



# Nausea and Vomiting

## Understanding nausea and vomiting

Nausea is a subjective unpleasant feeling in the back of your throat and stomach that may lead to vomiting. There are many words that describe nausea including sick to my stomach, queasy, or upset stomach. Nausea can have other symptoms that happen at the same time, such as increased saliva (spit), dizziness, light-headedness, trouble swallowing, skin temperature changes, and a fast heart rate.

Vomiting is also described as “throwing up.” When you vomit, your stomach muscles contract (squeeze) and push the contents of your stomach out through your mouth. You might or might not feel nauseated.

Retching is when you try to vomit without bringing anything up from your stomach. Other words used to describe retching are gagging or dry heaves.

Nausea and vomiting often happen at the same time, but they can be 2 different problems.

## What causes nausea and vomiting in people with cancer?

Nausea and/or vomiting in the person with cancer can be caused by many different things, such as:

- Chemotherapy (also called chemo)
- Radiation therapy
- The cancer itself, especially if it's in or affecting the brain
- Certain other (non-chemo) medicines
- Bowel slowdown or blockage (obstruction)
- Constipation
- Inner ear problems
- An imbalance of minerals and salts (electrolytes) in the blood

- Infections
- Anxiety
- The expectation of vomiting due to past vomiting in the same setting (this is called anticipatory vomiting)
- Other diseases or illnesses

## How does nausea and vomiting occur?

Doctors think that vomiting is most likely controlled by the part of the brain called the vomiting center. Less is known about how nausea occurs. When you are given chemo, 2 things happen:

- A certain area of the brain is triggered
- Certain areas of the esophagus (the tube that connects the mouth to the stomach), stomach, small intestine, and large intestine are triggered

These triggers activate a reflex pathway that leads to nausea and vomiting. Drugs can be used to block different parts of this pathway to control and prevent nausea and vomiting.

## Are nausea and vomiting common in people with cancer?

Some chemotherapy drugs are more likely to cause nausea and vomiting than other others. Doctors classify chemo drugs according to their emetogenic potential (how likely the drug will cause nausea or vomiting) as high, moderate, low, or minimal risk. Drugs are used to help control and even prevent nausea and vomiting depending on this risk.

Drugs used to control these side effects are called anti-nausea/vomiting drugs. You may also hear them called anti-emetics. Every person with cancer who's getting treatments that cause nausea or vomiting can, and should, get medicines to keep this from happening.

## What health problems can nausea and vomiting cause?

Nausea and vomiting are 2 of the most dreaded, unpleasant side effects of cancer treatment, but they only rarely become life-threatening.

Still, nausea and vomiting can make it hard to get the nutrition your body needs. And repeated vomiting can lead to dehydration, which is a lack of fluids and minerals your body needs. Dehydration can make you not want to eat or drink anything, and if it continues, it can become a serious problem very quickly. Be sure to let your cancer care team know right away if any of these happen:

- You can't keep fluids down
- You can't take the medicines you need

- You're vomiting for 24 hours or longer

Vomiting can also cause tiredness (fatigue), trouble concentrating, slow wound healing, weight loss, and loss of appetite. It can interfere with your ability to take care of yourself and may lead to changes in your treatment plan.

## What should I ask my cancer care team about nausea and vomiting?

Ask your cancer care team these questions:

- Is my cancer treatment likely to cause nausea and vomiting?
- Can my nausea and vomiting be prevented or controlled?
- How will you decide which anti-nausea/vomiting treatments I should use?
- Do the anti-nausea/vomiting treatments you want me to use have side effects?
- When and how often should I take each medicine?
- What will we do if the treatment doesn't control my nausea and vomiting?
- At what point do I need to call if the treatment isn't working?

## References

National Cancer Institute. Nausea and Vomiting PDQ<sup>®</sup> last modified 1/4/2016. Accessed at [www.cancer.gov/cancertopics/pdq/supportivecare/nausea/Patient](http://www.cancer.gov/cancertopics/pdq/supportivecare/nausea/Patient) on April 5, 2016.

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## Chemotherapy-related nausea and vomiting

Chemotherapy (chemo) is treatment that uses drugs (either alone or in combination) to treat cancer. There many different kinds of chemo drugs. Some can make you sick while others may not.

How likely you are to have nausea and vomiting while getting chemo depends on many things. Some of these are:

- The types of chemo drugs used
- The dose of the drugs (high doses of chemo are more likely to cause nausea and vomiting)

- When and how often the drug is given; for example, if doses of a chemo drug that causes nausea and vomiting are given close together, there's less time for the person to recover from the effects of the last dose before the next one is given
- How the drugs are given; for instance, chemo given into a vein (intravenous, or by IV) may cause nausea and vomiting much faster than a drug given by mouth. This is because the drug given by IV is absorbed faster.
- Individual differences – not every person will have the same response to a dose or type of chemo
- Whether there are tumors in the brain
- Other drugs in use (such as pain medicines)

Some personal risk factors that may make you more likely to have nausea and vomiting include:

- Being female
- Being younger than 50
- Having had morning sickness during pregnancy
- Being very anxious or nervous
- Having ever had motion sickness
- Being prone to vomiting when you are sick
- Having been a non-drinker or light drinker (of alcohol)
- Having had chemo in the past

There's no way to know for sure if you will have nausea and vomiting, but your doctor will consider these things when choosing anti-nausea/vomiting medicines to use with your cancer treatment.

## Types of chemo-related nausea and vomiting

**Acute nausea and vomiting** usually happens a few minutes to hours after chemo is given. It goes away within the first 24 hours. The worst of this acute vomiting most often happens about 5 or 6 hours after chemo.

**Delayed nausea and vomiting** starts more than 24 hours after chemo and up to 5 to 7 days after treatment. It's more likely with certain types of chemo. Ask your doctor if the chemo you're getting is known to cause delayed nausea and vomiting.

**Anticipatory nausea and vomiting** is a learned or conditioned response. It appears to be the result of previous experiences with chemo that led to nausea and vomiting, in which the brain pairs the sights, sounds, and smells of the treatment area with vomiting.

Anticipatory nausea and/or vomiting starts as a person prepares for the next treatment, before the chemo is actually given. The brain expects that nausea and vomiting will happen like it did before. About 1 in 3 people will get anticipatory nausea, but only about 1 in 10 will have vomiting before the chemo.

**Breakthrough nausea and vomiting** happens even though treatment has been given to prevent it. When this happens, you need more or different medicines to prevent further nausea and vomiting.

**Refractory vomiting** is when you're getting medicines to prevent or control nausea and vomiting, but the drugs are not working. Your nausea and vomiting have become refractory (no longer respond) to the medicines you're getting to prevent it. This means you need more or different medicines to stop the nausea and/or vomiting. Refractory vomiting may happen after a few or even several chemo treatments.

## Anti-nausea/vomiting medicines used for chemotherapy

It's easier to prevent nausea and vomiting than it is to stop it once it starts. No one drug can prevent or control chemo-related nausea and vomiting 100% of the time. This is because chemo drugs act on the body in different ways and each person responds to chemo and the anti-nausea/vomiting drugs differently.

To choose the best treatment plan, the doctor:

- Considers how likely the chemo will cause nausea and vomiting
- Selects anti-nausea/vomiting medicines based on whether the chemo drugs are known to affect the vomiting center in the brain
- Asks about your past history of nausea and vomiting
- Asks how well any anti-nausea medicines have worked for you before
- Considers side effects of the anti-nausea/vomiting medicines
- Prescribes the lowest effective dose of the anti-nausea/vomiting medicine before chemo or radiation therapy is given
- Makes drug changes as needed to keep you from having nausea and vomiting

Anti-nausea/vomiting medicines are usually given on a regular schedule around the clock. This means you take them even if you don't have any problems.

Sometimes you may take the medicine on an "as needed" schedule. This means you take the medicine at the first sign of nausea to keep it from getting worse.

To help the drugs work best for chemo-related nausea and vomiting:

- Preventive treatment should start **before** the chemo is given.

- Treatment should **continue** for as long as the chemo is likely to cause vomiting, which may be up to 7 to 10 days after the last dose.

Each time you start a new cycle of chemo, be sure to tell your cancer team what did and didn't work the last time.

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National Cancer Institute. Nausea and Vomiting PDQ<sup>®</sup> last modified 1/4/2016. Accessed at [www.cancer.gov/cancertopics/pdq/supportivecare/nausea/Patient](http://www.cancer.gov/cancertopics/pdq/supportivecare/nausea/Patient) on April 5, 2016.

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## Radiation therapy-related nausea and vomiting

Nausea and vomiting can be caused by radiation therapy based on:

**The part of the body being treated.** The risk is greatest when the brain is treated, or the area of the body being treated includes a large part of the upper abdomen (belly) – mainly the small intestine (or small bowel) and/or the liver.

Treatment with total body radiation therapy (used in stem cell transplants) is linked to a high risk of nausea and vomiting if treatment is not given to prevent it. These people may also get high doses of chemo to prepare for transplant, which further raises the chance of nausea and vomiting.

**The dose of radiation given.** About half of people with cancer who get standard doses (180 to 200 centigray) of radiation to the abdomen (belly) have nausea and vomiting. These problems can start 1 to 2 hours after treatment and can last for hours.

**How often the treatment is given.** People who get one large dose of radiation have a greater chance of nausea and vomiting than those who get radiation in smaller doses.

**If chemotherapy is given along with the radiation.** When radiation is given along with chemo, the anti-nausea/vomiting treatment used is based on the nausea/vomiting risk of the chemo drugs given.

## Anti-nausea/vomiting medicines used for radiation therapy

If your radiation treatment is likely to cause nausea and vomiting, your doctor will probably give you medicines to help prevent it each day before you get radiation. The anti-nausea/vomiting medicines may be given by mouth or into a vein, or both.

To choose the best treatment plan, the doctor:

- Considers how likely the radiation will cause nausea and vomiting
- Asks about your past history of nausea and vomiting
- Asks how well any anti-nausea medicines have worked for you before
- Considers side effects of the anti-nausea/vomiting medicines
- Prescribes the lowest effective dose of the anti-nausea/vomiting medicine before radiation therapy is given
- Makes drug changes as needed to keep you from having nausea and vomiting

Anti-nausea/vomiting medicines are usually given on a regular schedule around the clock. This means you take them even if you don't have any problems.

Sometimes you may take the medicine on an "as needed" schedule. This means you take the medicine at the first sign of nausea to keep it from getting worse.

If you have nausea or vomiting, be sure to tell your doctor so that it can be treated.

## References

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## Medicines to prevent and treat nausea and vomiting

Many medicines or combination of medicines are available to help prevent vomiting. These may also control nausea.

There are several different pathways that trigger nausea and vomiting. Antiemetic drugs have been developed to target and block these pathways. Some of these drugs target the vomiting center in the brain, while others work as rescue therapy if the initial nausea medicine doesn't work. Based on this knowledge, and the treatment's potential to cause nausea and vomiting, your doctor will recommend certain anti-nausea/vomiting medicines. **You might have to try a few different medicines to find the ones that work best for you.**

## Types of anti-nausea/vomiting drugs

Anti-nausea/vomiting drugs (sometimes called *anti-emetics*) are grouped by how they work in the body.

- **Serotonin (5-HT3) antagonists** block the effects of serotonin, a substance that commonly triggers nausea and vomiting. These drugs are given before chemo and then for a few days afterward. (Examples: ondansetron, granisetron, dolasetron)
- **NK-1 antagonists** help with delayed nausea and vomiting. They're often given along with other anti-nausea medicines. (Example: aprepitant)
- **Steroids** are often given along with other antiemetic drugs. The way which steroids work to treat nausea and vomiting is not fully understood. (Example: dexamethasone)
- **Dopamine antagonists** target dopamine to help prevent this substance from binding to areas in the brain that trigger nausea and vomiting. Many times these drugs are given when nausea and vomiting is not well controlled by other drugs. (Examples: prochlorperazine, metoclopramide)
- **Anti-anxiety drugs** can help reduce nausea and vomiting by reducing anxiety and helping the person feel more calm and relaxed. (Examples: lorazepam, alprazolam)
- **Cannabinoids** contain the active ingredient in marijuana. These drugs may be used to treat nausea and vomiting from chemo when the usual anti-emetic drugs don't work. They also may be used to stimulate appetite. Younger patients and those who used marijuana in the past tend to tolerate the side effects better. (Example: dronabinol)
- **Antacids** may be used to reduce indigestion and heartburn, which can feel like and sometimes lead to nausea and vomiting. (Examples: ranitidine, famotidine)

**Note:** Drug names are given only as examples. This is **not** a complete list of the drugs in each group.

## Cost

Many of these drugs are very expensive and you might need pre-approval from your health insurance before they will be covered. Others are available as generic drugs and cost a lot less than the name brands. Don't be afraid to talk to your cancer care team



about the cost of these drugs, what your options are, and what you might have to pay out of pocket.

## How are anti-nausea/vomiting medicines given?

There are many ways to take anti-nausea/vomiting medicines. For instance, you may be able to take them:

- Through an IV
- By mouth as a pill or liquid you swallow
- As a tablet that dissolves under your tongue
- As a suppository
- Through a patch that sticks to your skin

Your doctor will consider these things when deciding the best way to give your anti-emetics:

- How likely it is that the chemo will cause nausea and vomiting
- How bad your nausea and/or vomiting is
- The easiest way for you to take the medicine
- What you prefer
- How quickly the drug will start working
- Your medical insurance coverage (many of these drugs are very expensive, especially in IV form)

If the drugs used at first don't work, your doctor can switch you to another drug or add a new drug. Another option is to give the drugs a different way (by a different route). Taking pills by mouth is often the best, easiest, and cheapest way to prevent nausea and vomiting. But if you're already vomiting, or you can't swallow and keep things down, the medicine might need to be given another way.

Let your doctor know if you are still having problems despite treatment. Don't let nausea and vomiting make you feel bad and keep you from getting the nutrition your body needs during treatment. There's no reason for you to have nausea and vomiting. There are many drugs that can be used to prevent and treat these side effects.

## References

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## Non-drug treatments for nausea and vomiting

Anti-nausea/vomiting medicines (anti-emetics) are the main treatment for nausea and vomiting, but some non-drug treatments can also be used. These involve using your mind and body with the help of a qualified therapist.

Non-drug treatments may be used alone for mild nausea, and are often helpful for anticipatory nausea and vomiting. These methods can be used along with anti-nausea/vomiting medicines for a person who's taking chemo drugs that are likely to cause nausea and vomiting. If you'd like to try one of these methods, ask a member of your cancer care team to refer you to a therapist trained in these techniques.

All of these methods try to decrease nausea and vomiting by:

- Helping you feel relaxed
- Distracting you from what's going on
- Helping you feel in control
- Making you feel less helpless

Below are some non-drug treatments that have helped some people. Most of them have few or no side effects. And with the proper training, nearly anyone can use most of these.

### Self-hypnosis

Self-hypnosis was the first technique used to make behavior changes to control nausea and vomiting. It creates a state of intense attention, willingness, and readiness to accept an idea. It's been shown to work very well with children and teens.

### Progressive muscle relaxation

Progressive muscle relaxation (PMR) teaches a person to relax by progressively tensing and releasing different muscle groups. It's been used to decrease the nausea and vomiting caused by chemo.

Patients who learn PMR often go on to use this method as a way to cope with other stresses, too. It's also used to help with nervousness, pain, anger, headaches, and depression.

## Biofeedback

Biofeedback helps people reach a state of relaxation. Using biofeedback, a person learns to control a certain physical response of the body, such as nausea and vomiting. This is done by tuning in to the moment-to-moment body changes that are linked to the physical response. For example, biofeedback can be used to prevent skin temperature changes, such as those that often happen before nausea and vomiting starts. Biofeedback alone has not been found to work as well as for nausea and vomiting as the combination of biofeedback and progressive muscle relaxation.

## Guided imagery

Guided imagery lets people mentally remove themselves from the treatment center and imagine that they are in a place that's relaxing for them. The place can be a vacation spot, a room at home, or some other safe or pleasant place. While trying to imagine what they usually feel, hear, see, and taste in the pleasant place, some people can mentally block the nausea and vomiting.

## Systematic desensitization

Systematic desensitization helps people learn how to imagine an anxiety-producing situation (such as nausea and vomiting) and reduce the anxiety related to the situation. In most cases, what a person can imagine without anxiety, he or she can then experience in the real world without anxiety.

## Acupuncture or acupressure

Acupuncture is a traditional Chinese technique in which very thin needles are put into the skin. There are a number of different acupuncture techniques, including some that use pressure rather than needles (acupressure). Some clinical studies have found it may help treat anticipatory nausea.

## Music therapy

Specially trained health professionals use music to help relieve symptoms. Music therapists may use different methods with each person, depending on that person's needs and abilities. There's some evidence that, when used with standard treatment, music therapy can help to reduce nausea and vomiting due to chemo. It can lower heart rate and blood pressure, relieve stress, and give a sense of well-being.

## References

National Cancer Institute. Nausea and Vomiting PDQ<sup>®</sup> last modified 1/4/2016. Accessed at [www.cancer.gov/cancertopics/pdq/supportivecare/nausea/Patient](http://www.cancer.gov/cancertopics/pdq/supportivecare/nausea/Patient) on April 5, 2016.

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