

# **Malaysia Antimicrobial Resistance** (MyAMR) Conference 2024

Unite Against Antimicrobial Resistance (AMR): Fight Resistance with Evidence

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**Sunway Pyramid Convention Centre** 

Results

# **Experience of Using Blood Culture Rapid Diagnostics in Critical Care Units:** Single Centre Experience in Malaysia

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## Background

Bacteremia is a major health concern which is associated with high morbidity and mortality<sup>1</sup>. Most septic patients can be found in emergency medicine departments or critical care units, settings in which rapid administration of targeted antibiotic therapy can reduce mortality<sup>2</sup>. Routine blood cultures, though has been the gold standard and most common method of diagnosis of bloodstream pathogens, are not rapid enough to aid in the antimicrobial selection at the onset of bacteremia<sup>3</sup>. With the aim of reducing turnaround time from several days to few hours from the time of positive blood culture, BIOFIRE® Blood Culture Identification 2 (BCID2) Panel test, with the use of molecular testing, has been proposed. In this study, the results of rapid molecular diagnostic blood culture identification panel in patients with bacteremia in critical care units were evaluated.

Out of the positive blood culture samples (N=30) collected,



# The BioFire® FilmArray® Blood Culture Identification 2 (BCID2) Panel®

#### **GRAM-NEGATIVE BACTERIA**

Acinetobacter calcoaceticusbaumannii complex Bacteroides fragilis Enteric Bacteria Enterobacter cloacae complex Escherichia coli Klebsiella aerogenes Klebsiella oxytoca Klebsiella prieumoniae group Proteus Salmonella Serratia marcescens Haemophilus influenzae Neisseria meningitidis Pseudomonas aeruginosa Stenotrophomonas maltophilia

#### **GRAM-POSITIVE BACTERIA**

YEAST

Candida parapsilosis Candida tropicalis

Cryptococcus neoformans/gatti

Enterococcus faecalis Enterococcus faecium Listeria monocytogenes Staphylococcus Staphylococcus aureus Staphylococcus epidermidis Staphylococcus lugdunensis Streptococcus Streptococcus agalactiae Streptococcus pneumoniae Streptococcus pyogenes Candida albicans Candida auris Candida glabrata Candida krusei

### ANTIMICROBIAL RESISTANCE GENES Carbapenemases

OXA-48-like NDM VIM Colistin Resistance mcr-1 ESBL CTX-M Methicillin Resistance

KPC

#### mecA/C

mecA/C and MREJ (MRSA) Vancomycin Resistance vanA/B

Investigational use only. Not for use in diagnostic procedures.

#### Figure 3 Mean Turnaround Time (hours) reduction from 49 hours to 21 hours using BCID2 panel

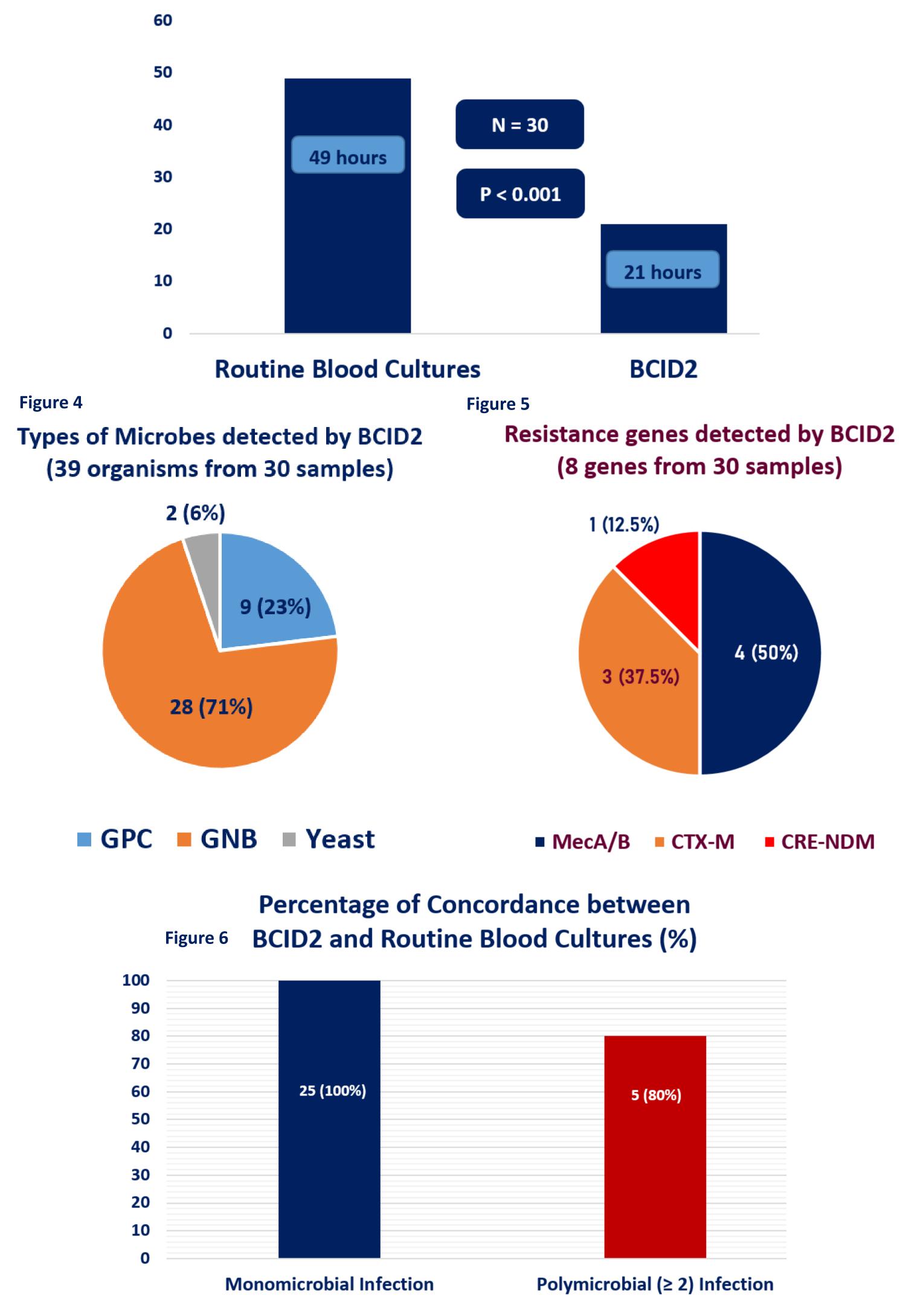
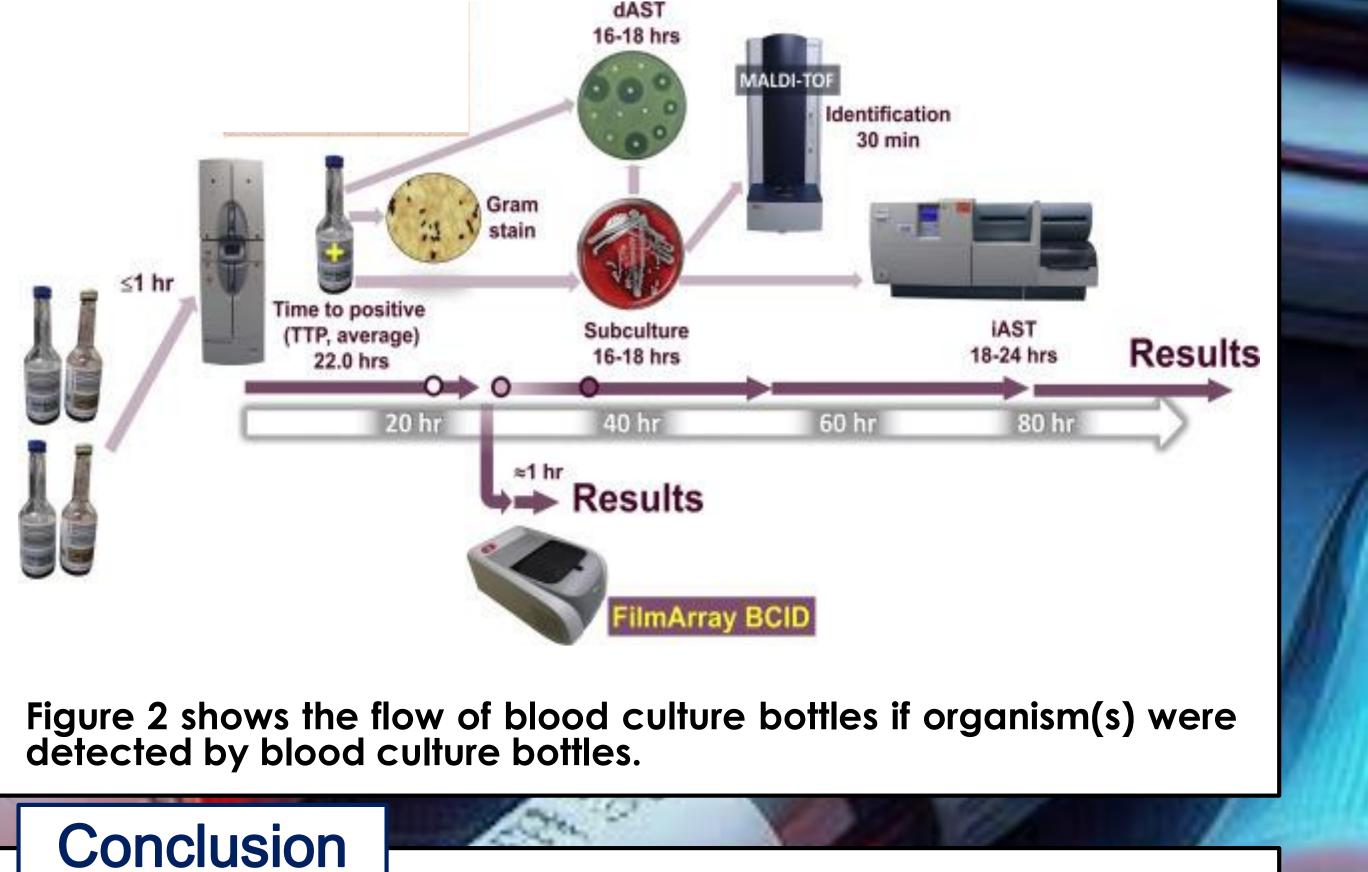


Figure 1 shows the panel of organisms and resistance genes that can be detected by BCID2.

### Method

This observational cohort study involved identical cohort comparison between routine blood culture (standard practice) and BCID2 panel test (Rapid Molecular testing) from 2022 to 2024.



polymicrobial case that Acinetobacter baumannii and There is one Streptococcus dysgalactiae detected by BCID2 but only Streptococcus dysgalactiae grew on culture plate.

BCID2 panel test was associated with significant reduced turnaround time from positive blood cultures than routine blood cultures method, with additional benefit of rapidly detecting resistance genes from the organism.

# References

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3.So M-K, Kim S-K, Chung H-S, Bae J-Y, Lee M. Large-Scale Clinical Evaluation of Rapid Blood Culture Identification Panels for Bloodstream Infections at a Tertiary Hospital. Diagnostics. 2023; 13(6):1177. https://doi.org/10.3390/diagnostics1306117



**Limitation:** There were 5 positive blood culture samples being excluded from this study because BCID2 were unable to detect Burkholderia cenocepacia, Citrobacter koseri and Morganella morgannii...

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