

# Radioactive Iodine Ablation Treatment for Differentiated Thyroid Cancer

You may receive radioactive iodine (also known as radioiodine, I-131 or RAI) some weeks after surgery to eliminate (ablate) any remaining papillary or follicular thyroid cancer cells or normal thyroid tissue that the surgeon could not remove. Ablation also aims to eliminate any thyroid cancer cells that may have spread to other parts of the body.

Eliminating the remnant of normal thyroid tissue will make it easier to do the ongoing monitoring for any possible recurrence. RAI ablation has also been shown to improve survival rates if the cancer has spread to the neck or other parts of the body.

**Whether or not RAI is recommended depends upon certain factors involved in tumor staging.** Your doctor will discuss the benefits and risks with you. RAI is usually not recommended for low-risk patients (see the section on Staging).

If RAI is part of your treatment, you will probably receive it between 3 and 6 weeks after your surgery. You will swallow the RAI in the form of either one or more capsules (pills) or a liquid.

RAI works because the thyroid gland needs iodine and absorbs it from the bloodstream. When you swallow the RAI (the isotope I-131), it goes through your bloodstream to your thyroid tissue. The radiation destroys thyroid cells, both cancerous and normal thyroid cells, with minimal effects on the rest of your body.

**The dosage of I-131 used for ablation is measured in millicuries.** The dose for remnant ablation may range from 30 millicuries to 100 millicuries. Sometimes the dose is higher (100 to 200 millicuries) for people with more extensive disease. Very rarely, the dose may be larger still.

It is also worth noting that RAI is usually safe in patients allergic to seafood or X-ray contrast dyes, both because the allergy generally results from the protein or compound containing iodine, not iodine itself, and also because the amount of iodine in RAI is very small compared to iodine in other sources.

## Preparation for RAI, Including the Low-Iodine Diet

### Raising Your TSH Level

Your TSH level (thyroid-stimulating hormone, or thyrotropin) must be well above the normal range for RAI treatment to be the most effective. This is because TSH stimulates the thyroid tissue, both normal and cancerous, to take up iodine, including the RAI.

Another reason to increase your TSH level is that thyroid cancer cells do not take up iodine as well as normal thyroid cells do. Increasing your TSH level before your RAI treatment helps the cancer cells better absorb the RAI.

There are two ways to increase your TSH level. The two ways are equally effective. Your doctor may have reasons for recommending one option over the other, related to your situation.

**1. Withdrawal from Thyroid Hormone Replacement:** You stop taking thyroid hormone replacement pills for a period of 3 to 6 weeks before your RAI. Stopping the pills will cause your TSH to rise to a level of 30 or higher, far above the upper end of the normal range. You will be significantly hypothyroid. You will probably feel symptoms of hypothyroidism.

**OR**

**2. Thyrogen® Injections:** Thyrogen® is the brand name of thyrotropin alfa (rhTSH), recombinant human TSH. Receiving injections of this drug a few days prior to ablation raises your TSH level rapidly. Therefore, you do not experience weeks of hypothyroidism.

## What It May Feel Like To Be Hypothyroid During Withdrawal from Thyroid Hormone Replacement

Although the hypothyroid state resulting from option 1 (withdrawal) is temporary, lasting a few weeks, it can cause one or more symptoms. These can include tiredness, weight gain, sleepiness, constipation, muscle aches, reduced concentration, emotional changes resembling depression, and others. Some people experience mild symptoms. Other people experience severe symptoms.

During withdrawal from thyroid hormone, to reduce symptoms of hypothyroidism, your doctor may prescribe a short-acting thyroid hormone called Cytomel® (T3) for a few weeks. You will be required to stop taking it for about 2 weeks before receiving RAI to make sure your TSH level is high enough for the RAI treatment.

As noted above, both methods of increasing TSH have shown comparable success rates for remnant ablation. As a result, Thyrogen® is increasingly used so that patients avoid experiencing hypothyroidism.

### Dental Care Before RAI

Many doctors recommend a dental cleaning before RAI.

### Pre-Treatment Scan: A Step for Some People

At some centers, for some patients, another step in preparing for RAI is a whole-body radioiodine scan.

- The goal of this scan is to determine the extent of any remaining thyroid tissue or thyroid cancer that needs to be destroyed.
- The results of this scan are used to help your doctor determine the appropriate ablation dosage of radioactive iodine to administer in the treatment process.
- For this scan, you will swallow a very small dose of radioiodine, either I-131 or another form, I-123.

### The Low-Iodine Diet – Overview and More Pages

The short-term low-iodine diet is another part of preparing to receive radioactive iodine for papillary or follicular thyroid cancer or one of their variants. A short-term low-iodine diet, recommended by ThyCa medical advisors and other thyroid cancer specialists, as well as the American Thyroid Association, increases the effectiveness of the radioactive iodine treatment.

## Shortly Before You Receive Your RAI

**Some doctors routinely** prescribe anti-nausea medication before you receive the RAI. This is because some people experience nausea the first day after receiving I-131 therapy. You also may request anti-nausea medication if it is not given routinely.

## After Your RAI — In Hospital or at Home

After you receive your RAI treatment dose, you may be sent home immediately, or you may stay in the hospital for one or more days, depending on factors such as the dose you receive.

In some centers, patients stay for a few hours after receiving RAI and then go home later in the same day.

Your center may give you written information about its guidelines for release. Your home circumstances, such as whether there is an infant or a young child at home, may affect the decision about going home or staying in the hospital for a day or more after your treatment dose.

The RAI that is not taken up by the remaining thyroid tissue is eliminated from the body through your perspiration, saliva, feces, and urine. Most radiation from the RAI is gone in about one week.

### The First Day

Ask your doctor about ways to protect your salivary glands, which also absorb the RAI. Ways include sucking on sugar-free lemon candy or eating certain foods. Your doctor will have instructions on what to do, and when to do it. Ask also about how much fluid to drink.

Research is under way on these topics. ThyCa's web site will add information as it becomes available from our medical advisors.

## In the Days After RAI

### Tips and Precautions

Below are tips and precautions to take during and after the RAI ablation treatment to help protect yourself, your family members, your co-workers, and other people from being unnecessarily exposed to the radiation.

The precautions listed below are for the days after your RAI. More guidelines and tips are on [www.thyca.org](http://www.thyca.org), given to ThyCa by our medical advisors, and in guidelines from the American Thyroid Association and in the reference book *Thyroid Cancer: A Guide for Patients*.

Please note that your physician and hospital may have different guidelines. Discuss any questions and concerns with your doctor.

### While You Are Isolated in the Hospital or at Home

- You will remain in your hospital room with the door closed until you are released from isolation by the radiation safety officer.

- If you are on medication, please let your doctor know. You will probably start taking your thyroid hormone pills one to two days after your RAI.
- You will likely remain on the low-iodine diet. If you're in the hospital, consider bringing some low-iodine foods such as fruit and unsalted nuts, in case the hospital meals include some high-iodine foods. The hospital may not have any choices. You may be able to order kosher, vegetarian, or diabetic diets. The dishes and eating utensils will stay in the room with you, probably to be placed in plastic bags provided.
- You may want to bring some reading materials such as newspapers or magazines that can be left behind. The hospital room will probably have a television.
- You may bring your eyeglasses, contact lenses, or personal medically-related equipment. Do not bring items such as a laptop computer, because it may become contaminated and have to stay in the hospital for pick up at a later date.
- **Being isolated after RAI may feel lonely and emotionally difficult, although it should not be physically painful.**
- It is helpful to prepare for the experience. We encourage you to use the telephone to communicate with your friends and family.
- Your nurse will check in with you frequently by telephone or intercom to assess how you are doing.
- To avoid any contamination of your own clothes by perspiration please wear a hospital gown and slippers during your hospital stay.
- You may be given instructions on fluid intake.
- You may be advised to take laxatives in order to reduce the amount of radiation exposure to your intestinal tract.
- You may be asked to shower and wash your hair frequently to help remove the radiation excreted through perspiration.

## Traveling Home, and When at Home

Use the following guidelines regarding distance, time, and hygiene:

- Stay at least 3 feet away (about 1 meter) from everyone except for short periods totaling less than 1 hour each day, for approximately the first 5 days. Stay at least 6 feet away most of the time. Stay this distance from small children or pregnant women for 8 days. Keep your distance from pets as well. Do not kiss anyone.
- Your doctor should give you more specific guidelines on how long to avoid close contact. The number of days will depend on whether you have small children at home, pregnant women at your workplace, and other factors.
- Do not sit next to someone in an automobile or public transportation for more than one hour. Sit in the back seat of an automobile, on the opposite side from the driver, if possible.
- Sleep in a separate room, or at least 6 feet away from any other person. Use separate bath linen and launder these and underclothing separately for one week.
- Use separate eating utensils or disposable eating utensils. Wash eating utensils separately for one week. Do not prepare food for others.
- Rinse the sink and tub thoroughly after using them. Shower every day.
- Wash your hands with soap and plenty of water every time you use the toilet. Flush the toilet each time you use it, and wash the toilet seat. Males should sit when urinating to avoid splashing urine for one week.
- Discuss with your doctor how long you should wait before starting a pregnancy after your treatment (usually at least two months for males and 6 to 12 months for females).

- If you are breastfeeding, it should be discontinued before receiving RAI, and should not be resumed. However, breastfeeding can be done after subsequent childbirths.
- If you need to travel by plane or other transportation after receiving RAI, carry an information card or letter of explanation from your doctor. This is because radiation detection devices used at locations such as airports, bus and train stations, trash collection sites, and some international borders and in some buildings may detect low radiation levels. Carry the card or letter with you for at least 3 months after receiving RAI.

## **Your Home Dental Care After RAI**

- Follow-up care after RAI is important to neutralize the changed acidity of your saliva.
- Upon noticing any change in taste or saliva, stop using commercial toothpastes and mouthwashes and change to ultra-soft toothpastes and mouthwashes without alcohol, phenol, or whitening agents.
- A good alternative to commercial products is baking soda for use as a scrubbing agent and baking soda mixed with water as mouthwash—to be used 4-5 times daily. For mouthwash, mix one heaping teaspoon of baking soda with 10 ounces of water.
- It is important to floss daily.

## **Post-Therapy Scan**

Between 2 and 10 days after your RAI treatment, you will have a whole body scan (WBS), also known as an I-131 scan. You will have this scan in the nuclear medicine department of the hospital or community radiology center.

- This scan usually takes between 30 minutes and one hour.
- You will be fully clothed. You will lie still on a narrow bed that moves slowly through the scanner, or else the scanner will move over you while the bed remains still.
- In some centers, a nuclear medicine doctor meets with you after the scan. Or, you may receive the results from your family doctor or endocrinologist at a later meeting or on the telephone.
- In nearly everyone (98% of people) the scan will show a small amount of thyroid tissue, because it is difficult for surgeons to remove every tiny bit of the thyroid. The nuclear medicine report may refer to this as “normal uptake in the neck.” The scan will also show uptake in your salivary glands and digestive tract.
- This scan will also provide information about whether and where there is any remaining thyroid cancer.

## **The Months After RAI**

Within 3 weeks, only traces of RAI remain in your body. However, it may take several months for the RAI to have its full effects on any remaining thyroid tissue, both cancerous and non-cancerous. This is because the radiation affects the cells gradually.

## **Potential Side Effects of RAI Treatment**

Side effects of the RAI treatment may include:

- A burning sensation or tenderness in the neck area
- Nausea and upset stomach (and rarely, vomiting)
- Swelling and tenderness of the salivary glands
- Taste changes (usually temporary)

- Dry mouth
- Reduction in tear production

If pain, tenderness, or nausea occur, they will usually happen soon and be short-term. However, sometimes the other side effects last longer or will not occur until several months after the treatment.

- **RAI treatment often causes a slightly metallic taste** in the mouth, even when not eating, or changes the way certain foods taste. Taste changes usually disappear gradually. However, some people experience them for several months. Others report that the taste changes disappear and then recur several weeks later.

## Tips for Coping with Some Side Effects of RAI

### Speak with your doctor for recommendations on these topics.

- **Tenderness in your neck area** can generally be treated with over-the-counter pain relievers.
- **Dry mouth sometimes occurs.** If symptoms persist, ask your doctor about products that help ease the problem, such as gels and sprays. In some people, especially after higher RAI doses, the impact on salivary glands, and hence the dry mouth, can be permanent. This can increase the risk of tooth decay. Therefore, it is important that you visit your dentist regularly.
- If you experience **dry eyes or reduced tear formation**, discuss this with your doctor. If you wear contact lenses, ask your doctor how long you should stop wearing them.
- **Rarely, salivary glands and/or tear ducts may swell** and become blocked. If this occurs, you should tell your doctor immediately to learn what will help.

## Other Potential Side Effects of RAI

- **Temporary or permanent decreases in blood cell counts** can also occur. You will probably not experience symptoms. Counts usually recover, at least to the normal range, if not to their full pre-treatment level. Blood tests can be done several weeks after RAI to make sure that your blood counts are in the normal range.
- Any person receiving RAI treatment may have a slightly higher risk of developing certain other cancers in the future. Doctors generally agree that the risk increases after several doses totaling 500-600 millicuries rather than after a single dose.
- **Special concerns for men.** Men who receive large cumulative doses of RAI may have lower sperm counts or, rarely, become infertile. Discuss banking sperm with your doctor if it is likely that your treatment plan may include more than one dose of RAI.
- **Special concerns for women.** Some women may have irregular periods for up to a year after treatment. Many doctors recommend that women avoid becoming pregnant for at least 6 months to a year after treatment.
- **If you are pregnant when diagnosed.** If you are pregnant when diagnosed with thyroid cancer, your doctor will have specific instructions related to your pregnancy. A woman who is pregnant or breastfeeding should never receive RAI in any form (I-123 or I-131). Most pregnant women can postpone surgery until after pregnancy. If surgery is necessary sooner, it is usually performed in the second trimester (22 weeks of pregnancy). Also, pregnant women should not be treated with external beam radiation or chemotherapy until after the baby is born.

You should always discuss your individual circumstances and risks factors with your doctor.

For more information about radioactive iodine, go to:

- [Radioactive Iodine Ablation and Treatment for Papillary and Follicular Thyroid Cancer](#)
- [After Receiving Radioactive Iodine](#)
- [Dental Issues and Radioactive Iodine](#)
- [Delayed Salivary Gland Pain and Swelling After RAI](#)
- [More Articles about Radioactive Iodine for Papillary and Follicular Thyroid Cancer](#)
- [Thyrogen \(brand name for recombinant human thyrotropin - rhTSH\)](#)