

PRISS – Prosthesis-Related Infections Shall be Stopped

– a national, interdisciplinary collaboration for safer prosthetic knee and hip operations

Editors: Pelle Gustafson, Torbjörn Schultz and Anna Stefánsdóttir



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Project administrator: Torbjörn Schultz

Background

Patientförsäkringen LÖF (the Swedish National Patient Insurance) is owned by the county councils and the regions in Sweden. The company's task is to examine damage claims – currently around 14,000 per year – and provide financial compensation to patients who have suffered unnecessary harm from the health care system. Another equally important task is to learn from these claims and to help prevent future damages. To an increasingly larger extent, this is done by actively working with our owners (county councils and regions), and professional organizations on interdisciplinary patient safety projects.

The initiative that ultimately became PRISS started with a study of insurance claims, which showed that prior to 2008, orthopedics was the specialty that had the most number of compensated claims – 33% of all claims result in compensation, approx. 23% of the costs and with postoperative infection as the most common reason. Behind these numbers lies considerable human suffering, which in itself resulted in attempts to lower the loss frequency. The focus and set-up for the project was developed in autumn 2008, based on discussions between the then chairperson of the Swedish Orthopedic Association and Patientförsäkringen LÖF. The arrangement was inspired by collaboration that was already taking place between Swedish Association of Obstetrics and Gynecology, Swedish Midwife Association, Swedish Pediatric and Neonatal Association and Patientförsäkringen LÖF, in order to reduce the number of avoidable birth injuries, project Safe Maternity Care (Säker Förlossningsvård). For more information about this project, see:

http://www.patientforsakring.se/resurser/dokument/saker_forlossningsvard/slutrapport_saeker_foerlossning.pdf

Based on an awareness that no profession can deal with the problem of prosthesis-related infections on their own, the professional organizations whose efforts were considered to be critical in this area were invited to help achieve success in this area.

Goals

In 2011, approximately 16,000 elective, prosthetic hip joint operations were performed and approximately 13,000 elective, prosthetic knee joint operations were performed in Sweden. In recent years, the risk of revision surgery due to prosthesis-related infection has been estimated at barely 1% for prosthetic hip operations and approximately 1.5% for prosthetic knee operations. The risk for prosthesis-related infection did not decrease during the 2000s, rather it showed a tendency to increase. The reason for this is not clear, but a multifactorial explanation is probably involved.

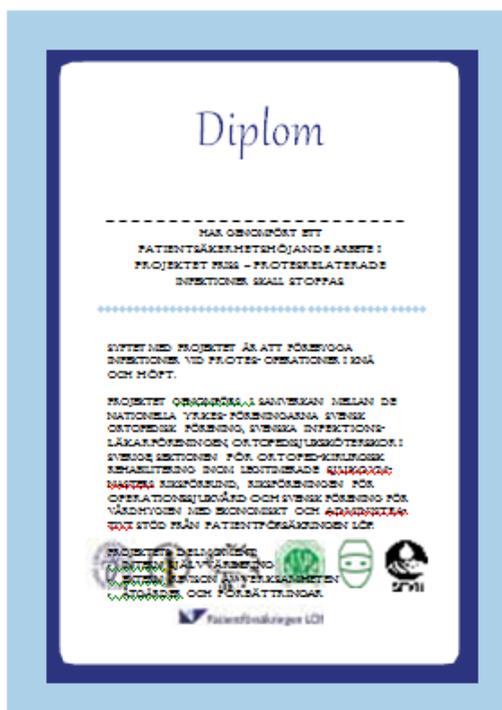
The overall goal for the project is to cut the actual frequency of prosthesis-related infection after primary elective prosthetic hip and knee surgery by half, and thereby reduce the amount of unnecessary suffering, but also the cost to society. Another intermediate goal is to create an awareness of the infection risks across all relevant professions and organizations, and an understanding of how these risks can be minimized during the course of care from the time a decision is made about the operation to three months after the operation.

The project also includes gaining a clearer understanding of the actual frequency of infection.

Project organization

PRISS is based on interdisciplinary cooperation between the professional organizations such as Swedish Orthopedic Association, Swedish Association of Infectious Disease Specialists, Swedish Association for Surgical Nursing, Swedish Orthopedic Nursing Association, Swedish Association of Professional Physical Therapists, Swedish Association for Infection Control (as of 2011) with administrative and financial support from Patientförsäkringen LÖF.

The organizations are solely responsible for the medical content, designated auditors and expert groups, as well as the project promoted via their organizations. Over the course of the project, the steering committee has consisted of the chair and board members of the respective organization and Patientförsäkringen LÖF's chief medical officer and initially the CEO at the time. The steering committee was formed before the project start in June 2008. On average, the steering committee met four times per year. The project administration was handled by an employee at Patientförsäkringen LÖF.



Project description

All 72 Swedish departments of orthopedics that perform prosthetic knee and hip surgery participated in the project on a voluntary basis. With the exception of a few departments that have still not completed all of the steps due to a change in the department management and/or staffing problems, each department completed all stages in the process.

The project was initiated with a pilot study at four departments in the spring of 2009, followed by six stages, one every 6 months, with 8, 9, 14, 13, 11 and 13 departments in each. The last stage started in autumn 2012.

The project concluded with a national symposium in November 2013.

The method used in PRIS has been self-assessment accompanied by external audit/peer review. The management at the department, together with the employees and other affected departments at the hospital, e.g. surgery and anesthesiology, reviewed important phases in the activities of the department from the point of view of infection using a so-called self-assessment instrument.

The self-assessment instrument was created by an interdisciplinary group of experts, appointed by the various organizations. The instrument was tested during a pilot round and was then regularly adjusted based on the insights and experience gained. The questions covered the period from the initial decision regarding surgery to three months after the operation. The responses were summarized in a so-called self-assessment report. This was reviewed by an interdisciplinary team of auditors with experienced colleagues from other parts of the country. The auditors are appointed by the respective professional organization. The task was to help identify the options for increasing patient safety, and specifically for this project, for reducing the risk of prosthesis-related infection. The minimum staffing for the team was one orthopedic surgeon, a surgical nurse and a regular nurse, but in general the organizations were able to strengthen the team with infection specialists, physical therapists or infection control technicians. The team visited the department over the course of a day, summarized their combined observations regarding strengths and areas for improvement in a written report, and met with the management to agree on a plan of action. The department management had the last word in terms of what would be included in the agreed plan of action and had sole responsibility for ensuring that the measures were implemented. The measures completed were reported to the team after six months.

All written material is stored and managed by Patientförsäkringen LÖF in Stockholm. The material is classified as a company secret, and only the steering committee has the right to make decisions regarding access to the material. The material is owned by the professional associations, and the professional organizations make joint decisions about how the material is used within the framework of confidentiality agreements made with the departments and the auditors.

One route that the organizations took was to create opportunities for many people to participate in the project's auditing team and thereby create the conditions for a broad exchange of experience and publicizing good examples nationwide. The alternative that was discussed was to train a small number of "professional auditors", which would have the advantage of giving the auditors more uniform, but more limited, conditions for sharing good examples. The idea of adding "master auditors" for final review was rejected.

The questions in the self-assessment instrument deal with selecting and optimizing the patient prior to the operation, basic hygiene procedures, preoperative cleaning, antibiotic prophylaxis, the surgical environment, postoperative treatment of

wounds, early detection and treatment of postoperative infections and the care program.

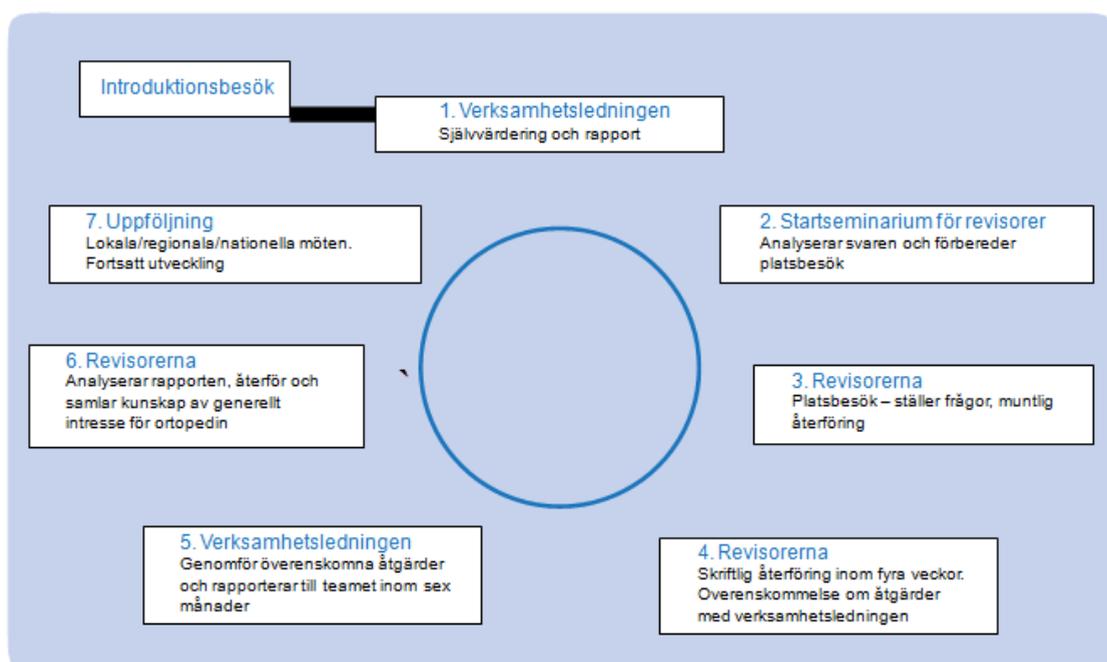
The questions are open-ended and are formulated as "How do you ensure that....?" with subquestions a) Which procedures/guidelines do you have? b) How do you create the conditions so that they will be followed? c) How do you measure/check the level of compliance? and d) What ideas to you have about remedial measures and improvements (a-c)? Question (b) also covers how the measured results are communicated back to the employees.

The option of implementing prescriptive measures from the top-down was never applicable. National guidelines are largely missing in this country, and by tradition, departments determine their own work methods, and neither the organizations nor Patientförsäkringen LÖF has the authority to set standards. A better option was considered to be asking open-ended questions about work methods and procedures, and thereby creating the conditions for mutual learning and development from the bottom up.

In this respect, it can be confirmed that the selected model has support in terms of current implementation research and modern adult education, which shows that interventions with a high level of participation generally have a greater chance of success than something that is considered to be a directive passed down from above.

An important principle in the project was that the suggested improvements should accommodate the respective departments' existing resources and conditions. Another important principle was not to get involved in the internal affairs of a department, e.g. by providing or recommending any special method for improvement.

An overview of the process, which takes approximately 1.5 years per department, can be illustrated as follows:



Results

In summary, the project has demonstrated that procedures vary widely among the country's departments and that a large number of measures have been created for increasing patient safety, particularly when it comes to procedures and work methods. Whether the project had an effect on the actual frequency of deep, postoperative prosthesis infections is still too early to tell. The actual frequency has been determined for hip prosthesis operations performed prior to PRISS, and this frequency will be compared with the results from a new measurement effort, which will be implemented in a few years.

The following report of the results was limited to a summary description of the list of procedures that was created, the remedial measures that were taken and the results from surveys of clinic managers and auditors, the actual infection frequency prior to PRISS, reference list, and recommendations within these four areas.

List of procedures

The widespread variation in procedures among the country's departments can be illustrated in that 1 in 4 departments had some form of limit for accepted BMI prior to the operation, 1 in 4 departments had a limit for the lowest acceptable hemoglobin value prior to the operation (and in turn the limit for acceptable variation between 90 and 120 g/L), 2 of 5 departments performed routine MRSA screening, 1 of 5 departments screened for diabetes, 1 of 5 departments admitted the patient on the day of surgery, the number of preoperative showers were equally distributed between 2 and 3, but checked in only 1 out of 4 departments, the body temperature is monitored peroperatively in 1 of 5 departments, changing the dressings prior to discharge occurred in half of the country's departments and only half of the country's departments had their own local infection register. Therefore, there was a wide variation in the use of procedures, which can be interpreted to be due to a lack of understanding of which procedures could be considered "best practice".

Measures implemented

In order to gain an understanding of the improvements that PRISS has generated, a summary overview of all agreed action plans and lists of actions has been created. Normally, 6 to 8 measures are included in each agreement. The measures are evenly distributed between the instrument's question topics. Here are some examples:

- Selection and optimization: Standardized referrals from primary health care providers, traceable checklists of what should be included in terms of selection, optimization, informed consent, smoke-free operation, BMI, the patient's situation after discharge.
- Basic hygiene procedures and dress codes: Information for patients and visitors, bottles of hand disinfectant on the bed posts, disinfecting shared aids and blood pressure cuffs, training and follow-up for all personnel including night-shift personnel, observations/measurements and quick reporting of the results to all employees.
- Overall skin: Improved patient information, full body exam with clarification of responsibility, clear criteria for cancellations, procedures for haircutting.
- Adequate operational environment: CFU measurements (approx 50% of the agreements), notice on the door to indicate when the most recent measurement was taken, locked rooms and maximum number of persons in the room, tight and

uniform clothing for all persons, e.g. disposable clothing, the patient's body temperature, using the third column of the Checklist for Safe Surgery (WHO) for monitoring and systematic improvements.

- Perioperative antibiotic prophylaxis: Preparation, dose and intervals, procedure when dose is not given at the right time, measuring compliance with the procedures through random testing.
- Postoperative wound treatment: Criteria and procedures for resetting/changing dressings, sterile environment.
- Early detection of infection: Patient information, removing sutures at the department, clear instructions for the primary health care provider/district nurses, "VIP lane" to the department of orthopedics in the case of suspected infection.
- Care program: Revised and new care programs, in some cases common to the county council/region.

General observations on measures implemented

Improved procedures and memos make up approximately 85 % of all implemented measures.

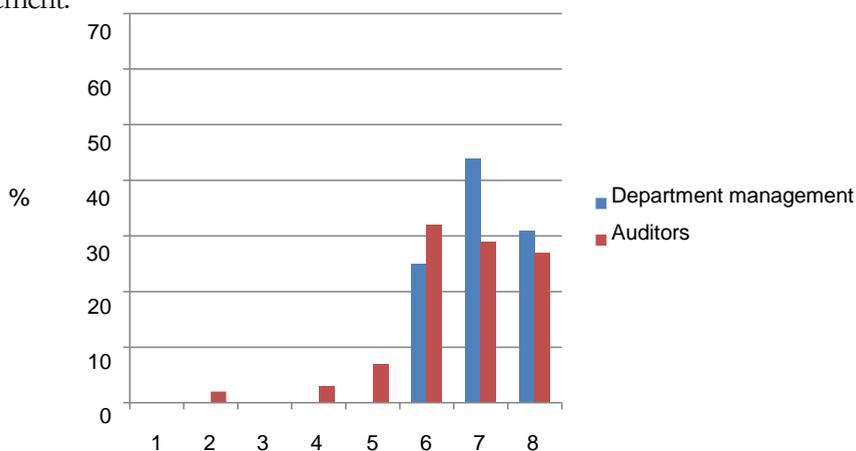
Measures to create better conditions for compliance accounts for approximately 10 %, and steps to measure and follow up on compliance approximately 5 %. The main focus has been on the professional/medical content of the procedures and memos and to make them consistent. There are examples that procedures and memos have been made more user-friendly/adapted to the situation, but this area needs to be developed more. The most obvious things that remain to be addressed are measuring and monitoring compliance with the procedures and the guidelines the department uses, and returning the results to the employees. This is where PRISS has created significantly increased awareness of the importance of not just having procedures, but following them as well.

Survey results

Surveys about the project have been directed to the auditors in rounds 0-4 (response frequency 75 %) and to the department management in rounds 5-6 (response frequency 73 %) According to the diagram below, the same opinion appears in most areas, but not all.

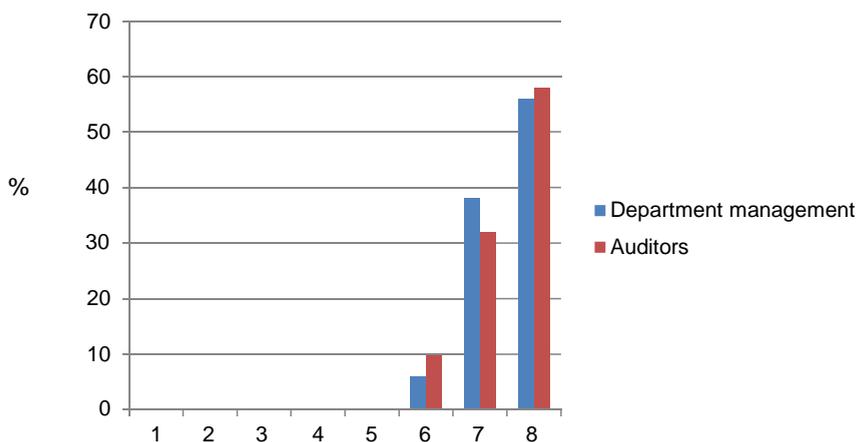
Self-assessment instrument

Statement: No important questions are missing, should be deleted, added or adjusted in terms of preventing infections from prosthetic knee or hip operations. Mark on a scale of 1-8, where the higher number indicates a strong level of agreement with the statement.



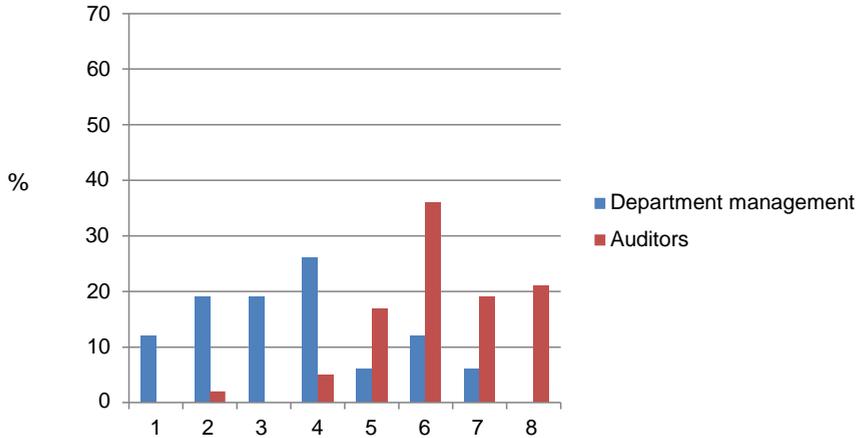
Site visit

Statement: I feel that I had a good and open dialog. Mark on a scale of 1-8, where the higher number indicates a strong level of agreement with the statement.



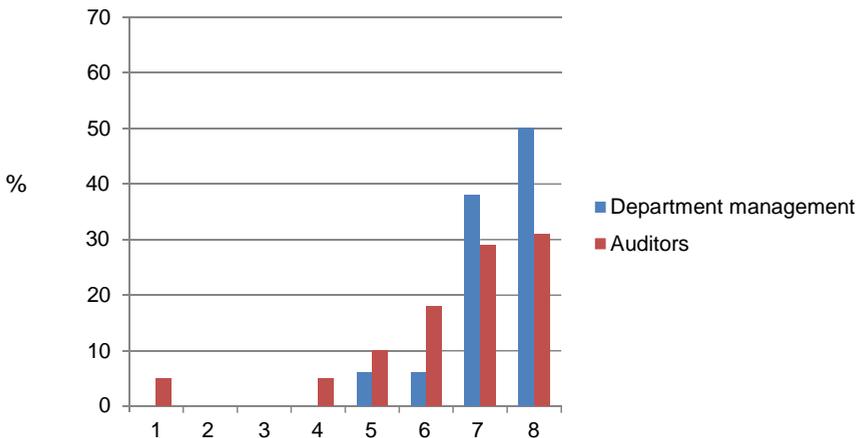
Feedback report

Statement: The auditor team pointed out the deficiencies in terms of patient safety that the management was not aware of. Mark on a scale of 1-8, where the higher number indicates a strong level of agreement with the statement.



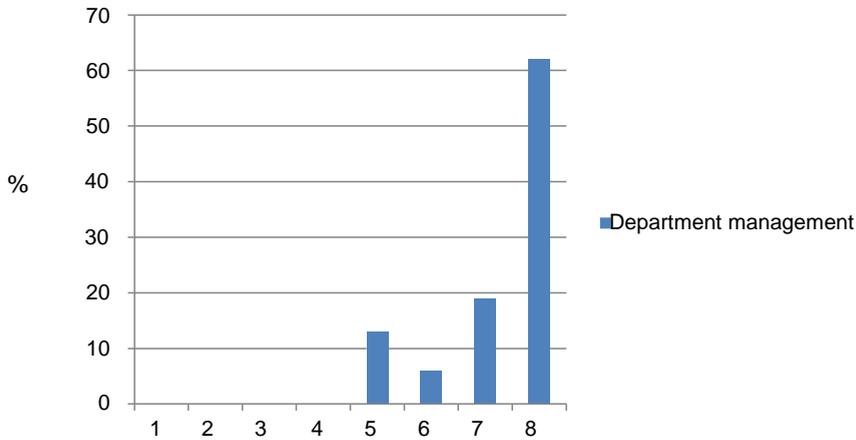
Agreement on actions

Statement: The clinic management and auditor team had no difficulty agreeing on the content of the agreed action plan. Mark on a scale of 1-8, where the higher number indicates a strong level of agreement with the statement.



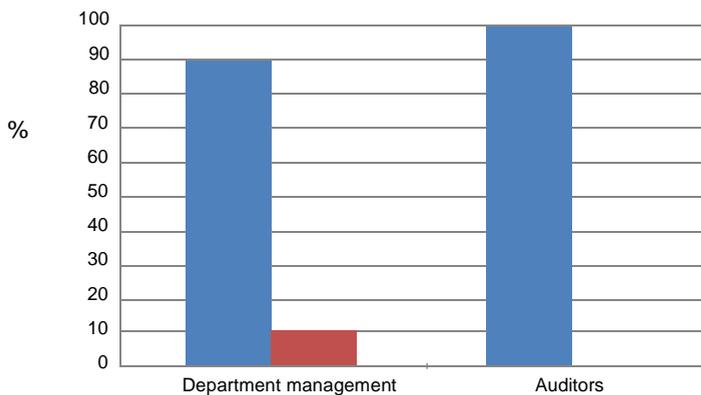
Ownership

Statement: A key concept/idea behind the PRISS project is that the department itself owns both the problems and the opportunity/responsibility to correct them. To what extent did the audit communicate this idea? Mark on a scale 1–8, where a higher number indicates a strong level of agreement with the statement.



Templates for checklists, PM etc.

Question: Do you think it would be good to create templates for checklists, memos, etc, for certain areas/phases in terms of primary, elective prosthesis operations of the knee and hip? blue = yes, red = no.



The surveys also asks for the insights and opinions of the department managers and auditors for the project.

Department managers:

- "Excellent way to run projects. Many projects are 'imposed' a little 'from above'. This felt important and relevant."
- "We all think that PRISS is a fantastic idea and organization, which can help make the departments aware of good ideas from other parts of the country."
- "Good and important work method. The hospital will use the self-assessment questions for many diagnoses and areas of specialty. Our process team will be working with this in the coming months."
- "This is an excellent initiative and very well recognized, which is shown not least by the 100% level of support. I know that there are a lot of people in other specialties who are jealous of how well and consistently this was carried out."
- "The auditors exceeded expectations."
- "There should be checklists for making the audits as uniform as possible."
- "Don't stop the project, rather implement it as a quality review of the departments!"

Auditors:

- "A fantastic project. For the first time in my career, all the professions are working together for a common goal. All of the synergistic effects of the project are invaluable. All professional groups are becoming aware of infections in a completely new way."
- "Very instructive, a lot that I didn't have any idea about as an infectious disease specialist - even though I work with prosthesis infections!"
- "Fantastic project that taught me a lot that I was able to share at my home department. I met a lot of people who I can share experiences with."
- "I think we need to set up a follow-up visit, about one year after the report."
- "It highlighted infection prevention issues in terms of procedures, compliance and feedback at the departments. The next phase is to prevent these from being forgotten."

As indicated, the comments are apparently entirely positive. A few comments concerning the effects of PRISS: interdisciplinary aspects, dissemination of operating methods to other departments within the hospital and the auditors taking the ideas of improvement back to their home departments. One opinion is that the audits should occur based on a common checklist. The auditors had a protocol for making the review of the self-assessments systematic and uniform. However, for reasons previously mentioned, the protocol has not become a standard in term

of the content of the departments. However, what has had a standardizing effect has been the auditor's joint reference list, on which the auditors could rely to a certain extent when it comes to feedback reports and suggested corrective actions. The process in itself has resulted in a demand for highlighting good examples, best practices and recommendations from the collected material.

The actual infection rate before PRISS

The overall goal of PRISS, as mentioned, is to cut the actual rate of infection by half. In order to have a clearer idea of the actual rate of infection prior to PRISS, the Patientförsäkringen LÖF provided partial financing for a scientific register study where information from the Swedish Hip Prosthetic Register (SHPR) was combined with information from the Swedish Medicines Register in terms of prescribing the relevant antibiotics. The connection between postoperative infection and the prescription of antibiotics was validated by means of a thorough inspection of medical records.

In summary, 0.9 % of patients suffered a deep post-operative infection within two years after the prosthetic hip operation, and the overwhelming majority of these (91 %) underwent a second operation to handle the infection. The confirmed rate reported to the SHPR was 66 % in terms of reoperation due to infection. Since SHPR only registers the infections that involve a second operation, and since the reporting level was low, the register today cannot be used to measure the actual infection rate before and after PRISS, which is why the study will be repeated in a few years [Lindgren et al 2014].

Reference List

The group of experts who created the self-assessment instrument had the task to, if possible, make the questions address the areas where there was evidence of an effect. This was done in order to make the recommendations from the auditor team as evidence-based as possible. The reference list that was then created was gradually filled and used to support the work of the auditors. Additional references have been added by the expert groups in terms of recommendations/best practices. The reference list has been openly accessible since November 2013 at [https:// www.zotero.org/groups/priss/items/](https://www.zotero.org/groups/priss/items/) Suggestions for additional items on the list should be sent to the editor, Anna Stefánsdóttir, anna.stefansdottir@med.lu.se

Recommendations/best practice

There were a number of recurring requests during the project, primarily from audited clinics, but also from auditors regarding comparing "current best practices". The steering committee therefore decided to appoint four groups of experts, composed of representatives from the professional organizations.

Expert group 1 was given the task of describing the factors that affect the rate of prosthesis-related infection and how patients can be optimized for this prior to the operation, and to describe the optimal process for ensuring that the correct patient is operated on. The group created a document that provides recommendations regarding risk assessment and risk management provides an overview of the factors that can affect the final results and the rate of infection after the prosthetic joint operations and describes the important points within the organization in order to minimize the risks.

Expert group 2 was given the task of presenting the evidence and a practical description of what the optimal peroperative antibiotic prophylaxis would look like, as well as a model to measure and report that the planned prophylaxis was administered as intended. The group created a document that provides recommendations for optimal antibiotic prophylaxis, and how to ensure that the intended prophylaxis has been given.

Expert group 3 was given the task of describing the optimal, early follow-up in order to ensure that any potential infections would be detected and dealt with as soon as possible. The recommendations from this group include measures for the surgical department, the nursing department and the journey home as well as the time after returning home and registering infections.

Expert group 4 was given the task of describing the optimal surgical environment. The recommendations from this group constitute a comprehensive list of actions, based on a review of the literature and practical experience.

All of these expert groups have published their reports on the PRISS website and on the home page of the respective professional organization.

Finances

Patientförsäkringen LÖF's costs for PRISS amounted to a total of SEK 11.2 million, which works out to approximately SEK 156,000 per department. As shown in the summary below, the costs of the auditors accounts for just over 70

% of the total costs of the project, half of which is made up of support for the departments for their participation with auditors.

	SEK million	%
Management and administration (steering committee meetings, prime movers, project administration, introduction meetings at the departments).	1.5	13.4
Auditors (support for the departments for working with the auditors, starting seminars, site visits with associated trips and lodging).	8	71.4
Expert groups (self-assessment instrument, reference list, recommendations, contributions to scientific	1	8.9
Regional PRISS meetings, national PRISS symposium, lectures.	0.7	6.3
Total	11.2	100

Since 2008, Patientförsäkringen LÖF's compensation payments to patients affected by deep infections in connection with prosthetic knee and hip operations amounted to approximately SEK 15 million per year, and the average compensation is roughly SEK 90,000 per patient. The number of patients who received compensation in 2008 was 131, and for 2012, it was 196 people. The number is estimated to make up roughly 2/3 of those who should be entitled to compensation. The greatest financial benefits of a reduced rate of infection, apart from the most important aspect of reducing unnecessary suffering, are seen in the health care and nursing area and in society as whole. The costs in terms of just the health care and nursing for treating a prosthesis-related infection is estimated at approximately SEK 300-500,000 per patient.

Number of auditors per organization and number of assignments per auditor

Organization - professional group	Number of auditors	Number of assignments	Number of assignments/ auditor
SOF - orthopedists	30	73	2.4
SEORNA - surgical nurses	30	78	2.6
OSIS - nurses	21	80	3.8
SILF - infectious disease specialists	13	39	3.0
SVFH- infection control nurses and infection control practitioners*	6	10	1.7
LSR - physical therapists	6	23	3.8
Total	106	303	2.9

* as of 2011

Approximately 2/3 of the auditors completed more than one assessment. From the table below, the distribution is provided in more detail. As of round 4, it was possible to always have at least one experienced auditor on each team.

Organization - professional group	Number of assignments/auditor		
	1	2–4	5–10
SOF - orthopedists	15	11	3
SEORNA - surgical nurses	9	11	2
OSIS - nurses	2	11	7
SILF - infectious disease specialists	5	5	3
SVFH- infection control nurses and infection	3	3	0
LSR - physical therapists	0	4	2
Total	35	45	17

* as of 2011

According to completed surveys, the average time for auditing a department was 6.8 days. Departments that assisted the auditors were offered financial support from Patientförsäkringen LÖF amounting to 5/20 of the auditor's regular monthly salary +31.42% of mandatory social security contributions. In addition, Patientförsäkringen LÖF covered the auditors travel costs and lodging, and the costs for the starting seminars and boarding.

Reflections

Overall reflections

The model used with open and non-prescriptive questions was considered good and trustworthy, and has been well received. Completed surveys have shown that sharing responsibility, likewise transferring responsibility from the auditing team to the clinic management, including signing the plan of action agreement, worked flawlessly. It is notable that, even though it involved a voluntary project, all of the country's departments that perform elective prosthetic hip and knee surgeries decided to participate in PRISS. A widespread opinion, from this and other projects, is that just knowing that an audit will occur, leads to improvements being made, and this has been clear in almost all of the audits. The audits seldom highlighted unknown problems for the departments, rather they resulted in known problems being addressed.

Reflections by question

- **What procedures do you have?**

PRISS has demonstrated an obvious variation in scope, quality and content across the country. However, we can see that a number of procedures were created as a consequence of PRISS and several were revised. We hope that the descriptions of the "best practice" will result in a reduction in local differences going forward.

- **How do you create the conditions for compliance?**

PRISS has shown widespread variation across the country in terms of what the conditions look like. The hope is that the informal exchange of knowledge that occurred during the project, helped to increase awareness and openness around the different ways to improve the conditions for complying with the relevant procedures.

- **How do you measure compliance?**

PRISS has shown that in general, compliance with the procedures is being measured only to a small extent. This is the area that shows the greatest potential for improvement. Few, if any, departments have a fully developed system for systematically measuring the degree to which procedures are followed and reporting these results back to the employees. One of the areas that PRISS will be working on is helping to create a good way of measuring and reporting

compliance and sending the results to the employees at the country's departments. In the long run, reporting process compliance will be complemented with or replaced by actual measured outcomes in the form of a reliable infection rate.

How to measure the effect of PRISS?

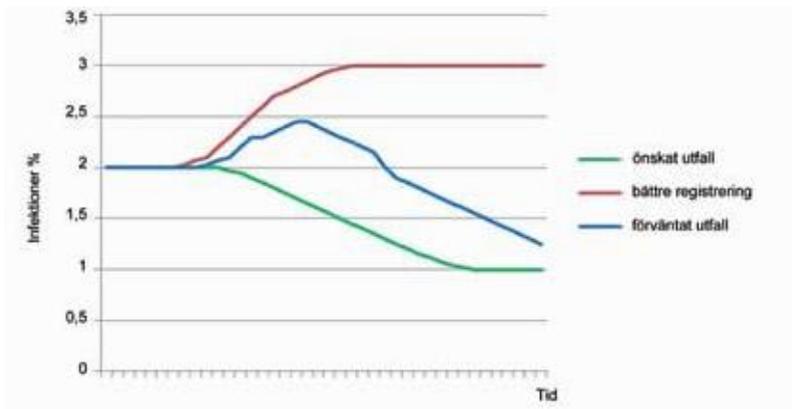
PRISS' explicit goals have been to halve the rate of infection after elective prosthetic hip or knee surgery. Early on in the project, it was clear that it would be difficult to use numbers to show that the goal has been achieved, not least because there was no common definition of prosthesis-related infection. However, there is no reason to discontinue the use of quality registers for hip and knee surgery to monitor the combined quality work, including PRISS. Local registries are also valuable, and the need for them has grown.

Similar to Swedish patient safety work, the current measured values for PRISS are skewed towards measurements of structures and process, rather than measurements of actual outcomes. This phenomenon has been observed in largely all known examples, when an organization enters a more secure stage. Keeping the focus on structure and/or process measurements isn't wrong at an early developmental stage, it may even be necessary. However, there has to be a gradual transition from measuring activities to measuring actual outcomes, and in those cases where there are no reliable outcome measures, they need to be created. Particularly in the area that PRISS covers, there was a clear lack of national, reliable and accurate outcome measures, which to a large degree can be explained by a lack of a common definition of prosthesis-related infection and an awareness that the actual occurrences are underreported. The problem with underreporting has been addressed in the study of the actual infection rate prior to PRISS (Victor Lindgren and colleagues).

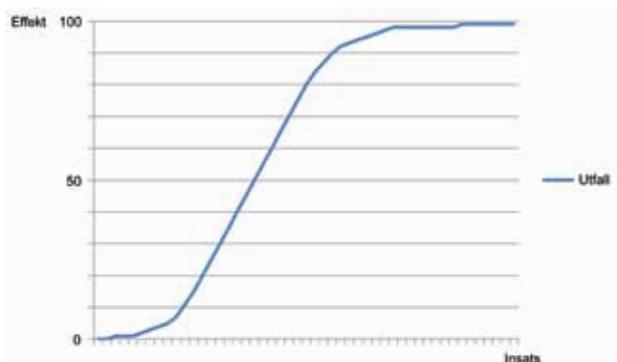
It is likely that during 2011, and few years afterwards, there will be an increase in the rate of prosthesis-related infection in the Swedish quality register for joint prostheses. This can obviously be interpreted to mean that PRISS has had the opposite effect than what was intended, but this explanation is less likely. Instead, PRISS has resulted in an increased awareness of the problem, a more active approach to diagnosing the problem and treating prosthesis-related infections and better reporting of the infections that have occurred.

The figure illustrates what can be expected: after a measure, the green part of the curve represents that desired development after measures are implemented, the red part represents what happens when the problem becomes more relevant and there is an increasing awareness of it, and the blue part represents what can

actually be observed and represents the probable effect of a project like PRISS.



Furthermore, a discussion can also be held in terms of the best way to measure and report the effects of PRISS. When an outcome approaches 100 % (99 % non-infection rate is another way of expressing 1 % infection rate), the traditional way of reporting the connection between effort and effect provides poor opportunities for demonstrating the effect of the implemented measures. This is because there probably is no linear connection between inputs and outcomes (figure below) A better way of reporting the rate of prosthesis-related infection, not least at the departmental level, is probably to use statistical process control.



The ongoing work within PRISS will include support for creating methods to help departments report the actual outcome measurements, which can also be used for process control and warning reports.

Conclusions from the work between the professional organizations and Patientförsäkringen LÖF

- There is a lot potential in this type of collaboration. The professional organizations have legitimacy and competency, but lack the financial resources and administrative capacity. The key to achieving success and widespread acceptance is that the professional organizations are fully responsible for the medical content, own and drive the project and receive administrative and financial support.
- Self-reporting with open, non-prescriptive questions followed by external audit/peer review is a successful method in Sweden.
- Voluntary adherence works excellent under these conditions.

Suggestions and ideas regarding continued development

- It is the opinion of the steering committee that the most factor element going forward is the local implementation work, both actions that are decided on at the local level as well as measures that are listed in the expert group's documents, rather than investing energy in renewed audits. Therefore, no audits are planned at present.
- The care program that is created for diagnosing and treating obvious prosthesis-related infection is being revised under the direction of the Swedish Association of Infectious Disease Specialists.
- The newly launched self-assessment instrument Rutinkollen (www.rutinkollen.se) can be easily converted into an instrument for self-assessing compliance with effective procedures during prosthetic joint operations, and this will be implemented.
- The study of the actual infection rate will be conducted. The main purpose, as named, is to measure the actual infection rate before and after PRISS.
- Relevant documents, primarily expert group documents and the reference list must be kept up to date.
- Patientförsäkringen LÖF is planning a fifth large project in the form of Safe Trauma Care, according to the same model as PRISS, where orthopedic departments will be natural participants. This will reduce the risk that knowledge gained from the improvement measures will be lost.

The most important effects of PRISS

- PRISS has contributed to an increased national awareness of the problem of prosthesis-related infection and has provided insights into the complexity of the process.
- PRISS has helped to disseminate improvement measures and helped publicize good, local examples to departments across the country.
- PRISS has shown that procedures vary widely across the country and that the best practices, as requested by the professions, have been created. Recommendations (best-practice) in four important areas are now published.
- Tools for measuring and reporting compliance with procedures are in development.
- Work on reducing the risk of prosthesis-related infection will continue. This work will be very important in terms of both the individual patient, but also for society.

Summary of closing symposium 21 November 2013

PRISS ended its first part with an interdisciplinary, national, all-day symposium in Stockholm 21 November 2013. The symposium was attended by 220 participants, representing all professional categories, and 65 of 72 audited units.

The program started with a talk by a patient who was affected by prosthesis-related infection, which provided a clear theme for the rest of the day. The final report was presented, as well as the three final documents from the expert groups. Representatives from Svenska Höftprotesregistret (Swedish Hip Registry) and Svenska Knäftprotesregistret (Swedish Knee Registry) gave an actual overview of what the registers show in terms of infections. New findings in terms of microbiology and orthopedics were discussed.

The meeting closed by the steering group presenting, and getting support for, on their plans in terms of the second part of the project:

- The local implementation work is now considered to be more important than conducting new audits.
- Based on the documents of the 4 expert groups, the knowledge base is considered to be good in terms of which factors are important to work with. SILF's care program for obvious prosthesis-related infection is estimated to be revised in the spring of 2014.



- Ongoing PRISS work should therefore be focused on helping the departments implement this knowledge base. One instrument for measuring and reporting compliance with procedures is in development and will be tested in the spring of 2014.
- The study on the actual infection rate will be prepared in a few years.
- The organization with a steering committee, represented by the six participating organizations, will remain. The tasks will be to update the documents from the expert group and the reference list at least every other year and to continue to offer a forum for interdisciplinary collaboration.

Final remarks

PRISS cannot be said to have achieved its goal of reducing the actual occurrence of prosthesis-related infections by half. However, PRISS has more than exceeded expectations in terms of participation and commitment. The necessary foundation for focus, knowledge, organization and plans for implementation is now set up, and the work in the coming years will result in a lower, actual frequency of prosthesis-related infections.

Participating organizations:
Swedish Orthopedic Association, Swedish Association of Infectious Disease
Specialists, Orthopedic Nurses Association in Sweden, National Association for
Surgical Nursing, Swedish Association of Professional Physical Therapists,
Swedish Association for Infection Control and Patientförsäkringen LÖF.

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