Division of Nuclear Medicine
Department of Radiology
Dartmouth-Hitchcock Medical Center

# Authorization and Information Sheet for Radioactive Iodine (I-131) Therapy for Hyperthyroidism

## Hyperthyroidism and its treatment

The role of the thyroid gland is the production of thyroid hormone. Iodine, which is found in many foods, especially seafood, is absorbed in the stomach and concentrated in the thyroid gland. Once in the gland, the iodine is formed into thyroid hormone and stored until needed. Thyroid hormone controls the metabolism of the body. In hyperthyroidism, the thyroid gland releases more hormone than is necessary: the thyroid gland is no longer under proper control. Hyperthyroidism is a common disorder (Graves' disease and toxic multinodular goiter are two types) but the symptoms are extremely variable and the diagnosis is sometimes difficult to make. Some of the most common complaints that people have are nervousness, agitation, tremors, fatigue, weight loss, heat intolerance and a racing or irregular heartbeat.

Hyperthyroidism can become a very serious problem if left alone. Although this disorder may resolve on its own, there is no telling how long that will take and how severe it may become.

Hyperthyroidism is a treatable disorder. One of the most effective treatments is also the least used. That is the surgical removal of all or part of the thyroid gland. Because this is a major operation requiring general anesthesia and the risks that go along with it, this treatment is reserved for the most severe and difficult cases. The two most common forms of treatment are medications and radioactive iodine. The medications (usually PTU or Tapazole) are frequently used and often work well. They will slow the action of the thyroid gland down. However, not all people with hyperthyroidism are candidates to take these medications.

Treatment of hyperthyroidism with radioactive iodine is also a commonly used therapy. This treatment has been in use since the 1940s and has been shown to be safe and effective in hundreds of thousands of patients. This treatment is performed by taking a capsule of radioactive iodine known as iodine -131 (I-131). This is true iodine and the body cannot recognize it as being different from any other iodine that it encounters during the day. Therefore, there are no allergies to this medication. The only significant difference in this iodine is that it gives off energy (also known as radiation). Your thyroid gland will concentrate the I-131 and this dose in the gland will peak at about 24-48 hours. Only some of the I-131 goes to the thyroid gland. The rest will leave the body in all bodily secretions, most notably the urine. Most significant excretion will occur during the first three days. Over the course of time, the amount in the thyroid gland will decline as well. Small amounts will be given off from the thyroid gland every day. Also, radioactive iodine naturally becomes non-radioactive. By itself, one half of the iodine disappears every 8 days.

The energy given off by the I-131 in the thyroid gland will destroy thyroid cells. The amount of I-131 used is quite small. Because of this, it will take an extended period of time for the treatment to work. The amount of radiation received by other parts of the body (remember that a significant amount of iodine-131 will be circulating for only three days) will be so small that there will be no expected effect outside the thyroid gland. The radiation given off by the iodine in the thyroid gland will affect only the thyroid gland itself. Because the dose is small, it will take several weeks before anything begins to happen. As long as the I-131 is present, it will slowly shrink the gland. There will be virtually no I-131 left in the gland in 3 months.

**Expected outcomes**

The dose of radiation that your thyroid gland receives will be about the same as is received by other people undergoing this treatment. To achieve this, the capsule dose is based on the approximate size of your thyroid gland and on the uptake measurement (the percentage of the iodine picked up by the thyroid gland). There is, however, an unknown: the sensitivity of your thyroid gland to radiation. Because of this, the final result of this treatment is uncertain. It will take 3 months to know this result. The ideal situation is to end up with normal thyroid function. This is not a common result. It is possible that in 3 months you will still have

hyperthyroidism (although it may be partially better) or the opposite problem, hypothyroidism or an underactive gland. This determination should be made with a blood test. It is essential that this be done.

If you remain with an overactive gland in 3 months, the same treatment options are open to you. On occasion, our treatment with I-131 is repeated. It is uncommon but not impossible that the second dose will not fully resolve the problem.

The most likely outcome is an underactive gland, or hypothyrodism. In this situation, you do not have enough thyroid hormone. Again, this is a problem with different presentations. People typically complain of feeling sluggish, tired, intolerant of cold and gain weight. It is important to note that hypothyroidism is less serious and much easier to treat than hyperthyroidism. A serious emergency is extremely uncommon and much less likely than with the overactive gland. The treatment is thyroid hormone supplements (such as Synthroid) and their dose is very easy to control. Finally, it is important to realize that hypothyroidism may also occur with other treatments and it may occur with no treatment at all. Because we feel that hypothyroidism is preferable to continued hyperthyroidism, the doses of I-131 that we use make the result of an underactive thyroid gland a very real possibility. If you become hypothyroid (whether it is due to this treatment or not) you will need to take thyroid hormone, probably forever. But if you take the medication, you will feel well.

One more important point concerning long term outcome is important. Although radiation is used in this treatment, the dose of radiation received anywhere outside of the thyroid gland is quite small. There is no known risk of this treatment causing tumors. There is also no significant risk of genetic damage (in other words, there is no known danger to children that you may have in the future).

**Preparation**

You will be asked to avoid foods that are high in iodine for one week prior to this treatment. Do not eat anything from the ocean: fish, shellfish (crabs, lobsters, clams, and shrimp) and seaweed (often found in sushi). If you are taking medications for your thyroid gland, Tapazole (methimazole) or PTU (propylthiouracil), these must be discontinued for 5 days before the treatment. If you are taking a beta blocker, you should continue to do so. If there are any

questions regarding the proper preparation, please call the phone number listed at the end of this form.

**Side effects**

Most people who undergo this treatment have no side effects. On occasion, people complain of a sore, swollen or tender neck, and a dry mouth. This is most likely to occur during the first several days and last only a couple of days. It may occur any time during the first 3 weeks. It is uncommon for anyone to need to do anything about this, but aspirin or Tylenol is fine. If there is marked swelling in your neck, please go to the nearest emergency room and have it evaluated. Again, this is not a common problem.

In extremely rare instances, people complain of feeling that their symptoms have worsened for a few days. This does not mean that something is going wrong but that the treatment is actually working. What is happening is that the thyroid gland is releasing some of its hormone stores. Nevertheless, this is something that should not be ignored. You do not want your hyperthyroidism to go out of control. If you feel worse, call your physician or go to the nearest emergency room. However, do not expect this to happen.

**Precautions**

During the first 3 days following your treatment, you will be emitting low doses of radiation. These levels are well below anything that has ever been shown to be harmful. Nevertheless, we ask that you do not expose others to radiation if it is not necessary. Radiation will be given off from your neck. To decrease the exposure to others, avoid direct personal contact. Try to keep 5 feet away from other people and, if someone comes closer, allow that to happen only for a couple of minutes. Be especially careful around children and pregnant women. Sleep alone for three nights. Radiation will also be given off from your urine, saliva and sweat. Therefore, do not share glasses, dishes or eating utensils without having them washed first, do not cook for others, share clothing or use a public water fountain. Flush the toilet twice and wash your hands after going to the bathroom. Drink plenty of fluids. After 3 days, no precautions are necessary.

Seafood, especially shellfish and seaweed, are exceptionally high in iodine. Excessive iodine will slow your thyroid function which is something that you do

not want to happen during your treatment. Avoid seafood for one week after the treatment.

The previously mentioned medications (PTU and Tapazole) will also slow your thyroid gland. You may be asked by your physician to take these medications after the I-131 treatment (just to hold you over until the I-131 begins to work). Do not take PTU or Tapazole for at least 3 days after your treatment. If you are on beta blockers (to slow the heart), you may continue to take them.

Finally, there is only one situation in which this treatment cannot be given: pregnancy. Women who are not at least two years post-menopause or have not had a hysterectomy are required to have a negative pregnancy test before the treatment. If you are breast feeding a child, you must stop but may breast feed your next child (if you have one). You should make every effort not to become pregnant for at least the next 6 months.

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Pt. Name:_____ Dartmouth-Hitchcock Medical Center
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Date of Birth:_____

# Authorization for $^{131}$I Therapy for Hyperthyroidism

I acknowledge that (print) _____ has thoroughly discussed with me radioactive iodine (I-131) therapy for hyperthyroidism. The following aspects of I-131 therapy have been fully explained to me: available alternative treatments, potential benefits, expectations of therapy with I-131, complications or side effects and precautions regarding pregnancy, breast feeding, and the protection of others. I have had a chance to ask and have answered any questions I may have had. I have read (or have had read to me), understand, and have received a copy of the "Information Sheet and Authorization for Radioactive Iodine (I-131) therapy for Hyperthyroidism".

I give my assurance that there is no chance of pregnancy since my recent blood pregnancy test (if applicable). I have been informed that I should not become pregnant for at least the next six months.

I further acknowledge that I desire this form of treatment with full recognition that there are no assurances made with regard to the success of the radioactive iodine therapy.

Therefore, I hereby release from any and all liability associated with radioactive iodine (I-131) therapy, including any possible complications thereof, the above named physician, his associates and assistants; the Dartmouth-Hitchcock Medical Center, the Hitchcock Clinic and the Mary Hitchcock Memorial Hospital, their respective agents and employees; and all other authorized agencies concerned with this treatment.

I hereby authorize the above-mentioned parties to perform radioactive iodine (I-131) therapy for hyperthyroidism on me.

I have read (or have had read to me) and understood the above, and give my informed consent.

_____ _____
Signature of Patient Date

_____ _____
Signature of Physician Date