

Radiation Therapy to the Abdomen

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Introduction

You will be getting external beam radiation to treat your cancer. A beam of radiation will be directed to the tumor site from a treatment machine. The beam passes through the body and destroys cancer cells in its path. This booklet describes the treatment. It also tells you about the side effects you might have and how to manage them.

Simulation

Before you begin treatment you will go through simulation and treatment planning. These are done to ensure that:

- The treatment site is mapped out.
- You get the right dose of radiation.
- The dose to nearby tissue is minimized.

During simulation, you will have x-rays and your skin will be marked. These marks define the area to be treated. Simulation takes two to four hours.

Preparation for Simulation

Depending on the area being treated, your doctor or nurse may tell you that you should not eat or drink before your simulation. Wear comfortable clothes. **Do not** wear earrings or necklaces. If you feel that lying still for a long time will be uncomfortable, take Tylenol® or your usual pain medicine one hour before your appointment. If you think you may get anxious during the procedure, speak with your doctor about medicine that may be helpful.

Simulation Day

When you arrive for your appointment, the radiation therapist will greet you and take a photograph of your face. This picture will be used to identify you throughout your treatment. It is a standard safety measure. The therapist will explain the simulation to you. If you have not already signed a consent form, your doctor will review everything with you. You will then sign the consent.

You may be asked to drink about one cup of barium. This is a contrast liquid. It helps us to see your small intestine on the x-rays that will be taken later.

For the simulation procedure, you will get undressed and change into a gown. Keep your shoes on. The therapists will then help you lie on your back on the simulation table. Although the simulation table will have a sheet on it, it is hard and has no cushion. If you have not taken pain medicine and think you may need it, tell the therapists before the simulation begins. The room is usually cool. If you feel uncomfortable at any time, let the therapists know. Throughout simulation, you will feel the table move to different positions. The lights in the room will be turned on and off. **You will see red laser lights on each wall. Do not look directly into the red beam as this may hurt your eyes.** The therapists use these laser lights as guides when they position you on the table.

Although the therapists will walk in and out of the room during the procedure, there will always be someone who can see and hear you. During the simulation, you will hear the therapists speaking to each other as they work. They will explain what they are doing, but we ask you not to speak once they begin, as it may alter your position. However, do tell them if you are uncomfortable or need assistance. To help pass the time, music can be played. If you would like, ask a radiation therapist to play a tape or CD for you. You may bring one of your own from home.

Positioning (The Mold)

You will be lying on your back throughout the simulation, with your arms either at your side or raised above your head. A mold may be made of your upper body to help you maintain the same position each time you receive your treatment. The therapists will pour warm fluid into a large plastic bag that will be sealed and placed on the table.

You will lie on top of the bag, on your back, with your arms raised above your head. The fluid will feel warm initially, but it will cool as it hardens. While it is cooling, the therapists will tape the bag to your skin so that it will take the shape of your upper body and arms. This procedure takes about 15 minutes. During the simulation, and every day of your treatment, you will lie in this mold, to help ensure you are in the correct position.

X-ray Images

X-ray images will be taken of the area to be treated. You will be lying in the mold when these are done. They may be done with a machine called a simulator or on a CT scan machine. Sometimes the CT scans are done in the Department of Radiology. If you are having a CT scan, a nurse may start an intravenous (IV) line so that contrast, or dye, may be given to you before the scan to help us get clear images of the area to be treated. These CT scans are used only to map your treatment plan. They are not used for diagnosis or to find tumors.

You will hear the machine as it is turned on and off. Even if the noise seems loud, the therapists will be able to hear you if you need to speak with them. The x-ray images take about 45 minutes.

Skin Markings (Tattoos)

The therapists will draw on your skin with a felt marker. Then they will make permanent skin markings, called tattoos, with a sterile needle and a drop of ink. The sensation of getting one feels like a pinprick. The tattoo marks are no bigger than the head of a pin. You will receive five to seven tattoos in the area being treated. After the tattoos are made, the therapists will take several photographs of you in the simulation position. The photographs and tattoo marks will be used to position you correctly on the table each day for treatment. The felt markings can be washed off after simulation. The tattoos are permanent and will not wash off.

For more information regarding simulation, go to the Memorial Sloan-Kettering Cancer Center web site using the following URL: <http://www.mskcc.org/PatientEd/Procedures/simulation>. Select Abdomen.

After Simulation

If you were given contrast to drink during the simulation, take two tablespoons of Milk of Magnesia® when you return home. You need it to help you pass the contrast.

Scheduling

At some time during the simulation, the therapist(s) will ask you what time of day you would like to have treatments. We will try to give you the time you like. However, we need a two-hour window because the time you prefer may not be open. If the time you request is taken, you will move to that time slot once that patient who has it completes treatment. Please know that we will do our best to give you the appointment time you want as soon as we can.

Treatment Planning

During the time between your simulation and initial setup, your radiation oncologist will work with a team to plan your treatment. They will use your simulation x-rays and/or CT scan to plan the angles and shapes of the radiation beams for you. They will also compute the dose that your body will receive. The details are carefully planned and checked. This takes between five days and two weeks.

Initial Setup or Beam Films

Before your first treatment, you will be scheduled for a set-up. This generally takes about one hour. If pain medicine was helpful during simulation, you may want to take it before this visit.

When you come for the set-up, you will be shown the dressing room and asked to change into a gown. The therapists will bring you to the room where you will receive your treatment each day. They will position you on the table. You will lie exactly as you did the day of your simulation. X-rays of each of the radiation beams (beam films) will be taken to make sure that your position is correct and that the area being treated is exactly what your radiation oncologist wants. The beam films will be repeated throughout your treatment. They are used to make sure you are in the right position and are getting treated in the right place. They are **not** used to see how your tumor responds to the treatment. You will be scheduled to begin treatment within several days after your setup.

Treatment Administration

Radiation treatments are given daily, Monday through Friday, for about _____ weeks. You must come in every day you are scheduled to ensure you complete treatment in an appropriate time frame. You may have one or two days off during the course of treatment to allow for machine maintenance. If anything comes up that requires you to change your schedule, please speak with your radiation therapist.

After you check in at the reception desk, have a seat in the waiting room. When they are almost ready for you, the therapists will ask you to change. When they bring you into the treatment room, the therapists will help you lie on the table, in your mold if you have one. Once you are properly positioned, the therapists will leave the room, close the door, and begin the treatment. You will not see or feel the radiation, although you may hear the machine as it moves around you and is turned on and off. You will be in the treatment room for about 30 minutes, depending on the complexity of your therapy. Most of this time will be spent positioning you correctly. The actual treatment only takes a few minutes.

Although you are alone during the treatment, the therapists can see you on a monitor and hear you through an intercom at all times. Breathe normally during the treatment, but do not move. If you are very uncomfortable and need help, speak to the therapists. They can turn off the machine and come in to see you at any time, if necessary.

Some patients receive chemotherapy on some days during their radiation. Most types can be given before or after your radiation. The timing does not usually matter. Your doctor will tell you if a specific timing is needed for you.

Weekly Visits During Treatment (“Status Checks”)

Your radiation oncologist oversees your entire treatment. He or she will see you each week with your nurse to evaluate your response to treatment. This visit will be before or after your treatment each _____. Expect to be here about one extra hour that day. This visit is a good time to ask questions and discuss any concerns you have. If you need to speak with your doctor or nurse any time between these weekly visits, ask the support staff or therapists to contact them when you come in for treatment.

Side Effects

Some people develop side effects from treatment. The type and how severe they are depend on many factors. These include the dose of radiation, the number of treatments, and your general state of health. Side effects may be worse if you are also having chemotherapy. Below are the most common side effects of radiation therapy to the abdomen. You may have all, some, or none of these.

Many patients ask about vitamins. You may take a daily multivitamin if you wish. Do not take more than the recommended daily allowance of any vitamin. Do not take any supplements unless your doctor approves them. This includes both nutritional and herbal.

Loss of Appetite

Some people find that their appetite decreases during treatment. Your body needs protein and calories. They help repair the normal cells injured from radiation. Try not to lose weight during your treatment. Also, if you have a

mold to position you for treatment, it may not fit correctly if your weight changes. Below are suggestions to help you maintain your weight.

- Be selective about what you eat to be sure you increase your calories and protein. We will give you the booklet *Eating Well During and After Cancer Treatment*. It contains many suggestions. Try the different foods that are recommended.
- Try to eat small meals often throughout the day. If you never seem to feel hungry, set up a schedule to ensure you eat regularly, for example every two hours.
- Eat your meals in a calm place and take your time. Eat with family or friends whenever possible.
- Vary the color and texture of foods to make them more appealing.
- Bring snacks and drinks with you when you come for treatment. You can have these while you are waiting or while you are coming to and from the department each day.
- Liquid nutritional supplements can be taken if you are not eating enough food. There are many products available, and they come in many flavors. Ask your doctor or nurse which product is best for you.

Nausea

Some people experience nausea, with or without vomiting some time during treatment. This may occur as early as the first treatment. If you have nausea or vomiting, tell your doctor or nurse. Medicine can be prescribed to relieve this. Take the anti-nausea medicine one hour before radiation. A change in your diet may also be helpful. Below are suggestions to help reduce your nausea and ensure you take in adequate food and fluids.

- Eat a light meal before your treatment.
- If you feel nauseated, nibble often on the dry starchy foods listed below. Have small frequent meals all day. Some people also find ginger tea helpful as long as there are no sores in your mouth.
- Drink only a small amount of liquids with your meals to prevent feeling full or bloated.
- Sip liquids between meals throughout the day. Using a straw may help. Try freezing your favorite beverages in ice cube trays and sucking on these during the day.
- Select foods that will not cause nausea. Foods that are usually well tolerated include:
 - Foods at room temperature or cooler.
 - Liquids that are cooled or chilled.
 - Dry, starchy foods such as toast, soda crackers, melba toast, dry cereal, pretzels, and angel food cake.
 - Yogurt, sherbet, and clear liquids (e.g., apple juice, Jell-O®, ginger ale).
 - Cold chicken or turkey, baked or broiled, with the skin removed.
 - Soft fruits and vegetables.
- Avoid foods and liquids that may increase nausea. These include:
 - Hot foods with strong odors.
 - Spicy, fatty, greasy, and fried foods.
 - Very sweet foods.
 - Acidic or citrus foods and juices (e.g., orange, grapefruit, pineapple, tomato).
 - Alcohol.

Pain or Difficulty with Swallowing or Heartburn

If your stomach is in the area being treated, you may have heartburn or an upset stomach. If your esophagus is in the area being treated you may have pain or difficulty with swallowing. These side effects often begin the second or third week of treatment. They can last two weeks after treatment is completed. If you have heartburn, tell your doctor or nurse. There are medicines that can help. Follow the suggestions below. They will help to minimize discomfort and ensure that you get adequate nutrition during your treatment.

If you are having difficulty or pain swallowing:

- Avoid the following because they may irritate your esophagus:
 - Very hot foods and fluids.
 - Dry, hard, and coarse foods (e.g., chips, pretzels, crackers).
 - Spices (e.g., pepper, chili, Tabasco® sauce, curry).
 - Acidic or citrus foods and juices (e.g., orange, grapefruit, pineapple, tomato).
 - Substances with caffeine (e.g., coffee, tea, cola, chocolate).
 - Alcohol.
 - Tobacco.
- Take small bites of food and chew well before swallowing.
- Soft, moist, or blenderized foods may be easier to swallow. Sauces and gravies may also be helpful.
- Cold foods and liquids may be helpful. Some people find that fruit nectars are particularly soothing.
- If you are having trouble swallowing pills, ask your doctor or nurse if the medicine comes in liquid form. If not, many pills can be crushed and taken with applesauce. However, check with your doctor, nurse, or pharmacist. Crushing some medicines affects their action. Ask if you can open a capsule and empty the contents into applesauce.
- If you are having heartburn, do not eat at bedtime. Sit upright for at least 30 minutes after each meal. This helps to prevent stomach juices from flowing back into your esophagus.
- You can take liquid supplements if you are not eating enough food. There are many products available, and they come in a variety of flavors. Speak with your doctor or nurse about how to select the one that will be best for you.
- Let your doctor or nurse know if you have trouble swallowing or have heartburn. Medicine can be prescribed to make you more comfortable.

Diarrhea

Some people develop changes in their bowel movements. It begins the first few weeks after treatment starts. You may have more bowel movements and softer stools. Some people develop diarrhea (increased watery stools). Below are guidelines to help you manage these problems during treatment. Start these if you have symptoms and continue until your bowel movements return to your usual pattern. This may take two to four weeks after your treatment is done.

- Follow a diet that is low in fiber, low in fat, and lactose-free. Your nurse will give you a booklet describing this diet in detail. When your bowel movements return to your normal pattern, you can slowly reintroduce foods from your usual diet.

- Drink increased fluids to replace some of the water and salts you lose in the stool. Try to drink two to three quarts of liquids throughout the day. Select fluids such as diluted Gatorade®, non-fat soup broth, Pedialyte®, and diluted juices and nectars. Limit fluids with caffeine (e.g., coffee, tea, colas), as they can further dehydrate you.
- Eat bananas and potatoes without the skin. They help replace important salts you may lose with diarrhea.
- Avoid any food or fluid that makes your symptoms worse.
- Take medicine for diarrhea. You can buy Imodium® without a prescription. Your doctor may prescribe other medicines.

Skin Reaction

During the course of radiation therapy, you may notice changes in the skin and hair in the area being treated on your abdomen as well as on the back, where the radiation beam exits the body. This is normal and expected. After two or three weeks, your skin will become pink or tanned. As treatment continues, it may feel dry and itchy, it may look flaky, and become redder. The skin gradually heals after treatment is completed but it generally takes three or four weeks.

You may also lose some or all of the hair on your abdomen. The hair will usually grow back two to four months after treatment is completed.

Below are guidelines to care for your skin while you are receiving radiation therapy. Continue these until the skin reaction resolves. These refer to the skin **only in the area being treated**.

Keep Your Skin Clean

- Bathe or shower daily using warm water and a mild unscented soap. Examples of soaps you may use include Dove®, Basis®, and Cetaphil®. Rinse the skin well, and pat dry with a soft towel.
- When washing, be gentle with your skin in the area being treated. Do not use a washcloth or a scrubbing cloth or brush.
- The tattoo marks are permanent and will not wash off. You may get other markings during treatment, for example a purple felt-tipped marker outline of your treatment area. You can use mineral oil to remove these lines. Do not use alcohol or alcohol pads on the skin in the area being treated.

Moisturize Your Skin

- You should start using a moisturizer when you begin treatment. This can help to minimize the skin reaction. There are a few moisturizers you can use. There is no evidence that one is better than another. Over-the-counter moisturizers you may use are Aquaphor®, or Eucerin®. There are many other good products, and your nurse may recommend one of these to you. Use only one at a time unless your nurse tells you to use more.
- If you are using a moisturizer, apply it two times a day. Your nurse will tell you if you need to do it more or less often.
 - If you are treated in the morning, apply it:
 - After your treatment.
 - Before you go to bed.
 - If you are treated in the afternoon, apply it:
 - In the morning, at least four hours before your treatment.
 - Before you go to bed.
 - If you are not being treated that day, apply it:
 - In the morning.
 - Before you go to bed.

- Do not wash off the moisturizer before your treatment. It could irritate your skin.
- Do not apply moisturizer four hours before your treatment.

Avoid Irritating the Skin in the Area Being Treated

- Wear loose-fitting **cotton** undergarments.
- Do not use any other moisturizers, creams, or lotions in the area being treated unless recommended by your doctor or nurse.
- Do not use powders in the area being treated.
- Do not use any tape on the treated skin.
- Avoid applying extreme heat or cold to the treated skin. This includes hot tubs, water bottles, heating pads, and ice packs.
- If your skin is itchy, don't scratch it. Tell your nurse so that he or she can recommend how to relieve the itching.
- If you have no skin reaction, you may swim in a chlorinated pool. However, be sure to rinse off the chlorine immediately after leaving the pool.
- Avoid tanning or burning your skin during treatment and for the rest of your life. If you are going to be in the sun, use a PABA-free sunblock with an SPF of 30 or higher. Wear clothing that covers you as much as possible.

Fatigue

Most people develop fatigue after two or three weeks of treatment. People commonly describe their fatigue as:

- Tiredness.
- Weariness.
- Lack of energy.
- Weakness.
- Being unable to concentrate.

This gradually goes away after your treatment is done, but it may last several months.

There are a number of reasons people develop fatigue during treatment:

- The effects of radiation on the tissues.
- Making trips for treatment each day.
- Not having enough restful sleep each night.
- Not eating enough protein and calories.
- Having pain or other symptoms.
- Feeling anxious or depressed.

Some people find that their fatigue is worse at certain times of the day and that they have more energy at other times. Below are suggestions to help you manage your fatigue.

- If you are working and are feeling well, we encourage you to keep working during treatment if possible. However, you may find that working shorter hours will help you feel less tired.

- Plan your daily activities. Pick those things that are necessary and most important to you and do them when you have the most energy.
- Plan time to rest or nap for short periods during the day, especially when you feel more tired. You may also find it helpful to go to sleep earlier at night and get up later in the morning.
- Ask family and friends to help you with things such as shopping, cooking, and cleaning.
- Some people find exercise increases their energy level. Ask your doctor if you can do light exercise, such as walking.
- Eat foods high in protein and calories.
- Ask your doctor or nurse for help with other symptoms you may have. Some people have pain or nausea, feel depressed or anxious, or cannot sleep well.

Bone Marrow Suppression

Bone marrow is the substance inside bone that produces blood cells. There are three main types of blood cells. White blood cells fight off infection, platelets help your blood to clot, and red blood cells carry oxygen needed for energy. When large areas of bone marrow are in the area being irradiated, it can affect the production of blood cells. Your blood cell counts may go down. We will monitor you throughout treatment with a blood test called a CBC (complete blood count). If your counts drop, we may stop your treatment until they return to higher levels. We will tell you what precautions to take. If you develop a fever of 100.4° F (38° C) or greater, shaking chills, flu-like symptoms, or bleeding, notify your doctor or nurse immediately. You may need to be evaluated to see if you have an infection. You may need antibiotics or have another problem related to a drop in your blood counts.

Sexual Issues

- There is nothing radioactive inside your body. You do not need to avoid close contact with other people.
- You do not have to change your sexual activity unless your doctor gives you specific advice.
- You may have concerns about the effects of cancer and your treatment on your sexuality. An excellent resource is the booklet *Sexuality and Cancer*. There are two versions, one for men and another for women. You can get a copy from the American Cancer Society. Call 1-800-ACS-2345 and tell them which one you want.

MSKCC has a *Sexual Health Program* to help patients address the sexual impact of their disease and treatment. You can meet with a specialist before, during, or after your treatment. Call 212-639-8480 to make an appointment.

Emotional Concerns

Having cancer is likely to cause you and the people who care about you to react in many ways. You may feel:

- Anxious.
- Nervous.
- Down.
- Depressed.
- Worried.
- Afraid.
- Alone.
- Numb.
- Ambivalent.
- Angry.

All these feelings are expected if you or someone you love has a serious illness.

You may also worry about telling your employer that you have cancer or about paying your medical bills. You may worry about how your family relationships may change, about the effect of cancer or treatment on your body, and if you will continue to be sexually attractive. You may worry that the cancer will come back. When people try to protect each other by hiding their feelings, they can feel very alone. It might help to talk about your feelings.

Talking can help the people around you know what you are thinking. It can bring you closer at a time when support is so needed.

Each of us has our own way of responding to difficult situations. Generally we use whatever has worked for us in the past. However, sometimes this is not enough. We encourage you to speak with your doctor, nurse, and social worker about your concerns.

After You Complete Treatment

After your treatment is completed, you must keep your regularly scheduled follow-up appointments with your radiation oncologist. This will enable us to evaluate your response to treatment. Blood tests, X-rays, and scans may also be ordered during your follow-up care. Before coming, write down your questions and concerns. Bring this and a list of all your medicines. If you are running low on any medicine you need, let your doctor know before you run out. You may also call your doctor or nurse at any time after your treatment is completed or between follow-up visits if you have any questions or develop any problems.

Conclusion

We hope this booklet has been helpful. If you have any questions, please speak with your radiation oncologist or nurse. Below are some important telephone numbers.

Monday to Friday 9AM to 5PM

Radiation Oncologist _____

Telephone _____

Radiation Nurse _____

Telephone _____

Secretary (to schedule appointments and obtain copies of records)

Telephone _____

If you have any problems that must be addressed in the evenings or over the weekend, please call _____ and ask for the radiation oncologist on call.



Memorial Sloan-Kettering
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