

Clostridium difficile Infection(CDI) Clinical Guideline

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Care Map Symbols

Links to more information or returns to a previous page.

Start of a Care Map Segment

Decision Point

Stop and Evaluate

Care Map Step
Blue underlined text is a hyperlink

Progression of care – Patient Improving



Source Reference



Education Module



Hospital Policy



Hospital Reference



Provider Information



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Clinical Guideline

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[IDSA Guideline](#)

Suggested Inclusion Criteria for Clinical Guideline

- Patient with [risk criteria](#) and clinical suspicion for CDI. Age > 2 years
- Patients age 12 months to 24 months with risk criteria, clinical suspicion, and **no other etiology for diarrhea**



This guideline document does not supersede the clinical judgment of a provider regarding the care that is ultimately ordered for a given patient. [Click to see full disclaimer.](#)



Executive Owner: Infectious Disease Physicians



[References](#)



[Patient Education Booklet](#)



Clinical Guideline

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[Infectious Disease Society of America \(IDSA\) Guideline](#)

Potential Reasons to Avoid Clinical Guideline

- No risk factors for CDI
- Patients less than 12 months of age(**consider Infectious Disease consultation**)



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Risk factors for CDI

- Past history of CDI
- Current or recent antibiotic use (highest risk within 3 months of exposure)
- Severe co-morbid disease(s)
- Hospitalization within 30 days or prolonged or frequent hospitalizations
- Inflammatory bowel disease (especially Ulcerative Colitis)
- Immunosuppressed state and use of immunosuppressive drugs
- Acid suppressive therapy (especially proton pump inhibitors)
- History of prematurity
- Hirschsprung disease, other intestinal dysmotility disorders, or history of abdominal surgery, including gastrostomy or jejunostomy tubes

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Emergency Department Care: C Diff Guidelines



CAUTION:

The decision to test young children for CDI is complicated given a high rate of asymptomatic carriage, especially in infants < 12 months of age. Although risk factors for CDI should guide suspicion for CDI, testing should be ordered only when indicated clinically and no other plausible explanation exists.

Triage

- Nurse performs initial assessment and assigns ESI* level.

*ESI = Emergency Severity Index

Provider Evaluation:

- History and Physical exam to include visual rectal exam to exclude anatomic source of bleeding
- Patient meets age, [clinical risk criteria](#) and [clinical suspicion](#) for CDI

[Testing](#)

Positive for C difficile

No

Yes

No further testing for CDI warranted

[Classify disease severity](#)

[General Treatment](#)
[Specific treatment](#)

Admit Criteria per clinical assessment. May be managed both in outpatient and inpatient settings.
[Infection Control Measures](#)

Family Education to include [infection control precautions](#)

Indications/ contraindications for testing

Indications:

Note: if testing is indicated, please test within the first 48 hours of hospitalization

- Consider ID consult for infants less than 12 months when CDI is suspected
- Diarrhea(> 3 unformed stools in a 24 hour period without an alternative explanation such as laxative use) and have risk factors
- Symptoms have not fully resolved after full course of treatment
- Colitis or ileus on imaging
- Leukocytosis
- Abdominal pain with radiographic evidence of bowel thickening
- Toxic megacolon
- Pseudomembranes

Contraindications

- Asymptomatic
- Recently finished therapy with or without resolution of symptoms (**No test of cure needed-do not repeat testing during same episode of diarrhea**)
- While on therapy
- Caution is advised in ordering and interpreting testing in children 12-24 months of age. (see inclusions)

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Testing algorithm

- General principles:
 - Difficult PCR: single test. A positive PCR(DNA probe results) confirms that the toxin producing gene is present. **If patient has risk factors and clinical presentation consistent**, it may be enough to confirm diagnosis in patients >2.
 - [EIA testing](#) is needed to determine toxin presence. (**Note:** need liquid stool)
 - In general, utilize full [multiplex PCR](#) panel on patients over 2 only.
 - If CDI is considered in patients between 12-24months because of risk and clinical presentation, perform full PCR panel. If concurrent positives are identified most likely clinical disease is **not CDI**. Consider performing EIA testing.
 - May also perform single DNA probe
- Institutional testing guidelines based on current capabilities:
 - PCR testing by multiplex panel or DNA probe with reflex to EIA toxin assay
 - A toxin assay alone may be utilized in certain clinical scenarios

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Disease Classification

Mild-Moderate	Severe (at least 2 abnormal lab values OR at least 1 high-risk condition)	Severe-Complicated(ANY of the following)
WBC < 15K	WBC ≥ 15K	WBC > 50K
Cr < 1.5 X baseline	Cr ≥ 1.5x baseline	Elevated lactate
ALB > 2.5	ALB ≤ 2.5	Ileus, Toxic Megacolon
ANC > 500	ANC ≤ 500	Bowel Perforation
Fever < 101	Fever > 101F	Hypotension/ Septic shock
Normal Host No IBD No Hirschsprung	SOT/BMT* < 100 days • Small bowel CDI Inflammatory Bowel Disease Hirschsprung's Disease or other intestinal dysmotility disorder Neutropenia from malignancy * Solid organ transplant/bone marrow transplant	Confluent pseudomembranous colitis

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Treatment recommendations : General

- **Metronidazole**
- PO has excellent bioavailability
- Only use IV if you think PO won't reach the colon (i.e. ileus, vomiting)
- Metronidazole is cheaper than Vancomycin

- **Vancomycin**
- PO vancomycin is only drug FDA-approved for CDI treatment in children
- PO vancomycin has near 0% bioavailability and stays in GI track and establishes high concentrations with minimal toxicity
- IV vancomycin is not excreted across the gut wall and has NO role in the treatment of CDI

- **Fidaxomicin and Rifaximin**
- Limited pediatric experience, not FDA approved in young children
- Very expensive
- Clinical trials suggest these are safe and effective in children
- Most often used for recurrent or refractory cases as part of tapered course
- Recommend ID consult if considering

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Treatment recommendations: Specific

Stop Therapy with Inciting Antibiotics ASAP

- **Mild-Moderate CDI:**
 - Metronidazole PO 7.5 mg/kg/dose QID for 10 days, maximum 500 mg/dose
 - **OR** Vancomycin PO 10 mg/kg/dose QID, up to maximum 125 mg/dose x 10 days
 - Preferred in patients with metronidazole allergy, pregnant, nursing, or on warfarin therapy, on ETOH containing medications, or who fail to improve after 3-5 days of PO metronidazole therapy
- **Severe CDI:**
 - Vancomycin PO 10 mg/kg/dose QID, up to maximum 125 mg/dose x 10 days (IDSA strong recs)
- **Complicated CDI:**
 - Triple Therapy = Vancomycin PO up to 500 mg QID, Metronidazole IV 7.5 mg/kg/dose Q6H up to 500 mg/dose, and Vancomycin Enema 10-20 ml/kg/dose up to 500 ml/dose every 6 hours of vancomycin 1000 mg/L solution (in patients with ileus, bowel obstruction or toxic megacolon; bowel perforation is a contraindication to enema therapy)
- **Note:** Inability to tolerate oral therapy consider IV metronidazole in combination with the rectal instillation of vancomycin.
 - Vancomycin 10 mg/kg per dose in normal saline (maximum dose: 500 mg in 100 mL normal saline) administered by retention enema 4 times per day^Δ; the volume of solution varies with age:
 - 1 through 4 years: 50 mL
 - 5 through 11 years: 75 mL
 - ≥12 years: 100 mL
- **Note:** IDSA now recommends Vancomycin or Fidaxomicin for 1st treatment in Adults given several trials demonstrating greater cure rate and less recurrence compared to metronidazole
- Gandhi et al. 2016. UMHS Guidelines at NGC McDonald et al. 2018. CID 66(7):e1-e48

Recurrent CDI

- Recurrent symptoms and positive testing for toxigenic *C. difficile* within 8 weeks of prior episode.
 - First recurrence:
 - Classify as “mild-moderate”, “severe”, or “complicated and treat accordingly.
 - Second or multiple recurrences(third or more episodes of CDI)
 - Consult Pediatric ID
 - Possible treatments include tapered or pulsed vancomycin, fidaxomicin or rifaximin
 - Fecal microbiota transplantation

Infection Prevention

Patient diagnosed with C. diff should be placed in Contact Precautions.

This cling alerts all staff to use soap and water for hand washing and alerts EVS to use a disinfectant approved to kill C. diff.

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CONTACT PRECAUTIONS



- GLOVES when entering room
- GLOVES for touching ANY surface patient, bed, linens or equipment
- GOWNS if uniform/clothes will touch patient, bed, linens or equipment
- Visitors and family members: check with nurse for instructions

Form No: 31931 (01-2018)



Multiplex PCR GI panel

GI panel I

CAMPYLOBACTER
SALMONELLA
SHIGELLA
SHIG-TOXIN E. COLI / with reflex to E. COLI 0157
CRYPTOSPORIDIUM

GI panel II

ROTAVIRUS A
NOROVIRUS GI/GII
ADENOVIRUS F40/41
CAMPYLOBACTER
SALMONELLA
SHIGELLA/ENTEROINVASIVE E. COLI
ENTEROPATHOGENIC E. COLI
SHIG-TOXIN E. COLI / with reflex to E. COLI 0157
CRYPTOSPORIDIUM
GIARDIA LAMBLIA

GI panel

ROTAVIRUS A
NOROVIRUS GI/GII
ADENOVIRUS F40/41
CAMPYLOBACTER
SALMONELLA
SHIGELLA/ENTEROINVASIVE E. COLI
ENTEROPATHOGENIC E. COLI
SHIG-LIKE TOXIN E. COLI
E. COLI 0157
CRYPTOSPORIDIUM
GIARDIA LAMBLIA
CLOSTRIDIUM DIFFICILE TOXIN A/B
PLESIOMONAS SHIGELLOIDES
YERSINIA ENTEROCOLITICA
VIBRIO SPECIES
VIBRIO CHOLERA
ENTERAGGREGATIVE E. COLI
ENTEROTOXIGENIC E. COLI
CYCLOSPORA CAYETANENIS
ENTAMOEBIA HISTOLYTICA
ASTROVIRUS
SAPOVIRUS (I,II,IV,V)

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References

[Clinical Practice Guidelines for *Clostridium difficile* Infection in Adults and Children: 2017 Update by the Infectious Diseases Society of America \(IDSA\) and Society for Healthcare Epidemiology of America \(SHEA\)](#)

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[Michigan Medicine *C. difficile* Guideline December 2016](#)

For questions concerning this care map, contact: CareMap@etch.com
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Contact and Revisions Number

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