

# Radioactive Iodine

## WHAT IS THE THYROID GLAND?

The thyroid gland is a butterfly-shaped gland located in the lower front of the neck. The job of the thyroid gland is to make thyroid hormones. Thyroid hormones are released into the blood and carried to every tissue in the body. Thyroid hormones help the body use energy, stay warm and keep the brain, heart, muscles, and other organs working. In children, thyroid hormone is necessary for normal growth.

## THE THYROID GLAND AND IODINE

The cells in the thyroid gland take up and hold onto iodine. Iodine is an essential ingredient used by the thyroid cells to make thyroid hormones. Since thyroid cells use iodine, radioactive iodine can be used to both diagnose and treat thyroid problems.

## WHAT IS RADIOACTIVE IODINE (RAI)?

Iodine can be made into two radioactive forms that are commonly used in patients with thyroid problems:

- I-123 (does not damage thyroid cells)
- I-131 (can be used to destroy thyroid cells)
- Both forms of RAI are given as a pill or liquid that you swallow
- RAI is safe to use even if you have had an allergic reaction to seafood or CT contrast

## RAI FOR THYROID IMAGING

I-123 is the usual form used to diagnose thyroid problems since it does not damage cells.

- I-123 can be used to perform a thyroid uptake and/or scan.
  - You will take I-123 on the first day and come back the next day for the scan.
  - The radiation from the RAI can be detected from outside your body using a special scan.
  - This scan can show how your thyroid gland is working and its location.
- No special radiation precautions are necessary after taking I-123.
- I-131 can also be used to take pictures of your thyroid gland. This is not used often because of possible side effects.

## RAI FOR TREATMENT OF THYROID PROBLEMS

I-131 can be used to treat an overactive thyroid gland (hyperthyroidism) or thyroid cancer.

**HYPERTHYROIDISM** – A low dose of I-131 is given to destroy overactive thyroid tissue (see [Hyperthyroidism brochure](#)).

- This is used for either Graves' disease or a toxic (hot) thyroid nodule.
- You will be asked to follow some simple radiation precautions. This is to protect others from radiation (see chart on page 2).
- Treatment with I-131 can cause mild pain in your neck. This can be treated with aspirin, ibuprofen or acetaminophen.
- The RAI treatment may take several months to have its full effect.
- After treatment, you may become hypothyroid and need to take thyroid hormone (see [Hypothyroidism brochure](#)).

**THYROID CANCER** – Larger doses of I-131 are used to destroy thyroid cancer cells remaining after thyroid cancer surgery (see [Thyroid Cancer brochure](#)).

- Your doctor may ask you to follow a low iodine diet before this treatment.
- This treatment is only effective when your TSH level is high.
  - To increase your TSH level, your doctor may stop your thyroid hormone pills or treat you with TSH injections.
- You will be asked to follow some simple radiation precautions after treatment. This is to protect others from radiation (see chart on page 2).
  - Depending on state regulations, you may have to stay isolated in the hospital to avoid exposing other people to radiation.



# RADIOACTIVE IODINE

## RADIATION SAFETY PRECAUTIONS AFTER TREATMENT WITH I-131

- Although treatment with I-131 is generally safe, RAI contains radiation so you must do your best to avoid exposing others to that radiation, especially pregnant women and young children.
- The amount of radiation exposure is lower the further you are from others.
- If you need to travel in the days after treatment, you should carry a letter of explanation from your doctor.
  - This is because radiation detection devices used at airports or in federal buildings may pick up even very small radiation levels.

## LONG TERM RISKS OF I-131

In general, RAI is a safe and effective treatment for thyroid problems.

- If you get RAI for your hyperthyroidism, you may become hypothyroid. This is treated with thyroid hormone (see [Hypothyroidism brochure](#)).
- Some studies suggest a slightly higher risk of thyroid cancer after RAI treatment for hyperthyroidism.
- Some studies suggest a slightly higher risk of secondary cancers after RAI treatment for thyroid cancer.
- Loss of taste, sore throat, dry eyes and dry mouth may be seen after thyroid cancer treatment.

## SPECIAL CONCERNS FOR WOMEN

RAI, whether I-123 or I-131, should never be used in a patient who is pregnant or nursing. This protects the baby from radiation exposure and potential damage to the thyroid gland.

- To protect the breast tissue from radiation, breastfeeding must be stopped completely at least 6 weeks before getting your I-131 treatment. To protect your infant, breastfeeding should not be restarted after receiving RAI. Breastfeeding is safe after future pregnancies.
- Pregnancy should be delayed until at least 6 - 12 months after I-131 RAI treatment.

## 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.

## RADIATION SAFETY PRECAUTIONS

Safety precautions are instructions for how you can reduce exposure to others after I-131 RAI treatment. The length of time that you will need to follow these precautions will depend on whether you are treated for hyperthyroidism or for thyroid cancer and the dose of I-131 you receive as well as other factors. The typical length for following the safety precautions in the chart below can vary from 3 days to 2 weeks. Be sure to ask your physician how long you will need to follow these precautions.

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

- Sleep in a separate bed (approximately 6 feet of separation) from another adult
- Sleep in a separate bed (approximately 6 feet of separation) from pregnant partner, child or infant
- Delay return-to-work
- Maximize distance from children and pregnant women (6 feet)
- Limit time in public places
- Do not travel by airplane or public transportation
- Do not travel on a long automobile trip with others
- Maintain prudent distances from others (approximately 6 feet)
- Drink plenty of fluids
- Do not prepare food for others
- Do not share utensils with others
- Sit to urinate and wipe the toilet seat after use

