

Infectious diarrhea

What you've always wanted to know but never dared ask

When a patient presents with acute onset diarrhea, do you test? When you see several patients with vomiting and diarrhea over a short period, do you report to public health?

In BC, summer marks the start of the bacterial and parasitic diarrheal season with an increase in the number of infections and outbreaks associated with *Salmonella*, *E. coli*, and *Cyclospora*. Norovirus and other viruses occur more commonly in the winter months.

Most enteric pathogens cause diarrhea, abdominal cramps, nausea, or vomiting of several days' duration. Most infections and intoxications are self-limited; however, some require treatment and may lead to complications. For example, *E. coli* O157 infections may result in hemolytic-uremic syndrome (8% of cases) and *Campylobacter* infections may result in Guillain-Barré syndrome (0.1% of cases). Key clinical characteristics such as those summarized in **Table 1** can help differentiate between types of enteric intoxications and infections.

The guideline "Infectious Diarrhea—Guideline for Ordering Stool Specimens" can help physicians determine when to request laboratory testing. Key recommendations are summarized in **Table 2**.

Ova and parasite testing can lead to an overdiagnosis of amebiasis. Only a small proportion of patients are truly infected with *Entamoeba histolytica*. Frontline laboratories diagnose amebiasis through ova and parasite detection on preserved (formalin fixed) stools; this method cannot dif-

This article is the opinion of the BC Centre for Disease Control and has not been peer reviewed by the BCMJ Editorial Board.

Table 1. Clinical characteristics of enteric intoxications and infections.

Pathogen	Symptoms	Incubation period	Duration
Bacterial toxins (e.g., <i>C. perfringens</i>)	Usually vomiting, but may include diarrhea.	1–24 h	12–24 h
Viruses (e.g., Norovirus)	Vomiting and diarrhea.	12–48 h	48–72 h
Bacteria (e.g., <i>Salmonella</i>)	Abdominal cramps, diarrhea (sometimes bloody), occasional vomiting, and/or fever.	1–10 d	3–7 d
Parasites (e.g., <i>Giardia</i>)	Abdominal cramps, diarrhea, nausea, bloating.	2–14 d	Weeks if untreated

Table 2. BC guidelines for ordering stool specimens, adapted from "Infectious Diarrhea—Guideline for Ordering Stool Specimens" (www.bcguidelines.ca/pdf/diarrhea.pdf).

Clinical presentation	Specimens to collect	Notes
Diarrhea with one or more of: • Fever • Bloody stools • Toxicity • Hemodynamic instability • > 6 episodes of diarrhea per day for > 5 days	• One stool culture and sensitivity. • <i>C. difficile</i> testing.* • One to two stool ova and parasite tests if clinically indicated.	These patients are considered to have severe diarrhea and should be investigated promptly.
Diarrhea not meeting above criteria and > 5 days' duration.	• One stool culture and sensitivity. • <i>C. difficile</i> testing.† • One to two stool ova and parasite tests if patient at risk.‡	These patients are likely to have a bacterial or parasitic infection that may require treatment.
Diarrhea not meeting above criteria and ≤ 5 days' duration.	• None. • Stool testing may be considered for severe abdominal pain, patients ≥ 70 years, or if <i>C. difficile</i> associated diarrhea is suspected.	Most patients with diarrhea of short duration have a self-limited viral infection and do not require testing or treatment.

* *C. difficile* testing needs to be specifically requested.

† *C. difficile* testing should be considered in those who used antibiotics within the last 3 months, were hospitalized recently, reside in a long-term care facility, or had a previous *C. difficile* associated diarrhea episode.

‡ Patients at risk of parasitic infections include those who traveled to endemic areas, have diarrhea lasting for more than 2 weeks, consumed unsafe food or water, swam in unsafe water, or are children in child care or men who have sex with men. See text for diagnosis of *E. histolytica* infection.

ferentiate between the pathogenic *E. histolytica* and the nonpathogenic *E. dispar*. To confirm diagnosis of *E. histolytica*, the following can be requested from the BC Public Health Microbiology and Reference Laboratory:

- ELISA test: Demonstration of *E. histolytica* on unpreserved stool (paired preserved and unpreserved stool samples are required).
- *E. histolytica* serology (cannot differentiate between past or current infections but is useful in the rare

cases of invasive disease).

- Tissue/stool test: Demonstration of *E. histolytica* that have ingested red blood cells.

The case definition for amebiasis was changed in January 2014 to increase the specificity in public health reporting and investigation (see www.bccdc.ca/dis-cond/a-z/_a/Amebiasis/amebiasisCaseDefinition.htm).

Diarrheal diseases are transmitted via contaminated food or water, from person to person, or via fomites. On average, about one-third of BC cases result from exposure during international travel. Every year, one in eight BC residents gets sick from a domestic foodborne illness. Norovirus, *Campylobacter*, *C. perfringens*, *Yersinia*, and *Salmonella* cause over 90% of these cases. Waterborne outbreaks have become rare in BC. Some diarrheal pathogens can be transmitted through sexual activities such as oral-anal contact. This occurs most frequently with *Shigella*, *Giardia*, and *Entamoeba*, for which only a small dose is required to cause infection. Sexual transmission of these infections is most commonly seen in men who have sex with men. Diarrhea in this population should be investigated.

Every year, one in eight BC residents gets sick from a domestic foodborne illness. Norovirus, *Campylobacter*, *C. perfringens*, *Yersinia*, and *Salmonella* cause over 90% of these cases.

Every year there is an average of 19 community-based enteric disease outbreaks investigated in BC. Norovirus and *Salmonella* together cause 63% of these. The most common outbreak settings are food-service establishments. Among foodborne outbreaks, the most common sources are meat and seafood.

Infectious diarrheal agents are reported by laboratories to public health authorities. However, it may take some time to diagnose sufficient patients to identify an outbreak. In addition, only a small proportion of patients get tested and reported. For every case of *Campylobacter*, shiga-toxin-producing *E. coli*, and *Salmonella* infection reported, up to 37,

47, and 49 people, respectively, are infected in the community.

Physicians play an important role in identifying outbreaks in the community. If you are aware that a patient is part of a possible enteric outbreak or you see more than the usual number of patients with vomiting, diarrhea, or both in a short period, please report this to your local health unit or medical health officer for public health investigation.

—Eleni Galanis, MD, MPH,
FRCPC

—Linda Hoang, MD, MHSc,
FRCPC

—Marsha Taylor, MSc

—Judy Isaac-Renton, MD, DPH,
FRCPC

SPINE
WE DO THAT TOO

Call 604.737.7464 or toll-free 1.866.737.7460
specialistclinic.ca

CAMBIE SURGERY CENTRE

SPECIALIST REFERRAL CLINIC

NERVE BLOCKS • DISCECTOMY • LAMINECTOMY • CERVICAL