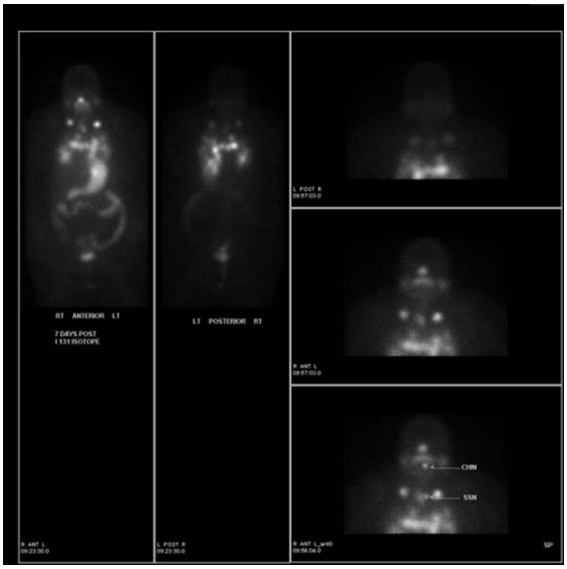
Radioactive Iodine (I-131) Therapy for Hyperthyroidism



Radioiodine therapy is a nuclear medicine treatment. Doctors use it to treat an overactive thyroid, a condition called hyperthyroidism. They also may use it to treat thyroid cancer. When a small dose of radioactive iodine I-131 (an isotope of iodine that emits radiation) is swallowed, it is absorbed into the bloodstream. The isotope is concentrated by the thyroid gland, where it begins destroying the gland's cells.

Your doctor will instruct you on how to prepare, how to take any necessary radiation safety precautions, and when to stop taking anti-thyroid medications. Tell your doctor if there's a possibility you are pregnant or if you are breastfeeding. Discuss any recent illnesses, medical conditions, allergies, and medications you're taking. This procedure requires little to no special preparation. However, you should not eat or drink anything after midnight on the day of treatment.

What is Radioiodine (I -131) Therapy and how is it used?

Radioactive Iodine I-131 (also called Radioiodine I-131) therapy is a nuclear medicine treatment. Doctors use it to treat an overactive thyroid, a condition called hyperthyroidism (http://www.radiologyinfo.org) . Hyperthyroidism can be caused by Graves' disease, in which the entire thyroid gland is overactive, or by nodules within the gland which are locally overactive in producing too much thyroid hormone.

Nuclear medicine uses small amounts of radioactive (http://www.radiologyinfo.org) material called radiotracers. Doctors use nuclear medicine to diagnose, evaluate, and treat various diseases. These include cancer, heart disease, gastrointestinal, endocrine, or neurological disorders, and other conditions. Nuclear medicine exams pinpoint molecular activity. This gives them the potential to find disease in its earliest stages. They can also show whether you are responding to treatment.

The thyroid is a gland in the neck that produces two hormones. These hormones regulate all aspects of the body's metabolism (http://www.radiologyinfo.org) , the chemical process of converting food into energy. When a thyroid gland is overactive, it produces too much of these hormones, accelerating the metabolism.

Radioactive iodine (http://www.radiologyinfo.org) (I-131), an isotope (http://www.radiologyinfo.org) of iodine (http://www.radiologyinfo.org) that emits radiation, is used for medical purposes. When a small dose of I-131 is swallowed, it is absorbed into the bloodstream in the gastrointestinal (http://www.radiologyinfo.org) (GI) tract. It is concentrated from the blood by the thyroid gland, where it begins destroying the gland's cells.

Doctors also use radioactive iodine I-131 to treat thyroid cancer.

Who will be involved in this procedure?

A radiologist who has specialized training in nuclear medicine and others, possibly including an endocrinologist, thyroid surgeon, and radiation safety officer, will be part of your treatment team.

Copyright© 2026, RadiologyInfo.org

What equipment is used?

There is no equipment used during radioactive iodine therapy.

Who operates the equipment?

There is no equipment used during radioactive iodine therapy, the patient simply swallows a prepared dose.

Is there any special preparation needed for the procedure?

You should not eat or drink after midnight on the day of the procedure. If you have been taking anti-thyroid medications, you must stop at least three days before the therapy is given. Frequently, your doctor will recommend stopping anti-thyroid medication for five to seven days before therapy.

You will be able to return home following radioactive iodine treatment. However, you should avoid prolonged, close contact with other people for several days, particularly pregnant women and small children. Most of the radioactive iodine that has not been absorbed leaves the body during the first two days following the treatment, primarily through the urine. Small amounts will also be excreted in saliva, sweat, tears, vaginal secretions, and feces.

If your work or daily activities involve prolonged contact with small children or pregnant women, you should wait several days after your treatment to resume these activities. Patients with infants at home should arrange for care to be provided by another person for the first several days after treatment. Your radiologist can be more specific for your given situation, but this is usually for two to five days.

Your treatment team will give you a list of other precautions to take following your treatment with I-131. The following guidelines comply with the Nuclear Regulatory Commission:

- Use private toilet facilities, if possible, and flush twice after each use.
- Bathe daily and wash hands frequently.
- Drink a normal amount of fluids.
- Use disposable eating utensils or wash your utensils separately from others.
- Sleep alone and avoid prolonged intimate contact for three or four days. Brief periods of close contact, such as handshaking and hugging, are permitted.
- Launder your linens, towels, and clothes daily at home, separately. No special cleaning of the washing machine is required between loads.
- Do not prepare food for others that requires prolonged handling with bare hands.
- If you are breastfeeding, you must stop several days before to ensure that milk production has also stopped.
- You should avoid becoming pregnant from six months to one year after treatment.
- You must be sure you are not pregnant before receiving I-131. Many facilities require a pregnancy test within 24 hours prior to giving I-131 in all women of child-bearing age who have not had a surgical procedure to prevent pregnancy.

Patients who need to travel immediately after radioactive iodine treatment are advised to carry a letter of explanation from their physician. Radiation detection devices used at airports and federal buildings may be sensitive to the radiation levels present in patients up to three months following treatment with I-131. Depending on the amount of radioactivity administered, your endocrinologist or radiation safety officer may recommend continued precautions for up to several weeks after treatment.

Doctors do not use radioiodine therapy in pregnant patients. Depending on the stage of pregnancy, I-131 given to the mother may damage the baby's thyroid gland. If you are pregnant, discuss this issue with your doctor. When given to a nursing mother, radioactive iodine can reach a baby through her breast milk. Most physicians feel that this procedure should not be used in women

Copyright© 2026, RadiologyInfo.org

who are breastfeeding unless they are willing to stop breastfeeding. Also, you should avoid getting pregnant for at least six to 12 months after treatment.

Pre-menopausal women should fully discuss the use of I-131 with their doctor.

How is the procedure performed?

Hyperthyroidism treatment is almost always done on an outpatient basis because the dose required is relatively small.

The radioiodine I-131 is swallowed in a single capsule or liquid dose and is quickly absorbed into the bloodstream in the gastrointestinal (GI) tract. It is concentrated from the blood by the thyroid gland, where it begins destroying the gland's cells. Although the radioactivity remains in the thyroid for some time, it is greatly diminished within a few days. The effect of this treatment on the thyroid gland usually takes between one and three months to develop. Maximum benefit occurs three to six months after treatment. Usually, a single dose is successful in treating hyperthyroidism. However, rarely, a second treatment is necessary. A third treatment is very rarely necessary.

What will I feel during this procedure?

Patients may experience pain in the thyroid after therapy like a sore throat. Ask your doctor to recommend an over-the-counter pain reliever if this occurs.

Are there permanent side effects from radioactive iodine therapy?

It is highly likely that this procedure will destroy some or most of your thyroid gland. Since hormones produced by the thyroid are essential for metabolism, most patients will need to take thyroid pills for the rest of their life following the procedure. Thyroid pills are inexpensive, and patients will typically be prescribed one pill per day. There are essentially no other permanent side effects from the procedure. The risk of cancer from this therapy is very small.

Disclaimer

This information is copied from the RadiologyInfo Web site (http://www.radiologyinfo.org) which is dedicated to providing the highest quality information. To ensure that, each section is reviewed by a physician with expertise in the area presented. All information contained in the Web site is further reviewed by an ACR (American College of Radiology) - RSNA (Radiological Society of North America) committee, comprising physicians with expertise in several radiologic areas.

However, it is not possible to assure that this Web site contains complete, up-to-date information on any particular subject. Therefore, ACR and RSNA make no representations or warranties about the suitability of this information for use for any particular purpose. All information is provided "as is" without express or implied warranty.

Please visit the RadiologyInfo Web site at **http://www.radiologyinfo.org** to view or download the latest information.

Note: Images may be shown for illustrative purposes. Do not attempt to draw conclusions or make diagnoses by comparing these images to other medical images, particularly your own. Only qualified physicians should interpret images; the radiologist is the physician expert trained in medical imaging.

Copyright

This material is copyrighted by either the Radiological Society of North America (RSNA), 820 Jorie Boulevard, Oak Brook, IL 60523-2251 or the American College of Radiology (ACR), 1891 Preston White Drive, Reston, VA 20191-4397. Commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is prohibited.

Copyright ® 2026 Radiological Society of North America, Inc.