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Abstract (poster session)

How liquid-based microbiology can change the workflow in microbiology laboratories

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Background: The Liquid based Microbiology (LBM) concept has been introduced in the microbiology laboratories by the advent of the ESwab system. From the development of the ESwab tube collection system to date many other devices have been added to the list, so that presently there is no branch of the microbiology that has not been improved by the introduction of these devices. In our laboratory we have adopted the LBM system since 2008 and currently are used from Gram stains to molecular platforms. Method: In this study we have used ESwab, Fecalswab and SL-solution (Copan Italia, Brescia). ESwab is used for the microbiological specimen usually collected with a swab (like genital, nasal, oropharyngeal, ocular, ear, and wound specimens); Fecalswab is for gastrointestinal sample collection (stool or rectal swab). Both systems were used to perform traditional culture (either manual or automated using the WASP system), Gram stain smear preparation, direct detection of bacterial antigen and toxins and molecular assays. SL-Solution, a new device generation, used to pre-treat mucous rich specimens for gram smear, culture and molecular test for the detection of many pathogens. Samples in ESwab medium are used to detect pathogens using the following assays: Direct sequencing with Rip Seq Mixed (Isentio); Duplicate Real Time CP, MP, LP on the Smart Cycler, (Euroclone); M.tubercolosis complex with the MTB GeneXpert and GeneXpert C.difficile (Cepheid); MOTT (Mycobacteria other than tubercolosis) with the Genotype Mycobacteria Direct (Hain); BD CT/GC with ProbeTec™, bacteria vaginosis with the Affirm™ VPIII; Duplica Real Time PRC for Mycoplasma genitalium and Ureaplasma urealyticum (Euroclone). Results: Our three years experience and extensive utilization of LBM devices demonstrates that a laboratory operating in manual-mode can automate several processes, by changing specimens collection from traditional Transystems to liquid phase ones. The same specimen collected or treated with such devices can be used for Gram stain, culture, antigen/toxins detection and numerous molecular assays, without affecting the sensitivity of the assays, but improving the work flow by reducing processing time, like in the case of direct sequencing. Conclusion: The Copan LBM device family allows us to optimize the workflow in the laboratory being suitable for Gram stain smear preparation, culture, with manual and automated inoculation methods, and for molecular assays.