

Montefiore GI PATHOGEN PANEL: Etiology and Treatment Recommendations

Prepared by Antimicrobial Stewardship Program (ASP) **Draft 6/19/18**

BACTERIA	COMMON PRESENTATION	COMMON SOURCES AND SEASONALITY	TREATMENT RECOMMENDATIONS (Same for adults and children)	ANTIBIOTIC OPTIONS (IF INDICATED) ²	
				ADULTS	PEDIATRICS (do not exceed adult dose)
Campylobacter ¹	Fever, cramps, and diarrhea within 6-48 hrs, fecal leukocytes often present	Unpasteurized milk, poultry and dairy Peak season – spring, summer	Most patients recover without antibiotics. Antibiotics can reduce symptoms by 1 day. Recommended for: <ul style="list-style-type: none"> Severe illness (high fever, bloody, severe, or worsening diarrhea) High risk (elderly, pregnant, immunocompromised) 	-Azithromycin 500 mg q24h x 3 days -Ciprofloxacin 500 mg q12h x 3 days Immunocompromised patients may require 7-14 days	-Azithromycin 10 mg/kg/dose q24h x 3 days
Clostridium difficile (toxin A/B)	≥3 unformed or watery loose stools within 24 hours; elevated WBC and/or SCr often present	Recent antibiotic use, especially β-lactams, fluoroquinolones, and clindamycin	Test not reported on panel. If CDI is suspected in adults, order C. difficile toxin panel and contact plus isolation. Discontinue other antibiotics, antimotility agents, PPI if possible Contact ID/ASP for assistance	For first episode, non-severe CDI: -Vancomycin PO 125 mg q6h x 10 days Please see CDI treatment guideline for complete recommendations	Testing/ treatment discouraged in children < 2 yo unless history/symptoms very consistent w/ CDI and no other cause identified. Consult Peds ID as needed. For first episode, non-severe: -Metronidazole PO 7.5 mg/kg/dose q6h or q8h x 10 days OR -Vancomycin PO 10 mg/kg/dose q6h x 10 days (do not exceed 125 mg per dose)
Plesiomonas shigelloides	Severe cramps, and diarrhea within 6-48 hrs	Fresh water, shellfish, international travel	Most patients recover without antibiotics. Unclear if antibiotics shorten the duration of illness. Consider if severe diarrhea, extremes of age, and immunocompromised.	-Ciprofloxacin 500 mg q12h x 3 days -Azithromycin 500 mg q24h x 3 days -TMP/SMX 1 DS q12h x 3 days	-Azithromycin 10 mg/kg/dose q24h x 3 days
Salmonella ¹	Fever, cramps, and diarrhea within 6-48 hrs, fecal leukocytes often present	Poultry, eggs, dairy products, produce, reptiles Peak season – summer, fall	For uncomplicated infection with nontyphoidal <i>Salmonella enterica</i> , antibiotics are usually not indicated as they have no significant effect on the length of illness and may prolong carriage	-Ciprofloxacin 500 mg q12h x 7 days (Consider ceftriaxone 1 g q24h if invasive disease or resistance to ciprofloxacin is suspected due to geographic variability. Please	Typically not indicated for nontyphoidal Salmonella gastroenteritis but might be used in <3 mo or immunocompromised and all Salmonella enterica Typhi or

			<p>of the organism in the stool.</p> <p>Antibiotics are recommended for:</p> <ul style="list-style-type: none"> • Severe illness (>8 stools/day, high fever, hospitalized) • High risk (ages <3 mo or >50 yo, immunocompromised) • All <i>Salmonella enterica</i> Typhi or Paratyphi infections • ID consult recommended 	<p>see www.cdc.gov/narms/)</p> <p>-Azithromycin 500 mg q24h x 7 days</p> <p>-TMP/SMX 1 DS q12h x 7 days</p> <p>Follow up culture and susceptibility if possible</p> <p>Immunocompromised patients require ≥ 14 days of therapy if relapsing</p>	<p>Paratyphi infections – please call Peds ID</p> <p>-Azithromycin 10 mg/kg/dose q24h x 5-7 days</p> <p>Alternatives:</p> <p>-TMP/SMX 5mg TMP/kg/dose q12h x 5-7 days (max dose: 160 mg TMP/dose)</p> <p>-Amoxicillin (only if confirmed susceptibility) 45 mg/kg/dose q12h x 5-7 days</p>
Vibrio ¹ (Non-Vibrio cholerae)	Fever, cramps, and diarrhea within 6-48 hrs, fecal leukocytes often present	Shellfish	<p>Most patients recover without antibiotics. Unclear if antibiotics shorten the duration of illness. Aggressive rehydration is the primary treatment</p> <p>Consider in severe or prolonged diarrhea.</p>	<p>-Azithromycin 1 g x 1 dose</p> <p>-Doxycycline 300 mg x 1 dose</p> <p>Invasive disease: Ceftriaxone 1 g q24h + Doxycycline 100 mg q12h</p>	<p>No standard treatment. Most patients recover without antibiotics. Consult Peds ID for severe infection.</p>
Vibrio cholerae ¹	Cramps and large volume watery diarrhea within 16-72 hrs	Shellfish, travel to Haiti or other endemic areas	<p>Aggressive rehydration is the primary treatment, but antibiotics as adjunctive treatment shorten the duration of illness and are recommended.</p>	<p>-Doxycycline 300 mg x 1 dose</p> <p>-Ciprofloxacin 500 mg x 1 dose</p> <p>-Azithromycin 1 g x 1 dose</p>	<p>-Azithromycin 20 mg/kg x 1 dose</p> <p>Alternatives:</p> <p>> 8 yo: Doxycycline 4-6 mg/kg x 1 dose (Maximum dose: 100 mg)</p> <p>Older children: Ciprofloxacin 20 mg/kg x 1 dose</p>
Yersinia enterocolitica ¹	Fever and persistent cramps within 1-11 days, with or without diarrhea, fecal leukocytes often present	Unpasteurized milk, undercooked pork, chitterlings Peak season – winter	<p>Most patients recover without antibiotics. Unclear if antibiotics shorten the duration of illness.</p> <p>Consider in immunocompromised patients.</p>	<p>-TMP-SMX 1 DS q12h x 5 days</p> <p>-Ciprofloxacin 500 mg q12h x 5 days</p> <p>Invasive disease: Doxycycline 100 mg IV q12h + tobramycin or gentamicin 5 mg/kg/day</p>	<p>Typically not indicated. For severe disease or immunocompromised:</p> <p>-TMP-SMX: 5 mg TMP/kg/dose q12h x 5 days</p> <p>Alternative:</p> <p>-Doxycycline 2.2 mg/kg/dose q12h x 5 days</p>

DIARRHEAGENIC E. COLI/SHIGELLA	COMMON PRESENTATION	COMMON SOURCES AND SEASONALITY	TREATMENT RECOMMENDATIONS (Same for adults and children)	ANTIBIOTIC OPTIONS (IF INDICATED) ²	
				ADULTS	PEDIATRICS (do not exceed adult dose)
Enteroaggregative E. coli (EAEC)	Cramps, watery diarrhea within 16-72 hrs, can be prolonged	International travel, infantile diarrhea in developing countries	Limited data in EAEC and EPEC. Many patients recover without antibiotics.	-Azithromycin 1 g x 1 dose or 500 mg q24h x 3 days -Rifaximin 200 mg q8h x 3 days -Ciprofloxacin 500 mg q12h x 3 days	Typically not indicated. For moderate to severe disease: -Azithromycin 10 mg/kg/dose q24h x 3 days
Enteropathogenic E. coli (EPEC)			For ETEC, antibiotics can shorten the duration of illness and are indicated if diarrhea (>4 stools/day), fever, or blood/pus in stool present.		
Enterotoxigenic E. coli (ETEC) It/st					
E. coli O157 ¹	Bloody diarrhea with minimal fever within 3-8 days	Unpasteurized milk, fresh produce, ground beef, zoos	Avoid antibiotics - no effect on duration or severity of symptoms and may increase the risk for hemolytic-uremic syndrome.	Antibiotics and antimotility agents should be avoided. Supportive care only	Antibiotics and antimotility agents should be avoided. Supportive care only
Shiga-like toxin-producing E. coli (STEC) stx1/stx2 ¹					
Shigella/Enteroinvasive E. coli (EIEC)	Fever, cramps, and diarrhea within 6-48 hours, fecal leukocytes present	Egg salad, lettuce, day care	Treatment is recommended	-Azithromycin 500 mg q24h x 3 days -Ciprofloxacin 500 mg q12h x 3 days (<i>Avoid ciprofloxacin for Shigella if MIC ≥ 0.12 µg/mL – increased risk of inducible resistance</i>) -TMP-SMX 1 DS q12h x 3-5 days -Ceftriaxone 1 g q24h x 3-5 days Immunocompromised patients require 7-10 days of treatment	Most are self-limited. For moderate to severe disease or immunocompromised: -Azithromycin 10mg/kg/dose q24h x 3 days Alternatives for older children: -Ciprofloxacin 12.5 mg/kg/dose q12h x 3 days -TMP-SMX (if known susceptibility) 5mg TMP/kg/dose q12h x 3-5 days

PARASITES	COMMON PRESENTATION	COMMON SOURCES AND SEASONALITY	TREATMENT RECOMMENDATIONS (Same for adults and children)	ANTIPARASITIC OPTIONS (IF INDICATED) ²	
				ADULTS	PEDIATRICS (do not exceed adult dose)
Cryptosporidium ¹	Prolonged watery diarrhea (> 1 week)	Contaminated water (recreational and drinking), unpasteurized apple cider	Most patients recover without treatment but antiparasitics may decrease the duration of illness. Immunocompromised patients often develop prolonged symptoms and respond poorly to therapy; ID consult recommended.	May use antimotility agents and/or nitazoxanide 500 mg q12h x 3 days for prolonged or severe illness	For prolonged/severe illness: -Nitazoxanide x 3 days: 1-3 yo: 100 mg q12h 4-11 yo: 200 mg q12h ≥12 yo: 500 mg q12h

Cyclospora cayetanensis ¹		Imported fresh produce	Treat if symptomatic. ID consult recommended for immunocompromised patients.	-TMP/SMX 1 DS q12h x 7-10 days	-TMP-SMX 5 mg TMP/kg/dose q12h x 7-10d
Entamoeba histolytica		Returning travelers	Treat if detected	-Metronidazole 500 mg q8h x 7-10 days -Tinidazole 2 g q24h x 3 days -- Nitazoxanide 500 mg q12h x 3 days followed by paromomycin 8-8.5 mg/kg/dose q8h x 7 days	-Metronidazole 10-15 mg/kg/dose q8h x 7 -10 days Alternative: -Tinidazole (≥3 yo): 50 mg/kg/dose q24h x 3 days <u>Either metronidazole or tinidazole to be followed by:</u> Paromomycin 30 mg/kg/day divided q8h x 7 days
Giardia lamblia ¹		Contaminated recreational water, daycare, international travelers	Treat if symptomatic	-Tinidazole 2 g x 1 dose -Nitazoxanide 500 mg q12h x 3 days -Metronidazole 500 mg q8h x 5-7 days	-Tinidazole (≥ 3 yo): 50mg/kg x 1 dose Alternatives: -Nitazoxanide: -1-3 yo: 100 mg q12h x 3 days -4-11 yo: 200 mg q12h x 3 days -≥12 years: use adult dosing -Metronidazole 5-10 mg/kg/dose q8h x 5-7 days

VIRUSES	COMMON PRESENTATION	COMMON SOURCES AND SEASONALITY	TREATMENT RECOMMENDATIONS FOR ADULTS AND PEDIATRICS
Adenovirus F 40/41	Vomiting and non-bloody diarrhea within 10-51 hours	Age <2 yo, daycare	<p>No targeted antiviral therapy available. Treat symptomatically. Antibiotics are not indicated.</p> <p>For young children: note that rotavirus -positivity may occur after vaccination, as healthy infants may shed the vaccine strain for up to 4 weeks after a dose</p> <p>Order isolation for:</p> <ul style="list-style-type: none"> • Rotavirus – contact • Norovirus, sapovirus – contact plus
Astrovirus		Age <1 yo, daycare	
Norovirus GI/GII		Salad, shellfish, cruise ships Peak season – winter	
Rotavirus A		Infants Peak season – winter	
Sapovirus		Children	

¹ Positive results for these organisms must be reported to the New York State Department of Health. While Infection Control is notified about any positive results for these organisms, please work with Infection Control if caregivers or other contacts also need to be notified.

² Options are listed in order of preference. Combination therapy is not recommended unless specifically noted.

References:

1. 2017 Infectious Diseases Society of America Clinical Practice Guidelines for the Diagnosis and Management of Infectious Diarrhea
2. 2016 American College of Gastroenterology (ACG): Clinical Guideline for the Diagnosis, Treatment, and Prevention of Acute Diarrheal Infections in Adults
3. National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS) <https://www.cdc.gov/narms/>