

Angiography: Yttrium-90 Radiotherapy

Treatment for liver tumors

This handout explains what Yttrium-90 radiotherapy is and what to expect when you have it done.

What is Yttrium-90 radiotherapy?

Yttrium-90 is a radioactive substance. It is used in radiation therapy (radiotherapy) to treat cancer.

Why do I need this treatment?

Your doctors have found a tumor (or tumors) in your liver. These may have started in your liver (*hepatocellular carcinoma*) or spread to it from another part of your body. There are many treatments for liver tumors, but certain ones work best for certain people.

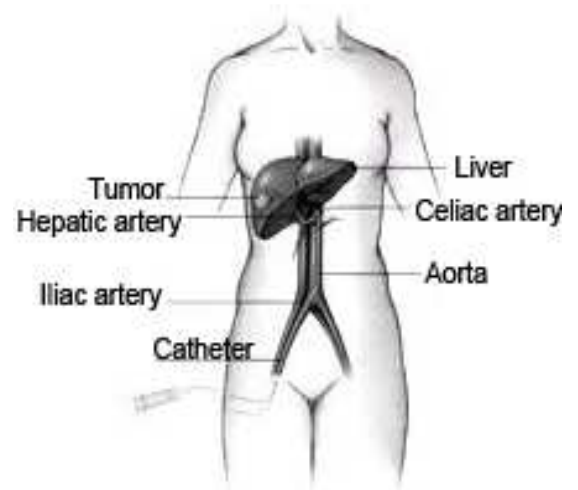
Our team of experts believes that Yttrium-90 (Y-90) radiotherapy is the best option for you at this time. Y-90 radiotherapy sends radiation directly into the blood vessels that feed the tumors.

This treatment does not cure liver tumors. But, it often controls or shrinks them. After this therapy, your doctors may advise other options such as chemotherapy or surgery.

How does Y-90 radiotherapy work?

External radiation therapy is used to treat many types of tumors. But, the doses of external radiation needed to kill liver tumors would seriously harm the healthy parts of the liver.

In Y-90 radiotherapy, millions of tiny radioactive beads are injected directly into the arteries that supply blood to your tumor. These beads will stay in the blood vessels around your tumor(s). This allows very strong radiation to reach the tumors directly.



Tiny radioactive beads are inserted into your arteries through a catheter (tube).

The beads emit radiation for about 10 days, but they will keep working for several months after they are injected. There is very little effect on healthy parts of your liver or other tissues in the area such as your intestines or skin.

Y-90 radiotherapy is also a *minimally invasive* treatment. This means that only small medical tools are used and your body is not opened up. This means your body will recover more quickly than it would after regular surgery.

What beads are used in Y-90 radiotherapy?

The beads used in Y-90 radiotherapy are made of either plastic or glass. Two types of beads can be used for this treatment:

- *SIR-Spheres* are approved by the Food and Drug Administration (FDA) for people with tumors in the liver that have spread from colon cancer.
- *TheraSphere* is approved as a *humanitarian use device* (HUD) to treat hepatocellular carcinoma. An HUD is a device that has been approved for treating a small number of people with a specific health condition.

Both TheraSpheres and SIR-Spheres have been used safely and effectively in thousands of patients with liver tumors. We will choose the type of bead that will work best for you.

How is the procedure done?

Y-90 radiotherapy is done by an *interventional radiologist*, a doctor who specializes in procedures that use X-ray guidance. The treatment is done in several steps over a few months.

Step 1: Mapping Angiogram

Step 1 is a procedure called a *mapping angiogram*. It takes 2 to 4 hours.

During this procedure:

- You will lie on an X-ray table.
- The only discomfort you will feel is a short burning feeling when the local *anesthetic* (numbing medicine) is applied to your skin.
- A small plastic tube (*catheter*) is put into an artery in your groin and threaded to the liver arteries. X-rays will help your doctor guide this catheter to the right place.
- *Angiograms* (X-ray pictures) are done to help your doctor see how blood flows to your liver. This will tell your doctor if we can use Y-90 therapy for you. If the angiogram shows that Y-90 therapy:

- Is not possible for you, the procedure will end.
- Is possible, your doctor will go ahead with the next steps.
- Your doctor will use small metal wires (*coils*) to block off blood vessels that should not receive radiation. A harmless *tracer agent* will be injected into your liver arteries. The angiogram shows how much tracer enters the tissues around your liver.
- Then, you will be taken down the hall to the Nuclear Medicine department for a scan. This scan will show how much of the tracer has left your liver and entered your lungs or other organs. If the scan shows:
 - Too much tracer in the tissue outside your liver, Y-90 treatment will not work for you, and the procedure will end.
 - Little or no tracer in the tissue outside your liver, you will be approved to go to Step 2.

Step 2: Y-90 Infusion

If you are approved for Y-90 therapy after Step 1, your precise dose of radiation will be calculated and delivered to the hospital at a specific time. About 2 weeks after Step 1, you will have a 2nd procedure.

- Another catheter will be placed in the artery in your groin. Like the last time, the catheter will be threaded to your liver.
- The beads coated with Y-90 will be slowly injected into your liver artery.
- This procedure takes about 1 hour.

Step 3: 2nd Y-90 Infusion (if needed)

We often treat only half of the liver in Step 2. If you need a second Y-90 infusion to treat other parts of your liver, you will have another Y-90 infusion session 4 to 6 weeks after Step 2.

Step 4: Scans

About 1 month after your last Y-90 infusion, you will have a *magnetic resonance imaging* (MRI) or *computed tomography* (CT) scan. This scan will show how the tumors have responded to the treatment.

Your doctor will review your scans, blood test results, and overall health. Your doctor will talk with you about any other treatments, if needed.

Are there any special precautions I need to take after the Y-90 infusions?

The radiation released by the Y-90 beads travels less than ½ inch. But, your doctor may restrict your activities after treatment. Depending on the type of treatment you have, you may need to limit your contact with others for a short time.

Are there any risks or side effects?

The most common side effect after Y-90 radiotherapy is fatigue. This can be mild or severe. It can last up to a few weeks.

Other side effects include:

- Poor appetite
- Mild abdominal pain
- Slight fever
- Nausea

These symptoms should slowly go away over 1 to 2 weeks.

There are other much less common but sometimes serious side effects and problems. Your doctors will talk with you about these risks before you start treatment. Please ask any questions you have and make sure all of your concerns are addressed before you begin Y-90 treatment.

Before Your Procedure

- **Arrival time.** If you are an *outpatient* (not staying in the hospital), a nurse coordinator will call you the afternoon before your procedure. If your procedure is on a Monday, the nurse will call you the Friday before. The nurse will:
 - Tell you when to arrive at the hospital
 - Give you reminders about what to do on the morning of your procedure
 - Answer any questions you have
- **Interpreter services.** If you do not understand English well enough to understand these instructions or the details of the procedure, tell us as soon as possible. We will arrange for a hospital interpreter to help you. **A family member or friend may not interpret for you.**
- **Blood tests.** You most likely will need blood tests done in the 14 days before your procedure. Sometimes, we do your blood tests when you arrive for your procedure. We will let you know if a blood sample is needed before that day.
- **Allergies.** If you have a history of allergy or bad reaction to *contrast* (X-ray dye) or other products that contain iodine, please call our nurse at one of the phone numbers on the last page of this handout. You may need medicine for this allergy before the procedure.
- **Kidney health.** If your kidney function is not normal and we need to give you contrast, we may prescribe a medicine for you to take before and after your procedure. This medicine will help protect your kidneys.

- **Blood-thinning medicines.** If you take any blood-thinning medicines such as Coumadin, Lovenox, Fragmin, or Plavix, you may need to stop taking the medicine for 3 to 9 days before your procedure. We will give you instructions about this.
- **Changes to diabetes medicines.** If you have diabetes and take insulin or metformin (Glucophage), we will give you instructions about holding or adjusting your dose for the day of your procedure.

Sedation

Before your Y-90 infusions, you will be given a *sedative* (medicine to make you relax) through an *intravenous line* (IV) in one of your arm veins. You will stay awake, but feel sleepy. This is called *conscious sedation*. You will still be sleepy for a while after the procedure.

For some people, using conscious sedation is not safe. If this is true for you, you will need general *anesthesia* (medicine to make you sleep during the procedure).

Let us know **right away** if you:

- Have needed anesthesia for basic procedures in the past
- Have *sleep apnea* or chronic breathing problems (you might use a CPAP or BiPAP device while sleeping)
- Use high doses of narcotic painkiller
- Have severe heart, lung, or kidney disease
- Cannot lie flat for about 1 hour because of back or breathing problems
- Have a hard time lying still during medical procedures

Day Before Your Procedure

- The day before your procedure, you may eat as usual.
- Make plans for a responsible adult to drive you home after your procedure and stay with you the rest of the day. **You may NOT drive yourself home or take a bus, taxi, or shuttle by yourself.**

On the Day of Your Procedure

At Home

- Take all of your other usual medicines on the day of the procedure. Do **not** skip them unless your doctor or nurse tells you to.
- Starting **6 hours** before your procedure, you may only have *clear liquids* (liquid you can see through such as water, broth, apple or cranberry juice, or weak tea).

- Starting **2 hours** before your procedure:
 - Take **nothing** at all by mouth.
 - If you must take medicines, take them with **only** a sip of water.
 - Do not take vitamins or other supplements. They can upset an empty stomach.
- Bring with you a list of all the medicines you take.
- Plan to spend most of the day in the hospital. If there is a delay in starting your procedure, it is usually because we need to treat other people with unexpected and urgent problems. Thank you for your patience if this occurs.

At the Hospital

- Unless you are told otherwise, check in at Admitting on the 3rd (main) floor of University of Washington Medical Center. Admitting is to the right and behind the Information Desk in the lobby.
- In the Radiology department, a medical assistant will give you a hospital gown to put on and a bag for your belongings. You may use the restroom at this time.
- A staff member will take you to a pre-procedure area. There, a nurse will do a health assessment. Your family or friend can be with you there.
- An IV will be started. You will be given fluids and medicines through the IV.
- An interventional radiology doctor will talk with you about the procedure and ask you to sign a consent form if that has not already been done. You will be able to ask questions at that time.

Your Procedure

- The nurse will take you to the radiology suite. This nurse will be with you for the entire procedure.
- If needed, an interpreter will be in the room or will be able to talk with you and hear you through an intercom.
- You will lie on a flat X-ray table for the procedure.
- Wires will be placed on your body to help us monitor your heart rate.
- You will have a cuff around your arm. It will inflate from time to time to check your blood pressure.
- A radiology technologist will clean your skin around your groin area with a special soap. Tell this person if you have any allergies. The technologist may need to shave some hair in the area where the doctor will be working.

- The entire medical team will ask you to confirm your name and will tell you what we plan to do. This is for your safety.
- Then, your nurse will give you medicine to make you feel drowsy and relaxed before we begin.

After Your Procedure

- We will watch you closely for a short time in the Radiology department.
- You will then go to a short-stay unit in the hospital. A different nurse will monitor you there.
- Most patients are able to eat and drink, and have visitors.
- You will need to rest in bed for 2 to 6 hours. **You must keep your leg below the groin puncture site perfectly still for that time to control bleeding.**
- When you are fully awake and are able to eat, use the restroom, and walk, you will be able to go home.
- Problems after this procedure are rare. If they occur, we may need to keep you in the hospital so that we can monitor you or treat you.
- Before you leave the hospital, your nurse will tell you what activities you can do, how to care for your incision, and other important instructions.

When You Get Home

- You may need to follow special precautions because of the potential radiation risk to others. Your nurse will give you these instructions before you leave the hospital.
- Relax at home for the rest of the day. Make sure you have a family member, friend, or caregiver to help you.
- You may feel sleepy or have some short-term memory loss.
- For 24 hours, do **not**:
 - Drive a car or use machinery
 - Drink alcohol
 - Make important decisions or sign legal documents
 - Be responsible for the care of another person
- You may shower or bathe the next day.
- There is usually only minor pain after Y-90 therapy. If your doctor says it is OK for you to take acetaminophen (Tylenol), this should ease any discomfort. If your doctor expects you to have more severe pain, you will receive a prescription for a stronger pain medicine.

- Resume taking your usual medicines as soon as you start to eat. Take **only** the medicines that your doctors prescribed or approved.
- You may be given medicines to help prevent infection or stomach ulcers. Take all of your prescribed drugs until they are finished.

When to Call

Call us **right away** if you have:

- Bleeding or swelling at the groin puncture site
- New coolness, pain, or lack of feeling in your leg below the puncture site
- New abdominal pain
- Vomiting, fever, or chills

Who to Call

Interventional Radiology nurse coordinator 206.598.6897

Procedure scheduling 206.598.6209

After hours (between 5 p.m. and 7 a.m.), and on weekends and holidays
Ask for the Interventional Radiology Fellow on call 206.598.6190

For Urgent Care

If you have an urgent care need, **go to the nearest Emergency Room or call 911 right away**. Do **not** wait to talk with one of our staff.

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

UWMC Imaging Services:
 206.598.6200