
Radioactive Iodine (I-131) Therapy for Hyperthyroidism

This information is reviewed by a physician with expertise in the area presented and is further reviewed by committees from the American College of Radiology (ACR) and the Radiological Society of North America (RSNA), comprising physicians with expertise in several radiologic areas.

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

Radioactive Iodine I-131 (also called Radioiodine I-131) therapy is a treatment for an overactive thyroid, a condition called hyperthyroidism. 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 is a branch of medical imaging that uses small amounts of radioactive material to diagnose or treat a variety of diseases, including many types of cancers, heart disease and certain other abnormalities within the body.

The thyroid is a gland in the neck that produces two hormones that regulate all aspects of the body's metabolism, 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 (I-131) is an isotope created from iodine to emit radiation for medical use. When a small dose of I-131 is swallowed, it is absorbed into the bloodstream in the gastrointestinal (GI) tract and concentrated from the blood by the thyroid gland, where it begins destroying the gland's cells.

Radioactive iodine I-131 may also be used 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, oncologist, thyroid surgeon and radiation safety officer, will be part of your treatment team.

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 will be able to return home following radioactive iodine treatment, but you should avoid prolonged, close contact with other people for several days, particularly pregnant women and small children. The majority 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 will want to 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 usually this time period is only two to four 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. Brief periods of close contact, such as handshaking and hugging, are permitted.
- Launder your linens, towels, and clothes 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 breast-feed, you must stop.
- You should avoid becoming pregnant for about 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 during your treatment, your endocrinologist or radiation safety officer may recommend continued precautions for up to several weeks after treatment.

Radioiodine should never be used in a patient who is pregnant. I-131 given during pregnancy can damage the baby's thyroid gland. 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 who are breastfeeding unless they are willing to cease breastfeeding their newborn. Also, pregnancy should be delayed until at least six to 12 months after I-131 treatment, since the treatment exposes the ovaries to radiation.

Women who have not yet reached menopause should fully discuss the use of I-131 with their physician.

How is the procedure performed?

Treatment for hyperthyroidism is almost always done on an outpatient basis because the dose required is relatively small.

The radioiodine I-131 is swallowed in a single dose, in capsule or liquid form, and is quickly absorbed into the bloodstream in the gastrointestinal (GI) tract and concentrated from the blood by the thyroid gland, where it begins destroying the gland's cells. Although the radioactivity from this treatment 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, with maximum benefit occurring three to six months after treatment. Usually, a single dose is successful in treating hyperthyroidism. However, rarely, a second treatment is needed.

What will I feel during this procedure?

Patients may experience some pain in the thyroid after I-131 therapy, similar to a sore throat. You should ask your physician to recommend an over-the-counter pain reliever to treat this pain, should it occur.

Are there permanent side effects from the procedure?

It is highly likely that most or all of the thyroid gland will be destroyed with this procedure. 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 instructed to take one per day. There are essentially no other permanent side effects from the procedure.

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