

45

**Gallagher, Carol**

**From:** Edmonds, Cathleen <Cathleen.Edmonds@ucsf.edu>  
**Sent:** Thursday, March 17, 2016 1:18 PM  
**To:** Gallagher, Carol  
**Cc:** Edmonds, Cathleen  
**Subject:** [External\_Sender] I-131 Thyroid Therapy Documents  
**Attachments:** I-131 Thyroid Instructions Nov 15.docx; Low Iodine Diet NIH.pdf; Low Iodine Diet UCSF.doc; I-131 Rad Safety Discharge Form March 2016.doc; Radioactive Iodine Nursing Instructions.docx; Radioactive Iodine Therapy Physicians Information.docx

11/16/2015  
80 FR 72843

Hello Carol,

I listened with great interest to the NRC hearings regarding thyroid therapy with I-131. I had planned to send the documents we designed at UCSF for our patients, earlier, but we have had many ongoing projects.

Annually, we see over 100 patients at UCSF that we can treat as outpatients and another 20 patients that require inpatient treatment due to their living situations.

I am attaching our documents if it is still of interest to you:

- Thyroid Instructions for Out Patients
- Low Iodine Diet for Thyroid Cancer Patients from NIH
- Low Iodine Diet for Thyroid Cancer Patients from UCSF
- Discharge information and instructions for Inpatients
- Nursing Instructions for Thyroid Therapy Inpatients
- Physician Instructions for Thyroid Therapy Inpatients

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RULES AND DIRECTIVES  
BRANCH  
UCSF

There are several other documents, radiation safety training scripts and a you-tube video that we generate if there is any interest.

Additionally, there are two topics that we are researching:

- A more usable and updated calculator to determine the days of public restrictions. Our current one has been in use for many years. We have many sequential exposure readings we have collected over the years and know the calculator tends to overestimate the days of restrictions.
- We have started to update the patient brochure (we are still using the SNM 1990's version), but would welcome input or at least a new NRC document.

Thank you very much for all your hard work!

SUNSI Review Complete  
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Cathleen

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University of California  
San Francisco



Office of Environment  
Health & Safety

**Radiation Safety Instructions to the Patient  
I-131 Thyroid Therapy**

Patient Name: \_\_\_\_\_

Date: \_\_\_\_\_

Activity: \_\_\_\_\_ mCi I-131

Physician: \_\_\_\_\_

For you to leave the hospital as an outpatient, you must follow these precautionary measures. During the next \_\_\_\_\_ days, you must be isolated from others as indicated below and you must follow these directions from \_\_\_\_\_ to \_\_\_\_\_ for 24 hours each day.

- You must keep your distance from other people so that they are more than one meter (more than an arm's length) from you
- You must stay away from children and pregnant women
- Sleep by yourself in a separate bed
- Drink plenty of fluids
- Flush the toilet three times after each use. **Always** sit down to use the toilet.
- When brushing your teeth, be sure to keep water running and lean over sink to spit.
- Use disposable eating items if possible, and retain with other trash for one week.
- If standard dishes and utensils are used, wash these items separately.
- For all trash generated, hold for one week in separate location before placing in garbage cans
- Hold all linen and clothing for one week then launder separately
- See the Brochure you are given for additional information
- Always bring these instructions to doctors' offices or medical facilities for the next three weeks
- In case of questions during business hours please call 415.353.1693
- In case of a medical emergency, call 911

- When in the shower, do not urinate, spit, or transfer any body fluids
- No sexual intimacy or close physical contact with another person
- Do not exercise vigorously
- Do not use public transportation
- Do not travel long distances in a vehicle other than returning home after treatment
- Do not prepare meals for anyone else
- Do not share towels, bath tubs, hot tubs, clothing or similar items

**Restrictions end on:** \_\_\_\_\_

Patient Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Physician Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Interpreter Signature (if applicable): \_\_\_\_\_ Language: \_\_\_\_\_ Date: \_\_\_\_\_

## Low-Iodine Diet: Preparing to Receive Radioactive Iodine

**\*** *Note: This information is only for patients taking part in clinical research at the NIH Clinical Center. It may not apply to patients elsewhere. If you have questions about this information, ask a member of your healthcare team.*

### INTRODUCTION

#### Why do I need to follow a low-iodine diet?

If you're going to get radioactive iodine for a test or as a treatment (either a tracer or a therapy dose), sticking to a low-iodine diet will help. You'll need to follow a low-iodine diet for about 2 weeks before your treatment or test.

#### How does the diet help?

By cutting down on iodine in your diet before your scan or treatment, your body levels of iodine will be low. Your thyroid gland will then be "hungry" for iodine. So when you get the dose of radioactive iodine, your thyroid will take in more—right where you need it. This will help make the treatment work better or the test be more accurate.

#### What is iodine?

Iodine is a key mineral your body needs to make thyroid hormones. It's also common in many of the foods you eat.

#### How much iodine should I get on the low iodine diet?

On the low-iodine diet, you should get less than 50 micrograms of iodine per day. You can do this by cutting down on foods that are high in iodine.

#### How much iodine do Americans normally get from food?

The Recommended Daily Allowance, or the amount of iodine that most adults need for normal health, is 150 micrograms per day. Most people in the United States get about 150-550 micrograms. So to follow the low-iodine diet you'll likely need to make some changes to what you eat.

#### How will I know which foods have the most iodine?

Unfortunately, the amount of iodine in a food isn't on a food label. It's not in books or on many web sites that list nutrients either. So you can't easily track iodine like some people track calories or grams of fat. Instead, you need to know which foods and ingredients to avoid.

## Which foods can't I eat?

The foods highest in iodine are:



Dairy (milk and milk-based products)



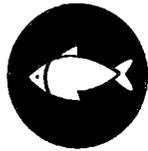
Seaweed



Egg Yolks



Chocolate



Fish



Certain grains made with added iodine. See table for a list of safe grains.



Shellfish

Aside from these foods, most Americans get iodine from iodized salt—which is salt with added iodine—and from food additives.

Use the following guide to help you make safe food choices. It will help you understand which

- **Foods you can't eat at all**
- **Foods you can eat, but only in small amounts**
- **Foods you can eat without limits**

# READING INGREDIENT LABELS FOR IODINE

You can't find iodine on a food label. But you can look for certain ingredients that contain iodine.

## Not-Allowed Ingredients

While you're on the low-iodine diet, you can't eat these ingredients at all. Look for them on food labels.

### 1 Bread conditioners

Companies and bakeries may add high-iodine bread conditioners to baked goods. Avoid any product with:

- calcium iodate
- potassium iodate

Home-made bread/baked goods without these conditioners are allowed.

### 2 Red Dye #3

This food coloring—called erythrosine or E127 in Europe—is rare now. But always check labels on foods dyed red or orange.

### 3 Seaweed and seaweed-based ingredients

These are used to thicken jellies, soup, ice cream, salad dressings, and toothpaste. Seaweed is also in sushi. Avoid ingredients like:

- Alginate
- Algin
- Agar-agar
- Carrageenan
- Nori
- Algae
- Kelp
- Seaweed

### 4 Egg Yolk

All the iodine in an egg is in the yolk, not the egg white.

## Limited Ingredients

While you need to avoid foods that are high in iodine, you can eat some in small amounts as ingredients.

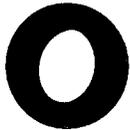
Foods that you can eat in small amounts as ingredients are



**Cream or milk**



**Chocolate**



**Whole Egg**



**Cheese**

**How small is a small amount?** There's no easy answer. Less is better. Think in terms of teaspoons, not measuring cups.

Keep in mind that ingredients are listed on the label from largest to smallest amounts by weight. So if a high-iodine food is at the end of a long list of ingredients, it's probably only a small amount.

## MORE ABOUT EATING LOW-IODINE

- **Processed foods**—like many canned, packaged or frozen foods—have added salt. Labels don't usually say if the salt has iodine or not. However, most large manufacturers use non-iodized salt. (See **Appendix A** for specific brand names). Always check for not-allowed ingredients.
- **Small manufacturers** may use iodized salt. You may want to avoid their products during the short time you're on the diet.
- **Non-iodized table salt** is OK to use while on a low-iodine diet.

- **Restaurant foods:** Eating out on the low-iodine diet can be hard in two ways. First, you can't usually tell what type of salt a restaurant is using and most restaurants prepare foods with lots of added salt. Second, restaurants may make marinades, spice mixes, dressings, and sauces from scratch with iodized salt.

Therefore, if you're eating food from any restaurant

- choose plainly prepared foods that are allowed on the diet
  - make a special request that your food be prepared without added salt, marinades, or sauces
  - use simple oil and vinegar instead of salad dressing, or bring your own
  - ask for spices and herbs without salt to flavor your food
- **Home preparation:** Similar to eating in restaurants.

## OTHER IODINE-CONTAINING PRODUCTS TO AVOID

- **Red Dye:** Avoid Red Dye #3 (erythrosine or E127 in Europe). Red Dye #40 is OK. With this in mind, check any pills or capsules that are artificially dyed red, orange, or brown.
- **Supplements:** Some supplements can be high in iodine. While you're on the diet, don't use:
  - **Calcium supplements** made from oyster-shells
  - **Fish oil**-except for Omacor brand, which is OK to use
  - **Multi-vitamins**
  - **Selenium supplements**
  - **Any supplement with Red Dye #3** (erythrosine or E127 in Europe)
- **Toothpaste:** Some brands have alginates (made from seaweed), which are high in iodine.
- **Medications:** Some thyroid medications—like levothyroxine and triiodothyronine—and other drugs have iodine. Check with your doctor to see if you should stop taking any medicines because of iodine. Never stop using a medicine your doctor prescribed unless he/she says it's OK.
- **Antiseptics for Cleaning Cuts:** Some products for killing germs on a wound—like Betadine—have iodine. Don't use them when you're on the low-iodine diet. Try hydrogen peroxide for cleaning a cut and an antibiotic cream if you need it.
- **Creams and Lotions:** Avoid lotions made from seaweed (including kelp and spirulina) while on the low-iodine diet.
- **Water Purification:** Don't use iodine tablets for purifying water (making it clean to drink) when you're on the diet.

# GUIDE TO THE LOW-IODINE DIET

\* See also the list of **Not-Allowed Ingredients**

TYPE OF FOOD	FOODS ALLOWED	FOODS NOT ALLOWED
<p><b>Grains, Starchy Vegetables, &amp; Cereals</b></p>	<p><b>Grains</b></p> <ul style="list-style-type: none"> <li>• Pasta (white and wheat)</li> <li>• Bulgar</li> <li>• Wheat</li> <li>• Rice</li> <li>• Couscous</li> <li>• Oats</li> <li>• Quinoa</li> <li>• Polenta</li> <li>• Cornmeal</li> <li>• Most other grains</li> </ul> <p><b>Starchy vegetables</b></p> <ul style="list-style-type: none"> <li>• Sweet Potatoes</li> <li>• Potatoes</li> <li>• Peas</li> <li>• Lentils</li> <li>• Beans</li> <li>• Corn</li> </ul> <p><b>Cold and hot cereals (without milk)</b></p> <ul style="list-style-type: none"> <li>• Oatmeal</li> <li>• Grits</li> <li>• Cream of Wheat</li> <li>• Corn Flakes</li> <li>• Wheat Flakes</li> <li>• Shredded Wheat</li> </ul>	<p>Any foods prepared with or that contain <b>not allowed ingredients</b></p>
<p><b>Fruits</b></p>	<ul style="list-style-type: none"> <li>• All fresh or frozen fruits and fruit juices</li> <li>• Most canned fruits, preferably in juice</li> <li>• Dried fruits</li> </ul>	<p>Maraschino cherries with Red Dye #3 or erythrosine</p>

TYPE OF FOOD	FOODS ALLOWED	FOODS NOT ALLOWED
<b>Vegetables</b>	<ul style="list-style-type: none"> <li>• Most fresh, frozen and canned vegetables (except for foods in the next column)</li> <li>• Beans, including canned and refried</li> <li>• Olives</li> </ul>	<ul style="list-style-type: none"> <li>• Nori (like the black paper in sushi rolls)</li> <li>• Seaweed and seaweed salad</li> <li>• Sea vegetables, like kelp and algae</li> </ul>
<b>Nuts</b>	<ul style="list-style-type: none"> <li>• Unsalted and unprocessed nuts</li> <li>• Salted or roasted nuts produced by big companies which use salt without iodine - see <b>Appendix A</b></li> <li>• Peanut butter in small amounts (less than 2 tablespoons a day)</li> </ul>	<ul style="list-style-type: none"> <li>• Roasted or salted nuts from small producers—like ones sold at local markets—which are more likely to have salt with iodine</li> <li>• Trail mixes with chocolate pieces, M&amp;M's, yogurt-covered pieces, or white chocolate</li> </ul>
<b>Animal Proteins</b>	<p><b>All fresh red meats, like</b></p> <ul style="list-style-type: none"> <li>• Beef</li> <li>• Pork</li> <li>• Lamb</li> <li>• Veal</li> </ul> <p><b>All fresh poultry, like</b></p> <ul style="list-style-type: none"> <li>• Chicken</li> <li>• Turkey</li> </ul> <p><b>Wild or game meats, like</b></p> <ul style="list-style-type: none"> <li>• Buffalo</li> <li>• Venison</li> </ul> <p><b>Luncheon meats, like</b></p> <ul style="list-style-type: none"> <li>• Chicken</li> <li>• Ham</li> <li>• Turkey</li> </ul> <p><b>Other foods, like</b></p> <ul style="list-style-type: none"> <li>• Frankfurters &amp; sausages</li> <li>• Bacon</li> </ul>	<p><b>Cured meats including</b></p> <ul style="list-style-type: none"> <li>• Pepperoni</li> <li>• Salami</li> <li>• Bologna</li> </ul>

TYPE OF FOOD	FOODS ALLOWED	FOODS NOT ALLOWED
<p><b>Dairy: milk, yogurt, cheese</b></p>	<p><b>Instead of milk or cream, safe options include</b></p> <ul style="list-style-type: none"> <li>• Almond milk</li> <li>• Hemp milk</li> <li>• Rice milk</li> <li>• Coconut milk</li> <li>• Non-dairy cream substitutes</li> </ul>	<ul style="list-style-type: none"> <li>• Milk (all kinds, including whole, low-fat, and skim)</li> <li>• Buttermilk</li> <li>• Powdered milk</li> <li>• Coffee drinks with milk, like lattes, cappuccinos, and frappes</li> <li>• Milk-based drinks, like egg-nog, kefir, and yogurt drinks</li> <li>• Cream (whipped and half &amp; half)</li> <li>• Cream based soups or sauces</li> <li>• Yogurt</li> <li>• Cheese</li> <li>• Cottage cheese</li> <li>• Ice cream and milk shakes</li> </ul> <p><b>Comment:</b> You can have milk, cream and cheese in very small amounts as an ingredient (<b>see Limited Ingredients</b>).</p>
<p><b>Eggs</b></p>	<ul style="list-style-type: none"> <li>• Egg whites</li> <li>• Egg substitute made from egg whites</li> </ul>	<ul style="list-style-type: none"> <li>• Whole eggs</li> <li>• Egg yolk</li> </ul>
<p><b>Breads</b></p>	<ul style="list-style-type: none"> <li>• Breads that do not have an iodate conditioner as an ingredient</li> <li>• Homemade breads made with <b>allowed ingredients</b></li> </ul>	<ul style="list-style-type: none"> <li>• Any breads with “calcium iodate” or “potassium iodate” on the label</li> </ul> <p><b>Comment:</b> Avoid fresh-baked breads from local bakeries unless the bakery can guarantee that they do not use iodate conditioners.</p>

TYPE OF FOOD	FOODS ALLOWED	FOODS NOT ALLOWED
<p><b>Baked Goods</b></p>	<ul style="list-style-type: none"> <li>• Homemade cakes, cookies and fruit desserts made with <b>allowed ingredients</b></li> </ul> <p><b>Comment:</b> Any baked goods must be made with egg whites only and dairy-free.</p>	<p>Avoid any foods made with <b>not allowed ingredients</b> including</p> <ul style="list-style-type: none"> <li>• Muffins</li> <li>• Cornbread</li> <li>• Quick breads (like banana or zucchini)</li> <li>• Pastries</li> <li>• Pancakes</li> <li>• Cakes</li> <li>• Cookies</li> <li>• Donuts</li> </ul>
<p><b>Snack Foods</b></p>	<p><b>Chips and Crackers</b></p> <ul style="list-style-type: none"> <li>• Crackers</li> <li>• Pretzels</li> <li>• Graham Crackers</li> <li>• Potato chips</li> <li>• Corn tortilla chips</li> <li>• Popcorn</li> </ul> <p><b>Sweets</b></p> <ul style="list-style-type: none"> <li>• Sugary candies</li> <li>• Fruit ice</li> <li>• Popsicles</li> <li>• Jell-O®</li> </ul> <p><b>Nuts and Seeds</b></p> <ul style="list-style-type: none"> <li>• Nuts</li> <li>• Seeds</li> <li>• Coconut</li> </ul>	<p><b>Sweets</b></p> <ul style="list-style-type: none"> <li>• Chocolate</li> <li>• Products with chocolate</li> <li>• Puddings and custards</li> <li>• Sherbet</li> <li>• Ice cream and other dairy products</li> <li>• Cocoa or hot chocolate (even if you mix it with water)</li> <li>• Diet or meal-replacement shakes (most have dairy or soy milk ingredients)</li> </ul>
<p><b>Seafood</b></p>	<p>None</p>	<ul style="list-style-type: none"> <li>• All fish including canned tuna and sardines</li> <li>• All shellfish including lobster, crab, shrimp and oysters</li> <li>• Sushi, nori, seaweed or other sea vegetables</li> <li>• Fish pastes and sauces</li> <li>• Imitation crab meat</li> </ul>

TYPE OF FOOD	FOODS ALLOWED	FOODS NOT ALLOWED
<p><b>Vegan Proteins and Soy</b></p>	<ul style="list-style-type: none"> <li>• Beans</li> <li>• Protein powders and meal-replacement bars made from wheat or nuts</li> <li>• Tofu*</li> <li>• Edamame (soy beans)*</li> </ul>	<ul style="list-style-type: none"> <li>• Soy milk*</li> <li>• Soy yogurt*</li> <li>• Protein powders and meal replacement bars made from soy or whey</li> <li>• Veggie burgers, sausages, and other vegetarian imitation meat products*</li> </ul>
<p><b>Mixed dishes, soups and stews</b></p>	<ul style="list-style-type: none"> <li>• Canned, non-cream soups</li> <li>• Homemade broth-based soups</li> <li>• Chili, stews and other one-pot meals that have <b>allowed ingredients</b></li> <li>• Hamburgers, meatloaf, meatballs, and other foods made with egg whites and other <b>allowed ingredients</b></li> </ul>	<ul style="list-style-type: none"> <li>• Lasagna, burritos, mac and cheese, and other dishes made with cheese</li> <li>• Hamburgers, meatloaf, meatballs, and other foods made from ground beef (assume that they contain egg yolk unless you made them yourself)</li> </ul>
<p><b>Condiments</b></p> <p><b>Comment:</b> You can eat mayonnaise, butter and soy sauce in very limited amounts (a total of two tablespoons from all three per day).</p>	<p><b>Savory</b></p> <ul style="list-style-type: none"> <li>• Catsup</li> <li>• Mustard</li> <li>• Gravy made without milk or butter</li> <li>• Margarine</li> </ul> <p><b>Sweet</b></p> <ul style="list-style-type: none"> <li>• Honey</li> <li>• Pancake syrup</li> <li>• Jellies</li> </ul> <p><b>Dressings, marinades, and herbs</b></p> <ul style="list-style-type: none"> <li>• Oil</li> <li>• Vinegar</li> <li>• Non-creamy salad dressings</li> <li>• Marinades</li> <li>• Herbs and spices—fresh or dried</li> </ul>	<p><b>Crean sauces and toppings</b></p> <ul style="list-style-type: none"> <li>• Cream</li> <li>• Sour cream</li> <li>• Creamy salad dressings</li> <li>• White or cream sauces</li> </ul> <p><b>Sweet</b></p> <ul style="list-style-type: none"> <li>• Blackstrap molasses</li> </ul> <p><b>Other sauces, pastas, and herbs</b></p> <ul style="list-style-type: none"> <li>• Fish sauce, anchovy paste</li> <li>• Spice mixtures and seasoning packets with iodized salt (see <b>Appendix A</b> for details)</li> </ul>

TYPE OF FOOD	FOODS ALLOWED	FOODS NOT ALLOWED
<b>Beverages</b>	<ul style="list-style-type: none"> <li>• Water</li> <li>• Coffee</li> <li>• Tea</li> <li>• Carbonated beverages</li> <li>• Fruit juice</li> <li>• Beer, wine and alcohol if your doctor says it's OK</li> </ul>	<ul style="list-style-type: none"> <li>• Milk or cream</li> <li>• Any beverage that has <b>not allowed ingredients</b></li> </ul>

\*U.S data on iodine content of these foods is lacking. Therefore guidelines are based on food composition data from other countries. However, it may be safest to avoid all soy and tofu foods unless you follow a vegetarian or vegan diet with limited protein sources.

## APPENDIX A

### Companies that Use Salt without Iodine

Remember that you can only use salt without iodine while on your diet. In 2012, these companies and brands stated that they use only salt without iodine in the products they sell in the U.S.

This is not a complete list of food companies or their brands. By including a company on this list, NIH is in no way endorsing them.

#### **Campbell's® US**

**[www.campbellsoupcompany.com](http://www.campbellsoupcompany.com)**

- Pace®
- Pepperidge Farm®
- Prego®
- Swanson®
- V8®

#### **Conagra Foods®**

**[www.conagrafoods.com](http://www.conagrafoods.com)**

- Banquet®
- Chef Boyardee®
- Egg Beaters®
- Fleischmann's®
- Healthy Choice®
- Hebrew National®
- Hunt's®
- La Choy®
- Marie Callender's®
- Orville Redenbacher's®
- PAM®
- Peter Pan®
- Slim Jim®

#### **FritoLay®**

**[www.fritolay.com](http://www.fritolay.com)**

- Cheetos®
- Cracker Jacks®
- Doritos®
- Funyuns®
- Grandma's®
- Lays®
- Nut Harvest®
- Rold Gold®
- Ruffles®
- Sabra®

- Sabritones®
- Simply Natural®
- Stacy's®
- Sun Chips®

#### **General Mills®**

**[www.generalmills.com](http://www.generalmills.com)**

- Betty Crocker®
- Big G cereals®
- Bisquick®
- Cascadian Farm®
- Cheerios®
- Chex®
- Fiber One®
- Green Giant®
- Haagen-Dazs®
- Hamburger Helper®
- Nature Valley®
- Old El Paso®
- Pillsbury®
- Progresso®
- Total®

#### **Heinz®**

**[www.heinz.com/our-food/products.aspx](http://www.heinz.com/our-food/products.aspx)**

- Bagel Bites®
- Classico®
- Jack Daniels Sauces®
- Ore-Ida®
- Smart Ones®
- T.G.I. Friday's®

**Hormel Foods®**

[www.hormelfoods.com/brands/default.aspx](http://www.hormelfoods.com/brands/default.aspx)

- Chi-chi's®
- Dinty Moore®
- Farmer John®
- HerbOx®
- Jennie-O®
- Spam®
- Stagg Chili®
- World Food®

**Kashi®**

[www.kashi.com/products](http://www.kashi.com/products)

- GOLEAN®
- Heart to Heart®

**Kraft Foods®**

[www.kraftrecipes.com/Products/](http://www.kraftrecipes.com/Products/)

- A1®
- Boca®
- Breakstone's®
- Capri Sun®
- Chips Ahoy®
- Cool Whip®
- Cracker Barrel®
- Crystal Light®
- Honey Maid®
- Jell-O®
- Kool-Aid®
- Maxwell House®
- Miracle Whip®
- Nabisco®
- Nilla®
- Oreo®
- Oscar Mayer®
- Planters®
- Ritz®
- Snackwell's®
- Stove Top®
- Triscuit®
- Wheat Thins®

**PepsiCo®**

[www.pepsico.com/Brands.html](http://www.pepsico.com/Brands.html)

- (owns FritoLay® and Quaker®, previously listed)
- Aquafina®
- Brisk®
- Dole®
- Frappuccino®
- Gatorade®
- IZZE®
- Lipton®
- Mountain Dew®
- No Fear®
- Ocean Spray®
- Pepsi®
- Propel®
- Sierra Mist®
- Sobe®
- Tropicana®

**Quaker®**

[www.quakeroats.com](http://www.quakeroats.com)

- Aunt Jemima®
- Chewy®
- Cap'n Crunch®
- Life®
- Mother's®
- Near East®
- Pasta Roni®
- Rice-A-Roni®

**What if the brand of the food I want to eat is not on this list?**

This list doesn't show all the companies that use salt without iodine. If there is a brand you want to use that is not on the list, use your best judgment or talk to your doctor.

In general, large manufacturers and companies use non-iodized salt in their products. Smaller companies are more likely to make foods with iodized salt.

## **References Available upon Request**

This guide is based on the latest food composition studies, the best scientific data available regarding the iodine content of food at the time of publication (January 2014).

## **Disclaimer**

This information is prepared specifically for patients taking part in clinical research at the National Institutes of Health Clinical Center and does not necessarily apply to individuals who are patients elsewhere. If you have questions about the information presented here, talk to a member of your health care team.

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## Low Iodine Diet

Your physician has prescribed a low iodine diet for you. This diet is an important part of your treatment and must be followed closely for the prescribed period of time.

### What is the goal?

The goal of this diet is to consume less than 50 micrograms (50 mcg) of iodine per day. Remember, you will only need to follow this diet for a short period of time!

### What is iodine?

Iodine is an important mineral that is found in a variety of foods. Iodine is used by your body to make thyroid hormones, which help to regulate your metabolic rate, body temperature, growth, reproduction, blood cell production, muscle function, and nerve function.

### Which foods contain iodine?

The major source of dietary iodine in the United States is “iodized” salt, which has been fortified with iodine. In the U.S., you can assume that any salt in prepared foods is iodized unless the product label shows that it is *not iodized*. Iodine is used in the feed of animals, and thus is found in high amounts in animal and dairy products. It is also in many processed or preserved foods since it is used as a stabilizer in food processing and as a component of red food dyes.

### What if a food is not on the list?

The iodine content is not available for all foods. Therefore, it is important that you carefully follow the provided guidelines. Eat only the approved foods in a quantity that will add up to no more than 50 mcg of iodine per day. If foods seem bland, they may be seasoned with garlic powder, onion flakes, or herbs, as long as the seasonings are salt-free and without iodine compounds. A sample menu is included.

### Can I take vitamin and mineral supplements?

This diet does not meet the Recommended Dietary Intake (RDI) for several nutrients, but a multivitamin supplement with minerals should not be taken, as iodine is a mineral included in these preparations. You may take a multi-vitamin supplement without mineral, if it does not contain red food coloring. Calcium supplements may also be beneficial because dairy products are a major source of dietary calcium and dairy products must be eliminated while on this diet. Consult your physician or dietitian if you have questions about taking nutrient supplements.

### General Guidelines

Avoid the following:

- ◆ Iodized salt, salt substitutes, sea salt
- ◆ All dairy products
- ◆ All fish and seafood
- ◆ All foods that contain preservatives
- ◆ All foods with a high sodium content.
- ◆ Processed foods and restaurant foods
- ◆ All commercially baked products including breads, pies, cakes, and cookies.
- ◆ Any foods with red food coloring

## The Low Iodine Diet

The following is a more detailed list of foods. You can eat any homemade foods prepared using ingredients from the "foods to include" column. See the list of resources at the end of this handout for grocery stores that sell special products. Additional information and many low iodine recipes are available at the web site: <http://www.thyca.org>

	<b>Foods to Include</b>	<b>Foods to Avoid</b>
<b>Dairy</b>	None allowed (you may use nut milk substitute* or non-dairy creamer such as Mocha Mix)	All dairy products including milk, cheese, cream, ice cream, yogurt, pudding, cottage cheese, evaporated milk, eggnog, sour cream, powdered dairy creamer
<b>Eggs</b>	Egg whites	All egg yolks, whole eggs and products made with whole eggs
<b>Meat and meat substitutes</b>	<i>Fresh</i> chicken, turkey, beef, pork, veal, lamb (best to buy meat from butcher) <i>Eat less than 2 servings cooked meat per day. One serving is the size of a deck of cards</i>	Canned, dried, salted, or cured meats including luncheon meats, bacon, lox, sausage, ham, chipped beef, liver, beef stew, pot pies, breaded meats, TV dinners, and mixed dishes such as pizza, chili, hash, chow mein, soy products (soy sauce, soy milk, tofu)
<b>Fish/Seafood</b>	None allowed	All fish, sardines, canned tuna, seaweed, all seafood
<b>Grain and starches</b>	Low sodium iodine-free bread, noodles (made without salt or eggs), homemade rice (not enriched or a packaged mix), homemade baked goods and cereals, oatmeal (not instant), matzos, popcorn(unsalted and no regular butter or margarine added), unsalted crackers, rice cakes (no salt added) and other specialty iodine-free baked products	Regular breads, processed cold cereals, instant cooked cereals, egg noodles, pancakes, cornbread, corn or tortilla chips, pastry/cookies, and salted crackers
<b>Fruit</b>	Fresh fruit	Prunes, other dried fruits, canned fruits, maraschino cherries, rhubarb

<b>Vegetables</b>	All fresh or fresh-frozen vegetables, including green beans and peas (other beans are not allowed), fresh potatoes without the skin, fresh tomatoes	Canned vegetables, potatoes with skin, instant mashed potatoes, French fries, onion rings, dried or canned beans, lentils, pickles, seaweed, sauerkraut, cans or jars of tomato/pasta sauce
<b>Desserts, snacks, and sweets</b>	Natural honey, natural jellies (without food coloring), maple syrup, plain popcorn popped with vegetable oil, unsalted potato chips, Mocha Mix non-dairy ice cream, applesauce, sorbet (not red)	Processed honey, jelly with food coloring, granulated sugar, ice cream, puddings, pretzels, commercially prepared bakery products, cakes, all candy, chocolate made with milk, molasses
<b>Nuts</b>	Unsalted almonds, pecans, walnuts, unsalted nut butter (limit nuts to 10 walnuts/pecans OR 15 almonds per day and nut butter to 2 T per day)	All salted nuts, and all other unsalted nuts
<b>Fats</b>	Unsalted butter and margarine, vegetable oils, olive oil, salt-free salad dressings, imitations and regular mayonnaise with no added salt	All salted margarine, butter, and salad dressings
<b>Beverages</b>	Water, fruit juices (bottles or cartons of natural juices), vegetable juice (V-8), homemade lemonade, lemon-lime or orange soda, mineral water without sodium, brewed teas and coffee, wine or alcohol (if medically improved)	Milk, lemonade mix, Kool-Aid, instant tea, instant coffee, mineral water that contains sodium, canned fruit juices, Carnation Instant Breakfast, instant cocoa mix, beer
<b>Miscellaneous</b>	Non-dairy creamer, onion powder, garlic powder, vinegar, fresh herbs, spices, ketchup, mustard, non-iodized salt, Kosher salt	Any iodized salt, garlic salt, onion salt, foods that contain these additives: carrageenan, agar-agar, algin, alginate

\*Nut milk dairy substitute

Blend or process 1 ounce of chopped unsalted nuts such as almonds, walnuts or pecans with 1 cup water (up to 2 cups water if very thin consistency preferred) and a sweetener (such as natural honey) to taste.



(affix patient label here)

**Radiation Safety Precautions for Discharge  
of <sup>131</sup>I Thyroid Therapy Patients**

\_\_\_\_\_ was treated at UCSF on \_\_\_\_\_  
(patient name) (treatment date)  
with \_\_\_\_\_ mCi of radioactive <sup>131</sup>I for treatment of their medical condition.  
(dose)

In accordance with 10 CFR 35.75, he/she was discharged on \_\_\_\_\_  
(discharge date)

with a measured exposure rate of \_\_\_\_\_ mR/hr at 1 meter (approximately arm's  
(exposure rate)

length). For the safety of other individuals nearby, please adhere to the following guidance:

**Follow these instructions before \_\_\_\_\_:**  
(free release date)

- Do not travel by airline or public transit, and do not stay in a hotel or motel.
- Do not return to work/school, or visit densely populated public places (eg. theater)
- Sleep alone in a room that is separate from other family members.
- Stay away from children and pregnant women.
- Keep a distance of at least 1 meter (approximately arm's length) from other people.
- Use separate dishes and utensils. Wash separately, or use disposable.
- Flush toilet 2-3 times after each use and keep bathroom area clean.
- Hold patient trash for 1 week before disposing in regular waste.
- Hold linen and clothing for 1 week before laundering.

**Follow these instructions after \_\_\_\_\_:**  
(free release date)

- The patient CAN travel by airline or public transit, and stay in a hotel or motel.
- If planning an early return to school/work, discuss a safe date with Radiation Safety.
- Recommended for an additional 1 week:
  - Refrain from sharing a bed with another individual.
  - Restrict time to 2 hours a day within 1 meter (approximately arm's length) of children and pregnant women.
  - Flush toilet 2 times after use.
- Recommended for an additional 1 month:
  - Bring this sheet with you to all medical appointments and during travel.

**For any questions or concerns, please contact Radiation Safety UCSF at (415) 443-6888.**

\_\_\_\_\_  
(signature of patient or parent/guardian) (date)

\_\_\_\_\_  
(signature of Radiation Safety specialist) (date)

\_\_\_\_\_  
(signature of interpreter if applicable) (date)

(Version 9 March 2016)

**Radioactive Iodine (I-131) Therapy Inpatients**  
**Thyroid Cancer and Hyperthyroid Treatment**

**Nursing Instructions**

**Preparation**

- **NO PREGNANT STAFF MEMBERS WILL BE ALLOWED TO CARE FOR THESE PATIENTS**
- **ALL STAFF entering the room must be wearing their quarterly dosimeter radiation badges and be properly trained in Radiation Safety**
- **Review Admission and Discharge Orders**
- **No NEW MEDICATIONS should be ordered for FOR PATIENT.** There are some medications that will interfere with the uptake of the iodine in the cells that are treated. For example, nicotine patches (and smoking) will decrease the uptake of iodine.
- Room will be prepared by Radiation Safety, with plastic covering on floors, plastic covered toilet and bed, lead shield in place by bed, mobile translator phone in place and wrapped in plastic if necessary, covered opening over sharps disposal and plastic labeled bins for radiation waste. Signs will be placed on outside of room with radioactive warning signs as soon as patient receives the radioactive iodine. Documents with radiation exposure levels will be placed outside the room and will also be documented in APeX.
- Bed should be prepared and clothing items should be pulled for patient with hospital gown, pants, towels, socks and robe, if necessary. Standard basin with toothpaste, toothbrush, mouthwash, lip moisturizer, deodorant should be provided. Patient should NOT WEAR any personal clothing during stay.
- SMALL sharps container needed if patient is diabetic (requiring insulin shots), on Lovenox therapy or any other medication requiring injections. **DO NOT USE IN ROOM SHARPS CONTAINER.**

- **Check in Procedure:**

- Radiation Safety will arrange the necessary admission/treatment consults
  - MOD team will be paged in the morning to alert medical team of need admission
  - Dietary will be paged to arrange for a low iodine dietary consult for thyroid cancer patients
  - Radiation Safety Training
  - Nuclear Medicine Team for therapy
- Standard check in procedure and questions, though vitals should **ONLY** be done at admission and discharge
- **NO IV** unless specified by referring endocrinologist.
- **NO Blood Work or Urinalysis** unless specified by admitting doctor
  - **Blood work should not be drawn for 72 hours unless it is an emergency**
  - **Urinalysis should not be collected for 96 unless it is an emergency**
  - **All lab samples must be labeled with Radioactive Label**
- Standard MRSA cheek swab if appropriate
- Patient should remove all their street clothes prior to treatment and place all belongings that they will not use during hospitalization and the clothes in the closet in the room. These items should not be touched by the patient until they are changing back into street clothes at discharge.
- Radiation Safety will wrap all computer/phone in plastic covering to avoid contamination.
- Patient must be **NPO** for two hours before and two hours after treatment
- Thyroid Cancer patients **must** be on low-iodine diet for 2 weeks prior and 48 hours post treatment. All meals must arrive on disposable plates and tray. Hyperthyroid patients will probably not have meal restrictions.

- Patient can use bathroom

- All patients **must always sit** while using toilet and flush toilet three times
- Patients may use shower but may not pass body fluids while in shower (no urination, spitting, blowing nose, brushing teeth)

### **ENTERING and EXITING ROOM**

- PPE cart will be placed outside the room: Yellow gowns (blue chemo gowns if there is concern of body fluid contamination), gloves and shoe covers. Radiation safety will leave

patient binder on top along with electronic dosimeter, and survey meter. This cart will be stored in Materials Management in between patients.

- **NO ONE** may enter the room without proper Radiation Safety training
- **The survey meter should be in the ON position all the time and in the dial setting of 1.0 (NOT 0.1). If the audio sound is left on in error, please turn off (upper left side).**
- Prior to entering room, all PPE must be donned, dosimeter exposure value recorded in binder and electronic dosimeter placed under yellow gown.
- When exiting room, **monitor SLOWLY** all PPE before discarding in waste boxes IN room. **DO NOT STEP** off plastic onto hall floor until all PPE has been determined to be non-contaminated and removed and placed in waste in room. Record reading in binder.

## **HANDLING BODY FLUIDS**

Typically, this is not an issue as no lab work will be done while in the hospital. In the unlikely emergent event that lab work needs to be done, all samples must be marked with a radioactive material label completed with isotope (I-131) and date if drawn earlier than the times listed below .

- **Blood**: Contaminated, especially in the first 48 hours. Blood should NOT be drawn in the first 72 hours unless ordered emergently.
- **Emesis**: Highly contaminated, especially in the first 24 hours as the Iodine therapy is given as an oral treatment
- **Urine**: Highly contaminated especially in the first 48 hours as this is the main excretion route. Urine should NOT be collected in the first 96 hours unless ordered emergently.
- **Saliva/Sputum**: Contaminated but standard precautions (gloves and gown) will be sufficient. Dispose of toilet paper and tissue paper **ONLY** in the toilet or in the designated trash box IN room. Do not dispose of any other material in the toilet.

- **RADIATION SAFETY TRAINING**

A Health Physicist Specialist will complete radiation safety training for the patient prior to therapy. They will coordinate the medical team and nuclear medicine team. Please check to be sure of the status of this coordination. If staff or physicians are unclear about radiation safety techniques, please request an in-service prior to therapy.

- Family members are not encouraged to visit patients during the treatment
- Radiation Safety will coordinate discharge with medical team
- Prior to discharge, Radiation Safety will measure all items used while in the hospital to be sure nothing is contaminated. If items are determined to be free of contamination, they will be placed in the closet and can be taken by patient at the time

of discharge. If items are contaminated, Radiation Safety will attempt once to remove contamination with a cleansing wipe. If the item cannot be decontaminated, it will be stored by EH&S Radiation Safety until decay (10 half-lives or with I-131, with an 8 day half-life, 80 days)

## **QUESTIONS:**

### **SFGH Patients**

- In house questions: Endocrine Fellow at Parnassus Pager 415.443.9125.
- Discharge/history questions: SFGH Endo Fellow is 415.443.9535.

### **Other UCSF Patients**

- In house questions: Endocrine Fellow at Parnassus Pager 415.443.9125

### **RADIATION SAFETY**

- Pager 415.443.6888

### **MOD PAGER**

- Pager 415.443.7147

**Radioactive Iodine (I-131) Therapy Inpatients**  
**Physician Admission and Discharge Orders**

Typically these patients are relatively healthy. The reason for admission is they do not meet the requirements for isolation at home. Most often they share a bed or have small children or a pregnant woman in close proximity.

Patients should be seen **early** (prior to treatment by nuclear medicine). After the radioisotope is administered, providers should enter the room **only** on an emergency basis. **DO NOT ENTER** room without training by Radiation Safety or Nursing. **DO NOT ENTER** room without appropriate PPE. Radiation Safety Team will provide all the information about radiation exposure levels on the outside of the room after dosing. This information will also be available in APeX. Typically patients are admitted for 2-3 days, but may stay as long as 6 days.

- **NO PREGNANT STAFF MEMBERS WILL BE ALLOWED TO CARE FOR THESE PATIENTS**

**Typical Recommendations/Orders in Addition to Patient's Usual Medications**

**THYROID CANCER PATIENTS**

**Admission**

- **CONTRAINDICATIONS:** No recent iodinated contrast in Radiology
- **Patient should be NPO for 2 hours prior and 2 hours post treatment**
- **DO NOT ORDER NEW MEDICATIONS FOR PATIENT.** There are some medications that will interfere with the uptake of the iodine in the cells that are treated. For example, nicotine patches (and smoking) will decrease the uptake of iodine.
- Vital Signs **ONLY** on admission and on discharge.
- Referring endocrinologist will provide document with patient history and medications.
- **NO** blood work, vaccinations, urinalysis, IV fluids etc. unless specifically requested by referring doctor
- Patients will arrive on a **low iodine diet that was started two to three weeks prior to therapy** and that should be continued for 48 hours. Order this diet and be sure to specify that it must arrive on **disposable** trays and dishes (written in additional instructions area on APeX). This is typically ordered as a 'normal diet' with a specification of 'low iodine' or less than 50 ugm daily. A dietician will meet with the patient to facilitate ordering the low iodine diet prior to therapy.

- Patients will often arrive having their thyroid medications stopped for two weeks. Patients may be restarted on their standard dose of thyroid medication (L-thyroxine) on day 1-3, depending on the referring endocrinologist's orders.
- **PRN:** Patients can be written a prescription for lactulose 30 ml a day to fend off constipation and help with elimination of the excess I-131 **ONLY if necessary.**
- **PRN:** Patients can also be written a prescription for ondansetron 4 mg PO x 1 to be taken about 30 minutes prior to I-131 dosing and Q8H PRN thereafter **ONLY if necessary.** Nausea and vomiting is a rare side effect of high dose I-131 but one to be avoided if at all possible.
- Patients should bring sour candy, such as "lemon drops" and suck on these or suck on sour foods (lemons) starting at 24 hours after treatment and continue for two days. The purpose is to release any uptake in the salivary glands. (I have placed a bag of these candies in the nurses charting room behind the charge nurse. Nurses can bring half a cup full of the candies to the patients 24 hours after treatment).

## **THYROID CANCER PATIENTS**

### **Discharge**

- Patient will continue to be on Radiation Precautions prior to actual discharge. DO NOT ENTER ROOM without standard PPE.
- Standard Discharge Assessment (nurse will provide vital signs).
- Referring endocrinologist will provide discharge information for patient
- Verification that patients know about their **one week** post treatment scan at Parnassus or China Basin. If patient does not know, call Nuclear Medicine at 415.353.1509
- Verification of thyroid medication re-start status if appropriate. Patient should be aware of appointment.
- Endocrine follow-up in 4-6 weeks. Patient should be aware of appointment.

## **HYPERTHYROID PATIENTS Admission**

- **CONTRAINDICATIONS:** No recent iodinated contrast in Radiology
- **Patient should be NPO for 2 hours prior and 2 hours post treatment**
- **DO NOT ORDER NEW MEDICATIONS FOR PATIENT.** There are some medications that will interfere with the uptake of the iodine in the cells that are treated. For example, nicotine patches (and smoking) will decrease the uptake of iodine.
- **Background:** The activity administered is typically much less than therapy treatment for thyroid cancer.
- They **TYPICALLY** are **not** on a low iodine diet and will **not** be on L-thyroxine.
- Vital Signs **ONLY** on admission and on discharge.
- **NO** blood work, vaccinations, urinalysis, IV fluids etc. unless specifically requested by admitting doctor
- **PRN ONLY** lactulose and ondansetron.
- Patients should bring sour candy, such as "lemon drops" and suck on these or on sour foods (lemons) starting at 24 hours after treatment and continue for two days. The purpose is to release any uptake in the salivary glands. (I have placed a bag of these candies in the nurses charting room behind the charge nurse. Nurses can bring half a cup full of the candies to the patients 24 hours after treatment).

## **HYPERTHYROID PATIENTS Discharge**

- Patients **may or may** not restart their methimazole at discharge. This information will have been conveyed to nuclear medicine on the request for treatment. Patient should also be aware/know.
- Endocrine follow-up in 4-6 weeks. Patient should be aware of appointment.

## **HANDLING BODY FLUIDS**

Typically, this is not an issue as no lab work will be done while in the hospital unless there is a clinical emergency. In the unlikely event that lab work needs to be done, all samples must be marked with a radioactive material label completed with isotope (I-131) and date.

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