Clostridium Difficile in Children

<table>
<tr><td>IP</td><td colspan="4">2-3 days</td></tr>
<tr><td>Asymptomatic carriage in children</td><td colspan="4">- 63% neonates
- 3-33% ≤2 years old
- 8% >2 years old</td></tr>
<tr><td>Spread</td><td colspan="4">Fecal-oral</td></tr>
<tr><td>Pathophysiology</td><td colspan="4">- Produces spores:
➢ Acid-resistant
➢ Heat-resistant
- Spores contain toxins:
➢ Toxin A: Enterotoxin
➢ Toxin B: Cytotoxin</td></tr>
<tr><td>Risk factors</td><td colspan="4">- Hospitalization
- Medications (antibiotics, antineoplastic meds, anti-reflux meds, anti-kinetic meds)
- Immunosuppression
- Chronic GI disorders (e.g., IBD, HD, GI dysmotility)</td></tr>
<tr><td>Recurrence rate</td><td colspan="4">25%</td></tr>
<tr><td>Clinical features</td><td colspan="4">- Diarrhea
➢ Watery diarrhea (75%)
➢ Bloody diarrhea (25%)
- Systemic toxicity: Fever +/– chills, abdominal pain, N/V, anorexia</td></tr>
<tr><td>Severity</td><td>Mild
Diarrhea (typically watery diarrhea, <4x/day) & NO systemic toxicity</td><td>Moderate
Diarrhea (typically ≥4x/day) + NO or MILD systemic toxicity (e.g., low-grade fever, abdominal pain)</td><td>Severe
Diarrhea (typically ≥4x/day) + systemic toxicity (e.g., high-grade fever + chills)</td><td>Severe complicated
Systemic toxicity AND complications (see below)</td></tr>
<tr><td>Complications</td><td colspan="4">- Severe colitis
- Toxic megacolon
- Ileus
- Perforation
- Sepsis/septic shock</td></tr>
<tr><td>Diagnosis</td><td colspan="4">- Diagnostic tests on stool samples:
➢ Enzyme immunoassay for glutamate dehydrogenase (in all strains)
➢ Enzyme immunoassay for toxins (A & B)
➢ Cell cytotoxin assay

▪ First, perform enzyme immunoassay for glutamate dehydrogenase (screening)
▪ If positive, proceed with the 2nd OR 3rd test (confirmatory)

- Testing is NOT indicated in the following cases:
➢ Asymptomatic child
➢ Formed stool
➢ Child’s age <1 year old
➢ To check for resolution following treatment</td></tr>
<tr><td rowspan="4">Treatment</td><td colspan="4">General measures:
- If the patient has diarrhea, assess whether any medications contributing to CDI or diarrhea can be discontinued: Consider antimicrobials, laxatives, stool softeners, pro-motility agents, and anti-acid agents
- Hydration if signs of dehydration</td></tr>
<tr><td colspan="4">Treatment based on severity</td></tr>
<tr><td>Mild</td><td colspan="3">- No antibiotics needed
- Stop offending antibiotics, if possible
- Treat if worsening/no improvement in 48 hr with PO metroNIDAZOLE (30 mg/Kg/day div QID x10 days, max 2 g/day)</td></tr>
<tr><td>Moderate</td><td colspan="3"><u>First and second episodes</u>
- Stop offending antibiotics, if possible
- PO metroNIDAZOLE (30 mg/Kg/day div QID x10 days, max 2 g/day)
- If NPO, IV metroNIDAZOLE (30 mg/Kg/day div QID x10 days, max 2 g/day); switch to PO ASAP</td></tr>
</table>

		- If failure to respond to metroNIDAZOLE in 3-5 days, D/C metroNIDAZOLE and give PO vancomycin (10 mg/kg/dose QID x10 days, max 125 mg/dose); if NPO, PR vancomycin (10 mg/kg/dose QID x10 days, max 125 mg/dose) **Third episode and more** - PO vancomycin (10 mg/Kg/dose QID x10 days, max 125 mg/dose), then BID x7 days (same dosing), then daily x7 days (same dosing), then q2days x7 days (same dosing), then q3days x7 days (same dosing) (38 days)
	Severe	**First and second episodes** - Stop offending antibiotics, if possible - **PO vancomycin** (10 mg/kg/dose QID x10 days, max 125 mg/dose) - If NPO, IV metroNIDAZOLE (30 mg/Kg/day div QID x10 days, max 2 g/day) PLUS PR vancomycin (10 mg/kg/dose QID x10 days, max 125 mg/dose); switch to PO ASAP **Third episode and more** - PO vancomycin (10 mg/Kg/dose QID x10 days, max 125 mg/dose), then BID x7 days (same dosing), then daily x7 days (same dosing), then q2days x7 days (same dosing), then q3days x7 days (same dosing) (38 days)
	Severe complicated	- Resuscitation - 3-view abdominal X-ray or abdominal CT - Consultation: ID, General Surgery or GI, and/or ICU - Stop offending antibiotics, if possible - **IV metroNIDAZOLE** (30 mg/Kg/day div QID x10 days, max 2 g/day) PLUS **PO vancomycin** (10 mg/kg/dose QID x10 days, max 125 mg/dose) - If impaired gut transit (e.g., ileus) and/or NPO, substitute PO with PR vancomycin (10 mg/kg/dose QID x10 days, max 125 mg/dose)
Prevention	- Meticulous hand hygiene - Contact Precautions until diarrhea stops for 48 hr or an alternate diagnosis is made (contact site Infection Prevention & Control prior to discontinuation of Contact Precautions) - Chlorine-containing agents to clean contaminated areas - Antimicrobial stewardship	
References	- CPS position statement: Clostridium difficile in paediatric populations; posted: Jan 10, 2014 | Updated: Mar 5, 2020	