

## Press release

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### Basic information

Name: Thomas Berger      Email: [tomber@rm.dk](mailto:tomber@rm.dk) Phone: +45-60185007

Department of: Clinical Medicine

Main supervisor: Professor Kari Tanderup

**Title of dissertation:** Reduction of normal tissue irradiation with the use of advanced external beam radiotherapy and proton therapy in locally advanced cervical cancer.

**Date for defence:** 10/05/2019 at (time of day): 15:00 **Place:** Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, Indgang C, Auditorium C114-101, 8200 Aarhus N

Press release (Danish)

**Reducering af normalvævsbestråling ved avanceret ekstern stråleterapi og protonterapi i lokal-avanceret cervix cancer.**

Et nyt Ph.D.-projekt fra Aarhus Universitet, Health, giver centrale konklusioner om hvordan teknologisk avanceret ekstern stråleterapi og protonterapi reducerer normalvævsbestrålingen ved strålebehandling af cervix cancer. Projektet er gennemført af Thomas Berger, som forsvare det d. 10/5-2019.

Det er estimeret, at der på verdensplan var 570.000 nye tilfælde af cervix cancer i 2018, og at 311.000 kvinder døde af sygdommen (I Danmark diagnosticeres omkring 370 kvinder hvert år med cervix cancer og 100 dør af denne sygdom). Behandlingsmulighederne afhænger af tumorens udviklingsstadiet. Hvis tumorstadiet er lokal-avanceret, er den traditionelle behandling en kombination af ekstern stråleterapi (dvs. bestråling af tumoren med en strålekilde placeret udenfor kroppen), samt kemoterapi og brachyterapi (dvs. indføring af radioaktive kilder i tumoren ved hjælp af nåle). Brugen af stråleterapi er en effektiv måde at behandle tumoren, men det beskadiger de omkringliggende raske organer. Patienter med cervix cancer, som får ekstern stråleterapi, vil især rammes af gastro-intestinal toksicitet, urinvejstoksicitet eller seksuel dysfunktion. Det er kendt, at graden af disse bivirkninger er relateret til volumen af det raske væv, som bestråles. Ny teknologisk udvikling i brugen af ekstern stråleterapi har potentialet til at ramme tumoren mere præcist og skåne de omkringliggende organer yderligere for stråling. I dette Ph.D.-projekt har vi fundet metoder til at udnytte potentialet af moderne stråleterapi, hvilket kan reducere volumen af det bestrålede normalvæv for patienter med cervix cancer. Reducering af dette volumen forventes at bidrage til en forbedret livskvalitet for disse patienter.

Ph.D.-forsvaret er offentligt og finder sted den 10/05-2019 kl. 15 på Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, Indgang C, Auditorium C114-101, 8200 Aarhus N. Titlen på projektet er "Reducering af normalvævsbestråling ved avanceret ekstern stråleterapi og protonterapi i lokal-avanceret cervix cancer". Yderligere oplysninger: Ph.D.-studerende Thomas Berger, e-mail: [tomber@rm.dk](mailto:tomber@rm.dk), tlf. +45 60185007.

Bedømmelsesudvalg:

Per Munck af Rosenschöld, Associate Professor, PhD, Department of Radiation Physics, Skåne University Hospital, Lund/Malmö, Sweden

Antje Christin Knopf, Associate Professor, PhD, Faculty of Medical Sciences, Universitair Medisch Centrum Groningen, The Netherlands

Brita Singers Sørensen, Associate Professor, PhD, Department of Experimental Clinical Oncology, Aarhus University Hospital, Denmark (Chairperson)

Kari Tanderup, Professor, PhD, Medical Physicist, Department of Medical Physics, Aarhus University/Aarhus University Hospital, Aarhus, Denmark (non-voting member)

Press release (English)

**Reduction of normal tissue irradiation with the use of advanced external beam radiotherapy and proton therapy in locally advanced cervical cancer.**

A new PhD project from Aarhus University, Faculty of Health, provides key conclusions on how technological advances in external beam radiotherapy and proton therapy reduce irradiation of healthy tissues in cervix cancer radiotherapy. The project was carried out by Thomas Berger, who is defending his dissertation on 10 May 2019.

In 2018, worldwide, it is estimated that there were 570 000 new cases of cervical cancer and that 311 000 women died from this disease. (About 370 women are diagnosed every year with cervical cancer in Denmark and 100 die from this disease.) The treatment options depend on the stage of development of the tumor. If the disease is locally advanced, the conventional treatment consists in a combination of external beam radiotherapy (target the tumor with radiations from outside the body), concomitant chemotherapy and brachytherapy (insertion of radioactive sources inside the tumor by the means of needles). The use of radiation is an effective way to treat the tumor but it causes damage to the neighboring organs. In particular, cervical cancer patients undergoing external beam radiotherapy may suffer from gastro-intestinal, urinary toxicity or sexual dysfunction. These adverse effects are known to be related to the dose of irradiation and the volume of healthy tissues irradiated. Recent technological developments in the way external beam radiotherapy is delivered have potential to better target the tumor and spare the adjacent organs. In this PhD project, we have found ways to exploit the potential of modern radiotherapy methods in order to reduce the volume of irradiation of healthy tissues for cervical cancer patients undergoing external beam radiotherapy. This volume reduction is expected to contribute to the improvement of the quality of life of cervical cancer patients.

The defence is public and takes place on 10/05/19 at 15:00 at Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, Indgang C, Auditorium C114-101, 8200 Aarhus N. The title of the project is "Reduction of normal tissue irradiation with the use of advanced external beam radiotherapy and proton therapy in locally advanced cervical cancer". For more information, please contact PhD student Thomas Berger, email: [tomber@rm.dk](mailto:tomber@rm.dk), Phone +45 60185007.

Assessment committee:

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