



GI Infections Part 2

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8/2/2026



Disclosures of Financial Relationships with Relevant Commercial Interests

- None

Question #1

- A 43-year-old female presents with several days of watery diarrhea and one day of gross blood in her stools.
- Two other members of her family have similar symptoms. None of the family members have had a fever and she is afebrile on exam.
- Laboratory studies are notable for a hematocrit of 28%, platelets of 80,000 per ml and creatinine 2.4 mg/dl.

In addition to stool-based diagnostics, which of the following would be the most appropriate next step in management for this patient?

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- B. Withhold antibiotic therapy
- C. Start PO Azithromycin
- D. Start IV Meropenem
- E. Start PO Vancomycin

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WITHOLD Antibiotics for Suspected and Confirmed STEC (IDSA Guidelines)

Recommendations:

1. Empiric treatment of bloody diarrhea should be limited to **young infants**, patients with **fever + blood with high suspicion for *Shigella***; and patients with **recent international travel + high fever or sepsis**
2. Antimicrobial therapy for confirmed STEC should be **avoided** (STEC O157 / unknown) or is **debatable** (non-O157 STEC)

Question #2

- A 21-year-old male was admitted to the hospital with fever and abdominal pain.
- The abdominal pain, which developed over the course of 48 hours, was initially generalized and then localized to the right lower quadrant. He was febrile and had abdominal guarding.
- His white blood cell count was elevated. Abdominal ultrasound revealed a normal appendix and multiple enlarged mesenteric lymph nodes.

Which of the following exposures was most likely to be the cause of his illness?

- A. Consumption of undercooked chicken
- B. Recent purchase of a pet lizard
- C. Consumption of shellfish
- D. Consumption of undercooked pork
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Common Exposure/Pathogen Associations

Exposure	Pathogen
Water	Cryptosporidium/Giardia
Custard	Staph aureus toxin
Hamburger	Shiga toxin-producing E. coli (STEC)
Leftover meat that is improperly stored and insufficiently reheated	Clostridium perfringens toxin
Undercooked chicken/Handling eggs	Campylobacter/Salmonella
Produce (esp. raspberries, lettuce)	Cyclospora
Shellfish	Vibrio/norovirus
Undercooked pork/pork intestines	Yersinia
Turtles/Lizards/Frogs	Salmonella
Unpasteurized milk/cheese, deli meats	Listeria

Question #3

- A nursing home experiences an outbreak of diarrhea with fever among long-term residents.
- Over the course of several weeks, additional residents develop illness one to three days after contact with illness cases.

Which one of the following organisms is the most likely cause?

- A. *Salmonella enterica* (non Typhi)
- B. *Vibrio cholerae*
- C. *Shigella sonnei*
- D. Enterotoxigenic *E. coli* (ETEC)
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Infectious Doses for Common Enteric Pathogens

10 ⁵⁻⁸	10 ¹⁻³
Diarrheagenic <i>E. coli</i>	<i>Shigella</i>
<i>V. cholerae</i>	<i>Giardia lamblia</i>
<i>Campylobacter</i>	<i>E. histolytica</i>
	<i>Cryptosporidium</i>
	Viruses
Only from food, water, other non-human sources	...also can be spread person to person

(*Salmonella* is complicated, but in general *S. Typhi* and *S. Paratyphi* can be person to person, whereas non-typhoidal *Salmonella* usually are not)

Question #4

- A 32-year-old nurse providing direct patient care in an inpatient oncology unit is diagnosed with *Shigella sonnei* gastroenteritis after developing fever, abdominal cramps, and bloody diarrhea.
- She is treated with a 3-day course of oral ciprofloxacin, and her symptoms completely resolve 48 hours after starting therapy.
- She completes her full antibiotic course and feels well.

Which of the following is sufficient to allow her to return to providing direct patient care?

- A. Resolution of symptoms for at least 24 hours
- B. Completion of the antibiotic course
- C. Two negative stool cultures
- D. Two consecutive negative PCR tests
- E. Symptom resolution and at least 24 hours of antibiotic therapy

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Return to Work Precautions for GI Infections

Public health guidance, typically at the local or state level, is provided for return to work for high-risk individuals, including **healthcare workers, food handlers, childcare staff, children attending daycare, and residents/staff in long-term care facilities**

Pathogens typically requiring a **microbiologic test of clearance** include *Shigella*, Shiga-toxin producing *E. coli*, *Salmonella* Typhi/Paratyphi, *V. cholerae*

Pathogens typically requiring **symptom resolution only** include *Campylobacter*, non-typhoidal *Salmonella*, *C. difficile*

Hepatitis A is typically cleared based on duration of symptoms alone (7 days after onset of jaundice, or 14 days after symptom onset if no jaundice)

Question #5

- An 81-year-old female was admitted to the hospital with vomiting, diarrhea, fever, and headache. She initially developed vomiting, diarrhea, and fever one week prior to presentation.
- The gastrointestinal symptoms resolved over the course of three days, but the fever continued and was accompanied by a progressive headache and dizziness. Her neurologic exam was notable for ataxia.
- A stool GI PCR panel was negative. An MRI revealed hyperintense lesions in the cerebellum on T2-weighted imaging. CSF analysis revealed a mild pleocytosis, mildly elevated protein, normal glucose, and a negative Gram stain. CSF and blood cultures are pending.

What type of organism is most likely to be isolated from CSF and/or blood cultures?

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- B. A Gram-negative coccobacillus
- C. A Gram-positive bacillus
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Listeriosis

Exposures: unpasteurized milk/cheese, deli meats

Risk factors for neuroinvasive disease: extremes of age (pregnancy is a risk factor for listeriosis and *Listeria* bacteremia, but **not** for encephalitis)

Clinical manifestations: Focal neurologic signs including cranial nerve abnormalities, ataxia, tremors, hemiplegia, deafness

Lab findings: CSF findings are variable but **lymphocytic pleocytosis** is distinctive among non-tuberculous bacterial CNS infections; Gram stain with **short GPRs**

Imaging findings: MRI with abnormal signal intensity or enhancement in the **brainstem**, particularly the pons and medulla, as well as the **cerebellum**

Question #6

- A 75-year-old male with a history of atherosclerosis presents with persistent fever.
- Two weeks prior to presentation, he developed watery diarrhea and fever. The diarrhea resolved but the fever persisted and was accompanied by chills, night sweats, and a headache.
- He denied bone or joint pain. No murmur was present on exam.
- Multiple sets of blood cultures yielded *Salmonella* typhimurium. Antibiotic therapy was initiated and repeat blood cultures after 48 hours remained positive.

What is the next best diagnostic test?

- A. Stool GI PCR panel
- B. Lumbar puncture
- C. CTA Chest
- D. MRI Brain
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Invasive Salmonella Infections

Exposures: Eggs, reptiles

General risk factors for invasive disease: Extremes of age, immunocompromised states including HIV

Most common focal complications (and specific risk factors): Endovascular infection (**valvular disease, prosthetic valves/grfts or severe atherosclerosis**), osteomyelitis/septic arthritis (**sick cell disease**)

Clinical manifestations: Fever, chills, night sweats, arthritis

Lab findings: Blood culture with GNRs

Imaging findings for endovascular infection: TTE with evidence of endocarditis, CTA/MRA with aneurysm or soft tissue enhancement, PET/WBC scan with focal uptake

Question #7

- A 35-year-old male presents to the emergency department 30 minutes after eating grilled tuna at a seafood restaurant. He complains of facial flushing, headache, palpitations, and a burning sensation in his mouth.
- In the emergency room, he begins to have diarrhea. His vital signs are temperature 37.0°C (98.6°F), heart rate 108/min, blood pressure 138/84 mm Hg, and respiratory rate 18/min. On physical examination, he is diaphoretic and visibly flushed but in no acute distress. Lung examination is normal.
- His symptoms improve significantly after administration of antihistamines.

Which of the following is the most likely cause of this patient's symptoms?

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- B. Tetrodotoxin
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Rapid-onset Fish Poisoning Syndromes

Scombroid: histamine-related symptoms (**flushing, perioral burning, rash** on face/chest, **diarrhea**) after consumption of fish (e.g., tuna, mackerel), often with a **peppery** or **spicy** taste

Paralytic shellfish poisoning: Severe syndrome of numbness, tingling, vomiting **progressing** to weakness, ataxia, and paralysis (including respiratory failure) after consumption of **shellfish**

Tetrodotoxin poisoning: Perioral paresthesias, nausea/vomiting, muscle weakness, paralysis (including respiratory failure) after consumption of **pufferfish**

Delayed-onset Fish Poisoning = Ciguatera

Constellation of findings starting as early as **3 hours** after consumption of contaminated reef fish (e.g., barracuda, eel), including **gastrointestinal** (vomiting/diarrhea), **neurologic** (peri-oral paresthesias, metallic taste, cold/hot reversal, blurred vision), **cardiovascular** (bradycardia, heart block).

Neurologic findings can be persistent (**weeks to months**)!

Thank you!