PEDIATRIC *C. DIFFICILE*

7/2021

General Risk Factors

- Antibiotic use within 3 months
- Hospitalization within 30 days
- Acid suppressive therapy
- History of prematurity
- History of abdominal surgery

Risk Factors for SEVERE Disease

- Immunosuppressed state
- Severe comorbid disease(s)
- Hirschsprung's disease
- Dysmotility disorder
- IBD

Indications for Testing

Patients must be symptomatic to send testing

<12 months:
Rarely indicated; High rate of asymptomatic carriage

Symptomatic infants if no alternative etiology* w/:
- Risk factors for severe CDI
- History of frequent antibiotic exposures
- C. diff outbreaks in hospital unit

12-36 months:
Indicated if no alternative etiology* for diarrhea

See ">36 months" section for indications

>36 months:
Indicated if patient meets any of the following criteria:
- Diarrhea (≥3 unformed stools within 24 hours w/o alternative explanation)
- Unresolved symptoms after full treatment course
- Colitis on imaging w/accompanying symptoms
- Leukocytosis (WBC >15k cells/mm^3) & ileus
- Abdominal pain with radiographic evidence of bowel thickening
- Toxic megacolon
- Pseudomembranes

Testing Results

"*Clostridium difficile* by PCR" assay is the preferred test

PCR Result	Toxin Result	Interpretation
-		No toxigenic *C. difficile* present ~99% negative predictive value
+	+	**Toxigenic *C. difficile* present.**
+	-	May represent colonization or active clinical infection (requires clinical correlation to determine if treatment is warranted)

GI Panel is for use in patients w/community-acquired diarrhea (send in the first 3 days of hospitalization)
or
Hospitalized patients at risk for etiologies other than C. difficile (e.g., norovirus outbreak)

There is no role for performing both tests

Classifications

Mild/moderate
- CDI and no criteria in the "severe" or "complicated" categories

Severe

At least 2 abnormal lab values:
- WBC ≥15K
- SCr ≥1.5x baseline
- ANC ≤500
- ALB ≤2.5

OR

At least 1 high-risk condition:
- SOT/BMT <100 days
- Small bowel CDI
- IBD
- Hirschsprung's disease
- Dysmotility disorder
- Neutropenic from malignancy

Complicated

ANY of the following:
- Septic shock
- Severe sepsis
- Ileus or bowel obstruction
- Toxic megacolon
- Peritonitis
- Bowel perforation

Prophylaxis (can be considered for high risk patients)

Broad Spectrum Antibiotics

3 or more episodes in the past year
- **Vancomycin** PO 10 mg/kg/dose PO BID (max: 125 mg/dose)
  - Continue for the duration of broad spectrum antibiotic exposure

Treatment

Treatment is only indicated in **SYMPTOMATIC** patients
- Discontinue/change antibiotics if possible
- Avoid PPI/H2 blockers without an appropriate indication
- Implement infection control measures: Infection Control C. diff

1st episode

Mild/moderate
- **Metronidazole** 7.5 mg/kg/dose PO QID x10 days (max: 500 mg/dose)

Severe
- **Vancomycin** 10 mg/kg/dose PO QID x10 days (max: 125 mg/dose)

1st Recurrence*

***Recurrence defined as repeat infection within 8 weeks of previous episode**
- If metronidazole was used for 1st episode:
  - **Vancomycin** 10 mg/kg/dose PO QID x10 days (max: 125 mg/dose)
- If vancomycin was used for 1st episode:
  - **Vancomycin** 10 mg/kg/dose PO QID x14 days (max: 125 mg/dose) w/taper‡

2 or more recurrences*
- **Consult Pediatric Infectious Diseases**
  +
- **Vancomycin** 10 mg/kg/dose PO QID x14 days (max: 125 mg/dose) w/taper‡
  OR
- **Fidaxomicin** 16 mg/kg/dose PO BID x10 days (max: 200 mg/dose)
  OR
- **Fecal microbiota transplantation**

Triple therapy

Complicated
- **Consult Pediatric Infectious Diseases & Pediatric Surgery**
  +
- **Vancomycin** 10 mg/kg/dose PO QID x10 days (max: 500 mg/dose)
  +
- **Metronidazole** 7.5 mg/kg/dose IV q6h (max: 500 mg/dose)
  +
- **Vancomycin retention enema**§ 10-20 mL/kg/dose q6h (max: 500 mL/dose)

Follow-up

- Clear improvement should be seen after 3-5 days
- If failure to improve on PO metronidazole after 3-5 days, change to vancomycin PO
- If clinical deterioration occurs (worsening abdominal distention/pain, and/or peritonitis, worsening leukocytosis, end organ failure, intubation, vasopressor requirement, mental status changes, new or worsening acute kidney injury, or worsening lactate >5 mmol/L):
  - Consult Pediatric Infectious Diseases
  - Consult Pediatric Surgery
  - Change to triple therapy
  - Consider CT scan of abdomen/pelvis

Notes

*Possible alternative explanations of diarrhea:
- Laxative use within last 48 hours
- Tube feeds initiated in last 48 hours
- Oral contrast receipt in last 48 hours

‡**Vancomycin** taper (to be started after treatment course is completed) (max: 125 mg/dose):
- 10 mg/kg/dose PO BID x7 days
- 10 mg/kg/dose PO Daily x7 days
- 10 mg/kg/dose PO every other day x7 days
- 10 mg/kg/dose PO every 3 days x4 weeks

§Vancomycin retention enema administration
- 10-20 mL/kg/dose, max: 500 mL, of a 500 mg/500 mL solution in NS q6h instilled by appropriately sized Foley catheter inserted into rectum with balloon inflated and Foley clamped for 1 hour
- Treatment naïve patients should be started at 10 mL/kg/dose and escalated as tolerated up to 20 mL/kg/dose up to a max: 500 mL
- Suspected or known bowel perforation is a contraindication for rectal administration

Postoperative diverting loop ileostomy regimen consists of antegrade vancomycin flushes (500 mg in 500 mL of Lactated Ringers; q8h for a duration of 10 days) via a 24 French Malecot catheter in the efferent limb of the ileostomy and intravenous (IV) metronidazole (500 mg q8h) for 10 days. See Reference Neal MD, et al. Ann Surg 2011;254:423-7.

ALB: Albumin
ANC: Absolute neutrophil count
BMT: Bone marrow transplant
CDI: Clostridium difficile infection
GI: Gastrointestinal
IV: intravenously
PO: Orally
NS: Normal Saline
QID: Four times daily
q6h: Every 6 hours
SCr: Serum creatinine
SOT: Solid organ transplant
WBC: white blood count