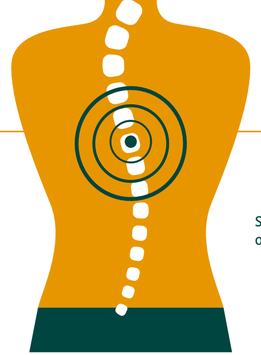
The average pain level reduces considerably, from 64 before surgery to 32 one year later, on a scale of 0 to 100 (VAS). After five years, it is 36 on average, and after seven and a half years 38. Five years after the operation, 73% of patients experience less pain than before.

Scoliosis

Scoliosis is a sideways distortion of the spine. The spine may grow crooked, sometimes to just one side, causing a single curvature. However, there are usually two curves. In addition, in cases of scoliosis the vertebrae rotate in relation to one another. This rotation of the vertebrae causes a hump on the back, as a result of which one shoulder blade sticks out more than the other.

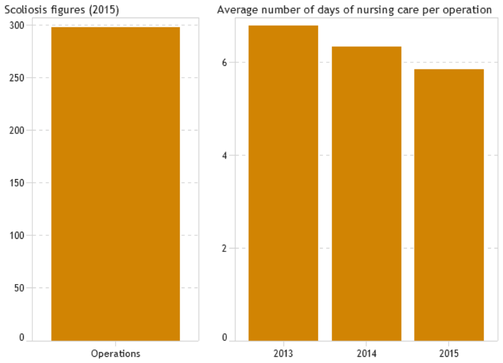
An X-ray can measure how serious the distortion is. Scoliosis is sometimes already present at birth.

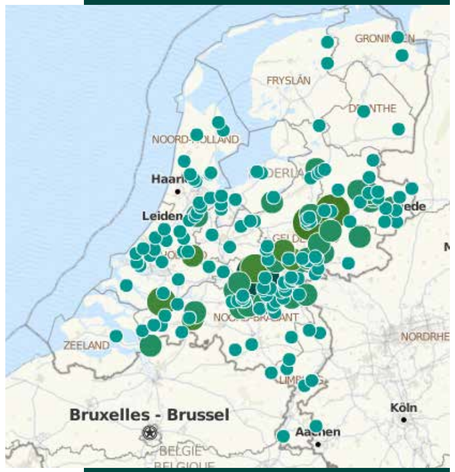
At the Sint Maartenskliniek, we make a distinction between scoliosis patients up to the age of 25 years and those who are older. We also use this distinction when measuring the outcomes.



Scoliosis occurs more often in girls than in boys.

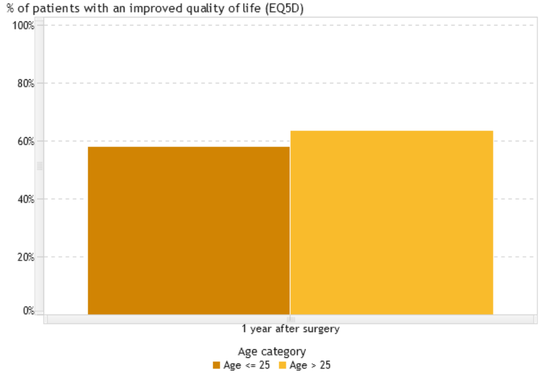
Treatment
Scoliosis treatments include wearing a brace that keeps the back as straight as possible. Where the spine curves to the right, the brace pushes that part of the back to the left. If the curvature is or has become too great or causes too many problems, the orthopaedic surgeon may decide to perform surgery.
An operation is then performed to straighten the spine as much as possible. Depending on the location of the curvature, the orthopaedic surgeon decides whether to perform spinal surgery from the back, front or side. In cases of scoliosis caused by an abnormality in the muscles or nerves, the surgeon will almost always perform surgery from the back.





Distribution of patients in the Netherlands
- avg. 1 patient
- avg. 3 patients
- avg. 5 patients

Facts & figures



The quality of life of patients aged 25 or younger who undergo surgery improves from 0.76 before surgery to 0.85 after one year, on a scale of -0.33 to 1.00 (EQ5D-3L). In patients older than 25, we see an improvement from 0.48 before surgery to 0.73 one year after surgery. 58% of patients aged 25 and under experience an improvement in their quality of life one year after surgery. This figure is 64% for patients older than 25.

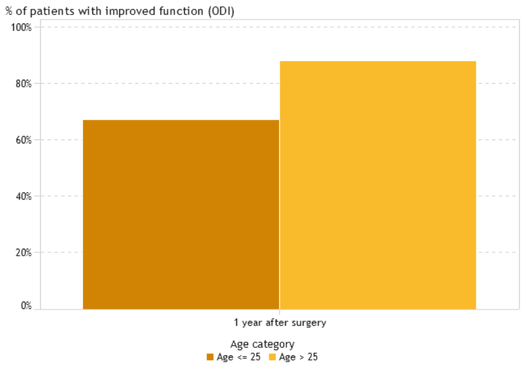
EQ5D scores, age <= 25

time of measurement	number of patients	average score
before surgery	313	0.76
1 year after surgery	119	0.85
2 years after surgery	40	0.84

EQ5D scores, age > 25

time of measurement	number of patients	average score
before surgery	48	0.48
1 year after surgery	33	0.73
2 years after surgery	13	0.77

Scoliosis

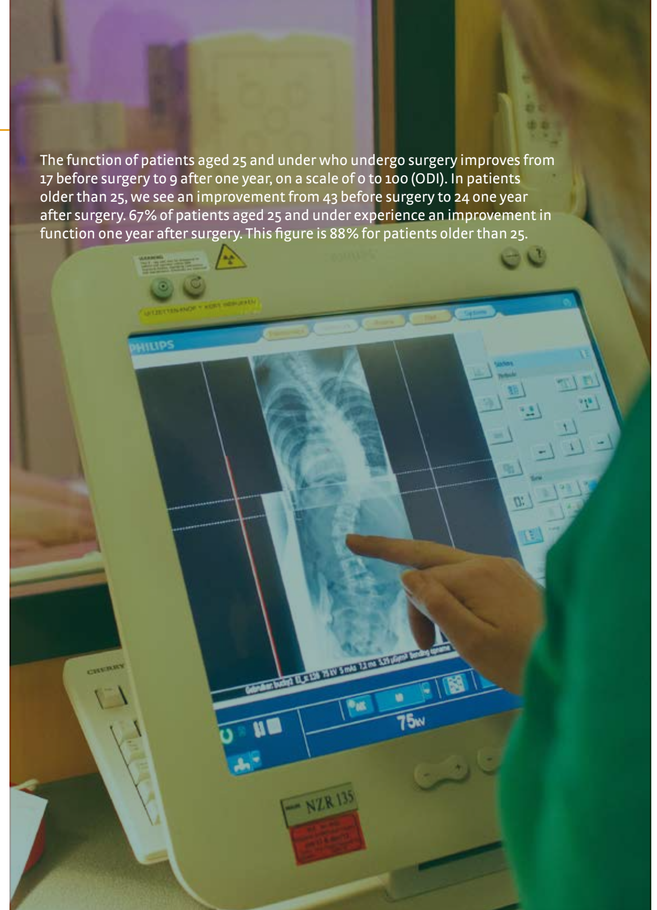


ODI scores, age <= 25

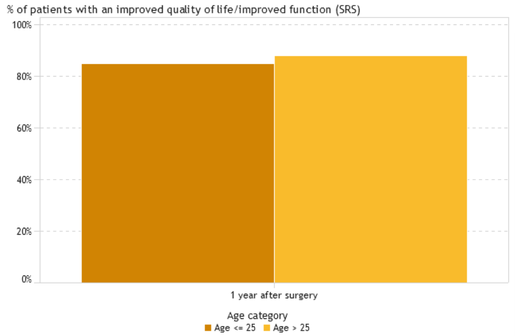
time of measurement	number of patients	average score
before surgery	313	17.49
1 year after surgery	119	9.07
2 years after surgery	40	9.70

ODI scores, age > 25

time of measurement	number of patients	average score
before surgery	48	42.87
1 year after surgery	33	24.33
2 years after surgery	13	21.08



The function of patients aged 25 and under who undergo surgery improves from 17 before surgery to 9 after one year, on a scale of 0 to 100 (ODI). In patients older than 25, we see an improvement from 43 before surgery to 24 one year after surgery. 67% of patients aged 25 and under experience an improvement in function one year after surgery. This figure is 88% for patients older than 25.



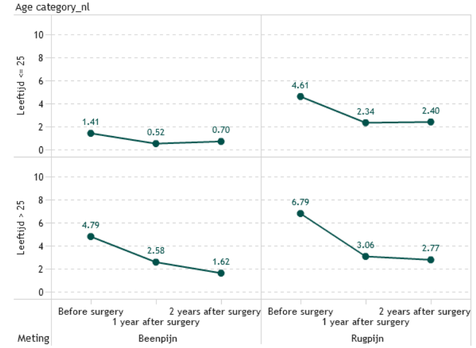
SRS scores, age <= 25

time of measure-ment	number of patients	average score
before surgery	313	3.69
1 year after surgery	119	4.26
2 years after surgery	40	4.23

SRS scores, age > 25

time of measurement	number of patients	average score
before surgery	48	2.91
1 year after surgery	33	3.69
2 years after surgery	13	3.71

Average pain level (NRS)



Scoliosis

The SRS-22r scale measures the impact of scoliosis on the quality of life, divided across four domains (function, pain, self-image, mental health and satisfaction), on a scale of 1 to 5. Patients aged 25 and under who undergo surgery show an average improvement on this scale from 3.69 before surgery to 4.26 after one year. Patients older than 25 show an improvement from 2.91 to 3.69.

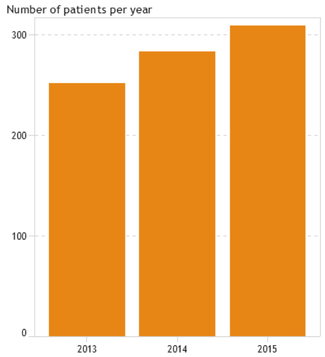
The average level of leg pain in patients aged 25 and under who undergo surgery improves from 1.41 before surgery to 0.52 after one year, on a scale of 0 to 10 (NRS). In patients older than 25, we see an improvement from 4.79 before surgery to 2.58 one year after surgery. For back pain, there is an improvement from 4.61 to 2.34 for patients aged up to 25 and from 6.79 to 3.06 for patients over 25.

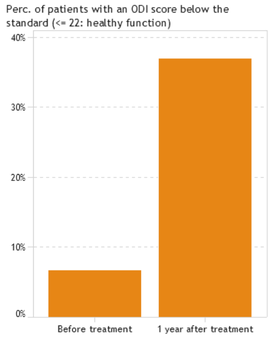
RealHealth

Treatment of patients with chronic lower back pain for whom surgery is not possible.

Research has shown that over 40 per cent of Dutch people experience chronic lower back pain. If surgery is not an option, the RealHealth programme, which focuses on behavioural changes, is a proven, effective method.

The RealHealth group programme is intensive. Participants stay in a hotel for two weeks. The programme consists of cognitive behavioural training, supported by physical activities and education on the causes and effects of pain and the use of medication.





RealHealth

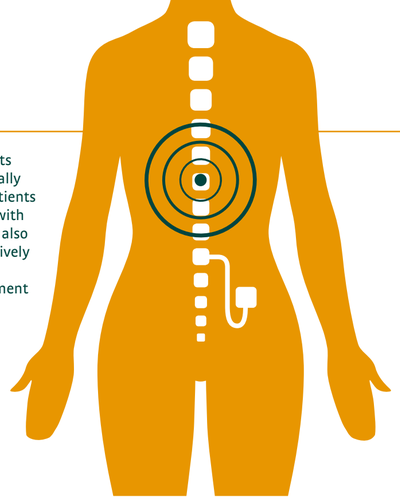
Patients' average quality of life improves from 40 before treatment to 61 one year after treatment, on a scale of 0 to 100 (SF-36 PCS).

The average pain decreases from 60 before treatment to 40 one year after treatment, on a scale of 0 to 100 (NRS).

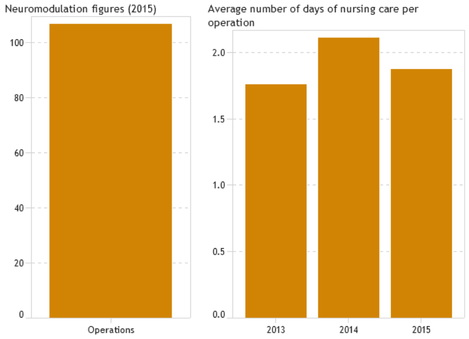
Patients' function improves from 41 before treatment to 28 one year after treatment, on a scale of 0 to 100 (ODI).

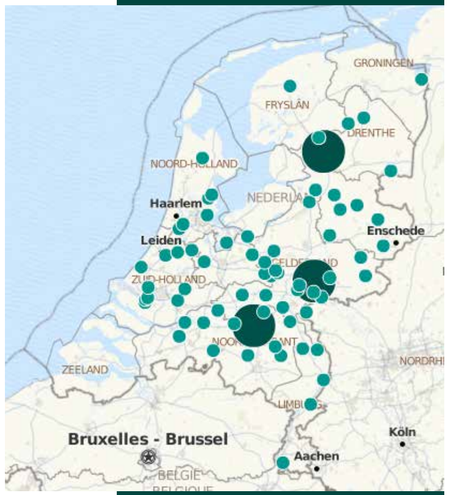
Neuromodulation

The Orthopaedics department refers many patients with back problems that cannot be treated surgically to the Sint Maartenskliniek's Pain Clinic. These patients have been experiencing back problems for years, with pain in the legs being the primary issue. They may also previously have had spine surgery and have effectively reached the 'end of the road' in treatment terms.
The Pain Clinic can offer them invasive pain treatment using neurostimulation.



Treatment
Neurostimulation is a neuromodulation technique that affects the function of the central nervous system, but without causing any irreversible changes. Selected patients (who meet specific criteria) have an electrode placed in the epidural space. The electrode is connected to a pulse generator that is also implanted in the body, usually in a buttock. It produces electrical pulses that 'modulate' the pain signals going into the spinal cord so that the patient perceives less pain. This treatment focuses on reducing the level of pain and thereby allowing function recovery and an improvement in quality of life.

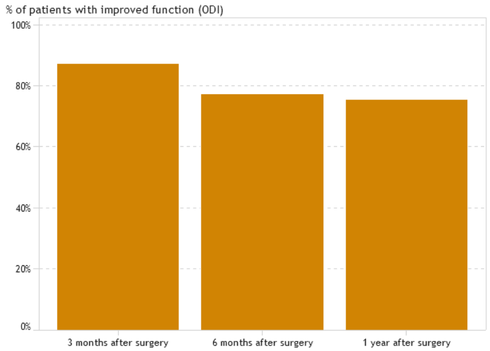




Distribution of patients in the Netherlands
- avg. 1 patient
- avg. 3 patients
- avg. 5 patients

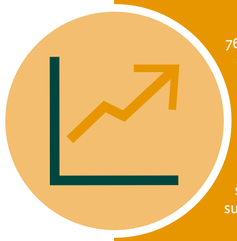
Neuromodulation

Facts & figures



ODI scores

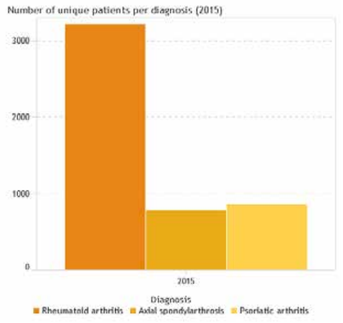
time of measurement	number of patients	average score
before surgery	91	54
3 months after surgery	71	38
6 months after surgery	62	58
1 year after surgery	45	44

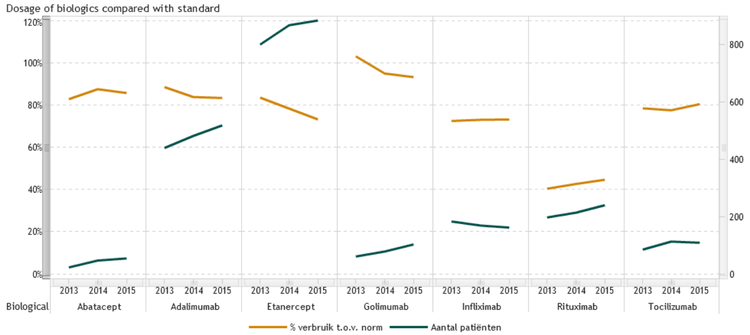


76% of patients experience an improvement in function one year after surgery. At 77%, this figure was almost the same six months after surgery.

Inflammatory rheumatic diseases and the use of biologics

Patients with rheumatoid arthritis, spondyloarthritis and psoriatic arthritis are given medication to treat rheumatoid arthritis, including the modern biologics abatacept (Orencia®), adalimumab (Humira®), anakinra (Kineret®), certolizumab (Cimzia®), etanercept (Enbrel®, Benepali®), golimumab (Simponi®), infliximab (Remicade®, Remsima®), tocilizumab (Roactemra®), ustekinumab (Stelara®) and rituximab (Mabthera®). These drugs are safe and effective, but sometimes cause side effects and are very expensive. The Sint Maartenskliniek therefore has a strict dosage optimisation policy. Doctors and patients are monitored for compliance with this policy, in close cooperation with the Sint Maartenskliniek pharmacy.





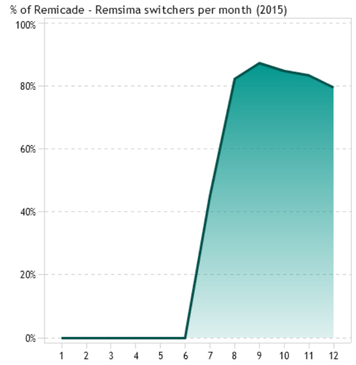
Dosage optimisation

Low dosages are often perfectly possible. At the Sint Maartenskliniek, we adapt the dosage of these drugs to suit the individual patient as well as possible, optimising the treatment and keeping costs to an absolute minimum. The graph on this page shows the percentage usage of biologics by RA patients at the Sint Maartenskliniek compared to the standard (standard registered dosage for each diagnosis = 100%). As the graph shows, the use of all biologics at the Sint Maartenskliniek is well below the standard.

Inflammatory rheumatic diseases and the use of biologics

Facts & figures

A biosimilar of the original biologic infliximab (brand name Remicade) was launched in 2015 under the name Remsima. This biosimilar also has the active ingredient infliximab. Since the drug is of equivalent quality and can be obtained at a lower price, the Sint Maartenskliniek started using Remsima for new and existing patients. The graph shows that six months after the introduction of Remsima at the Sint Maartenskliniek, 79% of Remicade users had switched to Remsima.



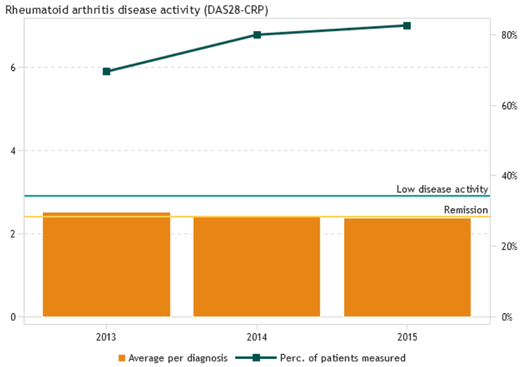
World's biggest switch

The biosimilar for etanercept appeared on the market in 2016. Named Benepali®, this biosimilar was offered to all 880 people who used Enbrel®. It was the world's biggest switch from a biologic to a biosimilar.

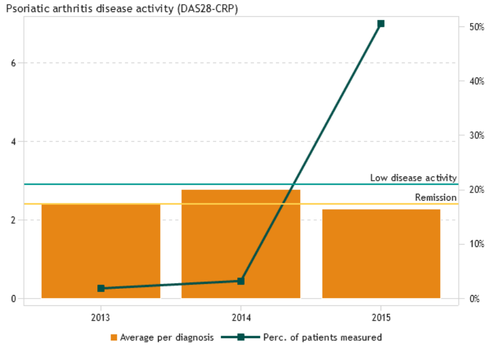
Biosimilars

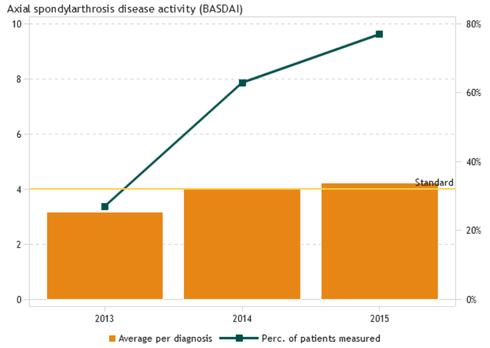
Biologics consist partially or entirely of animal or human proteins that inhibit the function of inflammatory proteins and immune cells in the human body. They are expensive medicines. Once the patent on a biologic has expired, biosimilars can be marketed. Biosimilars contain the same active ingredient as the biologic, are of equivalent quality and are much less expensive. Our rheumatologists prescribe medication on the basis of the 'equipotential': if the effect of several medicines is the same, the least expensive one should be chosen. We are therefore not explicitly opting for biosimilars, but for the best medicine at the best price, and this could well be a biosimilar.

Inflammatory rheumatic diseases and the use of biologics



Inflammatory rheumatic diseases and the use of biologics



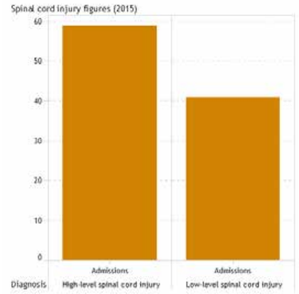


In 2013, we started measuring disease activity in patients with psoriatic arthritis and axial spondylarthrosis. This explains the large increase in the percentage of patients whose disease activity we have been measuring. We had already been doing this for a while in patients with rheumatoid arthritis. The diagrams also show that the patients measured remained on average within the standard for low disease activity or were in remission.

Spinal cord injuries

A spinal cord injury involves damage to the spinal cord, resulting from an accident, an infection or a haemorrhage, for instance. The damage causes problems with the motor system (movements), sensation and/or the bladder/bowels. A spinal cord injury does not necessarily mean that the spinal cord has been completely severed: less radical damage to the spinal cord can also disrupt communication along the nerves. The higher up the spinal cord and the more extensive the damage is, the more severe the consequences of the spinal cord injury will be. Spinal cord injuries cannot be cured in most cases.

Exoskeletons
The Sint Maartenskliniek purchased two exoskeletons in 2015. These 'robot suits' make it possible for people with spinal cord injuries to stand up straight and walk again. We use one exoskeleton for training with our physiotherapists at the hospital, while patients in out-patient rehabilitation take the other 'robot suit' home for a certain period to practice. We are investigating both the physical and mental benefits this has for patients during rehabilitation.

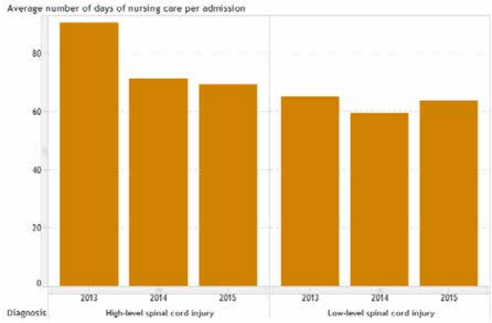


Distribution of patients in the Netherlands
- avg. 1 patient
- avg. 3 patients
- avg. 5 patients

Treatment
During the first two weeks after a patient is admitted, tests and observations are carried out by all members of the treatment team, in addition to the actual treatment. The physiatrist then outlines the treatment plan, together with the patient and the rehabilitation team. This treatment plan is the ongoing theme throughout the treatment. All activities are aimed at preparing the patient as well as possible for the new domestic situation and at teaching him/her how to cope with his/her limitations.

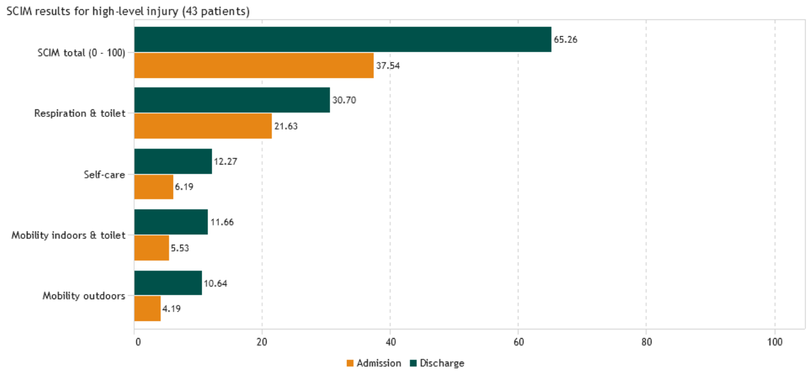
In 2015, there were 58 clinical admissions of patients with high-level spinal cord injuries. Admissions lasted 67 days on average.

58



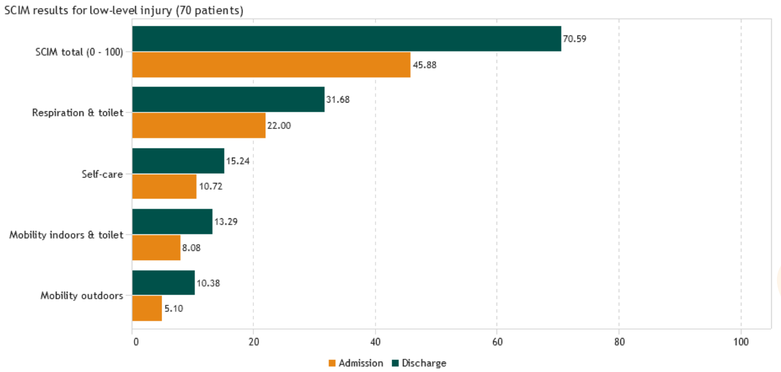
Spinal cord injuries

During the clinical rehabilitation treatment, the SCIM scale is used in order to quantify the function of the patient in out-patient rehabilitation. This tool consists of three domains: self-care, respiration & incontinence, and mobility (indoors and outdoors).



Facts & figures

Both groups of spinal cord injury patients (with tetraplegia and paraplegia) showed considerable improvements by the end of the treatment (green bars) when compared to the start of the treatment (orange bars). This applies to both the average total SCIM score and the average scores for each domain.



Explanation of measurement tools

Hindfoot
EQ-5D-3L: EuroQol 5 Dimensions; quality of life for five aspects of health (mobility, caring for themselves, everyday activities, pain/discomfort and anxiety/depression); -0.33 to 1.00; the higher the better.

NRS: Numeric Rating Scale; pain intensity; 0-10; the lower the better.

FFI: Foot Function Index; a tool for measuring foot pain and functional limitations; 23 items divided across 3 scales (limitations, pain, functional limitations); 0-100; the higher the score, the worse the pain and limitations are.

Knee
Pain VAS: Visual Analogue Scale; pain intensity; 0-100; the lower the better.

KSS: Knee Society Score; function; 0-100; the higher the better.

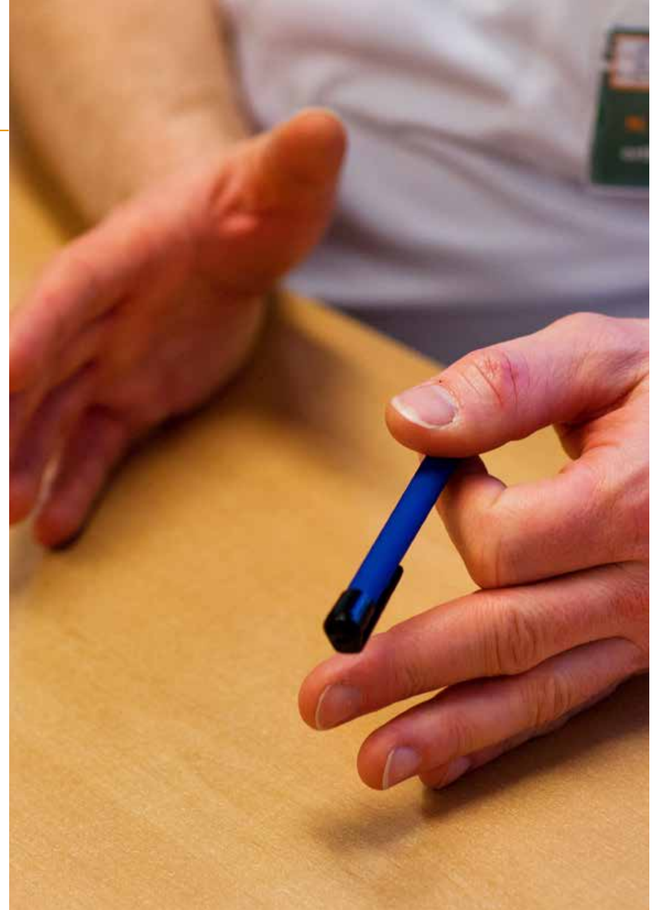
Hip
Pain VAS: Visual Analogue Scale; pain intensity; 0-100; the lower the better.

HOOS-PS: Hip disability and Osteoarthritis Outcome Score - Physical Function Short Form; functional limitations; 0-100; the lower the better.

EQ-5D-3L: EuroQol 5 Dimensions; quality of life for five aspects of health (mobility, caring for themselves, everyday activities, pain/discomfort and anxiety/depression); -0.33 to 1.00; the higher the better.

Scoliosis
EQ-5D-3L: EuroQol 5 Dimensions; quality of life for five aspects of health (mobility, caring for themselves, everyday activities, pain/discomfort and anxiety/depression); -0.33 to 1.00; the higher the better.

SRS-22r: Scoliosis Research Society 22 items; impact of scoliosis on the quality of life; 22 questions divided across 4 domains (function, pain, self-image, mental health and satisfaction); 1-5; a score of 1 (worst possible) to 5 (best possible) can be obtained for each question and domain, and the total score.



Explanation of measurement tools

ODI: Oswestry Disability Index (version 2.1a); functional limitations; 0-100; the lower the better.

Leg pain/back pain NRS: Numeric Rating Scale; intensity of leg or back pain; 0-10; the lower the better.

RealHealth
ODI: Oswestry Disability Index (version 2.1a); functional limitations; 0-100; the lower the better.

Leg pain/back pain NRS: Numeric Rating Scale; intensity of leg or back pain; 0-100; the lower the better.

SF-36 PCS: Short Form 36 Physical Component Score; physical function related to the quality of life; 0-100; the higher the better.

Neuromodulation
ODI: Oswestry Disability Index; functional limitations; 0-100; the lower the better.

Leg pain/back pain VAS: Visual Analogue Scale; intensity of leg or back pain; 0-100; the lower the better.

Biologics
DAS28-CRP: Disease Activity Score C-Reactive Protein; tool for measuring disease activity, consists of four parts: the number of swollen joints, the number of tender joints, the patient's subjective assessment and the blood sedimentation rate); 0-10; the lower the better.

BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; tool for measuring disease activity (pain, stiffness and fatigue); 0-10; the lower the better.

Spinal cord injuries
SCIM: Spinal Cord Independence Measure; a tool for measuring activities of daily living and function in three domains (self-care, respiration & incontinence, and mobility [indoors and outdoors]); 0-100; the higher the better.

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