



MASSACHUSETTS
GENERAL HOSPITAL

CANCER CENTER

Everyday Amazing

YOUR GUIDE TO RADIATION THERAPY

TABLE OF CONTENTS

Welcome.....	2
What Is Radiation Therapy.....	3 - 4
Types of Radiation Therapy	
External Radiation Therapy	
Types of External Radiation Therapy	
Internal Radiation — Brachytherapy	
Radiation Therapy.....	5
Your Radiation Treatment Team	
Safety and Quality Assurance	
What to Expect	6
Your Radiation Consultation Visit	
Planning Your Treatment — Simulation	
Treatment.....	7 - 8
Your Treatment Schedule	
The Treatment Process	
How Will I Feel During Radiation Therapy?	
After Your Treatment Program Ends	
Managing Side Effects	9 - 10
Recommended Skin Care During Radiation Treatment	
Nutrition	
Fatigue	
Hair Loss	
Sexual Activity	
Fertility — During & After Treatment	
Feelings and Concerns	
Support Services and Programs.....	11
Clinical Services	
Support and Education Programs	
Glossary of Commonly Used Terms	12 - 13
Helpful Hints	14

OUR MISSION

The mission of Harvard Medical School's Department of Radiation Oncology at Massachusetts General Hospital is to provide excellence in patient care by administering the highest level of quality in a safe and compassionate environment. We strive to excite, educate, encourage, train, and mentor a diverse team of physicians, physicists, radiation therapists, and dosimetrists to become excellent caregivers, to develop methods to improve outcomes for their community, and to become future leaders in academic medicine and/or healthcare delivery. We are active participants, not bystanders, in the revolution of life science discoveries that will distinguish the first part of this century as reducing human suffering.

WELCOME TO THE MASSACHUSETTS GENERAL HOSPITAL DEPARTMENT OF RADIATION ONCOLOGY



On behalf of the entire staff, it is my pleasure to welcome you to the Massachusetts General Hospital Cancer Center and the Department of Radiation Oncology. You have chosen one of the finest medical centers in the world to receive your cancer care. You have the vast resources and expertise of the entire hospital available to you and a dedicated radiation oncology team who will take every advantage of coordinating those resources to bring you the safest and most effective treatment for your cancer.

Our physicians are some of the world's most knowledgeable and skilled radiation oncologists and are faculty members at Harvard Medical School. All of our physicians specialize in particular types of cancer. This specialization means that the radiation oncologist/doctor who is in charge of your care has dedicated him/herself not only to learning all there is to know about your specific disease but also to participating in clinical research to improve treatment outcomes and to sharing his/her expertise to teach the next generation of doctors. As part of the multidisciplinary Cancer Center, your doctor works closely with medical and surgical oncology colleagues as needed, ensuring that you receive excellent, coordinated care.

Through the collaboration of physicians and medical professionals from our hospital as well as those at Dana-Farber Cancer Institute, Brigham and Women's Hospital, and Harvard Medical School, both children and adults with cancer have access to the latest advances in radiation treatment. As a result, many of our patients have the opportunity, when appropriate, to participate in clinical trials of truly promising new therapies.

We have resources here that are found in few other hospitals. First and foremost, there is a pioneering and expert clinical team — from doctors, to nurses, physicists, dosimetrists, and radiation therapist — that works together to provide each one of our patients with the safest and highest quality of care. Our state-of-the-art radiation technologies provide precise targeting of tumors while minimizing damage to surrounding tissue. Our Francis H. Burr Proton Therapy Center is the second hospital-based program and currently one of only 15 in the US. Each year, we successfully treat thousands of patients with noninvasive and minimally invasive internal and external radiation therapies, including proton beam therapy (with pencil beam scanning), stereotactic radiosurgery, stereotactic body radiation therapy (SBRT), brachytherapy, intensity-modulated radiation therapy (IMRT), volumetric arc therapy (VMAT), and image-guided radiation therapy (IGRT).

We realize that excellent patient service depends not only on advanced technology, but also on individualized and personalized care. At the center of all we do is the *person* for whom we care — the patient. We are committed to providing each patient with personalized, compassionate treatment and support. I am proud of the way one of our patients in the Cancer Center summarized her experience: "I receive not only excellent medical care, but caring care."

This patient information guide offers a general description of what patients can expect during radiation treatment. Not all sections may apply to you. As your therapy will be carefully tailored to your diagnosis and specific needs, your radiation treatment team will explain to you the specific type of treatment you will receive. This pamphlet should serve only as a guide.

We welcome you as a partner with us in your care and are happy to answer any questions you may have before, during, and after your treatment. We also thank you for choosing Mass General for your care; it is a responsibility we take seriously.

A handwritten signature in black ink that reads "Jay Loeffler". The signature is fluid and cursive, with the first name "Jay" and last name "Loeffler" clearly legible.

Jay S. Loeffler, MD
Chief, Radiation Oncology, Massachusetts General Hospital

WHAT IS RADIATION THERAPY?

Radiation therapy uses high energy x-rays or particles to kill cancer cells. The radiation source may be external (from outside the body) and comes from beams and x-rays aimed at the cancer; or, the radiation source can be internal (from inside the body) and comes from radioactive implants. The goal of both external and internal radiation therapy is to kill the cancer cells while limiting the damage to healthy normal cells around the tumor. Most healthy cells that are damaged by the radiation can quickly repair themselves.

Radiation therapy is used:

- » Alone, as the only treatment you need
- » Before surgery to shrink the tumor
- » During surgery to protect the area around the tumor
- » After surgery to destroy any remaining cancer cells
- » With chemotherapy, which makes the cancer cells more sensitive to radiation treatment
- » After chemotherapy to kill remaining cancer cells
- » To control symptoms such as pain or bleeding

TYPES OF RADIATION THERAPY

Radiation therapy does not hurt. You will not feel the radiation treatments. The type and dosage of radiation you receive is tailored to treat the type, size, stage, and location of your cancer. Your medical condition is also considered. Your radiation oncologist will work closely with all of your cancer doctors and you to plan the treatment that is best for you.

There can be side effects from radiation therapy. Your radiation oncologist will discuss these with you before treatment begins. (A section on side effects is on pg. 9).

We will give you the information you need to make an informed choice about your treatment plan. Please ask your team any questions you may have.

EXTERNAL RADIATION THERAPY

External radiation therapy uses a machine called a linear accelerator to direct beams of high energy x-rays at your tumor. The machine can change positions so the beams may enter your body from any angle. By changing the angle of the beams, your radiation oncologist is able to match the shape of your tumor and spare as many healthy cells as possible.



TYPES OF EXTERNAL RADIATION THERAPY

Stereotactic Radiosurgery (SRS)

High precision delivery of a single, high dose radiation treatment to a brain or spine tumor while sparing normal surrounding tissue. Special immobilization, imaging techniques, and equipment are used for this very focused treatment delivery.

Stereotactic Body Radiation Therapy (SBRT)

High precision delivery of high dose radiation over 2-5 treatments while sparing normal adjacent tissue. It is typically used for small lung and liver tumors. SBRT involves special patient immobilization and imaging techniques.

Intensity Modulated Radiation Therapy (IMRT)

Intensity modulated radiation therapy (IMRT) uses a computer to combine precise images of the tumor with a special linear accelerator to vary the angle, shape, and intensity of the radiation beams to different parts of the tumor or treatment area. The precision of IMRT delivers the maximum dose of radiation to the tumor while sparing normal tissue around the tumor. IMRT is used to treat areas such as the brain, head and neck, lungs, and prostate.

Stereotactic Radiation Therapy (SRT)

A high precision technique using a special head frame to immobilize and position patients during treatment delivery of certain brain tumors. Unlike SRS, SRT is delivered daily over several weeks.

No-Exit Dose Proton Beam Therapy

Proton radiation therapy uses energy from the protons of atoms to destroy cancer cells. A cyclotron produces these high-energy protons. The beam of proton radiation can be aimed at a tumor very precisely and can be concentrated on a tumor with little harm to the surrounding normal tissues.

Other types of radiation do some harm to normal tissues as they enter and exit the tumor area. Proton radiation has an entering dose but no exit dose of radiation so the nearby normal cells are protected.

External radiation treatments do not make you radioactive. You may go about your normal daily activities. You may have close physical contact with people without worrying that you might expose them to radiation.

INTERNAL RADIATION

Brachytherapy

Internal radiation therapy, or brachytherapy, means that the radiation source is placed inside your body. These implants hold the source of the radiation and can be thin wires, plastic tubes, capsules, or seeds. Brachytherapy or implants can be used with many types of cancer.

With high dose rate (HDR) brachytherapy, a special machine inserts the radioactive substance into the tumor and rapidly delivers a high dose of radiation. The machine also removes the radioactive substance in the treatment room. Usually, patients need several daily doses to attain proper treatment levels. This type of brachytherapy can usually be done on an outpatient basis.

Brachytherapy can sometimes require a short hospital stay of one to three days. This type of brachytherapy can make you radioactive for a short period of time and there are special precautions that you must take. Your doctor or nurse will make sure you understand the type of treatment you will have and what you can and cannot do.

RADIATION THERAPY

YOUR RADIATION TREATMENT TEAM

Your radiation oncology treatment team is made up of many different healthcare professionals. Each has special training and experience in treating your type of cancer with radiation therapy. Your treatment team will work with you to be sure you get the most effective radiation treatment possible.

The same team members will treat you throughout your therapy. They will get to know you well and you will get to know them. You will find that they are interested in you as a whole person and not just in your disease.

Your treatment team members work and talk with each other all the time to check your progress and make certain you get the best possible care. Any member of your treatment team is available to answer questions.

These are the healthcare professionals on your team.

» **Radiation Oncologist** - A doctor who specializes in using radiation to treat cancer. He/she works with you and your other cancer doctors to develop your treatment plan. The radiation oncologist leads your radiation treatment team and decides which type of radiation and equipment will best treat your type of cancer. Throughout your treatment, the radiation oncologist continues to monitor your progress.

» Nursing

Radiation Oncology Nurse - A nurse with special training in the care and treatment of patients with cancer. You can turn to your nurse with any question or concern you may have. Your nurse will talk with you about your radiation treatment and help you manage any symptoms or side effects. Remember, your nurse is the person you should call whenever a question arises.

Nurse Practitioner - A nurse with advanced training and oncology expertise who works with your radiation oncologist and nurse to manage treatment-related side effects.

» **Radiation Therapist** - A licensed therapist with specialty training in the fields of radiation physics, biology, radiation safety, and computer-aided biophysics. The therapist sets up your daily radiation treatment, positions you and delivers the prescribed dose of radiation.

» **Radiation Physicist** - A scientist who helps plan the technical part of your treatment. Your radiation physicist decides the best shape and angles for the treatment beams. They make sure the equipment works as planned and delivers the right amount of radiation.

» **Dosimetrist** - A specialist who calculates and plans the doses of radiation therapy.

SAFETY AND QUALITY ASSURANCE

We provide a safe, secure environment. All of our equipment is maintained in top condition according to guidelines set forth by the Massachusetts Department of Public Health and the Joint Commission of Accreditation of Health Care Organizations. In addition, our radiation therapists check the equipment settings (calibrations) on a daily basis. Our machines are fully shielded so that significant radiation can reach only a specific area necessary for the treatment of your cancer. Lead blocks or shutters protect your healthy tissue. These are custom made to fit the targeted tumor.

Your treatment plan is reviewed by a team of radiation oncologists. They constantly check your status and review your plan throughout your therapy. There are several checks and measures at each of your visits to confirm that the proper area of your body is being treated and your treatment is going as planned. (Please see "Planning Your Treatment — Simulation" on page 6 and "The Treatment Process" on page 7.)

WHAT TO EXPECT

YOUR RADIATION CONSULTATION

Your first visit with the radiation oncologist is called your consultation visit. The radiation oncologist will review all your records and pathology reports and give you a physical exam.

It is important to bring a list of all your medications. Include all prescription medications, vitamins, supplements, and any over-the-counter medications that you take. Please write down the dose (strength) of each medicine, how often you take it, and when you take it (for example: morning, lunch, evening.)

Tell your doctor or nurse if you have any allergies or if you are pregnant. (Please see “Fertility — During and After Treatment” on page 10.)

Your treatment team wants you to be their partner in your care. Helping you understand your diagnosis and the treatments available to you is the first step. During this first visit your doctor and nurse will go over information about your type of cancer, the radiation treatment choices, and any possible side effects.

Your radiation oncologist will go over your treatment plan. This includes:

- » Why the treatment plan is best for you
- » What it can and cannot do
- » The type and amount of radiation therapy you will receive
- » How the treatment is done
- » What the side effects of treatment might be

When you understand your treatment plan, you will be asked to sign a consent form before your first treatment.

PLANNING YOUR TREATMENT — SIMULATION

Your radiation oncologist will set-up and plan your radiation therapy in a process called “simulation.” The simulation consists of a CT scan or x-rays of the specific area where the tumor is located. Some scans require the use of a contrast material, such as barium or dye, or metal markers in or near the treatment area. These materials help to make certain organs visible on the x-ray. With the help of these x-rays and scans, your radiation oncologist will map out the exact location of your tumor and the area to be treated.

After the simulation process, your radiation therapist may mark or tattoo your skin. A tattoo is a tiny ink dot marker injected under the skin that helps line up the treatment area. These marks or tattoos are very important because they allow the radiation therapist to position you the exact same way for each treatment. Do not remove the marks during treatment. However, do not worry if the marks happen to come off. They can be reapplied.

Part of the simulation or planning session is finding and recording the best body position for you during your treatment. Special devices, such as molds and masks, can help to keep your body in the correct position. The molds and masks are made to fit your body at the time of the simulation.

After your simulation, our radiation physicists develop a treatment plan based on your radiation oncologist’s design. Once a plan has been made, your treatment can begin.

TREATMENT



are changing rooms where you can put your personal belongings. Please leave any valuables at home. Depending on the area of your body being treated, you may be asked to change into a hospital gown.

Family or friends may come with you to your treatment session. They can sit in the waiting area while you are having treatment. No one will be allowed in the treatment session.

All of our treatment rooms are private. To help you relax, you may listen to music. We have a music selection you can choose from or you can bring your own.

YOUR TREATMENT SCHEDULE

The amount of radiation and the number of treatments needed are different for each patient. Most patients receive one radiation treatment a day but some patients receive two treatments a day. At the beginning of your therapy, your radiation oncologist will give you an estimate of the number of treatments you will need. Sometimes the number of treatments you need is adjusted toward the end of treatment.

External radiation is usually given in small doses over a period of time, ranging from one day to several weeks. This gives normal cells a chance to recover and repair. For most patients, radiation treatments are given daily, five days a week, Monday – Friday.

The radiation therapist will work with you to arrange your treatment schedule. It is very important that you keep all of your appointments. If you are not feeling well, or if there are severe weather problems, please call 617-726-8650 for instructions.

THE TREATMENT PROCESS

When you come for your first radiation treatment, the daily check-in process will be explained. There

In the treatment room, your radiation therapist will check and recheck all of the equipment settings (calibrations) to make sure your treatment plan is followed exactly. Using the ink marks or tattoos on your skin, the radiation therapist locates your treatment area. They then review your written record to place you in the correct position. If a mold or mask has been custom-made to help with positioning, your radiation therapist will place that on or around you.

The radiation therapist will leave the room before the radiation begins. They will watch you constantly on a television monitor. Using an intercom, the therapist can hear you and talk with you throughout your radiation treatment. Remember, the radiation treatments are painless. If you feel uncomfortable for any reason, let your radiation therapist know right away.

During your radiation therapy, you should hold still but you can breathe normally. You will hear noises coming from the machine, but you will not see anything.

You may leave as soon as your treatment session is over.

HOW WILL I FEEL DURING RADIATION THERAPY?

Radiation therapy does not hurt. You will not even feel the radiation. However, there can be side effects from radiation therapy. Your doctor will discuss these with you before your treatment. A section on side effects is covered on page 9.

Checking Your Treatment Progress

Your radiation oncologist will see you throughout your radiation treatment to monitor the effect the radiation therapy has on your cancer. During these appointments the doctor may:

- » Give you a physical exam
- » Order blood tests
- » Make changes in your treatment plan
- » Prescribe medications

These appointments are a good time to ask your doctor and nurse questions and discuss any problems or concerns you may have. Write a list of concerns and questions ahead of time. Having a family member or friend come with you to the visits can also help. They can listen and take notes or ask questions about your care.

You must talk with your doctor or nurse before you start taking any new prescription medicines, over-the-counter drugs, herbal remedies, or vitamins during your radiation treatment.

After Your Treatment Program Ends

When your treatment program ends, your radiation oncologist will send a complete report to your referring physician. You should contact the referring physician to schedule follow-up exams.

Your radiation oncologist will also schedule follow-up appointments with you to monitor your progress.

It is important to keep these follow-up appointments.

Side effects from radiation may continue for weeks or months after your treatment has ended. It is important to notify both your referring doctor and your radiation oncologist if any symptoms or concerns develop after your treatment ends.

MANAGING SIDE EFFECTS



The goal of radiation therapy is to destroy cancer cells but radiation therapy can also injure or destroy normal cells. This can cause some side effects.

Your radiation oncologist will explain any possible side effects before your treatment begins.

Early or acute side effects from radiation therapy can be treated and usually go away a few weeks after your treatment ends. Fatigue, loss of appetite, and skin irritation are examples of acute side effects.

Late or long-term side effects may take months or years to develop and can be permanent. For example, high doses of radiation can cause permanent hair loss and damage to the skin in the treatment area.

You should always tell your treatment team about any symptoms or side effects you have. Your radiation nurse will give you specific information on how to manage those side effects.

RECOMMENDED SKIN CARE DURING RADIATION TREATMENT

Skin reactions within the treatment area are common during radiation therapy. Please follow these skin care instructions during your radiation treatment.

- » It is important to wash your skin in the treatment area with warm water and an unscented moisturizing soap, at least once a day. Be gentle. Do not scrub.
- » Pat your skin dry.
- » A mild shampoo (such as baby shampoo) may be used to wash your scalp if you are receiving radiation to your head.
- » A mild, unscented moisturizer may be used 2 to 3 times a day (morning, midday, and at bedtime) to the treatment area. Please see your radiation nurse for specific skin product recommendations and instructions.
- » Deodorants/antiperspirants may be used during radiation treatment.
- » Do not use anything else on the skin in the treatment area. For example, after-shave lotion, perfume, makeup, or powder.
- » If you choose to shave, only use an electric razor in the treatment area.
- » Wear loose clothing to avoid friction or tightness in the treatment area.
- » Protect your skin from the sun by applying sunscreen (at least SPF 50) to the treatment area before going outside.
- » Wear a wide-brimmed hat if you are receiving radiation to your head or neck.



NUTRITION

You may notice changes in your appetite during your radiation treatment. It is very important that you eat well to help lessen the side effects of cancer therapy. Eat foods that are high in protein and calories to maintain your weight and strength. You should

always check with your doctor or nurse before taking vitamins or other supplements. A consult with a nutritionist is available and in some cases required.

FATIGUE

It is normal for you to feel tired during your treatment. Low energy can be a side effect of your treatments. Your body is working very hard to heal and repair itself. Be sure to get plenty of sleep at night. Talk to your nurse or doctor if you are fatigued.

If you are working full-time, you may have to adjust your schedule to part-time or do some work from home. Let family members and friends help you with daily chores.

Light exercise, like walking, can help you feel less tired. Ask your doctor or nurse about starting an exercise program.

HAIR LOSS

Radiation therapy can cause hair loss (also called alopecia) in the area of the body that is being treated. Many patients find that their hair grows back several months after treatments stop. The new hair may be different in color and texture. Whether or not your hair grows back depends on the type and dose of radiation you receive and the area of your body that was treated.

SEXUAL ACTIVITY

You can be sexually active during radiation treatment but you **must** use a reliable method of birth control to prevent pregnancy. If you are a man in treatment you should not get your partner pregnant.

Feeling tired can reduce your interest and desire.

This is temporary and should go away after you finish your therapy.

If you have questions or concerns about your sexual health, talk with your team about an appointment in our Sexual Health Clinic.

FERTILITY — DURING & AFTER TREATMENT

For women of child bearing years.

If you are already pregnant or think you might be pregnant, tell your radiation oncologist before treatment begins. You should not become pregnant during your treatments because the radiation therapy could injure your developing baby. Talk with your radiation oncologist about reliable methods of birth control.

Radiation therapy may affect your future fertility. If you plan to have a child in the future, talk with your doctor about the options for preserving your eggs.

For men

Receiving radiation therapy in the area of your testes can reduce both the number and function of your sperm. This does not mean that conception cannot occur. Talk with your radiation oncologist about reliable methods of birth control.

Radiation therapy may affect your future fertility. If you are concerned about fertility, you should discuss sperm banking with your radiation oncologist before your treatments begin.

FEELINGS AND CONCERNS

It is normal for a person with cancer and their family to have worries or concerns. Each person may react differently to the stress cancer treatment has on their daily life. You may also have concerns about your job, parenting, or finances. Sometimes just talking about these issues can be helpful. Please tell your radiation treatment team about any concerns you may have. They can find the right people and resources to help you. There is a list of Cancer Center staff and programs on the following pages.

SUPPORT SERVICES AND PROGRAMS

CLINICAL SERVICES

Oncology Social Workers provide support, counseling, and resources for radiation oncology patients and their families. Social workers help with emotional issues and other concerns that may come up during cancer care. There are also support groups you may join where you can share your feelings with others going through the same experience.
massgeneral.org/cancer/socialwork

The Oncology Chaplain can offer spiritual guidance during treatment. The oncology chaplain also works closely with other hospital chaplains of all faiths to meet the spiritual and religious needs of patients and families.

Dietitians can help you with eating and nutrition during your cancer treatment and recovery.

SUPPORT AND EDUCATION PROGRAMS



Maxwell V. Blum Cancer Support and Education Hub
massgeneral.org/cancer/resource-program

Located outside Yawkey 7B, the Hub is intended to be a comforting and welcoming place for patients, their families, and friends to visit. In the Hub, you can learn more about Cancer Center resources and places to visit/experience, participate in an educational workshop, find information about supportive care and emotional needs, meet and talk with other patients and families, or just take a break and relax.

The Katherine A. Gallagher Integrative Therapies Program

massgeneral.org/cancer/integrative-therapies

The Integrative Therapies program includes a variety of wellness services and clinical interventions that recognize the whole person by increasing patient self-awareness and self-care to enhance well-being. Services include gentle yoga, tai chi, qigong, massage therapy, acupuncture, art therapy, and music therapy.

Education Workshops and Support Groups

Designed to help you and your family and caregivers cope with the challenges of a cancer diagnosis, these classes and groups are held on a regular basis.

Look for the monthly workshop and support calendar throughout the Cancer Center or online at www.massgeneral.org/cancer/supportservices.

Parenting at a Challenging Time (The PACT Program)

massgeneral.org/cancer/pact

This parenting program offers individual consultations to adults with cancer and their spouses/partners to help them support their children's coping. The PACT staff members (child psychiatrists, child psychologists, and social workers) offer guidance about how to discuss illness with your children, answer common questions, prepare children for visits, and how to cope with concerns about a particular child.

Images Oncology Boutique

Images helps you learn about managing hair loss and skin care. It has wigs, hats, breast prostheses, and more (Yawkey Center, second floor).

General Hair Care Center

This full-service salon offers many services plus professional hair care and skin care products. It is located in the Blake Building 1st floor.

A Guide to the Cancer Center for Patients and Families

Take time to read your patient guide. It has many helpful resources you should know about.

GLOSSARY OF COMMONLY USED TERMS

Alopecia - hair loss

BID - twice daily radiation therapy

Brachytherapy - a method of radiation treatment where radioactive sources are placed directly in, or up against, the target tissues. Various techniques and instruments are used to safely and accurately place, then remove, the source(s) from the body. If brachytherapy is advised, the specific technique recommended by the radiation oncologist will depend on the part of the body to be treated

Chemotherapy - the treatment of cancer using specific chemical agents or drugs that destroy malignant cells and tissues

CT Scan - sometimes called "CAT" scan, stands for computerized tomography. It's a valuable, painless diagnostic test that allows radiologists (doctors who specialize in the use of imaging for diagnosing diseases) to see inside some areas of the body that cannot be seen using conventional x-rays. This imaging method produces a series of pictures that are then reconstructed by a computer into cross-sectional views

Dosimetrist - a member of the radiation therapy team who assists the radiation oncologist and radiation physicist in calculating the proper radiation dose for treatment

External Radiation Therapy - radiation treatment delivered from outside the body. You are not radioactive when you receive this type of therapy

Fractionated - means divided into parts. Because the effect of radiation is cumulative, radiation therapy is divided into small doses to protect healthy cells and allow normal tissues or cells affected by the treatment to heal

High Dose Rate Brachytherapy (HDR) - uses radioactive sources that deliver a larger radiation dose per minute. The implant procedure can be completed quickly and can be done on an outpatient basis

Intensity Modulated Radiation Therapy (IMRT) - a course of radiation where the dosage of each beam can be regulated, thereby delivering high doses of radiation where it is needed most and minimizing the amount to healthy nearby tissue

Internal Radiation Therapy - radiation treatment where the radioactive source is put inside the body; also called "brachytherapy;" sometimes called "seed therapy"

Intraoperative Radiation Therapy (IORT) - a single radiation therapy treatment delivered in the operating room during the course of a surgical procedure

Linear Accelerator - a machine that creates high-energy radiation to treat cancer

Low Dose Rate Brachytherapy (LDR) - uses radioactive sources that deliver a small radiation dose per minute. The length of the implant procedure can take up to several days and requires the patient to remain in the hospital

Oncology - the branch of medicine that deals with cancerous tumors

Positron Emission Tomography (PET) - diagnostic test that looks at your body's metabolic activity and provides important information about your body's tissues

Proton Therapy - no-exit dose radiation beam that can be directed to and stopped at the diseased tissue, sparing surrounding healthy tissue

GLOSSARY OF COMMONLY USED TERMS CONTINUED

Radiation Oncologist - a doctor who specializes in radiation therapy

Radiation Oncology Nurse - a nurse who specializes in caring for patients undergoing radiation therapy

Radiation Physicist - a doctoral-level scientist who helps in the technical planning of radiation treatment

Radiation Therapist - the certified licensed health care professional who administers the radiation treatment prescribed by the radiation oncologist

Radiation Therapy - a medical specialty that uses high energy x-rays or particles to kill cancer cells

Seed Implant Therapy - a source of radiation that is implanted inside your body in the area to be treated. The implant may be temporary, during which time you are radioactive, or the implant may be permanent and lose its radioactivity over a period of time. This therapy may also be referred to as "internal radiation" therapy or "brachytherapy"

Single Photon Emission Computed Tomography (SPECT) - a nuclear imaging procedure similar to PET in that it looks at the body's biochemical functions

Stereotactic Radiosurgery (SRS) - a single, high dose radiation therapy treatment used for some intracranial tumors. Multiple narrow beams are used to focus on the target tissue. The patient is immobilized for this procedure with a special halo-type frame, a CT scan is then performed, a treatment plan is created, and treatment is delivered all on the same day

Stereotactic Radiation Therapy (SRT) - utilizes the same approach as SRS, except that the immobilization device is somewhat different and the radiation dosage is delivered over many treatment days

HELPFUL HINTS

- ✓ **Arrive at least 15 minutes before your scheduled appointments.**
- ✓ **Always bring with you to every appointment:**
 - Your radiation identification card. You will receive this card on your first visit
 - An up-to-date list of medications that you are currently taking
- ✓ **Ask your team if there are special instructions you need to follow.**
- ✓ **Get tips from your doctor and nurse about managing side effects.**
- ✓ **We have found that information reduces patients' fears and helps patients and families care for themselves. You can get information about radiation therapy by:**
 - Reading this guide
 - Asking your doctor and nurse any questions you have
 - Visiting the Blum Cancer Support and Education Hub in the Yawkey Building, outside suite 7B
 - Checking out the monthly Cancer Center Calendar for a listing of wellness services and educational workshops
- ✓ **If you need help getting to other appointments at Mass General, please ask us.**
- ✓ **Talk with an oncology social worker about any concerns you may have.**
They provide counseling and access to hospital and community resources.



MASSACHUSETTS
GENERAL HOSPITAL

CANCER CENTER

Everyday Amazing

Massachusetts General Hospital Cancer Center

Department of Radiation Oncology
55 Fruit Street
Boston, MA 02114
(617) 726-8650
www.massgeneral.org/cancer

Mass General Cancer Center at Mass General Waltham

52 Second Avenue
Suite 1110
Waltham, MA 02451
(781) 487-6100

Mass General Cancer Center at Newton Wellesley

Vernon Cancer Center
2014 Washington Street
Newton, MA 02462
(617) 219-1200

Mass General Cancer Center at Emerson Hospital-Bethke

Emerson Hospital Bethke Cancer Center
131 Old Road to Nine Acre Corner
Concord, MA 01742
(978) 287-3290

Mass General/North Shore Cancer Center

102 Endicott Street
Danvers, MA 01923
(978) 882-6060

A COMPREHENSIVE CANCER CENTER

An integral part of one of the world's most distinguished academic medical centers, the Massachusetts General Hospital Cancer Center is among the leading cancer care providers in the United States.

U.S. News & World Report consistently ranks the Mass General Cancer Center as one of the top ten cancer centers in the country. Its nurses were the first in Massachusetts to achieve Magnet status from the American Nurses Credentialing Center in recognition of the hospital's exceptional nursing care.

Known for providing customized, innovative treatments and compassionate care to both adults and children, the Cancer Center comprises more than 37 treatment programs within 29 fully integrated, multidisciplinary disease centers and a vast array of support and educational services. Its network of affiliations extends throughout New England and the southeastern U.S.

The Cancer Center's commitment to eradicating cancer is fueled by scientific investigation conducted as part of one of the largest hospital-based research programs in the nation. Through a powerful synergy between laboratory scientists and bedside physicians, the Mass General Cancer Center fosters innovation in all phases of cancer research. Physician investigators conduct nearly 400 clinical trials annually.

The Massachusetts General Hospital Cancer Center is proud to be a founding member of a Harvard Medical School consortium designated by the National Cancer Institute as a comprehensive cancer center. This prestigious seven-member center forms the largest cancer research collaboration in the country. The promising new treatments developed through this partnership are revolutionizing the future of cancer medicine.