

Using Radioiodine to Find and Treat Thyroid Cancer

Your doctor has referred you to Nuclear Medicine to learn more about the extent of your thyroid cancer, and perhaps even for treatment of the cancer. Please feel free to direct any questions or concerns you might have either to your doctor or to one of our Nuclear Medicine doctors.

How the Thyroid Works

The thyroid is a small, butterfly-shaped gland that sits below the Adam's apple. It helps to control your body's metabolism. It makes thyroid hormones, which travel throughout the body.

Thyroid and Iodine

When the thyroid is working as it should, it also takes up iodine. Thyroid cancer cells which take up iodine are "well differentiated." This means that these cancer cells have not changed much and still work a lot like normal thyroid gland cells.

Types of Thyroid Cancer

The two most common forms of thyroid cancer which can be treated are:

- papillary
- follicular

These are the types of cancer cells that often take up iodine just like normal thyroid tissue.

Radioactive Iodine

Iodine is taken up by the normal thyroid gland and most thyroid cancers. When the cells take up iodine, they also take up radioiodine or iodine-131. This is a radioactive form of iodine. Radioactive iodine can be used to find and treat thyroid cancer. It destroys cancer cells. It is one of the oldest and best forms of treatment for most thyroid cancers.

Treatment Options

Treating thyroid cancer is a process. The process includes:

- Surgery to remove the thyroid gland.
- Thyroid ablation to destroy the "left over" thyroid cells using a radioiodine capsule.

The first line of treatment for most thyroid cancer is surgery. For many patients, a short time after surgery, a dose of radioactive iodine might be used to destroy any thyroid tissue that may have been left after the surgery. After the thyroid gland is destroyed, patients need pills to replace the thyroid hormone that would have been made by the thyroid gland.

Thyroid Ablation

This is done in Nuclear Medicine likely within a few months after surgery. It is often used to remove (ablate) any thyroid tissue that may remain behind after surgery. This is done by giving you some radioactive iodine that will destroy the small amount of thyroid tissue left in your neck. You will not need to stay in the hospital after this treatment.

Other Tests and Treatments

- Blood tests to check TSH and thyroglobulin levels.
- Total body radioiodine metastatic survey scans. These scans check for remnants of the thyroid as well as for any spread of cancer cells. You may have these scans more than once to follow treatment progress.
- Hormone replacement to replace the hormone once made by the thyroid gland.

Metastatic Survey

This survey scan is also done in Nuclear Medicine for thyroid cancer patients. In most cases, you will have this scan after thyroid surgery and ablation, and other times as needed. It helps to find any spread of cancer (metastases) to other parts of your body.

For the survey, you get a capsule of radioactive iodine to swallow. It will travel to any thyroid tissue and to many thyroid cancer cells that have spread. You will return to Nuclear Medicine in 2-7 days to have images taken. These images will show how much thyroid tissue is left in your neck and if there is any spread of the cancer.

Getting Ready for the Metastatic Survey

Stopping hormone pills: If you have been taking any thyroid hormone pills, you might be asked to stop them about 1 month before the survey, since they will impact the test. You will be told when you should start taking these pills again.

Thyrogen®: Sometimes, we may inject you with Thyrogen®, a synthetic human hormone that stimulates the thyroid. This way, you would not need to stop thyroid hormone therapy. It has also been approved for thyroid remnant ablation and may be used to treat thyroid cancer that has spread. This requires a special schedule of injections, dosing with radioiodine, blood tests, and thyroid scanning.

Blood tests: When the survey is scheduled, you might be scheduled to have a TSH blood test done about two days after the radioiodine dose. A blood sample may also be taken to measure serum thyroglobulin.

Low iodine diet: You may be asked to maintain a low iodine diet for about 10 to 14 days to allow the test to work better. To do this, you should avoid milk & dairy products, seafood, kelp, bread, cereal and many seasonings (above all salt which has had iodine added). Most fruits, vegetables and meats that have not been processed are fine.

Precautions:

- Tell us if you have had an x-ray using contrast in the last 3 months.
- You must not be pregnant or breast feeding.
- Do not become pregnant in the next 6 months.
- Do not father a child for 6 months.

Treatment for Metastatic Thyroid Cancer

If your survey shows spread of thyroid cancer to other parts of your body, your doctor may discuss treatment with a larger amount of radioactive iodine than that used for thyroid therapy.

How to Rid Your Body of Radioiodine

Most of the radioiodine that is not taken up by thyroid tissue will leave your body within about four days. Most is lost through your urine, but some is also released in saliva, sweat, and stool.

To help remove the extra radioactivity, you should drink extra fluids and empty your bladder often (about every 1-2 hours or so) for the first 2 days.

You should try to have at least one bowel movement each day. Add fiber and prune juice to your diet if needed. You may need a laxative if you are having trouble with bowel movements.

We may also suggest you suck on lemon candies to increase your saliva production.

Radiation Safety

The dose of radioiodine used to perform a metastatic survey is most often small. Doses used in therapeutic thyroid ablations are greater, with the largest doses used to treat the spread of thyroid cancer. People around you are at very low risk from the radiation but there are still steps you can take to lessen the risk.

To reduce radiation exposure to others:

- **Do not go to work** for 2 days.
- **Avoid public places** for 4 days.
- **Avoid travel.** Do not travel by plane or prolonged car trips for 1 week.
- **Keep your distance from others.** For 4 days, keep an arm's length distance from others. Keep double arm's length away from pregnant women and children. The amount of radiation exposure will decrease quickly as you increase distance.
- **Clean the toilet after use** for the next 4 days. Flush the toilet twice after using it. Brush once under the rim of the toilet with the toilet brush and re-flush. If you can, use a toilet that others won't use.
- **Do not share eating utensils** for 4 days. You can wash them like normal after using.
- **Increase fluid intake** and suck on lemon candies.
- **Sleep alone.** Do not share a bed for 4 days.

Common Questions

Can I keep breast feeding?

No! The radioiodine absorbed by a breast feeding infant can lead to permanent thyroid gland problems. Your baby will also be exposed to radiation from being close to the mother's breast. Therefore, you must stop breast feeding well before your radioiodine treatment. You may safely resume nursing after the birth of your next child.

I am still lactating. Is that a problem?

Yes! The radiation dose to the lactating breast can be large. You must fully end lactation well before treatment. If you stop nursing for 2-3 months before treatment, we can be sure that lactation doesn't increase your radiation exposure.

What should I do if I have children at home?

Limit contact with them for at least 4 days. Always keep in mind the "double arm's length rule." It is best to arrange for children to stay with other family members during this time.

I am planning on staying at a hotel for a few days just to play it safe. What do you think?

We strongly advise you not to do this. Although reassuring to your loved ones, this will expose the public (housekeeping staff and other patrons) to radiation. We know that the toilet you use will be a source of radiation exposure since most of the radioiodine is passed through the urine. Therefore, we advise you to use your own bathroom for a few days and avoid using public bathrooms.

How long should I wait to get pregnant after having radioiodine treatment?

You should wait at least 6 months to get pregnant.

Do I need any tests before treatment?

Hospital policy requires a pregnancy test on the day before or the day of treatment for all women of childbearing age.

I don't need a pregnancy test because my husband had a vasectomy, right?

Wrong! You still need to have a pregnancy test as it is hospital policy.

How do I keep my pets safe from radiation exposure?

Treat pets as people or, better yet, children. Their thyroid glands are much more sensitive than adult human thyroid glands. Besides the “double-arm’s length rule,” you should also avoid holding your pets for 4 days.

When to Call

If you are a UW Health patient and have any other questions or concerns, we will gladly help you with them.

Who to Call

Nuclear Medicine
(608) 263-1462

The toll-free number is **1-800-323-8942**.
Ask for nuclear medicine.

If you are a patient receiving care at UnityPoint – Meriter, Swedish American or a health system outside of UW Health, please use the phone numbers provided in your discharge instructions for any questions or concerns.

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person’s health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 7/2021. University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#4908