

What is cyclic vomiting syndrome?

If you've made your way to the CVS website, you may suspect you/your child has **cyclic vomiting syndrome (CVS)**. Cyclic vomiting syndrome is not a single disease, but rather a specific pattern of vomiting that can be seen in a number of disease states. There is no proven test to diagnose cyclic vomiting syndrome. Therefore, the correct diagnosis is made by having a doctor take a careful history, performing a careful physical examination, and conducting tests to exclude other diseases.

What features in the medical history suggest CVS?

Many different conditions cause recurrent vomiting. In most cases, however, CVS can be differentiated from other conditions causing vomiting by three main features: paroxysmal (sudden onset), stereotypical (similar episodes) with accompanying paleness and listlessness, and periods of wellness in between.

First, the vomiting in cyclic vomiting is **paroxysmal** (sudden onset). Most patients with CVS feel fairly well, until they get a sudden attack of nausea, which usually progresses to vomiting a little later. The nausea and vomiting often start in the early morning and can even wake the patient from sleep.

Second, the vomiting episodes are **stereotypical**. "Stereotypical episodes" means each vomiting attack resembles similar episodes they have had previously. Most often, the attacks last between 8 and 24 hours. However, for some patients, attacks can be as brief as 1-2 hours, and for others they can last up to days. Episodes often begin with nausea, and progress to vomiting, with some people vomiting several times an hour. During the vomiting episodes, patients often like to be left alone in a dark quiet place. Other symptoms can also occur during the episode. Many patients become dehydrated, and benefit from being hospitalized and given intravenous fluids. The episodes usually resolve by themselves without any obvious intervention or explanation.

Third, most patients feel completely well in between episodes (**intervening wellness**). After the episode resolves, the affected patient often returns to their "normal self" within a few hours, and starts drinking and eating. The period of wellness in

between episodes is between 1 and 3 months for most patients. However, some patients will have more frequent episodes (every 1-3 weeks), and others will have episodes that occur rarely (every 6-12 months).

Patients can have many other symptoms during an attack, including listlessness, paleness, weight loss, diarrhea, high blood sugar, reduced urine output, and abnormal blood chemistries.

How does a doctor distinguish CVS from other causes of vomiting?

Diagnosing cyclic vomiting is difficult for most doctors, because CVS is an uncommon condition that has no simple test to make a diagnosis. Often, young children presenting with CVS are said to have "a stomach virus" (viral gastroenteritis). However, when patients develop recurrent bouts of vomiting lasting hours or days, without diarrhea, and are completely well in between, the doctor (or parent) should consider CVS.

What other conditions cause vomiting?

There is a long list of diseases and problems that cause vomiting. These include: gastroesophageal reflux (acid reflux), stomach infections or inflammation, food allergies, pancreas inflammation and urinary infections. However, most conditions that cause vomiting tend to either be self-limited (i.e. they have a beginning and an end), or chronic (i.e.: people vomit a little bit every day or two). Having recurrent bouts of severe vomiting separated by well periods is very unusual, and should make a physician or family suspect the diagnosis of CVS.

What causes vomiting in a CVS pattern?

A number of medical studies suggest that in most patients, CVS is related to migraine. The sudden onset of attacks with spontaneous resolution is also seen in patients with migraine headaches. Most (but not all) children with CVS have a family history of migraine. As affected children get older, many will go on to develop migraine headaches. In addition, many of the treatments used to treat migraine headaches are also effective in treating CVS.

Do other conditions need to be excluded?

Because there is no definitive test to diagnose CVS, a number of other conditions may need to be excluded as causes of the disorder. These include anatomic abnormalities of the bowel such as

malrotation. In children with malrotation, the intestines are abnormally positioned in the body from birth, and can twist on themselves. A second condition to be considered is **ureteropelvic junction obstruction**, in which urinary flow out of the kidneys is blocked, leading to backup of urine into the kidney, which in turn leads to vomiting. At the present, research is taking place to study the effects of using cannabis for CVS. Very rarely, brain tumors or other lesions in the head can present with recurrent vomiting. Lastly, **metabolic disease (hereditary enzyme deficiencies)** can cause recurrent vomiting, particularly in infants and young children, because there is a missing enzyme in the patient leading to buildup of toxins in the blood and urine.

What testing should be performed if cyclic vomiting is suspected?

In general, the history will strongly suggest CVS. However, in many cases, a physician may need to perform further tests to exclude other conditions. These tests may include: an **upper GI series** (x-ray of the stomach to exclude malrotation), an **abdominal ultrasound** (ultrasound of kidneys and gallbladder to rule out pathology), and a **CT scan or MRI of the head**. In addition, during a CVS episode, **blood tests** and **urine tests** may need to be obtained to evaluate for other causes of the episode, including infection, inflammation of the pancreas, and metabolic enzyme problems). In some patients, **endoscopy** (examination of the esophagus and stomach with a scope) may be needed.

If I think my child or I has cyclic vomiting, what should I do?

The most important thing to do is to find a physician who can take a careful history and determine if the history is consistent with CVS. While some pediatricians are comfortable and have experience in making the diagnosis, very often a definitive diagnosis will require referral to a pediatric specialist, either a neurologist or gastroenterologist). After the history, examination, and testing, if your physicians feel that CVS is likely, they will discuss therapy with you.

What therapies are available?

Treatment for CVS is divided into two major types: **abortive** therapy and **prophylactic** therapy. **Abortive therapy** means giving treatments to stop the episode once it starts, and only giving that treatment during the sick, in order to prevent episodes from coming on.

What are the abortive therapies (therapies that might help DURING an episode)?

Once CVS episodes start, they can be very hard to stop. For many patients, the best treatment is supportive, and can include intravenous fluids with a high percentage of dextrose and a quiet room in a hospital. Anti-nausea medicines, including ondansetron (Zofran), promethazine (Phenergan), and chlorpromazine (Thorazine) are sometimes used to reduce the feelings of nausea. Because patients may be anxious and just feel lousy during an attack, they may benefit from an anti-anxiety medication such as lorazepam (Ativan). Other patients may benefit from antimigraine treatments like sumatriptan (Imitrex). The combination of Thorazine and Benadryl is often used to sedate the person deeply enough to all rest and possibly break the cycle. After enough time passes (usually hours to days), most patients come out of the episode.



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