



PATIENT & CAREGIVER EDUCATION

Selective Internal Radiation Therapy (SIRT) Treatment

This information will help you get ready for selective internal radiation therapy (SIRT) treatment at Memorial Sloan Kettering (MSK).

SIRT (sometimes called radioembolization) is a treatment that's used to destroy liver tumors. During your SIRT treatment, tiny radioactive beads are sent directly to the tumor through the arteries (blood vessels) in your liver. The beads give off radiation over a very short distance. Radiation is high-energy beams that damage cancer cells making it hard for them to reproduce. The beads get the radiation inside the tumor, helping to reduce the amount of radiation that gets to the rest of your liver, as well as the rest of your body.

Mapping Arteriogram Procedure

About a month before your SIRT treatment, you will have a mapping arteriogram procedure. Mapping arteriogram is done to plan for your SIRT treatment. The first part of the procedure will tell us which liver arteries bring blood to the liver tumors. It

will also tell us if there are arteries that carry blood outside of your liver to other areas in your abdomen (belly). If these arteries are found, they are blocked so that the radiation won't harm your other organs. The second part of the procedure will check for any possible flow of radiation from your liver to your lungs.

Before Your Mapping Arteriogram Procedure

Ask about your medications

You may need to stop taking some of your medications before your procedure. Talk with your doctor about which medications are safe for you to stop taking. We have included some common examples below.

You don't need to take any special medications before your mapping procedure.

Anticoagulants (blood thinners)

If you take a blood thinner (medication that affects the way your blood clots), ask the doctor performing your procedure what to do. Their contact information is listed at the end of this resource. Whether they recommend you stop taking the medication depends on the reason you're taking it.

Do not stop taking your blood thinner medication without talking with your doctor.

Examples of Blood Thinners

apixaban	dalteparin	meloxicam (Mobic®)	ticagrelor
----------	------------	--------------------	------------

(Eliquis®)	(Fragmin®)		(Brilinta®)
aspirin	dipyridamole (Persantine®)	nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Advil®) or naproxen (Aleve®)	tinzaparin (Innohep®)
celecoxib (Celebrex®)	edoxaban (Savaysa®)	pentoxifylline (Trental®)	warfarin (Coumadin®)
cilostazol (Pletal®)	enoxaparin (Lovenox®)	prasugrel (Effient®)	
clopidogrel (Plavix®)	Fondaparinux (Arixtra®)	rivaroxaban (Xarelto®)	
dabigatran (Pradaxa®)	heparin (shot under your skin)	sulfasalazine (Azulfidine®), Sulfazine®)	

Please read our resource *Common Medications Containing Aspirin and Other Nonsteroidal Anti-inflammatory Drugs (NSAIDs)* (www.mskcc.org/pe/common_meds). It has important information about medications you'll need to avoid before your procedure and what medications you can take instead.

Medications for diabetes

If you take insulin or other medications for diabetes, ask the doctor who prescribes the medication what you should do the morning of your procedure. You may need to change the dose before your procedure.

Diuretics (water pills)

If you take any diuretics (medications that make you urinate more often), ask the doctor performing your procedure what to do. You may need to stop taking them the day of your procedure. Diuretics are sometimes called water pills. Some examples are furosemide (Lasix®) and hydrochlorothiazide.

Reactions to contrast

Contrast is a special dye that makes it easier for your doctor to see differences in your internal organs. You will be given contrast as part of your procedure. Some people can have an allergic reaction to contrast. Be sure to tell your doctor or nurse about any allergies you have or if you've had a reaction to contrast in the past.

Arrange for someone to take you home

You must have a responsible care partner take you home after your procedure. Make sure to plan this before the day of your procedure.

If you don't have someone to take you home, call one of the agencies below. They will send someone to go home with you. There's usually a charge for this service, and you will need to provide transportation.

Agencies in New York

Partners in Care: 888-735-8913

Agencies in New Jersey

Caring People: 877-227-4649

Caring People: 877-227-4649

Tell us if you're sick

If you develop any illness (fever, cold, sore throat, or the flu) before your procedure, call a nurse in Interventional Radiology at 212-639-2236. A nurse is available Monday through Friday from 9:00 AM to 5:00 PM. After 5:00 PM, during the weekend, and on holidays, call 212-639-2000 and ask for the Interventional Radiology fellow on call.

Note the time of your appointment

A staff member from Interventional Radiology will call you 2 business days before your procedure. If your procedure is scheduled on a Monday, you will be called on the Thursday before.

The staff member will tell you what time you should arrive for your procedure. They will also tell you where to go for your procedure. If you don't receive a call by noon the business day before your procedure, please call 212-639-5051.

Use this area to write down the date, time, and location of your procedure:

If you need to cancel your procedure for any reason, call the doctor who scheduled it for you.

Instructions for eating and drinking before your surgery

- Do not eat anything after midnight the night before your surgery. This includes hard candy and gum.
- Between midnight and up until 2 hours before your scheduled arrival time, you may drink a total of 12 ounces of water (see figure).
- Starting 2 hours before your scheduled arrival time, do not eat or drink anything. This includes water.



The Day of Your Procedure

Things to remember

- Take only the medications your doctor told you to take the morning of your procedure. Take them with a few sips of water.
- Don't put on any cream (thick moisturizer) or petroleum jelly (Vaseline®). You can use deodorant and light moisturizers.
- Don't wear eye makeup.
- Remove any jewelry, including body piercings.

- Leave all valuables, such as credit cards and jewelry, at home.
- If you wear contact lenses, wear your glasses instead, if possible. If you don't have glasses, please bring a case for your contacts.

What to bring with you

- A list of the medications you take at home.
- Medications for breathing problems (such as inhalers), medications for chest pain, or both.
- A case for your glasses or contacts.
- Your Health Care Proxy form, if you have completed one.
- If you use a CPAP or BiPAP machine to sleep at night, please bring your machine with you, if possible. If you can't bring your machine with you, we will give you one to use while you're in the hospital.

What to expect

Once you arrive, doctors, nurses, and other staff members will ask you to state and spell your name and date of birth many times. This is for your safety. People with the same or similar name may be having procedures on the same day.

After changing into a hospital gown, you will meet your nurse. They will place an intravenous (IV) catheter into a vein, usually in your hand or arm. At first, you will receive liquids through the

IV, but it will be used later to give you medication to make you sleepy and ensure that you are comfortable during the procedure.

During Your Mapping Arteriogram Procedure

When it's time for your procedure, you will be brought into the procedure room and helped onto an exam table. You will be attached to equipment to monitor your heart rate, breathing, and blood pressure. You will get oxygen through a thin tube that rests below your nose called a nasal cannula. While lying on your back on the table, you will be given sedation medication through your IV. This medication will make you sleepy and relaxed.

After you're sedated, you may have a urinary catheter (thin, flexible tube) placed in your bladder to monitor the amount of urine you're making. Your groin will be cleaned, shaved, and covered with sterile drapes. A local anesthetic (medication to make an area of your body numb) will be injected into the area where your doctor will be working. A catheter will be placed through the artery in your groin up to the arteries that supply blood to your liver. You will be given contrast dye through the catheter and images will be taken.

Next, you will get an injection (shot) of a radioactive imaging dye into your liver artery. Before you leave the procedure room, we will remove the catheter in your artery and seal the artery with a special device or by holding pressure on your groin for 15 to 20

minutes.

After your procedure, you will go to a room in the Molecular Imaging and Therapy Service (also known as Nuclear Medicine) for a scan. This scan will check if any of the radioactive imaging dye injected into your liver artery traveled to your lungs or anywhere else outside of your liver. This will help us decide whether it will be safe to proceed with your SIRT treatment. The scan will take about 45 minutes.

After Your Mapping Arteriogram Procedure

After your procedure, you will be taken to the recovery area. You will be asked to lie flat with your right leg straight for 1 to 4 hours. Once you're able to safely sit up, the catheter in your bladder will be removed. You will be in the recovery area for 3 to 4 hours before you go home. Your family and friends can be with you during this time.

Preparing for Your SIRT Treatment

A few weeks after your mapping arteriogram procedure, you will have your SIRT treatment. The preparation for your SIRT treatment will be almost the same as the preparation for your mapping arteriogram. Please follow the instructions in the “Before Your Mapping Arteriogram Procedure” section of this resource, as well as the additional instructions in the following sections.

You will need to have a blood test before you have your SIRT treatment to test your liver function. Your nurse will arrange this for you before your treatment.

5 days before your SIRT treatment

Your nurse will give you a prescription for a medication that will help prevent stomach pain, if you aren't already taking a similar medication. Start taking this medication 5 days before you have your SIRT treatment. You will continue to take this medication after your treatment.

The Day of Your SIRT Treatment

Your SIRT treatment will be almost the same as your mapping arteriogram procedure. Follow the same instructions on what to bring, where to park, and where to go.

What to expect

When it's time for your procedure, you will be brought into the procedure room and helped onto an exam table. You will be attached to equipment to monitor your heart rate, breathing, and blood pressure. You will receive oxygen through your nose. While lying on your back on the table, you will be given sedation medication through your IV to make you sleepy and relaxed. You will have a catheter inserted into your bladder to drain your urine.

Once you're relaxed, a catheter will be placed through the artery

in your groin up to the arteries that supply blood to your liver. This time, tiny radioactive beads will be given through the catheter. As with the mapping procedure, when the treatment is completed, your doctor will remove the catheter in your artery and seal the artery using a special device or by holding pressure on your groin. You will also go to Molecular Imaging and Therapy Service (also known as Nuclear Medicine) for a scan. This may not be done right after your procedure.

Your recovery time will be about the same as for the mapping procedure. Your bladder catheter will be removed in the recovery area.

If you have cancer on both sides of your liver, SIRT may be given in 2 separate treatments. The second treatment is about 6 weeks after the first.

After Your SIRT Treatment

Take your Medrol dose pack

A Medrol dose pack is a low dose steroid that you'll need to take after your treatment to prevent fatigue (feeling more tired or weak than usual) caused by radiation. You will start taking your Medrol dose pack before breakfast the day after your treatment procedure. Follow the instructions on the package for taking the medications. The Medrol dose pack doesn't completely stop fatigue, but it usually makes it more manageable. Steroids can increase blood glucose so don't take the Medrol dose pack if

you're diabetic. Your doctor will give you more information.

Follow radiation safety precautions

Follow the radiation safety precautions below, and the instructions the health physicist (staff member who specializes in radiation safety) gave you, to keep from exposing other people to radiation.

- After your SIRT treatment, you will have a small amount of radiation in your body fluids, such as in your blood, urine (pee), bowel movements (poop), and vomit (throw up). This will slowly decrease and become inactive over time. A health physicist will give you written instructions to follow at home.
- You don't need to avoid contact with other people after your SIRT treatment. You can be in the same room with anyone, including pregnant women and small children.
- You shouldn't become pregnant or father a baby while you're undergoing SIRT treatment. To find out more information about sexual activity during treatment, ask your nurse for the resource *Sexual Activity During Cancer Treatment: Information for Men* (www.mskcc.org/pe/sexual_activity_treatment_men) or *Sexual Activity During Cancer Treatment: Information for Women* (www.mskcc.org/pe/sexual_activity_treatment_women).
- If you're breastfeeding, talk with your doctor about continuing

after your SIRT treatment.

- If you have to go to a doctor, the emergency room, or if you need surgery within 3 days of your SIRT treatment, tell the medical staff that you had treatment with a small amount of radioactive material.
- Some types of security equipment (such as at the airport or outside a tunnel) can detect very small amounts of radiation. A staff member will give you a card that says you received radioactive medicine and that you may give off small amounts of radioactivity for up to 1 month after your treatment. If you're stopped by law enforcement at a checkpoint, show them this card.

For 24 hours after your SIRT treatment:

- Sit down to urinate (pee). Don't use a urinal.
- If your urine is being collected in a catheter bag, empty your bag into a toilet and flush it.
- Wear gloves when wiping up any body fluids or when handling clothing stained with body fluids. Flush any tissue with your body fluids down the toilet.
- Wash your hands with soap and water for at least 20 seconds after using the bathroom, and after touching body fluids or clothing and linens that have body fluids on them.
- Wash any clothes and linens that have body fluids on them

separately from your other clothes.

- Use a condom during sexual activity.

Follow these precautions for 24 hours after your SIRT treatment. After 24 hours, you don't need to follow these precautions.

If you have any questions about radiation safety, call 212-639-7391 Monday through Friday from 9:00 AM to 5:00 PM.

Side effects of SIRT treatment

After leaving the hospital, some people develop side effects from SIRT treatment, including:

- A fever of 100.4° F (38° C) or higher)
- Abdominal pain
- Nausea

When to Call Your Healthcare provider

Call your healthcare provider when you have any of the following:

- A fever of 100.4° F (38° C) or higher.
- Pain that doesn't go away, especially around your abdomen or groin.
- Nausea or vomiting that is worse than it was before your mapping procedure or treatment.
- Any symptoms that are worrying you.

Contact Information

If you have any questions or concerns, please call Interventional Radiology at 212-639-2236. You can reach a staff member Monday through Friday from 9:00 AM to 5:00 PM. After 5:00 PM, during the weekend, and on holidays, please call 212-639-2000 and ask for the fellow on call for Interventional Radiology.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Selective Internal Radiation Therapy (SIRT) Treatment - Last updated on March 28, 2019

©2020 Memorial Sloan Kettering Cancer Center