Evaluating WASPLab against manual processing for infection control screening swabs - An Australian perspective

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Introduction

Automation is expected to have a great impact on how microbiology will process samples, read culture plates and report results; with a key factor being improving turn-around-times (TAT) for results to doctors which will (likely) improve patient care.

The NSW Health Pathology microbiology department located at John Hunter Hospital, NSW is examining the use of the Copan WASPLab™ automated system and undertook an evaluation to determine how it performed against manual processing. Of the 4 sample types evaluated, one was infection control screening (ICS) swabs.

Aim

The aim was to assess how automated processing and examination of infection control swabs using WASPLab™ compared to using conventional manual techniques for plating, streaking and culture reading for those same samples.

Method

A random sampling of 276 infection control screening swabs were processed through the WASP® and incubated in air in the WASPLab™. Only samples collected using the E-swab (containing 1mL liquid Amies transport media) were processed. The same samples (using the swab from the e-swab collection system) were processed by conventional manual techniques.

WASP® Inoculated 10µL of the liquid E-swab sample onto a bioMerieux VRE, MRSA or ESBL chromogenic agar plate plate, or combination thereof according to required protocol. All plates were incubated in WASPLab™ in O_2 at 35ºC and were imaged at 0, 18 and 38 hrs.

Scientists examined digital images produced by WASPLab and recorded those culture results.These were compared against those obtained from manual examination of culture plates of manually processed and incubated samples.

Results

Of the 276 samples processed, 29 (11%) were considered positive (i.e. MRSA, VRE or Multi-resistant GNR [MRGNR] organisms were isolated) using WASPLab. There was greater than 99% concordance between methods.

There were 2 discrepant results:

- 1 x MRSA was recovered manually which was not recovered through WASPLab™
- 1 x VRE was recovered via WASPLab™, but not recovered via manual culture methods.

It was noted that 34% (11/29) of positive samples were recovered a day earlier by WASPLab™ than by manual methods.

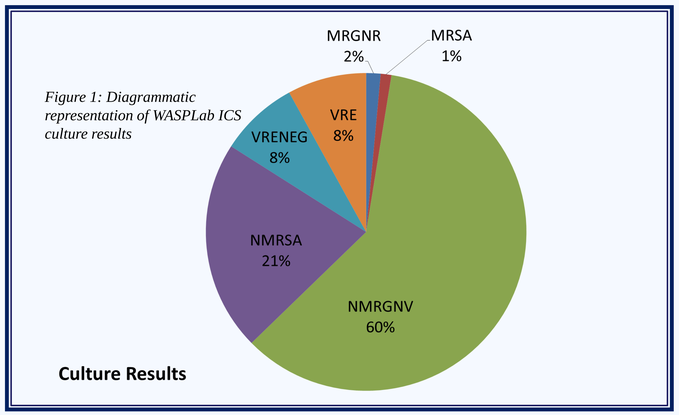

Figure 1: Diagrammatic representation of WASPLab ICS culture results

Culture Result	Manual count	WASPLab count
No MRGNR's	166/192	166/192
No MRSA	59/253	59/253
No VRE	22/216	22/216
MRGNR	4/192	4/192
MRSA	4/253	3/253
VRE	21/216	22/216
Total positive	*29*	*29*

Table 1: Culture result manual vs WASPLab

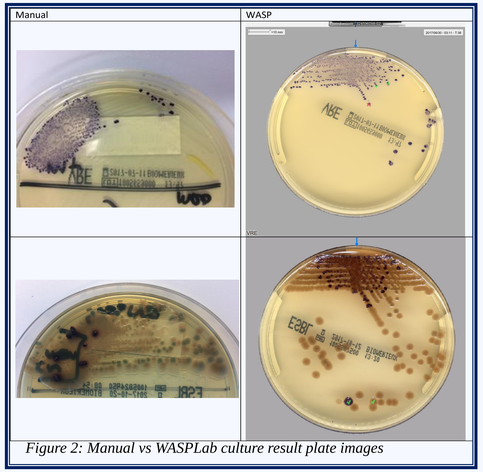

Figure 2: Manual vs WASPLab culture result plate images

Discussion and Conclusion

Using WASPLab™ we found we were able to quickly and easily screen out “negative” culture results, which represented up to 90% of all culture plates, providing significant time savings. There were only 2 discrepancies. The MRSA not recovered from WASPLab™ could be explained by low numbers as only 1 colony was recovered from manual culture set up.

Overall the WASP®/WASPLab™ combination proved to be equal to, or better than, manual processing, exhibiting equal or better colony isolation when compared with manually processed samples, improving the readability of culture plates.

The fact that the WASPLab™ is a closed system, providing consistent, temperature controlled incubation conditions, probably accounts positive cultures being recovered a day earlier than by manual methods in 34% of cases. Added advantages included standardisation of culture streaking and incubation times, storage of images and traceability of samples as they move through the system.

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