



RADIATION THERAPY & CANCER

A Guide For Patients, Families & Friends

March 2011

CANCERCARE MANITOBA

Mission Statement

CancerCare Manitoba, by an act of the legislature, is responsible for cancer prevention, detection, care, research and education throughout Manitoba.

We are dedicated to excellence in cancer care for all Manitobans.

We strive to prevent, endeavour to cure, and are committed to enhance the quality of life for people living with cancer.

The staff and volunteers at CancerCare Manitoba are here for you and your family to help assist you throughout your cancer journey. You will likely have questions about Radiation Therapy and related concerns. This booklet will try to answer the common questions asked by patients, families and friends. You will receive more information specific to your treatments during your visits to the radiation therapy department. If you have any questions, please don't hesitate to ask a health care professional.

RADIATION THERAPY

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WHAT IS CANCER?

Cancer is the growth and spread of abnormal cells. Normally, the cells that make up all parts of the body reproduce in an orderly manner. Occasionally, the cells grow irregularly and form a mass of tissue called a tumour. A tumour is either benign or malignant (cancer).

Benign tumours may interfere with how the body works normally, but they seldom threaten a person's life. Malignant tumours, however, grow and replace normal tissue. Sometimes, the cells may break away from a malignant tumour and spread through the blood or lymphatic systems to other parts of the body. If this takes place, it is called metastasis or secondary cancer.

There are three mainstream methods for treating cancer: surgery, chemotherapy and radiation therapy. The type of treatment is dependent on the individual patient, tumour location and stage of disease. The treatment that is advised for you will be discussed and decided upon with your oncologists.

WHAT IS RADIATION THERAPY?

Radiation therapy, sometimes called radiotherapy or irradiation, is the use of various forms of radiation to safely and effectively treat cancer and other diseases. Radiation oncologists may use radiation therapy to try to cure cancer, to control the growth of the cancer or to relieve symptoms, such as pain.

Radiation therapy works by damaging the DNA within cancer cells and destroying the ability of the cancer cells to reproduce. When these damaged cancer cells die, the body naturally eliminates them. Normal cells are also affected by radiation, but they are able to repair themselves from the

radiation in a way that cancer cells cannot. Sometimes radiation therapy is the only treatment a patient needs, and other times it is only one part of a patient's treatment. For example, some patients may be treated with surgery, radiation therapy and chemotherapy.

The goal of radiation therapy may be to:

- Destroy tumours.
- Reduce the risk that the cancer will return after you have had surgery or chemotherapy by killing tiny cancer cells that may remain.
- Shrink tumours that are interfering with your quality of life. For example: tumours that are causing difficulty swallowing or are causing bleeding.
- Alleviate pain by reducing the size of your tumour.

It is important for you to discuss the goal of your treatment and the side effects of your treatment with your radiation oncologist.

Please Note: If there is any chance that you are / or can become pregnant during radiation, you must advise your radiation oncologist and the treatment team. Radiation can be extremely harmful to your unborn child and appropriate measures must be taken, etc.

YOUR FIRST VISIT



On your first visit, you will meet the radiation oncologist and nurse who will be caring for you. A radiation oncologist is a doctor who has specialized in the field of radiation therapy. You may also meet a radiation oncology resident. The nurse will ask

you questions regarding your medical history. The doctor will review your history, examine you, and possibly order further tests. The plans for your treatment and any possible side effects will be discussed with you. Once you have consented to have radiation therapy treatments, the radiation planning process will begin. An escort, such as a relative or friend, may be present during most of your visits if you wish. Please do not hesitate to ask questions.

THE TREATMENT PROCESS

There are two different methods in delivering radiation to the tumour. 1) External Beam Radiation Therapy and 2) Brachytherapy. The type of radiation that will be prescribed is dependent on the location of the disease. You will need to lie still on a table and breathe normally, while the machine rotates around you. The machine will not touch you. There is no feeling to the radiation treatments.

External Beam Radiation Therapy: External beam radiation therapy is a method of delivering radiation (high energy x-rays or electrons) from outside the patient and is targeted at the tumour site and surrounding area. The radiation comes from a treatment machine called a linear accelerator.

Brachytherapy: Brachytherapy, also known as internal radiation therapy, is a method of treatment where the radiation source is placed inside the body near or into the disease site. During a brachytherapy procedure, a tube is inserted into the tumour area and a small radioactive seed travels inside the tube to deliver the radiation dose directly to the tumour. Additional information is available for patients receiving brachytherapy.

The treatment process may include the: 1. Mould Room, 2. Simulation (CT or conventional), 3. Patient Education, and

4. Treatment (linear accelerator, superficial x-ray therapy and / or brachytherapy).

1. MOULD ROOM

The mould room appointment happens before your simulation. If you have been scheduled for a mould room appointment, the radiation oncologist has requested you have a mould / shell made for your treatments. The shell is used to ensure that there is little to no movement during your simulation and your radiation treatment each day. A shell is commonly used with areas that can be easily moved or rotated (i.e. head and neck region, legs, arms, large breasts, etc.). Other members of the radiation therapy team may be present to assist with positioning when the shell is being made.

There are two types of shells. If your treatments are in the head and neck area you will have a thermoplast shell made. If your treatments are not in the head and neck area, you will require a uvex shell.

- **Thermoplast Shells for the Head & Neck Region:** For your shell fabrication you will need to remove; eyeglasses, hearing aids, wigs, jewelry and your shirt and put on a hospital gown. You may also need to remove your dentures. You will lie flat on your back on an examination table; there will be a positioning board under your back, a neck roll under your neck and a cushion under your knees for support. This will be your treatment position.

Once you are in your treatment position, a warm, moist flexible thermoplastic sheet will be formed to fit your head and neck area. It will be placed on you and smoothed down, leaving your nose and mouth clear with lots of room to breathe. The thermoplastic sheet will harden as it cools. When the thermoplastic sheet has set and cooled it will be lifted off. This visit takes approximately 30 minutes and is usually scheduled 30 - 90 minutes before your simulation visit.

- **Uvex Shells:** When making a uvex shell, you will be required to visit the mould room twice. For your first visit, you will need to wear a hospital gown and lie down on an examination table in the required treatment position. Moist plaster of paris bandages will be placed on and around the treatment area and smoothed down to the shape of the body being treated. The plaster of paris bandage will get warm as it starts to set. When the plaster of paris bandages have hardened, the impression will be lifted off. From this impression, a clear plastic shell will be made. This visit takes approximately 30 minutes.

During the second visit your plastic shell will be adjusted to ensure the best possible fit. This visit is usually scheduled 30 minutes before your simulation visit.

2. SIMULATION & TREATMENT PLANNING



You may be required to have a simulation prior to your treatment. There are two simulators; one is a CT scanner simulator "Brilliance Big Bore" and the other is a conventional simulator "Acuity".

During simulation, radiation therapists will place you in the treatment position (with your shell, if required for treatment). The radiation therapist then scans or x-rays the area to be treated and places ink marks on your skin (or shell). For some treatments, small permanent tattoo marks are made in your skin. The tattoos are very small, resembling a mole. The therapist doing your tattoos will describe the procedure to you and what to expect.

You will be required to lie very still and breathe normally. It is very important that you do not move once the markings are on your skin (or shell). Even lifting your arm or turning your head can change the location of the markings. There is no feeling to the scans or x-rays.



Once you have been set up in the correct position, the scan / x-rays will begin. The therapists will leave the room but are watching you at all times. This visit takes approximately 30 minutes.

The simulator x-rays or CT scans will be used to plan your treatment. Radiation therapists and oncologists use treatment planning computer software to help design your treatment plan. The treatment planning process takes approximately 2 weeks to complete.

You may be asked to have a verification simulation to complete the treatment planning. At this time, additional marks may be placed on your shell. This visit is scheduled prior to your first treatment and will take approximately 30 minutes.

If you do not require a computerized treatment plan, you may have your treatment scheduled within five days of your simulation. If you are having a simulation and treatment on the same day, plan to be at CancerCare for a minimum of 4 hours. The length of time is required to have the simulation, plan the treatment and have the treatment itself. This may vary depending on the individual and other appointments. You are not required to stay in the department after your simulation and / or education session if you would like to leave and come back for your appointment time.

3. SIDE EFFECTS FROM TREATMENT



The side effects from the treatment will be discussed by your radiation oncologist prior to starting treatment. After your simulation or on your first day of treatment, you will also be scheduled for a “patient education session”. A radiation therapist will sit down

with you and go over what to expect from the treatment and how to care for yourself while on treatment. You are welcome to bring a family member or friend to the session. Sometimes, it is helpful to have an extra set of ears. If you have any questions, don’t hesitate to ask.

4. THE TREATMENT

We have a variety of radiation therapy treatment machines. They are: linear accelerators, superficial x-ray therapy and brachytherapy.

Linear Accelerators: All the linear accelerators that we have are very similar in operation and appearance. They use man-made technology to produce radiation. The main difference between these machines is the energy (for depth of treatment) that they produce. These machines are used for external beam radiation therapy. There is no feeling to the radiation. During treatment, the radiation is directed to your tumour from the treatment machine. To administer the radiation treatment to the exact area of the tumour each day, you will be required to lie on the treatment table in the exact same position you were simulated in. Therapists will use the marks put on your shell or body as a treatment reference. Once you are in the correct position, therapists may take x-ray images before starting the treatment to ensure you are in the correct position. During this process you may feel the

bed move slightly if fine adjustments are required. When you are in the correct position, the treatment will start.

The therapists will leave the room during the x-ray imaging and treatment time but will closely watch you on a video monitor from outside the treatment room. You may also speak with them through an intercom system.

During the set up and treatment procedure, the machine will rotate around you but will not touch you. The radiation is only directed at you for a few seconds or up to a minute from each angle. The machine may make a humming sound when it is delivering the radiation. You will be in the treatment room for approximately 10-25 min. depending on your treatment plan. Times may vary depending on the individual. If at any time you are feeling ill or uncomfortable during the treatment it can be stopped.



Superficial X-Ray Therapy: This machine is smaller and produces a lower energy than the others. It is used to treat areas close to the skin surface (e.g. skin cancer, keloids (over grown scar tissue) etc.). Unlike the other machines, this one gently touches your skin during treatment. This machine is used for external treatment. You will hear a humming sound when the machine is "on". You will be in the treatment room for approximately 15 minutes. It may be longer on your first day, as you may have to go to the mould room first to have a lead cutout made for your treatment. The lead cut out is used to shield normal tissue, while delivering radiation to the affected area.

Brachytherapy (HDR): This machine is used for internal treatment. A small tube is inserted into a body cavity. The machine contains a small radioactive seed which travels inside the tube, to deliver radiation to the tumour. For internal treatment (brachytherapy), you will be in the room between 30 minutes and 3 hours. The actual treatment takes about 10-20 minutes. The rest of the time is needed for preparation and planning. This process must take place on the day of the treatment and cannot be done ahead of time. Your doctor, nurse or therapist can estimate the time for you on an individual basis. You will have a preparatory education session that will be scheduled before your first treatment.

SCHEDULING



Radiation treatment visits are scheduled five days a week, every day except weekends and holidays. This schedule allows your healthy cells surrounding the tumour to repair the radiation damage between treatment visits. Your radiation oncologist will tell you how many treatments you will receive. The number of radiation treatments will depend on the size, location and type of cancer you have, your general health and other medical treatments you may be receiving.

In most instances, you will receive an appointment for your first treatment when you arrive for your simulation. Occasionally, there are unforeseen delays in the planning process that require us to change start dates. If this happens, we will contact you with a new start date.

On the day of your first treatment, you will receive a schedule for that week. From that point on, weekly

schedules will be available for pick up every Thursday or Friday for the following week. Your treatment appointments may be scheduled at various times of the day throughout your treatments. If you are aware of any appointments outside of CancerCare Manitoba, please let your booking clerk know as soon as possible. Due to the numerous scheduling requirements, we will do our best to accommodate other medical appointments. Other extenuating circumstances will be considered and accommodated if possible.

ON TREATMENT CLINIC REVIEWS

During your treatment schedule, your radiation oncologist or nurse will review your progress regularly. The radiation team will follow your progress, evaluate whether you are having any side effects, recommend interventions for those side effects (such as medication) and address any concerns you may have. As treatment progresses, your radiation oncologist may change your treatment plan depending on your response or reaction to the radiation therapy. On treatment reviews will be indicated on your weekly schedule.

AFTER TREATMENT

After treatment is completed, a follow-up appointment may be scheduled so that your radiation oncologist can make sure your recovery is proceeding normally and can continue to monitor your health status. If you are followed by multiple physicians, you will not always be given a return appointment by your radiation oncologist. However, one of your physicians will schedule follow-up appointments and will be your primary physician in monitoring your health status. If there is a diagnostic test i.e. CT scan needed, a requisition is completed and sent to the appropriate centre with a copy of the completed study / final report. The report is sent to all your physicians. As time goes on, the frequency

of your visits will decrease. However, you should know that your radiation oncology team will always be available should you need to speak to someone about your treatment. You will be provided with a contact number for the clinic nurse for your radiation oncologist and asked to call if you have any concerns regarding radiation.

COMMONLY ASKED QUESTIONS

Do radiation treatments hurt?

- No, you will feel no pain during the radiation treatment.

Am I radioactive?

- No, you are not radioactive if you are receiving external beam radiation therapy. The effects of the radiation are working inside you, but you are not radioactive.
- If you are receiving brachytherapy, radioactive sources are put inside you but will be taken out of you before the end of your treatment.

Can you tell me if the treatments are working?

- Throughout the course of your treatments there is no way of telling if the treatments are working. The effects of the radiation are still working inside of you up to a maximum of two weeks after the completion of your radiation treatments. After two weeks of completing your treatments, the healing process will start to take place. Check with your radiation oncologist about your follow up plan and when someone will be able to discuss with you how effectively the treatments worked.

Can I work while I am on treatment?

- Radiation affects each individual very differently. Radiation does cause fatigue and may affect how you are feeling. You will be the best judge of your body and what you are capable of. Some people work, while others take the time off. It is your decision and you may wish to discuss this with your radiation oncologist.

Can I still take my prescription medications and vitamins?

- Let your radiation oncologist know of any medications and vitamins you are taking. They may advise you to stop taking them while on treatment.

Can I smoke?

- We recommend that you do not smoke while you are on treatment as smoking decreases oxygen levels in your body and radiation works best with more oxygen in your body. Smoking can also worsen your side effects from the treatments. You can ask your doctor, nurse or radiation therapist for more information.

Can I drink alcohol?

- Alcohol may worsen your side effects, depending on the area being treated. It is best to discuss this with your radiation oncologist, nurse or radiation therapist.

Notes or questions you may want to ask your health care professional:
