



GI Infections Part 2

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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?

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

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
- E. Consumption of unwashed raspberries

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)
- E. Toxin-producing strain of *Staph aureus*

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

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?

- A. A Gram-positive coccus
- B. A Gram-negative coccobacillus
- C. A Gram-positive bacillus
- D. A Gram-negative bacillus
- E. A Gram-negative coccus

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
- E. Bone marrow biopsy

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?

- A. Ciguatera toxin
- B. Tetrodotoxin
- C. Scombroid poisoning
- D. Staphylococcal food poisoning
- E. Botulism

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!