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Abstract (poster session)

**A novel molecular-based diagnostic screening test utilising the NanoCHIP® microarray technology for simultaneous detection of gastrointestinal protozoan parasites and bacterial infections**

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**Objectives:** Infectious Gastroenteritis is a global health problem associated with extremely high morbidity and mortality rates. Accurate diagnosis is crucial to allow appropriate and timely treatment. Stool testing at the microbiology laboratory is currently a complex, time consuming and cumbersome process, demanding highly qualified personnel and application of a wide range of techniques. Thus, workload, lab space and turnaround time are high and costly. Savyon Diagnostics has recently finalized the development of a novel molecular-based diagnostic screening test for simultaneous detection of eight bacterial and protozoan parasitic pathogens accounting for the majority of infectious gastroenteritis cases on its proprietary NC400 NanoChip® molecular electronic microarray system. The bacterial panel includes Salmonella, Shigella, Campylobacter, Clostridium difficile, and its toxins A and B. The parasitic panel is composed of Entamoeba histolytica, Giardia lamblia, Dientamoeba fragilis and Cryptosporidium spp. The aim of this work is to demonstrate the utility of the NanoCHIP technology for screening large number of samples for simultaneous detection of pathogenic bacteria and parasites directly from stool. **Methods:** DNA was extracted from characterized stool samples using a variety of readily available manual and automatic methods. Specific bacterial and parasitic genes were amplified through multiplex PCR and subjected to the NanoCHIP system. The generated amplicons were electronically addressed to discrete loci on the NanoCHIP cartridge, pre-activated with specific capture oligonucleotides. Detection was achieved through specific fluorescent reporter oligonucleotides. Culture, microscopy, EIA or RT-PCR of the corresponding stool samples served as reference methods. **Results:** The NanoCHIP results were in complete accordance with the characterizations of the tested samples in terms of clinical sensitivity and specificity. The Nanochip multiplex analysis provided clear results about the identity of the pathogen, either bacterium or protozoan parasite, within a working day time frame. **Conclusions:** The NanoCHIP has proven to be a useful platform for medium-high throughput screening of stool samples for reliably detection of bacterial or parasitic gastrointestinal infections. This technology presents significant advantages, mainly in terms of minimal hands-on time, improved laboratory workflow and turn around time, enabling flexibility and saving costs.