



LAURA DAWSON MD

Radiation Medicine Program, Princess Margaret Cancer Centre, University Health Network



# radiation medicine

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# connexions

## LIVER SBRT RMP LEADS THE WAY

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LIVER CANCERS HAVE BOTH HIGH MORBIDITY AND MORTALITY RATES. While the incidence of liver cancers is rising, treatment advances are providing new options for both primary and metastatic liver cancers. Princess Margaret Cancer Centre is one of the few centres worldwide offering stereotactic body radiation therapy (SBRT) to liver cancer patients. More than 400 patients have been treated with this therapy with great success.

SBRT is the delivery of several large doses of highly conformal radiation to a tumour while minimizing radiation dose to the surrounding normal tissues. Imaging at the time of treatment (image guided radiotherapy or IGRT) ensures that the treatment is delivered accurately to the intended targets.

Until recently, radiation therapy was not a viable option for patients with liver metastases. Liver resection has been used to cure patients with isolated liver metastases from colorectal cancer. Patients with hepatocellular carcinoma (HCC), the third leading cause of cancer death worldwide, may also be cured following resection or liver transplantation. However, many patients with liver metastases or HCC are not eligible for surgery. Chemotherapy and other systemic therapies can improve survival in these patients, but do not lead to cure on their own.

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## RECOGNITION OF DISTINGUISHED SERVICE

DR. BERNARD CUMMINGS IS AN INTERNATIONAL LEADER IN THE RADIOTHERAPY MANAGEMENT OF GI CANCERS. In 2011, Dr. Cummings was awarded the American Society of Therapeutic Radiology and Oncology (ASTRO) Gold Medal. The ASTRO Gold Medal is the highest professional honour a radiation oncologist can receive.

Dr. Cummings is one of only four Canadians to receive this honour.

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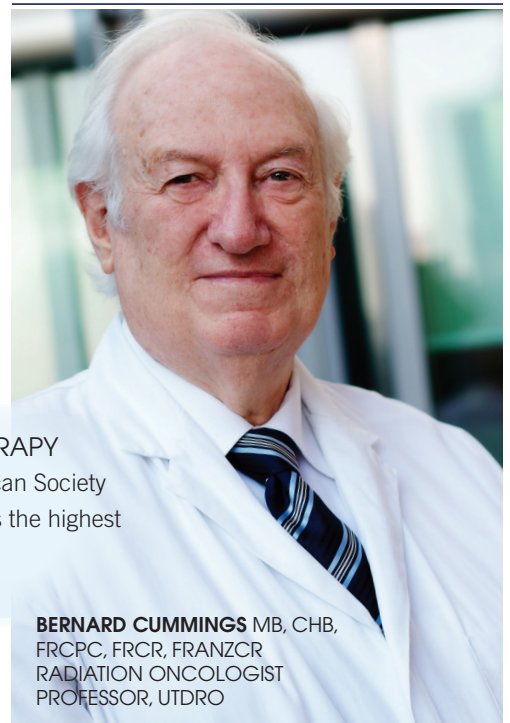
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ELIZABETH KIDYBINSKI

LAURA DAWSON MD

“The best part of my treatment was Dr. Dawson and the radiation team. I continue to have a strong connection with them, and enjoy my follow-up visits now, more than five years after I was treated.

I am thankful that I was a candidate for this therapy.”

— Elizabeth Kidybinski

### LIVER SBRT CONTINUED

Fortunately, advances in radiation technologies, including SBRT, are improving the precision and accuracy of highly conformal radiation delivery making this treatment a viable option for an increasing number of patients with liver cancer.

ELIZABETH KIDYBINSKI was diagnosed with breast cancer in 1994 and with unresectable liver metastases in 2000. Despite several hormonal therapies, her liver metastases progressed in 2005. She was treated with SBRT (54 Gy in 6 fractions) on a phase-I study and had a complete response, with no evidence of cancer for four years. In 2009, new liver metastases developed and Ms. Kidybinski has been on intermittent chemotherapy since. “Patients should not be afraid to try new therapies. Having metastatic cancer does not mean you should give up on enjoying life.”

Unlike surgery, invasion of cancer into major vascular structures is not a contraindication to SBRT, and HCC patients with major vascular invasion are excellent candidates for SBRT provided they do not have contraindications to radiation. In general, SBRT is not combined with systemic therapy; a good time to consider its use is between courses of chemotherapy.

#### IDEAL HCC PATIENTS FOR SBRT

- No known extrahepatic cancer
- Not suitable for surgery or radiofrequency ablation
- Intact liver function (Child Pugh A)
- > 40% of the liver uninvolved by cancer
- < 3 liver tumors
- Maximal diameter < 8 cm
- Tumor > 1.5 cm from stomach or bowel.

#### IDEAL LIVER METASTASES PATIENTS FOR SBRT

- Liver metastases from colorectal cancer, breast cancer, melanoma, or other cancer where risk of extrahepatic cancer is low
- No known extrahepatic cancer
- Not suitable for surgery
- Intact liver function (Child Pugh A)
- > 40% of the liver uninvolved by cancer
- < 3 liver tumors
- Maximal diameter < 6 cm
- Tumor > 1.5 cm from stomach or bowel.

#### CONTRAINDICATIONS TO LIVER SBRT

- Impaired liver function (Child Pugh C)
- Liver enzymes > 6 x ULN
- Platelet count < 50 000 (x 10<sup>9</sup>/L)
- < 700 cc of non tumor liver
- > 80% of liver involved with cancer
- > 5 liver tumors
- Maximal diameter > 10 cm (metastases)
- Maximal diameter > 15 cm (HCC)
- Ongoing or planned chemotherapy
- Extrahepatic cancer
- Other life threatening medical co-morbidities

## Clinical Trials Highlights

# REDUCING SIDE-EFFECTS

## FOR PATIENTS WITH GASTROINTESTINAL CANCERS

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HEALTH POLICY MANAGEMENT & EVALUATION



GASTROINTESTINAL CANCERS OCCUR FROM THE “TOP TO TAIL” OF A PATIENT, WHICH MEANS THAT MANY HEALTHY ORGANS MAY BE CLOSE TO CANCEROUS TUMOURS. Limiting the radiation exposure of these healthy organs can reduce both short-term and late onset side-effects for cancer survivors. The gastrointestinal site group at The Princess Margaret has made it a priority to provide long-term follow-up to treated patients, and to address survivorship concerns both on an individual basis, and through specific studies. Clinical trials that are aimed at maintaining or improving cancer control and reducing side effects are an important aspect of our GI program. The list below highlights some current and upcoming clinical trials:

### ADJUVANT RADIO-CHEMOTHERAPY FOR STOMACH CANCER

Phase II Clinical Trial

PI – Jolie Ringash

**Eligible Patients:** Those with completely resected stomach cancer at risk for recurrence (at least T2, or node positive).

This trial aims to show that the delivery of intense chemotherapy concurrently with radiation increases the efficacy of the radiotherapy dose. Additionally side-effects may be reduced by delivering the chemotherapy by continuous infusion, and by using radiation techniques that limit the exposure of healthy organs.

### INTENSITY-MODULATED RADIATION THERAPY (IMRT) FOR ANAL AND PERIANAL CANCERS

Prospective Cohort Study  
PI – John Kim

**Eligible Patients:** Those with squamous cell carcinoma limited to the anal canal and nearby lymph nodes.

Radiation therapy, given with concurrent chemotherapy, is the primary curative management for patients with anal and perianal cancers. This study is evaluating the tumour control outcomes, side effects and quality of life in this cohort of patients.

## HIGHLIGHTS OF UPCOMING RANDOMIZED TRIALS

The GI Site Group intends to open two international randomized trials in 2013 pending regulatory review. The first trial will compare outcomes after radiation plus sorafenib versus sorafenib alone in patients with hepatocellular cancer (PI – Laura Dawson). The second trial will compare perioperative chemotherapy plus radiation versus perioperative chemotherapy alone in patients with gastric or gastroesophageal cancer (Canadian PI – Rebecca Wong). Look for updates in future *conneXions*.

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## Clinical Care Innovation

# PELVIC INTENSITY-MODULATED RADIATION THERAPY (IMRT) FOR PELVIC GI CANCERS

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RADIATION THERAPIST, PLANNER

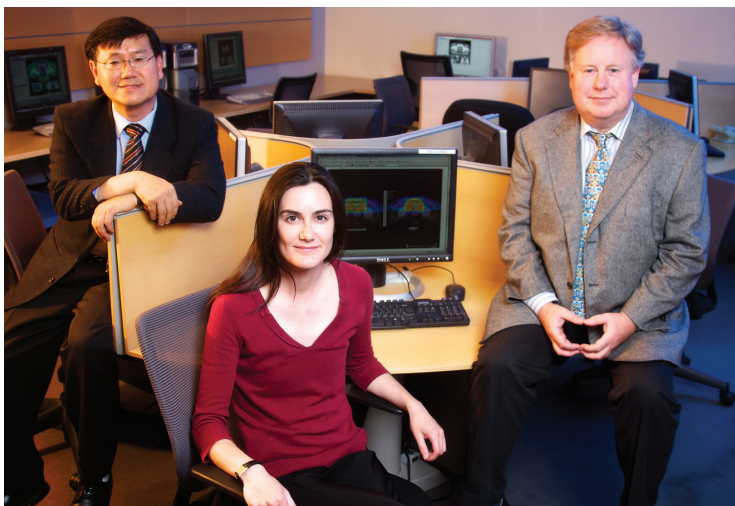
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RADIATION PHYSICIST; ASSISTANT PROFESSOR, UTDRO  
PHYSICS LOWER GI SITE GROUP LEADER

PELVIC RADIOTHERAPY, GENERALLY COMBINED WITH CHEMOTHERAPY, PLAYS AN IMPORTANT ROLE IN THE MANAGEMENT OF GASTROINTESTINAL CANCERS.

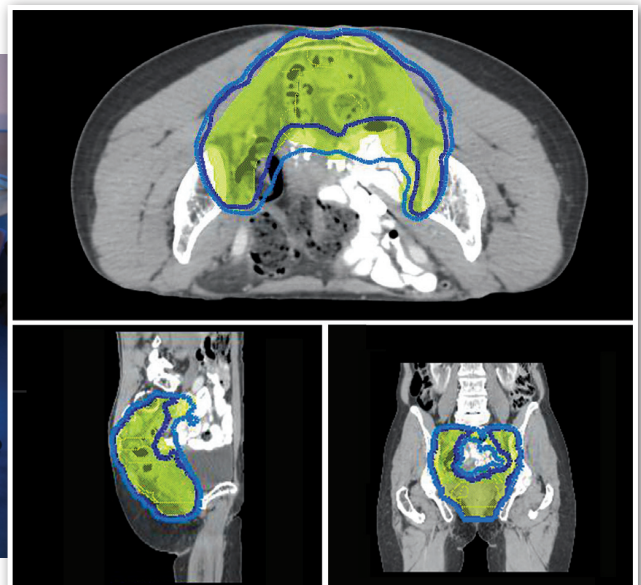
Patients with rectal cancer usually receive radiotherapy before surgery to reduce their risk of recurrence. For the rarer anal cancer, higher dose radio-chemotherapy is often curative, and preserves anal function by allowing the patient to avoid surgery. Intensity Modulated Radiation Therapy (IMRT) together with Image Guided Radiotherapy (IGRT) is considered the standard of care for anal and rectal cancers at Princess Margaret. Moreover, toxicity and effectiveness data are prospectively collected on all patients so that the value of these techniques can be shared with the medical community.

Advances in radiation techniques have the potential to reduce toxicity and improve outcome. IMRT uses computer-aided planning to produce an improved three-dimensional radiation dose distribution. This makes IMRT especially suitable for treating complex shapes and avoiding tissues sensitive to radiation. For example, in the case of anal cancer, IMRT lowers dose to the surrounding skin, reducing acute dermatitis, a side effect that can result in treatment delays that may compromise outcome.

It is important to verify that a complex IMRT plan is delivered as prescribed everyday. At Princess Margaret, this verification is achieved through the routine use of IGRT. This technique uses 3-dimensional images taken daily to ensure accurate set up. Improved set-up accuracy allows a smaller volume of normal tissue to be treated and can further reduce toxicity.



TONY LAM MRT(T), PATRICIA LINDSAY PhD, JAMES BRIERLEY MB



Pelvic IMRT for rectal cancer: Radiation doses (lines) are shown conforming to a complex 3-d target (shaded). All doses are not shown.



## radiation medicine

### connexions

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**IN THE NEXT ISSUE**  
PERSONALIZED CARE FOR  
WOMEN WITH BREAST  
CANCER



## FROM THE EDITOR

Welcome back to *conneXions*, the newsletter of the Radiation Medicine Program (RMP) at Princess Margaret Cancer Centre. Gastrointestinal (GI) malignancies include a number of cancers, each distinct in their presentation, clinical behaviour and response to therapy. Radiation therapy plays a critical role in the multidisciplinary management of many GI cancers. Patients with GI cancers may be treated with radiation as primary therapy, pre- or post-operatively and palliatively. In this issue we highlight a number of innovative treatment options for patients.

Radiation therapy to the liver is a new treatment option, offered in only a few centres around the world, including Princess Margaret. Dr. Laura Dawson provides national and international leadership in liver stereotactic body radiation therapy (SBRT), a treatment she describes in this issue. Our Clinical Care Innovations article describes the unique implementation of intensity-modulated radiation therapy (IMRT) for pelvic cancers.

At the end of this and every issue of *conneXions*, you will find helpful information about how to refer your patients to us. For patients who cannot easily come to Princess Margaret, our 'Did you know?' feature provides some useful information about the Ontario Telemedicine Network and the UHN Telehealth service. Radiation oncology consults can be provided through this service.

You can find *conneXions* online at [radiationatpmh.com](http://radiationatpmh.com). We welcome your comments and suggestions – drop us an email at [connexions@rmp.uhn.on.ca](mailto:connexions@rmp.uhn.on.ca).

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# DID YOU KNOW ?

## TELEMEDICINE CONSULTATIONS: CONVENIENT AND PATIENT-CENTRED

**RICHARD TSANG MD, FRCPC**  
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PROFESSOR, UTDRO

PATIENTS WHO LIVE OUTSIDE THE GREATER TORONTO AREA CAN NOW ACCESS LIVE, VIRTUAL VIDEO CONSULTATIONS WITH CONSULTING PHYSICIANS AT PRINCESS MARGARET CANCER CENTRE, UHN.

Refer your patients for a virtual consultation when:

- You are unsure if your patient can benefit from radiation therapy
- You would like a second opinion
- You would like to enquire about possible clinical trial participation
- Your patient has transportation problems and lives far from Toronto

Requests for a virtual consultation via Telemedicine can be made as a regular referral, but specifying a virtual consultation is preferred. UHN Telehealth staff will contact your patient to arrange the appointment.

To attend the consultation, patients will visit their local healthcare facility where they will use a secure video/audio link to see and speak with a consulting radiation oncologist.

It is important that you remember to send relevant clinical notes, pathology reports, and imaging studies to the consulting physicians before your patient's appointment.

After the virtual appointment, the consulting physician will write to the referring and family physician regarding the outcome and recommendations.

This service of the Ontario Telemedicine Network is available in 80 communities throughout the province and is also available to out-of-province patients.



RICHARD TSANG MD

# HOW TO FIND US FOR YOUR REFERRALS

We offer three ways to facilitate your requests for consultation:

**1. Our New Online Referral Guide Direct to Radiation Oncology**

Visit *Healthcare Professionals at radiationatpmh.com*

**2. Site Group Coordinators**

Designated Site Group Coordinators serve as a liaison for referring physicians, radiation oncologists, and the Princess Margaret Patient Referral Centre.

**3. The Princess Margaret Patient Referral Centre:**

T: 416.946.4575  
F: 416.946.2900

**Palliative Patients** The Palliative Radiation Oncology Program (PROP) directs all palliative referral patients to our PROP Coordinator at 416.946.2130. Within 24 hours, she will arrange an appointment. Patients will be seen within a few days.

**Emergencies** For patients requiring same-day consultations (e.g. spinal cord compression), please contact our PROP referral coordinator at 416.946.2130 who will identify the radiation oncologist best able to respond to your requests.

**After-Hour Requests** Please page the radiation oncologist on call through the switchboard at 416.946.2000.

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