

Overview

Useful For

Sensitive screening for the detection of *Giardia* antigens present in fecal specimens

Testing Algorithm

The following algorithms are available in Special Instructions:

[-Parasitic Investigation of Stool Specimens Algorithm](#)

[-Laboratory Testing for Infectious Causes of Diarrhea](#)

Special Instructions

- [Parasitic Investigation of Stool Specimens Algorithm](#)
- [Laboratory Testing for Infectious Causes of Diarrhea](#)

Method Name

Enzyme-Linked Immunosorbent Assay (ELISA)

NY State Available

Yes

Specimen

Specimen Type

Fecal

Ordering Guidance

Duodenal, colonic wash, or small bowel aspirates are **not** acceptable for this test. If giardiasis is suspected, order test ID, OAP / Parasitic Examination, Feces.

Specimen Required

Submit only 1 of the following specimens:

Preferred:

Specimen Type: Preserved feces

Supplies: Formalin 10% Buffered Neutral (T466); Stool Collection Kit, Random (T635)

Container/Tube:

Preferred: Fecal container with 10% buffered formalin preservative

Acceptable: SAF (sodium acetate formalin)

Specimen Volume: 5 g

Specimen Stability Information: Ambient (preferred) 60 days

Acceptable:

Specimen Type: Unpreserved feces

Supplies: Stool container, Small (Random), 4 oz (T288); Stool Collection Kit, Random (T635)

Container/Tube: Fecal container

Specimen Volume: 5 g

Specimen Stability Information: Frozen 60 days

Forms

[If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:](#)

-[Microbiology Test Request](#) (T244)

-[Gastroenterology and Hepatology Client Test Request](#) (T728)

Reject Due To

Other: Grossly bloody feces (containing no visible specimen), or very mucoid feces, specimens preserved in ECOFIX
hermetic (green cap), C and S (orange cap), or methiolate formalin (MF)

Specimen Minimum Volume

2 g

Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---------------|--------------------|------|-------------------|
| Fecal | Varies (preferred) | | |

Clinical & Interpretive

Clinical Information

Giardia duodenalis (also known as *G lamblia*, *G intestinalis*) is a flagellated protozoan parasite found in contaminated natural streams, lakes, and surface water municipal reservoirs. Humans become infected when ingesting the environmentally resistant cysts in water, food, and by the fecal-oral route.

Giardia infects the small intestine by attaching to the mucosa with a ventral sucking disc. Infection may be associated with a variety of outcomes ranging from asymptomatic disease (estimated to occur in 50% of infected individuals) to acute and chronic giardiasis. When present, symptoms generally appear 7 to 14 days after infection, and consist of watery diarrhea, malaise, malodorous steatorrhea, flatulence, abdominal cramping, nausea or vomiting, weight loss, and low grade fever. Less commonly patients experience constipation and urticaria. Symptoms will resolve in most patients after a period of several weeks. However, approximately 15% to 20% will remain chronically infected without treatment and experience ongoing loose stools, weight loss, malabsorption, steatorrhea, abdominal cramping, flatulence, and burping. Longstanding malabsorption may result in vitamin deficiencies and hypoalbuminemia. Acquired lactose intolerance may also occur, and may persist for months after successful parasite eradication.

Giardiasis is the most common intestinal parasitic infection in the United States that is reported to the CDC and is a common cause of diarrhea in children (especially in day care centers), travelers, and campers or hikers. It is also responsible for waterborne epidemics. Although *Giardia* parasites (cysts and trophozoites) may be seen using the microscopy-based stool parasitic exam (OAP / Parasitic Examination, Feces), this is an insensitive method for detection and requires examination of three or more specimens. Instead, detection of parasite antigen or DNA is recommended for optimal sensitivity. The *Giardia* antigen test (GIAR / *Giardia* Antigen, Feces) is ideal for settings in which giardiasis is specifically suspected (eg outbreak scenarios), whereas the multiplex gastrointestinal PCR panel (GIP / Gastrointestinal Pathogen Panel, PCR, Feces) is better suited for evaluating multiple potential causes of diarrhea, including parasitic, viral and bacterial pathogens.

See [Parasitic Investigation of Stool Specimens Algorithm](#) and [Laboratory Testing for Infectious Causes of Diarrhea](#) in Special Instructions for other diagnostic tests that may be of value in evaluating patients with diarrhea.

Reference Values

Negative

Interpretation

A positive enzyme-linked immunosorbent assay (ELISA) indicates the presence in a fecal specimen of *Giardia* antigens. As per the manufacturer, the assay has a sensitivity of 96%, specificity of 97%, and a positive predictive value of 95%. Interpretation of results should be correlated with patient symptoms and clinical picture.

Cautions

Small numbers of organisms residing only in the duodenum may not yield a positive test result.

Giardia antigen detection should be used as an aid in diagnosis of giardiasis. A single diagnostic assay should not be used as the only criteria to form a clinical conclusion.

Testing of at least 2 consecutive fecal specimens by enzyme-linked immunosorbent assay (ELISA) is recommended before considering the results negative.

Feces containing large amounts of leukocytes or red blood cells may give falsely positive results.

Clinical Reference

1. Janoff EN, Craft JC, Pickering LK, et al: Diagnosis of *Giardia lamblia* infections by detection of parasite-specific antigens. J Clin Microbiol 1989;27:431-435
2. Hanson KL, Cartwright CP: Use of an enzyme immunoassay does not eliminate the need to analyze multiple stool specimens for sensitive detection of *Giardia lamblia*. J Clin Microbiol 2001;39(2):474-477
3. Centers for Disease Control and Prevention: Parasites-Giardia. Accessed 10/16/2019. Available at www.cdc.gov/parasites/giardia/index.html

Performance**Method Description**

Giardia antigens present in the stool supernatant are captured by antibodies coating the wells of a microtiter plate. The bound antigen is sandwiched by the addition of a second antibody and the signal is amplified through the use of biotin-streptavidin horseradish peroxidase. Blue color develops with the presence of bound antigen. The reaction is stopped with the addition of acid and read visually or with the aid of a spectrophotometer. (Rosenblatt JE, Sloan LM, Schneider SK: Evaluation of an enzyme-linked immunosorbent assay for the detection of *Giardia lamblia* in stool specimens. Diagn Microbiol Infect Dis 1993;16:337-341; package insert: ProSpecT Giardia Microplate Assay. March 2012)

PDF Report

No

Specimen Retention Time

Fresh/Frozen - 1 week; Preserved specimens - 1 week

Performing Laboratory Location

Rochester

Fees & Codes**Test Classification**

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

87329