P0856
Poster Session III
Molecular diagnosis of gastrointestinal bacterial infections

TIME MOTION ANALYSIS OF THE BD MAX ENTERIC BACTERIAL PANEL (EBP) COMPARED TO CONVENTIONAL METHODOLOGIES FOR THE DETECTION OF STOOL PATHOGENS

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Objectives: Conventional stool cultures for the isolation of bacterial pathogens are one of the more time-consuming test methods in a routine clinical microbiology laboratory and typically yield less than 5% positive results. A new molecular platform, the BD MAX System, utilizes nucleic acid amplification methodologies coupled with a robotic system to automate sample preparation, extraction and analysis, offering the potential for significantly more rapid results and less technologist hands-on time. To establish the actual differences between these two methodologies, time motion analysis of the BD MAX EBP on the BD MAX System, was compared to conventional culture methodologies in the microbiology laboratory of a tertiary care pediatric hospital. Methods: The study objective was to evaluate the time to results of traditional culture methods versus the BD MAX EBP for the detection of *Salmonella* spp., *Shigella* spp., *Campylobacter* spp. and shiga-toxin-producing *E. coli* in stool specimens. We performed a Process Impact Analysis from time and motion studies of the BD MAX versus conventional culture methodologies and a commercial immunoassay for shiga-toxin. Sample flow, hands-on time, processing steps and overall turnaround time were studied. Data was obtained and analyzed from both Standard Operating Procedures and direct observation. A Regression Analysis was performed to ensure consistency of measurements. Time and process measurements were collected and analyzed from the time the specimens were first logged into the accessioning area of the microbiology laboratory, to the time that actionable results were generated. For the BD MAX system, because batch size might affect workflow, specimens were tested in differing batch sizes from 4 to 24 samples. For these studies, supplemental retrospective samples were added to the runs. Results: Laboratory processes were observed and recorded for a 5-day period during which 54 stool specimens were processed. Using culture plus immunoassay methods, negative culture results were available from 41:14:27 (hours: minutes: seconds) to 54:17:19 after arrival into the laboratory. If results were positive and required additional testing, the times to final results were 97:18:17 to 145:27:11. For BD MAX, 72 specimens were processed in 6 runs of differing sizes. Positive and negative results were generated in 2:28:40 to 3:33:39, (batch sizes from 4 to 24 samples), yielding a potential turnaround timesaving of 94.0% to 95.4% for negative results and 97.5% to 98.3% for positive results. Conclusions: This preliminary study supports the proposal that significant time savings can be realized using the BD MAX EBP for the analysis of stool specimens compared to traditional culture-based methods for the detection of *Salmonella* spp., *Shigella* spp., *Campylobacter* spp. and Shiga-toxin-producing *E. coli* in stool specimens of patients with acute bacterial diarrheal disease.