

## **NCU – Summative report for 2014**

**Report submission date: 17<sup>th</sup> February 2015**

**Principal investigator: Jesper Lagergren**

**Project title: Influence of obesity surgery on cancer risk in a Nordic population-based cohort study**

**NCU grant received (€): 35,000**

**Project commencement and completion dates: 1<sup>st</sup> January 2014 – on-going**

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### **1. Briefly describe the project in a language understandable to non-scientists (max. 100 words)**

Obesity surgery is used increasingly due to the obesity epidemic, but the future cancer risk following such surgery is uncertain. This project addresses 2 hypotheses: 1) Obesity surgery decreases risk of obesity-related cancer, and 2) increases risk of colorectal cancer.

Registries assessing obesity surgery and cancer in all Nordic countries are used to create a large cohort of obesity surgery patients and estimate their cancer risk compared to the background population and to non-operated obese patients.

If the hypotheses above are proven true, prevention in high-risk individuals for cancer and colonic surveillance might be considered following obesity surgery, respectively.

### **2. Summarize the major findings of the project (max. 400 words)**

The project is not yet finished, but the data management is on-going, which is entirely according the grant application. The following progress has been made during year 2014:

We have created an experienced research group:

- The 5 original applicants, all with expertise in cancer epidemiology: Jesper Lagergren, professor, Sweden; Elsebeth Lynge, professor Denmark; Eero Pukkala, professor, Finland; Laufey Tryggvadóttir, professor, Iceland; and Pål Roundstad, professor, Norway.

- Mark Hull, professor, United Kingdom.
- Wenjing Tao, PhD candidate, Sweden.
- Fredrik Mattsson and Peter Konings, biostatisticians, Sweden.
- Hanna Johans, project coordinator, Karolinska Institutet, Sweden.
- Miia Artama, postdoctoral researcher at the Finnish Cancer Registry, Finland.
- My von Euler, associate professor, University of Copenhagen, Denmark.

Progress:

- All approvals from relevant ethical review boards and data inspectorates in all 5 countries have been completed and approved.
- The data collection has been completed from all 5 countries.
- The variables of the datasets have been checked.
- The data have been stored and are managed from a secured server at Statistics Denmark, which is a well-established management of Nordic registry-based data.
- The biostatisticians Fredrik Mattsson and Peter Konings and PhD candidate Wenjing Tao have been given access to the data and work with the data remotely through a well-working VPN-system.
- The cleaning and merging of all relevant variables is on-going.

Time plan:

- Merging and cleaning of data during spring and summer 2015.
- Statistical analyses for the first study (obesity surgery and risk of colorectal cancer) during autumn 2015.
- First manuscript (obesity surgery and risk of colorectal cancer) winter 2015-2016.
- Statistical analyses for the second study (obesity surgery in relation to risk of all obesity-related cancer) during spring and summer 2016.
- Second manuscript (obesity surgery in relation to risk of obesity-related cancer) during end of 2016.

**3. Describe how the project has increased our knowledge of the prevention, cause and/or cure for cancer (max. 150 words)**

There are presently no results available from this project, but the progress is according to the plan. We expect this project to contribute importantly to the knowledge of the effects of obesity surgery regarding cancer risk. This is not only of interest from a cancer aetiological point of view, but it is also of great clinical relevance. The research will show how weight loss influences cancer risk, not only obesity surgery *per se*. If protective effects are established between obesity surgery and obesity-related cancer, preventive actions in certain groups of known high-risk patients for obesity-related cancer might be considered. If an increased risk of colorectal cancer is established, the results indicate a role for colonoscopic

surveillance after obesity surgery to identify colorectal tumours at an early and curable stage. Thus, this research might prompt new surveillance studies in these patients.

#### **4. Outline how Nordic cooperation has added value to this project (max. 100 words)**

This research cannot be conducted without Nordic collaboration and by using the goldmine of registry data available in each of these countries, particularly their hospital discharge registries and cancer registries. The previous research attempting to address the cancer risk after obesity surgery has not had statistical power enough to evaluate this risk. By merging the data from the Nordic countries, we can include >40,000 obesity surgery patients and >160,000 non-operated obese patients. This provides a most powerful basis for the studies outlined. Detailed sub-group analyses will be possible, e.g. assessment of specific types of cancer, and thorough risk assessments in the follow-up of several time periods after surgery. No previous studies on these topics are even close to the statistical power that this project will provide.

#### **5. Publications resulting from the NCU research grant**

During the data collection of the Nordic project, we have completed a scientific paper addressing short-term mortality following obesity surgery based on the Swedish registry data available:

Tao W, Lu Y, Östlund M, Lagergren J. Short-term mortality after obesity surgery in a population-based study. *Surg Obes Rel Dis* (in press). Journal impact factor 4.9.