Validation of ESwab™ for the collection and preservation of specimens processed on the on the WASP™ for the investigation of Corynebacteria species including C. diphtheriae

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Background:
Although immunization in many countries, C. diphtheriae still plays a major role as a potential lethal re-emerging infectious diseases. The increase of global traveling and the presence of re-emerging of C. diphtheriae epidemic strains are a threat to non immunized persons. Microbiological diagnosis of C. diphtheriae is very important for clinical management of sick patients and its contacts. Since the introduction of ESwab®, an LBM® collection device and WASP® automation in the bacteriology laboratory, it is important to validate its performance for the collection, transportation and preservation of clinical specimens for the detection of Corynebacteria species including C. diphtheriae.

Objectives:
The objectives of this study were to validate the performance of:

1) the viability of the ATCC strain of C. diphtheriae 13812 stored in ESwab® up to 48 hours at both 4°C and room temperature (RT).
2) the ESwab® for the investigation of Corynebacteria species in clinical specimens collected in ESwab® and processed on the WASP®.

Methods:
Stability of ESwab® was compared to Transystem™ M40 using the ATCC strain of C. diphtheriae 13812. A 0.5 McFarland was prepared from fresh culture of the C. diphtheriae strain. Dilutions of 0.5:100 – 0.5: 1,000 – 0.5: 10, 000 were prepared and 100 ul aliquot of each dilution were inoculate in sets of three ESwab® and Transystem™.

One set of each dilutions was used for zero time inoculation, for 24 and 48 hours at 4°C and RT. At each testing time, ESwab® were vortexed and 100 ul were plated in duplicate on Blood agar plates, while the Transystem™ swab was seed on the entire plate. ESwab® samples inoculated with each dilution were diluted 1:10 and plated on the WASP® using the 30ul loop as for clinical specimens inoculation with a 4 quadrant streaking pattern. Plates were incubated at 35°C at aerobic conditions for 48 hours. CFUs were recoded for each dilution and incubation time. Since the implementation of ESwab® for the collection of clinical specimens and WASP® processing, the presence of Corynebacteria species has been monitored by Gram smears and culture.

Results:
Viability of the ATCC strains of C. diphtheriae was stable up to 48 hours at both 4°C and RT testing conditions with ESwab® compared to the traditional Transystem™.

ESwab® Samples plated on the WASP® using 30 ul loop and 4 quadrant streaking pattern

C. diphtheriae ATCC 13812
Corynebacteria species from clinical specimens

Conclusions:
All the data obtained suggest that the Copan ESwab supports the viability of C. diphtheriae up to 48 hours at both 4°C and RT.

ESwab® is suitable for the collection and transport of clinical specimens processed on the WASP® for the detection of Corynebacteria species including C. diphtheriae.