



The Efficacy of Medical Wire Σ -VCM[®] Transport System in Maintaining Viability of *Neisseria gonorrhoeae*.

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Introduction

The recovery of *Neisseria gonorrhoeae* remains important for the diagnosis of gonorrhoea, especially in females. Near patient inoculation of media is optimal, but can prove impractical, or impossible, in some healthcare settings. Despite emergent molecular diagnostics, the need to recover NG for susceptibility testing and epidemiological typing ensures that transport media remain indispensable in the management of gonorrhoeae. This is underscored by the development of CLSI quality control standard for microbiological transport systems (M-40A)¹. For many years there have been ongoing efforts to improve and evaluate the performance of swab systems designed for the transport of *N. gonorrhoeae*. Factors such as the fastidiousness of the organism, the presence of inhibitors in glues and swab fibers, organism entrapment within the swab, loss of organisms to surrounding transport medium, and overgrowth by competing organisms all affect organism recovery. In this study, we followed the procedure of M40-A to challenge a new type of combination transport system Sigma-VCM[®] (Medical Wire) for survival of *Neisseria gonorrhoeae*. Sigma-VCM[®] is mainly intended for the survival of viruses, chlamydia, and mycoplasma. The product includes a sterile Sigma swab with foam tip, and a modified virus transport medium with antibiotics. The device has previously been demonstrated to recover viruses, chlamydia, mycoplasma and ureaplasmas^{3,4}. Because the antibiotics are chosen to allow the survival of mycoplasma and chlamydia, it was reasoned that they should also allow the survival of NG. If so this would make the device particularly suitable for use in STD clinics.

Methods

A suspension from a freshly grown isolate of *Neisseria gonorrhoeae* was prepared in sterile saline. Serial 10-fold dilutions were prepared from the suspension and plated onto chocolate agar. The plates were incubated at 37°C for 48h in CO₂ and colony forming units counted to confirm inoculum concentration.

- Swabs were inoculated with 50µl of inoculum suspension for 10 sec allowing the fluid to absorb and then inserted back into the transport device.
- Swabs were incubated at room temperature and at 4°C for 0h and 24h (as required for M40-A).
- After the appropriate incubation period each swab was vortexed and serial dilutions were prepared from the liquid transport medium.
- Serial dilutions were inoculated onto the chocolate agar using spiral plater (Don Whitley Scientific, BS5687).
- All plates were incubated at 37°C for 48h in CO₂ incubator. After incubation, a quantitative count was performed using Acolyte counter (Don Whitley Scientific) All experiments were carried out in triplicate.

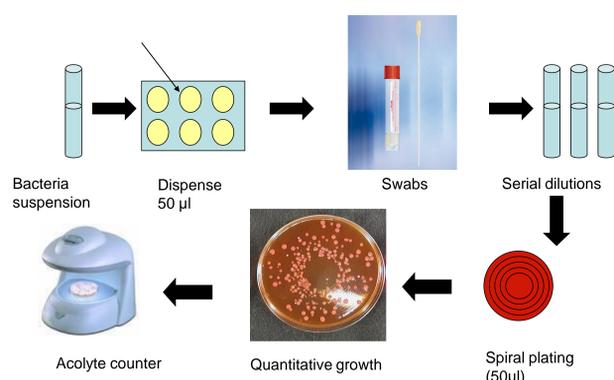


Figure 1. Method of processing the swab for evaluation of bacteria viability.

Results

Neisseria gonorrhoeae recovery at refrigerated temperature

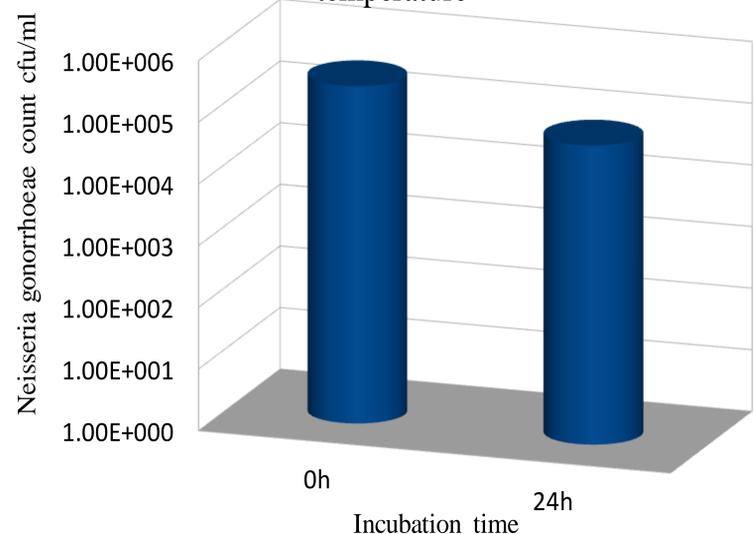


Table 1. Recovery of *Neisseria gonorrhoeae* incubated at 4°C

Neisseria gonorrhoeae recovery at room temperature

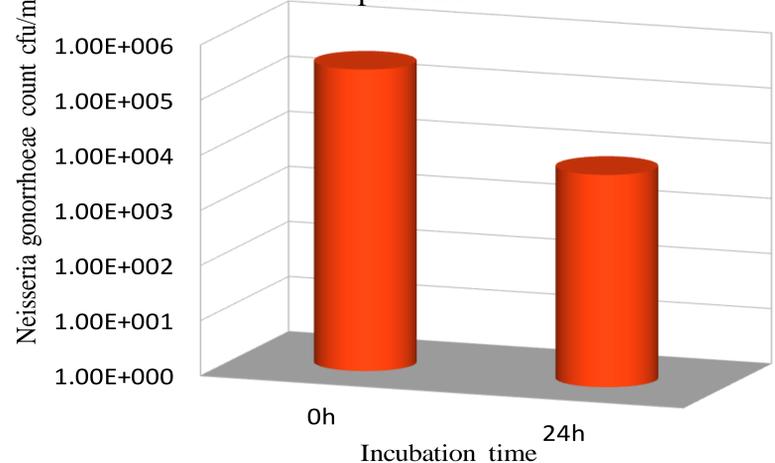


Table 2. Recovery of *Neisseria gonorrhoeae* incubated at room temperature.

Sigma-VCM[®] maintained the viability of *Neisseria gonorrhoeae* for 24hours for specimens held at 4C or at room temperature, thus meeting the requirements of M40-A for this organism.

Discussion/ Conclusion

Loss of viability during transport will have an obvious negative effect on culture results, especially when bacteria are present in low numbers. This study demonstrates that the Sigma-VCM[®] transport swab is capable of maintaining the viability of *Neisseria gonorrhoeae* at room temperature or refrigerated temperature for at least 24h.

An extension of the study, not described here, showed consistent recovery at 48 hours for swabs held at refrigerated temperature. In other studies of *Neisseria gonorrhoeae* in various transport systems, recovery has usually been improved by storage at 4C.

References

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4. Medical Wire In House Data.