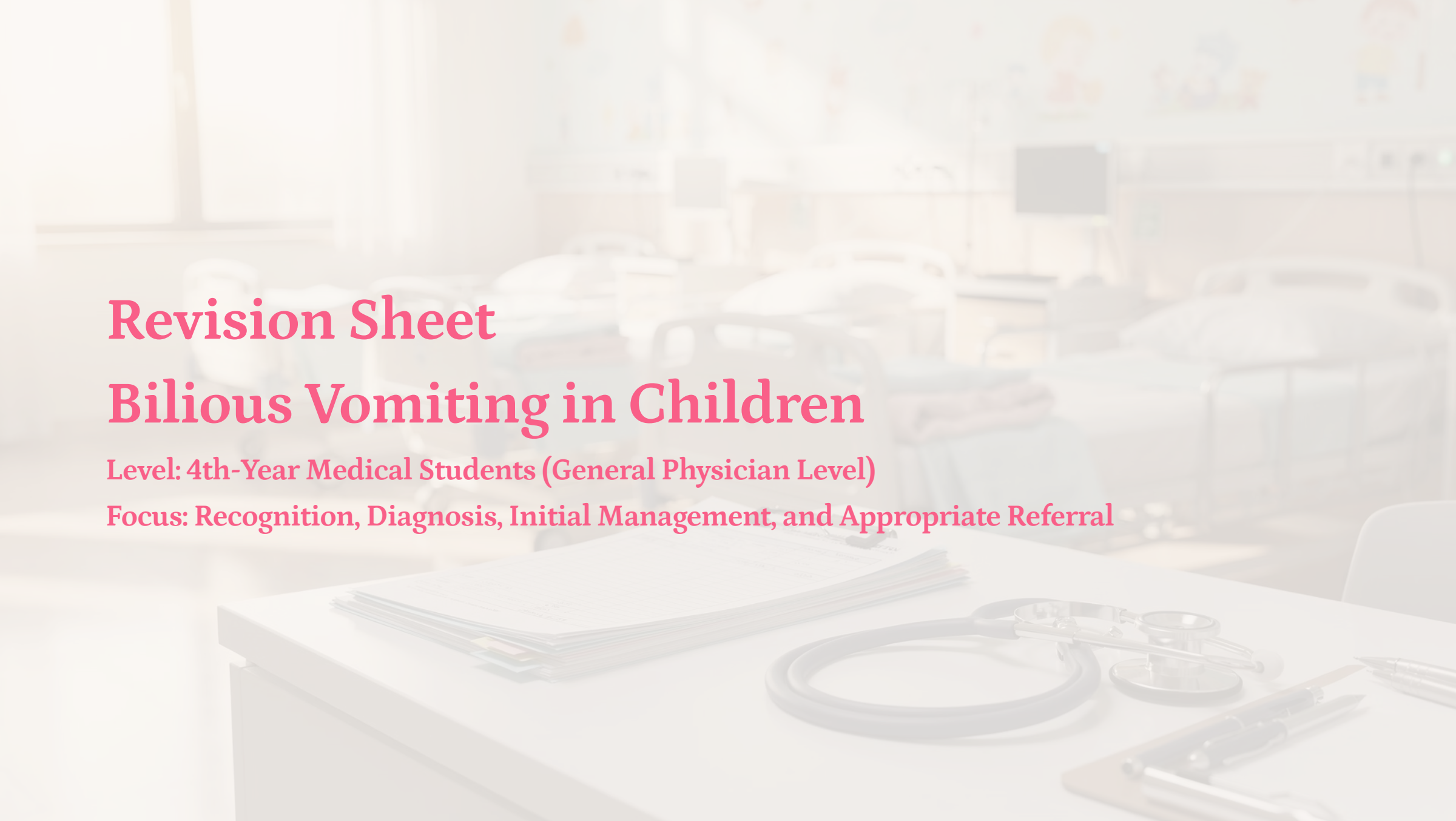


Revision Sheet

Bilious Vomiting in Children

Level: 4th-Year Medical Students (General Physician Level)

Focus: Recognition, Diagnosis, Initial Management, and Appropriate Referral

1. Definition

Bilious vomiting is green (dark green) vomitus caused by bile entering the stomach.

Bilious vomiting in infants and children should be considered intestinal obstruction until proven otherwise.

> ⚠ Important
>
> - Green = bile = surgical emergency until excluded.
> - Yellow vomit is not always bilious.

2. Clinical Presentation

Key History

Ask:

Question	Why important
Age at onset	Different causes by age
First episode or recurrent?	Acute obstruction vs chronic disease
Green or yellow?	True bilious vomiting
Projectile?	Pyloric stenosis (non-bilious)
Abdominal distension	Obstruction
Failure to pass meconium/stool	Hirschsprung disease, obstruction
Bloody stool	Intussusception, volvulus
Fever	Sepsis, NEC
Previous abdominal surgery	Adhesions
Pain (colicky vs constant)	Intussusception vs ischemia

Physical Examination

Assess ABC first.

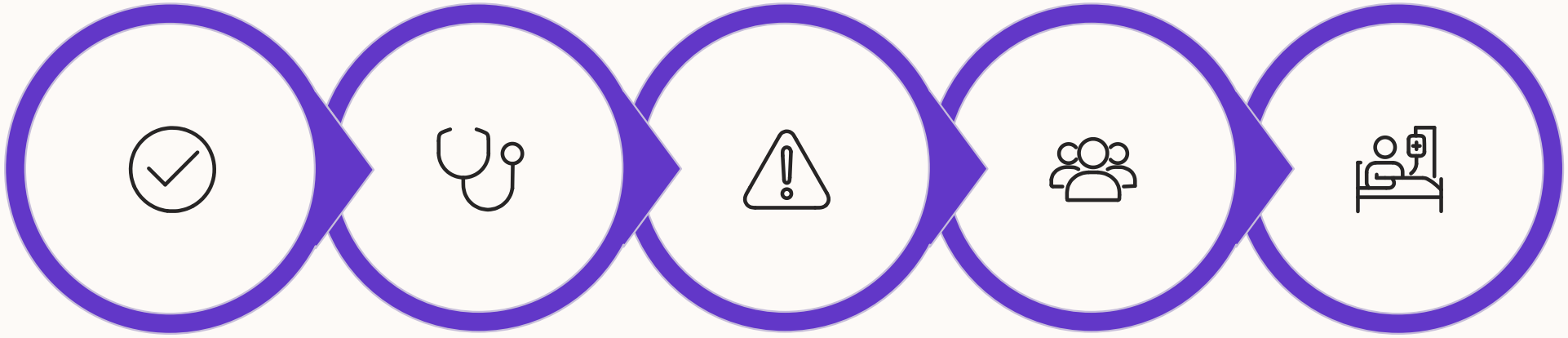
Look for:

- Toxic appearance
- Shock
- Dehydration
- Abdominal distension
- Tenderness
- Guarding/peritonitis
- Visible bowel loops
- Hernias
- Anal patency
- Signs of sepsis

Red flag findings

- Bilious vomiting
- Severe abdominal distension
- Peritonitis
- Bloody stool
- Shock
- Lethargy
- Absent bowel sounds

3. Diagnostic Approach



Confirm Bilious

Assess ABCs

Suspect Obstruction

Surgical Consult

Resuscitate

Each step must be followed in sequence to ensure safe and timely management of the child with bilious vomiting.

4. Differential Diagnosis

Neonates

Condition	Key clues
Malrotation with midgut volvulus ★	Sudden bilious vomiting, emergency
Duodenal atresia	First feed, minimal distension
Jejunal/ileal atresia	Distension + bilious vomiting
Hirschsprung disease	Delayed meconium
Meconium ileus	Cystic fibrosis
Necrotizing enterocolitis	Prematurity, bloody stool
Sepsis	Ill appearance

Infants

Condition	Clues
Malrotation/volvulus	Must exclude
Intussusception	Colicky pain, currant jelly stool
Incarcerated hernia	Groin swelling
Adhesions	Previous surgery

Older Children

Condition	Clues
Adhesive bowel obstruction	Previous surgery
Intussusception	Still possible
Appendicitis with ileus	Pain then vomiting
Internal hernia	Severe pain
Crohn disease obstruction	Chronic symptoms

⊗ **Must Not Miss**
✅ Midgut volvulus — Because bowel ischemia may occur within hours.

5. Investigations

Initial Laboratory Tests

- CBC
- Electrolytes
- Glucose
- Urea/Creatinine
- Venous blood gas
- Lactate
- CRP (if infection suspected)
- Blood culture if septic

Imaging

First test

Abdominal X-ray

May show:

- Double bubble
- Dilated bowel loops
- Air-fluid levels
- Free air

Gold standard when malrotation suspected

Upper GI contrast study — Shows abnormal position of duodenojejunal junction.

Ultrasound

Useful for:

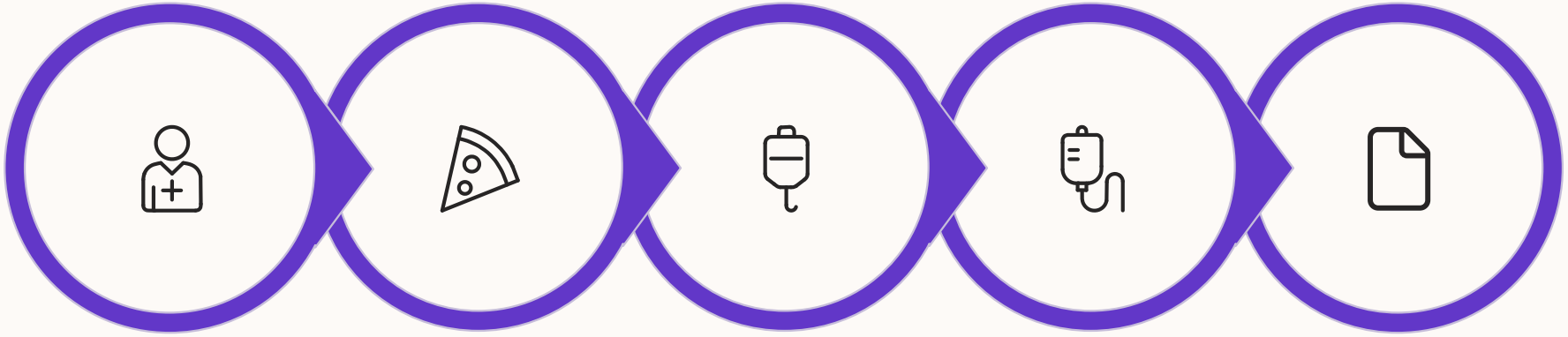
- Intussusception
- Volvulus (whirlpool sign)
- Free fluid

CT

Rarely first-line in children.

6. Management Algorithm

Child with Bilious Vomiting



ABC Stabilize | **NPO** | **IV Access** | **Fluid Resuscitation** | **NG Decompression**

Each step in the algorithm must be followed in order. Resuscitation and surgical consultation should not be delayed while awaiting imaging results.

7. Drug Summary Table

Medication	Indication	Dose
Normal saline	Initial resuscitation	20 mL/kg IV bolus, repeat if needed
Maintenance IV fluids	After stabilization	According to weight and electrolytes
Broad-spectrum antibiotics	Peritonitis, NEC, bowel ischemia	Local guideline
Analgesia	Pain	Do not delay diagnosis

⚠ Do not give oral medications before surgical evaluation.

8. Admission Criteria

All children with confirmed bilious vomiting require hospital admission.

Especially if:

- **Neonate**
- **Suspected obstruction**
- **Dehydration**
- **Electrolyte disturbance**
- **Abdominal distension**
- **Peritonitis**
- **Need for IV fluids**
- **Need for surgery**

9. Referral Criteria

Immediate Pediatric Surgical Referral

- Bilious vomiting
- Suspected malrotation
- Suspected volvulus
- Intussusception
- Incarcerated hernia
- Bowel perforation
- Peritonitis
- Intestinal obstruction

Pediatric Gastroenterology Referral

After surgical causes have been excluded and symptoms persist or recur.

10. Follow-Up

Depends on underlying diagnosis.

Monitor:

- **Hydration**
- **Electrolytes**
- **Feeding tolerance**
- **Return of bowel function**
- **Weight (infants)**

Postoperative patients require surgical follow-up.

11. Clinical Pearls

⭐ Green vomiting = intestinal obstruction until proven otherwise.

⭐ Never discharge a neonate with true bilious vomiting before excluding malrotation.

⭐ Normal abdominal examination does not exclude volvulus.

⭐ Delay in diagnosis may result in bowel necrosis and short bowel syndrome.

⭐ Early IV fluids improve outcomes.

⭐ Nasogastric decompression reduces aspiration risk and vomiting.

12. Common Mistakes in Exams and Practice

- ❌ Confusing yellow vomiting with green bilious vomiting.
- ❌ Assuming gastroenteritis before excluding obstruction.
- ❌ Delaying surgical consultation while waiting for imaging.
- ❌ Giving oral fluids.
- ❌ Forgetting NG decompression.
- ❌ Ignoring recurrent intermittent bilious vomiting (possible intermittent volvulus).
- ❌ Waiting for laboratory results before resuscitation.

13. Key Take-Home Messages

01

Bilious (green) vomiting is a surgical emergency until proven otherwise.

02

Malrotation with midgut volvulus is the most important diagnosis not to miss.

03

Stabilize first: ABCs, NPO, IV fluids, NG tube, correct electrolytes.

04

Obtain urgent pediatric surgical consultation—do not delay while awaiting complete investigations.

05

Abdominal X-ray is the usual initial imaging study; an upper GI contrast study is the preferred test when malrotation is suspected in a stable patient.

06

Ultrasound is particularly useful for diagnosing intussusception and may demonstrate the whirlpool sign in volvulus.

07

All neonates with bilious vomiting should be admitted for urgent evaluation.

08

Normal physical examination findings do not exclude volvulus.

09

Persistent abdominal pain, bloody stool, shock, or peritonitis indicate bowel ischemia until proven otherwise.

10

Prompt recognition and treatment can prevent bowel necrosis and reduce morbidity.

High-Yield Examination Box

Finding	Think of
Bilious vomiting in neonate	Malrotation with volvulus until proven otherwise
Double bubble	Duodenal atresia
Currant jelly stool	Intussusception
Delayed meconium	Hirschsprung disease
Premature infant + bilious vomiting + bloody stool	Necrotizing enterocolitis
Previous abdominal surgery	Adhesive bowel obstruction
Bilious vomiting + groin mass	Incarcerated inguinal hernia

Suggested References

- American Academy of Pediatrics
- North American Society for Pediatric Gastroenterology, Hepatology and Nutrition
- European Society for Paediatric Gastroenterology Hepatology and Nutrition
- National Institute for Health and Care Excellence

These recommendations are consistent with current pediatric emergency and pediatric surgery guidance and are appropriate for the level of a future general physician, emphasizing rapid recognition, stabilization, and timely surgical referral.