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Evaluation of the COPAN BC+ container for blood culture sampling and processing by the WASPTM

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Background: The diagnosis of bloodstream infections is one of the most critical tasks of clinical microbiology laboratories. Since these kind of infections can be life-threatening, it is of major importance to optimize the workflow around these samples in order to provide the results as soon as possible to the clinicians. In our lab, we currently use the WASP™ automation for the processing of clinical samples however; blood cultures (BCs) are processed manually. The aim of this work was: 1) To compare manual with WASP™ automation processing of BCs; 2) To validate the COPAN BC+ container (Copan, Brescia, Italy) for blood sampling; 3) To develop and implement a WASP™ protocol for Gram smear preparation and agar plate seeding for positive 253 BacT/Alert FA Plus® and FN Plus® BCs (bioMérieux, Marcy L'Etoile, France).

Material/methods: 500 consecutive positive BCs (253 BacT/Alert FA Plus® and 247 BacT/Alert FN Plus®) were used for this study. For the manual method, 1 drop of the BC was used for the smear and 1 drop of the BC for the agar plates' seeding. For the WASP™ automation, a new protocol was created using a 1 µl loop for the smear and seeding (inoculation of 4 plates with 4 quadrant streaking pattern). Positive BCs were transferred to a BC+ container and loaded on the WASP™. Both smears (manual and automated) were stained using an automated technique named Polystainer (IUL Instruments, Barcelona, Spain).

Results: For the Gram smear, 90% concordance was found between the manual and the automatic method. In 9 cases, the poly-microbial BCs were not noticed in the manual smear and 1 manual smear was negative. Concordance was found in 157 Gram-negative, 326 staphylococci, 30 enterococci, 81 streptococci, 4 yeasts, 6 Gram-positive rods and 10 anaerobic bacteria. There were 88 polymicrobial blood stream infections. By using the WASPTM, more isolated colonies were obtained. The BC+ tube is an easy to use container that also improves the safety of transferring positive BCs. By using the BC+ tube in combination with the WASPTM, we were able to reduce our turnaround time (TAT), from 2,5 minutes to 45 seconds.

Conclusions: Our WASP™ protocol for positive BCs significantly reduces manual work and improves the quality of the smear and the streaking. The results from the Gram smears are excellent and the streaking leads to more isolated colonies. Well isolated colonies can be used for identification by MALDI-TOF and antimicrobial susceptibility testing, which results in a decreased TAT.