

**Guideline on the Collection and Testing of Stool Specimens for Bacterial Culture and Antimicrobial Susceptibility Testing** **Revised September, 2015**

**1. Purpose**

The purpose of this Guideline is to provide community physicians with recommendations regarding which clinical situations warrant requesting a stool sample for bacterial culture and susceptibility testing (C&S), and how to order the test, collect the specimen, and interpret the results.

**2. Background**

Most cases of mild diarrhea are of viral etiology, while severe diarrhea, especially associated with fever and bloody stools tends to be of bacterial origin and sometimes indicates an invasive disease.

Chronic diarrhea may also be caused by parasites. Guidance for the collection and testing of stool specimens for ova and parasites in symptomatic patients is available in a separate OAML guideline available at <http://www.oaml.com/>.

The most commonly recognized gastrointestinal viruses, norovirus and rotavirus, are generally self-limiting. Given that the majority of viral diarrhea cases are transient in nature, stool culture for bacterial pathogens is usually unnecessary for patient management.

Risk factors that predispose people to the development of bacterial diarrhea include consumption of undercooked food, such as meat and seafood, or poorly washed food (imported salad, vegetables, or fruits). Other risk factors include drinking untreated (well/rural) water, or unpasteurized milk, swallowing water while swimming, or attendance at locations where the probability of ingesting a common contaminated food source is more likely, such as in daycare centres, parties/events, or nursing homes.

When assessing bacterial diarrhea associated with travel, the length of time and severity of the symptoms should be considered in determining if C&S is necessary.

Most cases of acute, bacterial diarrhea do not require treatment with antibiotics. In some cases, antibiotics may actually worsen or prolong the illness (e.g. *E. coli* O157:H7).

Antimicrobial therapy is required for:

- gastroenteritis due to *Shigella* spp. and *Salmonella* Typhi and Paratyphi and
- infections with *Salmonella* spp. and *Yersinia enterocolitica* that have spread to the bloodstream from the gastrointestinal tract

**Note:** Treatment of gastroenteritis from non-typhoidal *Salmonella* spp., *Campylobacter* spp. and *Yersinia enterocolitica* may be indicated in immunocompromised hosts and neonates.

Toxin detection of the gastrointestinal pathogen *Clostridium difficile* is usually indicated in people with a recent history of antibiotic treatment, although cases of non-antibiotic associated *C. difficile* diarrhea are becoming more common in the community.<sup>2</sup> In general, stool for *C. difficile* toxin detection should not be requested on children of 1 year of age or younger, as asymptomatic carriage is common.<sup>3</sup>

### 3. Clinical Situations Warranting a Stool Sample for C&S

- Cases of acute, severe diarrhea, especially when there is evidence of possible systemic infection (bloody stools or fever), such as with *Shigella* spp. or *Campylobacter jejuni* infections (Blood cultures may be of value in the work-up of these patients.)
- Suspected carriers
- Follow-up stool cultures to assure clearance of an enteric pathogen where a public health risk exists, as instructed by the Medical Officer of Health (e.g. food handlers, infant and child care workers)

#### Clinical Situations not Warranting a Stool Sample for C&S

- Patients with mild to moderate diarrhea for less than 5 days

**Note:** Order a *C. difficile* toxin test instead of a C&S on patients with mild to moderate diarrhea for less than 5 days and recent antibiotic use.

### 4. Ordering Instructions

**Note:** A single specimen is all that is needed for a C&S.<sup>4, 5</sup> Requests for testing on more than one specimen are unnecessary and will not be honoured unless warranted. For example, if the first specimen is negative and bacterial infection is still strongly suspected from the clinical condition and other causes of the illness cannot be found, a second specimen will be accepted. For the second specimen, the clinician is required to complete another requisition indicating the patient's clinical and travel history.

#### Additional Tests

Please note, if other infections such as *Plesiomonas shigelloides*, or *Aeromonas* spp. are suspected, the ordering physician is advised to directly contact the laboratory's microbiology department.

#### Tests Not Performed by Community Laboratories

Tests not performed by community laboratories, but available at the Public Health Ontario Laboratories (PHOL) include tests for *C. difficile*, non-O157 shiga toxin-producing *E.coli*, *Vibrio* spp., and enteric viral infections. These tests must be ordered on a PHOL requisition.

Specimen collection instructions and requisitions for these tests are available on the PHOL's website at <http://www.publichealthontario.ca/>.

**Note:** Microscopic examination of stool specimens for leukocytes is not recommended, since false positives and negatives occur and the examination has no effect on treatment for infectious gastroenteritis.<sup>6</sup>

### 5. Collecting Specimens

The patient should be provided with a collection kit that consists of a jar containing transport medium needed to stabilize and preserve pathogens en route to the laboratory. The jar should be tightly closed, given a shake to mix the contents, and ideally kept chilled (2-8 °C) during transport to the laboratory. Stool specimens should be processed in the laboratory within 24 hours of collection.<sup>1</sup>

Please refer to individual laboratory's specimen collection guidelines for complete specimen collection directions that should be provided to the patient.

The patient should be advised that if a specimen is received without 2 identifiers (e.g. patient's full name and either birth date or OHIP number) the specimen will be rejected.

## 6. Results

The stool specimen will be cultured on various selective media to demonstrate the presence of *Salmonella* spp., *Shigella* spp., *Campylobacter* spp., *E. coli* O157:H7, and *Yersinia enterocolitica*.<sup>1</sup>

Expected turnaround time for test results not requiring antimicrobial susceptibility testing (see table below) will be 3 to 4 days upon receipt of specimen at the laboratory.<sup>1</sup>

Confirmed or presumptive identification of reportable enteropathogens will be communicated by the laboratory to the Medical Officer of Health of the health unit where the patient resides.<sup>7, 8</sup>

The presence of *E. coli* O157:H7 or *Shigella dysenteriae* indicates serious infection and is classified as a “critical” result. The result will be communicated to the ordering physician immediately upon identification. If clinically indicated these patients may require hospitalization.

Pathogen	Antimicrobial Susceptibility Testing and Reporting
<i>Salmonella</i> spp. (Other than <i>S. typhi</i> and <i>S. paratyphi</i> )	Susceptibility testing should only be performed in cases where antibiotic therapy is indicated and required. Most cases resolve without treatment.
<i>Shigella</i> spp. and <i>Salmonella</i> Typhi and <i>S. Paratyphi</i> serovars	Susceptibility to ampicillin, ciprofloxacin, and trimethoprim/sulfamethoxazole are tested and reported. <sup>9, 10</sup>  Cefixime susceptibility will be tested and reported, if there is resistance to two or more of the primary drugs. <sup>11, 12</sup>
<i>Campylobacter jejuni/coli</i> <sup>13</sup>  <i>Yersinia enterocolitica</i>	Antibiotic susceptibility is not provided, as most cases resolve without treatment. In severe cases antibiotic therapy may be indicated, in consultation with an infectious disease physician and in the context of the individual clinical presentation.  Antimicrobial susceptibility testing for <i>Yersinia enterocolitica</i> can be performed on a physician request for presumed extra-gastrointestinal infection, i.e. bacteremia or mesenteric adenitis, but not for uncomplicated gastroenteritis.
<i>E. coli</i> O157:H7	Antibiotic susceptibility is not provided, as antibiotic treatment is contraindicated. There is evidence that antimicrobial therapy may be harmful and does not improve the outcome of infections with this organism.
<i>Vibrio cholerae</i>	Referred to the Ontario Public Health Laboratories for susceptibility testing.

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### External Reviewer:

Susan Richardson, MD, FRCP(C)  
Head Microbiology, The Hospital for Sick Children  
Senior Associate Scientist, Physiology & Experimental Medicine, Research Institute  
Professor, Laboratory Medicine & Pathobiology, University of Toronto

### Internal Development Group:

Anu Rebbapragada, Ph.D., D (ABMM), CIC  
Clinical Microbiologist, Associate Scientific Director for Microbiology, Dynacare®

Huda Almohri, MD FRCPC  
Deputy Ontario Medical Director  
Discipline Head - Microbiology  
Medical-Scientific Department, LifeLabs®

Julius Kapala Ph.D. , RSM (CCM), SM (ASCP)  
Scientific Director Microbiology, Dynacare®

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### Warning & Disclaimer

This Guideline was prepared to assist clinicians who order tests from community laboratories. Users must ensure that their own practices comply with all specific government policies and specific legislative and accreditation requirements that apply to their organizations. The Guideline is not meant to be construed as legal advice or be all inclusive on this topic. Given the complexity of legal requirements, users are reminded that whenever there is uncertainty regarding whether some aspect of a Guideline is appropriate for their practice or organization, further direction should be obtained from the Laboratory Director, their own professional association, college and/or legal counsel or appropriate government ministry.