

2014 ANNUAL REPORT



RADIATION MEDICINE PROGRAM



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VISION

To be the leading Radiation Medicine Program in the world

MISSION

To provide exemplary radiation medicine patient care, through research and education in partnership with our patients and our community

GUIDING PRINCIPLES

Excel in all areas

Lead advanced practice and new models of care

Transform quality and safety

Lead innovation

Operational excellence in program delivery

System leadership *via* active outreach and partnerships

MESSAGE FROM THE CHIEF

The Radiation Medicine Program (RMP) at the Princess Margaret Cancer Centre aims to achieve global impact as the premier Radiation Medicine Program in the world. Since assuming my role as Chief of RMP in August 2012, RMP has continued its trajectory of increasing excellence, innovation, and leadership in the realms of patient-centred care, research, and education.

I am pleased to share with you the 2014 Annual Report for RMP, which provides a high-level overview of our recent achievements and progress on the 2011-2015 strategic plan, *Moral Obligation to Innovate*, which has paved the foundation for our pursuit of improving patient care and outcome through innovations in research, education, clinical practice, and system operations.

2014 was another banner year for RMP, full of growth and progress. We recorded the highest number of radiation courses delivered in the recent decade. We welcomed new staff and leadership. We developed innovative approaches to treat patients and improve care through research and system improvements. We strengthened existing partnerships and established new ones that will have a lasting and positive impact for our program and patients. These are just a glimpse of all the outstanding activities over the past year. In 2014, RMP unfortunately lost one of its finest radiation oncologists and visionary leaders, Dr. Pamela Catton, who was a creative force in innovations in cancer education. Her impact will continue to reverberate through the generations of radiation medicine professionals who strive to advocate for the highest quality of interprofessional care for our patients.

The pages ahead showcase the important work conducted by our multiprofessional team comprising of over 350 staff, which collectively enables us to deliver high quality care and excellent patient experience. As Chief, I am proud to be working alongside such dedicated and talented people who share a common vision and passion for delivering world-class personalized radiation medicine. Thank you to everyone within RMP for continually pushing the boundaries of innovation. Together, we are on track to transform radiation medicine care for our cancer patients.



A handwritten signature in black ink that reads "F Liu".

Fei-Fei Liu, MD, FRCPC

Chief, Radiation Medicine Program, Princess Margaret Cancer Centre
Head, Department of Radiation Oncology, University Health Network

PROGRAM OVERVIEW

The Radiation Medicine Program at the Princess Margaret Cancer Centre is the largest radiation treatment centre in Canada, and one of the largest single-site treatment facilities in the world. The program is comprised of over 350 staff, organized by three core disciplines of radiation oncology, radiation physics, and radiation therapy (RT), which are supported by various clinical, research, administrative, and technical support staff. It is well outfitted with state-of-the-art equipment and technology that facilitate high precision and high quality care for our patients, treating over 8,000 cancer patients every year. Our interprofessional team of world-renowned radiation oncologists, physicists, therapists, and nurses support the assessment, planning, treatment,

and follow-up care for common, rare, and complex cancers.

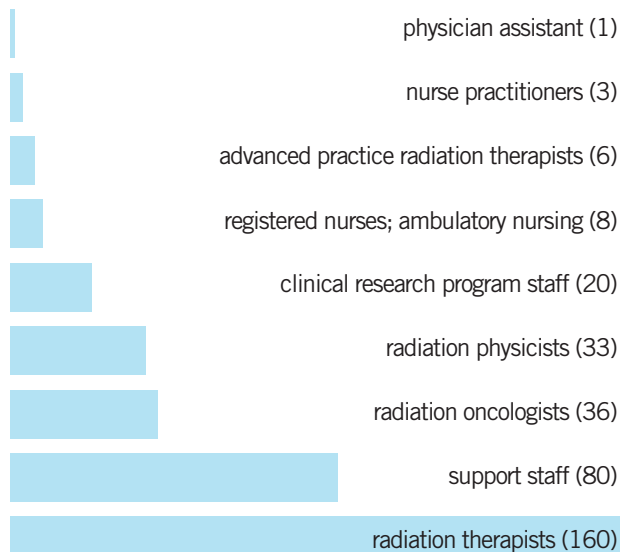
RMP continues to be a major driver for the establishment of the Princess Margaret as a world-class cancer organization, anchored by our program's strategic goals to:

- Excel in all areas of clinical practice, research, and education
- Lead advanced practice and new models of care by anticipating future developments in healthcare
- Transform quality and safety for patients and staff by communicating effectively and partnering with patients

- Lead innovation through discovery and deployment of new practices and technology
- Achieve operational excellence in program delivery by proactively responding to patient experiences
- Provide system leadership *via* active outreach and partnerships to ensure dissemination of best practices

These goals are central to our quest to achieve global impact as the premier Radiation Medicine Program in the world, by advancing best practices in radiation medicine through innovative research and education, as well as the dissemination of cutting-edge, novel radiation practices and technologies.

INTERPROFESSIONAL TEAM

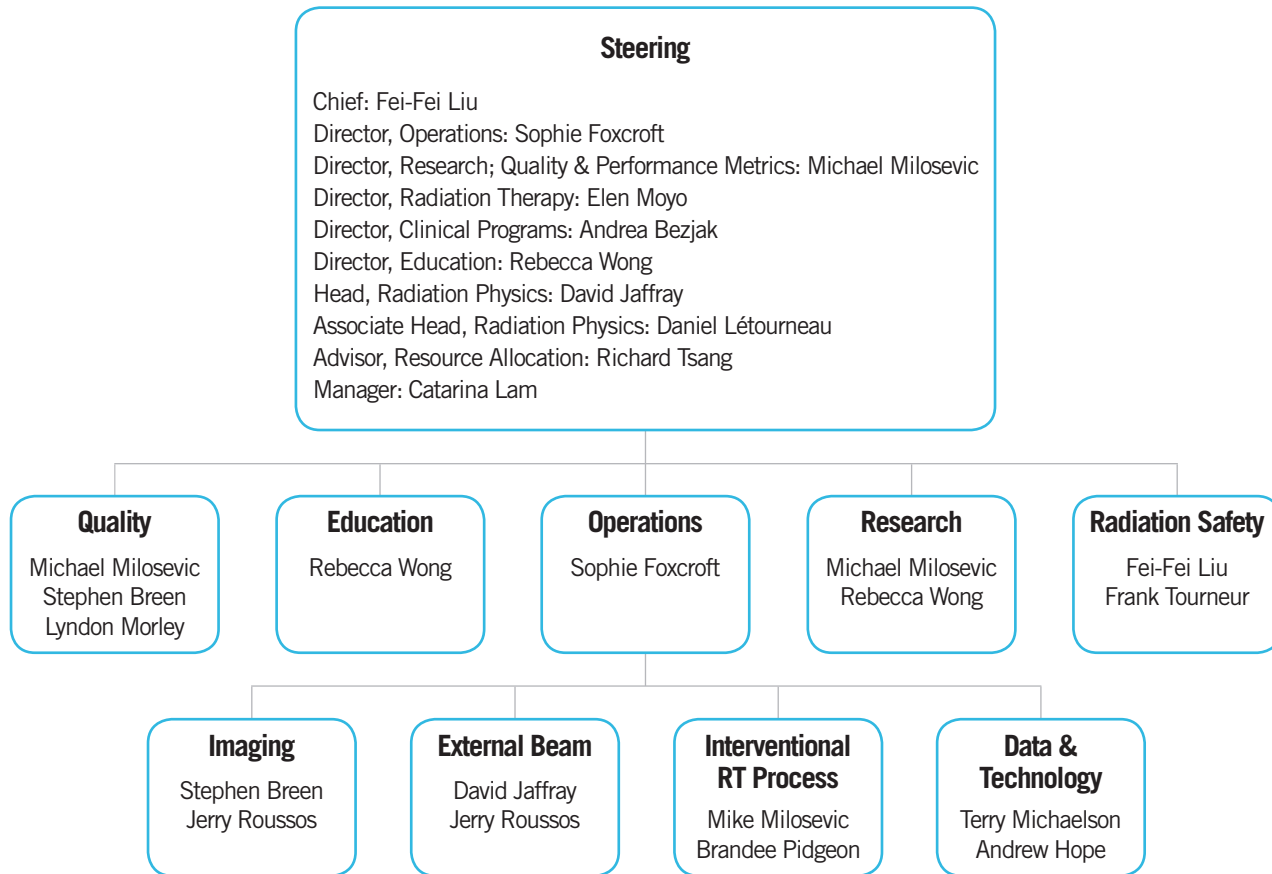


STATE-OF-THE-ART FACILITY

16	LINACs, HDR, PDR
2	Gamma Knife Perfexion units
4	CT Simulators (1 with PET)
1	MR Simulator (3T)
1	Orthovoltage/Superficial X-ray unit
	Brachytherapy: HDR (GYN, lung, esophagus, prostate), PDR (GYN, penile), and manual (eye, prostate)
	Magnetic Resonance Guided Radiation Therapy (MRgRT) Suite

*2014 fiscal year statistics for RMP

PROGRAM STRUCTURE



RMP promotes a strong focus on research, education, and a commitment to individualized, patient-centred care. Under the leadership of Dr. Fei-Fei Liu, the program's Chief, the RMP Steering Committee leads an effort to strengthen the program's operational infrastructure and develop a long-term strategy for radiation medicine within the context of Corporate Strategies and Priority Programs. The Steering Committee defines the principles of operation, and policies of governance for the management of various clinical, quality assurance & safety, research, educational, operational, and IT activities within RMP, which are also represented by sub-committees. The Chairs or Co-Chairs of each sub-committee are denoted above.

2014: THE YEAR IN NUMBERS

A snapshot of what 2014 looked like for RMP, by the numbers.



8219
patient consultations



45.7 million
peer-reviewed funding

10,383
radiation treatment courses



206
peer-reviewed publications



80.5%
of cases within Referral to Consult wait time target



190
prospective research protocols

89.4%
of cases within Ready-to-Treat to Treat wait time target

58 radiation oncology residents

24 radiation oncology fellows

4 radiation physics residents

49 medical radiation sciences students



100%
of all 103 Accreditation Canada quality & safety criteria met



45 observers

from **15** countries



100%
patient satisfaction rate with experience at RMP



CLINICAL CARE

The Radiation Medicine Program provides consultations for patients with all cancer diagnoses, recommends treatment approaches, delivers safe and effective radiation treatments, and offers ongoing follow-up care. Our clinical practice is integrated into four multidisciplinary Super Teams comprised of anatomically-related tumour Site Groups that have developed evidence-based treatment protocols. To further guide decisions on the role, indications, and benefits of radiation therapy in individual circumstances, specialized programs have also been established within RMP. Together, our interprofessional team works collaboratively to assess, plan, and deliver personalized clinical care that treats disease and supports wellness and healing at all stages of each patient's cancer journey.

TUMOUR SITE GROUPS

Breast
Central nervous system (CNS) & eye
Endocrine
Gastrointestinal (GI)
Genitourinary (GU)
Gynecological (GYN)
Head & neck
Lung
Lymphoma & myeloma
Melanoma & skin
Sarcoma

SPECIALIZED PROGRAMS

Gamma Knife Radiosurgery Program
Image-Guided Brachytherapy Program
Oligometastases Program
Palliative Radiation Oncology Program (PROP)
Pediatric Radiation Therapy Program
Stereotactic Radiation Therapy Program

HIGHLIGHTS

Leadership appointments

Elen Moyo was appointed as the Director of Radiation Therapy, succeeding Julie Wenz, who held this position for 15.5 years and Lue-Ann Swanson, who served as the Interim Director for 10 months.

Dr. David Hodgson was appointed as the Princess Margaret Pediatrics Radiation Oncology Site Group Leader, succeeding Dr. Normand Laperrriere, who held this position for over 10 years.

Dr. Anne Koch was appointed as the Princess Margaret Breast Radiation Oncology Site Group Leader, succeeding Dr. Anthony Fyles, who held this position for the last 9 years.

Dr. Jolie Ringash served as the Interim PROP Site Group Leader in 2014, as Dr. Rebecca Wong stepped down after a successful 10-year leadership term.

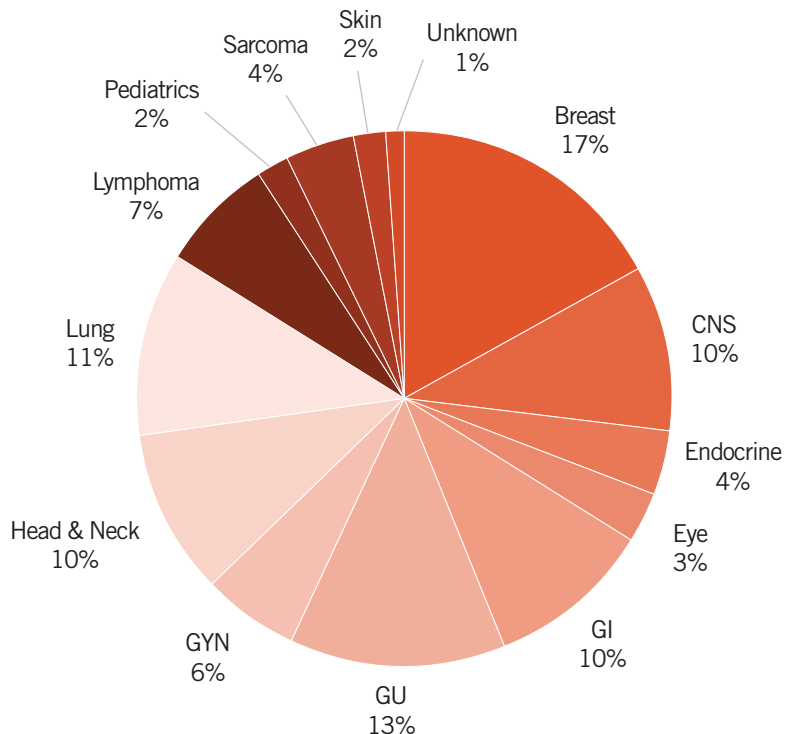
New recruits

Dr. Scott Bratman was appointed as Staff Radiation Oncologist – Clinician Scientist in September 2014 with a clinical and research focus on head and neck cancers.

SUPER TEAMS

Team 1	Head & neck, endocrine, skin, eye
Team 2	Lung, breast, upper GI
Team 3	GU, GYN, lower GI
Team 4	CNS, lymphoma, leukemia, sarcoma, pediatrics, palliative

In fiscal year 2014, RMP provided 8219 patient consultations (up 0.4% from 2013) and delivered 10,383 courses of radiation treatment (up 1.3% from 2013). The number of visits to the Radiation Nursing Clinic (RNC), which provides nursing care to patients during the course of their treatment, was also higher in 2014 at 6,671 visits (up 7.0% from 2013).



Patient consults by site for 2014

2014 CLINICAL ACTIVITY

8219

Consultations (new & returning)

10,383

Radiation treatment courses

6,671

Radiation Nursing Clinic visits

**2014 fiscal year statistics for RMP*

RMP records highest number of radiation courses in a decade

RMP successfully delivered 10,383 courses of radiation therapy in fiscal year 2014, achieving its highest number ever in the recent decade.

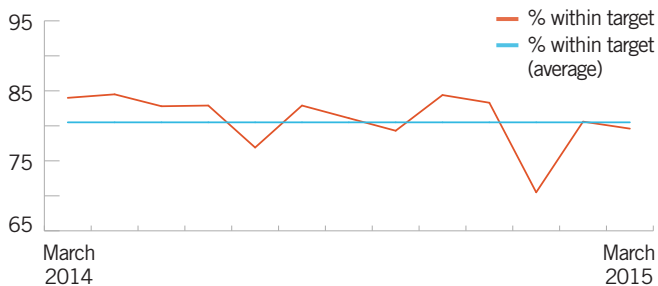
In recognition of this accomplishment, the RMP Steering Committee hosted a celebration lunch as an opportunity to thank all RMP staff for their hard work. The event was well attended by around 350 people, and appreciated by the front-line staff.



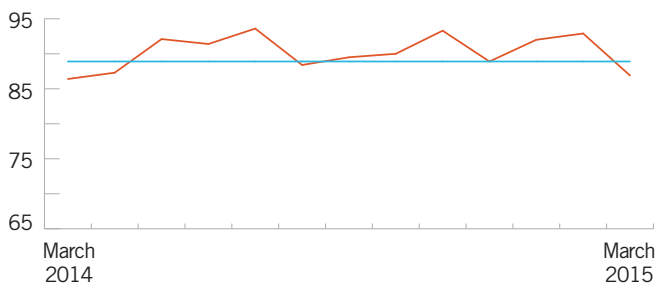
ACCESS TO TREATMENT

Ensuring timely access to care is a high priority for RMP. “Referral to Consult” and “Ready-to-Treat to Treat” are two wait time metrics that are tracked both internally, and also provincially by Cancer Care Ontario (CCO). The provincial target for Referral to Consult was recently increased in April 2014 to 85% of new cases to be seen within 14 days. This has provided a performance improvement goal for RMP; our average wait time for 2014 was 80.5%, meeting the previous target of 80% and slightly above last year’s average of 79.7%. It is important to note that it is not always appropriate to meet the 14-day timeline as there are valid reasons for delaying a patient’s consultation and avoiding unnecessary visits. RMP is actively monitoring the causes of delays in order to rationalize which were unavoidable and to identify and mitigate causes of unnecessary delays. Ready-to-Treat to Treat cases are stratified according to urgency: 14 days for standard, 7 days for urgent, and 1 day for emergency cases. Our 2014 Ready-to-Treat to Treat average of 89.4% exceeded the provincial target of 87% for new cases to start within 1/7/14 days based on urgency category.

Referral to Consult for all sites (% within 14-day target)



Ready-to-Treat to Treatment for all sites (% within target)



HIGHLIGHTS

Clinical Specialist Radiation Therapists: An innovative model of care

RMP has participated in the Ontario Ministry of Health and Long-Term Care’s Clinical Specialist Radiation Therapist (CSRT) project since its inception in 2007. This innovative project aims to improve patient care through the province-wide creation of advanced practice roles in radiation therapy; 24 CSRTs flourish in 10 Ontario cancer centres as of 2014. These positions combine expert clinical, technical, and academic skills to provide leadership in the advancement of radiation therapy practice. In 2014, RMP added a new advanced practice position to its existing academic complement of 5 CSRTs. Andrea Marshall is the new Advanced Practice Radiation Therapist (APRT) in Adaptive Radiation Therapy for thorax and upper GI.

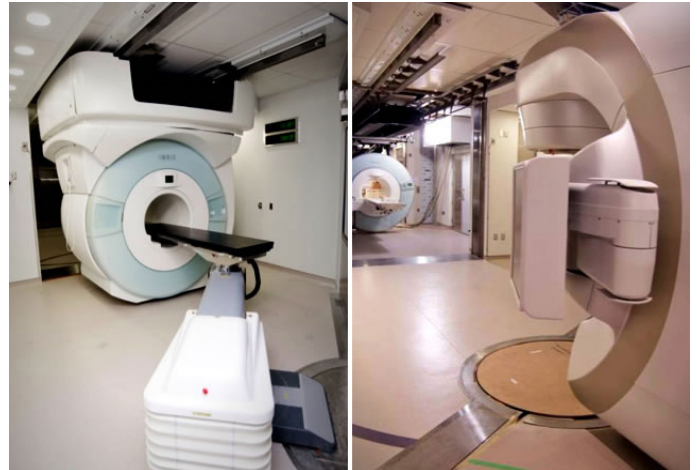


Top row (left to right): Biu Chan, Kitty Chan, Grace Lee (CSRTs)
Bottom row (left to right): Michelle Lau (CSRT), Vickie Kong (CSRT), Andrea Marshall (APRT)

HIGHLIGHTS

World's first Magnetic Resonance Guided Radiation Therapy facility

The construction of the Magnetic Resonance Guided Radiation Therapy (MRgRT) suite housed on level 2B in the Princess Margaret was completed in 2014. This innovative facility, the first in the world, merges the imaging capabilities of a full-strength (1.5 T) open bore MR imaging device on rails with state-of-the-art radiation therapy devices. The MRI will move between a linear accelerator and a High Dose Rate brachytherapy suite. A tremendous amount of effort has been invested to ensure the implementation of appropriate MR safety training, safety charter, and governance to assure safe and efficient MRgRT treatments for our cancer patients.



Ensuring equity in global access to radiation therapy

The establishment of a new international Global Task Force on Radiotherapy for Cancer Control (GTFRCC) was officially announced in February 2014 at the Princess Margaret. Spearheaded by Dr. Mary Gospodarowicz as President of the Union for International Cancer Control (2012-2014), the GTFRCC aims to evaluate the gap in radiotherapy worldwide to raise awareness and improve access, particularly in lower- and middle-income countries; ultimately, reducing the global cancer burden. The GTFRCC currently has 90 members representing 30 countries, including Dr. David Jaffray, who is leading the GTFRCC Secretariat, as well as Drs. Michael Milosevic, Brian O'Sullivan, Miller MacPherson and Danielle Rodin, who are part of the Toronto Operations group.



RMP staff recognized for involvement in Cancer Care Ontario Community of Practice

RMP staff continued to be actively engaged in various Communities of Practice (CoPs) facilitated by the CCO Radiation Treatment Program in fiscal year 2014, generously volunteering their time to advance the quality and access of radiotherapy services in Ontario. Many of our staff have participated in these CoPs for numerous years, and have been integral to the development of various recommendation reports, toolkits, and other deliverables. This is an extremely important and valuable undertaking, as RMP strives to share and disseminate the best radiotherapy practices for the patients of Ontario. In recognition of our staff's excellent work, CCO sent each CoP member an appreciation letter highlighting their important contributions in 2014.

Gynecological Cancers CoP	Michael Milosevic (lead) Kitty Chan (lead) Anthony Fyles (member) Marco Carlone (member)	Lung CoP	Andrea Marshall (lead) Alexander Sun (member) Jean-Pierre Bissonnette (member) Petula Seco (member) Sidney Phung (member)
Head & Neck Cancer CoP	John Kim (lead) Stephen Breen (lead) Andrea McNiven (lead) Lorella Divanbeigi (lead) Lily Chau (lead) John Waldron (member) Natassia Naccarato (member)	Physics CoP	Harald Keller (member)
		Radiation Therapy CoP	Natassia Naccarato (member)

Dr. John Waldron nominated for Gerald Kirsh Humanitarian Award

Dr. John Waldron was nominated for the 2014 Gerald Kirsh Humanitarian Award by a grateful cancer patient. The award recognizes the exemplary and compassionate patient care provided by staff and volunteers at the Princess Margaret.



.....

“... [Dr. Waldron’s] ability to set patients and their families at ease is a very special gift. To be able to convey what is the worst possible news a family wants to hear, in a clear and positive way is not ordinary. [He] never hides the truth, but presents the facts with an authority of optimism and positive belief. What he offers is the very strong realization that so long as there is treatment, there is hope. Nothing can be more reassuring than this.”

Cancer patient

QUALITY AND SAFETY

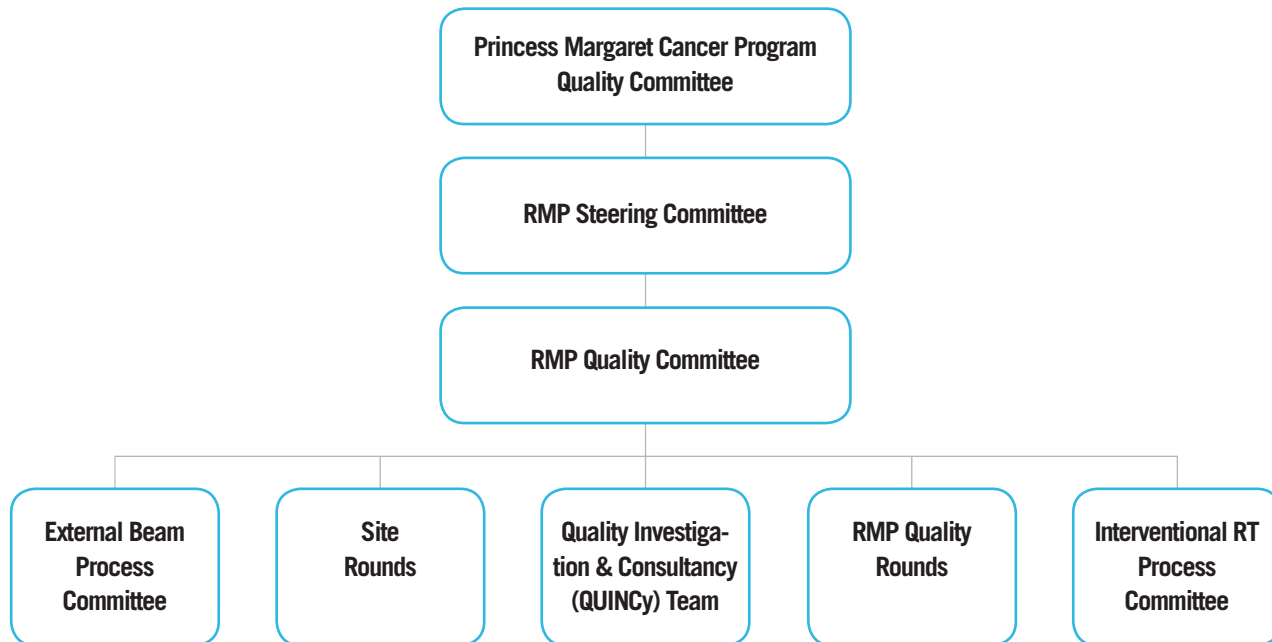
The robust RMP Quality Program monitors equipment, software, and processes to ensure that they operate safely, guaranteeing that each patient's treatment strikes a critical balance between personalization and consistency of practice. Our quality conformance standards aim to exceed national and international guidelines.

The former RMP Quality Committee and RMP Quality Assurance Monitoring Committee were merged in 2014 to form the current RMP Quality Committee (QC).

The RMP QC oversees an effective and efficient quality management program for the department covering the following four domains:

1. **Quality Assurance and Compliance**, aimed at identifying and managing compliance with a variety of standards, guidelines, and key indicators related to RMP quality and safety.
2. **Quality Education**, aimed at improving quality and safety competence through education.

3. **Incident Learning**, aimed at developing and managing an incident learning system that includes reporting, investigation and analysis, and system improvement.
4. **Quality Control and Improvement**, aimed at managing radiation treatment quality control processes and supporting continuous quality improvement.



RMP Quality of Care Reporting Structure
(in accordance with the Quality of Care Information Protection Act)

QUALITY ASSURANCE & COMPLIANCE ACTIVITIES

Every year, the RMP QC conducts a self-assessment of program quality assurance utilizing the Canadian Partnership for Quality Radiotherapy Quality Assurance Guideline, which includes 45 Key Quality Indicators (KQIs). In 2014, RMP achieved a 91% compliance rate (full or acceptable compliance with 41 out of 45 KQIs). Recommendations have been made to address the 4 unmet KQIs.

In 2014, the University Health Network (UHN) participated in Accreditation Canada's Qmentum Accreditation Program as part of the ongoing process of quality improvement in its programs, policies, and practices. UHN was accredited with Exemplary Standing, attaining the highest level of performance and excellence in meeting Accreditation Canada requirements for quality and safety in the domains of leadership, governance, clinical programs, and services. Following a rigorous on-site evaluation process, RMP was deemed to have met 100% of all 103 criteria. RMP was identified as one of two key programs that contribute to the success of the Princess Margaret Cancer Program. The accreditor noted our commendable attention to quality, and delivery of patient-centred interdisciplinary care, while promoting innovation, as well as supporting our talented staff.

.....

“... [RMP staff members] are always looking at ways to exceed expectations. They truly exemplify the quality and safety journey ...”

“... RMP is truly a multidisciplinary team ...”

“... [RMP] is to be commended on providing a philosophy of patient-centred care. This was confirmed during the [on-site] interviews with patients and families, [where they] indicated that they were well informed about their diagnosis and treatment plans; that at all times they were treated with respect and dignity and that their needs, questions and concerns were addressed in a caring and timely manner ...”

Accreditation Canada's accreditor

Innovative features of RMP's Quality and Safety Program

Incident Learning System

RMP's comprehensive, systematic radiotherapy incident learning system based on the Canadian Patient Safety Institute (CPSI) Incident Analysis Framework streamlines incident and near-miss reporting, as well as rapid investigation and analysis, ultimately ensuring the highest level of safety for our cancer patients. Its practice has been disseminated across Canada and globally, positioning Ontario as a leader in radiotherapy incident management and learning.

Quality Investigation and Consultancy (QUINCY) team

RMP's QUINCY team acts as a resource for multidisciplinary investigation and analysis of selected events reported to the RMP incident reporting system. The interprofessional membership of 17 radiation oncologists, physicists, and therapists has extensive training in incident policies and investigational procedures.

Treatment Plan Peer-Review Program

RMP has supported a robust in-house peer-review program since April 2011; a quality control and team learning activity, which is being reported by Cancer Care Ontario in 2015. The current CCO target is set at 60% of all radical courses to be peer-reviewed before or within 5 days of starting treatment. The rate of peer-review within RMP for radical cases has been averaging 80% since July 2012.

A key element of radiotherapy quality assurance is learning from incidents (patient safety events that reach patients) and near-misses (events that do not reach patients) to address causative factors and prevent recurrence. RMP's incident learning system based on the CPSI Framework is a successful incident and near-miss reporting program stemming from a culture of open communication and safety. Its high rate of reporting provides ample learning opportunities for system and programmatic performance improvements. The RMP QC reviews all incidents to ensure that investigation, analysis, and any remedial actions have been completed. In calendar year 2014, incident and near-miss rates of 0.49% and 2.2% of patients treated were reported, respectively. 244 action items related to incident investigation were generated, 83% have been completed to date. A summary of treatment incidents that occurred in 2014 is shown below.



AQUA team awarded Cancer Quality Council of Ontario's Innovation Honourable Mention

The AQUA (Automated Quality Assurance) system is an innovative end-to-end software platform that centralizes and manages all quality control activities related to RT equipment in real-time; thus ensuring high quality RT delivery and safety for our cancer patients. In 2014, the multidisciplinary AQUA team (Jim Pearce, Matthew Bergshoeff, Kevin Wang, Paul Homer, Phyliss Lee, Gavin Disney, Igor Svistoun, Bern Norrlinger, Jason Smale, Mohammad Islam, Robert Heaton, Stephen Breen) led by Drs. Daniel Létourneau and David Jaffray was awarded Honourable Mention for Innovation by Cancer Quality Council of Ontario. The Award, sponsored by CCO and the Ontario Division of the Canadian Cancer Society, recognizes initiatives that have made significant contributions to quality or innovation in the delivery of cancer care across the province. Due to AQUA's clinical success as a quality management system, the software is being commercialized for worldwide market roll-out by the Princess Margaret and Acumyn Inc., its spin-off company, in collaboration with Elekta Inc.; ultimately benefiting RT clinics and cancer patients on a local, regional, national, and global scale.

Left to right: Kevin Wang, Jim Pearce, Daniel Létourneau, David Jaffray, Matthew Bergshoeff, Varsha Devulapalli

Severity	Actual Incident	Near Miss
Critical: Incident occurred that resulted in death, near death or permanent harm.	0	0
Severe: Incident occurred that required an intervention necessary to sustain life, or may have contributed to permanent harm and/or prolonged hospitalization.	0	0
Moderate: Incident occurred that resulted in temporary loss of function or temporary harm requiring medical intervention. Incident did not result in prolonged hospitalization.	0	0
Minor: Incident occurred that reached the person(s) and caused minor harm or no harm.	36	0
Near-miss/potentially severe: Incident occurred, but did not reach any person(s). Reach would have resulted in a severe or critical incident.	0	0
Near-miss: Incident occurred, but did not reach any person(s).	0	150

HIGHLIGHTS

Head and Neck Cancer Survivorship Program accredited as a Canadian Leading Practice

The Princess Margaret Head and Neck Cancer (HNC) Survivorship Program, led by Dr. Jolie Ringash and Maurene McQuestion, supports an integrated philosophy of survivorship care for HNC patients, family, and caregivers. Few cancer centres offer survivorship resources across the spectrum of care from the time of diagnosis through treatment to long-term follow up, which are tailored to this specialized patient group, making the HNC Survivorship Program unique in the world. It is also the only program that is directly integrated longitudinally within the hospital's existing HNC clinic and team. In 2014, the innovative Survivorship Program was recognized by Accreditation Canada as a Leading Practice and was commended for its exceptional leadership and extraordinary interdisciplinary efforts of the involved nurses, physicians, patients, families, scientists, allied health specialists, and community partners to deliver high quality service for HNC patients and families.



Jolie Ringash and Maurene McQuestion

RMP innovates to improve CT simulation efficiency, quality, and safety

Under the guidance of Jerry Roussos, Radiation Therapy Practice Leader, computed tomography (CT) simulation radiation therapists identified various opportunities to enhance practice quality and safety through staff training, protocol revisions, and process coordination. The booking guidelines and appointment lengths for different procedures across the disease site groups were reviewed and streamlined to improve efficiency. This led to a 17.5% increase in CT simulation capacity per year, generating an additional 96 appointment slots per month. In 2014, RMP also went paperless to address delays associated with retrieval of patient consents in time for CT simulation. A pilot study to utilize mobile devices for e-consenting was undertaken, demonstrating significant benefits including enhanced ease of use, legibility, instant accessibility to data, no lost consents, and time savings for staff. Program-wide implementation of e-consenting has commenced in 2015.



Top row (left to right): Fionna Li-Cheung, Jenny Tam, Patrick Darcy, John Hsein, Millie Wong, Christine Carlone, Nelissa Chaudhry, Derek Chan
Bottom row (left to right): Joanna McCusker, Sherrill Archer, Michelle Mendoza, Uzma Awan, Frederick Cops

RESEARCH

The Radiation Medicine Program is a world-leader in radiation research aimed at improving the treatment of patients with cancer. Research within RMP spans the four professional disciplines of radiation oncology, radiation physics, radiation therapy, and nursing. Individuals in each discipline are nationally and internationally recognized for research excellence.

The RMP research program encompasses the full spectrum of radiation research, ranging from basic biologic studies through translation biology and physics, to clinical trials, health services, and education research. The overarching objective is the development of personalized cancer medicine approaches to cure more patients with fewer side effects. Our research program was re-organized in 2014 to focus on high priority research themes, with clear lines of accountability. There are now three main Personalized Cancer Medicine themes, which are highly integrated and closely aligned with the Princess Margaret Cancer Program, University Health Network, and University of Toronto Department of Radiation Oncology (UTDRO) research platforms:

- 1. Personalized Adaptive Radiotherapy**, including anatomic and biological targeting and adaptation to the changing state of the tumour during treatment; the use of novel molecular therapeutics in combination with radiotherapy; plus blood, tissue, and imaging biomarker discovery.
- 2. Personalized Stereotactic Radiotherapy to Cure Metastatic Cancer**, including stereotactic body radiotherapy (SBRT) to target metastases; molecular-targeted therapeutics in combination with radiotherapy; and biomarker discovery.
- 3. Regenerative Radiation Medicine**, including stem cell tissue regeneration; reversal of fibrosis; and the prevention and management of side effects in patients.

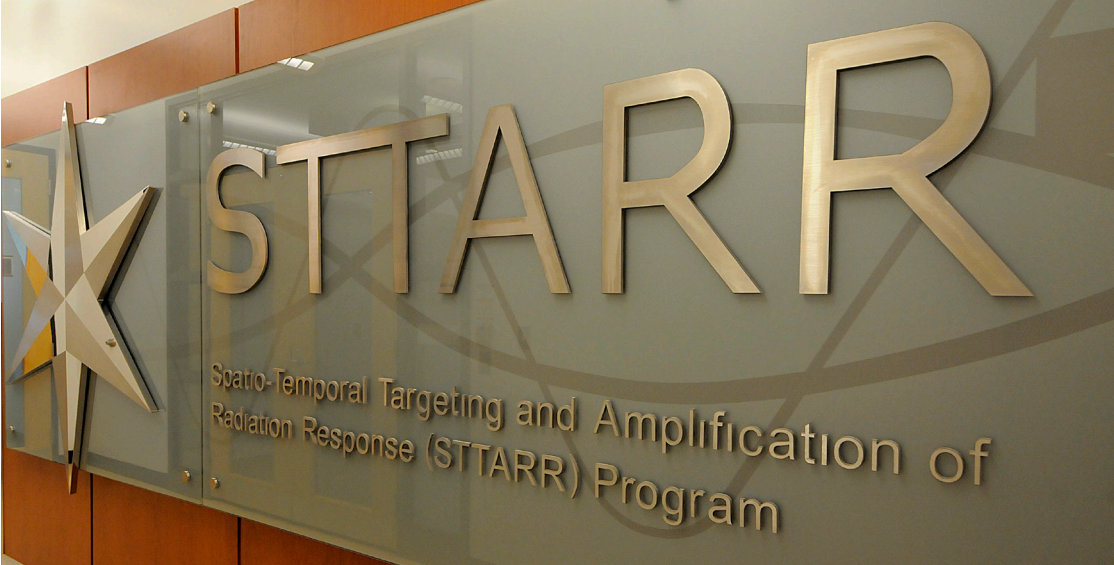
Strong collaborations currently exist with academic and industry-based research groups within UHN, as well as external groups locally, nationally, and internationally.

In 2014, RMP hosted its first program-wide Research Workshop, led by Dr. Michael Milosevic. Discussions focused on the current state of RMP's Personalized Cancer Medicine research initiatives and strategic development for achieving maximal impact. Speakers included Drs. David Jaffray ("Key Enablers"), Jean-Pierre Bissonnette ("RMP Adaptive Clinical Stream: Lung"), Thomas Purdie ("RMP Adaptive Research Stream: Breast"), Mary Gospodarowicz ("Personalized Medicine Campaign"), Ken Yip ("Regenerative Radiation Medicine Program"), Caroline Chung ("Brain Oncology Program"), and Rebecca Wong ("Oligometastasis Program"). The high level of attendance and discussions emanating from the workshop reflected a strong programmatic interest to learn and engage in RMP's innovative research initiatives. Future opportunities to foster research collaborations and the exchange of ideas have been implemented for 2015.

HIGHLIGHTS

Radiation therapy research output exceeds total output for the UK

RMP radiation therapists (160 FTE) were highly productive in 2014, publishing 28 peer-reviewed articles, with five in journals with an impact factor over 4.5. In comparison, a recent audit of research capacity amongst 45 RT clinics across the UK reported that radiation therapists (1,580 FTE) published a total of 27 peer-reviewed articles in 2014; the largest number of publications by any one centre was five. The outstanding research performance of RMP's radiation therapists is a testament to the program's continuous efforts to promote a positive research culture, thereby enhancing research capacity within all of its radiation medicine disciplines.



Research at the STARR Innovation Centre

The STARR (Spatio-Temporal Targeting and Amplification of Radiation Response Program; www.starr.ca) Innovation Centre provides a platform for cutting-edge multidisciplinary research. It houses a collection of advanced preclinical imaging equipment, contrast agent development, image analysis methods, and medical devices integrated with correlative pathology to drive bench-to-bedside translational research in radiation oncology. To date, STARR has conducted approximately 450 preclinical imaging studies since October 2007 for UHN and the surrounding research community. In fiscal year 2014, STARR provided research support for 70 new projects from various internal and external organizations, including the Princess Margaret, Techna, and University of Toronto. It also supported research stemming from grants totaling over \$29 million, which involved various RMP members.

STARR provides core research support for the Terry Fox Hypoxia Program co-led by Drs. Robert Bristow and Bradly Wouters, which includes developing novel methods to analyze digital pathology images from patients' tumours, as well as patient-derived xenograft models. Employing machine learning image software, the amount of hypoxia (low oxygen content) in pancreatic tumours can now be accurately quantified. Projects led by RMP staff, Drs. Bristow, Michael Milosevic and David Jaffray, have resulted in the development of an algorithm that can identify and count hypoxic cells in the stromal and epithelial regions of tumours. Dr. Milosevic is also working towards improving the effectiveness of radio-chemotherapy (RT-CT) for cervical cancer by assessing the combined treatment of Plerixafor (a mobilizing agent/chemokine inhibitor) and standard RT-CT on primary tumour control and the development of metastases.

2014 RESEARCH PRODUCTIVITY

\$45.7 million

Annual peer-reviewed funding

\$1.1 million

Annual industry funding

146

Peer-reviewed grants

206

Peer-reviewed publications

378

Active clinical studies

190

Active prospective clinical research protocols

10.9%

New patients accrued to prospective clinical research studies

2

Patents filed

6

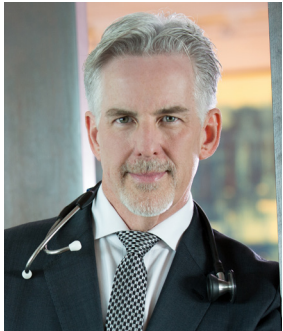
Radiotherapy products licensed to industry

**2014 calendar year statistics for RMP*



Radiation before surgery more than doubles mesothelioma survival

Dr. John Cho published a landmark study in the *Journal of Thoracic Oncology* (doi: 10.1097/JTO.000000000000078), which reported that mesothelioma patients treated with pre-operative radiation therapy achieved a more than 2-fold improvement in their 3-year survival rate (72% vs. 32%), compared to patients treated with surgery first. Completed over four years with 25 mesothelioma patients who had radiation therapy at the Princess Margaret, this Phase I/II study assessed a new approach dubbed SMART (Surgery for Mesothelioma After Radiation Therapy), wherein participants experienced shorter treatment, fewer complications, and speedier recovery, ultimately improving their quality of life and potential survival.



Personalized genetic test to predict prostate cancer recurrence

In a ground-breaking study published in *Lancet Oncology* (doi: 10.1016/S1470-2045(14)71021-6), Dr. Robert Bristow and his team evaluated the role that prostate cancer cell genetics and tumour microenvironment play in predicting successful treatment with radiotherapy. Analysis of pre-treatment tumour biopsies for genetic aberrations and oxygen content revealed that patients whose tumours had similar clinical characteristics could be further subdivided into those that would, or would not, do well with precision radiotherapy. Men with low levels of genetic changes had a favorable outcome; therapy would be effective more than 95% of the time. Men with aggressive features characterized by high levels of genetic aberrations and hypoxia had a 50% chance that the treatment would fail to control the tumour. These findings will be validated on more patients before a personalized test to accurately predict prostate cancer recurrence can be utilized in the clinic. Dr. Bristow's landmark study was also selected as one of the Canadian Cancer Society's top 10 research stories of 2014.



High fidelity simulation-based training in radiation therapy

Dr. Jean-Pierre Bissonnette was awarded a 2-year Ontario Ministry of Health and Long-Term Care-supported SIM-one Grant (2014-2016; \$24,964) as Principal Investigator. His innovative project, entitled "High Fidelity Simulation-Based Training in Radiation Therapy: Attitudes and Behaviours Towards Safety in Radiation Therapy", will help advance simulated learning in radiation medicine education for the benefit of patient care and patient safety. Co-Investigators include Drs. Brian Keller, Ewa Szumacher, Pamela Catton, Brian Liszewski, and Lisa Di Prospero.



MRI detects breast cancer early in at-risk survivors of pediatric Hodgkin lymphoma

Dr. David Hodgson led the largest clinical study to evaluate the efficacy of breast cancer screening on female survivors of childhood Hodgkin lymphoma (HL), who are at increased risk of breast cancer due to chest radiotherapy treatment. Published in *Cancer* (doi: 10.1002/cncr.28747), this high impact study demonstrated that screening with breast magnetic resonance imaging detected invasive breast tumours at early stages when cure rates are expected to be high. The findings underscored the need for high-risk pediatric HL survivors and primary care physicians to be mindful of established guidelines that recommend breast MRI screening from the age of 25 years or 8 years after chest radiation, whichever is later.

\$6.6-million investment for hypoxia-directed precision cancer medicine

Drs. Robert Bristow and Bradly Wouters received \$6.6 million from the Terry Fox New Frontiers Program to support the Princess Margaret Hypoxia Program, which has been continuously funded for 15 years, initially led by Dr. Richard Hill. The new Hypoxia Program is designed as a pipeline for expediting translational medicine. It will further the understanding of the molecular basis underlying hypoxia in tumours, the discovery of new therapeutic strategies in relevant animal models, and ultimately, the implementation of hypoxia-directed therapies within the clinic. Other Lead Project members of this team from RMP include Drs. Michael Milosevic, Anthony Fyles, and David Jaffray, who will be conducting innovative research to develop new and more personalized treatments in radiation medicine.



EDUCATION

The Radiation Medicine Program fosters a culture of continuous learning by developing education courses and programs on emerging best practices, technologies, and models of care in radiation medicine. RMP education programs span the continuum of professional learning; providing education and training at the undergraduate, graduate, and post-graduate levels *via* collaborations with our affiliated educational partners (notably University of Toronto, Ryerson University, York University, and Michener Institute), as well as through the provision of clinical training for residents, fellows, and radiation medicine professionals in a supportive interprofessional environment. The continued growth of our virtual learning platform has also enabled the development and delivery of educational curricula to peers beyond the walls of our own program.

As a fully affiliated teaching hospital of the University of Toronto, RMP has many staff who are faculty members at the Department of Radiation Oncology. Thus, RMP's educational portfolio is closely aligned and integrated with UTDRO's undergraduate, graduate, and post-graduate programs, providing educational expertise, infrastructure (e.g. space, administrative support), and faculty, supporting the central education mandate of the university. Our staff also provides training of residents and fellows from external institutions, as well as Masters and PhD students from graduate programs within the Institute of Health Policy, Management and Evaluation, Dalla Lana School of Public Health, Lawrence S. Bloomberg Faculty of Nursing, Institute of Medical Science, and Department of Medical Biophysics at the University of Toronto.

DIVERSE LEARNERS

Undergraduate

- 2 Canadian Radiation Oncology Foundation students
- 49 BSc Medical Radiation Sciences students
- 42 Undergraduate Medical Education students

Graduate

- 17 Excellence in Radiation Research for the 21st Century (EIRR21) scholars
- 4 MHS Medical Radiation Sciences students

Postgraduate

- 4 Radiation physics residents
- 58 Radiation oncology residents
- 24 Radiation oncology clinical fellows

Continuing Education

- 88 Accelerated Education Program students (4 courses)
- 45 Observers

**2014 calendar year statistics for RMP*

Dr. Pamela Catton awarded Margaret Hay Edwards Achievement Medal

Dr. Pamela Catton was the recipient of the 2014 Margaret Hay Edwards Achievement Medal from the American Association for Cancer Education in honour of her sustained outstanding contributions to cancer education. The award recognized her significant involvement within the broad spectrum of cancer education, ranging from initiatives targeting our interprofessional therapists, physicists, and radiation oncologists, to survivors and the public.



HIGHLIGHTS

Personalized Learning Program in Radiation Medicine

RMP established the framework for the Personalized Learning Program (PLP) in Radiation Medicine in 2014, under the leadership of Drs. Meredith Giuliani and Rebecca Wong. The PLP is a 6-12 month intensive observership experience designed to address the practical learning needs of radiation medicine healthcare professionals from around the world, offering exemplary education in advanced radiotherapy practice and delivery. The first cohort of PLP scholars, Drs. Run-Ye Wu and Ning-Ning Lu from Beijing, China started in January 2015.



Left to right: Bernard Cummings, Fei-Fei Liu, Meredith Giuliani, Run-Ye Wu, Ning-Ning Lu, Emily Milne, Laura Dawson, Rebecca Wong

RMP provides rich learning opportunities through its innovative continuing education initiatives. As global leaders in clinical practice, research, and education, RMP actively disseminates its knowledge and best practices so that quality care is made available to all patients within our community and worldwide. To date, learners from over 30 countries have participated in RMP's continuing

professional development activities.

The RMP Observership Program hosts a wide variety of learners from external programs and institutions upon request. In 2014, RMP hosted 45 visitors from 15 countries across the globe.

RMP also organizes weekly RMP Academic Rounds and monthly joint UTDRO Rounds, which showcase

the exceptional academic activities of RMP faculty within a scholarly and interprofessional environment. These rounds, which are video-conferenced to other radiation medicine programs across Ontario, are aimed at raising the standard of knowledge and practice in radiation medicine. Every year, a RMP Summer Seminar Series is also organized to provide opportunities for staff to think “outside the box” of discipline-specific perspectives, and further enhance faculty development. The theme of the 2014 Summer Seminar Series focused on “Excellence in the Patient Experience”. The seminar series was comprised of an exciting roster of internationally recognized speakers (e.g. experts from the fields of patient relations, healthcare education, industry, management, and external healthcare institutions) who excel in patient satisfaction, and stimulated discussions on how healthcare professionals can enhance patient experiences in a cancer healthcare setting.

GLOBAL LEARNING NETWORK



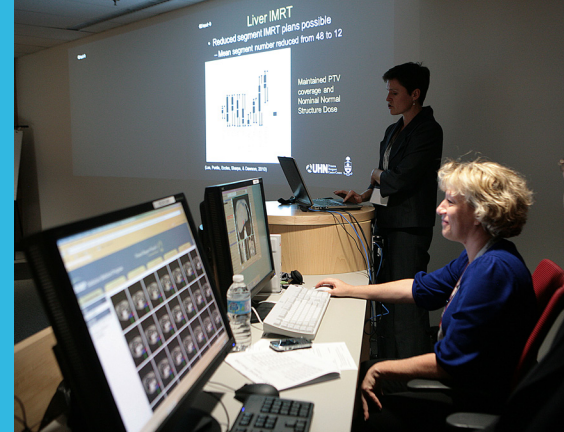
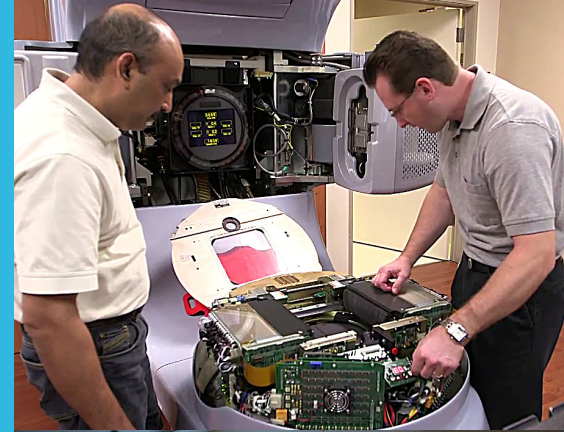
Accelerated Education Program: Putting innovation to work

The Accelerated Education Program (AEP; www.aepeducation.ca) is a continuing education platform for radiation medicine professionals aiming to keep pace with the rapid advances in the field of radiation oncology. The AEP offers dynamic educational programs promoting the integration of emerging technologies and the creation of innovative workplace models for radiation professionals. To date, AEP has developed and delivered award-winning, highly interactive and interdisciplinary educational courses, established high-tech live and virtual educational environments, and amassed a rich collection of digital assets, including an e-learning website, patient engagement videos, simulation software tutorials, and webinars, to name a few.

In 2014, AEP launched AEP Online (www.aepeducationonline.ca), an open access e-learning website that currently offers two e-learning modules: (1) image-guided radiation therapy, and (2) quality & safety for the general radiation medicine audience. The AEP YouTube channel (www.youtube.com/AEPeducation) was launched in March 2014 and has proven to be a very accessible modality for the distribution of educational materials. By the end of 2014, the highly-trafficked site boasted 14 videos and 26 subscribers with over 1,100 hits and ~3500 minutes of viewing. AEP further enhanced its online presence in 2014 by successfully streaming three webinar sessions from various live course offerings. These broadcasts reached a total of 242 live virtual registrants, and have received nearly 1,000 views on AEP's YouTube

channel.

Accelerating the adoption of clinical innovations cannot be successfully accomplished by healthcare professionals alone. Patient and public engagement is also essential. In collaboration with the Canadian Partnership for Quality Radiotherapy and the ELLICSR Health, Wellness and Survivorship Centre at the Princess Margaret, AEP successfully delivered its first patient engagement and empowerment workshop entitled "For Me with Me: A Forum for People Touched by Cancer" in May 2014. A total of 45 patient attendees participated in this highly impactful event; with more than 90% agreeing that the event met their expectations and the content was relevant, helpful, and informative. AEP also developed a series of Radiation Therapy Patient Education Videos, including seven individual modules that describe the patient experience from simulation to treatment and beyond at the Princess Margaret; accessible on the AEP YouTube channel.



AEP members awarded for excellence in course coordination

Drs. Pamela Catton, David Jaffray, and Nicole Harnett received the Colin R. Woolf Award for Excellence in Course Coordination from the Faculty of Medicine at the University of Toronto, in recognition of their sustained excellence of the RMP Accelerated Education Program, which provides continuing professional development opportunities for radiation medicine professionals.



Nicole Harnett, Dimitri Anastakis, Pamela Catton

Textbook on research for the radiation therapist – a Canadian first

Nicole Harnett and Caitlin Gillan have co-edited a new textbook entitled *Research for the Radiation Therapist: From Question to Culture*, the first of its kind in Canada. The book addresses a critical gap in the research-specific instructional literature available to radiation therapists in Canada. Sixty radiation therapy experts and students from RMP and across the country contributed to the book, which provides a context for radiation therapy research and covers important topics such as ethics, survey methodologies, and research culture. The book is now available from Amazon and the University of Toronto Bookstore.



Floortje Brus, Caitlin Gillan, Dana Al-Qinneh

Head and Neck Site Group strengthens international partnership with Kuwait

Drs. Meredith Giuliani, Michael Holwell, and Andrea McNiven from the Head and Neck (HN) Site Group delivered a successful three-day HN IMRT workshop at the Kuwait Cancer Control Centre (KCCC) in 2014. A Kuwait-specific program, based on RMP's innovative Accelerated Education Program courses in HN IGRT and IMRT, was developed jointly with the KCCC radiation team. The well-attended workshop (>50 interprofessional and interdisciplinary participants) offered a dynamic mixture of didactic lectures and hands-on practical training, covering topics such as radiation nomenclature, modern contouring, and planning techniques, which proved to be an excellent opportunity to share clinical experiences and strengthen educational partnerships with KCCC.



Eugene Yu, Michael Holwell, Meredith Giuliani, Andrea McNiven

Educating the leaders of tomorrow

Dr. Danielle Rodin, a radiation oncology resident at the Princess Margaret, has been working with the Union for International Cancer Control on the Global Task Force on Radiotherapy for Cancer Control (GTFRCC) to develop an investment framework to provide equity in global access to radiation therapy. During her residency, Dr. Rodin spearheaded the establishment of an online community called GlobalRT (www.globalrt.org), an initiative of the GTFRCC Young Leaders Program, to provide a platform for education, exchange, and action regarding radiotherapy in cancer treatment. GlobalRT is a flourishing movement led by young leaders to turn radiotherapy into a global health priority to ensure comprehensive, equitable cancer care for all.



First PhD radiation therapist graduates in Ontario

Dr. Michael Velec successfully defended his PhD thesis entitled “Deformable Dose Reconstruction to Optimize the Planning and Delivery of Liver Cancer Radiotherapy” from the Institute of Medical Science, University of Toronto (supervisor: Dr. Kristy Brock). Dr. Tara Rosewall also defended her PhD thesis entitled “Reconstructing Radiotherapy Dose to the Functional Bladder Tissue: Technique Development, Influential Factors and Associations with Chronic Urinary Toxicity” from Charles Sturt University (Australia) under the supervision of Dr. Michael Milosevic. Drs. Velec and Rosewall are the first two radiation therapists to obtain a PhD degree in Ontario.

Leadership appointments

Dr. Rebecca Wong was appointed as the Director of RMP Education in 2014.

Dr. Peter Chung was appointed as the Director of the UTDRO Clinical Fellowship Program, succeeding Dr. Charles Catton who led the Fellowship Program for the past 12 years.

Dr. Meredith Giuliani was appointed as the Acting Director of Cancer Education at the Princess Margaret to continue to implement and enrich the Education Strategy developed by Dr. Pamela Catton.

PEOPLE

RMP's richest resource is its people. With a team of over 350 radiation specialists, the program is fortunate to have a diverse pool of talent to increase RMP's capacity to deliver on its vision to achieve global impact as the premier Radiation Medicine Program in the world. In 2014, the Radiation Medicine Program continued to exhibit excellence, innovation, and leadership in patient-centred care, research, and education, exemplified by the high level of productivity and achievements of our RMP staff.

AWARDS

Dr. Mary Gospodarowicz awarded ASTRO Gold Medal for recognition of distinguished service

Dr. Mary Gospodarowicz was awarded the American Society for Radiation Oncology (ASTRO) Gold Medal, the Society's highest honour, in 2014. The ASTRO Gold Medal recognizes individuals who have made exceptional contributions and impact within the field of radiation oncology through their research, clinical care, teaching, and service. Dr. Gospodarowicz is only the 5th Canadian to receive the ASTRO Gold Medal. Previous recipients include Drs. Bernard Cummings (2011), Bill Rider (1986), Harold Johns (1980), and Vera Peters (1979), all from the Princess Margaret.

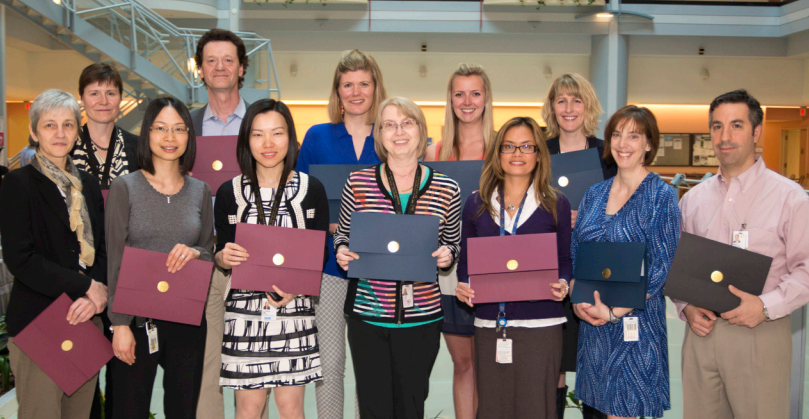


Tara Rosewall, Winnie Li, Annette Sperduti, Andrea Marshall

Radiation therapists nominated for UHN Allied Health Professions Recognition Awards

The UHN Allied Health Professions Recognition Awards recognize staff members or teams who have demonstrated excellence in education, innovation, leadership, mentorship, patient-centred care, professional practice, and research. 2014 was the first year that radiation therapy was invited to take part. Congratulations to the following radiation therapists on their nominations:

- Nominated for the Innovation Category: Winnie Li
- Nominated for the Leadership Category: Andrea Marshall, Tara Rosewall, Sophie Huang
- Nominated for the Mentorship Category: Tara Rosewall
- Nominated for the Patient-Centred Care Category: Annette Sperduti



RMP celebrates the accomplishments of its staff and trainees

The 2014 RMP Education and Research Awards event recognized members who have made significant contributions to the program's education and research portfolios through exceptional leadership, commitment, and/or innovation.

Robert Bristow	Research Productivity - Radiation Oncology
Young-Bin Cho	Research Productivity - Radiation Physics
Catarina Lam	Research Productivity - Radiation Therapy
Laura Dawson	Most Influential Research Publication
Peter Chung	Top Clinical Trial Accrual Investigator Award
Melania Pintilie, Lucy Lu, Grace Lee, Terry Michaelson	Exceptional Research Support
Marissa Tang Fong	Research Leadership Award
Robert Bristow	Best RMP Rounds
Pamela Catton	Excellence in Radiation Medicine Educational Teaching
Caitlin Gillan	Distinction in Education Research and Leadership
Colleen Young, Tina Papadakos, Emily Milne	Champion in Patient and Family Education
Laura Dawson	AEP Highest Overall Average Teaching Effectiveness Score
Marco Carlone	AEP "Putting Innovation to Work" Award

Notable External Awards

Pamela Catton	Survivorship Abstract Award, Canadian Association of Radiation Oncology (CARO)
Meredith Giuliani	Best Abstract in Survivorship Award, CARO
Jolie Ringash	Survivorship Award, CARO
Laura Dawson	Book Prize for Best Poster in Clinical Care and Epidemiology, CARO
Pamela Catton	Individual Teaching Excellence Award, Wightman-Berris Academy
Brian O'Sullivan	Best of ASTRO Award, American Society for Radiation Oncology (ASTRO)
Sophie Huang	Best of ASTRO Award, ASTRO
Jolie Ringash	Best of ASTRO Award, ASTRO
Nafisha Lalani	Best of ASTRO Award, ASTRO
Adam Gladwish	Resident Abstract Award - Digital Poster Discussion in Physics Category, ASTRO
Winnie Li	Outstanding Reviewer Award, Journal of Medical Imaging and Radiation Sciences
Caitlin Gillan, Meredith Giuliani, Olive Wong, Nicole Harnett, Emily Milne, Douglas Moseley, Robert Thompson, Pamela Catton, Jean-Pierre Bissonnette	E.I. Hood Award, Canadian Association of Medical Radiation Technologists
Adam Gladwish	Trainee Research Prize in Resident Category, Radiological Society of North America
John Waldron	Medical Radiation Sciences Program - Best Guest Lecturer Award, University of Toronto, Department of Radiation Oncology (UTDRO)
Robert Case	Medical Radiation Sciences Program - Excellence in Classroom Teaching Award, UTDRO

Notable External Awards (continued)

Caroline Chung, Padraig Warde	Master of Health Science in Medical Radiation Sciences – Best Guest Lecturer Award, UTDRO
Anthony Fyles	Postgraduate Advocacy & Mentorship Award, UTDRO
Andrew Hope	Postgraduate Medical Education - Excellence in Research Supervision Award, UTDRO
Pamela Catton	Cummings Education Leadership Award, UTDRO
David Jaffray	Professional Development & CME Award, UTDRO
Meredith Giuliani	Postgraduate Classroom Teaching Award, UTDRO
Robert Dinniwell	Undergraduate Medical Education Award – Outstanding Contribution to the Program, UTDRO
Kathy Han	Outstanding Research Potential Award, UTDRO
Laura Dawson	Sustained Excellence in Research Award, UTDRO
Alejandro Berlin	R.S. Bush Award For Academic Excellence in Research by a Radiation Oncology Fellow, UTDRO
Marcus Sonier	J.R. Cunningham Award For Academic Excellence in Research by a Physics Resident, UTDRO
Adam Gladwish	W.J. Simpson Award For Academic Excellence in Research by a Radiation Oncology Resident, UTDRO
Kate Barrett	Best Poster Award for a Postgraduate Trainee, UTDRO
Adam Gladwish	Chair's Award for Academic Excellence in Research, UTDRO
Jennifer Croke	Resident's Award for Excellence in Clinical Teaching by a Radiation Oncology Fellow, UTDRO
Andrea Bezjak	Resident's Award for Excellence in Clinical Teaching, UTDRO
Meredith Giuliani	Resident's Award for Best Academic Half-Day Teaching, UTDRO
Laura Dawson	Till and McCulloch Paper of the Year (Clinical), Ontario Cancer Institute

Dr. Brian O’Sullivan appointed Commissioner of the International Commission on Radiation Units and Measurements

Dr. Brian O’Sullivan was appointed as the Commissioner of the International Commission on Radiation Units and Measurements (ICRU) for a four-year term (2014-2018). He will support the ICRU’s mission to develop and disseminate internationally accepted recommendations on radiation-related quantities and units, terminology, measurement procedures, and reference data for the safe and efficient application of ionizing radiation to medical diagnosis and therapy, radiation science and technology, and radiation protection of individuals and populations.



Dr. Padraig Warde awarded Honourary Fellowship of the Faculty of Radiologists of the Royal College of Surgeons in Ireland

Dr. Padraig Warde was awarded with an Honourary Fellowship of the Faculty of Radiologists of the Royal College of Surgeons in Ireland (RCSI), which is the highest distinction the College bestows, recognizing outstanding achievements in radiation oncology. He was presented this prestigious honour at the 2014 Annual RCSI Scientific Meeting in Dublin, Ireland, where he also delivered the St. Luke’s Keynote Address – “The Importance of Clinical Trials in Radiation Oncology”.

Brian O’Sullivan

Radiation Oncology Co-Chair of the US National Cancer Institute Head and Neck Scientific Steering Committee for a three-year term (2014-2017)

David Jaffray

Fellow of Canadian Organization of Medical Physicists Award

Padraig Warde

Re-Appointment as the Provincial Head of the Radiation Treatment Program at Cancer Care Ontario

Dr. Mary Gospodarowicz: A world leader in the fight against cancer

Dr. Mary Gospodarowicz was honoured for her exemplary 40-year career at the Princess Margaret at a special event hosted by the Princess Margaret Cancer Foundation in May 2014. She was recognized for her 12-year tenure as the Chief of RMP and Chair of the University of Toronto, Department of Radiation Oncology, as well as being the first Canadian (and first woman) to lead the international cancer body, Union for International Cancer Control. Dr. Gospodarowicz is a transformational leader and world-renowned clinician and researcher in the management of lymphoma and genitourinary cancers, and continues to influence the future of radiation medicine as the current Medical Director of the Princess Margaret. To date, her passion for ensuring high-quality care for cancer patients worldwide has directed the Princess Margaret to achieve global impact as one of the top 5 cancer research centres in the world, and in leading the way for personalized cancer medicine.



Dr. Bernard Cummings: Honouring the career and legacy of a leader in radiation medicine



Dr. Bernard Cummings, the inaugural Chair of the University of Toronto, Department of Radiation Oncology and former Chief of RMP, has retired after an extraordinary career of over 40 years at the Princess Margaret. Dr. Cummings has made outstanding contributions to the field of radiation oncology, particularly for gastrointestinal cancers, in the domains of research, clinical care, teaching, and service, for which he received the prestigious Gold Medal from the American Society for Radiation Oncology in 2011. He has helped shape the landscape of radiation oncology in Canada and worldwide, leaving a lasting legacy of increased educational capacity for future generations of radiation medicine professionals, as well as safer and higher quality care for GI cancer patients. Dr. Cummings' legacy was honoured in November 2014 at a heartfelt tribute symposium attended by one hundred guests from the medical community, including members of RMP, UTDRO, and invited speakers.

In memoriam: Dr. Pamela Catton (1953 - 2014)

Dr. Pamela Catton was a Radiation Oncologist at the Princess Margaret Cancer Centre, and a Professor in the Department of Radiation Oncology, University of Toronto. She was an internationally renowned educator, and mentor to an entire generation of oncologists. Dr. Catton was a skilled and compassionate clinician, who consistently delivered exemplary care for her patients. She was a creative force in innovations in education, covering the spectrum from undergraduate, post-graduate, continuing education, faculty development, interprofessional, to patient and cancer survivor education.

Amongst many of Dr. Catton's legacy was the development of a joint BSc Program in Medical Radiation Sciences (MRS) between the University of Toronto Department of Radiation Oncology with the Michener Institute, which at the time was the first Radiation Therapy Degree program in Canada. Since its initial establishment in 1999, the MRS program has trained more than 1500 radiation therapists, imaging and nuclear medicine technologists; many of whom are now leaders across Canada. Dr. Catton's particular passion was the promotion of interprofessional education, and talent development in this domain. This passion translated into the creation of Clinical Specialist Radiation Therapists, which began as a pilot project at the Princess Margaret Cancer Centre in 2007, and now has expanded to 24 CSRTs flourishing in 10 cancer centres across Ontario.

Dr. Catton's contribution to the educational community extended well beyond our local environment; she was a key participant and leader in the Royal College of Physicians and Surgeons of Canada, ranging from

numerous site visits across the country reviewing residency training programs, to co-chairing the Working Group on CanMEDS roles, to chairing the Education Research and Development Committee. In all of these activities, Dr. Catton worked tirelessly, critiqued constructively, and facilitated the transformation of our medical training curricula.

Dr. Catton has always been a strong advocate for radiation oncology, and was an active contributor to our Canadian Association of Radiation Oncology. She was instrumental in the establishment of CROF (Canadian Radiation Oncology Foundation), the philanthropic arm of CARO, and was its Board Chair from 2011-2013, during which time, she established the CARO-CROF Summer Studentship in Radiation Oncology, facilitating medical students' career development in radiation oncology.

Through her strong vision, boundless energy, and organizational skills, Dr. Catton also established the trailblazing ELLICSR: Health, Wellness, and Cancer Survivorship Centre at the University Health Network, the first centre of its kind in Canada, focused on empowering "patients, to improve their health, well-being, and the overall delivery of cancer care."

Dr. Catton was an inspiring mentor, who believed in everyone's capacity to thrive in our academic environment; she would pour her entire energy and soul into ensuring that all trainees and junior faculties achieve success. She has mentored and influenced an entire generation of radiation medicine professionals, who are now leading their own programs nationally, and internationally.

Accordingly, Dr. Catton has received numerous honours and awards for her achievements, starting with innumerable

Teaching and Mentorship Awards within the Department of Radiation Oncology; the Mickles Fellowship Award for Postgraduate Medical Education from the Faculty of Medicine; and the Anderson Award for Excellence in Educational Administration from the Wightman-Berris Academy. She also held the Inaugural Princess Margaret - University of Toronto Butterfield/Drew Chair in Breast Cancer Survivorship; received the Excellence in Cancer Patient Education Award from the US National Cancer Institute - Cancer Patient Education Network; and the 2014 Margaret Hay Edwards Achievement Medal from the American Association for Cancer Education, awarded to those who have made sustained outstanding contributions to cancer education.

Dr. Catton will be dearly missed by everyone within our communities. Her legacy will continue through all the programs which she has launched and established; her impact will continue to reverberate through the generations of radiation medicine professionals who will strive to advocate for the highest quality oncology care for our patients, as did Dr. Catton.



LOOKING AHEAD

2014 was a landmark year for RMP as we saw our momentum and success accumulate over the course of the year. As we look ahead to 2015, we will build upon these achievements and continue to push the boundaries of innovation.

Our current strategic plan, the *Moral Obligation to Innovate*, which was launched in 2011, has laid the path in our pursuit to improve patient care and outcomes through innovations in research, education, clinical practice, and system operations. It summarizes our goals across six key strategic themes to becoming a world-class facility for personalized radiation medicine: excelling in all areas; leading advanced practice and new models of care; transforming quality and safety; leading innovation; achieving operational excellence in program delivery; and providing system leadership *via* active outreach and partnerships. As we approach the final stages of this plan, we have begun to refresh our strategy looking forward to reflect the rapid pace of innovation within radiation medicine and the changing healthcare environment. Further, we wish to ensure that our goals and directions are aligned with the recently updated strategic plans of the Princess Margaret Cancer Program and the University of Toronto, Department of Radiation Oncology.

As we look towards the 2015 launch of our refreshed strategic plan, RMP will continue to strive for performance excellence in all aspects of the program – clinical practice, research, education, and system operations. To enhance our position as one of the leading radiation medicine programs in the world, RMP will commit to searching for new opportunities to support and enable innovation that will impact the global cancer burden. With the support and vision of our staff and leadership, we will transform the future state of radiation medicine, providing better care and ensuring improved outcomes for cancer patients on a local, national, and global scale.

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FOR THE FULL 2014 RMP ANNUAL REPORT

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