10X Essentials: Stool’s Out for Summer!

GML typically experiences increases in foodborne and waterborne infections each summer. Refer to the GML stool testing guide on page 2 for system algorithms devised for testing accuracy and laboratory stewardship.

The STCOM will identify all enteric bacterial pathogens; use this test (STCOM) for your stool cultures from now on. The STCUL option will soon be discontinued in favor of the comprehensive STCOM, as clinical symptoms cannot reliably distinguish Salmonella, Shigella, and Campylobacter spp. from other enteric pathogens. GML laboratories routinely identify all enteric pathogens listed, including a recent case of cholera.

Evidence-based Decision to Restrict Ova and Parasite Exams (OAP): GML encourages that you test OAP only after the following screening criteria are applied: 1) Relevant history*, 2) Soft-liquid stool. 3) Out-patient status or in hospital for < 3 days, 4) Negative bacterial stool culture (STCOM), and 5) Negative Giardia/ Cryptosporidium Antigen Tests (GEIA and CRYIA) on record. See page 3.

New Urine Culture Specimen Collection Guide:
Please refer to the ‘GML Best URINE Practices: Microbiology Specimen Collection Guide” for proper specimen collection for bacterial, AFB, fungal, viral, and parasite testing (page 4).

GML stepped up to the challenge presented by last year’s influenza strain!!!

Due to the highly publicized influenza vaccine miss last winter, our outpatient testing for Flu A/B and RSV (ABRP) rose by 52% compared to the testing performed in the prior year; yet, as a system, we achieved a 33% improvement in mean turn around time (TAT) for outpatients. For inpatients, including Emergency Department, the median TAT ranged between 3 and 4 hours collect to result, approximately a 25% reduction in TAT from 2014 (4-5 hrs median). See page 5.

Reduction in inpatient TAT for sites that began testing instead of transporting by courier to Danville reached nearly 80% reduction in TAT from 2014, freeing up Emergency Room space, and supporting bed management and infection prevention.

If you have any questions, please contact the Doctoral Directors, Donna Wolk, Ph.D., D(ABMM) at 570-271-7467 or Raquel Martinez Ph.D., D(ABMM) at 570-214-6587.

For newsletter questions, contact Christy Attinger at (570) 271-6338.
Stool Testing: Microbiology Specimen Collection Guide

Potential for hospital-acquired or antibiotic induced diarrhea*

Acute onset of diarrhea% (liquid stools% for > 12 hours)

C. difficile/EPI PCR (CDIFP) x1 with no repeat within 5 days

Diarrhea < 3 days in hospital

Consider acute community-based GI illness

Diarrhea

YES

NO

C. difficile/EPI PCR (CDIFP) x1 with no repeat within 5 days

Sterile container at 2-8°C

5 mL liquid stool in sterile specimen container.
Must be received in laboratory within 2 hours of collection.

Giardia EIA, STOOL (GEIA) x1 Cryptosporidium Immunoassay Test (CRYIA) x1

*Alpha-Tec Enteric Transport Media (ETM) or Proto Fix-CLR

Culture, Stool (STCUL/STCOM) x1
Salmonella spp., Shigella spp., Campylobacter spp., Enterohemorrhagic E. coli -(EHEC or Shiga Toxin), Yersinia spp., Aeromonas spp., Plesiomonas spp., Vibrio spp.

Ova & Parasite Study (OAP) x3 separate days#

*Alpha-Tec Proto Fix-CLR

Relevant History

YES

NO

Culture, Stool (STCUL/STCOM) x1
Salmonella spp., Shigella spp., Campylobacter spp., Enterohemorrhagic E. coli -(EHEC or Shiga Toxin), Yersinia spp., Aeromonas spp., Plesiomonas spp., Vibrio spp.

Ova & Parasite Study (OAP) x3 separate days#

*Alpha-Tec Proto Fix-CLR

*In rare cases, hypervirulent C. difficile can have community onset.
* Risk Factors: recent exposure to antimicrobials, gastric acid suppressants.

Diarrhea with or without vomiting or fever (>38°C) and no likely noninfectious cause (e.g., diagnostic tests, therapeutic regimen other than antimicrobial agents, acute exacerbation of a chronic condition, or psychological stress).

% Liquid stool only (Bristol Stool Scale 5-7). Formed stools will be rejected. See link to Bristol Stool Chart in Test Catalog.

## OAP requires Microbiology Doctoral Director or ID approval. Must provide relevant Hx: negative culture and antigen tests, recent travel, group home, immunocompromised, including voluminous diarrhea.

Routine Stool Cultures, Giardia and Cryptosporidium EIA negative? Other Risk Factors?

<table>
<thead>
<tr>
<th>Risk</th>
<th>Foodborne exposure with negative cultures</th>
<th>Immunocompromised</th>
<th>Viral risk group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Test</td>
<td>Cyclospora and Isospora Exam (CYISO) x 1-3 samples on separate days</td>
<td>Cyclospora and Isospora Exam (CYISO) x 1-3 samples on separate days</td>
<td>Microsporidia Detection (MSPORI) x1-3 samples on separate days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Recent group setting: Norovirus PCR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pediatrics: Rotavirus Antigen (RVIR)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Immunocompromised: various agents, including Adenovirus 40/41 antigen</td>
</tr>
<tr>
<td>Collection Device*</td>
<td>Para-Pak 10% Buffered Neutral Formalin</td>
<td>Para-Pak 10% Buffered Neutral Formalin</td>
<td>10% Formalin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sterile Container at 2-8°C</td>
</tr>
</tbody>
</table>

*Please refer to GML Test Catalog for specific collection device information

Call Geisinger Medical Laboratories Client Services Department:
1–800–695–6491 with questions.

For additional information, refer to GML Test Catalog
Click on address below to invoke hyperlink, and search on keyword or (test code)
http://www.geisingermedicallabs.com/catalog/index.cfm

GEISINGER MEDICAL LABORATORIES

DMW;RMM: revised 11/04/2014
GML stool collection.vsd
On May 1, 2015, OAP will be removed from EPIC Test preference list and replaced with Giardia and Cryptosporidium Antigen testing (GEIA and CRYIA).

Algorithm for Fecal Parasite Testing

- Is your patient...  
  1) an outpatient with >3 stool/24 hr or  
  2) in-patient for <3 days with voluminous diarrhea?  

- Have medications, bacterial pathogens and Giardia/ 
  Cryptosporidium ruled out (with stool culture Giardia/ 
  Cryptosporidium EIA, respectively)?  

- Is this a pediatric patient suspected of having pinworms (or protozoa) or lives in poor sanitary conditions?  

- Does the patient have recent travel history with exposure risk or recently lived in a tropical or underdeveloped region?  

- Is the patient disabled and living in a group home?  

- Do NOT order OAP Testing without following these guidelines; Laboratory Doctoral Consult or Infectious Disease Consult is required for OAP testing.

- Standard practice: Do not order OAP testing (Ref 1)

- Order stool culture and/or Giardia and 
  Cryptosporidium EIA (these two parasites account for >99% of all parasites found in the GHS catchment area for 2011-2014).  

- Consider Pinworm smear (PIW) and OAP for A. duodenale if diarrhea persists

- Special considerations: 
  For immunocompromised patients or public health foodborne outbreaks 
  Laboratory Medicine or Infectious Disease Consult is required for Cyclospora, and Isospora and/or microsporidia testing, respectively

- Consider OAP or E. Histolytica antigen if diarrhea persists

Notes:
1. When symptoms occur within 6 hours of eating, ingestion of preformed toxin of S. aureus or Bacillus cereus should be suspected; diagnostic testing is recommended, unless there are >3 loose stool/24 hrs.
2. Viruses account for the majority of acute diarrhea cases.
3. The incidence of hypervirulent C. difficile associated colitis is an emerging problem even in outpatient settings; however, the prevalence of community acquired strains in the GHS catchment is low.
4. GHS Stool culture (STCOM) includes detection of nearly all culturable enteroic pathogens: Salmonella, Shigella, Campylobacter Antigen, STEC Antigen, Yersinia, Vibrio, Aeromonas and Plesiomonas.
5. Infection with HIV is also a common cause of diarrhea, as are many common medications.

References
1. Wolk, RM, Martinek, RM. 2011-2014 parasite survey Geisinger Health System
## GML Best URINE Practices: Microbiology Specimen Collection Guide

<table>
<thead>
<tr>
<th>TEST REQUEST</th>
<th>SOURCE</th>
<th>TRANSPORT DEVICE</th>
<th>SPECIMEN STABILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Culture</strong></td>
<td>Clean catch, Catheterized urine, nephrostomy, urostomy, vesicostomy or ileostomy</td>
<td>C&amp;S preservative tube filled to minimum fill line recommended.</td>
<td>C&amp;S preservative tube: 0-48 hrs at room temperature. Unpreserved urine: 0-2 hrs at room temperature or 0-24 hrs refrigerated 2-8°C.</td>
</tr>
<tr>
<td><strong>Quantitative Urine:</strong></td>
<td>Suprapubic, renal pelvis, ureter or kidney/bladder tap</td>
<td>Anaerobic Transport Media (ATM) is preferred.</td>
<td>Sterile specimen container or 15 mL aliquot (2 mL minimum).</td>
</tr>
<tr>
<td><strong>AEROBIC</strong></td>
<td><strong>Bacteria, Mycobacteria (AFB), and Fungal</strong></td>
<td></td>
<td><strong>NOTE:</strong> Urethral swabs are preferred for the recovery of Chlamydia, Mycoplasma and Ureaplasma. <strong>NOTE:</strong> The Aptima molecular probe can be utilized for <em>C. trachomatis</em>, <em>N. gonorrhoeae</em>, and <em>Trichomonas vaginalis</em> detection. Urine collection device pictured below.</td>
</tr>
<tr>
<td><strong>Culture</strong></td>
<td><strong>Quantitative Urine:</strong></td>
<td>Universal Transport Media (UTM). Use 1:1 ration of UTM to urine.</td>
<td>Sterile specimen container or 15 mL aliquot (2 mL minimum).</td>
</tr>
<tr>
<td><strong>ANAEROBIC</strong></td>
<td><em>Anaerobic studies are performed only on request.</em></td>
<td></td>
<td><strong>NOTE:</strong> Specimens for viral studies must be received by reference laboratory by 96 hrs of collection.</td>
</tr>
<tr>
<td><strong>Viruses:</strong></td>
<td></td>
<td></td>
<td><strong>NOTE:</strong> Specimens for viral studies must be received by reference laboratory by 96 hrs of collection.</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>Urine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mycoplasma culture, Ureaplasma culture</td>
<td></td>
<td></td>
<td><strong>Microsporidia®, Schistosoma spp.®, Trichomonas vaginalis</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* with long term immunosuppression from transplant * with travel history and activity risks</td>
</tr>
</tbody>
</table>

**NOTE:** Cleanse area prior to collection to minimize contamination with bacteria that colonize the urethra.

**NOTE:** First void (patient has not urinated for several hours prior to specimen collection) is recommended. First void urine is more concentrated, thus more likely to contain large numbers of microorganism(s). Random urine from children under 7 is acceptable.

**Universal Transport Media (UTM):** Use 1:1 ration of UTM to urine.

**NOTE:** The Aptima molecular probe can be utilized for *C. trachomatis*, *N. gonorrhoeae*, and *Trichomonas vaginalis* detection. Urine collection device pictured below.


[http://www.geisingermedicallabs.com/10xEssentials/GML_Tvag_Collection.pdf](http://www.geisingermedicallabs.com/10xEssentials/GML_Tvag_Collection.pdf)

dmwolek, rmmartinez: 6/22/15
33% decrease in TAT in the face of 52% increase in samples tested

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td># Samples</td>
<td>681</td>
<td>1322</td>
</tr>
<tr>
<td>Mean TAT</td>
<td>7.6</td>
<td>5.8</td>
</tr>
</tbody>
</table>