ABSTRACT REFERENCE R2622

22nd ECCMID London, United Kingdom 31 March – 3 April 2012
ESCMID EUROPEAN SOCIETY OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES

Heatherwood and Wexham Park Hospitals NHS
NHS Foundation Trust

Validation of New Liquid Faecal Swab for the detection of Clostridium difficile from faecal specimens with multiple diagnostic assays

Jamie Laughlin and Kamran Khan

Introduction

Pathology labs everywhere are being faced with the challenge of doing more with less money. This has led to a dramatic surge in innovative ideas and products. The pre-analytical process has been targeted particularly as significant improvements in efficiencies and money can be made here. The majority of front-end solutions require liquid base approach to the collection of samples which has led to the marketing of various forms of liquid swabs. The latest foray into liquid based microbiology comes form MW&E and its new faecal liquid swab. The goal was an innovative specimen collection device that would automatically transform the sample into liquid in standardized containers containing medium specifically developed for the collection and transportation of enteric pathogens. Liquid based Microbiology specimens improve efficiencies on robotic inoculating and streaking instrumentation, such as the InoqulA from Kiestra Lab Automation (Figure 1). This study was carried out to determine the compatibility of the liquid faecal swab with assays which detect C. difficile toxins A/B via an ELISA approach, GDH and/or a molecular test.

Fig 1: Faecal liquid swabs being used on the InoqulA (Kiestra Lab Automation)

Methods

- 50 faecal specimens, which had tested positive previously for toxin A/B by the VIDAS A/B ELISA were used to validate the liquid faecal swab device, which consists of a high absorbency foam bud for the collection of the faecal sample and a collection vial which contains 2ml of Cary Blair medium, specifically developed for the collection and transport of enteric micro-organisms.
- The foamed swab of the collection kit was used to sample the clinical material.
- The swab was tested to determine the amount of faecal material collected and to ensure that the concentration of faecal material which was diluted out by the introduction liquid medium did not negatively affect the result of the testing method.
- The commercial kits used in the validation were: C.DIFF QUIK CHEK® by TechLab (A rapid test for the detection of C.difficile Glutamate Dehyrogenase); VIDAS® C.difficile Toxin A & B by Biomerieux and the BD GeneOhm™ real time PCR assay by Becton Dickinson.
- Testing of the commercial kits where according to manufacturer's protocols.
- A negative faecal liquid swab was tested for each kit as a control and to determine if there was any interference from the Cary Blair media.

Fig 2: Collection kit with high absorbency cellular flow-through foam bud

Results

C.DIFF QUIK CHEK® by TechLab	Samples from MW&E liquid faecal swabs	Samples tested from routine faecal pot
Positive	49	49
Negative	1	1
Total	50	50

VIDAS® C.difficile Toxin A & B (Biomerieux)	Samples from MW&E liquid faecal swabs	Samples tested from routine faecal pot
Positive	49	49
Negative	1	1
Total	50	50

Bd GeneOhn C. difficile (N=50)	Samples from MW&E liquid faecal swabs	Samples tested from routine faecal pot
Positive	49	49
Negative	1	1
Total	50	50

- Out of the 50 samples tested 49 were positive whether the sample was taken from the liquid faecal swab or direct from a traditional stool container.
- The foam swab collected on average 136mg of faecal material.

Conclusion

- The dilution factor introduced by the liquid medium had no effect on the result. There was a 100% correlation from doing the assay direct from the stool or performing it from the faecal liquid medium.
- The Cary Blair medium had no effect on the PCR method. There was a 100% correlation between doing the PCR direct on the stool sample or straight from the inoculated Cary Blair i.e. no interference from the Cary Blair
- Medical Wire & Equipment liquid faecal swab can be used as an effective replacement for the traditional faecal pot with a resultant improvement in efficiencies for the automated pre-analytical process.