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Evaluation of Σ-Transwab® & Σ-Transwab®-PF (flocked) (ELITECH France & Medical Wire) by manual method and by automated inoculation on the Walk-Away Specimen Processor (WASP® Copan) for the recovery of microorganisms from clinical specimens.

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Introduction

The role of the Microbiology Laboratory in the care of a patient with suspected infection is normally the isolation of microorganisms, a task dependent on the conditions of collection, transport and storage of specimens, and the quality of the culture media. Automated inoculation and streaking has reduced the tedious and repetitive tasks and increased the quality of results by less variation in process. Such improvements are a significant contribution for ISO 15189 accreditation.

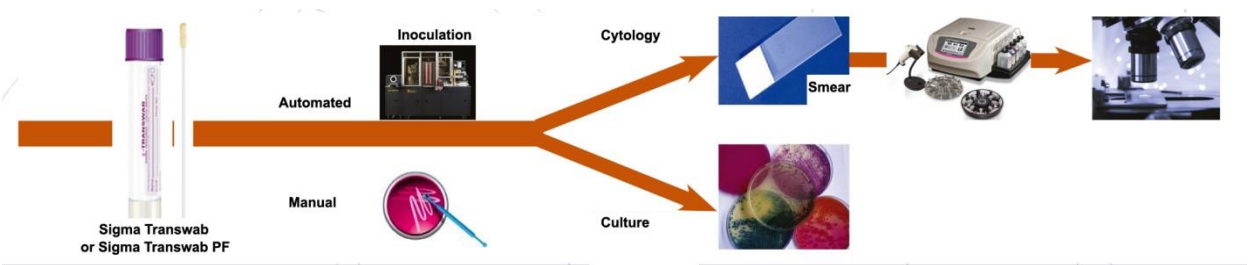
Objectives

This study was designed to evaluate and compare by cytology and culture specimens collected by two types of swabs, Σ-Transwab® and Σ- Transwab® PF flocked (ELITECH France, Medical Wire), and inoculated manually or using an automated method (WASP®, Copan).

Methods

Clinical specimens (vaginal, ear, enteric) were collected in duplicate (Σ- Transwab® with polyurethane swab and Σ-Transwab®PF with flocked swab) from hospitalised maternity patients. After shaking, the liquid Amies medium in each tube, 30µl of suspension was inoculated and spread across the appropriate culture media (REMIC) by the manual or automated method.

Each smear is Gram stained (Aerospray® GRAM stainer, ElitechGroup Biomedical Systems) and evaluated semi-quantitatively for bacterial morphotypes and polymorphonuclear leukocytes (PMN). The degree of correlation (Cohen Kappa Score) between the methods was analysed statistically using Graphpad software (Prism®)[1].



Results

Organism observed	Number positive by Σ-Transwab on WASP	Number positive by Σ-Transwab with manual processing	Number positive by Σ-Transwab PF on WASP	Number positive by Σ-Transwab with manual processing
C. albicans	1	1	1	1
C. freundii	1	1	1	1
E. cloacae	1	1	1	1
E. coli	11	11	11	11
E. coli / P. mirabilis	1	1	1	1
E. coli/ S. agalactiae	2	2	2	2
E. coli / Stahylococcus spp	1	1	1	1
Entercoccus faecalis	1	1	1	1
Saprophytes	8	8	8	8
Lactobacillus	24	24	24	24
Lactobacillus / S. agalactiae	4	4	4	4
Lactobacillus / S. agalactiae / G. vaginalis	1	1	1	1
S. epidermis	1	1	1	1
S. agalactiae	6	6	6	6
S. anginosus	1	1	1	1
Sterile	67	67	67	67
TOTAL	**132**	**132**	**132**	**132**

Table 1: Results of swabbing and testing according to swab used and method of processing

132 samples were analysed. Counts of bacteria and PMN showed a high correlation regardless of inoculation method (Cohen Kappa Scores for bacteria and cells were > 0,908 and > 0.899, respectively). After 24 and 48 hours of incubation, 51% of samples were culture positive. Neither method of inoculation resulted in the detection of additional organisms, regardless of swab. There was also no discrepancy of bacterial morphotypes observed between Σ-Transwab® and Σ- Transwab®-PF swabs (Cohen Kappa Score > 0.786). The visual quality of stained slides and isolates however, seemed better with the flocked swab.

Conclusions

This study has allowed us to validate the routine use of Σ-Transwab® PF swabs (ELITECH France, Medical Wire) for the collection of clinical specimens and their integration into the workflow of WASP® samples, ensuring reproducible quality isolates, traceability of the inoculation process, and reliability in an ISO 15189 compliant process.

References

EN ISO 15189 & HS REF02 COFRAC
REMIC 2010
1. Landis, J.R., & G.G. Koch, 1977, An application of hierarchical kappa-type statistics in the assessment of majority agreement among multiple observers, *Biometrics* 33: 363-74

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