



Princess Margaret Hospital  
University Health Network

# radiation medicine

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# connexions

## A NEW CURATIVE OPTION FOR PATIENTS WITH INOPERABLE EARLY STAGE LUNG CANCER

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WHILE SURGERY REMAINS THE MAINSTAY FOR PATIENTS WITH EARLY STAGE NON-SMALL CELL LUNG CANCER, an innovative treatment called Stereotactic Body Radiation Therapy (SBRT) being offered at Princess Margaret Hospital is improving treatment outcomes in those cases where surgery is not an option.

Patients with poor lung function or serious co-morbidities may not be fit for surgery or may have greater surgical risks. Traditionally, these patients are considered for radiation therapy (typically to a dose of 50 – 60 Gy delivered over 4 – 6 weeks) in an effort to eradicate the tumour. However, using this type of radiation therapy regimen increases the risk of radiation-related lung damage and has only a moderate success rate. Many patients and their physicians choose observation in early stage (asymptomatic) lung cancer rather than opt for a treatment that may further complicate their breathing. Unfortunately, in these cases, the cancer usually progresses to the incurable and fatal stage fairly rapidly. These patients now have a new curative option in SBRT.

SBRT uses state-of-the-art imaging to delineate the lung tumour and a combination of computerized three-dimensional treatment planning and precise treatment setup to target it. This results in a highly focused radiation treatment. SBRT delivers the same total dose in days instead of the weeks required with traditional radiotherapy and affords high rates of local control (85 – 90%). Lung SBRT is very well tolerated by patients with varying degrees of cardiopulmonary function.

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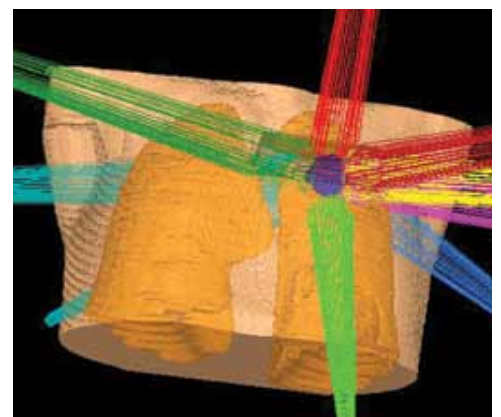
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“I FEEL GREAT! I FEEL LIKE I’VE BEEN GIVEN MY LIFE BACK.” — SUSAN STRATHMAN

## PATIENTS WITH LUNG METASTASES ALSO ELIGIBLE FOR SBRT

Lung SBRT may be an option for patients whose primary disease is controlled but who have a limited number of lung metastases. In these patients, the control of lung metastases may provide prolonged disease-free survival.

### ELIGIBILITY CRITERIA

- Controlled primary tumour.
- Lung metastases, maximum 3, less than 5 cm in size, peripheral in location (away from mediastinal structures, spine, stomach and brachial plexus).
- No other active sites of metastases
- WHO Performance status 0–2
- Reasonable life expectancy (preferably > 12 months).
- In the opinion of responsible oncologist(s), the provision of local control to the lung metastasis is expected to be beneficial in prolonging disease-free survival.
- Previous RT fields, if any, do not preclude delivery of SBRT to current lesion(s).

Potential candidates for SBRT can be discussed with any of the RMP Lung group radiation oncologists.

Referrals can be sent to the attention of the Lung SBRT program, fax 416.946.6561.

### NEW CURATIVE OPTION CONTINUED

In 2005, SUSAN STRATHMAN was diagnosed with two synchronous non-small lung cancers in her right lung, both of which were removed with surgery. Unfortunately, she was diagnosed with a third lung cancer in 2007. Susan was not a candidate for another operation because of her severe asthma and previous lung surgery. Her surgeon referred her to PMH for consultation regarding radiation therapy options where she was seen by Dr. Anthony Brade. Dr. Brade discussed the benefits of lung SBRT with Susan, who elected to proceed with the treatment.

Planning and delivery of any radiation therapy for lung cancer requires accuracy and care, but precision is even more crucial for SBRT where treatment tolerances are measured in millimetres.

From the time Susan was first seen to the end of her treatment, she recalls how attentive the team was: “It seemed like I was the only patient. I felt that [the SBRT team] explained everything to me. They walked me through the treatment and [potential] side effects.” Susan did not experience any side effects during treatment or afterward. “I never felt anything. It was the easiest thing in the world. I can’t believe how smoothly everything went. I was amazed.”

Nine months following lung SBRT, Susan’s tumour was no longer visible on CT scans. She has been closely monitored by the SBRT team and remains cancer-free today, more than three years after treatment.

“I feel great! I feel like I’ve been given my life back.”



SUSAN STRATHMAN

“I NEVER FELT ANYTHING. IT WAS THE EASIEST THING IN THE WORLD. I CAN’T BELIEVE HOW SMOOTHLY EVERYTHING WENT. I WAS AMAZED.” — SUSAN STRATHMAN



DR. ANDREA BEZJAK

DR. JOHN CHO

## Clinical Trials Highlights

# LUNG STEREOTACTIC BODY RADIATION THERAPY (SBRT)

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AT PRINCESS MARGARET HOSPITAL'S RADIATION MEDICINE PROGRAM, we are committed to improving therapy and outcomes through innovative clinical studies. These are some of the trials that are currently open to patients with early stage biopsy-proven non-small cell lung cancer:

### CAN WE SAFELY TREAT EARLY STAGE LUNG CANCER WITH A SINGLE SBRT TREATMENT? PHASE II RANDOMIZED RADIATION THERAPY ONCOLOGY GROUP (RTOG) STUDY

LOCAL PI - JOHN CHO

**Eligible Patients** Those with peripherally located tumours who are not candidates for surgery. Must have early stage cancer (T1-T2aNOMO, tumours less than 5 cm in size).

This multi-centre randomized trial addresses the benefits and side effects of a single SBRT fraction compared to four SBRT fractions.

### CAN WE SAFELY TREAT EARLY STAGE, CENTRALLY LOCATED LUNG CANCER WITH SBRT?

Phase I/II RTOG Study

RTOG and LOCAL PI - ANDREA BEZJAK

**Eligible Patients** Those with centrally located tumours (within 2 cm of the proximal bronchial tree or adjacent to mediastinum) who are not candidates for surgery. Must have early stage cancer (T1-T2aNOMO, tumours less than 5 cm in size).

This multi-centre trial will determine the safest SBRT dose for tumours near mediastinal structures, such as heart, bronchus, great vessels and esophagus.

IS SBRT TREATMENT OF MEDICALLY HIGH RISK EARLY STAGE LUNG CANCER PATIENTS AS GOOD AS SUBLOBAR SURGICAL RESECTION? American College of Surgeons Oncology Group (ACOSOG)/RTOG Phase III Study, open at UHN within next few months

LOCAL PIs - GAIL DARLING AND JOHN CHO

**Eligible Patients** Patients with peripherally located tumours who can tolerate sublobar surgical resection.

This North American-wide cooperative multi-centre trial will compare SBRT to sublobar resection for peripheral early stage lung cancer in borderline operable patients. (Pending UHN Research Ethics Board review.)

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**IN THE NEXT ISSUE**  
PROSTATE BRACHYTHERAPY  
PROGRAM

**IN THIS 'REAL-TIME' CBCT  
PLANNING PROCESS, ONLY  
A SINGLE, 30 - 45 MINUTE  
VISIT TO THE TREATMENT  
UNIT IS REQUIRED.**

## Clinical Care Innovation **FASTER TREATMENT OF PAINFUL BONE METASTASES**

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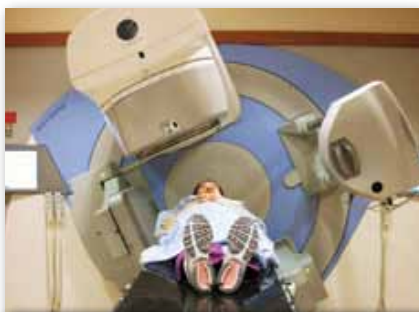
IMPROVING THE QUALITY OF LIFE OF PATIENTS REQUIRING PALLIATIVE TREATMENT IS A PRIORITY AT PRINCESS MARGARET HOSPITAL. As the technology surrounding radiation therapy has evolved, treatment processes have become more complex and can take longer to execute.

Fortunately for bone metastases patients, we have developed an exciting initiative capitalizing on new technology to streamline the radiotherapy planning and treatment process while maintaining high quality standards of care. This novel process hinges on the ability to use images from a Cone Beam Computed Tomography (CBCT) enabled treatment unit for real-time target definition, planning and alignment purposes.

In this 'real-time' CBCT planning process, only a single 30-45 minute visit to the treatment unit is required. In contrast, the conventional process involves an initial visit to the CT-simulator unit for a CT scan, subsequent radiotherapy planning, and then delivery of the radiotherapy prescription on the treatment unit several hours or days later.

The real-time CBCT planning and treatment approach is particularly valuable for patients receiving single fraction of radiotherapy and for those who have significant distances to travel. In a recent clinical study, we have shown that treatment can be delivered faster while maintaining quality and patient satisfaction.

### CONE-BEAM CT IMAGING



### TREATMENT PLANNING



### RADIOTHERAPY DELIVERY



**INTEGRATED PLANNING AND TREATMENT**



## FROM THE EDITOR

Welcome to our Winter/Spring 2011 issue of *ConneXions*, the quarterly Radiation Medicine Program (RMP) Newsletter from Princess Margaret Hospital (PMH).

In this issue, we highlight lung stereotactic body radiation therapy (SBRT). This cutting edge radiation therapy for patients with lung cancer or lung metastases is not only improving patient outcomes, but is allowing us to offer curative radiation therapy to more lung cancer patients.

Radiation therapy plays an important role in the management of bone metastases.

In our 'Did You Know?' feature, you will find useful information on how we can help your patients with this common cancer problem. In a related 'Clinical Care Innovations' article, we describe a novel process available at PMH that expedites radiation treatment for patients with painful bone metastases. At PMH's Radiation Medicine Program we continually strive to develop better radiation treatment programs for your patients.

You can now find *ConneXions* online at [www.radiationatpmh.com](http://www.radiationatpmh.com). To comment, suggest future topics, or to request an electronic version of *ConneXions* instead of a paper copy, please email us at [connexions@rmp.uhn.on.ca](mailto:connexions@rmp.uhn.on.ca).

Dr. John Kim MD FRCP

**DR. JOHN KIM**  
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# DID YOU KNOW?

## BONE METASTASES: PALLIATIVE RADIOTHERAPY PLAYS A KEY ROLE

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PROFESSOR, UTDRO  
RMP PROP SITE GROUP PHYSICIAN LEADER  
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PAIN IS THE MOST COMMONLY REPORTED SYMPTOM ARISING FROM BONE METASTASES. Radiation therapy provides rapid relief of bone pain in 60–70% of patients, with pain lessening sometimes as early as a few days following treatment. Pain relief can often be achieved with a single radiation treatment.

The Palliative Radiation Oncology Program (PROP) at Princess Margaret Hospital offers rapid turnaround for patients suffering from a wide array of cancer related symptoms requiring palliative radiation treatment, including symptomatic bone metastases.

Palliative radiotherapy offers several potential benefits for a patient with bone metastases:

- Pain relief
- Reduced narcotic requirements
- Improved mobility
- Preservation of function
- Reduced risk of pathologic fracture

Short course radiotherapy can also play a critical role in the management of patients with vertebral body metastases and in the prevention of spinal cord compression. Consider referring patients with spinal bone metastases for a consultation with a radiation oncologist, even if their symptoms are controlled with analgesics.

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. REBECCA WONG

# 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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