Thyroid Cancer
Finding It and Treating It Using Radioiodine

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.

What Does the Thyroid Do?

The thyroid is a small, butterfly-shaped gland that sits below the Adam’s apple. It helps to control your body’s metabolism. It works to produce thyroid hormones, which travel throughout the body. 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. If they are well differentiated, they are still working in many ways as you might expect normal thyroid gland cells to work.

What Kinds of Thyroid Cancer Are There?

The two most common forms of thyroid cancer which can be treated are \textit{papillary} and \textit{follicular}. These are the types that often take up radioiodine just like normal thyroid tissue.
What Is the Treatment for Thyroid Cancer?

Thyroid cancer treatment can be thought of as a process. The process includes:

- Surgery to remove the thyroid gland.
- Thyroid ablation to rid the body of “left over” thyroid cells with use of a radioiodine capsule.
- Blood tests to check TSH and thyroglobulin levels.
- Total body radioiodine metastatic survey scans to check for remnants of the thyroid as well as for any spread of cancer cells.
- Hormone replacement to replace the hormone once made by the thyroid gland.

The first line of treatment for most thyroid cancer is surgery. About 4 weeks later, a dose of radioactive iodine is 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.

What Is Thyroid Ablation?

This is done in the Nuclear Medicine. It is often used to remove (ablate) any thyroid tissue that may remain behind in your neck after surgery. This is done by giving you some radioactive iodine that will destroy the small amount of thyroid tissue left in your neck after surgery. You do not need to remain in the hospital after this treatment. Most of the time this is done a month after surgery and a capsule of radioactive iodine is given when the TSH test is high (greater than 40 units). Sometimes your endocrine physician uses Thyrogen®, a synthetic thyroid stimulating hormone.
How Does Radioactive Iodine Work?

Iodine is taken up by the normal thyroid gland and most (~70%) thyroid cancers. When the cells take up iodine, they also take up radioiodine or iodine-131, which is a radioactive form of iodine. Iodine that is radioactive can be used to find and treat thyroid cancer. It is one of the oldest and best forms of cancer treatment for any thyroid cancer that will take up radioiodine. It destroys cancer cells.

What Is a Metastatic Survey?

This survey scan is also done in Nuclear Medicine for patients with thyroid cancer. Most often it is done after thyroid surgery and ablation, and again at other future times as needed. It is used to find out if there is any spread of cancer (metastases) to other parts of your body.

For the survey, you will be given a capsule of radioactive iodine to swallow. It will travel to any thyroid tissue and to most thyroid metastases. You will return to Nuclear Medicine 2-7 days later, and images of your body will be made. These will show how much thyroid tissue is left in your neck and whether or not there is any spread of the cancer.

How do I Prepare for a Metastatic Survey?

If you have been taking any thyroid hormone pills, you might be asked to stop them about a month before the survey, since they will impact the test. If you stopped your thyroid replacement pills, you will be told when you should start taking these pills again after taking the radioiodine and scan. Sometimes another method is used where we inject synthetic human thyroid stimulating hormone (Thyrogen®) so you would not need to stop thyroid hormone therapy. Thyrogen® has also been approved for thyroid remnant ablation, and may be used in treatment of thyroid metastases. There is a special schedule of injections, dosing with radioiodine, blood tests, and thyroid scanning.
When the survey is scheduled, you will also be scheduled to have a TSH blood test done about two days before the survey. A sample may also be taken to measure serum thyroglobulin.

You may be asked to maintain a low iodine diet for about ten days in order 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.

Please tell us if you have had an x-ray using contrast in the last few weeks. You must not be pregnant or breast feeding when you receive radioiodine. You should not plan to become pregnant in the next 6 months. You should not father a child for 6 months.

**How Is Metastatic Thyroid Cancer Treated?**

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 simple thyroid ablation.

**How Should I Take Care of Myself after I Receive Radioiodine?**

Most of the radioiodine that is not taken up by thyroid tissue will leave your body within about two days. Most is lost through your urine, but some is also released in saliva, sweat, and stool. In order 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. During the first two days after the dose, drink plenty of juices and water. 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. You might be advised to take lemon candies to increase saliva secretion after you take the radioiodine capsule.
**Radiation Safety Measures for You**

The dose of radioiodine used to perform a metastatic survey is most often small. Doses used in thyroid ablations are greater, with the largest doses used for treatment of thyroid cancer metastases. People around you are at very low risk from the radiation. There are things that you can do in the first two to three days to lessen the risk for others.

- Do not return to work until the next day.
- Limit your time in public places.
- Do not travel by airplane or prolonged car trips for two days.
- Maintain an arm's length distance from other people if you will be with them for long stretches of time, and double this distance from pregnant women and children (2 arms lengths). The amount of radiation exposure will decrease quickly as the distance is increased. Maintain this for 4 days.
- Flush the toilet twice after using it. Brush once under the rim of the toilet with the toilet brush and flush. If you can, use a toilet that others won’t use.
- Avoid sharing of eating utensils. After use, you can wash your utensils as usual.
- Use fluids and lemon candies, as described above.
- Sleep alone in bed for 4 days.
- Avoid close contact with children and pregnant women.
- If you think you are pregnant, inform your doctor because radioiodine should not be given to pregnant women. After you receive radioiodine, you should avoid getting pregnant for about six months.
- Radioiodine will show up in breast milk. Inform your doctor if you are breast feeding.
- You should not try to get pregnant or father a child for at least six months after treatment with radioiodine.
Frequently Asked Radiation Questions

Can I continue breast feeding?

Absolutely not! The radioiodine absorbed by a breast feeding infant can lead to permanent thyroid gland problems. External radiation exposure to the baby will result from being close to the mother’s breast (radioiodine will accumulate in the breast of a breast-feeding mother) and being close to the mother’s radioactive thyroid. Therefore, breast feeding must be stopped well before the mother’s radioiodine treatment. Nursing may resume after the birth of your next child.

I am still lactating. Is that a problem?

Yes, a big one! The radiation dose to the lactating breast can be large. Lactation must be fully ended well before treatment. If you abstain from nursing for 2-3 months before treatment, we can be sure that lactation (and the ability of the breast to concentrate large amounts of iodine) doesn’t increase your radiation exposure.

I have children at home? What should I do?

Plan to limit contact with them for at least 4 days. Always keep in mind the “arm’s length rule.” To resist the temptation of children coming close to you during this time, it is best to make plans for the children to spend most of this time with other family members.

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. This is why 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?

We advise you to wait at least 6 months even though it cannot be proven whether 6 months is better than 4 months or 8 months. It is just a good, conservative amount of time.

Do I need any tests prior to treatment?

Hospital policy mandates 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! Please refer to the answer above.

How do all these radiation safety measures apply to pets?

Treat them as people or, better yet, children. Their thyroid glands are much more sensitive than adult human thyroid glands, so besides the “double arm’s length rule,” we also advise you to limit holding your pets for 4 days.

Any Further Questions?

If you are a UW Health patient and have any other questions or concerns, we will gladly help you with them. You can reach us at (608) 263-1462. If you are a UW Health patient and live out of the area, call 1-800-323-8942 and ask for the Nuclear Medicine Clinic.

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 © 5/2017. University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#6273