

# Direct MALDI-TOF from Positive Blood Culture Bottles: Evaluation of two Methods and Impact on Patient Management

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## INTRODUCTION

The advent of MALDI-TOF mass spectrometers has increased the pressure in clinical microbiology laboratories to identify bacteria faster than ever before. In this study, two methods that enabled the same day identification of bacteria from positive blood culture bottles (BacT/Alert FAN Plus, bioMérieux) by MALDI-TOF (Bruker) were evaluated in parallel with the standard overnight culture method. The impact of same-day identification on the antimicrobial management of patients was also prospectively reviewed.

## METHOD AND RESULTS

Parallel Evaluation: 6-month period

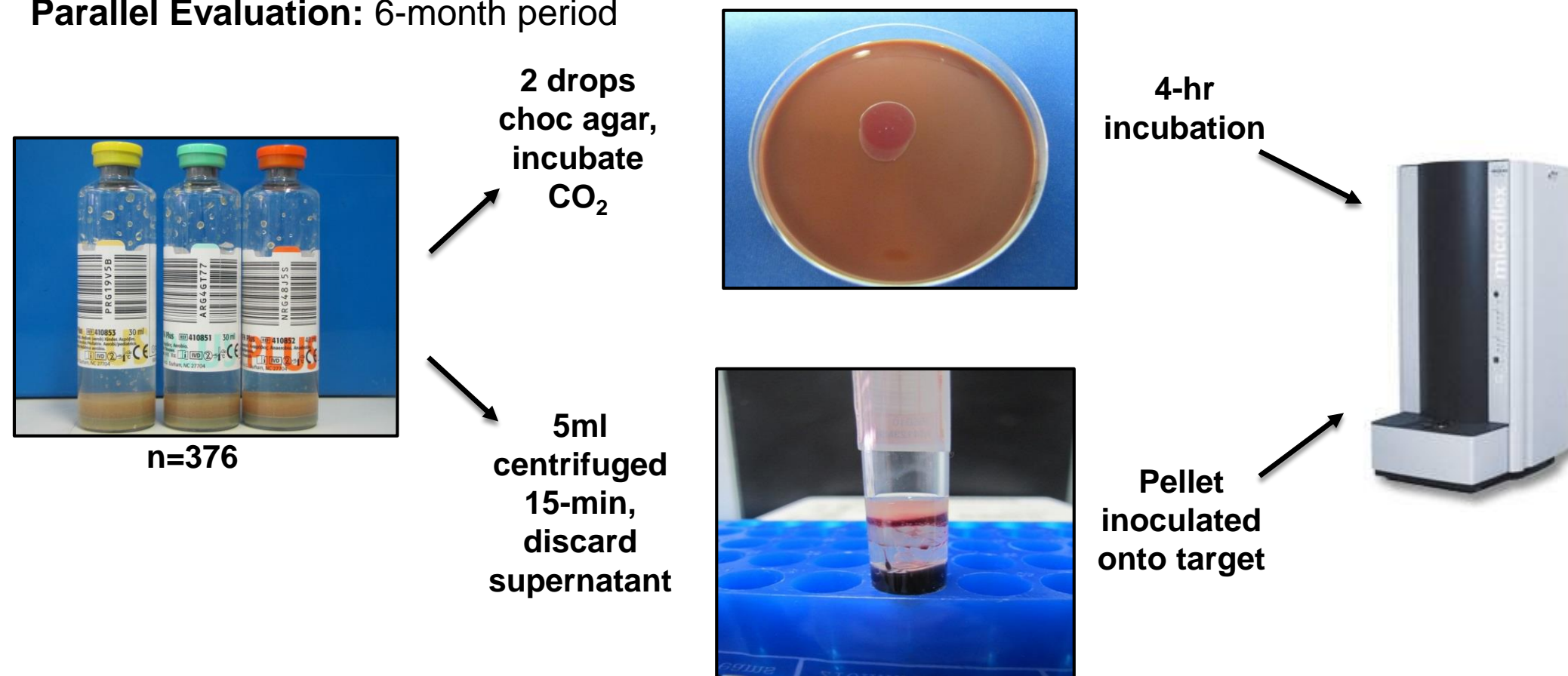


Table 1: Parallel Evaluation of Short Incubation & Pellet Methods

	Score	Short Inc	Pellet
<b>Enterobacteriaceae</b>	≥2	89.4	64.6
% (n=161)	≥1.9	92.5	79.5
<b>S aureus</b>	≥2	81	19
% (n=79)	≥1.9	83.5	34.2
<b>Ps aeruginosa</b>	≥2	42.9	0
% (n=14)	≥1.9	42.9	21.4
<b>Coag-neg staph</b>	≥2	17.9	9
% (n=67)	≥1.9	32.8	16.4
<b>Strep sp</b>	≥2	41.2	23.5
% (n=34)	≥1.9	55.9	38.2
<b>Ent faecium &amp; faecalis</b>	≥2	57.1	35.7
% (n=28)	≥1.9	57.1	46.4

**Prospective Review:** August to December 2015 - 38 patients were prospectively reviewed for the impact on treatment based on same day isolate identification. Four patients were subject to treatment changes and is summarised in Table 2.

Table 2: Prospective Review - Treatment changes

ISOLATE	TREATMENT CHANGE
<i>Enterococcus faecalis</i>	Vancomycin ceased
<i>Enterococcus faecalis</i>	Vancomycin ceased
<i>Escherichia coli</i>	piperacillin/tazobactam changed to ceftriaxone
<i>Citrobacter freundii</i>	piperacillin/tazobactam changed to cefepime

## CONCLUSION

The short incubation method was able to identify a greater percentage of isolates to the species level than the pellet method. This method is low cost, fast and easy to incorporate into the existing workflow and does not require any additional processing of the broth.

Although the short incubation method requires a 4-hour incubation period before identification, the pellet method also includes a delay as it was found that the gel tubes required batching to maintain the laboratory workflow.

Patient management was altered in only 10.5% of patients, and this was mostly to cease or step-down antibiotics. This will aid antimicrobial stewardship efforts in a modest number of patients.

The 'short incubation' method is able to provide same day identification of commonly isolated bacteria from positive blood culture bottles which can impact on patient management.