



About Your Nasal Cavity and Paranasal Sinus Surgery

This guide will help you get ready for your nasal cavity and paranasal sinus surgery at MSK. It will also help you understand what to expect during your recovery.

Use this guide as a source of information in the days leading up to your surgery. Bring it with you every time you come to MSK, including the day of your surgery. You and your healthcare team will refer to it throughout your care.

Your healthcare team

Doctor: _____

Nurse: _____

Phone number: _____

Fax number: _____

Your caregiver

It's important to choose a person to be your caregiver. They'll learn about your surgery with you and help you care for yourself while you're recovering after surgery. Write down your caregiver's name below.

Caregiver: _____



To view this guide online, visit
www.mskcc.org/pe/nasal_paranasal_surgery

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About Your Surgery

Your nasal cavity and paranasal sinuses

Your nasal cavity is a large, air-filled space above and behind your nose, in the middle of your face. It has 2 openings, called the nostrils, that warm and moisturize the air you breathe in.

Inside your nasal cavity, you have 4 types of paranasal sinuses, usually called sinuses (see Figure 1). Your sinuses are a group of hollow, air-filled spaces that surround your nasal cavity. These include:

- **Frontal sinuses**, which are above your eyes.
- **Ethmoid sinuses**, which are between your eyes.
- **Sphenoid sinuses**, which are deep in your nasal cavity, behind your ethmoid sinuses.
- **Maxillary sinuses**, which are on the sides of your nose.

Your nasal cavity and sinuses are covered with a layer of cells that make mucus and warm the air you breathe. They also affect how your voice sounds when you speak.

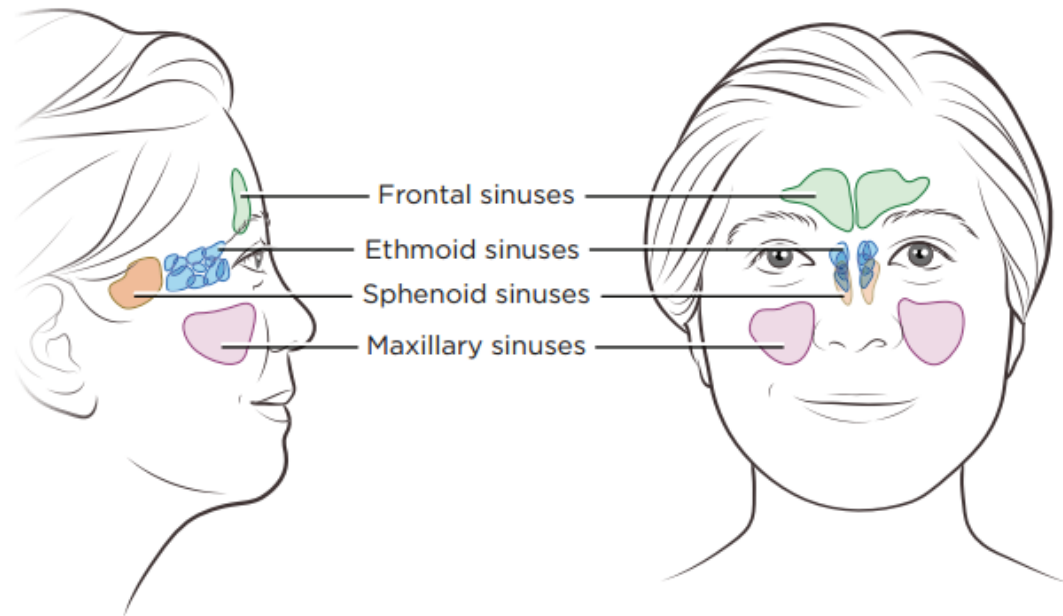


Figure 1. Your paranasal sinuses

Nasal cavity and sinus surgery

Nasal cavity and sinus tumors are usually treated with surgery. The goal of the surgery is to remove the whole tumor and a small amount of normal tissue around it.

Your nasal cavity and sinuses are small areas that have many muscles, nerves, blood vessels, and other important structures. If any of these other structures need to be removed during your surgery, it can affect how you look and how you perform basic functions. Therefore, another goal of surgery is to help you look the same and be able to breathe, chew, talk, and swallow without difficulty after your surgery.

You'll have many different providers working together before, during, and after your surgery. Depending on your surgery, your treatment team may include:

- Head and neck surgeon, plastic reconstructive surgeon, and neurosurgeon
- Radiation oncologist
- Medical oncologist
- Dentist
- Nurses
- Speech and swallowing therapist
- Clinical dietitian nutritionists
- Case managers
- Social workers

Your healthcare provider will talk with you about which surgery you're having. The type of surgery depends on the where the tumors are, how big they are, and what other structures are involved. Here are descriptions of the different types of surgeries.

Types of nasal cavity surgery

- Some nasal cavity tumors can be removed with a surgery called **wide local excision**. This surgery removes the tumor and a small amount of normal tissue around it.
- Tumors that are on your nasal turbinates (long, thin bones on the inside walls of your nose) can be removed by a surgery called **medial maxillectomy**.
- Tumors that involve the tissue on the outside of your nose may be removed by removing part of your nose or your entire nose.

Types of sinus surgery

- Tumors that are small, noncancerous (not cancer), and involve only your ethmoid sinuses are removed with a surgery called **external ethmoidectomy**.
- Tumors that have grown into your maxillary sinus can be removed by a surgery called **maxillectomy**. The extent of the surgery depends on where the tumor is and if it involves nearby tissue and structures. During a maxillectomy, the following things may be partly or completely removed:
 - Bone around your maxillary sinus
 - Bone of your hard palate (roof of your mouth)
 - Upper teeth on one side of your mouth
 - Part of or your entire orbit (eye socket)
 - Part of your cheekbone
 - Part of the bony part of your upper nose

If part of your hard palate is removed, there may be an open connection between your nasal cavity and your oral cavity (mouth). Your dental surgeon will take impressions (make a mold of your upper mouth) before and the day of your surgery. They'll put a temporary surgical obturator (plate) to close the opening in your palate during your surgery. This will help you speak and eat after surgery.

You'll be discharged from the hospital with the temporary surgical obturator in place. About 2 weeks after your surgery, you'll have an appointment with your dental surgeon to remove the surgical obturator. During this appointment, your dental surgeon will fit a removable obturator to your mouth. They'll also give you instructions for cleaning and taking care of the obturator. You'll have regular follow-up appointments with your dental surgeon to check the obturator and adjust the fit if needed.

- Tumors in your ethmoid, frontal, or sphenoid sinuses are removed by a surgery called **craniofacial resection**. This surgery involves removing the tumor through incisions (surgical cuts) on your face and skull. By accessing the tumor from two directions, your surgeons have a better chance of removing the entire tumor. This also helps decrease possible damage to your brain, nerves, and other major structures. You'll have a head and neck surgeon, plastic surgeon, and neurosurgeon working together on your surgical team.

Getting ready for your surgery

You and your care team will work together to get ready for your surgery. Help us keep you safe by telling us if any of these things apply to you, even if you're not sure.

- I take an anticoagulant (blood thinner), such as:
 - Aspirin
 - Heparin
 - Warfarin (Jantoven[®], Coumadin[®])
 - Clopidogrel (Plavix[®])
 - Enoxaparin (Lovenox[®])
 - Dabigatran (Pradaxa[®])
 - Apixaban (Eliquis[®])
 - Rivaroxaban (Xarelto[®])
- I take an SGLT2 inhibitor, such as:
 - Canagliflozin (Invokana[®])
 - Dapagliflozin (Farxiga[®])
 - Empagliflozin (Jardiance[®])
 - Ertugliflozin (Steglatro[®])
- I take any prescription medicines, including patches and creams. A prescription medicine is one you can only get with a prescription from a healthcare provider.
- I take any over-the-counter medicines, including patches and creams. An over-the-counter medicine is one you can buy without a prescription.
- I take any dietary supplements, such as herbs, vitamins, minerals, or natural or home remedies.
- I have a pacemaker, automatic implantable cardioverter-defibrillator (AICD), or other heart device.
- I have sleep apnea.
- I have had a problem with anesthesia (A-nes-THEE-zhuh) in the past. Anesthesia is medicine to make you sleep during a surgery or procedure.
- I'm allergic to certain medicines or materials, including latex.
- I'm not willing to receive a blood transfusion.
- I drink alcohol.
- I smoke or use an electronic smoking device, such as a vape pen or e-cigarette.
- I use recreational drugs, such as marijuana.

These are examples of medicines. There are others.

Always be sure your healthcare providers know all the medicines and supplements you're taking.

About drinking alcohol

It's important to talk with your healthcare providers about how much alcohol you drink. This will help us plan your care.

If you drink alcohol regularly, you may be at risk for problems during and after your surgery. These include bleeding, infections, heart problems, and a longer hospital stay.

If you drink alcohol regularly and stop suddenly, it can cause seizures, delirium, and death. If we know you're at risk for these problems, we can prescribe medicine to help prevent them.

Here are things you can do before surgery to keep from having problems.

- Be honest with us about how much alcohol you drink.
- Try to stop drinking alcohol once your surgery is planned. Tell us right away if you:
 - Get a headache.
 - Feel nauseous (like you're going to throw up).
 - Feel more anxious (nervous or worried) than usual.
 - Cannot sleep.

These are early signs of alcohol withdrawal and can be treated.

- Tell us if you cannot stop drinking.
- Ask us questions about drinking and surgery. We will keep all your medical information private, as always.

About smoking

If you smoke, you can have breathing problems when you have surgery. Stopping for even a few days before surgery can help.

We will refer you to our Tobacco Treatment Program if you smoke. You can also reach the program by calling 212-610-0507. To learn more, visit www.msk.org/tobacco

About sleep apnea

Sleep apnea is a common breathing problem. If you have sleep apnea, you stop breathing for short lengths of time while you're asleep. The most common type is obstructive sleep apnea (OSA). With OSA, your airway becomes fully blocked during sleep.

OSA can cause serious problems during and after surgery. Tell us if you have or think you might have sleep apnea. If you use a breathing device, such as a CPAP machine, bring it on the day of your surgery.

Using MyMSK

MyMSK (my.mskcc.org) is your MSK patient portal. You can use it to send and read messages from your care team, view your test results, see your appointment dates and times, and more. You can also invite your caregiver to make their own account so they can see information about your care.

If you do not have a MyMSK account, you can sign up at my.mskcc.org. You can get an enrollment ID by calling 646-227-2593 or your doctor's office.

Watch *How to Enroll in MyMSK: Memorial Sloan Kettering's Patient Portal* at www.msk.org/pe/enroll_mymsk to learn more. You can also contact the MyMSK Help Desk by emailing mymask@mskcc.org or calling 800-248-0593.

Within 30 days of your surgery

Presurgical testing (PST)

You'll have a PST appointment before your surgery. You'll get a reminder from your surgeon's office with the appointment date, time, and location. Visit www.msk.org/parking for parking information and directions to all MSK locations.

You can eat and take your usual medicines the day of your appointment.

It's helpful to bring these things to your appointment:

- A list of all the medicines you're taking, including prescription and over-the-counter medicines, patches, and creams.
- Results of any medical tests done outside of MSK in the past year, if you have them. Examples include results from a cardiac stress test, echocardiogram, or carotid doppler study.
- The names and telephone numbers of your healthcare providers.

You'll meet with an advance practice provider (APP) during your PST appointment. They work closely with MSK's anesthesiology (A-nes-THEE-zee-AH-loh-jee) staff. These are doctors with special training in using anesthesia during a surgery or procedure.

Your APP will review your medical and surgical history with you. You may have tests to plan your care, such as:

- An electrocardiogram (EKG) to check your heart rhythm.
- A chest X-ray.
- Blood tests.

Your APP may recommend you see other healthcare providers. They'll also talk with you about which medicines to take the morning of your surgery.

Identify your caregiver

Your caregiver has an important role in your care. Before your surgery, you and your caregiver will learn about your surgery from your healthcare providers. After your surgery, your caregiver will take you home when you're discharged. They'll also help you care for yourself at home.



For caregivers

Caring for a person going through cancer treatment comes with many responsibilities. We offer resources and support to help you manage them.

Visit www.msk.org/caregivers or read *A Guide for Caregivers* to learn more. You can ask for a printed copy or find it at www.msk.org/pe/guide_caregivers

Fill out a Health Care Proxy form

If you have not already filled out a Health Care Proxy form, we recommend you do now. If you already filled one out or have any other advance directives, bring them to your next appointment.

A health care proxy is a legal document. It says who will speak for you if you can't communicate for yourself. This person is called your health care agent.

- To learn about health care proxies and other advance directives, read *Advance Care Planning for People With Cancer and Their Loved Ones*. You can find it at www.msk.org/pe/advance_care_planning or ask for a printed copy.
- To learn about being a health care agent, read *How to Be a Health Care Agent*. You can find it at www.msk.org/pe/health_care_agent or ask for a printed copy.

Talk with a member of your care team if you have questions about filling out a Health Care Proxy form.

Do breathing and coughing exercises

Practice taking deep breaths and coughing before your surgery. We will give you an incentive spirometer to help expand your lungs. To learn more, read *How to Use Your Incentive Spirometer*. You can find it in the "Educational resources" section of this guide.

Follow a healthy diet

Follow a well-balanced, healthy diet before your surgery. If you need help with your diet, talk with your healthcare provider about meeting with a clinical dietitian nutritionist.

Do breathing and coughing exercises

Practice taking deep breaths and coughing before your surgery. Your healthcare provider will give you an incentive spirometer to help expand your lungs. For more information, read the resource *How to Use Your Incentive Spirometer*. You can find it in the “Educational Resources” section of this guide.

Exercise

Try to do aerobic exercise every day. Aerobic exercise is any exercise that makes your heartbeat faster, such as walking, swimming, or biking. If it’s cold outside, use stairs in your home or go to a mall or shopping center. Exercising will help your body get into its best condition for your surgery and make your recovery faster and easier.

Follow a healthy diet

Follow a well-balanced, healthy diet before your surgery. If you need help with your diet, talk with your healthcare provider about meeting with a clinical dietitian nutritionist.

7 days before your surgery

Follow your healthcare provider’s instructions for taking aspirin

If you take aspirin or a medication that contains aspirin, you may need to change your dose or stop taking it 7 days before your surgery. Aspirin can cause bleeding.

Follow your healthcare provider’s instructions. **Don’t stop taking aspirin unless they tell you to.** For more information, read *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil*. You can find it in the “Educational Resources” section of this guide.

Stop taking vitamin E, multivitamins, herbal remedies, and other dietary supplements

Stop taking vitamin E, multivitamins, herbal remedies, and other dietary supplements 7 days before your surgery. These things can cause bleeding. For more information, read the resource *Herbal Remedies and Cancer Treatment*. You can find it in the “Educational Resources” section of this guide.

2 days before your surgery

Stop taking nonsteroidal anti-inflammatory drugs (NSAIDs)

Stop taking NSAIDs, such as ibuprofen (Advil® and Motrin®) and naproxen (Aleve®), 2 days before your surgery. These medications can cause bleeding. For more information, read *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil*. You can find it in the “Educational Resources” section of this guide.

1 day before your surgery

Note the time of your surgery

A staff member will call you after 2 p.m. the day before your surgery. If your surgery is scheduled for a Monday, they’ll call you the Friday before. If you do not get a call by 7 p.m., call 212-639-5014.

The staff member will tell you what time to get to the hospital for your surgery. They’ll also remind you where to go.

Visit www.msk.org/parking for parking information and directions to all MSK locations.

Shower

Wash yourself with soap and water the night before your surgery.

Instructions for eating



Stop eating at midnight (12 a.m.) the night before your surgery. This includes hard candy and gum.

If your healthcare provider told you to stop eating earlier than midnight, follow their instructions. Some people need to fast (not eat) for longer before their surgery.

The day of your surgery

Instructions for drinking

Between midnight (12 a.m.) and 2 hours before your arrival time, only drink the liquids on the list below. Do not eat or drink anything else. Stop drinking 2 hours before your arrival time.

- Water.
- Clear apple juice, clear grape juice, or clear cranberry juice.
- Gatorade or Powerade.
- Black coffee or plain tea. It's OK to add sugar. Do not add anything else.
 - Do not add any amount of any type of milk or creamer. This includes plant-based milks and creamers.
 - Do not add honey.
 - Do not add flavored syrup.

If you have diabetes, pay attention to the amount of sugar in these drinks. It will be easier to control your blood sugar levels if you include sugar-free, low-sugar, or no added sugar versions of these drinks.

It's helpful to stay hydrated before surgery, so drink if you are thirsty. Do not drink more than you need. You will get intravenous (IV) fluids during your surgery.



Stop drinking 2 hours before your arrival time. This includes water.

Take your medicine as instructed

A member of your care team will tell you which medicine to take the morning of your surgery. Take only that medicine with a sip of water. Depending on what you usually take, this may be all, some, or none of your usual morning medicine.

Things to remember

- Wear something comfortable and loose-fitting.
- If you wear contact lenses, wear your glasses instead. Wearing contact lenses during surgery can damage your eyes.
- Don't wear any metal objects. Remove all jewelry, including body piercings. The tools used during your surgery can cause burns if they touch metal.
- Don't wear any lotion, cream, deodorant, makeup, powder, perfume, or cologne.
- Leave valuable items at home.
- If you're menstruating (have your monthly period), use a sanitary pad, not a tampon. You'll get disposable underwear, as well as a pad if needed.

What to bring

- A button- down or loose-fitting top.
- Your breathing device for sleep apnea (such as your CPAP device), if you have one.
- Your Health Care Proxy form and other advance directives, if you completed them.
- Your cell phone and charger.
- Only the money you may want for small purchases (such as a newspaper).
- A case for your personal items (such as eyeglasses, hearing aid(s), dentures, prosthetic device(s), wig, and religious articles), if you have one.
- This guide. Your healthcare team will use it to teach you how to care for yourself after surgery.

Once you're in the hospital

You'll be asked to say and spell your name and birth date many times. This is for your safety. People with the same or a similar name may be having surgery on the same day.

When it's time to change for surgery, you'll get a hospital gown, robe, and nonskid socks to wear.

Meet with a nurse

You'll meet with a nurse before surgery. Tell them the dose of any medications you took after midnight (including prescription and over-the-counter medications, patches, and creams) and the time you took them.

Your nurse may place an intravenous (IV) line in one of your veins, usually in your arm or hand. If your nurse doesn't place the IV, your anesthesiologist will do it in the operating room.

Meet with an anesthesiologist

You'll also meet with an anesthesiologist before surgery. They will:

- Review your medical history with you.
- Ask if you've had any problems with anesthesia in the past, including nausea or pain.
- Talk with you about your comfort and safety during your surgery.
- Talk with you about the kind of anesthesia you'll get.
- Answer your questions about your anesthesia.

Get ready for your surgery

When it's time for your surgery, you'll need to remove your hearing aids, dentures, prosthetic device(s), wig, and religious articles, if you have them. You'll either walk into the operating room or be taken in on a stretcher. A member of the operating room team will help you onto the operating bed and place compression boots on your lower legs. These gently inflate and deflate to help blood flow in your legs.

Once you're comfortable, your anesthesiologist will give you anesthesia through your IV line and you'll fall asleep. You'll also get fluids through your IV line during and after your surgery.

During your surgery

After you're fully asleep, a breathing tube will be placed through your mouth and into your windpipe to help you breathe. A urinary (Foley) catheter will also be placed to drain urine (pee) from your bladder.

Once your surgery is finished, your incision will be closed with staples or sutures (stitches). You may also have Steri-Strips™ (thin pieces of surgical tape) or Dermabond® (surgical glue) over your incisions. Your incisions may be covered with a bandage.

Your breathing tube is usually taken out while you're still in the operating room.

In the Post-Anesthesia Care Unit (PACU)

When you wake up after your surgery, you'll be in the PACU. A nurse will be keeping track of your body temperature, pulse, blood pressure, and oxygen levels. You may be getting oxygen through a thin tube that rests below your nose or a mask that covers your nose and mouth. You'll also have compression boots on your lower legs.

Pain medication

You'll get IV pain medication while you're in the PACU. You'll be able to control your pain medication using a button called a patient-controlled analgesia (PCA) device. For more information, read the resource *Patient-Controlled Analgesia (PCA)*. You can find it online at www.mskcc.org/pe/pca or ask your healthcare provider for a copy.

Tubes and drains

You'll have 1 or more of the following:

- Drainage tubes near your incisions. These help drain fluid from the area to help your wounds heal.
- A Foley catheter through your urethra, into your bladder. This drains urine (pee) from your bladder.
- A face mask and humidifier. This helps keep your airways moist.
- A nasogastric (NG) feeding tube, if needed. This is a tube that goes through your nose, into your stomach. It's used to give you nutrition. If you need a NG tube, it will be placed while you're asleep during surgery and removed once you're ready.
- Splints in your nose (Doyle splints). These help prevent scarring in your nose. They'll be removed during your first appointment after surgery.

Moving to your hospital room

Depending on the type of surgery you had, you may stay in the PACU for a few hours or overnight. After your stay in the PACU, a staff member will take you to your hospital room.

In your hospital room

The length of time you're in the hospital after your surgery depends on your recovery. A member of your healthcare team will tell you what to expect.

When you're taken to your hospital room, you'll meet one of the nurses who will care for you while you're in the hospital. Soon after you arrive in your room, your nurse will help you out of bed and into your chair.

While you're in the hospital, your healthcare providers will teach you how to care for yourself while you're recovering from your surgery.

Read the resource *Call! Don't Fall!* to learn what you can do to stay safe and keep from falling while you're in the hospital. You can ask your healthcare provider for a copy or find it online at www.mskcc.org/pe/call_dont_fall

Managing your pain

You'll have some pain after your surgery. At first, you'll get your pain medication through your epidural catheter or IV line. You'll be able to control your pain medication using a PCA device. Once you're able to eat, you'll get oral pain medication (medication you swallow).

Your healthcare providers will ask you about your pain often and give you medication as needed. If your pain isn't relieved, tell one of your healthcare providers. It's important to control your pain so you can use your incentive spirometer and move around. Controlling your pain will help you recover better.

You'll get a prescription for pain medication before you leave the hospital. Talk with your healthcare provider about possible side effects and when to start switching to over-the-counter pain medications.

Moving around and walking

Moving around and walking will help lower your risk for blood clots and pneumonia (lung infection). It will also help you start passing gas and having bowel movements (pooping) again. Your nurse, physical therapist, or occupational therapist will help you move around, if needed.

Exercising your lungs

It's important to exercise your lungs so they expand fully. This helps prevent pneumonia.

- Use your incentive spirometer 10 times every hour you're awake. For more information, read the resource *How to Use Your Incentive Spirometer*. You can find it in the "Educational Resources" section of this guide.

- Do coughing and deep breathing exercises. A member of your care team will teach you how.

Eating and drinking

For your first meal after your surgery, you'll have only clear liquids. After that, you'll slowly start following a puréed diet, then a mechanical soft diet.

If you have questions about your diet, ask to see a clinical dietitian nutritionist.

Caring for your tubes and drains

A staff member will care for your tubes and drains while you're in the hospital. If you'll be leaving the hospital with tubes or drains, they'll also teach you how to care for them so you can do it yourself at home. It may be helpful if your caregiver learns too.

Showering

If you have drainage tubes near your incision, you can shower, but don't get the drainage tubes wet. A staff member will help you. You can take a normal shower 24 hours after your drainage tubes are removed.

If you don't have drainage tubes near your incision, don't take a shower for first 48 hours after your surgery. You can take a sponge bath. A staff member will help you.

Planning for discharge

Your nurse will teach you the self-care you'll need to continue caring for yourself at home. This may involve irrigating your mouth and nose, if needed. You'll also learn exercises to prevent trismus. This is the inability to open your jaw that can develop from scarring or changes in the muscles around your jaw. For more information, read the resource *Managing Trismus After Treatment for Head and Neck Cancer*. You can find it in the "Educational Resources" section of this guide.

If you stay in the hospital for less than 1 week, you'll leave the hospital with staples or stitches in your incision. They'll be removed during a follow-up appointment after surgery. If you stay in the hospital for longer than 1 week, some or all of your staples or stitches will be removed before you leave.

Leaving the hospital

By the time you're ready to leave the hospital, your incision will have started to heal. Before you leave, look at your incision with one of your healthcare providers. Knowing what it looks like will help you notice any changes later.

On the day of your discharge, plan to leave the hospital around 11:00 AM. Before you leave, your healthcare provider will write your discharge order and prescriptions. You'll also get written discharge instructions. One of your healthcare providers will review them with you before you leave.

If your ride isn't at the hospital when you're ready to be discharged, you may be able to wait in the Patient Transition Lounge. A member of your healthcare team will give you more information.

At home

Read the resource *What You Can Do to Avoid Falling* to learn what you can do to stay safe and keep from falling at home and during your appointments at MSK. You can find it online at www.mskcc.org/pe/avoid_falling or ask your healthcare provider for a copy.

Filling out your Recovery Tracker

We want to know how you're feeling after you leave the hospital. To help us care for you, we'll send questions to your MyMSK account. We'll send them every day for 10 days after you're discharged. These questions are known as your Recovery Tracker.

Fill out your Recovery Tracker every day before midnight (12 a.m.). It only takes 2 to 3 minutes to complete. Your answers to these questions will help us understand how you're feeling and what you need.

Based on your answers, we may reach out to you for more information. Sometimes, we may ask you to call your surgeon's office. You can always contact your surgeon's office if you have any questions.

To learn more, read *Common Questions About MSK's Recovery Tracker*. You can find it at www.msk.org/pe/recovery_tracker or ask for a printed copy.

Managing your pain

People have pain or discomfort for different lengths of time. You may still have some pain when you go home and will probably be taking pain medication. Some people have soreness, tightness, or muscle aches around their incision for 6 months or longer. This doesn't mean something is wrong.

Follow the guidelines below to help manage your pain at home.

- Take your medications as directed and as needed.
- Call your healthcare provider if the medication prescribed for you doesn't ease your pain.
- Don't drive or drink alcohol while you're taking prescription pain medication. Some prescription pain medications can make you drowsy. Alcohol can make the drowsiness worse.
- As your incision heals, you'll have less pain and need less pain medication. An over-the-counter pain reliever such as acetaminophen (Tylenol®) or ibuprofen (Advil®) will ease aches and discomfort.
 - Follow your healthcare provider's instructions for stopping your prescription pain medication.
 - Don't take more of any medication than the amount directed on the label or as instructed by your healthcare provider.
 - Read the labels on all the medications you're taking, especially if you're taking acetaminophen. Acetaminophen is an ingredient in many over-the-counter and prescription medications. Taking too much can harm your liver. Don't take more than 1 medication that contains acetaminophen without talking with a member of your healthcare team.
- Pain medication should help you resume your normal activities. Take enough medication to do your activities and exercises comfortably. It's normal for your pain to increase a little as you start to be more active.
- Keep track of when you take your pain medication. It works best 30 to 45 minutes after you take it. Taking it when you first have pain is better than waiting for the pain to get worse.

Some prescription pain medications (such as opioids) may cause constipation (having fewer bowel movements than usual).

Preventing and managing constipation

Talk with your healthcare provider about how to prevent and manage constipation. You can also follow the guidelines below.

- Go to the bathroom at the same time every day. Your body will get used to going at that time. If you feel like you need to go, though, don't put it off.
- Try to use the bathroom 5 to 15 minutes after meals. After breakfast is a good time to go. That's when the reflexes in your colon are strongest.
- Exercise, if you can. Walking is an excellent form of exercise.
- Drink 8 to 10 (8-ounce) glasses (2 liters) of liquids daily, if you can.
 - Choose liquids such as water, juices (such as prune juice), soups, and ice cream shakes.
 - Avoid liquids with caffeine (such as coffee and soda). Caffeine can pull fluid out of your body.

If these things don't help, talk with your healthcare provider. They may recommend an over-the-counter or prescription medication.

For more information, read the resource *Constipation*. You can find it online at www.mskcc.org/pe/constipation or ask your healthcare provider for a copy.

Caring for your incision

Your healthcare provider will give you written instructions on how to care for your incisions before you leave the hospital.

It's normal for the skin below your incision to feel numb. This happens because some of your nerves were cut during your surgery. The numbness will go away over time.

Call your healthcare provider's office if:

- The skin around your incision is very red.
- The skin around your incision is getting more red.
- You see drainage that looks like pus (thick and milky).
- Your incision smells bad.

If you go home with staples or stitches in your incision, your healthcare provider will take them out during your first appointment after surgery. It's OK to get them wet.

If you had radiation therapy to your neck before your surgery, your healthcare provider will take out your staples or stitches 2 to 3 weeks after your surgery.

Eating and drinking

Your healthcare team will tell you if you need to follow a special diet at home. If you have questions about your diet, ask to see a clinical dietitian nutritionist.

Nasal changes after sinus surgery

If you had sinus surgery, you'll have congestion (stuffiness) and drainage. This can come and go. Your healthcare provider will help you manage these during your appointments after surgery.

You may have less of a sense of smell for some time after your surgery. This can also affect your sense of taste. These things will come back as you heal.

Nasal precautions after sinus surgery

If you had a sinus surgery, follow the precautions below for the first 4 to 6 weeks after your surgery.

- Don't put anything in your nose.
- Don't drink through a straw.
- Don't lower your head below your shoulders.
- Sneeze with your mouth open.
- Cough with your mouth open.

Your healthcare provider will tell you if this applies to you.

Physical activity and exercise

When you leave the hospital, your incision will look like it's healed on the outside, but it won't be healed on the inside. For the first 4 to 6 weeks after your surgery:

- Don't lift anything heavier than 10 pounds (4.5 kilograms).
- Don't do any strenuous activities (such as jogging and tennis).
- Don't play any contact sports (such as football).

Doing aerobic exercise, such as walking and stair climbing, will help you gain strength and feel better. Walk at least 2 to 3 times a day for 20 to 30 minutes. You can walk outside or indoors at your local mall or shopping center.

It's normal to have less energy than usual after your surgery. Recovery time is different for each person. Increase your activities each day as much as you can. Always balance activity periods with rest periods. Rest is an important part of your recovery.

Driving

Ask your healthcare provider when you can drive. Most people can start driving again 1 week after surgery. Don't drive while you're taking pain medication that may make you drowsy.

You can ride in a car as a passenger at any time after you leave the hospital.

Going back to work

Talk with your healthcare provider about your job and when it may be safe for you to start working again. If your job involves lots of movement or heavy lifting, you may need to stay out a little longer than if you sit at a desk.

Traveling

If you had sinus or skull base surgery, don't fly in a plane for 6 weeks after your surgery. Your healthcare team will tell you if this applies to you.

Getting your test results

The tissue that was removed during your surgery will be examined by a pathologist after your surgery. The test results are usually ready in 1 week, but they can take longer depending on the tests that are done. Your healthcare provider will discuss the results with you during your first follow-up appointment after your surgery.

Follow-up appointments

Your healthcare provider will talk with you about your long-term follow-up care. Your first appointment after your surgery will be about 7 to 10 days after you're discharged from the hospital. During this visit, your nurse will teach you how to care for your nose and sinuses at home, if needed.

If you have a sinus surgery, you'll have regular appointments with your doctor during the first month after surgery. They'll help keep your nose and sinuses clear which can help you heal and keep you comfortable.

You'll have regular appointments with your dental team for several months after your surgery. If you have an obturator, they'll adjust it as needed to help you be able to chew, swallow, and speak. If needed, a facial prosthesis will be made to help you look the same as you did before your surgery.

If needed, a speech pathologist from the Speech and Hearing Center will work with you. A speech pathologist treats:

- Voice loss
- Swallowing disorders

- Impaired speech

Your speech pathologist will help you regain as much of your speech and swallowing as possible.

If you have any questions or concerns, you can contact your healthcare provider's office at any time after you've been discharged from the hospital.

Managing your feelings

After surgery for a serious illness, you may have new and upsetting feelings. Many people say they felt weepy, sad, worried, nervous, irritable, and angry at one time or another. You may find that you can't control some of these feelings. If this happens, it's a good idea to seek emotional support. Your healthcare provider can refer you to MSK's Counseling Center. You can also reach them by calling 646-888-0200.

The first step in coping is to talk about how you feel. Family and friends can help. Your healthcare providers can reassure, support, and guide you. It's always a good idea to let us know how you, your family, and your friends are feeling emotionally. Many resources are available to you and your family. Whether you're in the hospital or at home, we're here to help you and your family and friends handle the emotional aspects of your illness.

Your treatment may change your appearance. This can be especially upsetting. There are many resources to help you and your family during your recovery. Some are here at MSK and others are in your community. Ask your doctor, nurse, or social worker about options.

The Resources for Life After Cancer (RLAC) Program provides support and education for people who are finished with treatment. To learn more about the programs they offer, call 646-888-8106 or go to www.mskcc.org/experience/living-beyond-cancer/services-survivors

Depression can occur at any time when you have a cancer diagnosis. It's important to recognize the symptoms. Help is available to treat and manage it. Signs of depression are:

- Feelings of helplessness and sadness lasting longer than usual
- Inability or difficulty to concentrate, carry out normal activities, or both
- Change in mood
- Change in sleep pattern
- Change in appetite

If you have any of these symptoms and they last more than 2 weeks, tell your healthcare provider.

When to call your healthcare provider



Call your healthcare provider if:

- You have a fever of 100.5 °F (38 °C) or higher.
- You have chills.
- You're having trouble breathing.
- The skin around your incision is warmer than usual.
- The skin around your incision is getting redder.
- The area around your incision is starting to swell.
- The area around your incision is getting more swollen.
- You have drainage or fluid coming from your incision site.
- You have any questions or concerns.

Contact information

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call.

If you're not sure how to reach your healthcare provider, call 212-639-2000.

Notes _____

MSK support services

Admitting Office

212-639-7606

Call if you have questions about your hospital admission, including requesting a private room.

Anesthesia

212-639-6840

Call if you have questions about anesthesia.

Blood Donor Room

212-639-7643

Call for more information if you're interested in donating blood or platelets.

Bobst International Center

332-699-7968

MSK welcomes patients from around the world. If you're an international patient, call for help arranging your care.

Chaplaincy Service

212-639-5982

At MSK, our chaplains are available to listen, help support family members, pray, contact community clergy or faith groups, or simply be a comforting companion and a spiritual presence. Anyone can request spiritual support, regardless of formal religious affiliation. The interfaith chapel is located near the main lobby of Memorial Hospital and is open 24 hours a day. If you have an emergency, please call the hospital operator and ask for the chaplain on call.

Counseling Center

646-888-0200

Many people find that counseling helps them. We provide counseling for individuals, couples, families, and groups, as well as medications to help if you feel anxious or depressed. To make an appointment, ask your healthcare provider for a referral or call the number above.

Food Pantry Program

646-888-8055

The food pantry program provides food to people in need during their cancer treatment. For more information, talk with your healthcare provider or call the number above.

Integrative Medicine Service

646-888-0800

Integrative Medicine Service offers many services to complement (go along with) traditional medical care, including music therapy, mind/body therapies, dance and movement therapy, yoga, and touch therapy.

MSK Library

library.mskcc.org

212-639-7439

You can visit our library website or speak with the library reference staff to find more information about your specific cancer type. You can also visit LibGuides on MSK's library website at libguides.mskcc.org

Patient and Caregiver Education

www.mskcc.org/pe

Visit the Patient and Caregiver Education website to search our virtual library. There you can find written educational resources, videos, and online programs.

Patient Billing

646-227-3378

Call if you have questions about preauthorization with your insurance company. This is also called preapproval.

Patient Representative Office

212-639-7202

Call if you have questions about the Health Care Proxy form or if you have concerns about your care.

Perioperative Nurse Liaison

212-639-5935

Call if you have questions about MSK releasing any information while you're having surgery.

Private Duty Nursing Office

212-639-6892

You may request private nurses or companions. Call for more information.

Resources for Life After Cancer (RLAC) Program

646-888-8106

At MSK, care doesn't end after active treatment. The RLAC Program is for patients and their families who have finished treatment. This program has many services, including seminars, workshops, support groups, counseling on life after treatment, and help with insurance and employment issues.

Sexual Health Programs

Cancer and cancer treatments can have an impact on your sexual health. MSK's Sexual Health Programs can help you take action and address sexual health issues before, during, or after your treatment.

- Our **Female Sexual Medicine and Women's Health Program** helps women who are dealing with cancer-related sexual health challenges, including premature menopause and fertility issues. For more information, or to make an appointment, call 646-888-5076.
- Our **Male Sexual and Reproductive Medicine Program** helps men who are dealing with cancer-related sexual health challenges, including erectile dysfunction. For more information, or to make an appointment, call 646-888-6024.

Social Work

212-639-7020

Social workers help patients, family, and friends deal with issues that are common for cancer patients. They provide individual counseling and support groups throughout the course of treatment and can help you communicate with children and other family members. Our social workers can also help refer you to community agencies and programs, as well as financial resources if you're eligible.

Tobacco Treatment Program

212-610-0507

If you want to quit smoking, MSK has specialists who can help. Call for more information.

Virtual Programs

www.mskcc.org/vp

MSK's Virtual Programs offer online education and support for patients and caregivers, even when you can't come to MSK in person. Through live, interactive sessions, you can learn about your diagnosis, what to expect during treatment, and how to prepare for the various stages of your cancer care. Sessions are confidential, free, and led by expert clinical staff. If you're interested in joining a Virtual Program, visit our website at www.mskcc.org/vp for more information.

For more online information, visit the Cancer Types section of www.mskcc.org

External support services

There are many other support services available to help you before, during, and after your cancer treatment. Some offer support groups and information, while others can help with transportation, lodging, and treatment costs.

Visit www.mskcc.org/pe/external_support_services for a list of these support services. You can also talk with an MSK social worker by calling 212-639-7020.



PATIENT & CAREGIVER EDUCATION

How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil

This information will help you check if your medicines or dietary supplements have aspirin, other NSAIDs, vitamin E, or fish oil as an active ingredient. NSAID stands for nonsteroidal anti-inflammatory drug.

It's important to stop taking these medicines and supplements before many cancer treatments. They affect your platelets (blood cells that clot to prevent bleeding) and can raise your risk of bleeding.

Other dietary supplements, such as vitamins and herbal remedies, can also affect your cancer treatment. Read *Herbal Remedies and Cancer Treatment* (www.mskcc.org/pe/herbal_remedies) to learn more.

Make sure your healthcare provider always knows all the prescription and over-the-counter medicines and supplements you're taking. This includes patches and creams.

A prescription medicine is one you can only get with a prescription from your healthcare provider. An over-the-counter medicine is one you can buy without a prescription.

What is an active ingredient?

An active ingredient is the part of a medicine or supplement that makes it work. Some medicines and supplements have just one active ingredient. Others have more. For example:

- Ibuprofen is the active ingredient in Advil® and Motrin®. Ibuprofen is an NSAID.
- Naproxen is the active ingredient in Aleve®. Naproxen is an NSAID.
- Acetaminophen is the active ingredient in Tylenol®.
- Aspirin, acetaminophen, and caffeine are the active ingredients in Excedrin®.

Generic medicines sometimes use their active ingredient as their name. But people often call medicines and supplements by a brand name, even if they're generic. This can make it hard to know their active ingredients.

How to find a medicine or supplement's active ingredients

You can always find the active ingredients by reading the label.

Over-the-counter medicines

Over-the-counter medicines list their active ingredients in the "Drug Facts" label (see Figure 1). Active ingredients are always the first thing on the Drug Facts label.

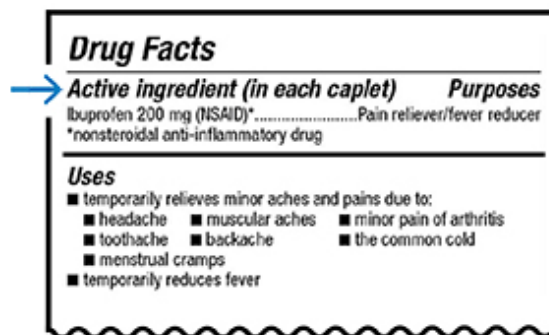


Figure 1. Active ingredients on an over-the-counter medicine label

Prescription medicines

Prescription medicines list their active ingredients on the label. Their active ingredients and their generic name are the same thing.

Labels often look different depending on which pharmacy you use. Here’s an example of where to find a medicine’s active ingredients (generic name) on a label from MSK’s pharmacy (see Figure 2).

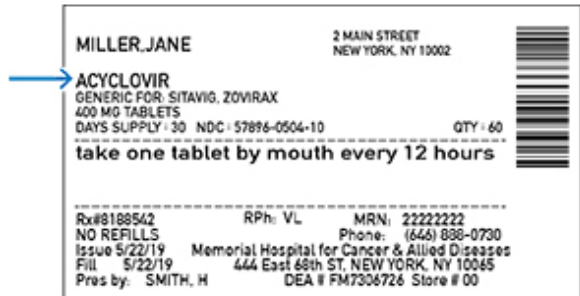


Figure 2. Active ingredients on a prescription medicine label

Dietary supplements

Dietary supplements list their active ingredients in the “Supplement Facts” label (see Figure 3). The active ingredients always have an amount per serving and % daily value included.

	Amount Per Serving	% Daily Value
Vitamin A (as retinyl acetate and 50% as beta-carotene)	5000 IU	100%
Vitamin C (as ascorbic acid)	60 mg	100%
Vitamin D (as cholecalciferol)	400 IU	100%
Vitamin E (as di-alpha tocopheryl acetate)	90 IU	100%
Thiamin (as thiamin mononitrate)	1.5 mg	100%
Riboflavin	1.7 mg	100%
Niacin (as niacinamide)	20 mg	100%
Vitamin B ₆ (as pyridoxine hydrochloride)	2.0 mg	100%
Folate (as folic acid)	400 mcg	100%
Vitamin B ₁₂ (as cyanocobalamin)	6 mcg	100%
Biotin	30 mcg	10%
Pantothenic Acid (as calcium pantothenate)	10 mg	100%

Other ingredients: Gelatin, lactose, magnesium stearate, microcrystalline cellulose, FD&C Yellow No. 6, propylene glycol, propylparaben, and sodium benzoate.

Figure 3. Active ingredients on a supplement label

Active ingredients to look for

If your medicine or supplement has any of these active ingredients, you may need to stop taking it before, during, or after your cancer treatment or surgery. Follow your care team's instructions.

Active ingredients to look for		
<ul style="list-style-type: none">• Acetylsalicylic acid• Alpha-linolenic acid (ALA)• Aspirin• Acetaminophen*• Celecoxib• Diclofenac• Diflunisal• Docosahexaenoic acid (DHA)• Eicosapentaenoic acid (EPA)	<ul style="list-style-type: none">• Etodolac• Fish oil• Fenoprofen Flurbiprofen• Ibuprofen• Indomethacin• Ketoprofen• Ketorolac• Meclofenamate• Mefenamic acid• Meloxicam	<ul style="list-style-type: none">• Nabumetone• Naproxen• Omega-3 fatty acids• Omega-6 fatty acids• Oxaprozin• Piroxicam• Sulindac• Tolmetin• Vitamin E

* The full name acetaminophen isn't always written out. Look for the common abbreviations listed below, especially on prescription pain relievers.

Common abbreviations for acetaminophen		
<ul style="list-style-type: none">• APAP• Acetamin	<ul style="list-style-type: none">• AC• Acetam	<ul style="list-style-type: none">• Acetaminop• Acetaminoph

About acetaminophen (Tylenol)

In general, acetaminophen is safe to take during cancer treatment. It doesn't affect platelets. That means it will not raise your chance of bleeding. If you're getting chemotherapy, talk with your healthcare provider before taking acetaminophen.

There is a limit to how much acetaminophen you can take in a day. Always follow the instructions from your care team or on the medicine's label.

Acetaminophen is in many different prescription and over-the-counter medicines. It's possible to take too much without knowing. **Always read the label on the medicines you take.** Do not take more than 1 medicine that has acetaminophen at a time without talking with a member of your care team.

Instructions before your cancer treatment

Tell your healthcare provider if you take aspirin, other NSAIDs, vitamin E, or fish oil. They'll tell you if you need to stop taking it. You'll also find instructions in the information about your treatment.

Before your surgery

Follow these instructions if you're having surgery or a surgical procedure. **If your healthcare provider gives you other instructions, follow those instead.**

- If you take aspirin or a medicine that has aspirin, you may need to change your dose or stop taking it 7 days before your surgery. Follow your healthcare provider's instructions. **Do not stop taking aspirin unless your healthcare provider tells you to.**
- If you take vitamin E, fish oil, or a supplement that has vitamin E or fish oil, stop taking it 7 days before your surgery or as directed by your healthcare provider.
- If you take an NSAID or a medicine that has an NSAID, stop taking it 48 hours (2 days) before your surgery or as directed by your healthcare provider.

Before your radiology procedure

Follow these instructions if you're having a radiology procedure (including Interventional Radiology, Interventional Mammography, Breast Imaging, and General Radiology). **If your healthcare provider gives you other instructions, follow those instead.**

- If you take aspirin or a medicine that has aspirin, you may need to stop taking it 5 days before your procedure. Follow your healthcare provider's instructions. **Do not stop taking aspirin unless your healthcare provider tells you to.**
- If you take an NSAID or a medicine that has an NSAID, you may need to stop taking it 24 hours (1 day) before your procedure. Follow your healthcare provider's instructions.

Before and during your chemotherapy

Chemotherapy can lower your platelet count, which can increase your risk of bleeding. No matter if you're just starting chemotherapy or have been getting it, talk with your healthcare provider before taking aspirin, other NSAIDs, vitamin E, or fish oil.

If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil - Last updated on November 29, 2023

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PATIENT & CAREGIVER EDUCATION

Herbal Remedies and Cancer Treatment

This information explains herbal remedies and how they can affect your treatment.

About Herbal Remedies

Herbal remedies are any herbs, botanical (plant-based) supplements, or dietary supplements you take for their health benefits. These may come as tablets, capsules, powders, teas, liquid extracts, and fresh or dried plants.

Some herbal remedies can help prevent or manage side effects of cancer or your treatment. The herbal remedies that can help you depend on what symptoms you have and what treatment you're getting.

Even though herbal remedies can feel safe, they may not all be safe. Herbal remedies do not go through the same testing as prescription medications to make sure they work and are safe.

Some herbal remedies may be harmful. This is because they can:

- Affect how your other medications work.
- Raise or lower your blood pressure.
- Thin your blood and increase your risk of bleeding.
- Keep radiation therapy from working as well as it should.
- Change how your body reacts to sedation (medication to make you calmer) or general anesthesia (medication to make you sleepy).

Talk with your healthcare provider about any herbal remedies or other

supplements you are taking. They can provide an open and safe space to talk about these products.

For more information about herbs and supplements, visit www.aboutherbs.com or call MSK's Integrative Medicine Service at 646-608-8550.

Stop taking herbal remedies before your treatment

Stop taking herbal remedies and other dietary supplements 7 days (1 week) before you:

- Have surgery.
- Start chemotherapy.
- Start radiation therapy.
- Have certain procedures. Your healthcare provider will let you know if you need to stop taking herbal remedies before your procedure.

Herbal remedies and other dietary supplements can cause bleeding and affect your treatment. Follow your healthcare provider's instructions for when to restart taking herbal remedies.

You can still use some herbs in your food and drinks, such as using spices in cooking and drinking tea. Herbal remedies are stronger than the herbs you cook with.

Common Herbal Remedies and Their Effects

These are some commonly used herbs and their side effects on cancer treatments.

Echinacea (EH-kih-NAY-shuh)

- Can cause rare but serious allergic reactions, such as a rash or trouble breathing.
- Can keep medications that weaken your immune system from working as well as they should.

Garlic

- Can lower your blood pressure and cholesterol levels.
- Can increase your risk of bleeding.

Gingko (also known as Gingko biloba)

- Can increase your risk of bleeding.

Ginseng (JIN-seng)

- Can keep sedation or general anesthesia from working as well as they should.
- Can increase your blood pressure.
- Can increase your risk of bleeding.
- Can lower your blood glucose (sugar) level.

Turmeric (TER-mayr-ik)

- Can keep chemotherapy from working as well as it should.

St. John's Wort

- Can keep some medications from working as well as they should.
- Can make your skin more sensitive to radiation or laser treatment.

Valerian (vuh-LEER-ee-un)

- Can make sedation or general anesthesia affect you more than they should.

Herbal formulas

- Herbal formulas contain many different herbs and dosages.
- Stop taking these products 7 days (1 week) before treatment. Do not start taking herbal formulas again until your healthcare provider tells you it is safe.

This information does not cover all herbal remedies or possible side effects. Talk with your healthcare provider if you have any questions or concerns.

Contact Information

- To schedule a consultation with a healthcare provider in Integrative Medicine, call 646-608-8550.
- To make an appointment for Integrative Medicine Service's therapies, classes, and workshops, call 646-449-1010.

For more information, visit www.mskcc.org/IntegrativeMedicine or read *Integrative Medicine Therapies and Your Cancer Treatment* (www.mskcc.org/pe/integrative_therapies).

For more resources, visit www.mskcc.org/pe to search our virtual library.

Herbal Remedies and Cancer Treatment - Last updated on May 5, 2022

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PATIENT & CAREGIVER EDUCATION

How To Use Your Incentive Spirometer

This information will help you learn how to use your incentive spirometer (in-SEN-tiv spy-rah-MEE-ter). It also answers some common questions about it.

About your incentive spirometer

After your surgery you may feel weak and sore, and it may be uncomfortable to take deep breaths. Your healthcare provider may recommend using a device called an incentive spirometer (see Figure 1). It helps you practice taking deep breaths.

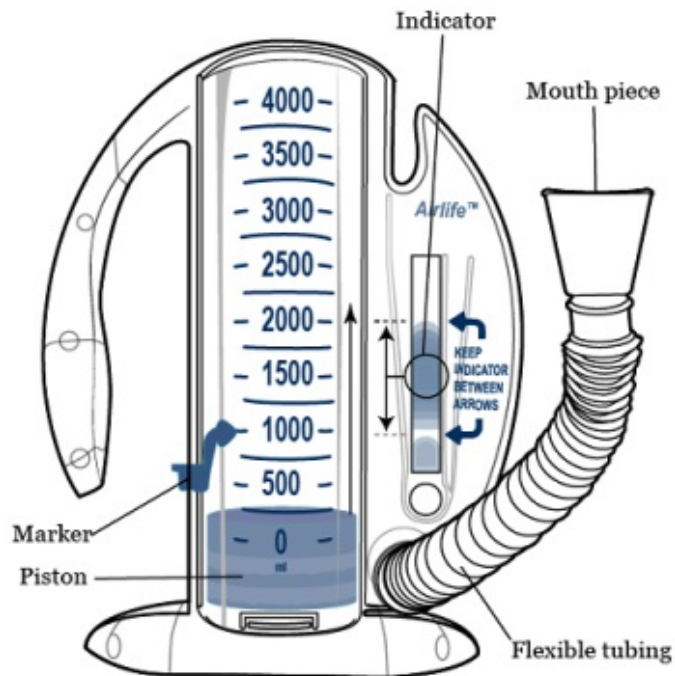


Figure 1. Parts of an incentive spirometer

It's important to use your incentive spirometer after your surgery. Using an incentive spirometer:

- Helps your lungs expand so you can take deep, full breaths.
- Exercises your lungs and makes them stronger as you heal from surgery.

If you have a respiratory infection, do not use your incentive spirometer around other people. A respiratory infection is an infection in your nose, throat, or lungs, such as pneumonia (noo-MOH-nyuh) or COVID-19. This kind of infection can spread from person to person through the air.

How to use your incentive spirometer

Here is a video that shows how to use your incentive spirometer:



Please visit www.mskcc.org/pe/incentive_spirometer_video to watch this video.

Setting up your incentive spirometer

Before you use your incentive spirometer for the first time, you will need to set it up. First, take the flexible (bendable) tubing out of the bag and stretch it out. Then, connect the tubing to the outlet on the right side of the base (see Figure 1). The mouthpiece is attached to the other end of the tubing.

Knowing what number to aim for on your incentive spirometer

Your healthcare provider will teach you how to use your incentive spirometer before you leave the hospital. They will help you set a goal and tell you what number to aim for when using your spirometer. If a goal was not set for you, talk with your healthcare provider. Ask them what number you should aim for.

You can also check the package your incentive spirometer came in. It may have a chart to help you figure out what number to aim for. To learn more, read "What number I should aim for?" in the "Common questions about your

incentive spirometer” section.

Using your incentive spirometer

When using your incentive spirometer, make sure to breathe through your mouth. If you breathe through your nose, your spirometer will not work right.

Follow these steps to use your incentive spirometer. Repeat these steps every hour you’re awake. Follow the instructions from your healthcare provider if they’re different from the ones here.

1. Sit upright in a chair or in bed. Hold your incentive spirometer at eye level.
2. Put the mouthpiece in your mouth and close your lips tightly around it. Make sure you do not block the mouthpiece with your tongue.
3. With the mouthpiece in your mouth, breathe out (exhale) slowly and fully.
 - Some people may have trouble exhaling with the mouthpiece in their mouth. If you do, take the mouthpiece out of your mouth, and then exhale slowly and fully. After you exhale, put the mouthpiece back in your mouth and go on to step 4.
4. Breathe in (inhale) slowly through your mouth, as deeply as you can. You will see the piston slowly rise inside the spirometer. The deeper you breathe in, the higher the piston will rise.
5. As the piston rises, the coaching indicator on the right side of the spirometer should also rise. It should float between the 2 arrows (see Figure 1).
 - The coaching indicator measures the speed of your breath. If it does not stay between the 2 arrows, you’re breathing in either too fast or too slow.
 - If the indicator rises above the higher arrow, you’re breathing in too fast. Try to breathe in slower.
 - If the indicator stays below the lower arrow, you’re breathing in too slow. Try to breathe in faster.

6. When you cannot breathe in any further, hold your breath for at least 3 to 5 seconds. Hold it for longer if you can. You will see the piston slowly fall to the bottom of the spirometer.
7. Once the piston reaches the bottom of the spirometer, breathe out slowly and fully through your mouth. If you want, you can take the mouthpiece out of your mouth first and then breathe out.
8. Rest for a few seconds. If you took the mouthpiece out of your mouth, put it back in when you're ready to start again.
9. Repeat steps 1 to 8 at least 10 times. Try to get the piston to the same level with each breath. After you have done the exercise 10 times, go on to step 10.
10. Use the marker on the left side of the spirometer to mark how high the piston rises (see Figure 1). **Look at the very top of the piston, not the bottom. The number you see at the top is the highest number the piston reached. Put the marker there.** This is how high you should try to get the piston the next time you use your spirometer.
 - Write down the highest number the piston reached. This can help you change your goals and track your progress over time.

Take 10 breaths with your incentive spirometer every hour you're awake.

Cover the mouthpiece of your incentive spirometer when you're not using it.

Tips for using your incentive spirometer

Follow these tips when using your incentive spirometer:

- If you had surgery on your chest or abdomen (belly), it may help to splint your incision (surgical cut). To do this, hold a pillow firmly against your incision. This will keep your muscles from moving as much while you're using your incentive spirometer. It will also help ease pain at your incision.
- If you need to clear your lungs, you can try to cough a few times. As

you're coughing, hold a pillow against your incision, as needed.

- If you feel dizzy or lightheaded, take the mouthpiece out of your mouth. Then, take a few normal breaths. Stop and rest for a while, if needed. When you feel better, you can go back to using your incentive spirometer.
- You may find it hard to use your incentive spirometer at first. If you cannot make the piston rise to the number your healthcare provider set for you, it's OK. Reaching your goal takes time and practice. It's important to keep using your spirometer as you heal from surgery. The more you practice, the stronger your lungs will get.

Common questions about your incentive spirometer

How often should I use my incentive spirometer?

How often you will need to use your incentive spirometer is not the same for everyone. It depends on the type of surgery you had and your recovery process.

Most people can take 10 breaths with their spirometer every hour they're awake.

Your healthcare provider will tell you how often to use your spirometer. Follow their instructions.

How long after my surgery will I need to use my incentive spirometer?

The length of time you will need to use your incentive spirometer is not the same for everyone. It depends on the type of surgery you had and your recovery process.

Your healthcare provider will tell you how long you need to use your spirometer. Follow their instructions.

How do I clean my incentive spirometer?

An incentive spirometer is a disposable device and only meant to be used for a short time. Because of this, you may not find cleaning instructions in the package your spirometer came in. If you have questions about cleaning your spirometer, talk with your healthcare provider.

What do the numbers on my incentive spirometer measure?

The large column of your incentive spirometer has numbers on it (see Figure 1). These numbers measure the volume of your breath in milliliters (mL) or cubic centimeters (cc). The volume of your breath is how much air you can breathe into your lungs (inhale).

For example, if the piston rises to 1500, it means you can inhale 1500 mL or cc of air. The higher the number, the more air you're able to inhale, and the better your lungs are working.

What number I should aim for?

The number you should aim for depends on your age, height, and sex. It also depends on the type of surgery you had and your recovery process. Your healthcare provider will look at these things when setting a goal for you. They will tell you what number to aim for.

Most people start with a goal of 500 mL or cc. Your healthcare provider may change your goal and have you aim for higher numbers as you heal from surgery.

The package your incentive spirometer came in may have a chart. You can use the chart to set your goal based on your age, height, and sex. If you cannot find this information, ask your healthcare provider what your goal should be.

What does the coaching indicator on my incentive spirometer measure?

The coaching indicator on your incentive spirometer measures the speed of your breath. As the speed of your breath changes, the indicator moves up and down.

Use the indicator to guide your breathing. If the indicator rises above the higher arrow, it means you're breathing in too fast. If the indicator stays below the lower arrow, it means you're breathing in too slow.

Aim to keep the indicator between the 2 arrows (see Figure 1). This means your breath is steady and controlled.

When to call your healthcare provider

Call your healthcare provider if you have any of these when using your incentive spirometer:

- Feel dizzy or lightheaded.
- Pain in your lungs or chest.
- Severe (very bad) pain when you take deep breaths.
- Trouble breathing.
- Coughing up blood.
- Fluid or blood coming from your incision site when you cough.
- Trouble using your spirometer for any reason.

If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

How To Use Your Incentive Spirometer - Last updated on November 24, 2023

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PATIENT & CAREGIVER EDUCATION

Managing Trismus After Treatment for Head and Neck Cancer

This information will help you manage trismus after treatment for head and neck cancer. Trismus, also known as lockjaw, is when you have trouble opening your mouth fully.

After surgery or radiation therapy to your head and neck, your jaw may feel tight. Your mouth may be hard to open. Following the instructions in this resource will help relax your jaw muscles. This will help your mouth and jaw move and work like they did before your treatment.

About Your Jaw

Your jaw is made up of a pair of bones. These bones form the framework of your mouth and teeth (see Figure 1).

- Your **maxilla** is your upper jawbone.
- Your **mandible** is your lower jawbone.
- Your **temporomandibular joint (TMJ)** is where your mandible connects to your skull.
- Your **masseter muscle** is the muscle that connects your mandible to your skull.

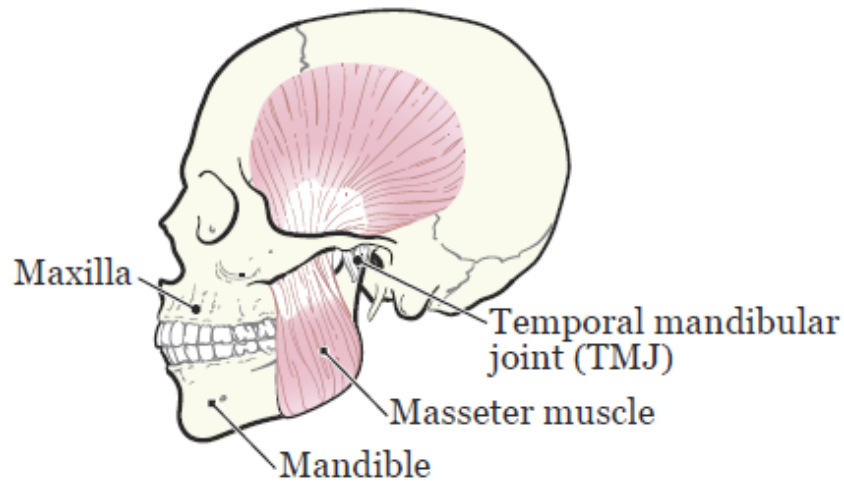


Figure 1. The bones and muscles of your jaw

Many muscles and nerves around your jaw work together to open and close your mouth. Most people can open their mouth 35 to 55 millimeters (1.4 to 2.2 inches). This is about the width of 3 fingers (see Figure 2).



Figure 2. Normal width of an open mouth

About Trismus

Trismus can happen anytime during, right after, or even years after your treatment. It can happen:

- If you have a tumor in the bones, muscles, or nerves that open your mouth.
- After surgery to your head and neck.
- After radiation therapy to your head and neck.

- After chemoradiation (KEE-moh-RAY-dee-AY-shun) therapy to your head and neck. Chemoradiation is when you receive chemotherapy along with radiation therapy.

These cancer treatments can cause fibrosis (fy-BROH-sis), which is an abnormal thickening or scarring of tissue. Fibrosis can develop as your tissues start to heal after surgery. It can also build up years after radiation therapy or chemoradiation therapy.

Trismus can get in the way of your daily activities and affect your quality of life. You may have problems with:

- Oral hygiene (cleaning your mouth and teeth). This can lead to bad breath, cavities, and infections.
- Chewing and swallowing. This can make it hard to eat and drink.
- Talking.
- Kissing.
- Having a breathing tube placed (for example, if you ever need general anesthesia).
- Having routine dental treatment.
- Feeling anxious (nervous or worried) or depressed (unhappy).

Once trismus develops, depending on how bad it is, it can be very hard to treat and manage. It's important to identify trismus as soon as it develops, so you can get the right treatment for it.

How to Manage Trismus

There are 5 main ways to help manage trismus:

- Massage (gently rub) your jaw muscles.
- Exercise your jaw muscles.
- Keep good posture.

- Keep good oral hygiene.
- Use jaw mobilizing devices, if needed.

Even if you do not have any symptoms of trismus, you should do these things. They are important in helping your mouth move and work like it did before your treatment. If you do develop trismus, doing these things will help manage your symptoms.

Follow the instructions in the sections below. **If you had surgery, ask your healthcare provider if it's safe before you start.**

Massage your jaw muscles

Place your index (pointer) and middle finger on your cheekbone. Keeping your lips together, relax your jaw (don't clench your teeth).

Run your fingers down over your masseter muscle, which ends at your bottom jaw (see Figure 3). As you move your fingers, find areas that feel tender or tight. **Massage these areas with your fingers in a circular motion for 30 seconds. Do this 2 to 3 times every day.**

Try not to clench your jaw when you're stressed or out of habit. This will help keep your jaw muscles relaxed.



Figure 3. Massage your jaw muscles

Exercise your jaw muscles

Your healthcare provider will tell you when to start doing these exercises. Follow their instructions. Starting too soon or too late can affect how well your mouth and jaw will work in the future.

Follow these tips when doing your exercises.

- It may be helpful to use a timer or clock to make sure you hold the stretches long enough.
- Breathe normally. Do not hold your breath during the exercises.
- Do the exercises slowly and smoothly. Do not make any fast or jerky movements.
- Watch your movements in a mirror to make sure you're doing them correctly.

You can do these exercises while sitting or standing. When doing these exercises, you should feel a gentle stretch. They should not cause pain. If an exercise is causing pain or discomfort, try doing it more gently. If you still have pain or discomfort, stop right away and call your healthcare provider.

Active range of motion and stretching exercises

Do these exercises 3 times every day. Hold your head still while doing them.

1. Open your mouth as wide as you can, until you feel a gentle stretch but no pain (see Figure 4). **Hold this stretch for 10 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**

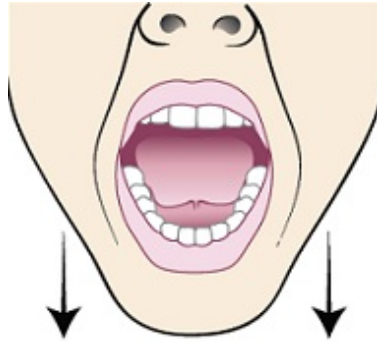


Figure 4. Mouth open wide

2. Move your lower jaw to the left (see Figure 5). **Hold this stretch for 3 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**
3. Move your lower jaw to the right (see Figure 6). **Hold this stretch for 3 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**



Figure 5. Move your jaw to the left



Figure 6. Move your jaw to the right

Passive stretching exercise

Do this exercise 3 times every day.

1. Put on a pair of disposable medical gloves. If you do not have gloves, wash your hands well with soap and water. Wet your hands and apply soap. Rub your hands together well for at least 20 seconds, then rinse. Dry your hands with a paper towel and use that same towel to turn off the faucet. If you don't have paper towels, it's OK to use clean cloth towels. Replace them when they are wet.
2. Place your thumb under your top front teeth.

3. Place the index (pointer) finger of your other hand on your bottom front teeth (see Figure 7).
4. Open your mouth as wide as you can. Push your fingers gently against your teeth to give extra resistance. This will help to keep your mouth from closing. You should feel a gentle stretch, but no pain. **Hold this stretch for 5 to 10 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**



Figure 7. Place your thumb and index finger on your teeth

Keep good posture

Good posture means sitting and standing with your ears, shoulders, hips, knees, and ankles aligned (see Figure 8). You need to keep your neck and shoulders strong and flexible to have good posture. The following exercises will help you do this.



Figure 8. Good posture

You can do them while sitting or standing with your arms at your sides. Try to check your posture at least once an hour while you're awake. It's very important to do this when you're sitting for a long time, such as working in front of a computer.

Neck stretches

Do these exercises once a day.

Do these exercises until you feel a gentle stretch or pull. You should not feel pain when doing them.

1. Bend your head forward (see Figure 9). **Hold this position for 30 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**

2. Bend your head backward (see Figure 10). **Hold this position for 30 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**



Figure 9. Bend your head forward



Figure 10. Bend your head back

3. Turn your head to the right (see Figure 11). **Hold this position for 30 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**
4. Turn your head to the left (see Figure 12). **Hold this position for 30 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**



Figure 11. Turn your head to the right



Figure 12. Turn your head to the left

5. Bring your left ear to your left shoulder (see Figure 13). **Hold this position for 30 seconds, then relax. Take 1 full breath between each repetition. Repeat this 5 times.**
6. Bring your right ear to your right shoulder (see Figure 14). **Hold this position for 30 seconds, then relax. Take 1 full breath between**

each repetition. Repeat this 5 times.



Figure 13. Bend your head to the left



Figure 14. Bend your head to the right

Chin tuck

Do this exercise 3 times every day.

1. Sit or stand with your back and head leaning against the wall.
2. Tuck your chin in and try to flatten the back of your neck against the wall (see Figure 15). **Hold this position for 5 seconds, then relax.**
3. Return to the starting position.
4. **Take 1 full breath between each repetition. Repeat this 10 times.**

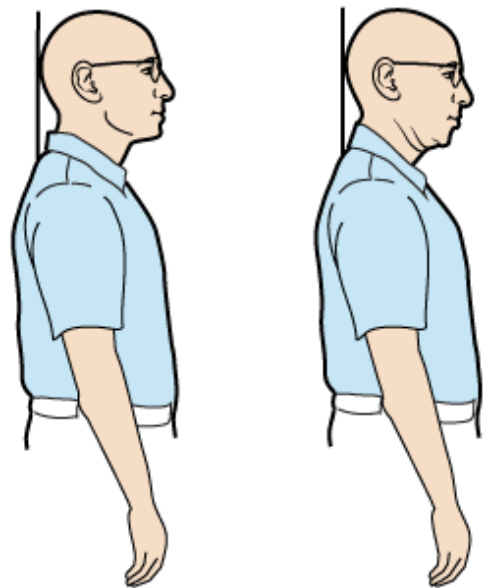


Figure 15. Chin tuck

Shoulder blade squeeze

Do this exercise 3 times every day.

1. Tuck your chin in (just like in the chin tuck exercise above).
2. Push your shoulders down and away from your ears. This stops you from shrugging.
3. Squeeze your shoulder blades together as tightly as possible (see Figure 16). **Hold this position for 5 seconds, then relax.**
4. Return to the starting position.

5. **Take 1 full breath between each repetition. Repeat this 10 times.**

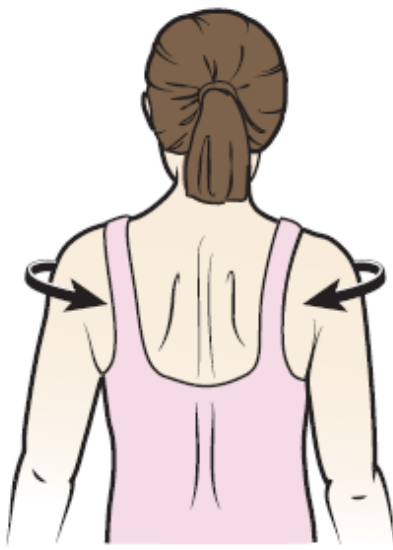


Figure 16. Squeeze your shoulder blades together

Keep good oral hygiene

- Brush your teeth and tongue when you wake up, after each meal, and before you go to bed.
- If you have removable dentures or a dental prosthesis, take it out and clean it each time you clean your mouth. Do not sleep with it in your mouth.
- Floss your teeth once a day before you go to bed.

Use jaw mobilizing devices

A jaw mobilizing device is a handheld device that helps to stretch your jaw. Some examples of jaw mobilizing devices are:

- The TheraBite® Jaw Motion Rehabilitation System™.
- The OraStretch® Press System.
- The Jaw Dynasplint® System.

Using a jaw mobilizing device, along with exercising your jaw muscles, can help:

- Improve your jaw's range of motion.
- Strengthen your jaw muscles.
- Reduce pain and swelling.

Your healthcare provider will tell you if you need to use a jaw mobilizing device. They will recommend one that is right for you and give you instructions on how to use it.

If You Develop Tightness When Opening Your Mouth

The earlier you start treatment for trismus, the easier it will be to help your jaw work better. If you notice any tightening in your jaw, call your healthcare provider right away. They can refer you to a specialist, such as:

- **Physical therapists, speech and swallowing specialists, or both.** They can help you keep your ability to open your mouth. They can also help you get back any ability you may have lost. They use many techniques, such as exercise, stretching, and massage. They may also recommend special jaw mobilizing devices to help you open your mouth.
- **Rehabilitation medicine doctors.** They check to see how well you can open your mouth. They may give you medication for pain or spasms (sudden intense cramping in your muscle), suggest other treatments, or recommend medical devices to help you.

Your healthcare provider will talk with you about which referral(s) may be most helpful for you.

If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., during the weekend, or on a holiday, call 212-639-2000.

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