

The Radiation Therapy Residency Program

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Program Objectives: The Radiation Therapy Residency Program will provide the resident with clinical training in the four main areas of medical physics practice, namely dosimetry, clinical external beam competency, brachytherapy and stereotactic radiosurgery. During this program, the resident will acquire clinical knowledge and practical experience to the extent that upon completion will be able to operate independently under the guidance of a senior physicist. The development of decision-making skills and communication skills will be fostered.

Organizational Structure: The Radiation Therapy Residency Program is a twenty-seven month course run by the Department of Therapy Physics of the Division of Medical Physics, CancerCare Manitoba (CCMB). The Department of Therapy Physics is one of four Departments within the Division of Medical Physics, CancerCare Manitoba. The other three Departments within the Division include Medical Imaging, Radiation Protection and Medical Engineering. The Head of the Department of Therapy Physics serves as The Director of the Residency Program reports to the Head of the Department of Therapy Physics. All members of the Department of Therapy Physics, Medical Physicists and Physics Associates, participate in the Residency Program. A Radiation Oncologist and a Radiation Therapist are also included in the Program.

A Brief History of the Program: The Radiation Therapy Residency Program at CCMB was established in 1997. Initially, the residency program was little more than a one-year work term. It was unstructured and concentrated primarily on dosimetry. The program was funded using operating budget surpluses. However, it proved to be an instant success and its benefits were quickly realized. As a result, funding for a single permanent resident position was requested and received from CCMB. It was during this period that training was expanded to include a clinical rotation in treatment planning. A third rotation, brachytherapy, was added a short time later. In 2001 the Residency Program was expanded to two permanent positions. In this year regular journal club presentations became a requirement and formal oral examinations in all three specialty areas were instituted. It was during this period that residents first began to receive a professional allowance. Stereotactic Radiosurgery became the fourth rotation soon after. As of January 2017, the Residency Program had graduated twenty medical physicists.



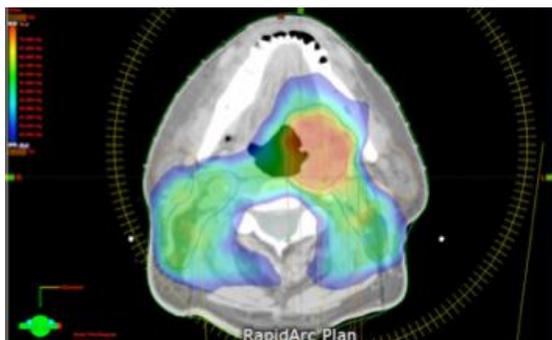
Program Content: The residency program at CancerCare Manitoba is twenty-seven months long and consists of four rotations, 9 months in dosimetry, 12 months in treatment planning, 5 ½ months in brachytherapy and two weeks in stereotactic radiosurgery. To successfully complete a rotation, the resident must demonstrate competency in specific areas. The resident must also pass two or three oral exams in each rotation (two in the brachytherapy rotation, three in both dosimetry and treatment planning and one in stereotactic radiosurgery). Supplemental oral exams may be administered to the resident as required. Oral exams are approximately two hours in length and are administered by at least three staff physicists with clinical

responsibilities in the areas of questioning. Immediately following the session, the examiners meet in the absence of the resident and evaluate the performance. The results are summarized in a written report that also includes any corrective actions the resident must take to remedy deficiencies.

Clinical competencies are acquired through one-on-one instruction from staff physicists. The learning process will begin with an orientation to a topic followed by detailed demonstration/instruction in which the resident watches the staff member perform the clinical task. The next phase has the resident performing the task under close supervision of the staff member; extensive quizzing of the resident will take place during this activity. Once the staff member believes that the resident has demonstrated competency in performing the task, they will sign off on the competency list. When two other staff physicists have also observed the resident satisfactorily perform that task, they too will sign off the competency list and the resident will be considered to have successfully completed training in that particular area.



Each rotation will also include reading assignments. Comprehension is assessed during the oral exams. At the end of each rotation, residents will be given program evaluation questionnaires. Their feedback will identify weaknesses in the program and allow solutions to be identified. The evaluation questionnaires were designed to allow residents to provide feedback without fear of reprisal by making questions non-confrontational. All residents entering the program are required to review and become familiar with anatomy using a workbook developed by the School of Radiation Therapy, CancerCare Manitoba.



Residents will participate in a medical physics journal club. The club runs from September through June with residents and graduate students presenting one journal paper per week on a rotational basis. Residents will typically present approximately three times per year. The primary goal of this club is to provide residents and students an opportunity to hone their public speaking skills. It also gives the residents additional incentive to stay abreast of the current literature. Residents are required to attend a monthly journal club run by the Radiation Oncology Resident program at CCMB. Attendance gives the medical physics

resident opportunity to learn more about the diseases that they will ultimately play role in eradicating. Gaining such knowledge is essential to becoming a top quality medical physicist.

The radiation oncology department at CCMB runs weekly treatment planning rounds at which the treatment strategies for select patients are discussed by oncologists, physicists and radiation therapists. Attendance at these rounds by the medical physics resident is also mandatory. This forum provides the resident with the opportunity to gain knowledge from the three primary groups responsible for radiation therapy in an interactive setting.

Residents are expected to attend an annual conference. Funding to cover the cost of attending this conference is provided by the Department of Radiation Therapy Physics (an annual professional allowance of \$2,500).

Salary and Benefits: The salary scale for Residents ranges from approximately \$54,000 to \$71,000 over 6 steps. The scale is adjusted yearly for cost of living at the same rate as the Medical Physics scales at CancerCare Manitoba. Residents are placed on the scale according to previous medical physics experience and whether they hold a PhD or MSc degree. Residents are responsible for their food and lodging while in the program.

Residents receive 4 weeks of vacation per year plus thirteen days of holidays. CancerCare Manitoba provides insurance to cover lawsuits that may be brought against the resident as a result their work. Employment benefits received by the residents include an employee pension, group life insurance, long term disability, Blue Cross dental and vision coverage and access to an employee assistance program. Additional health care insurance (Canada offers free health care to its citizens) is offered as an option. Residents receive 15 days per year to cover absences due to illness.

Facilities: CancerCare Manitoba operates eight Varian linear accelerators. Energies available on these treatment units are 6, 10 and 18MV, Electron beams with energies of 6, 9, 12, 15 and 18 MeV are available on two of the units. The units deliver VMAT and IMRT. Total Body Irradiation (TBI) and Total Skin Irradiation (TSI) are delivered at CCMB.



Treatment planning imaging is performed on two wide bore Computed Tomography (CT) scanners. In room contrast injectors are available as needed. Treatment planning computers are Eclipse based Varian systems. Some patients are imaged using a PET/CT scanner located in the adjoining hospital. Magnetic Resonance Imaging (MRI) scanners also are available in the adjoining hospital.

CancerCare Manitoba delivers brachytherapy treatments to all sites other than prostate using High Dose Rate (HDR) techniques. The treatment unit is manufactured by Varian and planning is performed using the Eclipse system.

Disease sites treated using this unit include cervix, vaginal vault, esophagus and lung. Many sites have been treated using interstitial techniques including breast, base of tongue and extremity sarcomas.

Prostate brachytherapy treatments are administered using low dose rate permanent 1-125 seeds. A full surgical suite (complete with xray and anesthesia equipment) within the CancerCare Manitoba facility has been dedicated to the program. Pretreatment imaging is carried out using a B-K ultrasound unit. Planning is performed using the Varian Variseed system.

Skin lesions are often treated at CancerCare Manitoba using a superficial/orthovoltage xray unit.



The Department of Radiation Therapy Physics is also heavily involved in a stereotactic radiosurgery program. Treatments are administered using an Elekta Perfection Gamma Knife housed in the hospital adjoining CancerCare Manitoba.



CancerCare Manitoba operates a fully equipped electronics lab that is staffed by eight certified electronics technologists. The organization also maintains a fully equipped machine shop consisting of five certified machinists. Equipment found in the shop includes CNC mill machines, lathes, drill presses and other assorted power tools. Design software and welding facilities are also available. Both the electronics and machine shops are departments within the Division of Medical Physics at CancerCare Manitoba. Residents have access to the two Departments for equipment repair as well as for design and fabrication of clinical/research devices.

Radiation Therapy Residents also have access to the expertise and equipment of six-person Imaging Department and a seven-person Radiation Protection Department (one Medical Physicist and six radiation safety officers). These two Departments are housed within the Division of Medical Physics at CancerCare Manitoba.

Each Resident in the program receives a small, one-person cubicle office that includes a work desk, storage space, a telephone and a computer with access to the CancerCare Manitoba network as well as the internet. Residents receive personal TLDs and pagers when they arrive. Residents obtain stationary supplies.

About The City of Winnipeg: The City of Winnipeg is located in the heart of Canada at the junction of the Red and Assiniboine Rivers. Winnipeg has over 800,000 people from over 40 different countries around the world speaking with 100 languages. It is well known across the prairies for its arts and culture. The extremely diverse city boasts over 100 cultural festivals each year and is home to the Royal Winnipeg Ballet and the Winnipeg Symphony Orchestra. Winnipeg is the home of the Canadian Museum of Human Rights, which is the first National Museum outside of the National Capital Region.

Several professional hockey, football, and baseball franchises have been fortunate enough to call Winnipeg home, the current professional sports teams are: The Winnipeg Jets, the Winnipeg Blue Bombers and the Winnipeg Goldeyes. Winnipeg is the only Canadian City to host the Pan-American Games, and only the second city to ever host it twice in 1967 and 1999.



Winnipeg is located near the geographic centre of North America, just 100km from the US border and is easily accessible by road, air and railway. The surrounding area includes forests, marsh landscapes, and various lakes and rivers including Lake Winnipeg, the third largest lake in Canada and 13th in the world. Also, it offers one of the lowest average housing prices of all of the major cities in Canada.

Admissions: Candidates that have successfully completed a medical physics graduate program, either at the MSc or PhD level, will be considered for a residency position. Individuals possessing an MSc or PhD in a non-medical stream of physics or engineering will also be considered. However, should such a candidate be successful in securing a position, their program would be modified to rectify any weaknesses (in particular, the resident would be required to complete the appropriate medical physics courses offered by the Medical Physics Graduate Program, University of Manitoba).



Individuals interested in applying to the residency program are required to submit:

- 1) a current CV
- 2) an official transcripts pertaining to undergraduate and graduate degree programs
- 3) three letters of reference

To:

Director
Radiation Therapy Residency Program
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