

## INTRODUCTION

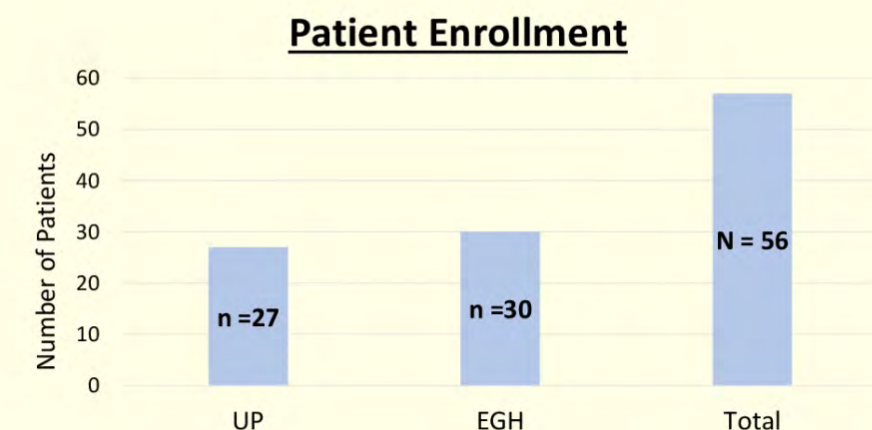
Resistant bacterial pathogens pose a global public health threat to hospitalized patients. Timely initiation of antimicrobial therapy targeting these resistant organisms is critical for successful outcome. The T2 Resistance (T2R) Panel which is run on the T2Dx Platform detects 13 resistance genes from both Gram-positive (*VanA/B*, *mecA/C*) and Gram-negative (*KPC*, *OXA-48*, *NDM/VIM/IMP*, *CTX-M 14/15*, *AmpC (CMY/DHA)*) pathogens direct-from-blood that can commonly cause bloodstream infections (BSIs).

## OBJECTIVE

The objective of this study was to evaluate the sensitivity and specificity as well as time of identification of the T2R Panel for the detection of resistance genes in patients with resistant bacterial bloodstream infections in comparison to blood culture (BC).

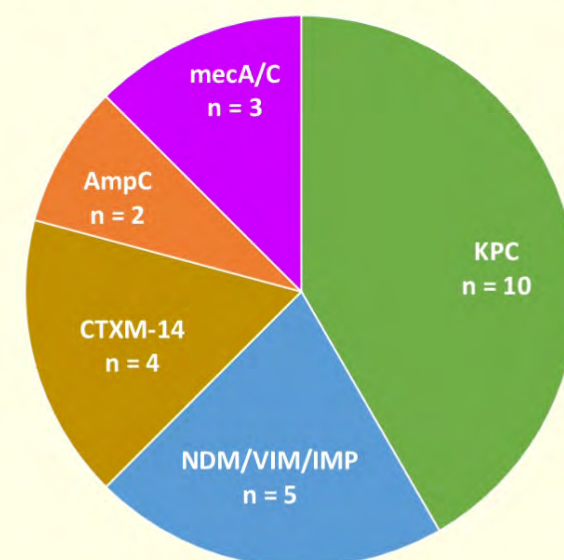
## INTRODUCTION

- This was a prospective study.
- Two major medical centers (University of Perugia (UP), Perugia, Italy and Evangelimos General Hospital (EGH), Athens, Greece) participated in enrollment.
- Conducted over 5 months.



## RESULTS

### Resistance Genes Identified by T2R (n=24)



- No *VanA*, *VanB*, or *OXA-48* genes were detected in this study.

### Mean Time to Results

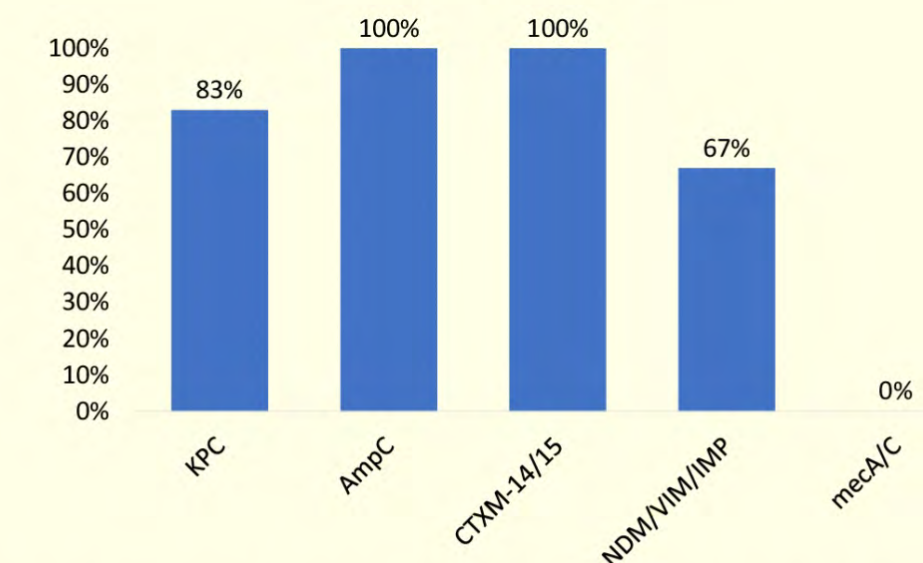
- The mean time to T2R results was 4.4h±0.1h for all enrolled patients (n=57).
- Mean time to positive T2R in UP was 4.2h±0.3h, while mean time to positive blood-cultures (BCs) was 32.9h±6.1h (p=0.002).
- Mean time to a positive result from standard molecular resistance assay (Gene Expert) following BCs was 33.7h±5.3h (p=0.001), from immunochromatographic assay for CTXM 27.6h±6.9h (p=0.008), and from antimicrobial susceptibility testing (AST) 53.8h±5.8h (p=0.004).
- Mean time to positive T2R in EGH was 3.6h±0.1h in comparison to that for final reporting of positive BCs with AST of 101.4h±15.0h (p<0.001).

### Antibiotic Changes

- When monitored for the impact of significant antibiotic changes at EGH, there were 22 events of discontinuation of unnecessary antibiotics and 10 events of escalation of antibiotics.

### Sensitivity

Sensitivity of T2R to Detect Genes in Comparison to AST



- The sensitivity of T2R in comparison to genotypic assays for detection of *KPC* was (100%) and for *mecA/C* (100%).
- Overall sensitivity and specificity for phenotypic and genotypic detection was 80-90% and 84% and with adjudication 91.3% and 90.2%, respectively.

## CONCLUSIONS

In summary, the T2R molecular markers were sensitive and specific for detection of drug resistance genes in patients with resistant bacterial BSIs, when compared with standard molecular resistance detection systems and phenotypic identification assays, while also significantly reducing time to detection of resistance genes compared to standard methodology by approximately 90%.

## ACKNOWLEDGEMENTS

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## CONTACT INFORMATION

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