NCCN GUIDELINES FOR PATIENTS®

2025

Nausea and Vomiting

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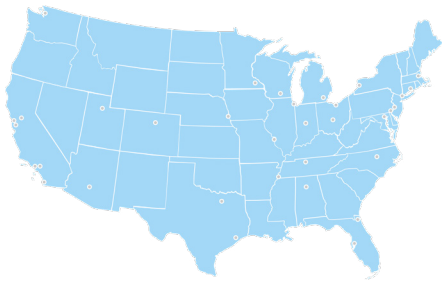
National Comprehensive Cancer Network®



Did you know that top cancer centers across the United States work together to improve cancer care? This alliance of leading cancer centers is called the National Comprehensive Cancer Network® (NCCN®).

Cancer care is always changing. NCCN develops evidence-based cancer care recommendations used by health care providers worldwide. These frequently updated recommendations are the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®). The NCCN Guidelines for Patients plainly explain these expert recommendations for people with cancer and caregivers.

These NCCN Guidelines for Patients are based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Antiemesis, Version 2.2025 — May 12, 2025.

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About nausea and vomiting

Nausea and vomiting are common side effects of cancer treatment that can often be prevented. In other words, your life doesn't have to come to a complete stop because you're receiving cancer medicines. This chapter explains the basics of nausea and vomiting. The rest of this book details what you can do about these side effects.

Why you should read this book

Making decisions about cancer care can be stressful. You may need to make tough decisions under pressure about complex choices.

The NCCN Guidelines for Patients are trusted by patients and providers. They clearly explain current care recommendations made by respected experts in the field. Recommendations are based on the latest research and practices at leading cancer centers.

Cancer care is not the same for everyone. By following expert recommendations for your situation, you are more likely to improve your care and have better outcomes as a result. Use this book as your guide to find the information you need to make important decisions.

Common concerns

Having cancer and undergoing cancer treatment can be very stressful. You may feel a wide range of emotions and discomforts. Your care team wants to help you focus on your treatment. But sometimes the side effects caused by cancer treatment can overshadow the treatment itself.

Nausea and vomiting are two side effects of cancer treatment that people tend to worry about.

- Nausea is that sensation that makes you feel like you're going to throw up. You feel woozy, queasy, or sick to your stomach. Nausea often comes before vomiting but it can also occur without vomiting.
- Vomiting is forcefully throwing up what's in your stomach. It usually comes out of your mouth but can also come out through your nose. Frequent vomiting can affect your quality of life, your overall well-being, and may lead to dehydration (your body losing too much water to function normally).

Not every person gets sick from cancer therapy. But if you have these side effects, it's important to reduce them as much as possible to keep them from interfering with your treatment and quality of life.

What causes nausea and vomiting?

Nausea and vomiting are reflexes that happen when your body wants to get rid of substances in the intestine and stomach that it doesn't like. Nausea and vomiting can occur together or separately.

This book is about nausea and vomiting that comes from cancer treatments like chemotherapy and radiation therapy.

Nausea can happen during or within hours after a cancer treatment (acute) or it can take a day or more (delayed). When nausea is delayed, it can be more intense and harder to treat. You can become dehydrated and need fluids, which are given through an IV (intravenous) tube inserted into your body.

This book also explains what you need to know about preventing nausea and vomiting.

Medicines used to prevent and treat nausea and vomiting have come a long way over the years. When nausea and vomiting can't be prevented, there are other ways to help you cope. But prevention is key. See *Chapter 3: Preventing nausea and vomiting.*

How are they prevented?

It's important to try to prevent these side effects before they develop because after they start they can be much harder to stop. Your health care provider will develop a treatment plan for you that will help reduce or prevent these side effects.

The goal is to prevent you from feeling sick in the first place. You want to stay ahead of the symptoms as best you can.

This plan will also help you cope if prevention doesn't work or comes too late.

Nausea can develop during or within hours after cancer treatment (acute) or it can take one or more days to develop (delayed). Delayed nausea is a common result of cancer treatment.

The first step is for your care team to learn all they can about you. This includes specifics about you as well as your medical history of nausea and vomiting.

Below are a few useful terms to help you in talking with your care team:

- **Emesis** is the medical term for vomiting.
- **Antiemesis** means preventing nausea and vomiting.
- **Antiemetics** are medicines for preventing or relieving nausea and vomiting.

Other factors your care team will consider when planning how to prevent nausea and vomiting are listed in *Chapter 3, Preventing nausea and vomiting,* **Guide 5**.

Stick to the schedule and the instructions you received with your antiemetic (anti-nausea/ anti-vomiting) drugs. Make sure you use these medicines at the right times and at the correct dosages. Don’t skip a scheduled dose even if you feel fine. If you wait until you start feeling sick, it may be too late for the medicine to work.

Preventing nausea and vomiting is the goal. Once these side effects start, they can be hard to stop.

How are nausea and vomiting treated?

If you're not getting any relief with prevention efforts and you experience breakthrough nausea and vomiting (emesis), your provider may have to take a different approach.

Depending on your cancer treatment, you may need to use a combination of antiemetic medicines. These medicines work best if taken on a schedule or as soon as you begin to feel a little queasy.

Your provider might also recommend different strategies like eating small meals and drinking plenty of fluids.

There are several other management options including complementary therapies. For more information, read *Chapter 4: Managing nausea and vomiting.*

What can you do to get the best care?

Advocate for yourself. You have an important role to play in your care. In fact, you're more likely to get the care you want by asking questions and making shared decisions with your care team.

The NCCN Guidelines for Patients will help you understand cancer care. With better understanding, you'll be more prepared to discuss your care with your team and share your concerns. Many people feel more satisfied when they play an active role in their care.

You may not know what to ask your care team. That's common. Each chapter in this book ends with an important section called *Questions to ask.* These suggested questions will help you get more information on all aspects of your care.

Take the next step and keep reading to learn what is the best care for you!

We want your feedback!

Our goal is to provide helpful and easy-to-understand information on cancer. Take our survey to let us know what we got right and what we could do better.
NCCN.org/patients/feedback

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Causes of nausea and vomiting

Nausea and vomiting are not uncommon when you're being treated for cancer. These side effects can happen before, during, and after cancer treatment. This chapter explains which cancer treatments can cause nausea and vomiting.

Nausea and vomiting are two of the most common side effects of cancer treatment. (Other side effects of cancer treatment can include constipation, diarrhea, fatigue, hair loss, itchy skin, infections, mouth problems, and other effects. These aren't covered in this book.)

Side effects can happen from the cancer itself, from health problems caused by cancer, and from cancer treatment. Sometimes it can be hard to tell the difference between the side effects of cancer treatment and the symptoms of the cancer itself.

What can nausea and vomiting do to your body?

Not only can nausea and vomiting be unpleasant to experience, they can be serious and cause harm to your body, especially if they happen repeatedly. Nausea and vomiting that aren't treated can get worse with time. Nausea and vomiting can also interrupt or delay your treatment schedule.

Every cancer therapy has a risk of causing side effects. These side effects can happen before, during, or after treatment. Sometimes cancer therapies are combined, which may increase the risk of side effects.

Nausea and vomiting can cause you to:

- Not want to eat
- Lose fluids (become dehydrated)
- Be low in electrolytes, which are minerals that your body needs to function
- Miss out on vitamins you need from food or drink
- Lose the energy you need to carry out your daily activities

Other effects:

- Cancel or delay necessary cancer treatment
- Reduce your body's ability to heal wounds
- Alter your ability to function normally in your mind and body
- Possibly cause tearing of your esophagus (the tube-shaped organ between your throat and stomach)

Of course, no one wants to experience nausea and vomiting. But the good news is there are many treatments available to prevent and treat these side effects. For more information, see *Chapter 3: Preventing nausea and vomiting* and *Chapter 4: Managing nausea and vomiting.*

What happens when you vomit?

Vomiting is when the stomach forcefully empties what's inside, which comes out of the mouth as vomit. It's the body's way of protecting itself from substances or germs it doesn't like. But how exactly does it happen? Here's a simplified step-by-step description.

A substance (such as germs, alcohol, or a chemotherapy drug) enters the body, or a sensation (pain, anxiety, or motion) affects the body.

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Special receptors in different areas of the body (stomach, brain, ear, and more) detect the substance or sensation.

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These receptors send danger signals to an area of the brain called the chemoreceptor trigger zone.

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The chemoreceptor trigger zone activates another mechanism in the brain called the vomiting center. (Some danger signals bypass the chemoreceptor trigger zone and go directly to the vomiting center.)

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The vomiting center jumps into action. It sends out a series of orders to several areas of the body to perform specific functions.

The vomiting center transmits signals to the following areas:

- **The intestine and stomach,** which contract and begin to shove the stomach contents upward.
- **A valve** between the stomach and the esophagus (the tube-shaped organ between your throat and stomach) opens so that the vomit can continue upward.
- **The diaphragm and the inner walls of the abdomen** also contract.
- **The lungs** expand.

These actions close off the airway (to prevent vomit from entering it) and propel the vomit up the throat and out of the mouth.

Breaking the chain of events

Several key interactions happen throughout this sequence of events. This is when antiemetics get to work. These medicines block the signals at different points of communication between the stomach and the brain. This interrupts or shuts down a part of the sequence. Researchers still haven't developed a drug that will stop the entire vomiting process all at once (but they're working on it). That's why some people need 2 or more antiemetic drugs to get relief.

Cancer treatments that cause nausea and vomiting

Many cancer treatments can cause nausea and vomiting. Your body can react to these therapies as if they're harmful even though they're meant to be helpful. The side effects you're likely to have depend on the type of cancer treatment you get. Common treatments include:

- **Chemotherapy** is medicine that targets fast-growing cells, including cancer cells and healthy cells. Chemotherapy is the most common cause of nausea and vomiting related to cancer treatment.
- **Radiation therapy** uses high-energy particles or rays to kill cancer cells. Radiation causes nausea and vomiting when it affects fast-growing cells in the intestine.
- **Targeted therapy** seeks out and blocks how cancer cells grow and move in the body. Though targeted therapy can cause nausea and vomiting, it's more likely to cause other side effects.
- **Immunotherapy** boosts the body's immune system to find and destroy cancer cells. Immunotherapy can cause different side effects. One side effect is colitis, an inflammation of the colon. Symptoms of colitis include stomach cramps, diarrhea, bloody stools (poop), and nausea and vomiting.

The amount (dose) of chemotherapy or radiation therapy can also have an effect on your body. Higher doses often cause more severe side effects.

Nausea and vomiting related to chemotherapy, targeted therapy, and immunotherapy are grouped together and called chemotherapy-induced nausea and vomiting. Nausea and vomiting related to radiation therapy are referred to as radiation-induced nausea and vomiting. (The term "induced" means "to bring on".)

Chemotherapy-induced nausea and vomiting

Chemotherapy is a systemic (whole-body) drug therapy that attacks fast-growing cancer cells. It can also damage normal cells in the process. Damage to normal cells causes side effects. Targeted therapy and immunotherapy also cause side effects.

There are several different types of chemotherapy-induced nausea and vomiting. These types include acute, delayed, anticipatory, breakthrough, and refractory (persistent). Read about the different types of chemotherapy-induced nausea and vomiting in **Guide 1.**

Radiation-induced nausea and vomiting

Radiation therapy is a systemic therapy that often uses a large machine to send high-energy rays (radiation) into the body to kill cancer cells. The risk of nausea and vomiting gets higher as the doses of radiation get larger and more frequent and reach more areas of the body.

Radiation therapy aims to kill rapidly dividing cancer cells. The radiation may also damage healthy tissue, causing side effects. Radiation that treats the upper abdomen or whole body

Guide 1
Types of chemotherapy-induced nausea and vomiting

Acute nausea and vomiting	Occur soon after cancer treatment is given (within minutes to hours)	• Usually stops within the first 24 hours of cancer therapy. • The intensity hits its peak after 5 to 6 hours and then begins to lessen. • Linked to the type and amount of cancer treatment given, patient-specific factors (risk factors), and the patient's history of nausea and vomiting.
Delayed nausea and vomiting	Occur more than 24 hours after treatment is given	• Often more common, more severe, and more resistant to treatment than acute nausea. • Commonly occur with chemotherapy drugs that have a high risk of causing vomiting, such as cisplatin, carboplatin, cyclophosphamide, or doxorubicin.
Anticipatory nausea and vomiting	Occur in anticipation of the next treatment to be given	• Come from an emotional or physical reaction to a past bad experience when getting treatment. The patient anxiously expects (anticipates) the bad experience to happen again. • Can be triggered by smells, sights, or sounds related to treatment. • Younger people with cancer are more likely to have this type. • Younger people also may be more likely to develop this type because they have less control over vomiting. • Nausea is more common than vomiting with this type. Anti-anxiety medication may help.
Breakthrough nausea and vomiting	Happen despite prevention with antiemetic drugs	• Additional or different antiemetic drugs are needed to control nausea and vomiting.
Refractory nausea and vomiting	Keep happening after each treatment cycle	• Antiemetics weren't able to control nausea or vomiting in previous treatment cycles. So nausea and vomiting keep coming back with each following cycle.

may reach the stomach and intestine (the long section of the digestive system that absorbs nutrients from food). Because the digestive system has many rapidly dividing cells, it's more sensitive to radiation treatment. So when the stomach and the intestine receive radiation, nausea and vomiting are more likely to happen.

Other cancer-related causes of nausea and vomiting

Besides cancer treatments, other factors can cause nausea and vomiting in people with cancer. These include:

- Anxiety
- Infection
- Balance issues
- Certain types of cancer
- Lack of minerals in the body (electrolyte imbalance)
- Other drugs' side effects (for example, drugs for pain)

Issues related to the abdomen (belly):

- Your intestine is blocked or you're very constipated
- Food stays in your stomach for too long
- You have an abnormal buildup of fluid in your abdomen

A note about nausea

Although it seems like nausea and vomiting are two phases of the same illness, they may be separate conditions. Nausea often occurs without vomiting during cancer treatment or pregnancy, for example. Antiemetics can prevent or greatly reduce vomiting, but they may be less effective against nausea.

Avoid becoming dehydrated. Drink small amounts of fluids throughout the day.

Risk of nausea and vomiting

Every cancer therapy has a risk of causing side effects. These side effects can happen before, during, or after treatment. The risk of these side effects depends on the specific treatment type and the part of the body that's being treated. Your health care provider will select an antiemetic treatment based on your cancer therapy's risk of causing nausea and vomiting.

Sometimes cancer therapies are combined, which may increase the risk of side effects. If you're getting more than one cancer therapy, your health care providers will base your antiemesis plan on the cancer therapy with the highest risk of side effects. Your care team will also consider other factors that put you at risk for nausea and vomiting, such as those in *Chapter 3: Preventing nausea and vomiting,* **Guide 5**.

Risks from chemotherapy drugs

Chemotherapy drugs are grouped into 4 levels based on their risk of causing nausea and vomiting: high, moderate, low, and minimal. The higher the drug's risk level, the more likely it is to cause nausea and vomiting.

When people don't get antiemetic medicine before high-risk chemotherapy, most have the side effect of vomiting. But when people do get preventive medicines before high-risk chemotherapy, a lot fewer of them develop vomiting.

To assess the level of risk, your care team will also consider the form of cancer therapy. These therapies include drugs injected into your body (IVs and injections) and those you swallow (pills, tablets, and capsules).

When to contact your care team

Nausea and vomiting can be caused by medical conditions not related to your cancer treatment. It's important to call your care team if:

- ✓ You continue to have nausea and vomiting despite taking antiemetics.
- ✓ Nausea interferes with your ability to eat.
- ✓ Vomiting occurs 4 to 5 times in a 24-hour period.
- ✓ You feel bloated.
- ✓ You have pain or a swollen stomach before nausea and vomiting occurs.
- ✓ You're bothered by the side effects from your antiemetic medications.

Cancer drugs with moderate to high risk (including chemotherapies, immunotherapies, and targeted therapies) that are taken by mouth are listed in **Guide 2.**

Guide 2
Cancer drugs with moderate to high risk of nausea and vomiting

Oral drugs (pills, tablets, and capsules)

Generic name	Brand name
abemaciclib	Verzenio
adagrasib	Krazati
avapritinib	Ayvakit
azacitidine	Onureg
binimetinib	Mektovi
bosutinib*	Bosulif
busulfan*	Busulfex
cabozantinib	Cabometyx
ceritinib	Zykadia
crizotinib	Xalkori
cyclophosphamide*	–
dabrafenib	Tafinlar
elacestrant	Orserdu
enasidenib	Idhifa
encorafenib	Braftovi
estramustine	Emcyt
etoposide	–

Generic name	Brand name
fedratinib	Inrebic
imatinib*	Gleevec
lenvatinib*	Lenvima
lomustine	Gleostine
midostaurin	Rydapt
mitotane	Lysodren
niraparib	Zejula
olaparib	Lynparza
procarbazine	Matulane
rucaparib	Rubraca
selinexor	Xpovio
temozolomide*	Temodar
tovorafenib	Ojemda
trifluridine/tipiracil	Lonsurf

**At higher doses*

Cancer drugs with high risk (including chemotherapies, immunotherapies, and targeted therapies) that are given by IV or injection are listed in **Guide 3.**

Guide 3
Cancer drugs with high risk of nausea and vomiting

IV and injectable drugs

Generic name	Brand name
carboplatin*	–
carmustine*	–
cisplatin	–
cyclophosphamide*	–
dacarbazine	–
datopotamab deruxtecan-dlnk	Datroway
doxorubicin*	Adriamycin
epirubicin*	Ellence
fam-trastuzumab deruxtecan-nxki	Enhertu
ifosfamide*	–
mechlorethamine	–
melphalan*	Evomela
sacituzumab govitecan-hziy	Trodelvy
streptozocin	Zanosar
zolbetuximab-clzb	Vyloy

**At higher doses*

Risks from radiation therapy

Radiation therapy is more likely to cause nausea and vomiting when it's given in larger or more frequent doses, and when more areas of the body are treated. Like chemotherapy, radiation therapy also has 4 risk levels. The level of risk is based on the areas of the body being given radiation. The highest risk for nausea and vomiting is radiation to the whole body. The lowest risk is radiation to the arms and legs. **See Guide 4.**

When chemotherapy and radiation are given together (chemoradiation therapy), the type, dose, and schedule of antiemetic drugs are based on the chemotherapy's risk of side effects.

Guide 4
Radiation therapy and risk of nausea and vomiting

Risk level	Area treated
High	• Whole body
Moderate	• Upper abdomen • Brain and spine
Low	• Head and neck • Chest • Pelvis
Minimal	• Arms and legs • Breasts

What's next

Now that you know what can cause nausea and vomiting, this information can help you prepare in case either one occurs. Find out more about preventing nausea and vomiting in the next chapter.

Key points

- Nausea and vomiting are two of the most common side effects of cancer treatment.
- Sometimes the side effects of cancer treatment can be hard to tell apart from the symptoms of the cancer itself.
- Higher amounts (doses) of chemotherapy or radiation therapy often cause more severe side effects.
- Your care team will select antiemetic treatment based on your cancer therapy's risk of causing nausea and vomiting.
- The types of chemotherapy-induced nausea and vomiting include acute, delayed, anticipatory, breakthrough, and refractory (persistent).
- The higher a chemotherapy drug's risk level, the more likely it will cause nausea and vomiting.
- Radiation therapy is more likely to cause nausea and vomiting when it's given in larger or more frequent doses, and when more areas of the body are treated.

Questions to ask

- What side effects can I expect from my cancer treatment?
- What is the nausea and vomiting risk level of my treatment?
- Can I switch to a different cancer treatment if nausea and vomiting become really bad?
- When should I let you know if I'm experiencing nausea and vomiting?
- What side effects are caused by the antiemetic medicine that I will be given?

3 Preventing nausea and vomiting

Your care team can make a prevention plan that may include different antiemetic (anti-nausea/ anti-vomiting) drugs. Continue to follow the prevention plan for as long as the risk of nausea and vomiting exists.

If your provider or care team hasn't already talked to you about antiemetic drugs, you should certainly ask about them.

Many experts believe that antiemetics aren't used as often as they should be. This is a problem that involves both people with cancer and health care providers. Some people feel that they don't want to bother their care team with questions. Or they've heard that cancer treatment is supposed to cause nausea and vomiting — and that these side effects are a routine part of treatment. This is untrue. Not everyone who receives cancer treatment will experience nausea and vomiting.

At the same time, some care providers may underestimate how often nausea and vomiting occur or how disruptive these side effects can be for people.

Let your care team know

If your provider or care team isn't aware you're having nausea or vomiting, they may not ask you about it. But they do want to help. So if you develop these side effects from your cancer treatment, don't try to "tough it out." Call a member of your care team and let them know right away, whether it's day or night.

Also, if you've been given antiemetic medicines but they're not working or you don't

"Come armed to each and every appointment with all of your questions and concerns and do not leave until you get them all answered!"

like their side effects, let your care team know about that, too. There are a lot of options to treat nausea and vomiting.

Drugs to prevent nausea and vomiting

When treating nausea and vomiting, medicines are taken before and after cancer treatment. It's usually much easier to prevent nausea and vomiting than it is to treat them once they've started. That's why this book emphasizes prevention.

In addition to drugs, other types of therapy like meditation or breathing exercises may help you feel better. When and how much you eat can also affect nausea and vomiting. We'll discuss these non-drug methods in *Chapter 4: Managing nausea and vomiting*.

Providers need to think about many factors when deciding how to prevent nausea and vomiting. Your provider and care team will look at the whole picture — from before your cancer treatment until after the last dose; **see Guide 5.**

Things your provider considers when planning to prevent nausea and vomiting include:

- Your type of cancer treatment
- Your level of risk (risk factors) for nausea and vomiting from the cancer treatment
- What antiemetic drug (or drugs) you should receive
- The side effects of the drug(s)

Sometimes vomiting can be easier to prevent than nausea.

- What time to give you the drug(s) (for example, 30 minutes before cancer treatment)
- How much you'll need (dose)
- Your past use of antiemetic drugs

Also, while there is some risk of drug interactions between antiemetics and cancer drugs, your care team will monitor you and give you antiemetics for a limited time or dose to minimize that risk.

Timing of drugs

Preventing nausea and vomiting is the goal. So antiemetic drugs are given before cancer treatment.

If cancer treatment is likely to cause delayed nausea and vomiting, additional medicines may be given to you to take for several days following treatment. After the last dose of chemotherapy, the risk that you'll start vomiting lasts for at least 3 days with high-risk chemotherapy drugs and 2 days with moderate-risk chemotherapy drugs. Ask your provider if you should continue to take antiemetic medicine if the risk of nausea and vomiting still exists.

Guide 5
Things to consider when making an antiemesis plan

Cancer treatment information:	• The type of treatment you'll receive
	• How much of the treatment you'll receive (dose)
	• When and how often you'll receive the treatment
	• Whether the treatment is a pill, an IV, or other
Risk factors:	• Age
	• Sex (assigned male or female at birth)
	• Past cancer treatments
	• History of drinking alcohol
	• Motion sickness
	• History of morning sickness (during pregnancy)
	• Feelings of anxiety
	• Current medications

For cancer therapy with moderate to high risk of nausea and vomiting, your provider can give you antiemetic drugs on a planned schedule. This might be in the morning or evening, once a day, or more than once a day. Depending on your response, your provider may decide to switch and treat you with antiemetic drugs only when needed (vs. on a schedule).

For cancer treatment with low risk of nausea and vomiting, your provider will likely give you antiemetic drugs only when needed.

If you have questions about how much or when to take any type of antiemetic drugs, ask your provider or pharmacist for more information.

But if you are experiencing nausea and/or vomiting even with prevention (called breakthrough emesis), your provider may give another drug to take as needed. For more information on breakthrough emesis, see the next chapter: *Managing nausea and vomiting.*

Forms of drugs

Antiemetic drugs come in different forms; see **Guide 6 and Guide 7.**

These include the kind you swallow such as tablets, capsules, oral liquid, and those that dissolve in your mouth. Other antiemetics are injected into your body — into a vein, a muscle, or under your skin. Some antiemetics

Guide 6
Common antiemetic drugs

Type of drug	Generic name	Brand name	Forms available
Serotonin (5-HT3) antagonists	dolasetron	Anzemet	tablet
	granisetron	Kytril	tablet, injection
		Sancuso	skin patch
		Sustol	injection
	ondansetron	Zofran	tablet, oral liquid, injection, dissolvable tablet
	palonosetron	Aloxi	injection
Neurokinin-1 (NK-1) receptor antagonists	aprepitant emulsion	Cinvanti	IV push/infusion
	aprepitant	Emend	capsule, oral liquid
	fosaprepitant	Emend	injection
	netupitant/ palonosetron	Akynzeo	capsule
	fosnetupitant/ palonosetron	Akynzeo	injection
	rolapitant	Varubi	tablet
Atypical antipsychotic	olanzapine	Zyprexa	tablet
		Zyprexa Zydis	dissolvable tablet
Corticosteroid	dexamethasone	Decadron	tablet, injection

can be given in an infusion center (through IV) before cancer treatment. Other forms are transdermal patches (placed on your skin) and rectal suppositories (inserted into the rectum).

Types of drugs

There are different types (classes) of antiemetics and even different ways they're given. Your provider will recommend what's known to work for preventing or treating your type of nausea and vomiting. For example, scientists have found that 5-HT3 antagonists are the most effective type of drug for preventing radiation-induced nausea and vomiting. If you'll be receiving radiation therapy, your provider may recommend a 5-HT3 antagonist with or without other medicine.

The different classes of antiemetic drugs include:

Serotonin (5-HT3) antagonists

Serotonin (also called 5-HT3) is a neurotransmitter (a chemical messenger that helps neurons communicate with each other) that's triggered by cancer therapy to carry the vomiting impulse from the intestine to the brain. The 5-HT3 antagonists are a type of drug that blocks serotonin from reaching the brain, which can prevent nausea and vomiting. The 5-HT3 antagonists also sometimes decrease diarrhea, a common side effect of chemotherapy and/or radiation therapy.

The most common side effects of 5-HT3 antagonists are headache and constipation.

Guide 7
Common antiemetic drugs

Type of drug	Generic name	Brand name	Forms available
Dopamine receptor antagonists	prochlorperazine	Compazine	tablet, injection, suppository
	promethazine	Phenergan	tablet, oral liquid, suppository
	metoclopramide	Reglan	tablet, oral liquid, injection
	haloperidol	Haldol	tablet, oral liquid, injection
Benzodiazepine	lorazepam	Ativan	tablet, oral liquid, injection
Cannabinoids	dronabinol	Marinol	capsule
		Syndros	oral liquid
Motion sickness medicine	scopolamine	Transderm Scōp	skin patch

Neurokinin-1 (NK-1) receptor antagonists

NK-1 receptor antagonists prevent both acute and delayed nausea and vomiting by blocking a neurotransmitter called Substance P. Substance P has dozens of functions including setting off the vomiting reflex. NK-1 receptor antagonists are drugs that prevent Substance P from attaching to the NK-1 receptors in the brain, which may stop or reduce the vomiting reflex. NK-1 receptor antagonists can be used for cancer drugs with either a moderate or a high risk of nausea and vomiting.

Common side effects of NK-1 receptor antagonists include tiredness (fatigue), hiccups, and headache.

Atypical antipsychotic

Olanzapine (Zyprexa) is a drug that has been used historically for treating mental health conditions. But providers have discovered it also prevents and treats acute, delayed, and refractory nausea and vomiting in people receiving moderate- to high-risk chemotherapy at lower doses than those used to treat mental health conditions. It can also stimulate appetite.

Olanzapine disables several neurotransmitters linked to nausea and vomiting caused by cancer therapy. It's typically given in combination with 2 or 3 other antiemetic drugs prior to chemotherapy. But it may be given on its own the night before to help with anticipatory nausea/vomiting. It may also be given by itself or with other antiemetics after chemotherapy.

Olanzapine sometimes causes drowsiness (sedation), fatigue, and dizziness. It should be used with caution in older people and people with dementia. Because this medicine can cause sedation, it is recommended to take at bedtime.

Check with your care team if you were prescribed olanzapine in combination with prochlorperazine or metoclopramide because of the risk of additional side effects.

Corticosteroids

Corticosteroids (steroids) have been used for years to prevent both acute and delayed nausea and vomiting caused by cancer therapy. The main steroid used for nausea and vomiting is dexamethasone (Decadron). If your chemotherapy already includes a steroid, like prednisone, you may not need dexamethasone as an antiemetic.

Steroids can have a lot of side effects, such as insomnia (trouble sleeping), upset stomach, and increased blood sugar levels. So how much, how often, and how long steroids are used is customized for each person.

One strategy to decrease steroids' side effects includes taking dexamethasone in the morning with breakfast to help reduce insomnia and an upset stomach.

Still, there is some disagreement in the medical community that if you are receiving chemotherapy along with an immune checkpoint inhibitor (ICI) (a type of immunotherapy), dexamethasone could lessen the ICI's effect. Although this chance is small, your provider might opt for another antiemetic in that case.

Dopamine receptor antagonists

Dopamine receptor antagonists were the first class of drugs used for nausea and vomiting due to cancer treatment. These drugs block

More insights

Take your medicine on time

It's important to take anti-nausea and antiemetic drugs at the scheduled time and dose, even if you don't feel nauseated. If you wait until you begin to feel sick, it may be too late for the drugs to provide relief.

Why did my doctor give me an antipsychotic drug?

For many years now, olanzapine (Zyprexa) has been widely used to prevent nausea and vomiting in people receiving cancer treatment. But olanzapine has been used even longer to treat depression, bipolar disorder, and schizophrenia. Scientists have found that olanzapine blocks some of the same neurotransmitters involved in both vomiting and mental health conditions.

Can I try cannabis?

You may hear that smoking marijuana (scientifically known as cannabis) or taking capsules, edibles, or drops made from the active compounds in cannabis (cannabinoids) will drastically reduce nausea or vomiting. You may hear that they'll dull your pain or help you sleep.

But before you take a trip to your nearest dispensary, discuss this with your doctor. And don't stop or skip your prescribed medications in place of non-prescribed cannabis products. The ingredients in these products can interfere with your current cancer therapy or your antiemetic treatment. Also, the active ingredients and effects can vary greatly between products.

One cannabinoid antiemetic medication (dronabinol) is available and approved by the U.S. Food & Drug Administration (FDA). Check with your doctor or pharmacist to get trustworthy information on this topic.

the neurotransmitter dopamine from reaching the chemoreceptor trigger zone in the brain.

Dopamine receptor antagonists can cause numerous side effects, such as drowsiness, dry mouth, uncontrollable muscle movements or tremors, and blurred vision. Older people may be more affected by these side effects.

Benzodiazepines

Benzodiazepines are anti-anxiety drugs. They reduce anticipatory nausea and vomiting by helping people who feel anxious to feel calmer and more relaxed. Benzodiazepines are also sometimes used to reduce anxiety due to breakthrough nausea and vomiting (emesis). The main benzodiazepine drug for nausea and vomiting is lorazepam (Ativan).

Benzodiazepines are used in combination with other antiemetic drugs. Their most common side effects are drowsiness, dizziness, and confusion. Benzodiazepines can also cause dangerously slow breathing in people who are taking opioid-based pain medicine. If you're taking lorazepam regularly, talk to your care team before you stop taking this medicine to avoid unwanted side effects.

Cannabinoids

Cannabinoids are drugs that contain an active ingredient in marijuana called tetrahydrocannabinol (THC). Cannabinoids prevent nausea and vomiting by blocking receptors in the central nervous system's endocannabinoid system. The endocannabinoid system regulates many functions, some of which involve hunger and mood.

Cannabinoids are sometimes used to treat nausea and vomiting when standard antiemetic drugs haven't worked.

Cannabinoids can even stimulate appetite in people having cancer treatment. But they also have some undesirable side effects such as dizziness, sleepiness, lightheadedness, anxiety, mood changes, and other effects.

Before using cannabinoids, ask your provider about any possible side effects you might have.

Motion sickness medicine

Motion sickness medicine can be added to regular antiemetics if you have breakthrough

Cannabinoids are sometimes used to treat nausea and vomiting when standard antiemetic drugs haven't worked. They also have some undesirable side effects such as dizziness, sleepiness, lightheadedness, anxiety, mood changes, and other effects. Talk to your doctor before using cannabinoids.

nausea and vomiting, a history of motion sickness or movement-related nausea and vomiting. Because capsules or pills may be difficult to keep down during breakthrough emesis, this medicine comes as a patch applied to the skin behind your ear. The patch releases the medicine through the skin and into the body. One patch works for about 3 days. Side effects include dizziness and disorientation (confusion).

Heartburn medicine

Along with nausea and vomiting, cancer treatment can cause indigestion and heartburn. Drugs called histamine H2 antagonists (H2 blockers) and proton pump inhibitors reduce the stomach acid that causes heartburn. Some are available over the counter and others are by prescription only.

H2 blockers include famotidine (known as Pepcid and Zantac 360). Common proton pump inhibitors are lansoprazole (Prevacid) omeprazole (Prilosec), and esomeprazole (Nexium).

Combinations of antiemetics

Many people who have cancer therapy that lasts for just one day or several days will need an antiemesis plan that prevents both acute and delayed nausea and vomiting.

Antiemesis treatment usually includes more medicines for the acute period (first day of cancer therapy) than for the delayed period (next 2 or 3 days of cancer therapy). But because acute and delayed emesis can overlap during cancer therapy, it can be difficult to come up with an antiemesis plan that's completely effective for every day.

Therapy that works for one person may not work for another. Let your care team know if your antiemetics aren't helping. Your provider can switch one drug for another or add a medicine from a different class.

Your antiemesis plan also depends on the risk of nausea and vomiting from your cancer therapy. Cancer therapy with a high risk of nausea and vomiting may require a combination of up to 3 or 4 antiemetic drugs. Cancer treatment with a moderate risk may include 2 or 3 antiemetics. Low-risk cancer therapy may involve only 1 antiemetic. Cancer therapy with a minimal risk may not require any antiemetic drugs.

Remember that therapy that works for one person may not work for another. So be sure to let your care team know if your antiemetic drugs aren't helping. If the first drug or combination of drugs didn't work, your provider can switch 1 drug for another or add a medicine from a different class.

Radiation-induced nausea and vomiting

Some types of radiation therapy — to the upper abdomen or the whole body — may cause side effects of nausea and vomiting. Antiemetic treatment is given on each day of radiation therapy to prevent these side effects. The recommended treatment is a 5-HT3 antagonist (granisetron or ondansetron) with or without a steroid (dexamethasone).

When radiation is given together with chemotherapy (chemoradiation therapy), the antiemetic treatment is based on whether the drugs or the radiation treatment has the higher risk of nausea and vomiting.

What's next

Unfortunately, preventing nausea and vomiting doesn't always work. But knowing what goes into preventing nausea and vomiting can help in managing these side effects. In the next chapter, you'll find out more about managing nausea and vomiting through a variety of ways.

Key points

- To prevent nausea and vomiting, most medicines are taken before cancer treatment. However, some medicines are taken during or after cancer treatment.
- 5-HT3 antagonists block serotonin from reaching the brain, which can prevent acute nausea and vomiting.
- NK-1 receptor antagonists prevent both acute and delayed nausea and vomiting.
- Olanzapine is used for acute, delayed, anticipatory, and refractory nausea and vomiting in people receiving moderate- to high-risk chemotherapy.
- Benzodiazepines reduce anticipatory nausea and vomiting by helping people who feel anxious to feel calmer and more relaxed.
- Corticosteroids (steroids) can prevent acute and delayed nausea and vomiting.
- Cannabinoids are sometimes used to treat nausea and vomiting when standard antiemetic drugs haven't worked.

Questions to ask

- Could another medicine that's not part of my cancer treatment be causing nausea and vomiting?
- What medicine can I take to reduce nausea and vomiting?
- Can I take more than one antiemetic medicine?
- Do my antiemetic medicines cause any side effects?
- Will my insurance cover the cost of antiemetic treatment?

4

Managing nausea and vomiting

Even with prevention, nausea and vomiting may still happen. This chapter explains various drug options and many non-drug strategies to manage and cope with these side effects.

Despite using antiemetic drugs before cancer therapy, some people still have nausea and vomiting during or after therapy (called breakthrough emesis). The treatment plan changes from preventing nausea and vomiting to reducing these side effects.

Treatment if prevention doesn't work

Your provider or care team may ask you to try one or more of these treatment options for breakthrough nausea and vomiting:

Add another medicine

The first option is to add another drug from a different drug class. The idea is to choose a drug that works differently than the antiemetic drug(s) you're already taking.

Take several medicines

You may need to take several antiemetic medicines, each of which works in a separate way. This strategy attempts to block the emetic reaction at different points in the process. Your provider or pharmacist may also recommend taking your medicine on a different schedule or at different times of day. (Ask your provider or pharmacist first before doing this on your own.)

Go on an around-the-clock schedule

Instead of taking your antiemetic drug(s) on an as-needed basis, you may be put on a schedule to take your medicine around the clock.

Try a different route

If you can't keep down a pill because you're vomiting, you might be able to receive the medicine in another form. For example, some pills also come as a tablet or a film that quickly dissolves under your tongue. Other methods include IV, injection, skin patch, or suppository (a medicine placed in the rectum). If one method gives you trouble, ask if you can try a different one.

See if it's something else

Before you receive your next round of cancer therapy, your provider should check that there isn't another reason why you're having nausea and vomiting. Be open with your provider about any side effects you have. There might be another cause that's related or even unrelated to your cancer. Other causes could be a lack of minerals in your body, stomach problems, or another disease.

Even something like heartburn can be confused with nausea. In this case, your provider can give you antacid therapy to reduce stomach acid. Your care team may also help you find other ways to cope.

Keep track of your side effects

Your provider may ask you to be aware of how you're feeling between visits. Pay close attention to when you feel nauseated or when you vomit. You can write down that information and share it with your provider. Your care team needs to know exactly what you're experiencing to be able to help.

Think about ways to keep track of your side effects. You can write them down in a weekly diary or create your own way to record any side effects you experience. Tracking your side effects in a journal or app may reveal a helpful pattern.

You also need to remember to take your antiemetic drugs as prescribed. Use a calendar or an app to remind you when to take your medicine. This will help you stay on schedule and, if needed, record any missed doses. Caregivers can also use these to help you take your medicine on time.

You can try one of these smartphone apps to help you keep track of medicines, appointments, and symptoms:

- **The MASCC Antiemesis Tool** – Developed by the Multinational Association of Supportive Care in Cancer, this tool is available in a PDF or app to help people talk with their providers about their nausea and vomiting.
- **Wave Health** – An app designed for people getting cancer treatment. It keeps track of your symptoms, medicines, mood, activity, and sleep.
- **Cancer.Net Mobile** – An app from the American Society of Clinical Oncology (ASCO) that allows users to track side effects. You can set reminders for medicines and appointments, too.

Finding the right antiemesis drug or drugs might take several tries. If preventing nausea or vomiting doesn't work, there are many treatments available to reduce these side effects.

Report problems and ask questions

Your providers need to know if your antiemetic drugs aren't working. If the side effects continue or get worse with time, call your provider or care team as soon as possible.

It's also a good idea to let your caregiver know if you're having any side effects. Your caregiver can help you track when side effects are happening and help you figure out what works best to make you feel better.

Another thing you can do in between visits is to make a list of questions you have. Review these questions with your provider. Some people don't want to ask questions — maybe they think their questions aren't important or they're afraid of wasting the provider's time. You need to know that your care team wants to help you by answering any questions you have.

Other people on your team can also answer your questions. Feel free to talk to your primary care provider, nurse practitioner, medical oncologist, radiation oncologist, oncology nurse, pharmacist, physical therapist, psychologist, or social worker.

For some helpful questions, see *Questions to ask* at the end of this chapter.

Report all your drugs and supplements

Let your care team know if you're taking (or want to take) complementary therapies like nutritional supplements, vitamins, or herbs. Some of these therapies can interfere with your cancer treatment or cause complications.

For instance, taking the over-the-counter supplement St. John's wort while being treated with the chemotherapy drug granisetron can increase the risk of a rare but serious condition called serotonin syndrome.

Put together a list of all the medications you take, including any herbals, supplements, and over-the-counter products. Make copies and provide this list whenever you have an appointment with a new doctor or specialist.

Coping with nausea and vomiting

In addition to treatment, several other strategies can help you cope with nausea and vomiting.

Eat small meals

Instead of three large meals (breakfast, lunch, and dinner), try several small, frequent meals throughout the day. Eating less but more often can be easier and less filling than eating fewer larger meals.

Drink plenty of fluids

Nausea can turn you off from eating and drinking, while vomiting can cause you to lose a lot of fluids. To avoid getting dehydrated, drink small amounts of fluids frequently throughout the day. In addition to water, electrolyte supplements (Pedialyte) and low-sugar sports drinks (Gatorade) can replace important minerals. If you do get dehydrated, your provider may need to give you IV fluids in a healthcare setting to help you feel better.

Ginger ale or flat cola might help settle your stomach. Don't drink as much while you're eating, though — it'll make you feel fuller faster.

Eat to avoid more nausea

It's normal to want to skip eating when you feel nausea coming on. Surprisingly, an empty stomach can make nausea worse. If it's been a while since you've eaten, have a little food even if you're not hungry. As noted, eat small portions frequently throughout the day.

Eat cool food

Hot food has a stronger smell and taste. If the smell or taste bothers you, eat food cold or at room temperature.

Stay away from spicy food

You might love spicy food, but if you're having nausea it's best to avoid it. Spicy food can irritate the digestive tract and sometimes make nausea worse.

Try ginger

You might also find that not just ginger ale but ginger tea and actual ginger can be helpful. This root has been used to settle upset stomachs for centuries. Though more research needs to be done, some people find that ginger

An empty stomach can make nausea worse. Try to eat small portions throughout the day, even if you're not very hungry.

capsules, powdered ginger, or ginger-flavored foods and drinks help relieve nausea.

Talk to a dietitian

It's important to try to eat as healthily as possible and take in as many nutrients as you can. Ask your provider or care team to put you in touch with a registered dietitian or a certified nutritionist. They can recommend ways to get enough nutrition even if you don't feel like eating.

Avoid offensive smells

Common smells that never bothered you before may become unexpectedly unpleasant. Strong smells — or even mild ones — can make you feel nauseated. Smells you might want to avoid include:

- Food while it's cooking
- Scented candles
- Hair products
- Perfume
- Smoke

Sniff pleasant smells

Though many smells can trigger nausea, some smells have been known to help. For short-term relief, try taking long deep sniffs of a newly opened alcohol wipe. The smell of peppermint or sucking on peppermint candy may also ease your queasiness.

Get some fresh air

A breath of fresh air can help. Breathe in deeply and exhale slowly.

Complementary therapies

Complementary therapies offer other ways to prevent or reduce nausea and vomiting. Complementary therapies are meant to be used alongside standard therapies. They shouldn't be used instead of your prescribed therapy.

Important to know: While complementary therapies can be helpful to some people in some cases, there isn't a lot of high-level research backing their use over what your provider prescribes. Talk to your provider before using any type of complementary therapy.

Some types of complementary therapies used for nausea and vomiting are:

- **Acupuncture and acupressure** – These ancient practices use needles (acupuncture) or pressure (acupressure) to reduce nausea and pain. Bracelets for seasickness and motion sickness (Sea-Bands) are a popular form of acupressure.
- **Behavioral therapy (also known as cognitive behavioral therapy)** – A psychological treatment that helps change thinking patterns or behaviors.
- **Relaxation techniques** – Activities that reduce anxiety in the mind by lowering stress and tension in the body. Examples include breathing exercises, mindful meditation, and muscle relaxation.
- **Hypnotherapy** – A therapy guided by a trained specialist that uses hypnosis and the power of suggestion to relieve symptoms or affect behavior.

What to do after you vomit

This book is mostly about preventing nausea and vomiting.
But what if you just threw up? Now what do you do?

Sit and rest for 15 to 20 minutes. Let your stomach settle down before doing anything else.

Rinse your mouth. If you have a bad or acidic taste in your mouth, mix 1/4 teaspoon of baking soda into 1 cup of warm water. Baking soda neutralizes stomach acid. Swish it around your mouth and spit it out. Rinse with plain water.

Drink slowly. If you've given your stomach time to settle and you haven't thrown up again, drink sips of water or suck on a few ice chips every few minutes. Gatorade, Pedialyte, and other clear fluids are good, too. After a while, you can try broth or Jell-O.

Suck on hard candy. Or lick a popsicle or a lollipop. These help produce saliva, which aids digestion and soothes your stomach.

Chew gum. The action of chewing is believed to get your stomach and intestines back on track.

Try bland foods. If you feel like eating, and you can keep down water for several hours without throwing up, start with small bites of light, bland food. Try crackers, rice, toast, applesauce, or bananas. Go slowly. Avoid heavy, large meals and spicy, fatty, oily, or acidic foods.

Sit up. Keep sitting upright for an hour or longer after eating. Lying down can cause indigestion.

If you throw up again after eating or drinking, start over by letting your stomach settle.

- **Yoga** – A series of breathing techniques and physical poses along with meditation to boost overall health. Be sure to ask your provider first if it's okay for you to practice yoga.

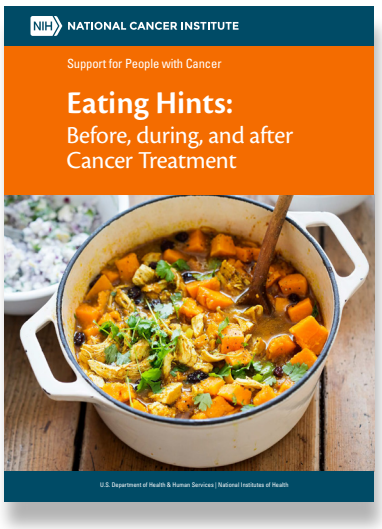
- **Guided imagery** – A relaxation technique in which a person visualizes positive mental images. This can reduce the anxiety associated with nausea and vomiting.
- **Music therapy** – A therapy given by a trained music therapist using music to encourage relaxation and enhance quality of life.

Complementary therapy for anticipatory nausea and vomiting

Anticipatory nausea and vomiting occur in advance of the next cancer treatment. So prevention is important. In addition to anti-anxiety medicine, complementary therapies can be useful here, too. Some people find that behavioral therapy, hypnotherapy, or guided imagery can soothe the stress that leads to anticipatory nausea and vomiting.

To learn more about complementary therapy, ask your care team. If you're interested, ask for a referral to a specialist who gives complementary therapy. Some cancer centers and hospitals have complementary care or integrative medicine programs for people with cancer.

You can also speak with a social worker, psychologist, or other mental health professional if you have any issues or need guidance.



For more information on eating

Take a look at the National Cancer Institute's **Eating Hints: Before, During, and After Cancer Treatment** at www.cancer.gov/publications/patient-education/eating-hints

Here you can learn more about eating small meals, having a full liquid diet, and avoiding foods that make you feel sick.

Accept support

Taking good care of yourself is the most important thing you can do at this time. This might mean getting healthier to prepare for treatment or staying on track with your treatment plan. It also means reaching out to the people in your life when you need help.

- Accept offers from friends or loved ones to do your grocery shopping or run errands.

- Ask a friend or family member to prepare a meal to help you avoid cooking smells.
- Ask your care team to help you find more resources about nausea and vomiting.
- Be honest and let your provider and your loved ones know when you're not feeling well.

Finding ways to cope can take time. Having the support of your family, friends, and care team can help you focus on the most important person right now — you.

Key points

- Tell your provider if your antiemetic medicine isn't working.
- Keep track of when you're nauseated and when you vomit. Share this with your care team.
- Remember to take your antiemetic drugs as prescribed. Use a calendar, ask a caregiver, or download an app to set a reminder.
- Eating frequent small meals may feel better than eating fewer large meals.
- An empty stomach can make nausea worse. Try to eat small portions throughout the day, even if you're not hungry.
- Stay hydrated by drinking small amounts of fluids throughout the day.
- Complementary therapies are sometimes used alongside standard therapies.

Questions to ask

- Can you help me find a registered dietitian or a certified nutritionist?
- What other things can I do to prevent nausea and vomiting?
- Are there any complementary therapies that might help?
- What if the nausea just won't go away?
- What symptoms should I report right away and who do I contact?

5
Other resources

Want to learn more? Here's how you can get additional help.

What else to know

This book can help you improve your cancer care. It plainly explains expert recommendations and suggests questions to ask your care team. But it's not the only resource that you have.

You're welcome to receive as much information and help as you need. Many people are interested in learning more about:

- How to reduce or manage the side effects of cancer treatment
- Being a part of a care team
- Getting financial help
- Finding a care provider who is an expert in their field
- Coping with health problems

What else to do

Your health care center can help you with next steps. They often have on-site resources to help meet your needs and find answers to your questions. Health care centers can also inform you of resources in your community.

In addition to help from your providers, the resources listed in the next section provide support for many people like yourself. Look through the list and visit the provided websites to learn more about these organizations.

Where to get help

AIM at Melanoma
aimatmelanoma.org

Cancer*Care*
cancercare.org

Cancer Hope Network
cancerhopenetwork.org

Imerman Angels
Imermanangels.org

National Coalition for Cancer Survivorship
canceradvocacy.org

National LeioMyoSarcoma Foundation
Nlmsf.org

NMDP
Nmdp.org

The Leukemia & Lymphoma Society
LLS.org/PatientSupport

Triage Cancer
Triagecancer.org

Questions to ask

- How much will I have to pay for treatment?
- What help is available to pay for medicines and other treatments?
- Do you know any specialists who provide complementary therapy?
- Will my insurance cover complementary therapies?
- Is a clinical trial for nausea and vomiting an option for me?

Let us know what you think!

Please take a moment to complete an online survey about the NCCN Guidelines for Patients.
NCCN.org/patients/response

Words to know

abdomen
The belly area between the chest and pelvis.

acute nausea and vomiting
Side effects that happen within a few minutes to a few hours after cancer therapy.

anticipatory nausea and vomiting
Side effects that occur in advance of the next treatment.

antiemesis
The prevention of nausea and vomiting.

antiemetic
A drug used to prevent or treat nausea and vomiting.

behavioral therapy
A psychological treatment that helps change thinking patterns or behaviors.

breakthrough nausea and vomiting
Side effects that happen despite trying to prevent them. Also called breakthrough emesis.

central nervous system
The brain and spinal cord.

chemoreceptor trigger zone
An area in the brain that receives emetic signals from the body and transmits them to the vomiting center.

chemotherapy
Drugs that stop the life cycle of cancer cells so the cells don't increase in number.

chemotherapy-induced nausea and vomiting
Nausea and vomiting brought on by chemotherapy.

complementary therapy
Non-medication treatment that's given alongside standard therapy.

dehydration
A condition where the body lacks enough water and other fluids to work normally.

delayed nausea and vomiting
Nausea and vomiting that occur more than 24 hours after treatment is given.

digestive system
A series of organs (including the stomach, intestines, and others) that breaks down food for the body to use as energy. Also called the gastrointestinal system.

electrolyte
An essential mineral in the body's fluids that helps control vital functions.

emesis
The physical action of expelling what's in the stomach out of the mouth. Also called vomiting.

esophagus
A tube-shaped organ that carries food between the throat and stomach.

guided imagery
A relaxation technique in which a person visualizes positive mental images to reduce stress and increase well-being.

hypnotherapy
A therapy that uses hypnosis and the power of suggestion to relieve symptoms or affect behavior.

immune checkpoint inhibitor
A type of immunotherapy that blocks proteins called checkpoints to help the immune system kill cancer cells.

immunotherapy
A drug treatment that uses a person's own immune system to find and destroy cancer cells.

intestine
A long, tube-shaped organ of the digestive system that absorbs nutrients from food.

intravenous (IV)
A method of giving drugs by a needle or tube inserted into a vein.

long-term side effect
An unhealthy or unpleasant physical or emotional response to treatment that continues for months or years after treatment.

music therapy
A therapy using music to encourage relaxation and enhance quality of life.

nausea
The sensation when you feel like you're going to throw up.

neurotransmitter
A chemical messenger that neurons use to communicate with one another and with other cells.

quality of life
A person's overall satisfaction with their well-being and their ability to participate in regular activities.

radiation-induced nausea and vomiting
Nausea and vomiting brought on by radiation therapy.

radiation therapy
A treatment that uses high-energy rays (radiation) to kill cancer cells.

rectal suppository
A form of medicine that's inserted into the rectum and absorbed by the body.

rectum
The last section of the large intestine ending at the anus.

refractory nausea and vomiting
Nausea and vomiting that keeps happening after each treatment cycle despite antiemetics.

side effect
An unhealthy or unpleasant physical or emotional response to treatment.

systemic therapy
Treatment (such as chemotherapy) that affects the entire body.

targeted therapy
Treatment with drugs that target a specific or unique feature of cancer cells.

transdermal drug
A medicine absorbed through the skin.

treatment plan
A personalized program that includes all parts of cancer care.

vomiting
The physical action of expelling what's in the stomach out of the mouth. Also called emesis.

vomiting center
An area in the brain that controls the act of vomiting.

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This patient guide is based on the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Antiemesis, Version 2.2025. It was adapted, reviewed, and published with help from the following people:

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at the University of Pennsylvania
Philadelphia, Pennsylvania
800.789.7366 • pennmedicine.org/cancer

Case Comprehensive Cancer Center/
University Hospitals Seidman Cancer Center and
Cleveland Clinic Taussig Cancer Institute
Cleveland, Ohio
UH Seidman Cancer Center
800.641.2422 • uhhospitals.org/services/cancer-services
CC Taussig Cancer Institute
866.223.8100 • my.clevelandclinic.org/departments/cancer
Case CCC
216.844.8797 • case.edu/cancer

City of Hope National Medical Center
Duarte, California
800.826.4673 • cityofhope.org

Dana-Farber/Brigham and Women's Cancer Center |
Mass General Cancer Center
Boston, Massachusetts
877.442.3324 • youhaveus.org
617.726.5130 • massgeneral.org/cancer-center

Duke Cancer Institute
Durham, North Carolina
888.275.3853 • dukecancerinstitute.org

Fox Chase Cancer Center
Philadelphia, Pennsylvania
888.369.2427 • foxchase.org

Fred & Pamela Buffett Cancer Center
Omaha, Nebraska
402.559.5600 • unmc.edu/cancercenter

Fred Hutchinson Cancer Center
Seattle, Washington
206.667.5000 • fredhutch.org

Huntsman Cancer Institute at the University of Utah
Salt Lake City, Utah
800.824.2073 • healthcare.utah.edu/huntsmancancerinstitute

Indiana University Melvin and Bren Simon
Comprehensive Cancer Center
Indianapolis, Indiana
888.600.4822 • www.cancer.iu.edu

Johns Hopkins Kimmel Cancer Center
Baltimore, Maryland
410.955.8964
www.hopkinskimmelcancercenter.org

Mayo Clinic Comprehensive Cancer Center
Phoenix/Scottsdale, Arizona
Jacksonville, Florida
Rochester, Minnesota
480.301.8000 • Arizona
904.953.0853 • Florida
507.538.3270 • Minnesota
mayoclinic.org/cancercenter

Memorial Sloan Kettering Cancer Center
New York, New York
800.525.2225 • mskcc.org

Moffitt Cancer Center
Tampa, Florida
888.663.3488 • moffitt.org

O'Neal Comprehensive Cancer Center at UAB
Birmingham, Alabama
800.822.0933 • uab.edu/onealcancercenter

Robert H. Lurie Comprehensive Cancer Center
of Northwestern University
Chicago, Illinois
866.587.4322 • cancer.northwestern.edu

Roswell Park Comprehensive Cancer Center
Buffalo, New York
877.275.7724 • roswellpark.org

Siteman Cancer Center at Barnes-Jewish Hospital
and Washington University School of Medicine
St. Louis, Missouri
800.600.3606 • siteman.wustl.edu

St. Jude Children's Research Hospital/
The University of Tennessee Health Science Center
Memphis, Tennessee
866.278.5833 • stjude.org
901.448.5500 • uthsc.edu

Stanford Cancer Institute
Stanford, California
877.668.7535 • cancer.stanford.edu

The Ohio State University Comprehensive Cancer Center -
James Cancer Hospital and Solove Research Institute
Columbus, Ohio
800.293.5066 • cancer.osu.edu

The UChicago Medicine Comprehensive Cancer Center
Chicago, Illinois
773.702.1000 • uchicagomedicine.org/cancer

The University of Texas MD Anderson Cancer Center
Houston, Texas
844.269.5922 • mdanderson.org

UC Davis Comprehensive Cancer Center
Sacramento, California
916.734.5959 • 800.770.9261
health.ucdavis.edu/cancer

UC San Diego Moores Cancer Center
La Jolla, California
858.822.6100 • cancer.ucsd.edu

UCLA Jonsson Comprehensive Cancer Center
Los Angeles, California
310.825.5268 • uclahealth.org/cancer

UCSF Helen Diller Family Comprehensive Cancer Center
San Francisco, California
800.689.8273 • cancer.ucsf.edu

University of Colorado Cancer Center
Aurora, Colorado
720.848.0300 • coloradocancercenter.org

University of Michigan Rogel Cancer Center
Ann Arbor, Michigan
800.865.1125 • rogelcancercenter.org

University of Wisconsin Carbone Cancer Center
Madison, Wisconsin
608.265.1700 • uwhealth.org/cancer

UT Southwestern Simmons Comprehensive Cancer Center
Dallas, Texas
214.648.3111 • utsouthwestern.edu/simmons

Vanderbilt-Ingram Cancer Center
Nashville, Tennessee
877.936.8422 • vicc.org

Yale Cancer Center/Smilow Cancer Hospital
New Haven, Connecticut
855.4.SMILOW • yalecancercenter.org

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