Development and network project of endoprosthesis patients care chain in the Tampere region (VERCOX)

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Mrs. Sirpa Hankela (PhD, nurse) has specialized in operating and anesthesiological nursing in 1975, graduated as a teacher of nursing in 1979 and finished her PhD in Nursing Science from University of Tampere in 1999. She has worked as teacher of nursing 25 years in Pirkanmaa University of Applied Sciences and the major areas of teaching have been perioperative nursing, nursing science and research. Since 2000 she has worked as principal lecturer and project manager in R&D department in Pirkanmaa University of Applied Sciences.

Abstract
Endoprosthesis patients’ care in the Tampere region is implemented as a nationally unique network action model. Preoperative education is the responsibility of health centres. Endoprosthesis surgery and services are concentrated in the Coxa Hospital for Joint Replacements. Patients are transferred from Coxa Hospital by stretcher taxis in 2 to 3 days after their operation to postoperative care units (N=15). The patients are discharged from postoperative care units in 3 to 4 days and sent home. Development and network project of endoprosthesis patients care chain, entitled also VERCOX, was carried out in Tampere region 2005-2007. The VERCOX project focused on the development of endoprosthesis patients’ pre- and postoperative care chain phases. Development work was implemented at organisational, regional and network level in accordance with the client, personnel, process and effectiveness viewpoints of Balanced Scorecard.

Keywords
Endoprosthesis patient, regional care chain, modelling

Introduction and background
Development and network project of endoprosthesis patients care chain, entitled also VERCOX, was carried out in Tampere region 2005-2007. The VERCOX project was a continuation of preceding one year PIRACOX project (2003-2004) which focused on developing the processes of Coxa Hospital for Joint Replacement. The VERCOX project in turn focused on the development of endoprosthesis patients’ preoperative education, postoperative care and rehabilitation as well as regional collaboration and networking. Both projects were financed by the Finnish National Workplace Development Programme.
Endoprosthesis surgery and services in the Tampere region are concentrated in the Coxa Hospital for Joint Replacement, whose activity was started in September 2002. The Coxa Hospital for Joint Replacement is responsible for endoprosthesis surgery carried out in the Tampere region. This centralization meant that endoprosthesis operations were ended in 4 hospitals in the Tampere region. When operations are performed in specialized hospitals and centres of excellence, results will be optimised and the need for revision surgery is minimized. This will guarantee both quality and economy of operation. International studies have shown the benefits for both society and patients from performing endoprosthetic operations centrally by orthopaedic surgery with experience in the field.

The need for endoprosthetic surgery is increasing continuously in Finland. It is estimated to double within the next 15 years. Coxa’s extension building will be taken into use in spring 2008. After the extension Coxa will have 10 operating rooms and 72-75 beds. In addition to hip and knee replacements, the operations performed in Coxa include shoulder, elbow, wrist and ankle replacements. During the year 2007 over 2500 endoprosthesis operations were performed in Coxa.

Endoprosthesis patients' care in the Tampere region is considered nationally as a regional care chain as well as a unique network action model. Because of the centralization of endoprosthesis operations the role of the Tampere region hospitals and health centres has also changed. Preoperative patient education is on the responsibility of health centres in the Tampere region. The patients are transferred from the Coxa Hospital usually by stretcher taxis in 2 to 3 days after their operation to accepted postoperative care units (N=15). The patients are usually discharged in 3 to 5 days and sent home.

**Partners**

The VERCOX project was initiated by 9 collaborating partners in order to establish a seamless care chain for endoprosthetic patients in the Tampere region. The actors were: Pirkanmaa University of Applied Sciences, Coxa Hospital for Joint Replacement, Tampere City Hospital, Mänttä, Valkeakoski and Vammala regional hospitals as well as Kangasala, Nokia and Ylöjärvi health centres.

**Basic analysis of charting the development needs**

The goal of the basic analysis was to document how the care and care chain for endoprosthetic patients functioned at the time. The initial implementation of the endoprosthesis patients’ care and rehabilitation as well as and the needs for further development were charted thoroughly by using different methods: Observation, document analysis, patients and staff interview, a questionnaire of the joint replacement patients (N=558) and a self-evaluation seminar. The evaluation questions were designed by applying the European Foundation for Management (EFQM) and the Common Assessment Framework (CAF) models. The areas assessed were ‘The strengths of networking and areas for further development’ and ‘The strengths of endoprosthesis patients’ care and areas for further development.’

**Goals of the VERCOX project**

The goals of the VERCOX project arose from the basic analysis. The overall goal was to assess and evaluate the endoprosthetic patients’ care chain in order to improve and secure seamless and client-oriented multiprofessional care and rehabilitation.

**Subgoals:**

1. To chart the expectations, experiences and needs of endoprosthetic patients and municipal partners
2. To assess and improve the quality of preoperative education, as well as of postoperative care and rehabilitation
3. To document and model step by step the care chain of endoprosthesis patients
4. To design quality criteria and indicators for endoprosthesis patients’ care and rehabilitation
5. To sustain the expertise and renewal of the project group members who act as internal experts, and to support their wellbeing and empowerment in accordance with the development and education programme designed for the project.

Developmental work was implemented at diverse levels in accordance with the client, personnel, process and effectiveness viewpoints of Balanced Scorecard: Organisational level (postoperative care unit and ward); Regional level (postoperative care units’ regional cooperation); Network level (whole Tampere region)

**Action model of the VERCOX project**
The VERCOX project was administered, coordinated and managed by the Pirkanmaa University of Applied Sciences. In to the VERCOX project was structured two years lasting development and education programme. With the help of this programme, it was possible to control and secure wide and procedural development process.

Project group consisted of physiotherapists and nurses from each partner organization, together 17 members, who functioned as internal experts. The project group assembled one or two day per month in Pirkanmaan University of Applied Sciences and took part in the guiding of the external experts to the developmental action during the whole project. The main external experts represented 3 areas: modelling and quality assurance, research as well as development of know-how and wellbeing at work.

In VERCOX project participatory development methods and principles of learning organization provided the point of departure for the development of endoprosthesis patients care chain. For example: regional, national and partly international networking, benchmarking, education and research-based action as well as self-evaluation and peer review. During the project altogether 14 seminars were arranged, for example municipal seminars, regional seminars and national benchmarking seminar.

**RESULTS OF THE VERCOX PROJECT**

**Support of expertise, renewal and wellbeing at work of the project group**
Development work requires that the person feels well at work, which enables building up professional skills and expertise. That is the reason why the section on wellbeing at work was integrated into the development and education programme as well as into the expertise development process. The developmental action emphasized the theory-practice interaction and so it was also possible to update and renew the project group members’ knowledge and skills. During the VERCOX project, resource questionnaire of the project group was filled in 3 times. In connection with this it was possible to have information sessions and personal discussions on wellbeing at work.

**Seminars for municipal decision-makers and key persons**
Client viewpoint included both the municipal client and the endoprosthesis patient. The first municipal seminar was carried out during the PIRCOX project in 2004 and its name was: “How much does waiting cost? How much does well-timed endoprosthesis operation cost?” The focus of the second municipal seminar was “Care guarantee legislation”. This legislation came into force in 2005 and it was ordered by The Ministry of Social Affairs and Health care. This care
guarantee legislation specifies access criteria for both hip and knee degenerative arthritis. When these criteria are met, a patient’s surgical procedure must be arranged no later than 6 months after the decision to proceed with treatment. The third municipal seminar “When you buy an endoprosthesis operation, you buy the whole process” was arranged in 2006.

**Assessment feedback questionnaire for endoprosthesis patients**

The patient evaluation questionnaire was integrated in the modelling process. Questions relating to different phases of the modelling process were included in the questionnaire. The composition of the questionnaire was made at the same time as the endoprosthesis patient’s care chain phases were modelled. The questionnaire was pretested on endoprosthesis patients of the postoperative units.

The questionnaire covered 60 questions from the following areas: 1. Waiting time for operation 2. Preoperative guidance and education 3. Transfer to postoperative care unit 4. Implementation of care and rehabilitation in the postoperative unit 5. Discharge and coping at home 6. Control visits.

The target group consisted of patients who had undergone an endoprosthesis operation in Coxa in 2005 and were in postoperative care in the participating organisations of VERCOX project. In total 567 forms were sent, 439 were returned, so the response rate was 77%. The structure questions were analyzed using statistical methods and open responses using content analysis. The results were reported both as summary results and organisation-specific results.

Main results and development challenges:

During their first visit in Coxa, the patients receive the information of the contact person working in their own health centre, and the patients are advised to make an appointment for the preoperative education. According to the research results, only 30% of the patients had taken part in the preoperative education. Despite the given information, some patients did not know whom to contact. Some patients, on the other hand, felt so ill, painful and weak that they just passively waited for the admission to the surgery. The goal of preoperative education is maintenance, promotion, assessment and follow-up of patients’ functioning ability. Based on the results one challenge will be to increase the patients’ active role and their participation in preoperative education as well as standardisation of preoperative education in the Tampere region.

Transfer of the patients to the postoperative care units did not always live up to expectations. Some patients criticised the lack of professionalism of the drivers or disrespectful and hurried treatment. Because of this, further education for stretcher taxi drivers has been organised by Pirkanmaa University of Applied Sciences three times. The following education day will take place in spring 2008.

According to the patients’ estimation, the treatment given by different professional groups was rated as very well / well (over 94%). Most criticism among the patients arose from the fact that physiotherapists do not work in the postoperative care units during weekends. This is the reason why the responsibility of other staff members for rehabilitation and further development of rehabilitative care work became one central challenge.

Over 71% of the patients felt that their relatives were not considered enough within the process of postoperative care, which also became a central challenge.

According to the results 15% of the patients had fears for their discharge to home, and almost as many patients (14.72%) reported that they had problems in coping at home. Those problems
included for example coping in the daily routines (housework, shopping), living alone, basic mobility activities like climbing and descending stairs, falls, problems in wound care, self-injections, effectiveness of mobility exercises, understanding the instructions, and complications. Other development challenges include the event of discharge, careful composition of the discharge plan, and support for patients’ coping at home. Treatment periods have shortened during the last years and some increasingly part of patients have been safely discharged straight from Coxa without a referral to further rehabilitation. Because of this the development of home care and nursing became a central challenge.

Within the assessment procedure of the modelling of the endoprosthesis patients’ care chain, the results of the patient questionnaire were reflected with respect to process descriptions.

The research data was sampled in 2005. The same patients’ questionnaire will be used again in 2008 and we are currently sampling the data.

**Modelling of endoprosthesis patients’ care chain in the Tampere region**

The endoprosthesis patients’ regional care chain went across organisational limits. The starting point of the development process was defining and documenting the endoprosthesis patients’ care chain. Quality coordinator Anne Marjamäki from Vammala regional hospital acted as the modelling expert. Four days supervision, consulting, assessment and auditing support were bought from the consultants of Mawell Ltd. The structure for modelling was based on Pirkanmaa Hospital District’s process modelling guidelines. The process descriptions were made by using internet supported QPR ProcessGuide programme.

In the VERCOX project, the endoprosthesis patients’ care chain and its 10 subprocesses were modelled in cooperation with Coxa Hospital for Joint Replacement:

1. Phase before first visit to Coxa
2. First visit to Coxa
3. From first visit to arrival examination
4. Arrival examination in Coxa
5. Endoprosthesis surgery in Coxa (2-3 days)
6. Transfer of patient from Coxa to postoperative care unit
7. Postoperative care and rehabilitation (3-5 days)
8. Control visit (2, 4 or 6 weeks after the operation, depending on the endoprosthesis operation performed)
9. Re-examination in Coxa (2 months after the operation)
10. Annual control visits

**Quality criteria and indicators**

In order to assess the accomplishment of the goals of the endoprosthesis care chain, criteria and indicators were developed for preoperative phase, postoperative care and rehabilitation (in the postoperative care units) and follow-up phases. The indicators were structurally based on the customer, process, economy and personnel viewpoints on the Balanced Score Card. The content of the criteria and indicators were defined according to the critical factors of the results of the patient evaluation questionnaire and modelling of the care chain.
Critical factors of preoperative phase:

- Active waiting time before surgery
- Common referral practice and criteria
- Flow of information between actors during the endoprosthesis patients’ care chain
- Follow-up system of patients’ functioning ability covering the whole care chain
- Standardisation of preoperative education
- Maintenance, promotion, assessment and follow-up of patients’ functioning ability (Patients participate in preoperative education (~100%))
- Patient’s active role and taking care of own condition
- Contact person activity and network cooperation: role and tasks defined at diverse levels and directions, professional continuing education, resource allocation to activity, networking and net cooperation.

Critical factors of postoperative care and rehabilitation in postoperative care units:

- Transfer of the patient to postoperative care unit by stretcher taxi without problems
- Effective pain treatment continues in the postoperative care unit
- Implementation of physiotherapy: clear work and liability distribution
- Continuing education of nursing staff members for rehabilitation of patients
- Standardisation of discharge
- The patients’ coping at home without problems (anticipation of problems)
- Cooperation with home care and home nursing personnel
- Target duration of stay in the postoperative care unit

Critical factors of control visits and annual follow-ups:

- Common criteria for implementation of follow-up practices
- Centralised implementation of follow-up
- Criteria and implementation requirements for differentiation of follow-up
- Scope of follow up
- Follow-up resources and definition of competence
- Number of follow-up visits/implementor

**Endoprosthesis patients’ care and its integration into basic task and core competence of Pirkanmaa University of Applied Sciences**

The law defines the tasks of the universities of applied sciences, which are: education, regional development and applied research and development. Pirkanmaa University of Applied Sciences provides specialization education in endoprosthesis patients’ expert studies. In the Clinic of Wellbeing pre- and postoperative pool therapy groups for endoprosthesis patients are organised in cooperation with Coxa. From the regional development viewpoint these PIRCOX and VERCOX projects in Tampere region can be mentioned. Teaching and regional development actions are based on investigative approach. In PIRAMK publication series four books titled “The renewal care of endoprosthesis patients (parts 1-3)” and “The developmental results of endoprosthesis patients care chain” have been published in years 2002-2007.

Development and reorganization of endoprosthesis patients surgery, care and rehabilitation are the current challenges overall in Finland. That’s the reason why networking, cooperation, benchmarking and peer review as well as respect of others are important also on national and international levels.