

FAQ: Radioactive Iodine

What is the thyroid gland?

The thyroid gland located in the neck produces thyroid hormones which help the body use energy, stay warm and keep the brain, heart, muscles, and other organs working normally.

Why is iodine used in some thyroid gland treatment?

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, where it is concentrated as iodide.

What is radioactive iodine (RAI)?

Iodine, in the form of iodide, is made into two radioactive isotopes that are commonly used in patients with thyroid diseases: 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. RAI is given by mouth in pill or liquid form.

Does RAI for thyroid imaging provide the best results?

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

When is RAI used 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 (*see Goiter brochure*). I-131 may occasionally cause mild pain in the neck that 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*). This is performed after the remaining thyroid tissue (including any cancer cells) is stimulated by raising TSH levels by either withdrawing thyroid hormone or by treating with recombinant human TSH. Depending on state regulations, patients may have to stay isolated in the hospital for about 24 hours to avoid exposing other people to radiation, especially if there are young children living in the same home.

What are the radiation safety precautions after treatment with I-131 RAI?

Since RAI produces radiation, patients must do their best to avoid radiation exposure to others, particularly to pregnant women and small children. The amount of radiation exposure markedly decreases as the distance from the patient increases. Patients who need to travel in the days after I-131 RAI treatment are advised to carry a letter of explanation from their physician since radiation detection devices used at airports or in federal buildings may pick up even very small radiation levels.

Are there long term risks of I-131 RAI?

In general, RAI is a safe and effective treatment. Hypothyroidism is a common side effect of RAI for hyperthyroidism and always seen after RAI for thyroid cancer (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. The use of lemon drops, vitamin C or sour stimulation to potentially decrease the exposure of the salivary glands to RAI is controversial and should be discussed with your physician. Importantly, once you have been treated with RAI, regular medical follow-up is lifelong.

What are the special concerns for women?

RAI, whether I-123 or I-131, should never be used in a patient who is pregnant or nursing. 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 and to ensure that thyroid hormone levels are normal and stable prior to pregnancy. There is no clear evidence that RAI leads to infertility.

Are there 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)
Sleep in a separate bed (~6 feet of separation) from another adult	1-11*
Delay return to work.....	1-5*
Maximize distance from children and pregnant women (6 feet).....	1-5*
Limit time in public places.....	1-3*
Do not travel by airplane or public transportation.....	1-3*
Do not travel on a prolonged automobile trip with others.....	2-3
Maintain prudent distances from others (~6 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
Sit to urinate and flush the toilet 2-3 times after use	2-3
Sleep in a separate bed (~6 feet of separation) from pregnant partner, child or infant.....	6-23*

*duration depends on dose of I-131 given

Where can I find additional information?

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.

