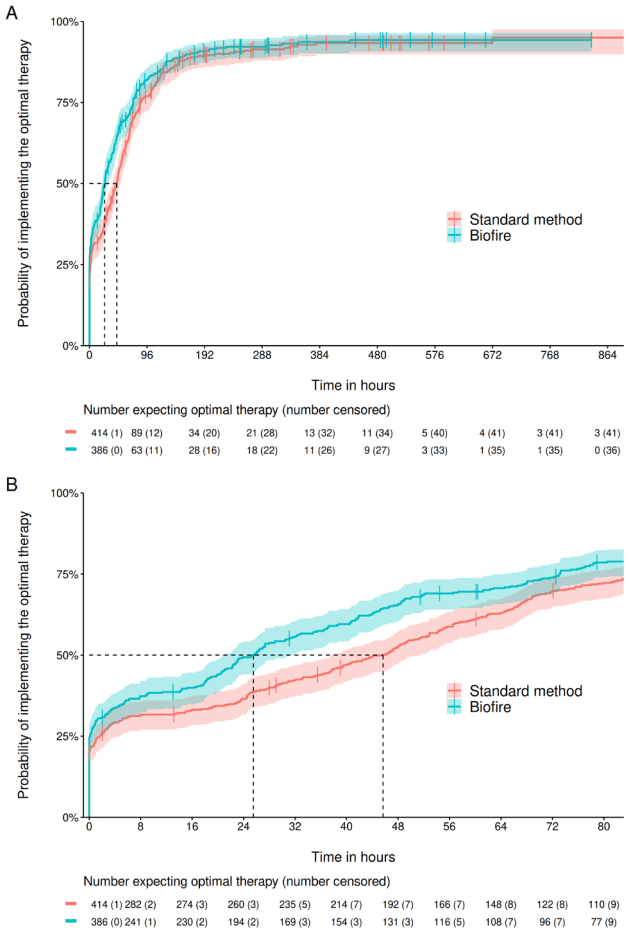
and 44.3 hours by the conventional method. Patients with BF-FA-BCIP received the optimal therapy after a median of 25.5 hours (95%CI 21.0 - 31.2) as compared to 45.7 hours (95%CI 37.7 - 51.2) in the control group (Figure 1). We found no effect of the identification method on secondary outcomes.

Kaplan-Meier curve representing the probability of implementing the optimal therapy at any given time according to the identification method (Standard vs. BF-FA-BCIP).



Shaded ribbons represent the 95 % confidence interval (CI). The vertical dashes represent censored data. The vertical dotted lines represent the median time, i.e. the time at which 50 % of the patients obtained the optimal therapy, for the two methods. Median (95 % CI) time to optimal therapy is 45.7 (37.7 - 51.4) hours with the Standard method and 25.5 (21.0- 31.2) hours with Biofire. The tables below the curves present the numbers expecting optimal therapy according to the bacteria identification method, as well as the number of censored data in parenthesis. Panel A shows data from 0 to 900 hours. Panel B shows the data from 0 to 90 hours to better visualize how the probability to implement optimal therapy varies in the first 72 hours.

Conclusion. In conclusion, rapid pathogen identification by BF-FA-BCIP was associated with an almost 24h earlier initiation of the optimal antibiotic therapy in BSI. However, the overall benefit for individual patients seems to be limited. Future studies should assess the cost-effectiveness and impact on the prevention of antibiotic resistance using this diagnostic approach.

Disclosures. **All Authors**: No reported disclosures

654. Performance of the T2Resistance Panel in Detecting Antibiotic Resistant Bacteria Directly in Whole Blood, and Implications for Improving Appropriate Therapy of Bloodstream Infections

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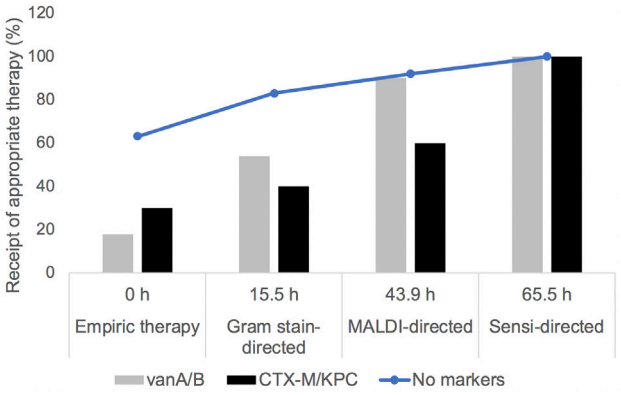
Session: P-29. Diagnostics: Bacteriology/mycobacteriology

Background. Appropriate antibiotic (Ab) therapy of bloodstream infections (BSI) is often delayed by time to blood culture (BC) positivity, species (sp) identification and Ab sensitivity (sensi). The T2Resistance (T2R) Panel is a direct-from-blood (culture-independent) diagnostic that detects 13 genetic markers associated with methicillin-resistant *S. aureus* (MRSA), vancomycin-resistant Enterococcus (VRE), ESBL- and carbapenemase-producing Enterobacteriaceae (E). We assessed T2R performance in detecting these resistant bacteria in whole blood (WB) and analyzed possible impact on time to appropriate Ab.

Methods. We performed T2R using WB samples obtained from patients (pts) on the same day as BCs from July 2019-2020. Receipt of appropriate Ab was assessed at time of empiric, Gram stain-directed, MALDI-directed (sp identification) and sensi-directed therapy. T2R results were not available to care teams. Teams were notified of positive BCs. Stewardship optimized Abs based on sensi.

Results. BC from 103 pts grew 114 bacterial sp: E (n=54; 16 ESBL-, 1 KPC-producer), *S. aureus* (n=29, 22 MRSA), Enterococcus (n=21, 16 VRE), *P. aeruginosa* and others (n=10). 12 ESBL-E produced CTX-M 14/15. T2R sensitivity and specificity was 78% and 99%, respectively, compared to sequencing of resistance markers. Sensitivity was excellent for vanA/B, KPC (100% each), and CTX-M14/15 (92%); sensitivity was 58% for mecA/C. T2R detected resistance determinants in 3-7h. Median time to appropriate Ab was 16.3h, which was significantly longer for VRE (25.6h) and ESBL- or KPC-E (50.9h) BSIs than for T2R marker-negative bacteria (6.7h; p=0.04). Pts with VRE or ESBL-/KPC-E BSI were less likely to received appropriate empiric Ab (18% and 30%, respectively) than pts with T2R marker-negative BSI (63%; p=0.02; Fig.1). Median times to achieve ≥80% appropriate Ab therapy of marker-negative, VRE and CTX-M/KPC-E BSIs were 15.5h (after Gram stain), 43.9h (after MALDI) and 63.5h (after sensi), respectively.

Antibiotic Therapy



Conclusion. There was a significant delay in appropriate Ab therapy of BSIs, especially in pts infected with VRE and ESBL/KPC-E. T2R rapidly and accurately detected BSI caused by VRE and ESBL/KPC-E, and has the potential to significantly shorten time to appropriate Ab.

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655. Patterns of Interferon-Gamma Release Assay (IGRA) Testing for Tuberculosis in Patients Less Than 2 Years Old

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Session: P-29. Diagnostics: Bacteriology/mycobacteriology

Background. The American Academy of Pediatrics recommends use of Interferon-Gamma Release Assays (IGRAs) to diagnose tuberculosis (TB) infection in patients ≥2 years old. However, IGRAs are not currently recommended in younger patients due to limited data and concerns of invalid/indeterminate test results, which occur if there is a positive or negative control failure. We sought to characterize the patterns of IGRA use in clinical practice and results of IGRAs in patients < 2 years old.

Methods. We conducted a retrospective cohort study of children < 2 years old at two large health systems in the Boston area who had IGRA and/or tuberculin skin test (TST) performed from October 1, 2015 – January 31, 2021. We reviewed medical records to determine IGRA test type, IGRA result (positive, negative, invalid/indeterminate) and location of testing (outpatient primary care, outpatient subspecialty, inpatient). We summarized test interpretability, location, and changes in proportion of IGRA vs. TST.

Results. We identified 330 IGRA (268 T-SPOT.TB, 62 QuantiFERON Gold) and 2029 TST results among 1982 patients who were < 2 years old (range: 11 days – 1.9 years). Monthly proportion of IGRAs among all TB tests ordered increased from 2015 to 2021 (Figure 1) (Pearson correlation coefficient 0.85, P < 0.001). Among IGRA results, 314 (95%) were negative, 3 (1%) were positive, and 13 (4%) were invalid/indeterminate (11 T-SPOT.TB, 2 QuantiFERON Gold). Of 324 IGRA tests for which testing location was known, 233 (72%) and 91 (28%) were ordered in outpatient and inpatient settings, respectively. Of tests in outpatient settings, 132 (57%) were ordered in primary care offices, 53 (23%) were ordered in subspecialist offices, and 48 (21%) were obtained in outpatient labs of unidentified clinics.

Tuberculosis infection tests and proportion IGRA.