Patient education: Nausea and vomiting in infants and children (Beyond the Basics)

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INTRODUCTION

Nausea and vomiting are common in children and are usually part of a mild, short-lived illness, frequently caused by a viral infection.

Although most children recover from nausea and vomiting without any treatment, it is important to know when to seek help if the child does not get better.

Spitting up in infants (gastroesophageal reflux) is discussed separately. (See "Patient education: Acid reflux (gastroesophageal reflux) in infants (Beyond the Basics)".)

WHY DOES VOMITING OCCUR?

Vomiting occurs when nerves in the body or brain sense a trigger, such as food poisoning, certain infections or medicines, or motion. Nausea usually, but not always, occurs before vomiting. Younger children may not be able to recognize nausea, although they may complain of a stomach ache or have other general complaints.

Vomiting often has a benefit since it provides a way for the body to get rid of potentially harmful substances. However, medicines and methods to induce vomiting (eg, syrup of ipecac, placing a finger in the throat) are no longer recommended, even if an infant or child has ingested a harmful substance. In this case, it is best to immediately call for emergency medical assistance, available in the United States by calling 911.

Vomit versus spit up — There is a difference between vomiting and spitting up, although the terms are often used interchangeably. Vomiting usually has more force behind it and is larger in amount. Spitting up often occurs with a burp after feeding. The medical term for this is gastroesophageal reflux (GER). Most infants spit up milk or formula through the mouth or nose. (See "Patient education: Acid reflux (gastroesophageal reflux) in infants (Beyond the Basics)".)

CAUSES OF VOMITING

Vomiting can be caused by a number of different problems. The possible causes of vomiting depend upon a child's age.

Newborns and young infants — It can be hard to tell if an infant is spitting up or vomiting because some infants reflux forcefully or in large amounts. Your child's doctor or nurse can help to determine the cause and if treatment is needed.

In newborns and young infants (up to three months old), forceful vomiting can indicate a serious condition and always requires further evaluation. Potential causes of vomiting in these infants include a blockage or narrowing of the stomach (pyloric stenosis) or a blockage of the intestines (intestinal obstruction).

Infants can also vomit because of infections of the intestine or other parts of the body. Any young infant (newborn to three months) who develops a temperature of 100.4°F (38°C) or higher, with or without vomiting, should see a doctor or nurse.

Older infants and children — The most common cause of vomiting in older infants and children is infectious gastroenteritis (an infection of the stomach or intestines), usually caused by a virus. Vomiting caused by gastroenteritis usually begins suddenly and resolves quickly, often within 24 to 48 hours. Other signs of gastroenteritis can include nausea, diarrhea, fever, or abdominal pain. (See "Patient education: Acute diarrhea in children (Beyond the Basics)".)

Gastroenteritis can develop after eating contaminated food or putting a contaminated object (or hand) into the mouth. The viruses that commonly cause gastroenteritis are spread easily. Careful hygiene (especially hand washing) can prevent these infections from spreading.

Less commonly, vomiting occurs after consuming improperly stored or prepared foods that contain bacteria or toxins; this is called food poisoning. (See "Patient education: Foodborne illness (food poisoning) (Beyond the Basics)".)

Other illnesses can also cause vomiting in older infants and children, including gastroesophageal reflux, peptic ulcer disease, an intestinal blockage (obstruction), cyclic vomiting syndrome, respiratory and urinary tract infections, and others. (See "Patient education: Acid reflux (gastroesophageal reflux) in infants (Beyond the Basics)" and "Patient education: Gastroesophageal reflux disease in children and adolescents (Beyond the Basics)".)

Adolescents — Similar to children, the most common cause of nausea and vomiting in adolescents is infectious gastroenteritis. Vomiting usually resolves within 24 to 48 hours in an adolescent with gastroenteritis.

Less common causes of vomiting in adolescents include appendicitis (inflammation of the appendix), induced vomiting (eg, as seen with bulimia), frequent use of marijuana (cannabis), pregnancy, gastric ulcers (of the stomach), pancreatitis (inflammation of the pancreas), inflammatory bowel disease (eg, Crohn disease), and consumption of toxic substances (eg, overdose).

NAUSEA AND VOMITING DIAGNOSIS

Most children with vomiting do not need to be seen by a health care provider. However, you should monitor for signs that the child is getting worse or not getting better within 24 hours. If your child has severe or persistent pain or has signs of dehydration, she or he should be seen sooner. If you are concerned about your child, call the child's doctor or nurse. (See 'When to seek help' below.)

If the child sees a doctor or nurse, he or she will review the child's medical history, perform an examination, and, if needed, perform testing.

HOME CARE OF NAUSEA AND VOMITING

The following are some simple recommendations to help care for children with nausea and vomiting at home.

Monitor for dehydration — Dehydration can develop in children with vomiting.

Signs of mild dehydration include:

- A slightly dry mouth
- Thirst

Children who are mildly dehydrated do not need immediate medical attention but should be monitored for signs of worsening dehydration.

Signs of moderate or severe dehydration include:

- Decreased urination (not going to the bathroom or no wet diaper in six hours)
- A lack of tears when crying
- A dry mouth
- Sunken eyes
- Cool or clammy hands and feet
- Listlessness

A child who is moderately or severely dehydrated should be evaluated by a doctor or nurse as soon as possible.

Dietary recommendations — Children who are vomiting but are not dehydrated can continue to eat a regular diet as tolerated. Dehydrated children require rehydration (replacement of lost fluid). (See 'Oral rehydration therapy' below.)

Infants — If a breastfeeding infant vomits, he or she should continue to breastfeed unless your doctor or nurse tells you otherwise. Oral rehydration solutions (eg, Pedialyte) are not usually needed for infants who exclusively breastfeed, because breastmilk is more easily digested.

If your infant vomits immediately after nursing, you can try to breastfeed more frequently and for a shorter time. For example, breastfeed every 30 minutes for 5 to 10 minutes. If vomiting improves after two to three hours, resume the usual feeding schedule. If vomiting worsens or does not improve within 24 hours, call your child's doctor or nurse. (See 'When to seek help' below.)

If your infant drinks formula, initially offer one-half to one ounce of an oral rehydration solution (eg, Pedialyte) every 15 minutes for two to three hours. If vomiting occurs after drinking, wait 30 minutes and try again. If vomiting improves, resume feeding with full-strength infant formula. If vomiting worsens or does not improve within 24 hours, call your child's doctor or nurse. (See 'When to seek help' below.)

Older infants and children — Older infants and children who vomit can continue to eat, if desired. However, it is common for children to have little or no appetite during a vomiting

illness.

- Monitor for signs of dehydration, and do not force the child to eat, especially during the first 24 hours. Encourage the child to drink fluids. The best fluids are the commercially prepared oral rehydration solutions (eg, Pedialyte) (see 'Oral rehydration therapy' below). Other fluids, including water, diluted juice, or soda, can be given in small quantities.

- Apple, pear, and cherry juice, and other beverages with high sugar content, should be avoided. Sports drinks (eg, Gatorade) should also be avoided since they have too much sugar and have inappropriate electrolyte levels.

- Recommended foods include a combination of complex carbohydrates (rice, wheat, potatoes, bread), lean meats, yogurt, fruits, and vegetables. High-fat foods are more difficult to digest and should be avoided.

- It is not necessary to restrict a child's diet to clear liquids or the BRAT diet (bananas, rice, applesauce, toast). Although these and similar foods might be recommended to decrease diarrhea, these foods do not contain enough nutrients for a child.

Oral rehydration therapy — Oral rehydration therapy (ORT) was developed as a safer, less-expensive, and easier alternative to intravenous (IV) fluids. Oral rehydration solution (ORS) is a liquid solution that contains glucose (a sugar) and electrolytes (sodium, potassium, chloride), which are lost during vomiting and diarrhea.

ORS does not cure vomiting, but it does help to prevent and treat the dehydration that can develop because of a vomiting illness. You can buy ORS at most grocery stores and pharmacies in the United States without a prescription. A few widely available brands include Pedialyte, Infalyte, and ReVital, although generic brands work equally well (table 1). Gelatin, tea, fruit juice, rice water, and other beverages are not recommended in children who are dehydrated. Do not try to prepare ORS recipes at home, because the formulas must be exact.

You can give ORS at home if your child is mildly dehydrated, refusing to eat a normal diet, or has vomiting, diarrhea, or both. If needed, you can give ORS in frequent, small sips or small amounts by spoon, bottle, or cup over three to four hours. Your child's doctor or nurse might provide specific instructions for giving oral rehydration. One method is described below:

- The recommended amount is 5 teaspoons of ORS for every pound of body weight (or 50 milliliters per kilogram) (table 2). For a 20-pound (9-kg) child, this would equal 100 teaspoons (450 milliliters) of ORS. This amount should be given gradually, spread out over approximately four hours.

- Measure the solution with a standardized medicine syringe or measuring cup or spoon, rather than a regular cup or spoon.
- Give the fluid by teaspoonfuls (5 milliliters each) every one to two minutes or as tolerated.
- After you give the whole amount, the child can eat a normal diet.

Children who refuse to drink or who vomit immediately after drinking ORS should be monitored closely for worsening dehydration. Children who are not dehydrated can continue to drink ORS between episodes of vomiting to prevent dehydration. (See 'Monitor for dehydration' above.)

Medicines — Medicines to reduce nausea and vomiting, called antiemetics, might be recommended in certain situations (to reduce the risk of dehydration in children who vomit repeatedly or to reduce motion sickness). These medicines require a prescription, and you should not give them to an infant or child unless your child's doctor or nurse has recommended them. Nonprescription treatments for nausea or vomiting are not recommended for infants or children.

Preventing spread — If your child is vomiting, you need to be careful to avoid spreading the infection to yourself, your family, and friends. Wash your hands frequently, and keep sick children out of school or daycare. Children with vomiting (two or more times in 24 hours) that is caused by a contagious condition should be kept out of school or daycare until they have not vomited for 24 hours.

Hygiene measures — Hand washing is very effective and the preferred way to prevent the spread of infection. Wet your hands with water and plain or antimicrobial soap, and rub them together for 15 to 30 seconds. Pay special attention to the fingernails, between the fingers, and the wrists. Rinse your hand thoroughly, dry them with a paper towel, and throw away the paper towel.

Alcohol-based hand rubs are an acceptable alternative for disinfecting hands if a sink is not available. Spread the hand rub over the entire surface of your hands, fingers, and wrists until dry. You can use the rub over and over, if needed. Hand rubs are available as a liquid or wipe in small, portable sizes that are easy to carry in a pocket or handbag. If your hands are visibly dirty, you should wash them with soap and water.

WHEN TO SEEK HELP

You should call your doctor or nurse **immediately** if your child has any of the following:

- Bile (green) or blood-tinged (red or brown) vomit
- Any episode of forceful vomiting in a newborn or vomiting that continues for more than 24 hours in an infant or child
- If an infant refuses to eat or drink anything for more than a few hours
- Moderate to severe dehydration: dry mouth, no tears when crying, not urinating or having a wet diaper in four to six hours (for babies and young children) or not urinating in six to eight hours (for older children)
- Abdominal pain that is severe, even if it comes and goes
- Bloody bowel movements
- Fever higher than 102°F (39°C) once or fever higher than 101°F (38.4°C) for more than three days
- Behavior changes, including lethargy or decreased responsiveness

WHERE TO GET MORE INFORMATION

Your child's health care provider is the best source of information for questions and concerns related to your child's medical problem.

This article will be updated as needed on our website (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for health care professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

Patient education: Nausea and vomiting in adults (The Basics)
Patient education: Appendicitis in children (The Basics)
Patient education: Motion sickness (The Basics)
Patient education: Dehydration in children (The Basics)
Patient education: Pyloric stenosis in babies (The Basics)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

Patient education: Acid reflux (gastroesophageal reflux) in infants (Beyond the Basics)
Patient education: Acute diarrhea in children (Beyond the Basics)
Patient education: Foodborne illness (food poisoning) (Beyond the Basics)
Patient education: Gastroesophageal reflux disease in children and adolescents (Beyond the Basics)

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

Approach to the infant or child with nausea and vomiting
Clinical manifestations and diagnosis of gastroesophageal reflux disease in children and adolescents
Cyclic vomiting syndrome
Gastroesophageal reflux in infants
Gastroesophageal reflux in premature infants
Infantile hypertrophic pyloric stenosis
Management of gastroesophageal reflux disease in children and adolescents
Oral rehydration therapy

The following organizations also provide reliable health information:

- National Library of Medicine

  (www.nlm.nih.gov/medlineplus/healthtopics.html)

- Centers for Disease Control and Prevention

  (www.cdc.gov)

- National Institute of Diabetes and Digestive and Kidney Diseases

  (www.niddk.nih.gov/health-information/digestive-diseases)

- American Academy of Pediatrics

(www.aap.org)

[1-4]

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GRAPHICS

Comparison of oral rehydration solutions to other beverages

	Carbohydrate (g/L)	Sodium (mEq/L)	Potassium (mEq/L)
Oral rehydration therapy			
Ceralyte	40	70	20
Enfalyte	30	50	25
Pedialyte	25	45	20
Rehydralyte	25	75	20
Other beverages (not appropriate for rehydration)			
Apple juice	100 to 150	3	20
Chicken broth	0	250	5
Colas	100 to 150	2	0.1
Gatorade	45	20	3
Ginger Ale	90	3.5	0.1
Tea	0	0	0

Adapted from: King CK, Glass R, Bresee JS, et al. Managing acute gastroenteritis among children: oral rehydration, maintenance, and nutritional therapy. MMWR Recomm Rep 2003; 52:1.

Graphic 70752 Version 6.0

Amount of oral rehydration solution to give child (over 4 hours) for mild dehydration, based on weight

English system		Metric system	
Weight, lbs	**Volume, oz**	**Weight, kg**	**Volume, mL**
10	7.5	4	200
15	11.5	6	300
20	15	8	400
25	19	10	500
30	22.5	12	600
35	26.5	14	700
40	30	16	800
		18	900

Graphic 62163 Version 3.0

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Contributor disclosures are reviewed for conflicts of interest by the editorial group. When found, these are addressed by vetting through a multi-level review process, and through requirements for references to be provided to support the content. Appropriately referenced content is required of all authors and must conform to UpToDate standards of evidence.

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