

Table 1. Surgery day. Transfer into Operating and anesthesia unit of LPKS, Kemi.

Surgical ward.	Operating and anesthesia unit,	
<p>Preoperative phase begins on the surgical ward, usually 3B from which patient is coming for an elective planned hip replacement. Often patient arrives on ward early in the morning. Responsible surgeon might come to greet a patient, give brief intro about process and mark operated area. Patient receives instructions and guidance upon upcoming surgical procedure, surgical gown, pressure stockings, and sometimes sedatives in case of anxiety. Patient is fasting and body hygiene is maintained properly, however nurse one more time goes through questionnaire upon medication, food intake, skin condition. After that, either surgical nurse or nurse from OR arrives to transfer patient for planned intervention.</p>	Circulating nurse.	Instrument nurse.
	<p><i>Preparation of the OR e.g. availability of supporting devices used in positioning, traction device for lower extremity, leashes, Unitrac tube, lock with a bar for the abdomen region, "kylkipatja", "hartiapehmuste". "Imut 2 kappaletta", "dia/savuimu plaan jalkapäässä leikattavalla puolella", "sementtipoljin". Check prosthesis components and availability of trolley with implants. Trolley with catheters should be always available. Open LESU, ESKO and x-ray images on the screen in front of operation table and doctor. Order "tilauskaavake" and "pesusykeröt". Check type of anesthesia.</i></p>	<p>Confirmation of availability of equipment required for hip replacement including:</p> <ul style="list-style-type: none"> • hip package • suction bags • Zimmer® or Stryker® with rinse set • isolation for camera (Unitrac) • lancet 22 size • required amount of gloves • set of scoops • set for bone material including bone biter, storage can, package for freezer, test vial, vial for culture test. <p>Instruments:</p> <ul style="list-style-type: none"> • basic set of tools for hip replacement surgeries • drill as Zimmer Stryker S7/CD4, Hall/PowerPro. • Pad saw and batteries plus blades. • In case of fixation with cement, set M or L to mix cement is needed plus cement pressurizer. L set requires pressurizer separately, 2 x Refobacin 40 or Optipac 60/80 hydrogen with mixer, räkämukatetri and special gloves to handle cement. • Clock. <p>Implants including cup reamers, cups and stems of different kind and size:</p> <ul style="list-style-type: none"> • Summit – Pinnacle • Accolade – Trident • Exeter • C-stem

Table 2 Arrival to operating unit, preoperative scope of activities in Operating and anesthesia unit of LPKS, Kemi.

<i>Receiving patient, induction room environment.</i>
<p>Patient arrives to the unit and after proceeds to the induction room either of OR 4 or 5 generally used for "clean" surgical procedures. Induction room serves nowadays as a space to keep all necessary equipment for intervention as prosthesis packages, draping material and other secondary. One of perioperative team members receives patient. Surgical nurse from the wards gives a brief exact report upon patients' ID, operation planned, operated area, medication in use, last medication intake, allergies, presence of wound, skin integrity, general condition. Patient is awake and conscious thus usually participates in the report confirming prior report of surgical nurse. After that patient is transferred into OR from induction room and ready to participate in intraoperative phase.</p>

Table 3. Intraoperative phase in OR. Operating and anaesthesia unit environment LPKS, Kemi.

Intraoperative stage: Transfer into operating room, anaesthesia induction & surgical procedure.		
Circulating nurse	Anaesthesia nurse	Instrument nurse
<ul style="list-style-type: none"> • <i>Circulating nurse accompanied by anaesthesia nurse receive patient in induction room.</i> • <i>Guide patient to proceed into operating room, note if patient is not capable to do so transfer can be done directly from the bed near operating table</i> • <i>Connects to monitoring of vitals including ECG, blood pressure, and oxygen saturation in tissues(NB if general anaesthesia NMT meter and EEG meter.</i> 	<ul style="list-style-type: none"> • Gets and iv access by placing cannula, begins fluid therapy, gives antibiotic prophylaxis. • Prepares equipment for spinal anaesthesia, disinfects injection area and assists anesthesiologist during anaesthesia induction procedure. • Monitoring of patient's cardiovascular function, respiratory function, maintenance of normothermia, vitals. • Documentation of anaesthesia process, patient's condition. 	<ul style="list-style-type: none"> • Transfers instrumentation and other needed equipment into the operating theatre. • Assists team-members in positioning of patient. • Maintenance of sterile field, preparation of instruments. • Handling instruments, assisting with equipment. • Dressing of the surgical wound. • Removal of drapes and further process of instrumentation into sterilisation department.

Table 4 Circulating nurse tasks during intraoperative stage.

More of circulating nurse responsibilities.
<ul style="list-style-type: none">• <i>Promotes patient safety being with patient.</i>• <i>Guidance of patient during positioning for spinal anaesthesia, tight cooperation with anesthesia nurse and anesthesiologist.</i>• <i>Surgical positioning.</i>• <i>. Surgical site disinfection.</i>• <i>Scrubs surgeon in washing room environment.</i>• <i>Activation of gas evacuator, suction device, water rinse, Diathermy.</i>• <i>Documentation work with programs Implant DB®, Tissue DB®, LESU®.</i>• <i>Handling Bone sampling according to guidelines.</i>• <i>Handles additional equipment needed e.g. surgical gauzes, dressings, needles, implants.</i>• <i>Monitoring of surgical process attention to safety, asepsis and maintenance of sterile field.</i>• <i>Assists in removal of drapes, disconnects from monitoring.</i>• <i>Safe transfer into the bed and proceeding to recovery room environment.</i>

Table 5 Postoperative phase. Operating and anesthesia unit environment of LPKS, Kemi.

Postoperative phase: recovery room environment.	
Anesthesia nurse	Circulating nurse
<ul style="list-style-type: none"> • Reportation to recovery room team. 	<ul style="list-style-type: none"> • Connecting patient to monitoring system.
<p><i>Arriving to recovery room</i>, circulating nurse applies monitoring devices while anesthesia nurse gives a report to recovery room team. Care of patient in the recovery room involves pain management with paracetamol, NSAIDs, weak and strong opioids as well as gabapentines, touch responsiveness testing, external condition of the surgical trauma, basal core temperature, urine output if catheter used, and movement in lower extremities, monitoring of vitals and general condition of patient. Operation theatre nurse gives report to recovery room nurse upon patient's condition, surgery done. In recovery room patient stays as long as his condition requires monitoring.</p> <p>Instrument nurse brings instrumentation to sterile unit for further process and sterilization process.</p> <p>Circulating nurse returns to the operating room to replace single – use equipment as suction tubes, diathermy wires, gas evacuator filter, collection pouches, implants into the trolley from board in the induction room, x – ray images of next patient.</p> <p>Circulating nurse also notices operated side and layouts equipment accordingly including devices and lamps.</p>	

Data	Event
<p>19th January – 29th January 2017.</p>	<p>Appointment with teachers in the university upon possibility to conduct project for operating unit in länsipohjan keskussairaala. Decision – making process to request study problem from OR unit. Making visit to leikkaus – ja anestesia osasto and first appointment with nurse specialized in arthroplasty. Identifying research problem and possible methods for its solution and practical implementation. “Day of hip prosthesis patient in the operation unit” operating model was identified as study problem. Operating plan has outdated and needed refreshment due to changed hospital and nursing practices. Assessment of model, discussion upon implementation methods and limitation of work. Identification of objectives and goals of project work. Planning observation method as one of the primary ways to conduct project work. Planned visit to observe primary elective hip replacement.</p>
<p>1st February 2016 – 5th February 2016</p>	<p>Successful comprehensive observations of hip replacement procedure. Process of collection data and making notes upon perioperative process during procedure. Orientation to the phenomenon and study problem, self familiarization and studying topic</p>

<p>February, March and April 2016</p>	<p>using literature material, scientific databases and other scientific researches. Critical assessment of conducted notes and selection process. Process of plan formation for study project. Usage of material conducted in Finnish and English languages, building up theoretical background of study project as for parts "Grounds of Perioperative Nursing" and "Joint Replacement".</p>
<p>7th April – 18th May 2016</p>	<p>Presentation of study project plan and theoretical background to supervisors in länsipohjan keskussairaala leikkaus – ja anestesia osasto. Based on feedback both theoretical background and plan were still lacking structuration.</p>
<p>17th September – 16th December 2016</p>	<p>Bringing corrections and changes to the plan according to discussed instructions and corrections necessary. 27th October meeting with supervisors and guidance related to the thesis, discussion of final corrections needed. 18th November thesis plan approved. Preparation of assignment contract and collection of signatures. Intermediate assessment of project progress in the unit with supervisor, involvement of more material as well as conduction of observation of hip replacements.</p>

<p style="text-align: center;">Spring 2017</p>	<p>Introduction of material into present project from the unit about instrumentation used, implants and roles of perioperative team.</p>
<p style="text-align: center;">August – October 2017</p>	<p>Generalization of the concepts related to project work as data collection methods e.g. implementation, methods, evaluation, examination of theoretical material. After feedback received during guidance meetings on 12th September and 2nd of October project was restructured. Although project required some big structural changes, supervisors were quiet satisfied with its contents and adherence to defined purpose and aim in the beginning of work. Profound research has been done during this time as contents required more comprehensive data and layout, some of theoretical material was missing. Important to mention the fact, that I have been already doing my advanced practices so it helped in getting more observation data and be in close cooperation with project' supervisors from receiving organization. After successful introduction of required changes Presentation of the project product took place on 13.10 during "osaston tunti" time when the topic was TEP procedures and it was a good moment to give a brief introduction to project work I have done.</p>

Surgery & Anesthesia induction

Circulating nurse

Check list, Implant DB, Tissue DB, bone bank procedure if planned, documentation, blood loss monitoring, handling

Anesthesia nurse

Monitoring, medication therapy, documentation, communication.

Instrument nurse

Cooperation with surgeon, passing instruments, asepsis maintenance, communication.

Ending surgical procedure & transferring patient to recovery unit.

Circulating nurse

Prepares operating room for next surgery: fills out OR with equipment as bags for suction device and gas evacuator, positions devices for next surgery depending on operated side, fills in trolley with implants.

Circulating, instrument nurse & anesthesia nurse

Performs surgical count, removes surgical draping, performs safe patient transfer into the bed.

Circulating & anesthesia nurse

Transfers patient into recovery unit, connects monitoring and gives report to team in recovery room.

Instrument nurse

Transfers instruments into sterilization unit, checks anesthesia equipment.

Patient transfer into operating unit.

Anesthesia & circulating nurse.

Receiving patient in induction room, check list.

Safe transfer on operating table and connection to monitoring system.

Circulating nurse

Anesthesia induction: regional/spinal or general.

Safe and secure positioning.

Anesthesiologist, anesthesia nurse, circulating nurse and instrument

Surgical site disinfection

Sterile gowning, sterile package opening.

Circulating & instrument nurse

Circulating nurse

Instrument & circulating nurse and anesthesia nurse if needed.

Attachment of suction device, Diathermy, gas evacuator, assists surgeon in sterile gowning.

Preparation of sterile field.

Instrument nurse

Circulating nurse



Day before surgery

Checks availability of instrumentation for procedure.

Instrument nurse

Implants and its spare parts.

Day of Surgery

Preparation of operating theatre

Responsible for anesthesia station, equipment for regional or general anesthesia, medication, fluid – warming device.

Anesthesia nurse



Arranges operating room and devices e.g. Diathermy, Gas evacuator/, Suction device/IMU, Unitrac- device. Checks availability of pad softeners for prominent areas, trolley with implants & review image of



Circulating nurse

Instrument nurse

Responsible for transfer of sterile instrumentation into the operating room from sterilization department. Checks availability of surgical drills, saws and implants for hip replacement surgery.

Table 6. Choosing prosthesis.

Type and description of an implant.	Image of an implant.
<p>SUMMIT – PINNACLE Pinnacle cement-less cup 1 set contains a cup reamer ja material to maintain cup.</p> <p>Cups of PINNACLE are of three kinds including hole free, with three holes and many holes. The one containing many holes is required mainly for revision surgery.</p>	 <p>The image shows the logo for PINNACLE HIP SOLUTIONS, which consists of the word 'PINNACLE' in a large, bold, sans-serif font with a stylized 'C' that has a dot inside, and 'HIP SOLUTIONS' in a smaller font below it. Below the logo are three hip cup implants: one is silver with a black center, and two are pink with a silver center.</p>
<p>SUMMIT Cement – less stem 2 sets reamer and basic devices.</p>	 <p>The image shows a hip stem implant, which is a long, tapered metal rod with a textured surface and a curved end.</p>

Type and description of an implant.	Image of an implant.
<p>ACCOLADE – TRIDENT</p> <p>Trident cement - less cup 1 set contains cup reamers and material to maintain cup.</p>	
<p>ACCOLADE cement – less stem.</p> <p>Two sets stem reamers and basic devices.</p>	

EXETER cement stem.

Could be set up with Exeter cement cup NFB50 or Trident/Tritanium hybrid cup NFB40.

