Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

About Your Hepatic Embolization

This information will help you get ready for your hepatic embolization (heh-PA-tik EM-boh-lih-ZAY-shun) procedure at MSK.

A hepatic embolization stops the blood flow to liver tumors. The hepatic artery is the main source of blood for most liver tumors. During your procedure, your doctor will thread a small catheter (thin, flexible tube) into your hepatic artery. Then, they will inject (put) tiny particles through the catheter into your hepatic artery. These particles will block the blood flow to the tumors, which will kill them.

Your hepatic embolization will be done by an interventional radiologist (also called an IR doctor). This is a doctor who has special training in doing image-guided procedures.

What to do before your procedure

Ask about your medicines

You may need to stop taking some of your usual medicines before your procedure. Or, you may need to take a different dose (amount) than usual. Talk with your healthcare provider about how to take your medicines before your procedure. Do not change how you take your medicines without talking with a healthcare provider.

This section lists some examples of medicines, but there are many others. **Make sure your care team knows all the prescription medicines, over-the-counter medicines, and dietary supplements you take.** A prescription medicine is one you can only get with a prescription from a healthcare provider. An over-the-counter medicine is one you can buy without a prescription.

It's very important to take your medicines and supplements the right way in the days before your procedure. If you don't, we may need to reschedule your procedure.

Anticoagulants (blood thinners)

A blood thinner is a medicine that changes how your blood clots. Blood thinners are often prescribed to help prevent a heart attack, stroke, or other problems caused by blood clots.

If you take a blood thinner, ask your healthcare provider what to do before your procedure. They may tell you to stop taking it a certain number of days before your procedure. This will depend on the type of procedure you're having and the reason you're taking a blood thinner.

Here are some examples of blood thinners. There are others, so be sure your care team knows all the medicines 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 injection (shot)
- 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®)

Other medicines and supplements can change how your blood clots. Examples include vitamin E, fish oil, and nonsteroidal anti-inflammatory drugs (NSAIDs). 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 will help you know which medicines and supplements you may need to avoid before

your procedure.

Diabetes medicines

You may be taking insulin or other diabetes medicines. If so, talk with your MSK healthcare provider and the healthcare provider who prescribes it. Ask them what to do before your surgery or procedure. You may need to stop taking the medicine or take a different dose (amount) than usual. You may also need to follow different eating and drinking instructions before your surgery or procedure. Follow your healthcare provider's instructions.

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

GLP-1 medicines for weight loss

It's important to tell your healthcare provider if you take a GLP-1 medicine. You must follow special eating and drinking instructions before your surgery or procedure. **It is very important to follow these instructions. If you do not follow them, your surgery or procedure may be delayed or canceled.**

- **Follow a clear liquid diet the day before your surgery or procedure.** Do not eat any solid food. Read *Clear Liquid Diet* (www.mskcc.org/pe/clear-liquid-diet) to learn more.
- **Stop drinking 8 hours before your arrival time.** Do not eat or drink anything after this time, including clear liquids. You can have small sips of water with your medicines.

To learn more, read *Eating and Drinking Before Your Surgery or Procedure When Taking GLP-1 Medicines* (www.mskcc.org/pe/eat-drink-glp1).

Here are some examples of GLP-1 medicines. There are others, so be sure your care team knows all the medicines you take. Sometimes, these are prescribed to help manage diabetes or other conditions. Other times, they're prescribed for weight loss.

• Semaglutide (Wegovy®, Ozempic®, Rybelsus®) • Dulaglutide (Trulicity®)	• Tirzepatide (Zepbound®, Mounjaro®) • Liraglutide (Saxenda®, Victoza®)

Diuretics (water pills)

A diuretic is a medicine that helps control fluid buildup in your body. Diuretics are often prescribed to help treat hypertension (high blood pressure) or edema (swelling). They can also be prescribed to help treat certain heart or kidney problems.

You may be taking a diuretic. If so, ask the healthcare provider doing your procedure what to do before your procedure. You may need to stop taking it the day of your procedure.

Here are some examples of diuretics. There are others, so be sure your care team knows all the medicines you take.

• Bumetanide (Bumex®) • Furosemide (Lasix®)	• Hydrochlorothiazide (Microzide®) • Spironolactone (Aldactone®)

Stop taking nonsteroidal anti-inflammatory drugs (NSAIDs)

NSAIDs, such as ibuprofen (Advil® and Motrin®) and naproxen (Aleve®), can cause bleeding. Stop taking them 1 day (24 hours) before your procedure. If your healthcare provider gives you other instructions, follow those instead.

To learn more, 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).

Reactions to contrast dye

Contrast is a special dye that makes it easier for your doctor to see differences in your internal organs. Internal organs are the organs inside of your body. This procedure is usually done with contrast. The dye will be injected into an artery in your arm or groin. Your groin is the area between your belly and thigh.

Some people can have an allergic reaction to contrast. Most reactions are mild, such as hives.

Some people can have very rare but more serious reactions, such as anaphylaxis (A-nuh-fih-LAK-sis). This is a bad allergic reaction that can cause hypotension (a sudden drop in blood pressure) or trouble breathing. Anaphylaxis is treated with an epinephrine (eh-pih-NEH-frin) autoinjector, commonly known as an EpiPen®. This is an injection (shot) of epinephrine (adrenaline) into a muscle.

If you have had an allergic reaction to contrast dye in the past, tell your healthcare provider. You may need to take medicine before your procedure to help with the allergy.

If you're breastfeeding, you may choose to continue after your procedure with contrast. If you have questions about contrast and breastfeeding, talk with your care team. They will arrange for a healthcare provider from the lactation team to contact you.

Take devices off your skin

You may wear certain devices on your skin. Before your procedure, surgery, or scan, some 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 to bring an extra device with you to put on after your procedure, surgery, or scan.

You may not be sure how to manage your glucose (blood sugar) 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 1 to 2 business days before your procedure. If your procedure is scheduled for a Monday, they'll call you on the Thursday or Friday 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.

What to do the day before your procedure

Instructions for eating

Important: If you take a GLP-1 medicine, do not follow these instructions. Follow the instructions in *Eating and Drinking Before Your Surgery or Procedure When Taking GLP-1 Medicines* (www.mskcc.org/pe/eat-drink-glp1) instead.



Stop eating at midnight (12 a.m.) the night before your surgery or procedure. This includes hard candy and gum.

Your healthcare provider may have given you different instructions for when to stop eating. If so, follow their instructions. Some people need to fast (not eat) for longer before their surgery or procedure.

Medicine to prevent allergy to contrast dye

Your doctor may have told you to take medicine to prevent an allergy to contrast. If they did, take your first dose 13 hours before your arrival time.

What to do the day of your procedure

Instructions for drinking

> **Important:** If you take a GLP-1 medicine, do not follow these instructions. Follow the instructions in *Eating and Drinking Before Your Surgery or Procedure When Taking GLP-1 Medicines* (www.mskcc.org/pe/eat-drink-glp1) instead.

Between midnight (12 a.m.) and 2 hours before your arrival time, only drink the liquids on the list below. Do not eat or drink anything else. Stop drinking 2 hours before your arrival time.

- Water.
- Clear apple juice, clear grape juice, or clear cranberry juice.
- Gatorade or Powerade.
- Black coffee or plain tea. It's OK to add sugar. Do not add anything else.
    - Do not add any amount of any type of milk or creamer. This includes plant-based milks and creamers.
    - Do not add flavored syrup.

If you have diabetes, pay attention to the amount of sugar in your drinks. It's easier to control your blood sugar levels if you include sugar-free, low-sugar, or no added sugar versions of these drinks.

It's helpful to stay hydrated before surgeries and procedures, so drink if you're thirsty. Do not drink more than you need. You'll get intravenous (IV) fluids during your surgery or procedure.



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

Your healthcare provider may have given you different instructions for when to stop drinking. If so, follow their instructions.

Things to remember

- Follow your healthcare provider's instructions for taking your medicines the morning of your procedure. It's OK to take them with a few sips of water.
- If you're taking pain medicine, take it before your procedure with a few sips of water. You can take acetaminophen (Tylenol®). Do not take any NSAIDs, such as ibuprofen (Advil® and Motrin®) and naproxen (Aleve®).
- Do not put on body cream, lotion, or petroleum jelly (Vaseline®). You can use deodorant and facial moisturizers. Do not wear eye makeup.
- Do not wear any metal objects. Take off all jewelry, including body piercings. The tools used during your procedure can cause burns if they touch metal.
- Leave valuable items at home.
- If you wear contact lenses, wear your eyeglasses instead, if you can. If you do not have eyeglasses, bring a case for your contacts.
- Wear something comfortable and loose-fitting.
- When it's time for your procedure, you must remove any hearing aids, dentures, prosthetic devices, wigs, and religious articles.

What to bring

- A list of all the medicines you take at home, including prescription and over-the-counter medicines, patches, and creams.
- Medicines for breathing problems (such as your inhaler), medicines for chest

pain, or both.

- Your cell phone and charger.
- Only the money you may want for small purchases, such as a newspaper.
- A case for your personal items, if you have any. Eyeglasses or contacts, hearing aids, dentures, prosthetic devices, wigs, and religious articles are examples of personal items.
- Your Health Care Proxy form and other advance directives, if you filled them out.
- Your breathing device for sleep apnea (such as your CPAP machine), if you use one. If you cannot bring it, we will give you one to use while you're in the hospital.

What to expect when you arrive

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

Once you're brought to the presurgical area, you'll get a hospital gown and nonskid socks to wear. You'll take off your eyeglasses, hearing aids, dentures, prosthetic devices, wig, and religious articles.

Meet with a nurse

You'll meet with a nurse before your procedure. Tell them the dose of any medicines you took after midnight (12 a.m.) and the time you took them. Make sure to include prescription and over-the-counter medicines, patches, and creams.

Your nurse will place an IV line into a vein in your arm or hand, unless you already have:

- A central venous catheter (CVC) or any other type of CVC.
- A peripherally inserted central catheter (PICC).
- An implanted port (also called a mediport or Port-A-Cath).

You will get anesthesia (medicine to make you sleep) during your procedure. It will be given through the IV line, CVC, PICC line, or implanted port. You may also get fluids through the same line before your procedure.

Meet with an anesthesiologist

You will also meet with an anesthesiologist (A-nes-THEE-zee-AH-loh-jist). An anesthesiologist is a doctor with special training in anesthesia. They'll give you anesthesia during your procedure. They'll also:

- Review your medical history with you.
- Ask if you've had any problems with anesthesia in the past. This includes nausea (feeling like you're going to throw up) or pain.
- Talk with you about your comfort and safety during your procedure.
- Talk with you about the kind of anesthesia you'll get.
- Answer questions you have about anesthesia.

Meet with a doctor

Before your procedure, you will meet the IR doctor who will do the hepatic embolization. They will explain the procedure to you and answer your questions. You'll be asked to sign a consent form, which says you agree to the procedure and understand the risks.

During your procedure

When it's time for your procedure, you'll be brought into the procedure room and helped onto the table. You'll lie flat on your back.

A member of your care team may put compression boots on your lower legs. These gently inflate and deflate to help blood flow in your legs. You'll be attached to equipment to keep track of your heart, breathing, and blood pressure. You'll also get oxygen through a thin tube that rests below your nose.

Then, your anesthesiologist will give you anesthesia and you'll fall asleep.

A member of your care team will clean the skin in the area where your doctor

will be working. This area is called the insertion site. The insertion site will be either your arm or groin. They will shave the area if needed and cover it with sterile (clean) drapes.

You'll get an injection (shot) of a local anesthetic to numb the insertion site. Then, your doctor will make a small incision (surgical cut) into the site. They will insert a catheter through the incision and into an artery. They will thread the catheter through the artery until it reaches your hepatic artery. This is the artery that brings blood to your liver.

To make sure the catheter is in the right place, your doctor will do an angiogram (AN-jee-oh-gram). An angiogram is an imaging test that uses X-ray pictures and contrast dye to look at your blood vessels. The X-ray pictures will help your doctor guide the catheter through the artery to your hepatic artery.

Your doctor will also give you contrast dye through the catheter. The dye will help them see your blood vessels clearly in the X-ray pictures. They will see where the tumors are and see the blood vessels that feed (bring blood to) the tumors.

Once the tumors are found and the catheter is in the right place, your doctor will start the embolization. They will inject tiny particles through the catheter into your hepatic artery. The particles will plug up the artery, which will reduce or stop the blood flow to the tumors. Blocking the blood supply to the tumors will kill them. It will keep them from getting oxygen and nutrients that help them survive and grow.

When the procedure is done, your doctor will take out the catheter. The insertion site will be cleaned and covered with a dressing (bandage).

The procedure takes about 2 to 3 hours.

After your procedure

In the hospital

After your procedure, you'll be brought to the Post-Anesthesia Care Unit (PACU). While you're in the PACU, tell your nurse if your dressing feels wet or warm.

Your nurse will monitor (keep track of) your insertion site for any bleeding. You'll need to lie flat on your back in bed with your leg straight for at least 1 hour. This will help prevent bleeding from the site. Depending on how the site was closed, you may need to lie like this for up to 4 hours.

Once your anesthesia has worn off, you'll be taken to your hospital room. Most people stay in the hospital for at least 1 night. You'll be discharged (released) when your doctor says it's safe for you to go home.

At home

Caring for yourself

- You can shower 24 hours (1 day) after your procedure. Shower with your bandage in place. Gently wash around the insertion site with soap and water. Pat it dry with a clean towel.
    - Change your bandage right after your shower. Place a new bandage (Band Aid®) over the insertion site. Never leave a wet bandage on. A wet bandage can irritate your skin and make it sore.
- Your insertion site must not be submerged (kept under water). Do not swim, sit in a hot tub, or take a bath for 1 week after your procedure.
- Your incision may feel sore. This should get better within 1 or 2 days. You can take over-the-counter pain medicine, such as acetaminophen (Tylenol®) or ibuprofen (Advil®), if you need it.
- Change your bandage right away if it becomes wet or dirty.
- Once a scab forms over your insertion site, you do not need to wear a bandage anymore.

Side effects

After your procedure, you may have:

- A fever of 100.4 °F (38 °C) or higher.
- Pain at the insertion site or abdominal (belly) pain.
- Nausea (feeling like you're going to throw up).
- Vomiting (throwing up).
- Fatigue (feeling more tired and weak than usual).

You'll get medicine to manage your symptoms if you need it.

When to call your healthcare provider

Call your healthcare provider if you have:

- A fever of 100.4° F (38° C) or higher.
- Pain, nausea, or vomiting that will not stop or is worse than it was before your procedure.
- Redness, swelling, or bleeding around the insertion site.
- 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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