Comparison of the Copan ESwab System with Traditional Charcoal Swab in Stuarts Transport Medium

Alice Friis-Møller[1], Anders Schou Andersen[2], Jørgen Engberg[1] & Bo Jørgensen[3]
[1]Dept. of Clinical Microbiology, Hvidovre Hospital, [2]Dept. of Bacteriology, Mycology and Parasitology, Statens Serum Institut, [3]The Copenhagen Wound Healing Center, Bispebjerg Hospital, Copenhagen, Denmark

Aim

To compare the traditional system with charcoal swab in Stuarts medium with ESwab in Amies transport medium in a clinical setting in order to optimize the results of swab cultures from complicated wounds.

Background

The Copan ESwab is a new nylon-flocked swab designed to optimize specimen collection and to minimize entrapment of the specimen in combination with liquid Amies transport medium, ***Fig 1***. The ESwab has met the CLSI criteria for maintenance of viability of aerobic bacteria stored in both room and refrigerated temperature and anaerobic bacteria stored at refrigerated temperature.

Methods

One hundred and sixty hospitalized patients and outpatients at The Copenhagen Wound Healing Center, Bispebjerg Hospital were included.

On clinical indication, each patient had swabs taken from leg or foot wounds with both a charcoal swab and an ESwab, from exactly the same part of the wound, ***Fig 2***. The two swabs were placed in Stuarts medium and Amies medium, respectively and immediately transported at ambient temperature to the Department of Clinical Microbiology and cultured for aerobic and anaerobic bacteria.

Charcoal swabs in Stuarts medium were processed using standard routine procedures. From the ESwab/Amies medium all plates were inoculated with 30 microliter/plate in order to detect at least 10^3 CFU/mL. The plates were incubated in aerobic and anaerobic atmosphere and red after 24h and 48h, respectively.

To compare the qualitative performance of the swabs the bacteria were divided intro three groups, and the pathogens were further analyzed:

1. Pathogens (*S. aureus,* haemolytic streptococci, *Pseudomonas aeroginosa*, *Prevotella* spp., *Bacteroides* spp., Anaerobic multiflora)
2. Potential pathogens (*Enterobacteriaceae*, *Enterococcus* spp., fungi)
3. Non-pathogens (Coagulase neg. staphylococci, *Corynebacterium* spp.).

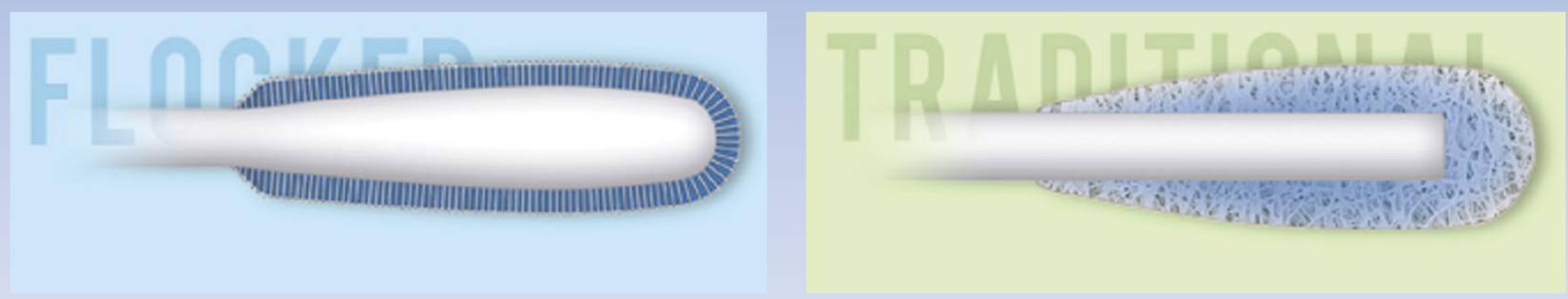

Figure 1. *Swabs.*

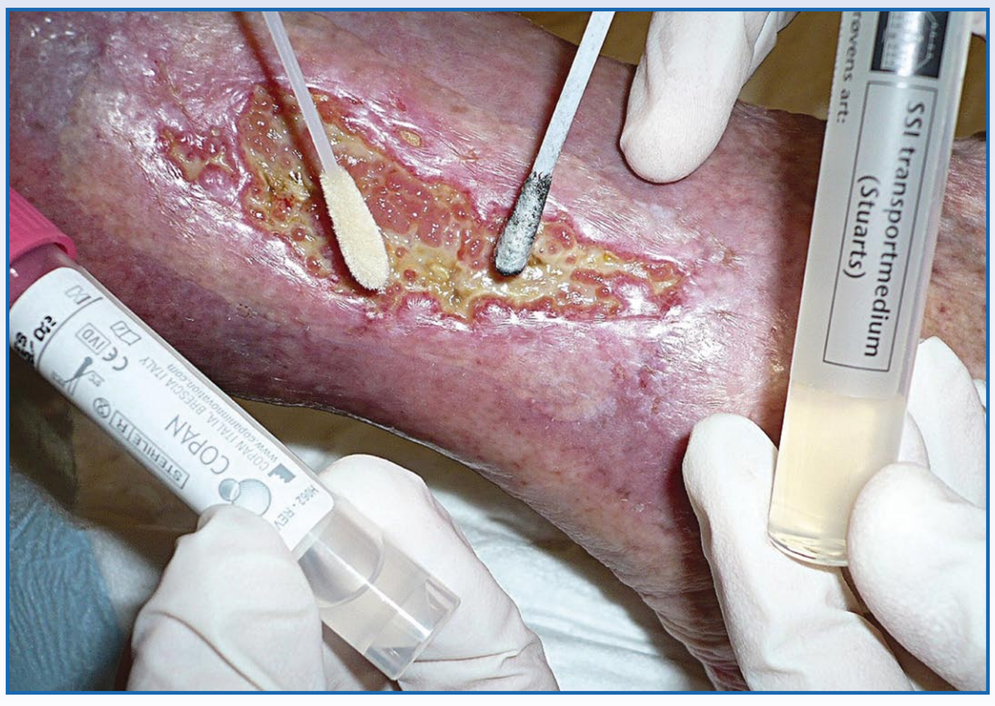

Figure 2. *Swab sampling from a chronic ulcus cruris.*

Table. *Performance of the ESwab system versus charcoal swab in Stuarts medium.*

	Pos. ESwab Pos. Stuart	Pos. ESwab Neg. Stuart	Pos. Stuart Neg. ESwab	Neg. Stuart Neg. ESwab	p-value
All bacteria isolates	259	62	38	35	0.016
S. aureus	68	9	16	103	0.162
Pseudomonas aeroginosa	27	5	1	163	0.013
Haemolytic streptococci	14	2	4	176	0.414
Anaerobes	4	8	3	181	0.132

Results

From 160 patients 196 paired sets of swabs were recieved.
One hundred and twenty eight sets had concordant culture results. In 68 sets, disagreement with one or more isolates was found. Sixtytwo isolates, of wich 23 were pathogens, were exclusively isolated with the ESwab system, whereas 38 isolates, of wich 24 were pathogens, were exclusively isolated from the charcoal swab system. Likewise, 24 potential pathogens were exclusively isolated with the Eswab system, whereas 14 potential pathogens were exclusively isolated from the charcoal swab system.
Anaerobes were isolated from 12 ESwabs compared to seven from the charcoal swabs.

Correspondence:
Alice Friis-Møller
alice.friis.moeller@hvh.regionh.dk

Conclusions

In this study, the ESwab system was at least as good as the standard charcoal swab in Stuarts medium.
Eswabs were easy to handle in the clinical setting.