MARY BIRD PERKINS
CANCER CENTER

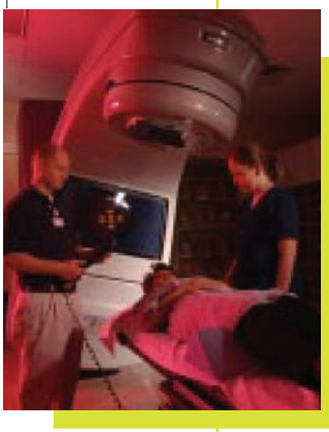
PROUDLY OFFERS IMRT

(INTENSITY MODULATED

RADIATION THERAPY)

FOR PROSTATE CANCER PATIENTS

Information and Instructions



Mary Bird Perkins Cancer Center is committed to providing the latest technology for radiation therapy.

How Does Radiation Therapy Work?

Cancer is the unrestrained growth of abnormal cells within the body. Radiation therapy kills both normal and cancerous cells. The aim of curative radiation therapy is to kill all cancerous cells that have the ability for unrestrained growth while avoiding significant injury to normal tissues. In order to accomplish this, radiation therapy treatments are designed to provide the best techniques that not only can cure the cancer but allow normal tissues to repair themselves as fully as possible.

What Is IMRT? (Intensity Modulated Radiation Therapy)

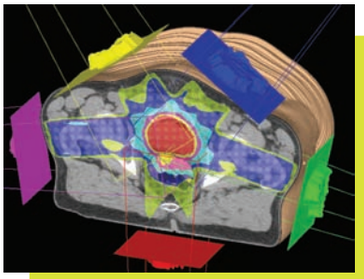
IMRT involves varying (or **modulating**) the strength (**intensity**) of the **radiation** (in this case, X-rays) being used as **therapy** (treatment) for cancer. It is a form of radiation therapy that uses computer-generated images to plan and then deliver more tightly focused radiation beams to cancerous tumors than is possible with conventional radiation therapy. With this capability, a precise radiation dose can be shaped to the tumor, while significantly reducing the amount of radiation to surrounding healthy tissues. Consequently, the technique can increase the rate of tumor control while significantly reducing adverse side effects.

What Kind Of Radiation Is Used In IMRT

Photons (X-rays) are used to deliver IMRT. A machine called a linear accelerator generates the radiation. Very small beams with varying intensities can be aimed at a tumor from various angles to attack the target in a complete three-dimensional manner. In fact, IMRT can be delivered with beams the size of a pencil tip, each with varying intensity. The idea is to deliver the lowest dose possible to the surrounding tissue, reducing the chance of causing a radiation side effect, while still delivering the maximum dose to the tumor.

Why Would I Want To Be Treated With IMRT?

IMRT allows physicians to increase the radiation dose to cancer cells while keeping the dose to surrounding tissues as low as possible. Imagine painting with a paintbrush as compared to using an airbrush with masking tape to protect outlying areas. The airbrush allows you to deposit variable amounts of paint in a highly controlled fashion. IMRT does something similar with radiation.



IMRT is not used for all cancer treatment sites, and sometimes it is not used for your full course of treatment. IMRT may be used as a boost at the beginning or end of your course of radiation therapy.

What Happens When A Person Is Treated With IMRT?

The IMRT treatment process involves three basic steps: **imaging, treatment planning and treatment delivery**. The process begins with three-dimensional pictures of your body being taken with a CT scanner which are then used to plan the dose of radiation you will receive.

Imaging

To determine the area to be treated, the physician will use images from a CT scanner. This process is called virtual simulation or CT simulation. The CT scanner will produce images that will allow your physician to pinpoint the location of your tumor or tumor site for treatment planning purposes.

Before CT simulation scans are done, positioning devices may be made to assist the radiation therapist who will deliver your treatments to accurately duplicate your treatment position each day. This special molded device (immobilization or positioning device) will also help you to maintain the same position every day during treatment.

After you have had your CT scan, the technologist will draw colored lines on your skin or the positioning device with ink or a paint marker. These semi-permanent lines are used to outline your treatment fields and to make sure that you will be correctly positioned each time you receive a treatment. These lines are very important to your treatment team and should not be intentionally washed off until you have completed your entire course of therapy.

This entire process will take between 30 minutes to an hour.

Treatment Planning

The physician will use the 3-dimensional images from the CT to simulate your treatment by outlining your tumor or treatment site and adjacent critical normal structures and planning the position of the radiation beams. The treatment planning computer will then generate a diagram outlining the dose to the tissues within the radiation beam. The IMRT planning process usually takes several days. When the plan is complete, you will be given an appointment to begin radiation treatments.

Treatment Delivery

The first IMRT treatment session is sometimes longer than subsequent treatments so that X-rays and other measurements can be taken. You should plan to be at the Center for at least an hour on your first treatment day. You may not receive an actual radiation treatment until the following day.

In the treatment room, the radiation therapist uses the marks on your skin or positioning device to locate the

treatment area. The immobilization device which was made during the CT process will be used to help the radiation therapist duplicate the position used during your CT scan. X-rays are taken on the first day for verification of your treatment fields.

The Treatment Team

The radiation treatment team involved in planning your IMRT treatments will include the following specialists:

1. ***Radiation oncologist*** - Your Mary Bird Perkins doctor has had special training in using radiation to treat disease and will prescribe the type and amount of treatment that best suits your needs. Your radiation oncologist will work closely with other doctors, including your primary care physician.
2. ***Medical physicist*** - Qualified medical radiation physicists work directly with the radiation oncologist during treatment planning and delivery. They oversee the work of the dosimetrists and ensure that the machine delivers the right dose of radiation. They perform quality assurance on each patient's IMRT plan prior to the patient beginning treatment.
3. ***Dosimetrist*** - Dosimetrists carefully calculate the dose of radiation to make sure the tumor gets the amount of radiation prescribed by the radiation oncologist. Using computers, they develop a number of treatment plans that can best destroy the tumor while sparing the normal tissues. Since treatment plans are often very complex, dosimetrists work with the radiation oncologist and the medical physicist to choose the treatment plan that is right for you.
4. ***Oncology certified registered nurse*** - Radiation oncology nurses are specifically trained in the needs of cancer patients and work with your radiation oncologist and radiation therapists to care for you and your family at the time of consultation, while you are receiving treatment and during your follow-up care. They are available by phone or in person to answer any questions you may have about IMRT.
5. ***Radiation therapist*** - Radiation therapists work with the radiation oncologist to administer the daily radiation treatment under the doctor's prescription and supervision. Your radiation therapists will check the treatment machines daily to make sure they are working properly, properly align the radiation beam to the area of treatment and keep a daily record of your treatment. Your radiation therapist will schedule the appointment time for your daily treatments.

How Long Is A Course Of IMRT Treatment?

Radiation therapy is usually given five days a week for six or seven weeks. For each radiation therapy session, you will be in the treatment room for approximately 15 to 30 minutes. A small amount of radiation is given daily rather than large doses to help protect normal body tissues in

the treatment area. Weekend rest breaks allow normal cells to recover. The total dose of radiation and the number of treatments you need depend on the size and location of the cancer, the type of tumor and your general health.

What Are The Effects Of Treatment?

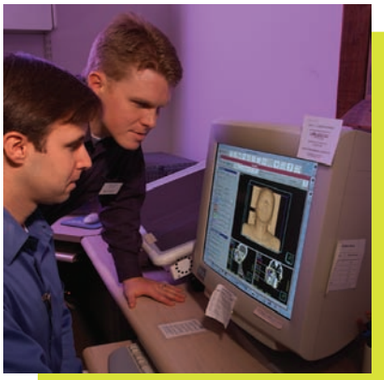
External radiation therapy does not cause your body to become radioactive. You do not need to avoid being with other people because of treatment. Hugging, kissing and having sexual relations pose no risk of radiation exposure to others.

Side effects of radiation therapy are related to the area that is being treated. Most side effects that occur during radiation therapy, although unpleasant, are not serious and can be controlled with medication or diet. They usually go away within a few weeks after treatment ends. With IMRT, some patients have no side effects at all.

How Is IMRT Different From Other Forms Of Radiation Therapy?

IMRT maximizes the physician's ability to spare normal tissue from radiation. With IMRT, a computerized tool called a **multileaf collimator** (MLC) shapes the radiation beam to match the optimized treatment plan. The Center's linear accelerators offer high resolution MLCs that can deliver unique doses to very small areas.

Mary Bird Perkins offers a completely integrated system of hardware, software and support services for delivering IMRT treatments. Because the system is entirely integrated, information can be moved



electronically and seamlessly from one part of the process to the next.

Patient Instructions

Before Your CT Scan

- To be able to see the position of the prostate gland on CT and X-rays each day, your physicist may ask your urologist to implant three seeds (markers) into your prostate gland. The placement of the markers is similar to the biopsy that was done to diagnose your prostate cancer. X-rays to evaluate the position of these markers is an exact way to determine any corrections in the placement of the radiation treatment beam during your CT and course of treatment.

CT Scan

- On the day of your radiation planning CT scan, you will need to take a Fleet's enema immediately before you come to the Center. This will empty the rectum of stool. Fleet's enemas may be purchased at any drugstore without a prescription. Follow the directions on the label.

- At the time of your CT scan, a catheter (small plastic tube) will be inserted into your bladder through the penis. The physician will inject a dye through the catheter which will help to outline the position of the bladder on the CT scan.
- Another catheter may be inserted into your rectum. A balloon surrounding the catheter will be inflated with water or air once the catheter is in place so that it will remain in the rectum. The catheter in your rectum will help to immobilize the prostate (keep it from moving) and move part of the rectum away from the planned treatment area. The tube may be inserted daily before treatment to help ensure the prostate gland is in the same position daily.
- During the CT scan, you will lie on a special movable table. You will be automatically moved in and out of the scanner on the table through a round opening in the scanner as the CT scan pictures are taken. It is very important to remain as still as possible during the scan so that you are in the correct position when all scan pictures are taken. This usually takes 10 to 15 minutes to complete.
- Although a diagnostic CT scan may also be taken at the same time, this scan is needed to plan your radiation therapy treatments only.
- Once the scan is complete, you will be given an appointment to return to begin treatment or someone will telephone you with an appointment once your treatment plan is ready.

Your First Treatment Appointment

- Your first appointment may be for verification of your treatment fields only. X-rays and measurements will be taken; you may not receive a treatment on this day.
- You will be placed in the immobilization device which was made prior to your CT scan. The therapist will use the immobilization device and the lines painted on your skin to position the radiation beam.
- A rectal balloon may be inserted into your rectum before treatment each day to immobilize and localize the prostate during treatment and also to help push the rectum away from the prostate. Your radiation oncologist will decide whether or not the rectal balloon is appropriate for your treatment.
- Digital pictures will be taken of your treatment fields and stored with your electronic medical record. These pictures are for documentation purposes.
- Your radiation therapist will give you an appointment for your daily treatments at the end of this treatment session.

Daily Treatment

- It is important to have your rectum empty each day at the time of treatment. If you have a bowel movement prior to your treatment, this should be sufficient. However, a Fleet's enema may be necessary to empty the rectum daily before treatment.

- It is also important that you have a full bladder when you receive your daily treatment. This will move a part of your bladder away from the treatment area and out of the treatment field. Do not urinate once you arrive at the Center.
- Your daily treatments should take approximately 20 minutes once you enter the treatment room. Your appointments will be scheduled at the same time each day, Monday through Friday.
- You will be positioned in the immobilization device the same way each day. It may take a few minutes for the therapist to ensure you are in the correct position.
- The radiation machine will be rotated to several different positions each day. Since this may take 10 to 15 minutes, it is very important that you lie still during the treatment. The actual treatment time from each direction will only last 30 to 90 seconds.
- Receiving external radiation treatments is painless, just like having an X-ray taken. You will not see, hear or feel the radiation. The radiation therapist leaves the room before the treatment machine is turned on and controls the machine from outside the treatment room. During the treatment, you will be monitored on a television screen and the therapist can talk with you through an intercom. If you become uncomfortable for any reason, the machine can be stopped.
- The therapists will take X-ray films one or more times each week to verify your position and the placement of the radiation. Small corrections in the targeting of the radiation beam may be made based on the results of these X-rays.
- You may develop rectal discomfort during the course of radiation. This discomfort may be reduced by applying an ointment around the outside of the anus or suppositories or foam may be used within the rectum. Your radiation physician can prescribe these for you. Warm baths may be soothing as well, but be careful to not soak away any lines drawn on your skin by the therapist.
- Your radiation oncologist will see you weekly in an examination room to review any side effects and progress of your treatment.
- A dietitian and social worker are available to meet with you at any time during your course of treatment. Simply ask your therapist, nurse or physician for an appointment with either or both of them. Dietary guidelines are available from the dietitian.
- If you or your family members have any other questions about your treatment at Mary Bird Perkins Cancer Center, please ask any member of your treatment team. We will be happy to help you.

For urgent problems or emergencies, on weekends or after business hours, call 225-215-1515 and ask the operator to page your doctor or the doctor on-call.

Mary Bird Perkins Radiation Oncologists

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Radiation Oncologist

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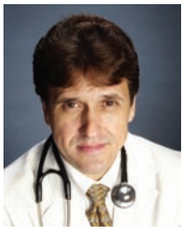
Radiation Oncologist

Gregory C. Henkelmann, M.D.
Radiation Oncologist/
Medical Director



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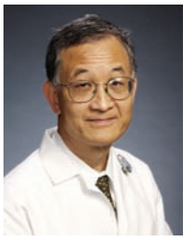

Kenneth K. Lo, Ph.D., M.D.
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