Comparison of Diarrhea Pathogenic Profiles Between China and USA Children Using the FilmArray® GI Panel

R. Trusch1, M. Vaughn1, B. Harrel2, R. Wallace1, R. Criso3, A. Pavio4, J. Bovens5, J. Doly3, M. Bogdachev6, Samantha Jegesen6, Martin Troy7, Kristin Casey7, Spencer Lloyd7, DevAn C Hote2
1BioFire Diagnostics, Inc., Salt Lake City, UT, 2Univ. of Utah, Salt Lake City, UT, 3Primary Children’s Med. Ctr., Salt Lake City, UT, 4ARUP, Salt Lake City, UT

INTRODUCTION
Gastrointestinal illness remains one of the major causes of death among children in developing countries. In developed countries the number of cases with diarrhea remains high with 2-3 episodes per child per year; although the advances in public health and treatment resulted in dramatically fewer deaths. BioFire Diagnostics, Inc. is developing a new multi-target test, the FilmArray® Gastrointestinal (FilmArray® GI) panel, for detection of 23 viruses, bacteria, and protozoa that cause diarrhea.

The FilmArray GI Panel was used to compare pathogenic profiles from the two populations of children with gastrointestinal symptoms in USA and in China.

THE FILMARRAY GI PANEL
Simultaneous detection of 23 targets:

- **Bacteria**
  - Salmonella
  - Vibrio
  - *Campylobacter*
  - *Clostridium difficile*
  - Prototrichous bacteria

- **Viruses**
  - *Norovirus* GII/GIII
  - *Cryptosporidium*
  - *Cyclospora*
  - *Giardia lamblia*

- **Parasites**
  - *Entamoeba histolytica*
  - *E. histolytica*

METHODS
A symptomatic profile for symptomatic children was obtained by testing residual stool samples from 705 children under five years old collected in several villages in Hainan, China in 2012 and from 500 children under 18 years old collected at Primary Children’s Medical Center (PCMC), Salt Lake City, Utah in 2011-2012.

This profile was obtained by testing a developmental version of the FilmArray GI Panel.

RESULTS
In rural specimens collected in China, enteric pathogens were present in 95% of children, with an average of 3.5 organisms per specimen.

The FilmArray GI Panel detected 68% of specimens from PCMC.

CONCLUSION
The advantage of simultaneous testing for a broad number of pathogens provided by the FilmArray GI Panel was demonstrated by the detection of a number of pathogens for which testing was not requested by clinicians.

Comparison of Detection Rates Between Laboratory and FilmArray GI Panel Testing

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<thead>
<tr>
<th>Organism</th>
<th>Laboratory Detection</th>
<th>FilmArray GI Panel Detection</th>
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</thead>
<tbody>
<tr>
<td>C. diff.</td>
<td>72.5</td>
<td>87.5</td>
</tr>
<tr>
<td>P. shigelloides</td>
<td>75.0</td>
<td>88.7</td>
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<tr>
<td>E. coli</td>
<td>70.0</td>
<td>85.0</td>
</tr>
<tr>
<td>C. dysentriae</td>
<td>75.0</td>
<td>88.7</td>
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<tr>
<td>S. dysenteriae</td>
<td>72.5</td>
<td>87.5</td>
</tr>
<tr>
<td>V. cholerae</td>
<td>75.0</td>
<td>88.7</td>
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<tr>
<td>A. hydrophila</td>
<td>72.5</td>
<td>87.5</td>
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CONTACT INFORMATION
Bob Vaughn, BioFire Diagnostics, Inc., Salt Lake City, UT, bob.vaughn@biofire.com

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