Evaluation of Sigma Transwab® in Liquid Amies Transport Medium for Neisseria gonorrhoeae Culture.

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Aim

To determine whether the use of foam-tipped swabs in liquid Amies transport medium would result in comparable recovery of Neisseria gonorrhoeae with direct near patient inoculation of specimens to LCAT culture plates.

Materials

Based on published recovery rate data, literature reviews and user preference, the Sigma Transwab® was selected for the evaluation.

- MW177S Mini tip swab, orange capped, for cervical, rectal, throat and eye sampling.
- MW176S Standard tipped swab, purple capped, for urethral sampling.
- LCAT (Lincomycin, Colistin sulphate, Amphotericin B, Trimethoprim)-Thermofisher product no: PB0226A.

Methods

The Sigma Transwabs® were obtained in parallel with the direct culture on LCAT plates in three Sexual Health clinics over a 7 month period. Patients were informed that the trial swabs would be obtained, if the patient declined the request this was noted in the clinical notes, “patient declined trial swab”.

Procedure for Sigma Transwab® sample collection

- 10ml disposable loops for urethral sampling were used to prepare a smear slide and inoculate a single LCAT culture plate.
- Urine sample was obtained for NAAT (Nucleic Acid Amplification Test – Roche) for Chlamydia trachomatis and Neisseria gonorrhoeae PCR testing.
- For all other anatomical sites (cervical, throat, rectal and eye) the NAAT sample was collected, followed by inoculation of a single LCAT culture plate using a dry cotton swab for each site.

Procedure for Sigma Transwab® sample inoculation

- Male urethral sampling - the Sigma Transwab® was obtained before the urine sample for NAAT. The swab was rolled over visible discharge or inserted into but not beyond the meatus.
- For all other sites the Sigma Transwab® was obtained after all other specimens for NAAT and direct culture plate inoculation had taken place.

On receipt in the laboratory the Sigma Transwab® were inoculated on to individual LCAT plates and stroked out for single colonies. The direct culture plates and the Sigma Transwab® cultured plates were then incubated in parallel at 35 ±2 °C in an atmosphere of 5% CO2 for up to 48 hours.

Culture plates were examined at 24 & 48 hours and bacteria presumptively identified on the basis of colony morphology, oxidase (positive), Gram stain (Gram negative diplococci), and confirmed by biochemical reactions using API® NH Biomerieux (Product Code: 10400) (Acceptable profile 1000 & 1001) and Reference laboratory confirmation by Scottish Bacterial Sexually Transmitted Infections Reference Laboratory, NRIE, Edinburgh.

Results

<table>
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<th>Trial Swab Culture</th>
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<td>URETHRAL</td>
<td>NEG</td>
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</tr>
</tbody>
</table>

Direct culture/ Trial swab POS: Neisseria gonorrhoeae isolated.
Direct culture/ Trial swab NEG: Neisseria gonorrhoeae NOT isolated.

Patient Compliance

Of a possible 200 samples, 177 trial swabs were obtained from the 3 selected trial sites. Confirmed Neisseria gonorrhoeae was isolated from 14 samples.

Discussion

The use of Sigma Transwab® in liquid Amies transport medium obtained in parallel with the current LCAT culture plates has provided data which demonstrates an increase in recovery of the target thereby contributing to a service improvement.

Growth of Neisseria gonorrhoeae was achieved in a total of 14 samples obtained from the Sigma Transwab® plates, while only 12 positive cultures were isolated from the direct culture plates, a 14% increase in recovery capability. Growth was achieved from the Sigma Transwab® plates at 24 hours, in 6 cases, whereas all of the direct culture plates were incubated for a further 24 hours. The results indicate not only a more rapid identification, but also a more accurate method of diagnosis. This is demonstrated in the 2 cases where Neisseria gonorrhoea was only detected when using Sigma Transwab®. The current method of direct inoculation would have produced false negative results in these cases.

Delays in incubation of direct culture plates along with use of media below optimum conditions undoubtedly contribute to the failures of the current system. Management of Sigma Transwab® stock is easier than culture plates as they can be stored at room temperature and have a shelf life of 2 years.

The Sigma Transwab® inoculated plates were stroked out for single colonies which in some cases made the performance of further identification possible at 24 instead of 48 hours. This is particularly evident in rectal and throat swab cultures where mixed cultures are common.

Conclusions

The use of Sigma Transwab® in liquid Amies transport medium provides a superior recovery method for Neisseria gonorrhoeae from clinical material which is not only a quality improvement but also a service improvement for the patient, allowing for a more efficient management of the process.

The outcome of this study was a change in procedure at all Sexual Health clinics. NHS Fife adopted the use of Sigma Transwab® in liquid Amies transport medium to obtain the relevant anatomical sample for transportation to the Microbiology laboratory for culture and identification of Neisseria gonorrhoeae.

Acknowledgements and References

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6. Medical Laboratory Translube and Sigma Transswab® with liquid modified Amies medium - MW176S & MW177S.
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