



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'll 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 Procedure

Ask about your medicines

You may need to stop taking some of your medicines before your procedure. Talk with your healthcare provider about which medicines are safe for you to stop taking. We've included some common examples below.

Blood thinners

Blood thinners are medicines that affect the way your blood clots. If you take blood thinners, ask the healthcare provider performing your procedure what to do. They may recommend you stop taking the medicine. This will depend on the type of procedure you're having and the reason you're taking blood thinners.

Examples of common blood thinners are listed below. There are others, so be sure your care team knows all the medicine you take. **Do not stop taking your blood thinner without talking with a member of your care**

team.

- Apixaban (Eliquis[®])
- Aspirin
- Celecoxib (Celebrex[®])
- Cilostazol (Pletal[®])
- Clopidogrel (Plavix[®])
- Dabigatran (Pradaxa[®])
- Dalteparin (Fragmin[®])
- Dipyridamole (Persantine[®])
- Edoxaban (Savaysa[®])
- Enoxaparin (Lovenox[®])
- Fondaparinux (Arixtra[®])
- Heparin (shot under your skin)
- Meloxicam (Mobic[®])
- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Advil[®], Motrin[®]) and naproxen (Aleve[®])
- Pentoxifylline (Trental[®])
- Prasugrel (Effient[®])
- Rivaroxaban (Xarelto[®])
- Sulfasalazine (Azulfidine[®], Sulfazine[®])
- Ticagrelor (Brilinta[®])
- Tinzaparin (Innohep[®])
- Warfarin (Jantoven[®], Coumadin[®])

Read *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil* (www.mskcc.org/pe/check-med-supplement). It has information about medicines you must avoid before your procedure.

Medicines for diabetes

Before your procedure, talk with the healthcare provider who prescribes your insulin or other medicine for diabetes. They may need to change the dose of the medicine you take for diabetes. Ask them what you should do the morning of your procedure.

Your care team will check your blood sugar levels during your procedure.

Diuretics (water pills)

A diuretic is a medication that makes you urinate (pee) more often. Hydrochlorothiazide (Microzide[®]) and furosemide (Lasix[®]) are common diuretics.

If you take any diuretics, ask the healthcare provider doing your procedure what to do. You may need to stop taking them the day of your procedure.

Reactions to contrast

Contrast is a special dye that makes it easier for your doctor to see differences in your internal organs. You'll 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.

Take devices off your skin

You may wear certain devices on your skin. Before your scan or procedure, device makers recommend you take off your:

- Continuous glucose monitor (CGM)
- Insulin pump

Talk with your healthcare provider about scheduling your appointment closer to the date you need to change your device. Make sure you have an extra device with you to put on after your scan or procedure.

You may not be sure how to manage your glucose while your device is off. If so, before your appointment, talk with the healthcare provider who manages your diabetes care.

Arrange for someone to take you home

You must have a responsible care partner take you home after your procedure. A responsible care partner is someone who can help you get home safely. They should be able to contact your care team if they have any concerns. Make sure to plan this before the day of your procedure.

If you don't have a responsible care partner to take you home, call one of the agencies below. They'll send

someone to go home with you. There's a charge for this service, and you'll need to provide transportation. It's OK to use a taxi or car service, but you still need a responsible care partner with you.

Agencies in New York

VNS Health: 888-735-8913

Caring People: 877-227-4649

Agencies in New Jersey

Caring People: 877-227-4649

Tell us if you're sick

If you get sick (including having a fever, cold, sore throat, or flu) before your procedure, call your IR doctor. You can reach them Monday through Friday from 9 a.m. to 5 p.m.

After 5 p.m., during the weekend, and on holidays, call 212-639-2000. Ask for the Interventional Radiology fellow on call.

Note the time of your appointment

A staff member will call you 2 business days before your procedure. If your procedure is scheduled for a Monday, they'll call you on the Thursday before. They'll tell you what time to get to the hospital for your procedure. They will also remind you where to go.

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

If you don't get a call by noon (12 p.m.) on the business day before your procedure, call 646-677-7001. If you need to cancel your procedure for any reason, call the healthcare provider who scheduled it for you.

The Day Before Your Procedure

Instructions for eating and drinking: 8 hours before your arrival time



- **Stop eating 8 hours before your arrival time, if you have not already.**
 - Your healthcare provider may tell you to stop eating earlier. If they do, follow their instructions.
- 8 hours before your arrival time, do not eat or drink anything except these clear liquids:
 - Water.
 - Soda.

- Clear juices, such as lemonade, apple, and cranberry juices. Do not drink orange juice or juices with pulp.
- Black coffee or tea (without any type of milk or creamer).
- Sports drinks, such as Gatorade®.
- Gelatin, such as Jell-O®.

You can keep having these until 2 hours before your arrival time.

The Day of Your Procedure

Instructions for drinking: 2 hours before your arrival time



Stop drinking 2 hours before your arrival time. This includes water.

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'll meet your nurse. They will place an intravenous (IV) catheter into a vein, usually in your hand or arm. At first, you'll 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'll be brought into the procedure room and helped onto an exam table. You'll be attached to equipment to monitor your heart rate, breathing, and blood pressure. You'll get oxygen through a thin tube that rests below your nose called a nasal cannula. While lying on your back on the table, you'll 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'll be given contrast dye through the catheter and images will be taken.

Next, you'll 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'll 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'll be taken to the recovery area. You'll 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'll 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'll 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'll 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'll 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'll be brought into the procedure room and helped onto an exam table.

You'll be attached to equipment to monitor your heart rate, breathing, and blood pressure. You'll receive oxygen through your nose. While lying on your back on the table, you'll be given sedation medication through your IV to make you sleepy and relaxed. You'll 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'll 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'll 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'll 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 *Sex and Your Cancer Treatment* (www.mskcc.org/pe/sex_cancer_treatment).
- 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 a.m. to 5:00 p.m.

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.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

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

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