

Radioactive Iodine FAQ

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The thyroid gland and iodine

Iodine is essential for proper function of the thyroid gland, which uses it to make the thyroid hormones. The thyroid is equipped with an active system or “pump” for moving iodine into its cells.

What is radioactive iodine (RAI)?

Iodine can be made into two radioactive isotopes that give off radiation for medical uses: I-123 (harmless to thyroid cells) and I-131 (destroys thyroid cells). RAI is safe to use in individuals who have had allergic reactions to seafood or X-ray contrast agents, since the reaction is to the compound containing iodine, not the iodine itself.

RAI for thyroid imaging

I-123 is the isotope used to take pictures and determine the activity of the thyroid gland (*Thyroid Scan and Radioactive Iodine Uptake, RAIU*), since it is harmless to thyroid cells. No special precautions are necessary after a thyroid scan or RAIU.

RAI for treatment of thyroid disorders

Normal Thyroid Tissue - I-131 is given to destroy overactive thyroid tissue (see [Hyperthyroidism brochure](#)) or to shrink thyroid glands that are functioning normally but are causing problems because of their size. Patients are asked to follow some precautions (see below). Mild pain in the thyroid after I-131 can be treated with aspirin, ibuprofen or acetaminophen. The RAI treatment may take up to several months to have its effect.

Thyroid Cancer - Large doses of I-131 are used to destroy thyroid cancer cells (see [Thyroid Cancer brochure](#)). Depending on state regulations, you may have to stay isolated in the hospital for about 24 hours to avoid exposing other people to radiation, especially if there are small children living in the same home with you. Pain and swelling of the salivary glands after high doses of I-131 therapy may be minimized by drinking plenty of fluids and may possibly be prevented or reduced by sucking on lemon drops.

Precautions after treatment with I-131 RAI

Since I-131 RAI produces radiation, patients must do their best to avoid radiation exposure to others, particularly to pregnant women and small children (*see instructions outline in table*). The amount of radiation exposure markedly decreases as the distance from the patient increases. Patients who need to travel in the time immediately after I-131 RAI treatment are advised to carry a letter of explanation from their physician. This is because radiation detection devices used at airports or in federal buildings may pick up even radiation levels thought to be safe. Details should be discussed with your physician prior to, and at the time of, your treatment.

Long term risks of I-131 RAI

In general, RAI is a safe and effective treatment for the thyroid disorders mentioned above. Hypothyroidism is a common side effect of RAI and is easily treated (see [Hypothyroidism brochure](#)). Some studies suggest a slight increase in thyroid cancers after RAI treatment for hyperthyroidism. Loss of taste and dry mouth due to salivary gland damage may be seen after treatment of thyroid cancer and may possibly be prevented by using lemon drops. The risk of some other cancers may also increase after the doses of I-131 used to treat thyroid cancer. Importantly, once you have been treated with RAI, regular medical follow-up is lifelong.

Special concerns for women

RAI, whether I-123 or I-131, should never be used in a patient who is pregnant or nursing. Also, pregnancy should be put off until at least 6 - 12 months after I-131 RAI treatment, since the ovaries are exposed to radiation after the treatment. There is no clear evidence that RAI leads to infertility, although earlier menopause may occur.

Special concerns for men

Men who receive RAI treatment for thyroid cancer may have decreased sperm counts and temporary infertility for periods of roughly two years. Sperm banking is an option in a patient who is expected to need several doses of RAI for thyroid cancer.

Instructions to reduce exposure to others after I-131 RAI treatment

ACTION	DURATION (DAYS)
Delay return to work	1
Limit time in public places	1
Do not travel by airplane or public transportation	1
Do not travel on a prolonged automobile trip with others	2-3
Maintain prudent distances from others (~3 feet)	2-3
Drink plenty of fluids	2-3
Do not prepare food for others	2-3
Do not share utensils with others	2-3
Flush the toilet 2-3 times after use	2-3
Sleep in a separate bed (~7 feet of separation)	5-11*
Avoid prolonged close contact with children and pregnant women	5-11*

*duration depends on dose of I-131 given

FURTHER READING

Further details on this and other thyroid-related topics are available in the patient information section on the American Thyroid Association website at www.thyroid.org and in the following scientific reviews:

Pearce EN, Braverman LE. *Hyperthyroidism: advantages and disadvantages of medical therapy*. Surg Clin North Am. 2004 Jun;84(3):833-47.

Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, Mazzaferri EL, McIver B, Sherman SI, Tuttle RM; The American Thyroid Association Guidelines Taskforce. *Management guidelines for patients with thyroid nodules and differentiated thyroid cancer*. Thyroid. 2006 Feb;16(2):109-42.

www.thyroid.org