

OUTPATIENT RADIOACTIVE IODINE (RAI) TREATMENT

PLEASE BRING THIS INFORMATION PACKAGE WITH YOU TO YOUR RAI TREATMENT APPOINTMENT

Why am I getting Radioactive Iodine (RAI) Treatment?

Like other forms of radiation therapy, RAI treatment involves the use of radiation to destroy cancerous tissue. In RAI treatment, the purpose is to destroy any remaining thyroid tissue following surgery or to treat residual or recurrent disease. This is a unique treatment for differentiated forms of thyroid cancer (papillary and follicular). Instead of using an external radiation beam, with RAI Treatment, the patient ingests a pill containing a prescribed dose of a radioactive form of iodine. The dosage of RAI is determined by your Endocrinologist based on many factors, such as hormone levels, extent of disease, etc.

To maximize effectiveness of RAI Treatment, you need to become hypothyroid. To accomplish this we need you to:

- 1) Be on a low iodine diet 2 weeks before to 2 days after your RAI Treatment. Please see *Low Iodine Diet* section below.
- 2) Stop thyroid hormone replacement pills (such as Levothyroxine, Synthroid and Eltroxin) for 4 weeks prior to RAI treatment.
- 3) If suggested by your Endocrinologist, take Cytomel instead of your regular thyroid medications. Stop Cytomel 2 weeks prior to RAI treatment.
- 4) A blood test for TSH levels is done prior to treatment to ensure that you are appropriately hypothyroid and a pregnancy test is done for women in the reproductive age group.

What other restrictions are there?

- 1) X-Rays / CT scans involving contrast injections should be avoided for 6 weeks prior to RAI treatment due to its high iodine content which competes with your RAI treatment.
- 2) Pregnancy: Female patients must practice birth control prior to treatment because radioactive iodine could potentially harm a fetus. For women, pregnancy should also be avoided for 12 months after treatment. Males should wait at least 3 months to initiate a pregnancy.
- 3) Breast Feeding: If you have breastfed within the past 6 months, please inform your Endocrinologist. If you are still lactating, the treatment may be postponed to prevent the accumulation of radioactive iodine in the breast milk and breast tissue. Breastfeeding must be discontinued for several months (check with your Endocrinologist for exact time frame) prior to treatment and completely ceased thereafter. Breastfeeding in subsequent pregnancies are unaffected and therefore acceptable.

What is a low iodine diet?

Follow a low-iodine diet 2 weeks before to 2 days after receiving your RAI Treatment. Therefore, you may go back to eating as usual 2 days after you ingest the RAI Treatment capsule(s). Sample of low iodine meals can be obtained from the low iodine cookbook available at the following websites. You can also find more detailed examples of what foods you can and cannot eat on these websites.

<http://www.thyca.org> and <http://www.thyroidcancercanada.org>

Low Iodine Diet	
AVOID	CAN EAT
Table salt and Sea salt	Non-iodinated salt (ie. Kosher salt)
Dairy Products (milk, yogurt, cheese, butter, ice cream, sour cream, chocolate)	Grains, cereals and rice (Basmati rice is best for the diet) up to 4 servings per day
Egg Yolks	Fresh meats to 5 oz per day (avoid fresh turkey/chicken that are injected with highly-salted broth – check package labels)
Seafood (fish, shellfish, kelp, sea weed)	Unsalted nuts or nut butters
Soy	Rye or Whole wheat bread or Matzos crackers
Food prepared in restaurants	Fresh fruits
Prepared foods containing carrageenan (eg. Beer, gelatin desserts, etc.)	Raisins and other dried fruit
Cured and corned food (ham, lox, corned beef, sauerkraut)	Fresh vegetables
Breads with iodinated dough conditioners (ie. White bread)	Sugar, jelly, honey, maple syrup
Canned vegetables	All vegetable oils
Commercial baking products	Fruit juice, lemonade, soda, wine (Avoid red dye #3)
Molasses	Unsalted rice cakes
Medications or vitamins containing iodine (check with your Endocrinologist)	Popcorn (homemade)
Foods containing FD&C and Red Dye #3 (food/pills that are red/brown, colas)	Sorbet (with no salt, dairy or red dye #3)

Reference: <http://www.thyca.org> and <http://www.thyroidcancercanada.org/>

How might I feel when I am hypothyroid?

- Tired, loss of energy, weakness
- Trouble sleeping, nightmares or excess sleep
- Puffiness especially in the face and bloating
- Loss of ability to concentrate, memory loss, absent mindedness
- Weight gain
- Anxiety, panic attacks, irritability, mood swings
- Depression
- Dry eyes, skin and hair, hair loss

- Change in menstrual cycle
- Joint pains and stiffness, muscle cramps
- Intolerance to cold
- Constipation
- Tingling or numbness in fingers or toes
- Itchiness
- Ringing in ears, slight changes in eyesight

How does the RAI Treatment work?

Radioactive iodine emits two types of radiation called “beta particles” and “gamma rays”. The beta particles, which travel only a few millimeters in tissue, irradiate and destroy the thyroid or thyroid cancer tissue. The gamma rays travel a much greater distance and can be used to image the distribution of the radioactive iodine within your body.

Why do I have to be isolated once I receive the RAI Treatment?

The Canadian government mandates strict radiation safety precautions to ensure that members of the public are not exposed to significant amounts of radiation. Radiation exposure to others can occur through two pathways: (1) “contamination” via bodily fluids or (2) direct exposure to gamma rays emitted from your body.

Regarding “contamination” via bodily fluids → the RAI dose that you receive gets picked up by any thyroid or thyroid cancer tissue, but it also excretes in your urine and feces. A small amount is also contained in other bodily fluids such as perspiration and saliva. You will be given special instructions during your isolation period to prevent contamination.

Regarding direct exposure to gamma rays → this can be reduced to insignificant levels by ensuring that you stay at least three to four meters away from others for a few days after treatment. It is particularly important to avoid close contact with children and pregnant women during these few days.

To meet the above radiation safety requirements, it will be necessary for you to undergo a period of isolation and to follow some safety guidelines. You have the option of being treated in isolation as a hospital in-patient or out-patient (if your home environment qualifies for this treatment). If you are interested in out-patient treatment, please inform your Endocrinologist and complete & sign ***Appendix A: OUTPATIENT Questionnaire***. A telephone interview with our Assistant Radiation Safety Officer will be arranged to determine if you meet all of the criteria.

Some criteria to qualify for out-patient treatment are as follows:

1. Ability to remain at home for the 3 days following treatment.
2. Ability to take care of yourself for 3 days.
3. No children under 12 yrs at your residence for 3 days.
4. A bathroom and bedroom that can be reserved for your exclusive use for 3 days.
5. Ability to maintain a 4 metre distance from others for 3 days.

OUTpatient Treatment

Protocols vary at different hospitals. The following guidelines apply to Sunnybrook's Iodine treatment patients and have been determined based on careful consideration by the Radiation Safety Officer and Nuclear Medicine Physician.

The Day of Treatment

1. Avoid eating after 8:00 AM.
2. Check-in at Nuclear Medicine (AG21) at 10:00am. The assistant Radiation Safety Officer or a Nuclear Medicine technologist will discuss how to carry out the required radiation isolation and offer tips to reduce your own radiation exposure. Then the Nuclear Medicine physician will discuss the benefits and potential side effects of the RAI treatment with you. Finally, the technologist will administer the RAI dose to you with a glass of water. The RAI dose is usually contained in 1 or 2 regularly-sized pills. If you are experiencing nausea, you can take Gravol with or before the treatment. Do not eat or drink for 60 minutes after receiving your RAI pill(s).
3. You are then free to go directly home.
4. Radiation isolation at home. Please follow the guidelines outlined in the ***OUTPATIENT Instruction sheets (Appendix B)***.
5. Please note that menstruating females should use tampons during their isolation period.

Extra things that you may need to prepare for home prior to your RAI Treatment

Buy Gravol, mild laxative (if you regularly experience constipation) and plastic gloves

Followup

Whole body scan (check page 1 for date & time) → indicates how much remnant tissue remains in the neck area and may indicate any metastases (spread) of cancer to other parts of the body

Blood test, regular check-ups by the doctor (feeling the neck), may include imaging tests (ultrasound or whole body scans). Frequency and need for testing are determined by your Endocrinologist based on a number of factors.

Possible Side Effects and Instructions to Minimize Them

The Nuclear Medicine Physician will discuss these with you again before your dose on your RAI treatment day.

Early side effects:

- A brief period of nausea *may* occur after treatment. (within the first 48 hours) Gravol can be taken if needed (50mg every 4 hours). **Vomiting is rare.**
- You may experience a funny taste, dry mouth, or decreased taste sensation for a few weeks after treatment. To help with this and to lessen the inflammation in the salivary glands, you are encouraged to suck on sour candies or swallow a mouthful of lemon juice several times a day starting 24 hours after treatment. If you develop pain and/or swelling in the salivary glands you can gently massage them.
- Sores in the mouth can develop in the first 2 weeks after treatment, but this is rare. Contact your doctor if this occurs.

Delayed side effects:

- Your blood counts may temporarily decrease about 5 to 10 weeks after treatment. Drinking fluids frequently and voiding frequently in the first few days after receiving your treatment can minimize this.
- Salivary gland dysfunction, such as decreased saliva, altered states of sensation and gum or dental problems may *rarely* occur months to years later. Regular brushing and flossing will maintain dental health.
- Dry eyes or increased tearing due to blockage of the tear ducts can occur.
- A *small* increased risk of other cancers may occur, related to the high radiation dose received. Drinking fluid every 2 hours while awake, and voiding frequently in the first 4-7 days after receiving the RAI dose can reduce the radiation dose.
- Menopause may occur earlier.
- **Temporary** infertility may occur in men. Permanent infertility is extremely rare.
- There may be unusual rare side effects in patients with advanced disease. These will only be discussed with you if you are at risk.

Frequently Asked Questions:

- 1. I heard that there is a new drug that I can take instead of having to become hypothyroid. Can you tell me about this drug?**

This new drug is called “Recombinant TSH”, or “Thyrogen” and it mimics the body’s own TSH. Thyrogen is approved as an aid to remnant ablation and treatment of thyroid cancer. Ask your Endocrinologist more about Thyrogen if you are interested.

- 2. When can I go back to work?**

This depends on how you feel after your treatment and what type of work you do. As side effects and the response to hypothyroidism vary between individuals, the decision should be made based on how well you are feeling. Those who are feeling up to it and have little close contact with co-workers can resume work immediately after the isolation period ends. In other cases, patients who work closely with others or with children, or those who are not tolerating the hypothyroidism well may decide to start work days or several weeks after treatment.

- 3. When can I resume my normal diet?**

You can resume a normal diet 2 days after your RAI treatment.

- 4. What should I wear during my treatment?**

Wear your own “comfortable clothing”.

- 5. What are the chances of the radioactive iodine causing another cancer?**

There is some data which suggest that there is a slightly increased risk of developing a second cancer in thyroid cancer patients and that the risk increases with cumulative exposure to radioactive iodine. **However**, this treatment has been carried out for over 50 years and long term studies indicate that the chance of developing second cancers after radioactive iodine is small.

- 6. Will my hair fall out?**

Not from the radioactive iodine. The radioactive iodine does not concentrate in areas that could lead to hair loss.

- 7. Can I keep on taking my Calcium tablets?**

Yes.

Reference: <http://www.thyroidcancercanada.org/rai-treatment.php>

Appendix A:
I-131 OUTpatient Questionnaire

PATIENT NAME: _____

MRN: _____

DOB: _____

PATIENT TEL: (H) _____

(W): _____

REFERRING DR: _____

TEL: _____

TREATMENT DOSE: _____ **mCi**

TREATMENT DATE: _____

SCAN DATE: _____

Other than yourself, how many people live at your place of residence?	
Excluding yourself, what are the approximate ages of each member of your household?	
How many bathrooms are in your residence?	
Is there a bathroom that could be reserved for your exclusive use for 3 days?	
If you are treated on an outpatient basis, will you be able to avoid contact with pregnant women or children under 12 years old for the next 7 days?	
Will you be able to sleep alone in a private room for the next 7 days?	
While at home, will you be able to maintain at least 3 m distance from all other people for the next 3 days?	
How will you travel from SHSC to your home after treatment?	
Will anyone be travelling with you? If so, will the person be staying with you for the next 3 days?	
How long does it take to travel from SHSC to your home?	
After you arrive at home, will you be able to stay there for 3 days?	
Are you planning to initiate a pregnancy within the next year?	

Patient's signature: _____ Date: _____

Witness: _____ Date: _____

Appendix B: I-131 OUTpatient Instructions sheet

If you feel nauseated after treatment: Take Gravol; 50 mg orally; every 6 hours if needed for up to 2 days .
Minimize close contact with others by adhering to the following guidelines. You may spend up to a maximum of 45 minutes per day at 1 m (3.5 feet) from other people; up to a maximum of 2 hours per day at 2 m (7 feet) from other people; up to a maximum of 7 hours per day at 3 m (10 feet) from other people. Spend as much time as you like 4 m (13 feet) from other people. This precaution lasts: 3 days (72 hours from the time you take the RAI treatment pill(s))
Stay at your home for 3 days . Hotel/motel accommodations are not permitted for 3 days .
Do not sleep with pets for 3 days .
Reserve a bathroom for your personal use for 3 days . You should be the only person to use this bathroom during this time. Thoroughly clean your bathroom prior to allowing anyone else to use your bathroom on the 4th day.
Use good hygiene habits. Wash your hands thoroughly after each toilet use. Flush the toilet 3 times after each use. Males should sit when urinating in order to avoid splashing. Remove urine splatters with toilet paper and flush. All for 3 days .
Take at least 1 shower or bath per day for 3 days .
Designate a telephone for your own use for 3 days .
Continue the low iodine diet for 3 days .
Avoid alcoholic beverages for 3 days .
Launder your clothes, bedclothes, towels, etc. separate from the clothes of anyone else for 3 days .
Use one set of dishes, cutlery and cup and wash them separately for 3 days . Do not use disposables.
After brushing your teeth or gargling, keep saliva close to the drain and use lots of water to rinse the sink for 3 days .
Do not share toothbrush or razors for 3 days .
Do not cook for others for 3 days .
Cut food such as apples and chicken, rather than eating off the core or bone for 3 days .
Anyone cleaning up bodily fluids for you (ie. Vomit, blood, urine, stool) should wear plastic gloves and dispose of all garbage in the trash for 3 days .
Dispose of trash regularly for 3 days .
Wear your slippers/shoes when you are out of bed for 3 days .
Starting from the morning after the RAI Treatment, take 1-2 sour candies after each meal, aiming for ~5 candies per day for 7 days . Lemon juice with tea is a good alternative if you do not like sour candies.
Sleep alone for 7 days .
Avoid contact with pregnant women and children under the age of 12 for 7 days .
Drink plenty of liquids <i>starting 60 minutes after your RAI pill(s)</i> for 7 days . After that, drink about 1 glass of fluids every 2 hours that you are awake to encourage urination at least once per hour. It is not necessary to wake up to drink fluids but you should wake up to empty your bladder if needed. Doing this will help to eliminate any excess radioactive iodine more rapidly.
If you are not having a daily bowel movement, take a mild laxative in the evening to help you (ie. milk of magnesia, Dulcolax, or prune juice) for 7 days .
Do not donate blood for 14 days .
Females should wait at least 1 year before starting a pregnancy. Males should not initiate a pregnancy for at least 2-3 months .
Cease breastfeeding (consult Nuclear Medicine physician)
If you have any further questions you may call 416-480-6100 x 2271 (8:00AM to 4:15PM). After hours: You may Page 416-714-1484 (first) or 416-484-7119 . Please key in your Phone #.

I have read and understand the above precautions. I agree to abide by the above precautions.

Patient's signature: _____ Date: _____

Witness: _____ Date: _____