

Presenting Symptoms of GERD in Infants, Older Children, and Adolescents	
Table 7-1 INFANTS Persistent vomiting Feeding difficulties Poor weight gain Irritability/arching Apnea/apparent life-threatening events	OLDER CHILDREN/ADOLESCENTS Heartburn, painful burping Nausea Epigastric abdominal pain Dental erosions Cough, wheezing, hoarseness

gastric emptying, which increases intragastric pressure and TLESR.^{4,7} Recently, there has been interest in a possible genetic basis for GERD. There has been concordance of GERD symptoms described in monozygotic twins. Family clustering of Barrett's esophagus and erosive esophagitis has been reported.⁷

Understandably, infants and children with underlying physical disorders will be more predisposed to GERD. These include congenital abnormalities of the gastrointestinal tract, such as diaphragmatic hernia, esophageal atresia, gastroschisis and omphalocele, hiatal hernia, and malrotation. Neurodevelopmental delay, physical stress, and infection can also exacerbate GER/GERD. The variety of age groups represented in the pediatric population naturally leads to a variability in GER/GERD presenting symptoms. Table 7-1 illustrates the difference between presenting symptoms of GER/GERD in infants, older children, and adolescents. Extraesophageal symptoms attributed to GER/GERD have been cited at all age ranges and include apnea/apparent life-threatening events (ALTE), respiratory symptoms, otitis media and sinusitis, feeding difficulties and irritability, and failure to thrive.

Until a child is 8 to 12 years of age, it is difficult to rely on verbalization of symptoms. Therefore, it is difficult to make a clinical diagnosis of GER/GERD in an infant based on symptoms alone. Vomiting suggests GER/GERD, but the differential diagnosis of vomiting in an infant or toddler is broad. Care must be taken to consider and exclude other causes of vomiting in this age group. Excellent references are available for this purpose.^{4,8,9} There are several diagnostic modalities available to assist in making a diagnosis of GER/GERD. These include contrast radiography (barium esophagram or upper GI series), nuclear scintigraphy, 24-hour pH monitoring and 24-hour pH monitoring combined with multiple channel intraluminal impedance monitoring (MII), and endoscopy with biopsy. Analysis of fluid from the esophagus, upper respiratory tract, ear effusions for lipid-laden macrophages (LAM), pepsin, and bilirubin has also been proposed. Finally, empiric medical therapy for GERD symptoms is sometimes utilized as a diagnostic test.

Although a barium esophagram and upper GI series are excellent studies to evaluate anatomy, they are poor screens for GER/GERD. Because the duration of the test is brief, GER is frequently missed. The significance of visualized GER during the study is hard to interpret, because the GER may be physiological.^{4,7} Nuclear scintigraphy is done by labeling milk or infant formula with technetium-99. The ingested bolus is followed for 1 hour. GER (acid and nonacid) can be identified, as well as pulmonary aspiration. Gastric emptying is also assessed. Limitations of the study are that evaluation standards are poorly established and that only immediate postprandial reflux is assessed. Pulmonary aspiration is rarely identified. Nuclear scintigraphy is generally not recommended for the evaluation of GER/GERD in infants and is rarely utilized in older children and adolescents.^{4,7,8} Esophageal manometry is more helpful in explaining