

# Real-life experience and case examples from an evaluation of the Accelerate PhenoTest™ BC Kit used in a clinical routine setting

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## Introduction and Purpose

- The new diagnostic kit (PhenoTest™ BC kit) shows fast and reliable results for pathogen identification (ID) and antimicrobial susceptibility testing (AST) [1,2]
- An economic model based on a historic case review showed substantial clinical and economical potential when introducing the new test [3]
- The aim of this study is to investigate the clinical and economic effects of a rapid availability of antibiotic susceptibility in Germany and to validate these theoretical results in up to 3 German hospitals
- The project was initiated in the first hospital in July 2018. All blood cultures (BC) from any intensive care unit (ICU) shall be tested with the new system
- We show 6-month interim results of the project. All cases underwent a clinical case review by 2 reviewers
- Together with the statistical data we display 4 exemplary cases where the new test could clearly show its benefit over Standard-of-Care (SoC)

## Methods for Clinical Case Review

All positive blood culture results are reported by the Microbiology lab

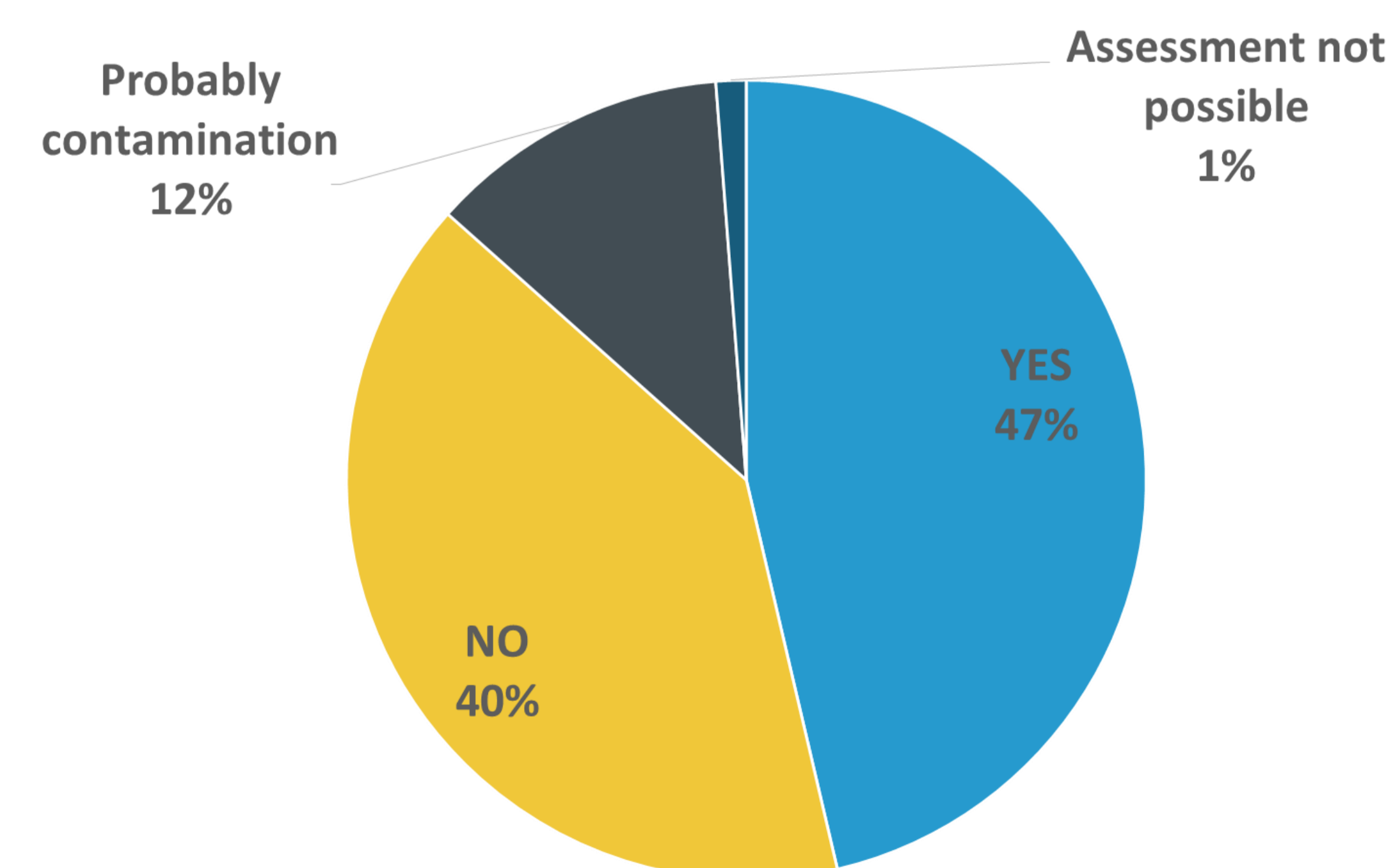
Clinical reviewers check all cases

- Patient on ICU (=‘candidate’)?
- If yes: PhenoTest™ BC kit test performed
- If yes: Result available?
  - If yes: Does result recommend change in AT?
    - If yes: which change is recommended?
      - Adaption (Escalation) due to resistance
      - De-Escalation
      - Broadening therapy by antifungal

## Average Time to Result (ID+AST) Start: “BC drawn” (in average 21hrs until positivity)



## Changes in Antimicrobial Therapy Recommended (n=82)?

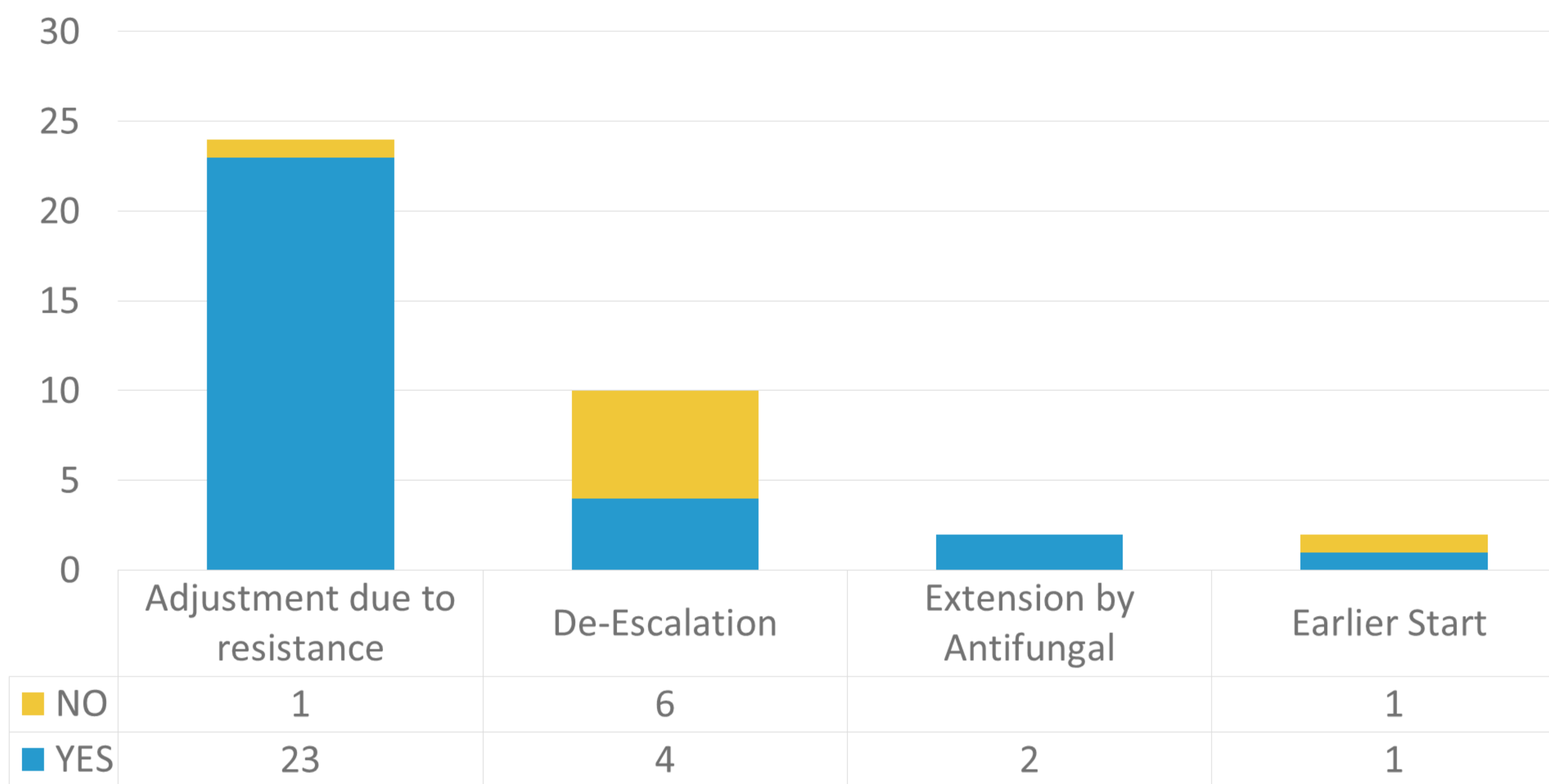


## Disclosures

This study was sponsored by Accelerate Diagnostics Inc. Tucson, USA. W. Heinlein is employee and M. Wilke is employee and shareholder of inspiring-health GmbH, which was contracted by Accelerate. K. Worf and T. Kast were formerly employees of inspiring-health GmbH. W. K.F. Bodmann acted as a consultant to Accelerate, and has received lecture honoraria from Accelerate.

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## Necessary Adjustments Performed on ICU (n=39)



## Case 1

Male patient, 82 yrs old

- Hemicolectomy due to Colon-Ca
- CAD, Hypertension, DM II, COPD
- Peritonitis with Sepsis

IAT: Piperacillin/Tazobactam 3 x 4,5g + Metronidazol 2 x 600mg

ID+AST - result after 24 hrs (17hrs BC+ / 7hrs test time): K.pneumoniae, resistant to Pip/Tazo

Change to Meropnem 2x1 g i.v. / Discontinue Metronidazole

SoC (after 64 hrs): Confirmation of result

→Take home: Effective AT was available 40hrs earlier with PhenoTest™ BC it in a critically ill patient

## Case 2

Female patient, 93 yrs old

- Septic shock,
- Chronic immunosuppression (Mtx for rheumatoid arthritis),
- DM II,
- COPD,

IAT: Piperacillin/Tazobactam 3 x 4,5g i.v. in combination with Fosfomycin 3 x 8 g i.v.

AST+ID - result after 70 hrs (68h BC+ / 2hrs „ID“): Candida glabrata

Broadening therapy with Caspofungin

SoC (after 170 hrs): Confirmation of result: C. glabrata, resistant to Fluconazol

→Take home: PhenoTest™ BC kit result was 100 hrs, faster. Critically ill patient. Early therapy switch potentially life-saving

## Case 3

Female patient, 27 years

- Polytrauma (Fell out of window – 15m), multiple, partly open fractures, spleen rupture
- Emergency surgery and several follow-up surgeries for osteosyntheses of the fractures
- After 10 days Fever, CRP and PCT high

IAT: Piperacillin/Tazobactam 3 x 4,5g

ID+AST – result after 21 hrs (14hrs BC+ / 7 hrs test time): Enterobacter cloacae, MIC = 8

Change to Cefepime 3 x 2 g i.v. (MIC = 0.25)

SoC (after 99 hrs): Enterobacter cloacae, „S“ to Pip/Tazo, no MIC provided

Take home: The MIC of 8 indicates still susceptibility but in the critically ill patient PhenoTest™ BC kitenabled an early switch to a much more effective drug. Special case – infectious disease expert stuff!

## Case 4

Male patient, 61 yrs old

- Critical limb ischemia right leg, COPD, Liver cirrhosis, CAD, DM II
- Over-the-knee major limb amputation
- Infection of the stump
- Generalized infection, suspicion of bacteriema
- BC drawn – 2 pairs

IAT: Piperacillin/Tazobactam 3x4,5g i.v.

ID+AST - result after 20.4 hrs: Staphylococcus aureus, susceptible to Flucloxacillin

De-Escalation to Flucloxacillin 4x2g i.v.

SoC (after 80 hrs): Confirmation of result

Take home: Early de-escalation possible; example for good Antimicrobial Stewardship

## Conclusions

- High rate of tests in ‘candidates (BC from ICU)’ (82%) yet to be improved
- Fast results (68hrs = 2.8 days faster than SoC)
- 48% therapy adjustments recommended
- High compliance (De-Escalation to be improved)
- Changes are clinically meaningful (potentially life-saving)
- Fast results translate into LOS saved

## References

- Pancholi P et al. Multicenter Evaluation of the Accelerate PhenoTest™ BC Kit for Rapid Identification and Phenotypic Antimicrobial Susceptibility Testing Using Morphokinetic Cellular Analysis. Journal of clinical microbiology. 2018;56(4). DOI: 10.1128/JCM.01329-17.
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