

Stool Specimen Collection and Testing Options: Fecal Specimens for Parasites – Options for Collection

Option	Pros	Cons
<p>Rejection of stools from inpatients who have been in-house for >3 days^a</p>	<p>Data suggests that patients who begin to have diarrhea after they have been inpatients for a few days are not symptomatic from parasitic infections, but generally other causes.</p>	<p>There is always the chance that the problem is related to a healthcare-associated (nosocomial) parasitic infection (rare), but <i>Cryptosporidium</i> and microsporidia may be possible considerations.</p>
<p>Examination of a single stool (O&P examination) Data suggest that 40-50% of organisms present will be found with only a single stool exam.</p> <p>Two O&P exams (concentration, permanent stained smear) are acceptable, but not always as good as three specimens (may be relatively cost-effective approach); any patient remaining symptomatic would require additional testing.</p>	<p>Some feel that most intestinal parasitic infections can be diagnosed from examination of a single stool. If the patient becomes asymptomatic after collection of the first stool, then subsequent specimens may not be necessary.</p>	<p>Diagnosis from a single stool examination depends on experience of the microscopist, proper collection, and the parasite load in the specimen. In a series of 3 stool specimens, frequently not all 3 specimens are positive and/or may be positive for different organisms.</p>
<p>Examine a second stool only after the first is negative and the patient is still symptomatic.</p>	<p>With additional examinations, yield of protozoa increases (<i>Entamoeba histolytica</i>, 22.7%; <i>Giardia lamblia</i>, 11.3%; and <i>Dientamoeba fragilis</i>, 31.1%)</p>	<p>Assumes the second (or third) stool is collected within the recommended 10 day time frame for a series of stools; protozoa are shed periodically. May be inconvenient for patient.</p>

<p>Examination of a single stool and an immunoassay (EIA, FA, lateral or vertical flow cartridge) This approach is a mix: one immunoassay may be acceptable; however, immunoassay testing of two separate specimens may be required to confirm the presence of <i>Giardia</i> antigen. One O&P exam is not the best approach (review last option below)</p>	<p>If the examinations are negative and the patient's symptoms subside, then probably no further testing is required</p>	<p>Patients may exhibit symptoms (off and on), so it may be difficult to "rule out" parasitic infections with only a single stool and one fecal immunoassay. If the patient remains symptomatic, then even if two <i>Giardia</i> immunoassays are negative, other protozoa may be missed (the <i>Entamoeba histolytica</i>/<i>E. dispar</i> group, <i>Entamoeba histolytica</i>, <i>Dientamoeba fragilis</i>, <i>Cryptosporidium</i> spp., the microsporidia). Normally, there are specific situations where fecal immunoassays OR O&P exams should be ordered. It is not recommended to automatically perform both the O&P and fecal immunoassay as a stool exam for parasites.</p>
<p>Pool three specimens for examination; perform one concentration and one permanent stain (the laboratory would pool the specimens).</p>	<p>Three specimens are collected by the patient (three separate collection vials) over 7-10 days and pooling by the laboratory may save time and expense.</p>	<p>Organisms present in low numbers may be missed due to the dilution factor once the specimens are pooled.</p>
<p>Pool three specimens for examination; perform a single concentrate and three permanent stained smears (the laboratory would pool the specimens).</p>	<p>Three specimens are collected by the patient (three separate collection vials) over 7-10 days; pooling by the laboratory for the concentration would probably be sufficient for the identification of helminth eggs. Examination of the three separate permanent stained smears (one from each vial) would maximize recovery of intestinal protozoa in areas of the country where these organisms are most common.</p>	<p>Might miss light helminth infection (eggs, larvae) due to the pooling of the three specimens for the concentration; however, with a permanent stain performed on each of the three specimens, this approach would probably be the next best option in lieu of the standard approach (concentration and permanent stained smear performed on every stool). Coding and billing would have to match the work performed.</p>

2 Table: Stool Collection Options (Garcia)

<p>The patient collects three stools, but puts a sample of stool from all three specimens into a single vial (patient given a single vial only) (the patient would pool the specimens).</p>	<p>Pooling of the specimens would require only a single vial.</p>	<p>This would complicate patient collection and very likely result in poorly preserved specimens, especially regarding the recommended ratio of stool to preservative and the lack of proper mixing of specimen and fixative</p>
<p><u>Perform immunoassays on selected patients^b</u> using methods for <i>Giardia lamblia</i>, <i>Cryptosporidium</i> spp. and/or the <i>Entamoeba histolytica</i>/<i>E. dispar</i> group or <i>Entamoeba histolytica</i>.</p>	<p>Would be more cost-effective than performing immunoassay procedures on all specimens; however, information required to group patients is often not received with specimens. This approach assumes the physicians have guidance in terms of correct ordering options. Ordering Recommendations: Routine O&P Examinations OR Fecal Immunoassays</p>	<p>Labs rarely receive information that would allow them to place a patient in a particular risk group: children <5 yrs old, children from day-care centers (may or may not be symptomatic), patients with immunodeficiencies, and patients from outbreaks. Performance of immunoassay procedures on every stool is not cost-effective and the positive rate will be low unless an outbreak situation is involved. Education for the physicians is critical for proper test ordering.</p>
<p><u>Perform immunoassays and O&P examinations ON REQUEST*</u> <i>Giardia lamblia</i>, <i>Cryptosporidium</i> spp. and/or <i>Entamoeba histolytica</i>/<i>E. dispar</i> group or <i>Entamoeba histolytica</i></p> <p>A number of variables will determine the approach to immunoassay testing and the O&P examination (geography, organisms recovered, positive rate, physician requests). Immunoassays and/or O&P examinations should be separately ordered, reported, and billed.</p>	<p>Using this approach, will limit number of stools on which immunoassay procedures are performed for parasites. Immunoassay results do not have to be confirmed by any other testing (such as O&P examinations or modified acid-fast stains). If specific kit performance problems have been identified, individual laboratories may prefer to do additional testing. HOWEVER, the fecal immunoassays are more sensitive than the O&P examination and special stains (modified acid-fast stains). Also, this may be considered duplicate testing and may not be approved for reimbursement unless specifically ordered by the physician.</p>	<p>Will require education of the physician clients regarding appropriate times and patients for whom fecal immunoassays should be ordered. Educational initiatives must also include information on the test report indicating the pathogenic parasites that will NOT be detected using these methods. It is critical to make sure clients know that if patients have become asymptomatic, further testing may not be required. HOWEVER, if the patient remains symptomatic, then further testing (O&P exams) is required. Remember, a single O&P may not reveal all organisms present.</p> <p>Present plan to physicians for approval: Immunoassays or O&P examinations, procedure discussion, report formats, clinical relevance, and limitations on each approach.</p>

3 Table: Stool Collection Options (Garcia)

^a O&P, ova and parasite examination; EIA, enzyme-linked immunoassay; FA, fluorescent antibody immunoassay.

^b See Ordering Recommendations: Routine O&P Examinations or Fecal Immunoassays. It's difficult to know when you may be in an early outbreak situation where testing of all specimens for either *Giardia lamblia*, *Cryptosporidium* spp., or both, may be relevant. Extensive efforts are underway to encourage communication among laboratories, water companies, pharmacies, and public health officials regarding the identification of potential or actual outbreaks. If it appears that an outbreak is in the early stages, then performing the immunoassays on request can be changed to screening all stools.

References

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