



Princess Margaret Hospital  
University Health Network

# radiation medicine

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# connexions

## NAVIGATING THE COMPLEX SPECTRUM OF THERAPY OPTIONS IN PROSTATE CANCER

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THE GOOD NEWS FOR MEN DIAGNOSED WITH LOCALIZED PROSTATE CANCER IS THAT THEY NOW HAVE MORE OPTIONS. Making an individualized choice and treatment plan is important, as each case is unique. While active surveillance is a good option for those with indolent disease, outcomes have greatly improved for the many who may benefit from treatment. A balanced but detailed discussion with both a urologist and radiation oncologist is a key step towards an appropriate, informed decision. The need for and the benefit of a multidisciplinary discussion has never been greater.

The landscape of radiation therapy techniques, both in external beam therapy and brachytherapy, is now much more nuanced. The goal of the program at Princess Margaret Hospital (PMH) is to offer patient-centred treatments with technologically advanced solutions that reduce or eliminate side effects altogether, while at the same time improving the chance of ablating the tumour for good.

KARL MAHLER hadn't seen a doctor in seven years when his wife encouraged him to get checked. Apart from congenital dysplasia of the hip and subsequent bilateral prosthetic replacements, he felt strong and healthy. However, two PSAs and a biopsy later, he found himself diagnosed with intermediate-risk localized prostate cancer. Karl was referred by his urologist to PMH where he discussed his radiation therapy options with Dr. Peter Chung.

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KARL MAHLER

PETER CHUNG MD

"I HAD FULL CONFIDENCE IN THE RADIATION TREATMENTS. THE STAFF WERE WELL TRAINED. I RESPECTED THEIR APPROACH" — KARL MAHLER

#### NAVIGATING OPTIONS CONTINUED

Karl's background in technology and medical instruments provided him with an understanding of the unique challenges he'd face as the recipient of two metal hips. He knew that his case would have to be considered carefully if he were to receive radiation.

Radiation therapy is more precise and accurate than ever, even when metal implants cause artifact on the CT scan used for treatment, as in Karl's situation. At PMH, MRI is a standard part of the treatment planning process for patients with hip prostheses. MRI enables better visualization of the prostate tissues, and guides tailored trajectories in the radiation beam. Using volumetric modulated arc therapy (VMAT) and online image-guidance, much less bladder and rectum is exposed to radiation while at the same time each treatment can be delivered in just a few minutes. This treatment option allowed Karl to participate in a clinical trial investigating the merits of a shorter course of radiation.

One alternative approach to prostate cancer treatment is brachytherapy, a precise technique involving the insertion of radioactive sources into the prostate. After permanent implants, radiation oncologists at PMH routinely use MRI to accurately calculate dose delivery. The PMH technique has now been used on over 1100 patients with excellent results, including outstanding long-term tumour control and very low morbidity rates.

The most recent advance in our program is a unique high-dose-rate brachytherapy treatment that relies solely on MRI guidance, finally enabling the PMH team to target the tumour instead of the entire prostate gland. This highly focused therapy is a welcome treatment for patients with large or recurrent tumours so that the radiation dose can be safely intensified to where it is most needed.

Technologies are continually advancing. Individualized treatment approaches and a new emphasis on tumor-targeted radiotherapy at PMH harness the potential of state-of-the-art technologies that, with time, should translate to tumour control and reduced side effects.

"TWO WEEKS AFTER MY TREATMENT, I FELT ENERGETIC AGAIN." — KARL MAHLER

## Clinical Trials Highlights

# LOCALIZED PROSTATE CANCER

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### CAN WE SAFELY DELIVER HIGH-PRECISION RADIOTHERAPY USING A SHORTER, MORE INTENSIVE SCHEDULE?

Ontario Clinical Oncology Group  
Prostate Fractionated Irradiation  
Trial (OCOG PROFIT)

PI – Charles Catton

**Eligible Patients:** Men with intermediate risk prostate cancer considering curative treatment with radiotherapy.

This randomized trial compares the safety and efficacy of a more intense and compressed four-week course (20 fractions) of image-guided, high-precision prostate radiotherapy to a conventional eight-week course (39 fractions).

### WHAT IS THE RIGHT TIME TO OFFER RADIATION AFTER PROSTATECTOMY?

National Cancer Institute of Canada Clinical Trials Group/  
Medical Research Council  
Radiotherapy and Androgen Deprivation In Combination After Local Surgery (NCIC-CTG/MRC RADICALS-PR13) Phase III Study  
Local PI – Charles Catton

**Eligible Patients:** Men who are considering radiotherapy after prostatectomy.

This randomized trial evaluates the optimal timing of post-operative radiotherapy to the prostate bed for men with positive surgical margins and/or pT3 status.

### CAN WE IMAGE OXYGEN TO DESIGN TUMOR-SPECIFIC RADIOTHERAPY?

PI – Cynthia Ménard

**Eligible Patients:** Men with visible tumour nodules and/or high-risk prostate cancer considering curative treatment with radiotherapy.

This study compares two novel imaging oxygen imaging techniques (FAZA PET and qBOLD MRI) in their ability to map tumours and their oxygen levels in each patient prior to radiotherapy.

### CAN MRI-GUIDANCE OFFER CURE WITH FEWER SIDE EFFECTS WHEN TUMOUR RETURNS AFTER RADIOTHERAPY?

PI - CYNTHIA MÉNARD

**Eligible Patients:** Men with suspected or confirmed recurrence of cancer within their prostate gland more than two years after radiotherapy.

This study aims to improve the toxicity of salvage therapy through MRI-guided biopsy mapping and tumour-targeted HDR salvage brachytherapy.

### DOES ADDING EXTERNAL RADIATION TO BRACHYTHERAPY IMPROVE OUTCOMES?

Radiation Therapy Oncology  
Group (RTOG 0232)

Phase III Study

Local PI - Saibishkumar Elantholi  
Parameswaran

**Eligible Patients:** Men with intermediate-risk prostate cancer considering brachytherapy. This randomized trial evaluates whether the addition of external beam radiotherapy to brachytherapy improves disease control and impacts side effects.



SAIBISHKUMAR ELANTHOLI PARAMESWARAN MD

CHARLES CATTON MD

## Clinical Care Innovation

# PERSONALIZED MRI-GUIDED BRACHYTHERAPY FOR PATIENTS WITH CERVIX CANCER

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CERVIX CANCER IS ONE OF THE MOST COMMON CANCERS, AFFECTING WOMEN OF ALL AGES.

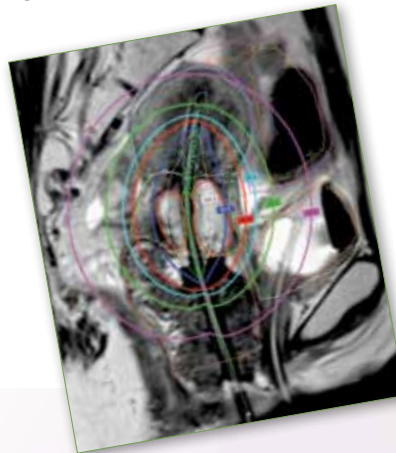
Many women are diagnosed at an advanced stage of cancer.

However, these women can still be cured with a combination of brachytherapy and external beam radiation therapy techniques.

PMH uses MRI-guided brachytherapy, a new treatment that improves customization of radiation dose to tumours while limiting radiation to normal tissues such as bladder and rectum when compared to conventional treatment.

In this innovative approach, meticulous treatment planning is used to deliver very high doses of radiation directly inside the cervix and uterus using a specialized applicator that contains radioactive sources.

This state-of-the-art technique starts with an MRI scan that provides a very detailed picture of the tumour, the surrounding normal organs, and the applicator. The treatment team uses the information from the MRI scan to develop a brachytherapy treatment plan that is customized to the anatomy of each patient, with millimeter accuracy. The resulting tumour control rates are higher and patient side effects are lower compared to the conventional treatment approaches. MRI-guided brachytherapy is the new treatment standard at PMH for patients with cervix cancer.



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### IN THE NEXT ISSUE

ELICSR: COLLABORATIVE  
CENTRE FOR HEALTH,  
WELLNESS AND CANCER  
SURVIVORSHIP



KIRSTEN KEELER MRT(T)

MICHAEL MILOSEVIC MD



## FROM THE EDITOR

On behalf of the Editorial Board, I thank the many readers of *ConneXions*, the quarterly newsletter from the Radiation Medicine Program (RMP) at PMH, who have provided such an enthusiastic response to the first two issues. We are encouraged to continue sharing with you highlights of our comprehensive radiation therapy program.

Men with a diagnosis of prostate cancer are often presented with a number of cancer management options. In this issue of *ConneXions*, we address the changing landscape of individualized care from a radiation oncology perspective. We hope this will be useful for you and your patients diagnosed with prostate cancer. Our 'Clinical Care Innovations' article continues the theme of personalized care and describes a leading-edge MRI-guided brachytherapy treatment option available for women with cervix cancer. The implementation of this innovative therapy as the standard of care at PMH offers women customized treatments not available at most cancer centres.

Did you know that some patients can be retreated with radiation? Our recurring 'Did You Know?' feature presents some insight into the opportunities and challenges of re-irradiation.

The editorial board of *ConneXions* thanks you for taking the time to read our newsletter and, as always, we welcome your comments and feedback. You can find *ConneXions* online at [www.radiationatpmh.com](http://www.radiationatpmh.com). If you would like to receive an electronic version of *ConneXions* by email instead of a paper copy, please send an email to [connexions@rmp.uhn.on.ca](mailto:connexions@rmp.uhn.on.ca).

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# DID YOU KNOW?

## RE-IRRADIATION: A VIABLE TREATMENT OPTION

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**PATIENTS WITH CANCER ARE NOW LIVING LONGER THAN EVER.** Consequently, issues with local and nodal recurrence, and the development of second primary tumours in areas that have received prior radiotherapy, are becoming more prevalent. A common misconception is that previously irradiated patients cannot be re-irradiated. While this is true for some patients, others can receive retreatment with palliative or definitive intent and the treatment is viable for many different cancer sites.

Advanced techniques developed at PMH are making it possible for previously irradiated patients to be re-irradiated. These techniques make it possible to ensure accurate target volume delineation and precise treatment delivery – both crucial to avoiding normal tissues and sparing previously treated sites. When contemplating re-irradiation as a treatment option, it is important to carefully consider its efficacy and safety for each patient.

Re-irradiation requires the whole spectrum of advanced technologies routinely used at PMH for: planning (CT and MR simulation to visualize targets); treatment delivery (intensity modulated and stereotactic radiation therapy to sculpt dose around critical structures and precisely target disease); and treatment verification (cone beam CT to ensure precise radiation dose delivery).

To have a patient seen for consideration of re-irradiation, please contact the appropriate disease site group using the contact information located on the back of this newsletter.



**ROBERT DINNIWELL MD**

# HOW TO FIND US FOR YOUR REFERRALS

We offer three ways to facilitate your requests for consultation:

## 1. Site Group Coordinators

Site Group Coordinators serve as a liaison between referring physicians, radiation oncologists, and the PMH New Patient Referral Centre.

## 2. Direct to Radiation Oncologists

Referrals may be discussed with Site Group Physician Leaders or specific Site Group members. Site Group members' contact information can be found at:

[www.radiationatpmh.com](http://www.radiationatpmh.com)

## 3. PMH New Patient Referral Centre:

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