



Princess Margaret Hospital  
University Health Network

# radiation medicine

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# connexions

## NEW HOPE

### FOR PATIENTS WITH BRAIN METASTASIS

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THE PRINCESS MARGARET HOSPITAL'S MULTIDISCIPLINARY BRAIN METASTASIS CLINIC has been working in close partnership with patients and their primary oncologists to pursue optimized treatment strategies aimed at controlling tumours in the brain.

The multidisciplinary team is made up of a radiation oncologist, neurosurgeon, neuro-oncologist, radiation therapist and a nurse, all of whom have expertise in the management of metastases to the brain. This team works alongside the patient to address all surgical, radiation and systemic therapy options, as well as experimental therapies through participation in clinical trials. Given the nature of brain metastases, the clinic's aim is to see patients within one week of referral; treatment usually takes place the following week.

Advances in radiation therapy and neurosurgical techniques have made it possible to focus more aggressive treatment on multiple well-defined lesions. This offers the possibility of better control of brain metastases, improved neurological functioning and quality of life, and longer survival. Identifying those patients who would benefit from these more aggressive approaches, and selecting the best therapy to ensure long-term control, remains an ongoing challenge.

PETER MACKENDRICK was seen in the brain metastasis clinic in 2009 with a newly diagnosed lung cancer and a single, small brain metastasis. After meeting with the team, and considering the pros and cons of the available treatment options, Peter decided to proceed with radiosurgery alone. He felt it gave him the best chance to maintain his active lifestyle.

A year after his initial visit to the brain metastasis clinic, Peter recalls all the nuances of the discussion around his treatment options and expresses his appreciation for the opportunity to work together with his team to come to the best treatment decision. CONTINUED ON PAGE 2.

"IT WAS GOOD TO HAVE OPTIONS PRESENTED AND TO WORK TOGETHER TO MAKE THE RIGHT DECISION FOR MY TREATMENT."

— PETER MACKENDRICK

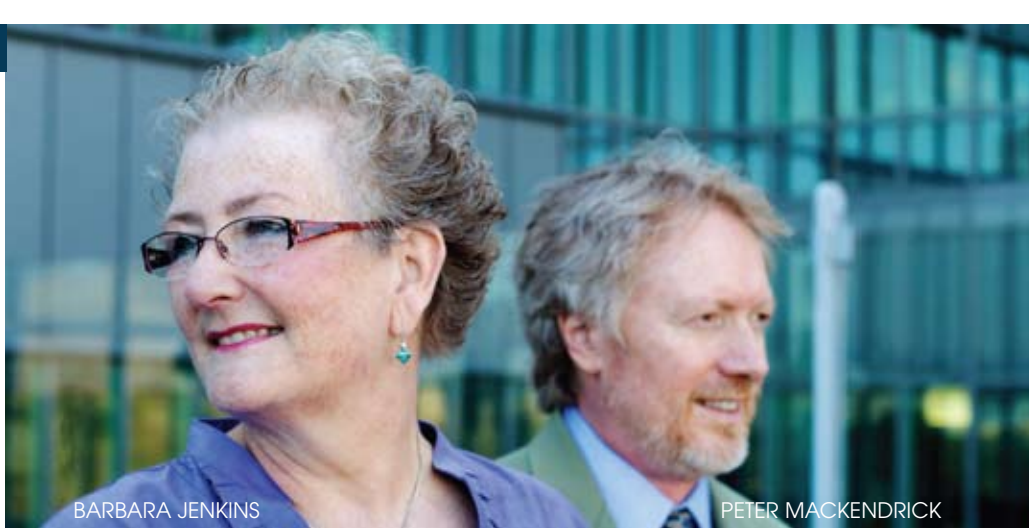
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DR. CAROLINE CHUNG PROVIDES SOME INSIGHTS ON HOW THE BRAIN METASTASIS CLINIC WORKS WITH PATIENTS AND THEIR PRIMARY ONCOLOGISTS

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BARBARA JENKINS

PETER MACKENDRICK

“I CAN’T THANK  
DR. BERNSTEIN AND  
THE ENTIRE TEAM  
ENOUGH FOR EASING  
MY NERVES.  
IN THE FIRST FIVE  
MINUTES, YOUR FEARS  
WILL BE RELIEVED  
AND ONCE THE FRAME  
IS PLACED, EVERYTHING  
ELSE RUNS SMOOTHLY  
AND PAIN-FREE.”

— BARBARA JENKINS

## NEW HOPE CONTINUED

However, what was right for Peter may not be the best approach for all patients. Some patients arrive at the clinic and, despite aggressive management of brain metastases, their journey involves ongoing, repeated discussions and treatments.

BARBARA JENKINS was diagnosed with breast cancer in 2003. She was treated with whole brain radiotherapy in 2009 when she first presented with brain metastases. Eight months later, when her brain metastases recurred, Barbara was seen at the clinic. Despite claustrophobia and a significant fear of radiosurgery, she proceeded with the treatment and has, since then, received multiple treatments for recurrent brain metastases. “I think of it like weeding the garden.”

Radiosurgery and stereotactic radiotherapy are often used interchangeably, however, the terms represent different treatment approaches. Considered safe only with small metastases, radiosurgery typically delivers a radiation dose in a single fraction and provides a more convenient treatment. Stereotactic radiotherapy fractionates the dose in 3 to 5 daily doses and is used with larger lesions.

Cancer Care Ontario has published evidence-based clinical practice guidelines supporting the use of radiosurgery for selected patients with brain metastases. Despite capacity in our clinic, radiosurgery remains vastly underutilized in Toronto and across the province.

## WHO WOULD BENEFIT FROM A REFERRAL TO THE BRAIN METASTASIS CLINIC?

Patients with a good performance status and:

- 1–3 newly diagnosed brain metastases
  - prior to any local therapeutic intervention (preferred)
  - within 6 weeks of whole-brain radiotherapy for consideration of a boost
  - after surgical resection
- Recurrent brain metastases for consideration of salvage therapy
  - including possible surgery, radiosurgery, stereotactic radiotherapy, or chemotherapy

“THE STAFF  
WERE PARTICULARLY  
GOOD AT HELPING ME  
TO REMAIN HOPEFUL  
THROUGHOUT THIS  
WHOLE PROCESS.”

— PETER MACKENDRICK

## Clinical Trials Highlights

# BRAIN METASTASIS

CYNTHIA MÉNARD MD FRCPC  
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DR. GELAREH ZADEH MD PHD FRCS(C)  
NEUROSURGEON  
CIHR CLINICIAN SCIENTIST, TORONTO WESTERN HOSPITAL,  
UHN BRAIN TUMOUR RESEARCH CENTRE

ACROSS DISCIPLINES AND IN PARTNERSHIP WITH OUR PATIENTS, we strive to answer key questions that will improve the treatment of brain metastases.

### WHAT IS THE EFFECT OF WHOLE-BRAIN RADIATION THERAPY? LOCAL PI – CYNTHIA MÉNARD

#### Eligible Patients

1–3 brain metastases not previously treated

This multi-centre randomized trial addresses questions about the benefits and side effects of treating the whole brain immediately after radiosurgery, or at the time of progression.

### IS THE COMBINATION OF SUNITINIB AND RADIOSURGERY SAFE? PI – CAROLINE CHUNG

#### Eligible Patients

1–3 brain metastases not previously treated

More patients with metastatic disease are being treated with anti-angiogenic inhibitors and have to stop their drug therapy while receiving radiosurgery. This study will determine the safety of combining sunitinib with radiosurgery and hopes to show that there is no need to interrupt drug therapy in the future.

### CAN LARGER METASTASES BE BETTER TREATED OVER 3 DAYS? PI – CYNTHIA MÉNARD

#### Eligible Patients

At least 1 large metastasis (2–5cm) and previous whole brain radiotherapy

This study examines the treatment of larger lesions with three fractions of high-precision radiotherapy using a new relocatable head frame and custom cone-beam CT device for imaging. This approach combines the precision of GammaKnife, the accuracy of image-guidance, the comfort of a non-invasive frame, as well as the safety of fractionation.



DR. GELAREH ZADEH

DR. CYNTHIA MÉNARD

### WHICH IS BETTER – SURGICAL RESECTION OR RADIOSURGERY? PI – GELAREH ZADEH

#### Eligible Patients

Single resectable metastasis not previously treated

This is a randomized trial initiated at the University Health Network with a plan to expand across the country. It looks at which local treatment, surgery or radiosurgery, is more effective at controlling a single tumour in the brain. (Pending UHN Research Ethics Board Review.)

### CAN WE PREDICT HOW WELL RADIATION TREATMENT WILL WORK? PI – CAROLINE CHUNG

#### Eligible Patients

Any patient receiving radiotherapy or radiosurgery for brain metastases

This study looks at MRI, blood and urine measures that may be able to predict for response to RT, in an effort to develop individualized therapy for patients with brain metastases. (Pending UHN Research Ethics Board Review.)

## BRAIN METASTASIS CLINIC TEAM

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## Clinical Care Innovation

# CARDIAC-SPARING BREAST IMRT

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RADIATION ONCOLOGIST, PROFESSOR, UTDRO  
RMP BREAST SITE GROUP PHYSICIAN LEADER, PMH

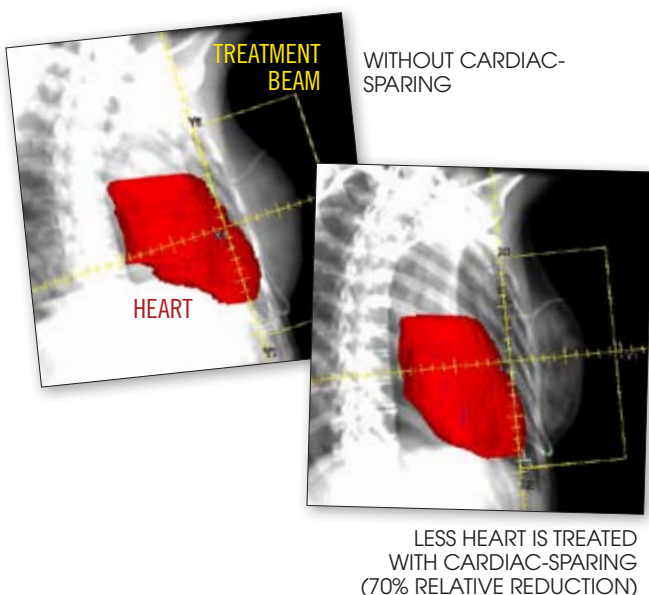
TOM PURDIE PHD MCCPM  
RADIATION PHYSICIST, ASSISTANT PROFESSOR, UTDRO  
RMP PHYSICS BREAST SITE LEADER, PMH

INTENSITY-MODULATED RADIATION THERAPY (IMRT) is a technique that improves the quality of radiotherapy delivered, while simultaneously reducing doses to normal tissue like the heart and lung. IMRT has become the standard of practice for whole breast irradiation at PMH. Cardiac-sparing IMRT may reduce the risk of coronary artery disease (CAD). Despite its small risk, CAD is one of the most significant late effects of radiation therapy.

The challenge in adopting these cutting edge cardiac-sparing techniques has been to select those patients receiving left-sided radiotherapy who have a sufficient amount of their heart within the radiation field. To speed up treatment planning, an automated process has been established, thereby reducing planning time from hours to minutes.

Using a “breath-hold” technique that has patients hold their breath for 15–20 seconds during radiation (displacing the heart away from the radiation beam), we have shown that the heart doses can be reduced from 21–53%, and doses to the left anterior descending coronary artery can be reduced by 52–84%. Patients tolerate the technique very well and report no discomfort while using the breath-hold device.

Princess Margaret Hospital’s automated treatment planning process can be used to select patients who will benefit most from cardiac-sparing IMRT, and can significantly reduce the radiation dose to the coronary arteries and the heart. Cardiac-sparing IMRT reduces the risk of CAD.



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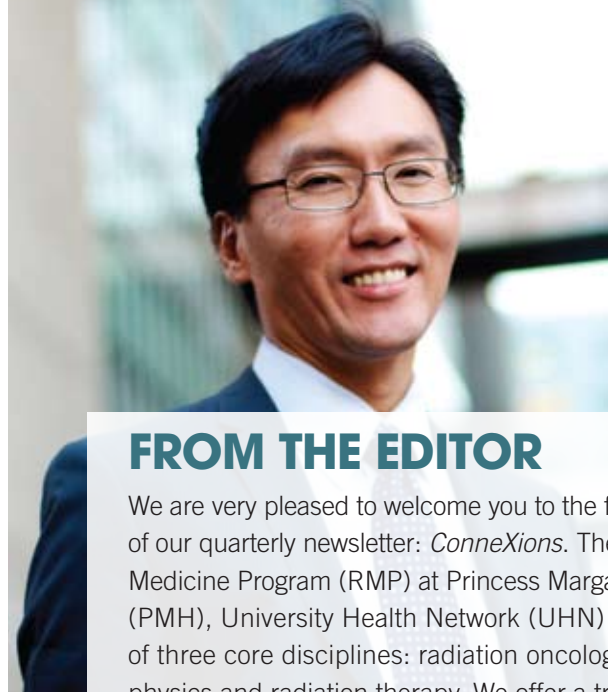
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### IN THE NEXT ISSUE

WE WILL HIGHLIGHT THE  
LUNG STEREOTACTIC BODY  
RADIATION THERAPY (SBRT)  
PROGRAM



## FROM THE EDITOR

We are very pleased to welcome you to the first issue of our quarterly newsletter: *ConneXions*. The Radiation Medicine Program (RMP) at Princess Margaret Hospital (PMH), University Health Network (UHN) is made up of three core disciplines: radiation oncology, radiation physics and radiation therapy. We offer a tremendous array of state-of-the-art radiation therapies, clinical trials and educational programs.

We appreciate that it is not always easy to keep abreast of all the advances within RMP that can benefit your patients. As such, we have created *ConneXions* as a vehicle to communicate with you. We hope *ConneXions* will facilitate your communication with us as well.

In this first issue we highlight the multidisciplinary brain metastasis clinic, a collaborative program with our neurosurgery, neuro-oncology and nursing colleagues at UHN. Each issue of *ConneXions* will also feature one of our clinical care innovations. In this issue, we describe a technical radiation innovation that will help reduce the long-term cardiac side effects in women undergoing curative breast irradiation. Another recurring article will be our 'Did You Know?' feature. We hope that this section will provide you with some insight into the many roles of radiation therapy in the management of cancer patients.

At the end of each issue, we provide information that will assist you in referring your patients to us. We are always available to help you provide the best care for your patients.

DR JOHN KIM MD FRCPC

DR. JOHN KIM IS A RADIATION ONCOLOGIST, ASSISTANT PROFESSOR, UTDRO, AND RMP GI SITE GROUP PHYSICIAN LEADER, PMH

# DID YOU KNOW?

## PALLIATIVE RADIOTHERAPY:

### A HIGHLY EFFECTIVE TOOL IN THE MANAGEMENT OF TUMOUR-RELATED BLEEDING

ANTHONY BRADE MD CM PHD FRCPC  
RADIATION ONCOLOGIST  
ASSISTANT PROFESSOR, UTDRO

BLEEDING IS A FEARED AND TRAUMATIC SYMPTOM for many cancer patients, but it is also one of the most readily palliated by a timely and brief course of radiotherapy. Radiotherapy can reduce or eliminate bleeding in 70–90% of cases.

The Palliative Radiation Oncology Program (PROP) at Princess Margaret Hospital offers a rapid turnaround for patients suffering from a wide array of cancer-related symptoms that require palliative radiation treatment, including tumour-related bleeding. The program aims to see and initiate treatment for patients within 48 hours of referral, and more quickly if necessary.

Radiation therapy can palliate bleeding from many cancers such as lung, head and neck, esophagus, stomach, bladder, cervix, uterus, rectum, anal canal and subcutaneous metastases (e.g. from highly vascular melanomas or renal cell cancers).

To refer patients, please contact Asanda Cheung at 416.946.2130. After-hours referrals can be readily obtained by contacting the radiation oncologist on call through the PMH switchboard at 416.946.2000.



DR. ANTHONY BRADE

# 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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