



Your Guide to Head and Neck Radiation Therapy

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Your radiation treatments will be at UWMC - Montlake campus.

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Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

Weekdays from 8 a.m. to 5 p.m., call 206.598.4100 and press 1.

After hours and on weekends and holidays, call 206.598.6190 and ask to page the Radiation Oncology resident on call.

About Your Radiation Treatments

Your Guide to Head and Neck Radiation Therapy

This handout describes what to expect during your radiation treatments, side effects, and who to call with any questions or concerns.

We know that this is a stressful time for you. We will do our best to make your treatment process go as smoothly as possible.

Your First Clinic Visit: Consult

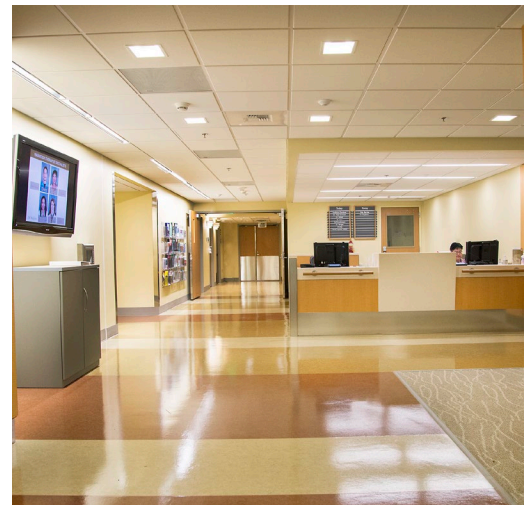
A *radiation oncologist* is a doctor who has special training in treating cancer with radiation. If you have not already met with your radiation oncologist, you will meet with this doctor at your first visit to talk about using radiation to treat your cancer.

Nurse Visit

You may meet with a registered nurse (RN) on the day of your consult. Or, your nurse visit may take place on the same day as your treatment planning visit (see page 2).

At the nurse visit, your nurse will:

- Ask you about your health history
- Assess any of your health needs that must be monitored while you are having radiation therapy
- Talk with you about possible side effects of your radiation therapy
- Explain how to contact staff in Radiology Oncology
- Answer any questions you may have about your treatment



Your radiation consult and nurse visit will be in the Radiation Oncology clinic at UWMC - Montlake campus.

Depending on your treatment, you may also:

- **Answer an IV contrast questionnaire:** If you need *contrast* for the *computed tomography* (CT) scan that will be done during your treatment planning visit, you will fill out this form at the nurse visit.
- **Access your port-a-cath:** If you have a CT-capable port-a-cath such as a Power Port, bring your ID card or band (or other ID that you received when your port was placed) to the nurse visit. Your nurse can access your port-a-cath for use during the procedure **only** if you bring this information.

Your Treatment Planning Visit

At your treatment planning visit, a special CT scanner will be used to take images of the area or areas where your radiation therapy will be aimed. These images will help your care team plan your treatment. This is called a simulation/planning CT scan.

Simulation/Planning CT Scan

Simulation is the process that helps your care team:

- Determine the position your body needs to be in during your daily radiation treatments
- Make special devices to help you stay in that position
- Take the images we need to plan your customized radiation therapy

You will be asked to lie very still on a table while your doctor and CT/simulation (CT/SIM) therapists locate the exact place to aim the radiation. This “simulates” (is the same as) the position you will be in for your radiation therapy.

You may receive *contrast* to make it easier for the doctor to see inside your body. This contrast may be oral (swallowed), or you may need to receive IV (*intravenous*) contrast. The IV contrast will be delivered through a line in your arm or through a *central line/port-a-cath*, if you have one. Please talk with your nurse about which one will be used for you.

You may be asked to breathe in a specific way to help create the best images. If you need to do this, CT/SIM staff will give you instructions over an intercom.

If your treatment is in the pelvis area, you may need to either empty your bowels OR have a full bladder. Please follow the instructions your care team gave you.

This precise process may take from 30 minutes to 2 hours. Most planning CT scan visits usually last about 1 hour.

You may leave this scan with stickers on your body, as well as marks drawn with permanent pen. These will be used during your treatment to make sure you are in the right position. Please follow the directions of the CT/Simulation staff about keeping these in place until your treatment begins.

Immobilization Devices

The part or parts of your body that will be treated must stay very still during your radiation treatments. At your treatment planning visit, before the CT scan is done, an *immobilization device* will be made to help keep parts of your body from moving during treatment.

Depending on the area of your treatment, you may need more than 1 device. Each device takes about 15 minutes to make.

Please tell your CT/SIM staff if any device is uncomfortable. We will keep your devices in our department until your radiation treatment is complete.

Here are the kinds of immobilization devices that we may use for your treatment:

- **Bite block:** A bite block is like a mold of your teeth that a dentist may make. It holds your jaw in an open position. Bite blocks are often used for patients with tumors in their head or neck. If you need a bite block, you will be referred to a nearby dental clinic to have it made.
- **Mask:** You will need a mask if you are having radiation to your head or neck. The mask will keep your head in exactly the same position each time you receive radiation.

To make your mask, a plastic see-through mesh is heated and softened in warm water, then molded over your face. At first, it will feel like a warm, wet washcloth. The mask will harden as it cools and dries. After the mask is formed, it is removed and holes are cut out for your eyes, nose, and mouth.

- **Vacu cradle:** A vacu cradle is like a beanbag. It forms a mold in the shape of your torso, arms, or legs to ensure that you are in the same position every time you have a treatment.

To make the cradle, you will lie down or place your affected body part on the bag. As the air is removed from the bag, it hardens to the shape of your body or limb, forming a mold.

Treatment Scheduling

After you are finished with the Simulation/Planning CT Scan, we will give you an appointment time for your daily treatment. Treatment is usually at the same time every visit.

If your appointment time does not work well for you, please tell the radiation therapist at the treatment machine. Different treatment times may be open or become open in 1 or 2 weeks.

At times, your treatment time may need to be changed. If this occurs, we will let you know as soon as we can.

Planning Your Treatment

After your treatment planning visit, your doctors and *dosimetrists* (radiation planning specialists) will work together to create a treatment plan for you. This planning is done on a computer. It usually takes 7 to 10 business days, or 1½ to 2 weeks. If your doctor wants to start your radiation treatment right away, the planning will be done more quickly.

Verification Simulation Day (VSIM)

During this visit, radiation therapists will give you a quick “tour” of the process in the department. They will show you:

- The changing room
- The treatment reception area

Next, you will go to the treatment room (*radiation vault*). Therapists will help place you in your treatment position. We will take low-energy scans called *cone beam CT scans* (CBCTs) or films to make sure the treatment area exactly matches the area that was planned by computer.

The therapists may also mark your skin with permanent “dots” (tattoos). These marks help them line up the radiation beams exactly the same way for each treatment. You may have an “X” drawn over the tattoo with a semi-permanent pen. **Please do not remove these marks unless your radiation therapist tells you to.**

During your treatment, we will take CBCTs daily or films often to make sure your body is in the correct position. These scans only help check your position and do not show the details of body tissues very clearly. It is very rare that we can see the cancer or the results of radiation treatment in these types of imaging.

Treatment Day

Arriving at the Clinic

To protect the privacy of our patients, the treatment reception area is for patients only. But, if you need help getting dressed or walking, one of your caregivers may come with you.

When you arrive for your treatment:

- Check in at the front desk.
- Please check the monitor in the waiting room for any treatment delays.
- Go to the back waiting room area 15 minutes before your scheduled treatment time.
- Follow the instructions you received during your Verification Simulation (see page 4).

In the Radiation Vault

While you are in the radiation vault, the radiation therapists will monitor you at all times. When they are not in the vault with you, they will be able to see you on a closed-circuit TV. You will be able to talk with them through an intercom.

You will be in the radiation vault for 15 to 30 minutes. Much of this time is used to position you and to adjust the position of the machine. The actual radiation treatment lasts only a few minutes.

About Your Treatment Schedule

- It is important for you to receive all of your treatments as prescribed. Please plan your schedule so you can come every day and not miss any treatments.
- If you are going to be late or cannot keep an appointment, please call the clinic right away.
- If you know of a time conflict that you cannot avoid, please tell your radiation therapists as soon as you can. They will try to give you a different treatment time for that day.
- If you feel you are too sick to come for treatment, please call your nurse. It is important that you not miss any treatments.
- Radiation patients are scheduled every 15 to 30 minutes. To help us stay on schedule, please be in the radiation treatment area by your scheduled time every day.

- Please make sure we have your most reliable phone number. We may need to call you and postpone your treatment if:
 - A radiation machine needs repair or service
 - We have an emergency situation with another patient

Your Radiation Care Team

Doctors and Nurse Practitioners

- Your **attending doctor** in the Cancer Center/Radiation Oncology is a *radiation oncologist* (a doctor who specializes in treating cancer patients with radiation therapy) and a faculty member of the University of Washington School of Medicine.
- Your **resident doctor** is receiving advanced training in radiation therapy. This doctor rotates to a new service every 3 months, so you may see a new resident or not have one during your treatment.
- **Nurse practitioners**, advanced practice nurses, may also be involved in your day-to-day care while you are receiving treatment.

Your attending doctor is: _____

Your resident doctor is: _____

Your nurse practitioner is: _____

You will see an attending doctor and your care team once a week at your on-treatment visit, called “doctor day.” At this weekly visit, a medical assistant will take your vital signs and record your weight. Your doctor will check how your treatment is going and answer any questions you may have. This is your scheduled visit, but you may ask to see your doctor at other times if needed.

Radiation Nurse

The radiation nurse is a link between you and the rest of your care team. Please tell your radiation nurse if there are any changes in how you feel and if you have any concerns or questions.

Your radiation nurse is: _____

Radiation Therapists

Board-certified *radiation therapists* work in teams to run our radiation treatment machines. They provide the actual treatments after your doctor has approved your treatment plan.

You may see different radiation therapists during your treatment. Our radiation therapists are on a rotating schedule so that they keep their skills current on all 5 of our radiation treatment machines.

Medical Assistants

Our medical assistants will take your vital signs and weight at least once a week during your on-treatment visit (“doctor day”). They will also help you connect with your care team if you have any questions or problems.

Patient Services Specialists

Patient Services Specialists will greet you, check you in, help with scheduling changes, connect you to your care team, check you out as you leave, make sure you have the right parking validation, and set up follow-up visits or other services as needed.

Care Team Members You May Not See

Other people work behind the scenes to help plan your treatment and make sure it is safe and of the highest quality. They include:

- **Nurse manager.** This nurse is responsible for making sure you receive the best quality care. If you feel that your questions or concerns are not being addressed, you may reach the nurse manager by calling the front desk at 206.598.4100. Ask to be transferred to the nurse manager.
- **Radiation physicists.** These specialists confirm that your radiation treatment plan is safe and the radiation equipment is safe and working correctly.
- **Dosimetrists.** These specialists plan the treatment based on the radiation oncologist’s prescribed radiation dose.
- **Patient care coordinators.** These staff members help arrange the consults and planning scans before your radiation therapy starts.

Other Cancer Center/Radiation Oncology Staff

- A **clinical dietitian** can help you assess your eating and help you find ways to deal with any eating problems that may arise. This dietitian is a backup to your dietitian at Harborview Medical Center (HMC) or Fred Hutchinson Cancer Center. Our staff will help you connect with our department clinical dietitian as needed.

- A **social worker** can help you with emotional issues that may arise and help find the resources you may need to help make your treatment go as smoothly as possible. This social worker is a backup to your social worker at HMC or Fred Hutch. Our staff will help you reach our department social worker as needed.

Side Effects

Most times, radiation side effects are limited to the area being treated. At your first visit, your radiation oncologist will talk with you about the side effects that you may have. Your nurse will give you a handout that describes the general side effects for your treatment area. If you have any side effects, please tell your radiation nurse or doctor.

Infections

Call your radiation nurse if you have any of these signs of infection:

- Runny nose, sneezing, or coughing
- Fever higher than 100.5°F (38.1°C)
- Chills
- Body aches
- Rash or shingles
- Diarrhea

Isolation or Precautions

Please call your radiation nurse before you come to the Cancer Center if the staff at HMC or Fred Hutch has placed you in *protective isolation/ precautions* or if you have been exposed to chickenpox, shingles, or tuberculosis (TB). The guidelines for isolation at UWMC are the same as the ones at HMC and Fred Hutch.

Emergencies and Urgent Concerns

- If you become ill or have an emergency, come to the UWMC Emergency Department or call 911.
- If you have an urgent concern or question:
 - Weekdays between 8 a.m. and 5 p.m., call our front desk at **206.598.4100** and press **1**. Your call will be forwarded to a Patient Services Specialist.
 - After hours and on weekends and holidays, call **206.598.6190** and ask to page the **Radiation Oncology resident on call**.

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

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After hours and on weekends and holidays, call 206.598.6190 and ask to page the Radiation Oncology resident on call.

Radiation Side Effects and Self-care

Your Guide to Head and Neck Radiation Therapy

Radiation treatments to your head and neck can cause side effects. Most will begin after you have had several treatments and will start to go away a few weeks after your therapy is done.

Common Side Effects

- Skin reactions
- Taste changes
- Sore mouth and throat
- Dry mouth
- *Parotid* gland swelling and *parotitis* (see pages 3 and 4)
- Hair loss
- Fatigue (feeling very tired)

Skin Reactions

You may have skin reactions while you are receiving radiation therapy. These occur because X-rays must pass through the skin to reach the tumor. Take special care of your skin in the treatment area to help lessen skin reactions. (See “Skin Care During Radiation Therapy.”)

Here are some tips:

- Wear shirts, blouses, and neck scarves that are soft and have soft collars (no starch). Do **not** wear clothes that rub the treated area.
- Use only an electric razor, or do not shave in the treated areas. (Radiation therapy will suppress hair growth.) Do not use a pre-shave or after-shave lotion in the treatment area.
- Use unscented, mild soap that does not contain a deodorant.
- Use only lotions on the treatment area that a radiation therapy team member gives you or tells you are OK to use.



Products like Aquaphor and RadiaGel can help lessen and treat skin reactions.



Try lemon tea or lemon water to help with taste changes and to help your mouth feel less dry.

- During treatment, protect your skin from the sun. Limit your time in the sun. Use things like hats, clothing, or umbrellas to block the sun from your skin in the treatment area.

Alopecia

Your hair in the radiation field will likely fall out. This may happen a few weeks into radiation or even a few weeks after treatment is over. Your hair will likely grow back, but it may not do so for several months. It may be thinner when it regrows.

Taste Changes

Your sense of taste may change during your radiation therapy. Foods may taste strange or your sense of taste may get weaker. Taste usually improves 2 to 6 months after treatments are done.

- Try lemon tea, lemon water, lemonade, sugar-free lemon drops, and sugar-free gum. These will also make your mouth feel less dry. Please note that if you have mouth sores, anything with lemon in it may make them worse.
- Try using mild flavorings such as vanilla, mint, or basil to add flavor to your food.

Sore Mouth and Throat

You may have a sore mouth and throat starting in the 2nd or 3rd week of therapy. The soreness may increase toward the end of your therapy. It should start improving within a few weeks after your treatments are done.

To help ease these symptoms:

- Eat foods that are soft, smooth, and moist.
- Foods and liquids that are cool or at room temperature are easier to swallow than warm, hot, or very cold foods.
- Avoid dry or coarse foods such as crackers, potato chips, pretzels, popcorn, raw vegetables, and fruits.
- Eat a healthy soft diet. Include foods from all the food groups. Try not to lose weight during radiation therapy.
- After eating, gently brush your teeth and gums with a **soft** toothbrush. Use baking soda or Biotene toothpaste.
- Make a solution of $\frac{1}{4}$ teaspoon salt and $\frac{1}{4}$ teaspoon baking soda in 1 cup of warm water. Rinse your mouth with this solution at least 8 times a day. Do **not** use mouthwashes you can buy.



Drink plenty of fluids during your radiation treatment, at least 10 to 12 glasses each day.

- Try eating smaller amounts of food more often. Some people find that 4 to 6 small meals are better than 3 large meals a day.
- If you drink alcohol or smoke, **STOP**. Both are very irritating to the mouth and throat. They can make radiation side effects worse and slow your recovery.
- There are medicines that can help with your swallowing discomfort. Ask your nurse or doctor for more information about these.

Dry Mouth

Radiation can affect the glands that produce saliva. This can cause dry mouth. This may be a problem during treatment and, for some people, for a long time after treatment is over. These tips may help:

- Drink plenty of fluids, at least 10 to 12 glasses each day. If your mouth is very dry, carry a water bottle or small spray bottle to wet your mouth often.
- Eat foods with liquids, gravies, and sauces.
- Drink high-calorie liquid supplements and shakes to make sure you are getting the vitamins and proteins you need.
- Try using a cool-mist vaporizer while you sleep to increase the moisture in the air.
- When saliva is decreased, tooth decay and gum disease may occur. Brush your teeth and floss often, and get fluoride treatments to help protect your teeth. If needed, ask your doctor or nurse about seeing a dental hygienist to explain more about this care.
- Decreased saliva can also lead to thicker mucus in your mouth. To help make the mucus thinner and help clear it from your mouth:
 - Drink club soda or papaya juice.
 - Drink a solution made with meat tenderizer. Add $\frac{1}{4}$ teaspoon tenderizer to 1 cup of liquid.
 - Try Xylimelt lozenges or Biotene Moisturizing Mouth Spray. You can buy these at a drugstore or online without a prescription.

Parotid Gland Swelling (Parotitis)

- *Parotitis* is swelling of the *parotid* glands. These are your largest salivary glands. You have 2 of them, one in each cheek in front of your ears. Parotitis often occurs when the parotid glands receive radiation.

- Symptoms of parotitis occur 4 to 24 hours after the first treatment. Ice packs and acetaminophen (Tylenol and other brands) help relieve discomfort from the swelling. Check with your medical oncologist before you take acetaminophen.
- The swelling goes away 24 to 72 hours after the first radiation treatment.
- Having parotitis does not mean you will have more problems during therapy than someone who does not have parotitis.

Fatigue

During radiation therapy, your body uses a lot of energy. You may feel very tired from stress related to your illness, daily trips for treatment, and the effects of radiation on your normal cells.

The amount of fatigue and how long it lasts varies with each person. For some, it may go away when their therapy is done. For others, fatigue can last 2 or more years. Spread out your activities over the day and take rest breaks to keep you from getting over-tired.

We encourage you to do regular exercise, as you can. Do things you enjoy!

Ask someone to help you clean your house, shop, or cook meals. Take advantage of their help while you feel tired. If you live alone and are too tired to cook a full meal, try eating a well-balanced frozen dinner, or consider using a community service such as Meals on Wheels.

Other Side Effects

Other less common side effects may also occur. Tell your doctor, nurse, or therapist if you have any other symptoms.

Please talk with your nurse or doctor if you have any questions.

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

Weekdays from 8 a.m. to 5 p.m., call 206.598.4100 and press 1.

After hours and on weekends and holidays, call 206.598.6190 and ask to page the Radiation Oncology resident on call.

Skin Care During Your Radiation Therapy

Your Guide to Head and Neck Radiation Therapy

This handout is for people having radiation treatments. It offers tips to protect your skin and specific care tips for the area being treated.

How Radiation May Affect Your Skin

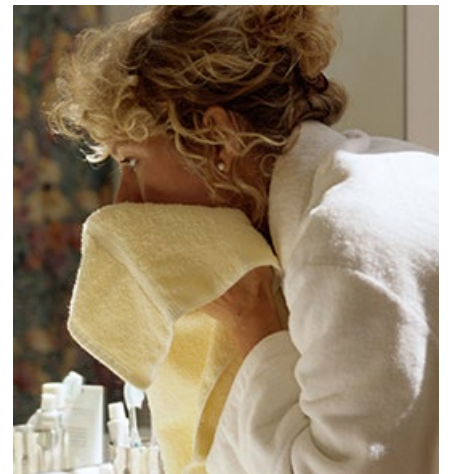
After 2 to 3 weeks of radiation treatment, your skin in the area being treated may:

- Look red, irritated, or sunburned
- Be dry and itchy or begin to peel

Closely watch all places with skin folds. These include your neck, stomach, armpits, under your breast, and in your groin or crotch. The skin in these areas is more likely to become irritated.

Tips to Help Protect Your Skin

- Ask your radiation therapist what area of your skin may be affected by your radiation therapy.
- Bathe and shower as normal. But, do **not** use soaps that contain lotions, perfumes, or deodorants. Instead, use brands such as Ivory, Sensitive Skin Dove, Basis, or Neutrogena.
- Be extra gentle with your skin.
- Wear loose, soft clothing over the treated area.
- Your skin in the treated area will be very sensitive. If you must shave in the treated area, use **only** an electric razor. Do **not** use straight-edge or safety razors.
- Wear a hat, scarf, or other clothing to protect your skin from the sun.



Be very gentle with your skin while you are having radiation therapy.

- Keep the treatment area clean and dry.
- Gently wash off all creams and lotions before each radiation treatment.
- Talk with your radiation nurse if you have questions about your skin. Tell your nurse if you have any problems with your skin, or notice any changes in your skin.

Basic Skin Care

- Do **not** use perfume, pre-shave or aftershave, deodorant, hair conditioner, or other styling products on the area being treated, unless your doctor or nurse says it is OK to do so.
- Do **not** use products that contain metals like aluminum or zinc, including zinc oxide ointment.
- Do **not** use oil- or petroleum-based products such as Vaseline, baby oil, ointments, or vitamin E oil during your treatment.
- Do **not** apply any gel, lotion, or cream to your skin for 2 hours before each treatment.
- Do **not** use cornstarch or powder on your skin. These products can lead to fungus on your skin.
- Do **not** apply heat or cold to your treated skin. Do not use heating pads, electric blankets, hot water bottles, or ice packs.
- Do **not** expose the treated area to extreme heat or cold. Avoid very hot showers or baths, saunas or steam rooms, direct sunlight, or cold air direct from an air conditioner.
- Do **not** use tape or Band-Aids on the treatment area.
- Do **not** scrub your skin with a washcloth.
- Do **not** scratch, scrub, or rub your skin.
- Do **not** wear tight clothing over the treatment area.

Care for the Area Being Treated

Scalp

- Use baby shampoo or Neutrogena.
- Do **not** use conditioners, shampoo with conditioners, or styling products.
- Always wear a hat when you are outside.

Face and Neck

- Do **not** use makeup, moisturizer, sunscreen, perfume, or aftershave.
- Keep the area shaded from the sun.

Chest

- Do **not** use deodorant, unless your doctor says it is OK to do so.
- Wear clothes that protect your chest from the sun.

Belly or Pelvis

- Do **not** use lotion, powder, or cream on the area.
- Clean your bottom well after bowel movements.
- Allow your skin to air dry, or dry it with a hair dryer on the cool setting at a short distance. If your skin is irritated, do **not** scrub or towel dry.

Arms, Hands, Fingers, Legs, Feet, or Toes

- Do **not** use lotion, cream, or sunscreen.
- Wear loose clothing.
- Wear shoes that do give your toes and feet plenty of room.

Keep Your Skin Safe from the Sun

Your skin in the treatment area will be very sensitive to the sun for years after radiation treatment. You will need to treat your skin carefully. Sunburn may cause your skin to have the same reaction it did to the radiation.

After your skin heals from treatment:

- Use sunscreen (30 SPF or higher) **every** time you go outside.
- Do **not** let the treatment area be in direct sun for long periods.

Self-care After Radiation Therapy

Your Guide to Head and Neck Radiation Therapy

This handout explains self-care after having radiation therapy for head and neck cancer.

Skin Care

Your skin in the treatment area will be very sensitive after having radiation. It may be more affected by the sun than it was before. You will need to take extra care of your skin for several years after your treatment. Be especially careful during the first year.

- Until your skin is healed, wear a hat and clothing to protect it from the sun.
- Once your skin is fully healed and you do not have any redness or peeling:
 - Use sunscreen 30 SPF or higher **every time** you go outside.
 - Do **NOT** let the treatment area be in direct sun for very long.
 - Do **NOT** get sunburned.



Protect your skin every time you go outside.

Mouth Care

After radiation therapy, you must take special care of your mouth for the rest of your life. Dry mouth and treatment to the jaw bone can make tooth decay and gum disease occur more easily.

To keep your mouth and gums healthy:

- Brush your teeth at least twice a day. Floss every day.
- Use a toothpaste that contains fluoride, such as 1.1% NaF gel.

Dental Care

- Get regular dental cleaning and check-ups, at least once a year.

- Make sure your dentist knows you received radiation therapy.
- Follow your dentist’s advice on fluoride treatments. They may want you to use fluoride trays or have fluoride applied. Your dentist or hygienist can explain more about this care.

Dental Procedures

Ask your dentist to talk with your Radiation Oncology team BEFORE scheduling an *invasive procedure*. This includes *extractions* (teeth removal), placing a dental implant, and other procedures that affect the jaw.

When your dentist contacts us, we will review the proposed procedure. We will also check to see how much radiation was received by that area of your mouth.

Because of your treatment, you may have a higher risk of *osteoradionecrosis* (ORN). This means that your jaw bone may not heal well after an invasive procedure.

With careful planning, we can help lower your risk of ORN. One thing we may advise is for you to have *hyperbaric oxygen treatment* (HBO) before and after the dental procedure.

Lymphedema

The *lymphatic* (lymph) system is part of your immune system. After radiation to the head and neck or face, this system does not drain lymph fluid as well as it used to. This problem is worse for patients who have had both surgery and radiation.

You may have lymph problems weeks to months after radiation. Symptoms include swelling or firmness in the tissues. You may see these most in your upper neck and under your jaw.

You can do self-massage to help the lymph fluid drain. This can reduce the swelling. (To learn about self-massage, please see the handout “Head and Neck Lymphedema.”) If self-massage does not help, ask for a referral to a physical therapist who specializes in lymphedema therapy.

Nutrition

Side effects from radiation can last weeks to months after your therapy ends. Many patients need to stay on a soft or liquid diet, or use their feeding tube for 4 to 12 weeks after radiation.

Good nutrition is key to helping your body heal. Your body needs extra calories and protein during your recovery time. Most patients must keep supplementing with nutritional drinks or shakes. These can be homemade or store bought.

If you lose weight after your therapy ends, talk with your oncology provider. Weight loss means you are not getting enough nutrition, fluids (*hydration*), or both.

Feeding Tube Removal

Contact your oncology provider when:

- You are no longer using your feeding tube for nutrition, hydration, or medicines

AND

- You have been taking nutrition only by mouth for several weeks, and your weight has remained stable

Your provider will assess your condition and decide if your feeding tube can be removed.

Swallowing

Head and neck radiation can cause *dysphasia*, a swallowing problem. This problem can be long term.

We advise you to keep your swallowing muscles active during radiation. To do this, regularly take small sips of liquid or small swallows of food, even if most of the nutrition is coming from the feeding tube. Doing this can help prevent or reduce dysphasia. It can also help you regain your swallowing ability more quickly after your therapy has ended.

If you have swallowing problems, ask your oncology provider to refer you to a specialist. If you are already working with a swallowing specialist, keep working with them.

Pain Medicine

If you are taking prescription pain medicine (*opioids*), ask your oncology team to teach you how to stop or taper off of it. Do not suddenly stop using opioids. You could have withdrawal side effects.

Your team can give you a tapering schedule. If you have *chronic* (long-term) pain, we may refer you to a pain medicine team to help you manage it.

Exercises

Tissues in the treatment area can become *fibrotic* (less elastic) over time. This problem is worse for patients who have had certain surgical procedures and then radiation. For example:

- *Trismus* (lockjaw) can occur when chewing muscles are stiff. It is helpful to do stretching exercises to help keep your jaw flexible.
- The neck can also become more stiff. Neck range-of-motion exercises can help.

If you have these problems, ask your oncology provider about a referral to physical therapy. For jaw and neck exercises, please see the handout “Exercise During Radiation to the Head and Neck.”

Thyroid Function

After radiation to the neck, some patients may have problems with their thyroid gland (*hypothyroidism*). This can occur months to years after treatment. Some patients may need to take thyroid hormone.

We advise having your thyroid function checked about once a year. Your primary care provider (PCP) can take care of this.

Stopping Smoking

Do **not** smoke during and after your radiation therapy. Smoking will increase your risk of:

- Side effects after treatment
- Having a recurrence of your cancer
- Having a secondary cancer

Please tell us if you need help to quit smoking. We can also refer you to our smoking cessation clinic.

Alcohol Use

The U.S. National Toxicology Program states that alcohol is “a known human *carcinogen*.” This means that drinking alcohol is known to increase the risk of cancer.

Please avoid alcohol or at least limit the amount you drink. If you plan to drink alcohol, the National Cancer Institute advises that:

- Women have no more than 1 drink a day
- Men have no more than 2 drinks a day

Cancer Surveillance

Talk with your oncology team about *cancer surveillance* after radiation therapy. Ask them about the best times to have these follow-up visits.

Most patients have follow-up visits every 3 to 6 months. You may meet with an otolaryngologist, a medical oncologist, or a radiation oncologist, depending on your treatment plan.

At these visits, we may or may not advise scans. This decision will be based on your specific diagnosis and treatment.

Your Providers and Follow-up Care

Your medical oncologist is managing all aspects of your cancer care. But, if you have any questions about your radiation therapy, please call Radiation Oncology weekdays from 8 a.m. to 5 p.m., at 206.598.4100.

For all other health concerns, please talk with your PCP. Be sure to see your PCP for regular checkups. These visits will help you maintain your overall health.

Exercises After Radiation Therapy

Your Guide to Head and Neck Radiation Therapy

Radiation treatment can cause scarring and other tissue damage in the treatment area. These side effects are called *fibrotic changes*. When the treatment area includes the neck and jaw, fibrotic changes can affect how well you can move your head and neck.

The exercises in this handout are designed to help lessen these problems. Doing these exercises will help you:

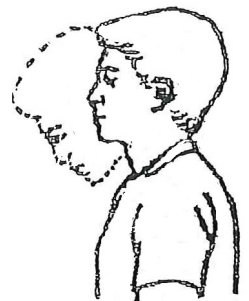
- Keep normal movement in your neck and jaw
- Prevent *contractures* (shortening of the soft tissue or muscle)
- Keep fluid from gathering in the treatment area

Ask your doctor which exercises will be most helpful for you. Also ask how long to do them. If your doctor says you are at high risk for fibrotic changes, we encourage you to start these exercises soon after treatment and to keep doing them. They may help in your physical rehabilitation and prevent long-term problems.

Neck Exercises

Exercise #1: Chin to Chest

- Start by looking straight ahead.
- Tilt your head forward. Try to touch your chin to your chest, if you can. Then return to the starting point.
- Do this _____ times in a row.
- Repeat _____ times a day.



Exercise #2: Look Up

- Start by looking straight ahead.
- Tilt your head back and point your chin toward the ceiling. Then return to the starting point.
- Do this _____ times in a row.
- Repeat _____ times a day.



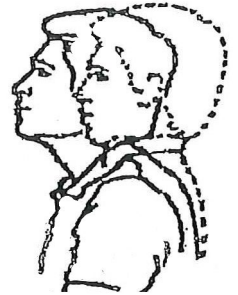
Exercise #3: Ear to Shoulder

- Start by looking straight ahead.
- Tilt your head toward one shoulder, then slowly tilt it toward the other should. Then return to the starting point.
- Do this _____ times in a row.
- Repeat _____ times a day.



Exercise #4: Pigeon Head

- Start by looking straight ahead.
- Keeping your jaw and eyes level, pull your head straight back. Then return to the starting point.
- Do this _____ times in a row.
- Repeat _____ times a day.



Exercise #5: Looking Side to Side

- Start by looking straight ahead.
- Slowly turn your head to look over one shoulder. Then slowly turn your head to look over the other shoulder. Then return to the starting point.
- Do this _____ times in a row.
- Repeat _____ times a day.



Exercise #6: Neck Stretch

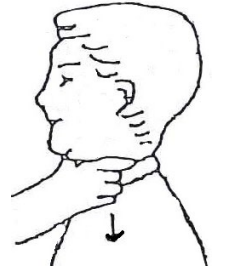
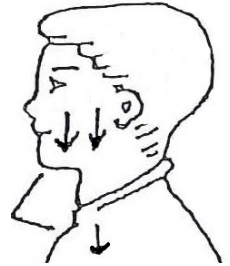
- Sit on a solid surface, such as a hard chair. Start by looking straight ahead.
- Tuck your left hand under your left buttock.
- Place your right hand on the top of your head and apply light pressure to gently tilt your head toward your right shoulder.
- Relax and return to the starting point.
- Do this _____ times in a row. Then change sides and sit on your right hand. Use your left hand to tilt your head. Do this _____ times.
- Repeat both sides _____ times a day.



Exercise #7: Neck Massage

This exercise helps move lymph fluid out of the treatment area to prevent lymphedema.

- Start by looking straight ahead.
- Place one hand on your upper throat, with your thumb on one side of your neck and your fingers on the other side.
- While gently pressing in, stroke your thumb and forefinger down the sides of your neck. Stroke all the way down to your collarbone.
- Do this _____ times in a row.
- Repeat _____ times a day.



Jaw Exercises

If you are having trouble opening your mouth, or if the problem is getting worse, tell your doctor.

Exercise #1: Open Wide

- Start by looking straight ahead.
- Open your mouth as wide as you can. Hold for 5 seconds. Release.
- Do this _____ times in a row.
- Repeat _____ times a day.

Exercise #2: For Jaw Contracture

If you have jaw contracture, we will provide tongue depressors (blades) and teach you how to use them. Over time, increase the number of blades you use. Most times, you will be adding 1 to 2 blades each week.

- Do this for 5 minutes. Repeat 2 times a day.

Exercise #3: Jaw Press

This *resistance* exercise will help strengthen your jaw muscles.

- Start by looking straight ahead.
- Place the heels of both hands under your jaw. While gently pushing up, try to open your mouth. Hold for _____ seconds, then relax.
- Do this _____ times in a row.
- Repeat _____ times a day.

Face Exercises

For each of the exercises shown below:

- Hold the position for _____, then release.
- Repeat the motion _____ times in a row.
- Do the exercise _____ times a day



Purse lips



Retract lips



Move lips left



Move lips right



Open jaw wide



Move sides of mouth downward

Exercise Tips

Do:

- Keep your neck warm. Wear a scarf when going outside and drafty areas.
- Tuck in your chin when looking down.
- When lying on your back or side:
 - Use pillows for support
 - Keep your head straight
- Strengthen your neck by:
 - Moving your head 5 times every hour during the day -- forward and from side to side
 - Avoiding painful positions
 - Avoiding activities that bother your neck

Do NOT:

- Tilt or rotate your head to the side when lying on your back or side
- Keep your head in one position too long
- Sleep on your stomach
- Lift or carry heavy objects

Helpful Tips for Healing

- If your doctor says it is OK, do the exercises in this handout every day.
- Stay active. Try to do your normal routines.
- Try doing your neck and jaw exercises in the shower. Warm water helps your muscles stretch.
- Always go to your clinic visits.
- If any health issues arise, tell your doctor.
- Try not to get discouraged. Healing takes time.

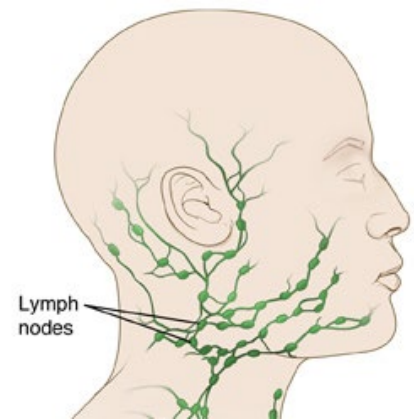
Head and Neck Lymphedema

Your Guide to Head and Neck Radiation Therapy

This handout is for patients who have received radiation therapy to the head and neck. It explains lymphedema and how to lower your risk.

What is the lymph system?

The *lymph system* is a network of tissues and organs. The system helps remove toxins from the body. As *lymph fluid* travels through *lymph vessels*, it passes through *lymph nodes*. These lymph nodes help filter wastes from the lymph fluid.



What is lymphedema?

Lymphedema is tissue swelling.

It can happen if lymph nodes are injured, or if they are removed as part of cancer treatment. When lymph nodes are not working as usual, it keeps lymph fluid from draining well. This causes fluid buildup and swelling.

There are many lymph vessels and lymph nodes in the head and neck.

How can I help avoid lymphedema?

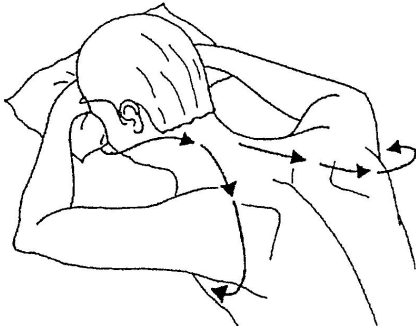
To avoid lymphedema, it is very important to protect your skin. If skin is injured, the body will send special chemicals to the area, causing inflammation. When the lymph system is not working well, your body cannot remove the extra fluid and swelling results.

Skin injuries include:

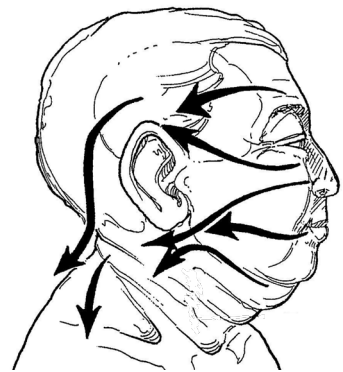
- Burns and sunburns
- Bites and scratches from insects and animals
- Bruises and cuts, including inside the mouth

Take good care to avoid breaking the skin surface on your face:

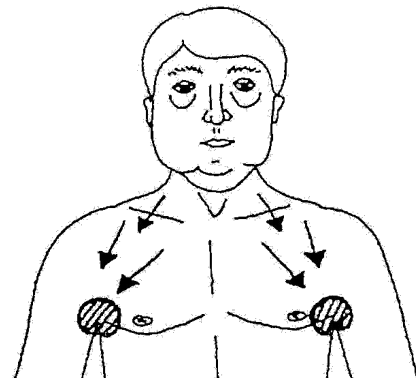
- If you shave your face, use an electric razor instead of a razor blade.
- Be careful with waxing and electrolysis.
- If you get a cut on your head or neck:
 - Wash it well.
 - Apply an antibiotic ointment.
 - Watch it closely for infection.
- If you see any signs of infection, see your healthcare provider as soon as you can. Your provider may prescribe antibiotics.
- Take good care of your mouth:
 - Brush and floss well to help prevent infections.
 - Use an alcohol-free mouthwash.
- Exercise regularly.
- Maintain a healthy body weight.
- Avoid tightening your neck and shoulder muscles. To help your lymph fluid flow well through this critical area:
 - When sitting at a desk or working on a computer, keep your neck and shoulders relaxed.
 - Lower your stress levels. We tend to tighten our shoulders and neck muscles when we feel stressed.
- Try sleeping with your upper body raised a little. This will improve lymph drainage. You can use extra pillows or a foam wedge under your upper body.
- Moisturize your skin to keep it from getting too dry.
- Do **not** wear clothes or jewelry that fit tightly around your neck.
- Be very careful when sitting in a hot tub, sauna, or using other forms of heat therapy:
 - Do **not** spend longer than 15 minutes in these settings.
 - Stop if you notice increased swelling.
- Avoid being outside in very cold weather. The cold can cause “rebound swelling” or chap your skin.



Step 3 (if you have a helper)



Step 10



Step 12

Massage to Drain Lymph from Your Head and Neck

To start, focus on breathing slowly. Relax your body. When you are ready to begin:

- Follow these steps in order.
- Repeat each step 5 to 10 times.
- Try to do this full sequence 2 to 4 times a day.

Remember, this is **gentle massage**. Use only enough pressure to stretch the skin in the direction as indicated, then release.

1. Massage each armpit. Stroke your skin toward your heart, then release.
2. Massage from the area above your *clavicles* (collarbone) and upper chest. Stroke toward your armpits.
3. If you have a helper, have them massage the back of your neck and upper back, stroking toward your armpits. (See top drawing at left.)
4. Massage your scalp and the back of your neck.
5. Massage your jaw. Stroke toward the back of your neck.
6. Massage the back of your neck. Stroke down, toward your back.
7. Massage your temples. Stroke toward the back of your head.
8. Massage the back of your neck. Stroke upward, toward your head.
9. Massage under your lips. Stroke toward the back of your neck.
10. Massage your face (see middle drawing at left):
 - Massage your cheeks, stroking toward the back of your neck.
 - Starting at your nose, stroke across your cheeks, toward the back of your neck.
 - Massage under your eyes and over your ears. Stroke toward the back of your head and neck.
11. Massage the back of your neck, stroking toward your back and clavicles.
12. Massage the area above your clavicles and upper chest. Stroke toward your armpits. (See bottom drawing at left.)
13. Massage the back of your neck and upper back, stroking toward your armpits.

Eating for Esophagitis

Esophagitis is defined as irritation of the lining of the esophagus and throat, often as a result of chemotherapy and radiation. It causes the throat to be sore, making it difficult to eat and swallow. When experiencing esophagitis, you can still eat many of your favorite foods. However, it may be helpful to change some ingredients, add in new recipes, modify texture, *and* allow extra time for meals.

Esophagitis makes eating and swallowing difficult, which may lead to weakness and weight loss. Nutritional requirements, including calorie and protein needs, may increase as a result of your cancer and your cancer treatment. In order to maintain not just your weight, but your muscle, strength, and nutritional health, it is important to get adequate calories and protein in your diet.

Eating recommendations

- Eat 5 to 6 small meals instead of 3 large meals. It may be easier to eat smaller amounts of food at one time.
- Allow extra time for meals. Chewing and swallowing each bite will take more time than you may be used to.
- Try a sip of liquid before and after each bite of solid food.
- Choose foods that are easier to swallow, including soft, moist, and liquid-based foods.
- Choose foods that are high in protein and calories (see next page for recommendations).
- Find recipes and food suggestions throughout this handout.
- Ask your provider for strategies to manage pain while eating.
- Modify the texture or consistency of foods. Use moist cooking methods.

Foods high in protein and calories

Foods high in protein and calories will reduce the amount of time you need to chew and swallow, since you are eating more in each bite. Ideas to increase protein and healthy calories include:

- Whole milk instead of low fat
- Canned coconut milk instead of water in recipes or prepared food (pudding).
- Cream of celery or mushroom soup instead of water in savory recipes.
- Unflavored whey or pea protein powder in hot cereals, mashed potatoes, or drinks.
- Scrambled eggs as a side to meals.

Food high in protein and calories, continued

- Vegetable oils (olive and canola) and butter in recipes.
- Cream cheese added to mashed potatoes and eggs.
- Smoothies made with coconut milk.

Food recommendations for home

Try: Soft, blended, and saucy foods	Avoid: Acidic, spicy, and sharp foods
Protein	
<ul style="list-style-type: none"> • Blended beans or tofu mixed in with soup or rice • Homemade, blended soups (split pea, lentil, or black bean) • Creamy peanut butter or other nut butters (almond, cashew) • Greek yogurt, any flavor, sweetened with jam or honey • Scrambled eggs • Tuna, chicken, or egg salad 	<ul style="list-style-type: none"> • Whole pieces of meat, including chicken, beef, or seafood (even cut up they are difficult to chew and swallow) • Whole nuts
Grains	
<ul style="list-style-type: none"> • Oatmeal • Cream of Wheat[®] • Grits • Quinoa • Use more liquid in cooked cereals to make them softer to eat • Well-cooked pasta • Rice porridge 	<ul style="list-style-type: none"> • Cold cereal • Sharp foods, such as crackers and chips • Dry breads, such as toast
Vegetables and fruit	
<ul style="list-style-type: none"> • Mashed potatoes or cauliflower • Cooked vegetables that have gone through a food processor, such as carrots, zucchini, squash, etc.) • Fruit smoothies made with whole fruit • Blended watermelon for drinking • Mashed avocado • Soft fruits, like applesauce, peaches, and banana 	<ul style="list-style-type: none"> • Whole or chopped raw, hard fruits or vegetables like apples or celery (fine if cooked and mashed) • Acidic or spicy fruits and vegetables, such as tomatoes, peppers, lemons and other citrus fruits, and hot sauce or salsa

Dairy and non-dairy alternatives

- Cottage cheese flavored with jam or honey
- Milk: cow's, soy, almond, coconut
- Lactose-free alternative (Lactaid®)
- Ice cream and milkshakes
- Yogurt, pudding, or custard

Recipes we recommend

Homemade Hummus

Homemade hummus is a calorie and protein dense snack. It pairs well with soft tortillas or can be eaten by itself.

Ingredients

1 can chickpeas
1-2 tbsp. olive oil
1-2 cloves fresh, minced garlic
1-2 tbsp. tahini, if available* (can be omitted)
Squeeze of lemon juice (can be omitted if irritating)
Coarse ground salt and pepper, to taste

Directions

Drain the chickpeas but save the liquid. Rinse the chickpeas in running water. In a food processor, combine chickpeas, olive oil, garlic, tahini, salt, and pepper, and blend until smooth. If hummus is too thick, add olive oil or chickpea liquid to reach desired consistency.

* *Tahini is the paste of ground sesame seeds. It can be found in the natural section of grocery stores.*

Guacamole

This guacamole is made with basil instead of lime juice and tomato. With the addition of herby basil, it is just as flavorful as traditional guacamole. Guacamole is a great calorie booster and goes well on top of soup.

Ingredients

1 soft, medium avocado
5-7 basil leaves, rinsed and dry
1-2 tbsp. olive oil
Coarse ground pepper and sea salt, to taste

Directions

Open the avocado and set aside the pit. Scoop the avocado from the skin and mash in a bowl. Roll the basil lengthwise along the stem and slice into shreds. Add the basil shreds to the guacamole, mix in the olive oil, and stir well. Eat promptly to keep the guacamole from turning brown.

Chia Seed Pudding

Chia seeds offer a high-calorie, high-protein, *and* high-fiber profile. The longer they soak in the milk, the softer they will become.

Ingredients

1 twelve to fourteen-ounce can full-fat coconut milk
2-3 tablespoons chia seeds*
1 tsp. ground cinnamon
1 tsp. vanilla
Shredded coconut, finely chopped (optional)
Frozen blueberries or mango
Honey to taste

Directions

Combine all ingredients in a large bowl with a lid. Stir or shake until well mixed. Refrigerate for 5-6 hours, stirring occasionally to keep from clumping. More liquid can be added if necessary, as can more honey for flavor.

*If you are following the immunosuppressed diet, chia seeds must be roasted.

Adapted from skinnytaste.com

Recipes we recommend

Cauliflower Soup

Ingredients

4 cups cooked cauliflower florets (may use frozen)
1/2 cup shredded cheese
1 tablespoon all-purpose flour
1 1/3 cups buttermilk
1 cup vegetable or chicken broth
1 clove garlic, minced
Salt and pepper to taste

Directions

Place all ingredients in a food processor or blender and process until smooth. Serve immediately or refrigerate if serving cold, heat if soup is to be served hot. Add more broth as needed to thin.

Baked Peach Delight

Ingredients

1 (16-ounce) can peach halves, drained
5 tablespoons creamy peanut or nut butter (cashew or almond)
5 teaspoons brown sugar

Directions

Heat oven to 350 degrees. Place peach halves in baking dish, spread peanut butter on each half, and sprinkle with brown sugar. Bake until nut butter and sugar melt, about 5 to 10 minutes. Let cool before eating. One peach slice with 1 tbsp. peanut or nut butter is one serving.

High-Powered Hot Cereal

Ingredients

1 cup **prepared** Cream of Wheat[®], grits, or oatmeal (can be prepared with cow's milk, half and half, or almond/soy/coconut milk)
2 tablespoons peanut or other nut butter (almond or cashew)
1-2 tablespoons protein powder
Maple syrup, butter, and cinnamon to taste

Directions

Combine all ingredients and reheat in the microwave for one minute or until warm.

Blueberry Yogurt Smoothie*

Ingredients

1 cup frozen blueberries
1 whole ripe banana
1 cup pasteurized yogurt, plain
1/2 avocado
1 cup packed spinach leaves
2 tablespoons whey protein power (optional)
Milk to thin (optional)

Directions

Combine and mix in a blender or food processor. Enjoy!



*Adapted from *Eating Well through Cancer* by Holly Clegg and Gerald Miletello © 2006

What if I don't want to cook?

- **Canned or boxed soup:** Mix in blender if soup is too thick or thin down with broth. Try adding extra nutrients/calories with olive oil or additional milk for a cream-based soup. If you are eating with your family, friends, or caregiver, you can also blend the main meal into a soup base.
- **Pudding:** Use canned coconut milk or whole cow's milk in place of skim milk to make a container of pudding.
- **Prepared smoothies:** Many smoothies can be found at your local grocery store if you do not want to mix your own. Make sure they are pasteurized if you are neutropenic (Absolute Neutrophil Count < 1000m³).

Resources

Cook for your life: cookforyourlife.org/category/recipes/health-considerations-recipes/easy-to-swallow

This education resource was intended to be given as a part of a nutrition consult by a Fred Hutchinson Cancer Center dietitian. Questions? Ask a Fred Hutch dietitian at nutrition@seattlecca.org.

Make Every Bite Count

What can I eat if my appetite is low?

When you are in treatment, it can be difficult to eat enough of the foods you need. You might be nauseous, feel full quickly, have difficulty swallowing, or have a low appetite. There are many ways to increase your calories without feeling overwhelmed by the amount of food you need to eat.



Why is eating important now?

You need to nourish healthy cells with nutrients to help your body fight cancer. Your nutritional requirements, including calorie and protein needs, may increase as a result of having cancer and/or your cancer treatment. In order to maintain your weight, muscle mass, and vitamin and mineral levels, it is important to get enough calories in your diet. Here are some high-calorie whole food suggestions:

Food	Serving size	Calories
Avocados	¼ medium	70
Butter	1 tablespoon	100
Canned coconut milk	1/3 cup	140
Cream cheese	2 tablespoons	100
Dates	¼ cup	120
Eggs	1 egg	75
Grapeseed oil	1 tablespoon	120
Grated cheese	2 tablespoons	60
Hummus	2 tablespoons	50
Mayonnaise	2 tablespoons	180
Nuts/seeds	2 tablespoons	100
Olive oil	2 tablespoons	240
Olives	5 olives	50
Peanut butter	2 tablespoons	200
Pesto	2 tablespoons	100
Tahini	2 tablespoons	170

What are some other food suggestions to increase calories?

Fats, condiments, spreads

- Canned coconut milk: 1 cup has twice as many calories as whole milk; add to soups and smoothies.
- Avocados: Add to toast, soups and smoothies.
- Olive oil: Cook with, use on salads, and drizzle over vegetables, pasta, grains, and meats.
- Olives: Eat alone or add to salads, pasta, vegetables, and casseroles.
- Butter: Melt on vegetables or hot cereals. Mix with herbs to put on meat or seafood dishes.
- Peanut butter or other nut butters: Spread on bread, eat with fruit, mix into smoothies, or use in sauce.
- Tahini (ground sesame seeds): Mix with water, lemon juice, and salt; drizzle on salads or roasted vegetables.

Vegetables and fruit

- Juice, nectars and fruits: Blend into shakes or smoothies.
- Dried fruits: Add to salads, cooked vegetables, hot or cold cereal, or eat as a snack.
- Fruits: Add cream, half-and-half, whole milk or maple syrup to fresh, canned, or frozen fruits.
- Vegetables: Mix butter or cheese with vegetables before serving or while baking/cooking.

Meat, eggs, legumes

- Beef, chicken, pork, fish: Chop and add into soups, scrambled eggs, vegetables, baked potatoes, salads and casseroles
- Eggs: Try hard boiling to crumble over salads, vegetables, or casseroles; eat deviled eggs or egg custards as a snack.
- Beans or dried peas: Add beans to salads or soups. Use hummus in a sandwich, on a cracker or with some vegetables.

Dairy

- Whole milk: Add calories to whole milk by mixing in half-and-half or instant dry milk powder (3 tablespoons= 90 calories). Add to smoothies/shakes or use in cooking.
- Ice cream, sorbets: Make sundaes, milkshakes, or ice cream cookie sandwiches.
- Whole milk yogurt: Use fruit-flavored yogurt on pancakes, waffles, cereal, or as a fruit dip.
- Cheese: Sprinkle cheese on salads, vegetables, toast, sandwiches, soups or casseroles.
- Cottage cheese: Add to casseroles, scrambled eggs, or stuff in pasta shells.

What if I don't want to cook?

- **Canned or boxed soup:** Try adding extra nutrients/calories with frozen vegetables, beans, potatoes, pasta, finely chopped meat/chicken, olive oil or additional milk for a cream-based soup.
- **Sauces:** Add sauces to pastas or vegetables. There are many sauces available in the grocery store aisles, like alfredo sauce, that can add 125 calories in ½ cup. Other sauces include cheese, peanut, curry, creamy tomato and pesto.
- **Frozen entrées:** Shepherd's pie, pot pies, quiches and other casserole-type dishes are high-calorie meals in small packages. Most of these are soft and easy to swallow.
- **Pudding/yogurt:** Use coconut milk in place of milk to make a container of pudding. Add canned fruit to yogurt.
- **Prepared smoothies:** Many smoothies can be found at your local grocery store if you do not want to mix your own. Make sure they are pasteurized if you are neutropenic.
- **Peanut butter and jelly:** There are 380 calories in this classic sandwich. Put in some sliced banana for some added nutrients!
- **Try a tuna, egg, or chicken salad sandwich.**

Recipes

Coconut Milk Rice Pudding

- 16 oz can coconut milk (not light)
- 1 ½ cups cooked rice (brown or white)
- Sweetener to taste (suggestions: honey, maple syrup, agave syrup, etc.)
- 1 teaspoon vanilla extract

Heat the coconut milk in a saucepot, over medium heat, until it comes to a simmer. Add sweetener and stir until dissolved. Add the cooked rice and heat through. Simmer until it thickens but don't allow it to become too dry; the rice will continue to absorb the milk as it cools. Take off heat and stir in the vanilla. Serve warm or chilled. Makes 4 (1/2 cup) servings; 250 calories, 2grams protein, 1 gram of fiber (white rice) per serving.

The Basic Smoothie

- 1 banana
- 1 cup frozen fruit
- 8 oz plain yogurt

Directions: combine ingredients in a blender and blend until smooth. Makes one serving: 300 calories; 14 grams protein; 6 grams fiber

This education resource was intended to be given as a part of a nutrition consult by a Fred Hutchinson Cancer Center dietitian. Questions? Ask a Fred Hutch dietitian at nutrition@seattlecca.org.

Protein

What is protein?

Protein is important for building all body tissues, maintaining muscle mass, growth, and healing. Inadequate protein intake can result in weight loss and muscle loss, causing weakness and fatigue. Your body's protein needs may be higher for various reasons:

- Chemotherapy and radiation
- Steroid therapy (i.e. prednisone)
- Infection
- Surgery or wounds



What is my protein goal?

- Your protein goal is _____ grams each day.
- The best way to meet your protein goal is to include a protein source with each meal and snack.
- After you have regained lean body mass and finished treatment, your protein goal is _____ grams each day.

What if I am a vegan or vegetarian?

- You can meet your protein goal even if you do not eat meat, fish or dairy. Become familiar with alternative sources of protein (some listed below).
- Some plant proteins do not include all eight essential amino acids. These are considered incomplete proteins.
- Some vegan foods that are complete proteins are quinoa, buckwheat, amaranth, nutritional yeast, hemp and soy.
- If your diet does not include a complete protein, it should contain beans or legumes to complement other vegetarian protein sources, such as seeds, nuts and grains.
- Always try to include a wide variety of plant sources of protein throughout the day such as leafy green vegetables, grains, and beans or legumes.

What if I am not feeling well?

If you are having nausea or diarrhea, some high protein foods may not be well tolerated. With these symptoms, it is often best to avoid:

- High fat cuts of beef, pork or lamb
- Poultry with skin
- Fried meats
- Processed meats (hot dogs, bacon, sausage)
- Beans, legumes, and lentils
- High fat dairy foods such as whole milk and ice cream

What if I am lactose intolerant?

- If you or your dietitian suspects that you are lactose intolerant, avoid lactose-containing protein foods such as milk, skim milk powder, and ice cream.
- Try soy or lactose-free milk and ice cream instead. Lactaid® tablets may also be beneficial.
- Some dairy foods with lower amounts of lactose may be better tolerated but should be discussed with your dietitian. Examples include aged cheese, cottage cheese, and yogurt.

High protein foods

Protein source	Serving size	Protein (grams)
Meat and seafood		
Beef, pork, lamb	3 ounces	25
Chicken, turkey	3 ounces	25
Fish	3 ounces	21
Prawns, scallops, etc.	3 ounces	19
Eggs	1 egg	7
Dairy		
Milk	1 cup	8
Yogurt	6 ounces, $\frac{3}{4}$ cup	8
Cottage cheese	$\frac{1}{2}$ cup	13
Cheese	1 ounce, 1 slice	7
Kefir	1 cup	7

Protein Source	Serving size	Protein (grams)
Plant foods		
Seitan (protein from wheat gluten)	3 ounces	31
Tempeh*	½ cup	20
Quinoa	1 cup	8
Beans, split peas, lentils	½ cup	8
Nuts, seeds	¼ cup	7
Nut butters	2 tablespoons	8
Tofu	3 ounces	13
Edamame (soybeans)	½ cup	6
Soymilk	1 cup	8
Spinach (cooked)	1 cup	5
Broccoli	1 cup	4
Mushrooms	1 cup	4
Green peas	1 cup	4

*Do not eat while on the *Immunosuppressed Patient Diet*.

Ideas for high protein meals and snacks

- Fruit with yogurt or cottage cheese
- Crackers/toast with peanut butter or cheese
- Cereals, pancakes, and vegetables with added nuts or nut butter
- Soups, pastas, and casseroles with eggs, ground or diced meats, poultry, or seafood
- Tuna/chicken/egg salad on sandwiches or crackers
- Bean soups and stews
- Hummus or bean dip with pita or vegetables

Sample menus

Non-vegetarian	Vegetarian
<p>Breakfast: 1 cup oatmeal 8 ounces milk 1 banana</p>	<p>Breakfast: 1 piece whole grain toast 1 tablespoon peanut butter</p>
<p>Snack: 8 ounces yogurt with ½ cup blueberries</p>	<p>Snack: 8 ounces yogurt with ½ cup diced peaches</p>
<p>Lunch: 2 pieces whole wheat toast 3 ounces tuna salad 1 ounce cheddar cheese 1 cup carrot, cucumber and tomato salad</p>	<p>Lunch: 1 serving lentil soup 1 piece whole grain toast</p>
<p>Dinner: 4 ounces chicken breast 1 cup cooked broccoli 1 cup mixed green salad ¾ cup brown rice</p>	<p>Dinner: Pasta with tofu and walnuts 1 cup mixed green salad</p>
<p>Total: 90 grams protein</p>	<p>Total: 82 grams protein</p>

Your Self-care Schedule

Your guide to head and neck radiation therapy

= Start this self-care task on the 1st day of your treatment.

<u>Oral Care</u>	
<input checked="" type="checkbox"/> Brush teeth with soft brush and gentle paste after meals and at bedtime, or as tolerated. Floss gently once a day.	<ul style="list-style-type: none"> Suggest: Biotene toothpaste
<input checked="" type="checkbox"/> Do salt and soda swishes at least 8 times a day, after meals and at bedtime.	<p>Recipe:</p> <ul style="list-style-type: none"> Mix ½ tsp salt, ½ tsp baking soda, and 2 cups (16 ounces) warm water. It is easiest to double the recipe and keep it in a water bottle to use all day. You may use a little less salt if your mouth is sensitive.
Fluoride dental trays	<ul style="list-style-type: none"> If your dentist has provided them, use them as instructed.
For thick saliva	<ul style="list-style-type: none"> Club soda or papaya juice.
For dry mouth	<ul style="list-style-type: none"> Xylimelt lozenges, Biotene Dry Mouth (spray, gel, or rinse).
<u>Skin Care</u>	
Washing	<ul style="list-style-type: none"> Wash skin daily with lukewarm water and gentle, fragrance-free, pH balanced soap (such as Dove® or Cetaphil®). Lather your fingers with soap and water to keep skin slippery. Do not use washcloths or abrasive materials. Pat dry with a soft towel and do not rub your skin. <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Apply Skintegritty to the treated skin area 3 times a day. Keep a thin layer of moisturizer on the treated skin throughout the day.

Sun Exposure	<p>During radiation:</p> <ul style="list-style-type: none"> • Avoid sun exposure and wear protective clothing when you are outside. • Do not wear sunscreen. <p>After radiation:</p> <ul style="list-style-type: none"> • Your skin is at a higher risk of sunburn. • Every time you go outside, apply SPF 50+ sunscreen to the areas where you had radiation.
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Nutrition and Hydration	
<input checked="" type="checkbox"/> Drink 10 to 12 cups (80 to 96 ounces) of fluid every day	You must swallow at least 10 sips of fluid, 10 times a day.
<input checked="" type="checkbox"/> Make sure you eat enough to avoid losing weight	There is no specific diet for cancer. Visit www.cancer.gov/publications/patient-education/eatinghints.pdf for recommendations.
Remember: “Food is fuel”	You will meet with the dietitian on a weekly basis. They will work with you to help make sure you meet your calorie and protein goals during treatment.

Constipation	
Senna	You can buy Senna without a prescription at your local drugstore. Take Senna 1 to 2 times a day. Do not take more than 4 tablets in one day.
MiraLax	You can buy MiraLax without a prescription at your local drugstore. Follow directions on the label.
For severe constipation:	<ol style="list-style-type: none"> 1. Glycerin suppositories or Fleets Enema: You can buy these without a prescription at your local drugstore. Follow directions on the label. 2. Call clinic if the treatments above do not work, or if you have questions.

Grade	Grade 0	Grade 1	Grade 2	Grade 3
NCI CTCAE V5.0 Dermatitis Radiation	No changes in Skin	Faint <i>erythema</i> (skin redness) or dry <i>desquamation</i> (peeling skin)	Moderate to brisk erythema. Patchy, moist desquamation, mostly in skin folds and creases. Moderate <i>edema</i> (swelling).	Moist desquamation in areas other than skin folds and creases. Bleeding caused by minor trauma or <i>abrasion</i> (scrape or scratch).
Imaging Examples	N/A	