



## What is cannabinoid hyperemesis syndrome?

Cannabinoid hyperemesis syndrome (CHS) is a condition that leads to repeated and severe bouts of vomiting. It is rare and only occurs in daily long-term users of marijuana (cannabis). Usually marijuana and other cannabinoids decrease nausea and vomiting, but in some high frequency long-term users, marijuana has the opposite effect.

Marijuana is the dried leaves, flowers, stems, and seeds from the *Cannabis sativa* plant. Hashish is made from the concentrated resins of the *Cannabis sativa*'s female flower. Marijuana has several active substances. These include tetrahydrocannabinol (THC) and related chemicals. These bind to molecules found in the brain. That causes the drug "high" and other effects that users feel.

Your digestive tract also has a number of molecules that bind to THC and related substances. So marijuana also affects the digestive tract. For example, the drug can alter the time it takes the stomach to empty. It also affects the esophageal sphincter. That's the tight band of muscle that opens and closes to let food from the esophagus into the stomach. Long-term marijuana use can change the way the affected molecules respond and lead to the symptoms of CHS.

Marijuana is the most widely used illegal drug in the U.S. Young adults are the most frequent users. A small portion of these people develop CHS. It usually only happens in people who have regularly used marijuana for several years. Often CHS affects those who use the drug at least once a day.

## What causes cannabinoid hyperemesis syndrome?

Marijuana has very complex effects on the body. Experts are still trying to learn exactly how it causes CHS in some people.

In the brain, marijuana often has the opposite effect of CHS. It helps prevent nausea and vomiting. The drug is also good at stopping such symptoms in people having chemotherapy.

In the digestive tract, marijuana seems to have the opposite effect. It actually makes you more likely to have nausea and vomiting. With first use, the signals from the brain may be more important. That may lead to anti-nausea effects at first. But with repeated use of marijuana, certain receptors in the brain may stop responding to the drug in the same way. That may cause the repeated bouts of vomiting found in people with CHS.

It still isn't clear why some heavy marijuana users get the syndrome. But others do not.

## What are the symptoms of cannabinoid hyperemesis syndrome?

People with CHS suffer from repeated bouts of vomiting. In between these episodes are times without any symptoms. Healthcare providers usually divide these symptoms into 3 stages. They are the prodromal phase, the hyperemetic phase, and the recovery phase.

During the prodromal phase, the main symptoms are usually early morning nausea and belly (abdominal) pain. Some people also develop a fear of vomiting. Most people keep normal eating patterns during this time. Some people use more marijuana because they think it will help stop the nausea. This phase may last for months to years.

The hyperemetic phase is next. Symptoms during this time may include:

- Ongoing nausea
- Repeated episodes of vomiting
- Abdominal pain
- Decreased food intake and weight loss
- Symptoms of dehydration

During this phase, vomiting is often intense and overwhelming. Many people take a lot of hot showers during the day. They find that doing so eases their nausea. (That may be because of the effects of the hot temperature on a part of the brain called the hypothalamus. It has effects on both temperature regulation and vomiting.) People often first seek medical care during this phase.

The hyperemetic phase may continue until the person completely stops using marijuana. Then the recovery phase starts. During this time, symptoms go away. Normal eating is possible again. This phase can last days to months. Symptoms usually come back if the person tries marijuana again.

## How is cannabinoid hyperemesis syndrome diagnosed?

Many health problems can cause repeated vomiting. To make a diagnosis, your healthcare provider will ask you about your symptoms and your past health. He or she will also do a physical exam, including an exam of your abdomen.

Your healthcare provider may also need more tests to rule out other causes of the vomiting. That's especially the case for ones that may signal a health emergency. Based on your other symptoms, these tests might include:

- Blood tests for anemia and infection
- Tests for electrolytes
- Tests for pancreas and liver enzymes, to check these organs
- Pregnancy test
- Urine analysis, to test for infection or other urinary causes
- Drug screen, to test for drug-related causes of vomiting
- X-rays of the abdomen, to check for conditions like blockage
- Upper endoscopy, to view the stomach and esophagus for possible causes of vomiting
- Head CT scan, if a nervous system cause of vomiting seems likely
- Abdominal CT scan, to check for health problems that might need surgery

CHS was only recently discovered. So some healthcare providers may not know about it. As a result, they may fail to spot it for many years. They often confuse CHS with cyclical vomiting disorder. It's a health problem that causes similar symptoms. A gastroenterologist might make the diagnosis.

## How is cannabinoid hyperemesis syndrome treated?

If you have had severe vomiting, you might need to stay in the hospital for a short time. During the hyperemesis phase, you might need these treatments:

- Fluid replacement for dehydration, given through an IV
- Medicines to help decrease vomiting
- Pain medicine
- Proton-pump inhibitors, to treat stomach inflammation
- Frequent hot showers

Symptoms often ease after a day or two unless marijuana is used before this time.

To fully recover, you need to stop using marijuana all together. Some people may get help from drug rehabilitation programs to help them quit. Cognitive behavioral therapy or family therapy can also help. If you stop using marijuana, your symptoms should not come back.

## What are the complications of cannabinoid hyperemesis syndrome?

Very severe, prolonged vomiting may lead to dehydration. It may also lead to electrolyte problems in your blood. If untreated, these can cause rare complications such as:

- Brain swelling (cerebral edema)
- Muscle spasms or weakness
- Seizures
- Kidney failure
- Heart rhythm abnormalities
- Shock

Your healthcare team will quickly work to fix any dehydration or electrolyte problems. Doing so can help prevent these problems.

## What can I do to prevent cannabinoid hyperemesis syndrome?

You can prevent CHS by not using marijuana in any form. You may be reluctant to believe that marijuana might be the underlying cause of your symptoms. That may be because you have used it for many years without having any problems. The syndrome may take several years to develop. The drug may help prevent nausea in new users who don't use it often. But people with CHS need to completely quit using it. If they don't, their symptoms will likely come back.

Quitting marijuana may lead to other health benefits, like:

- Better lung function
- Improved memory and thinking skills
- Better sleep
- Decreased risk for depression and anxiety

## When should I call my healthcare provider?

Call your healthcare provider if you have had severe vomiting for a day or more.

## Key points about cannabinoid hyperemesis syndrome

- CHS is a condition that leads to repeated and severe bouts of vomiting. It results from long-term use of marijuana.
- Most people self-treat using hot showers to help reduce their symptoms.
- Some people with the syndrome may not be diagnosed for several years. Admitting to your healthcare provider that you use marijuana daily can significantly speed up the diagnosis and possibly avoid many invasive and expensive tests.
- You might need to stay in the hospital to treat dehydration from CHS.
- Symptoms start to go away within a day or two after stopping marijuana use. In people with CHS, symptoms almost always come back if they use the drug again.

## Next steps

Tips to help you get the most from a visit to your healthcare provider:

- Know the reason for your visit and what you want to happen.
- Before your visit, write down questions you want answered.
- Bring someone with you to help you ask questions and remember what your provider tells you.
- At the visit, write down the name of a new diagnosis, and any new medicines, treatments, or tests. Also write down any new instructions your provider gives you.
- Know why a new medicine or treatment is prescribed, and how it will help you. Also know what the side effects are.
- Ask if your condition can be treated in other ways.
- Know why a test or procedure is recommended and what the results could mean.
- Know what to expect if you do not take the medicine or have the test or procedure.
- If you have a follow-up appointment, write down the date, time, and purpose for that visit.
- Know how you can contact your provider if you have questions.