

Approach to a Neonate with Vomiting

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Introduction:

- Vomiting refers to acute expulsion of gastric contents through the mouth and/or nose. Vomiting should be differentiated from regurgitation, especially in infants.
- Regurgitation is the involuntary and effortless expulsion of small amounts of gastric contents that is not accompanied by nausea. Regurgitation is a relatively frequent symptom during the newborn period. In most cases this is unimportant and rarely persists.

Table. 1 Causes of vomiting -Medical

Gastrointestinal causes	NON Gastrointestinal causes
Gastroesophageal reflux	Infections- urinary tract infection, meningitis, sepsis, encephalitis, otitis media.
Overfeeding	Inborn error of metabolism- Defects in fatty acid oxidation or respiratory chain , Urea cycle defect Organic academia. Aminoacidopathies
Medications	Neurological -kernicterus, intracranial hemorrhage ,cerebral edema, hydrocephalus
Milk protein allergy	Endocrine dysfunction- congenital adrenal hyperplasia ,Neonatal tetany
Paralytic ileus(sepsis, electrolyte imbalance)	Renal dysfunction -Obstructive uropathy Renal failure

Table. 2. Surgical causes of Vomiting

Bilious vomiting	Non bilious vomiting
Necrotizing enterocolitis	Gastric volvulus
Intestinal malrotation +/- midgut volvulus	Esophageal atresia
Duodenal atresia/stenosis	Hypertrophic pyloric stenosis
Jejunal atresia/stenosis	Hirschsprung Disease
Meconium syndromes	
Gastrointestinal duplications	

Table. 3. Causes of vomiting depending upon the onset and duration-

Acute-Acute vomiting presents rapidly over 24 to 48 hours and can be associated with severe symptoms and dehydration	Chronic-Chronic vomiting is seen in baby who have had symptoms for several days to weeks. Chronic vomiting tends to be of low volume and infrequent, and it is rarely associated with dehydration	Cyclical- Cyclic vomiting is characterized by both symptomatic periods with a sudden onset, as well as by asymptomatic periods between episodes.
Milk protein-induced enterocolitis syndrome	Adrenal insufficiency	Adrenal insufficiency
Hirschsprung disease	GERD	IEM
Intestinal atresia	Hirschsprung disease	Malrotation with volvulus
Meningitis	Intestinal atresia	
Pyloric stenosis		
Sepsis		

Approach to a neonate with vomiting:

When the neonate with vomiting shall be evaluated?

1. Vomiting may be clinically significant in following situations -
 - 1) If the vomit contains blood (red or black, the color of the blood will depend upon how long the blood has been in the stomach) or is bile stained (green, not yellow)
 - 2) In case of projectile vomiting
 - 3) Sick neonate
 - 4) Associated with failure to thrive
 - 5) Associated with diarrhea
 - 6) Associated signs of abdominal distension, organomegaly, absent bowel sounds, tenderness, guarding
 - 7) History of delayed passage of meconium
 - 8) associated with dehydration .

Approach based on history:

- **Age of onset:** Symptoms within 48 hours after birth are likely due to congenital intestinal malformations.
- **Bilious or Nonbilious vomiting:**
 - Bilious vomit has a greenish appearance due to the presence of bile and is indicative of obstruction distal to the ampulla of Vater, the opening of the common bile duct into the duodenum.
 - It helps in anatomical localization of intestinal obstruction or pathology.



Fig. 1. Bilious vomiting

- **Well baby or sick baby :**
 - Well baby with pathological vomiting is likely due to underlying surgical abdomen – noncomplicated.

- **Does the vomitus contain blood?**

- Blood in the vomit indicates inflammation or damage to the GI mucosa and may indicate need for endoscopy to rule out acute upper GI bleed.
- Blood stained vomitus after birth - rule out maternal blood by **Apt test**.



Fig. 2. Blood stained vomiting

- **Projectile or non-projectile or projectile vomiting :**

- Points towards specific diagnosis – namely, pyloric stenosis.
- True expulsive vomiting should be distinguished from regurgitation, which is not associated with retching or prodromal features like nausea.



Fig. 3. Curd like vomiting

Approach based on examination:

- **Well or sick baby?** – Sick baby → sepsis or NEC or complicated surgical abdomen
- **Abdominal mass if any palpable?** →Surgical abdomen
- **Abdominal tenderness?** →Peritonitis or perforation
- **Bowel sound present or absent?** →Ominous signsuggests ileus

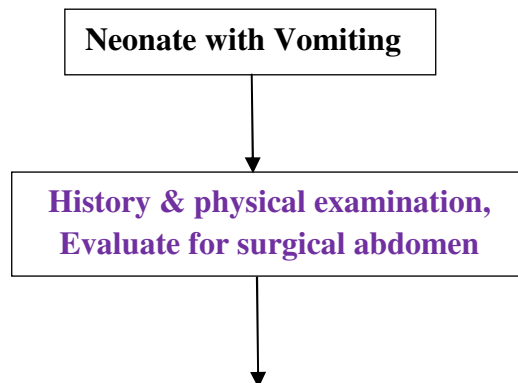
Approach based on investigations

- Septic screen –To rule out infectious causes
- Xray abdomen –

Table 4. Surgical conditions and characteristic findings on X ray abdomen

X ray findings	Causative condition
Pneumatosis intestinalis or portal veous gas	NEC
Crock screw appearance	Malrotation with volvulus
Single bubble abdomen	Pyloric atresia
Double bubble abdomen	Deodenal atresia
Triple Bubble abdomen	Jejunal atresia
Ground Glass appearance	Meconium ileus
Bowel distension with or without multiple air-fluid levels and paucity of air in pelvis	Hirschsprung disease

- USG abdomen
- Neurosonography-neurological causes
- Gastroscopy- In Upper GI bleed
- Barium enema- dilated proximal segment and the transition zone Hirschsprung disease
- EsophagealPH monitoring -GER
- Blood TMS and urine GCMS-IEMs and endocrine causes



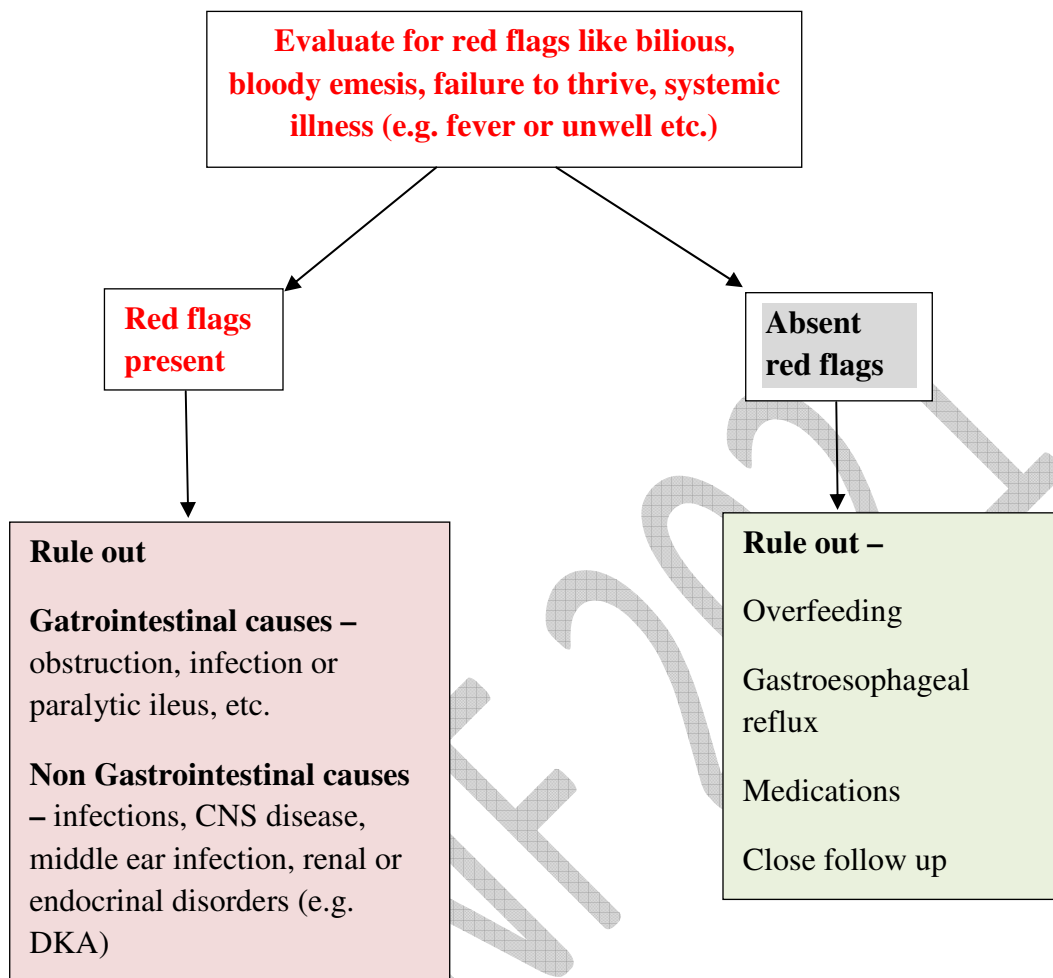


Fig. 4. Approach to a neonate with vomiting

Summary

- Detailed history helps in differentiating the cause of vomiting.
- Use descriptors such as bilious, projectile, and bloody to help rule out serious or specific causes.
- The differential diagnosis for vomiting are broad, includes GI as well as non GI causes.
- Dehydration and electrolyte imbalance are most common

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