

Doctoral thesis for SNF-project

Multimodal prehabilitation for major surgery in elderly patients to lower complications and to increase cost effectiveness. A randomized, prospective, multicenter, multidisciplinary trial (PREHABIL trial).

Background

Postoperative complication rate is up to 50% in patients undergoing major surgery, and physiological and functional capacity after major surgery is reduced by 20-40%, particularly in elderly patients. The proportion of patients older than 65 years amongst those presenting for surgery will increase greatly in the near future. The incidence and severity of complications are closely related to preoperative functional capacity, nutritional state, and smoking behaviour. Therefore, the concept of prehabilitation aims at optimising the physiological state of the patient before surgery in order to positively affect surgery outcome. We have composed a comprehensive patient assessment and multimodal prehabilitation programme to improve cardiorespiratory fitness, nutritional and haematological status of elderly patients undergoing major surgery.

Study aim

To investigate the impact of a multimodal prehabilitation on postoperative outcome using the Comprehensive Complication Index (CCI), a validated index (range from 0, no complication, to 100, death) for assessment of multiple postoperative complications. Secondary outcomes will be changes in cardio pulmonary exercise testing (CPET, Forced expiratory volume in one second (FEV1)), timed up and go test (TUG), grip strength, nutritional state (Nutritional Risk Screening score, albumin and prealbumin), haemoglobin, Quality of Recovery score (QoR15), State-Trait Anxiety Inventory (STAI), days at home and well after 30 days (DAH30), smoking habits, time to surgery (i.e. time between decision and intervention) and cost analysis.

Study outline

This is a 4-year multicentre parallel-arm randomised controlled trial funded by the Swiss National Foundation (SNF). A target sample of 466 patients scheduled for major urologic, thoracic, abdominal or vascular surgery will be recruited at the Inselhospital Bern and Stadtspital Tiefenau. All study patients undergo baseline testing for cardiorespiratory fitness (CRF), strength, anaemia, nutritional and smoking status. After randomisation to prehabilitation intervention or standard of care, patients of the intervention group receive individually tailored treatment (composed of four elements: exercise, nutritional intervention, anaemia treatment and smoking cessation) during the 2-4-week prehabilitation program according to deficits diagnosed at baseline testing. Two PhD projects will be embedded in this study, one project will focus on the CRF interventions and the other project on nutritional interventions.

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Aim of the thesis

Elaboration of a clinically feasible procedure for assessing and improving CRF before major surgery in elderly patients. While the protocols for assessing CRF are largely established, the intervention for improving CRF will be developed in the project. This will include need assessment, creation of centre-based as well as telehealth-based interventions, and assessment of feasibility and effectiveness different CRF interventions. Further, the CRF interventions need to be integrated with other prehabilitation interventions and patient individual clinical schedules, synergies need to be developed.

Tasks of the PhD student

Composition of systematic review on prehabilitation programmes aiming at optimising CRF. Performing testing procedures and interventions to improve CRF (this includes centre-based and telemedicine implementation of interventions by phone or video calls). Close collaboration with PhD student who develops nutritional interventions, sharing of tasks. Assessing feasibility and effectiveness of the interventions. Developing synergies with other prehabilitation interventions.

Student profile

Masters degree in Health/Movement Sciences or similar
German and French mandatory for patient councelling
Open personality and good social and communication skills (daily patient contact)
Organisational skills (scheduling study appointments around clinical appointments)
Readiness to travel between Inselspital Bern and Stadtspital Tiefenau (15 min by bicycle)

Time commitment

3 years @100% (renumeration according to SNF), starting September 2021 or as soon as possible

Supervision

PD Dr. Prisca Eser and Prof. Dr. med. M. Wilhelm, Preventive Cardiology & Sports Medicine, Department of Cardiology, Inselspital, University Hospital Berne

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