Rate of Detection of Multiple Organisms with Multiplex PCR Gastrointestinal Panel in Pediatrics

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The Rate of Detection of Multiple Organisms with Multiplex PCR Gastrointestinal Panel in Pediatrics

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Infectious gastroenteritis/collitis is a significant cause of morbidity and mortality in children around the world, with an estimated 2,195 deaths daily, and it is associated with multiple etiologic organisms. There are several traditional methods of testing stool for bacterial, parasitic, and viral causes of gastroenteritis/collitis with varying sensitivities. The turnaround times for results range from one hour to 2-4 days, which can limit a timely diagnosis, increase hospital length of stay, and lead to unnecessary use of antimicrobials. New multiplex molecular assays have been developed that are faster and have a higher sensitivity, antimicrobials. New multiplex molecular assays have been developed that are faster and have a higher sensitivity, useful single modality for determining the etiology of infectious gastroenteritis, more than one organism is frequently found. There are several traditional methods of testing stool for bacterial, parasitic, and viral causes of gastroenteritis/collitis with varying sensitivities. The turnaround times for results range from one hour to 2-4 days, which can limit a timely diagnosis, increase hospital length of stay, and lead to unnecessary use of antimicrobials. New multiplex molecular assays have been developed that are faster and have a higher sensitivity, useful single modality for determining the etiology of infectious gastroenteritis, more than one organism is frequently found.

STUDY OBJECTIVES:
- Determine the number of FilmArray™ panels that detected one organism vs. multiple organisms in pediatric patients.

METHODS:
- Retrospective review of stool samples received from both inpatient and outpatient facilities at Health Network Laboratories from January 2015 to December 2015.
- Age: patients 18 years and younger

EXCLUSION CRITERIA:
- Any patient older than 18 years.

RESULTS:
- Overall there were 353 FilmArray™ panels that were performed (from January 2015 to December 2015). Of those, 213 panels detected presence of at least one organism (60.3%).

DISCUSSION:
- Although the BioFireDX FilmArray™ Gastrointestinal Panel is a useful single modality for determining the etiology of infectious gastroenteritis, more than one organism is frequently found. Caution should be used when interpreting these results.
- Further studies are underway to establish the role of colonization versus true pathogens in the pediatric population, especially in children younger than 5 years.

Table 1: The 22 Organisms That Can be Detected by the FilmArray™ Gastrointestinal Panel

<table>
<thead>
<tr>
<th>Bacterial</th>
<th>Diarrheagenic E. coli/Shigella</th>
<th>Parasites</th>
<th>Viruses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campylobacter jejuni</td>
<td>Enteritidis, non-O1, O111</td>
<td>Entamoeba histolytica</td>
<td>Adenovirus 40/41</td>
</tr>
<tr>
<td>C. difficile</td>
<td>Stx, Se, and C. difficile</td>
<td>Shigella</td>
<td>Adenovirus 40/41</td>
</tr>
<tr>
<td>C. difficile</td>
<td>Stx, Se, and C. difficile</td>
<td>Shigella/Enteroinvasive E. coli</td>
<td>Adenovirus 40/41</td>
</tr>
<tr>
<td>C. difficile</td>
<td>Stx, Se, and C. difficile</td>
<td>Shiga-like toxin-producing E. coli</td>
<td>Adenovirus 40/41</td>
</tr>
<tr>
<td>C. difficile</td>
<td>Stx, Se, and C. difficile</td>
<td>Salmonella</td>
<td>Adenovirus 40/41</td>
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References:

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