Mycobacterium tuberculosis (Mtb) and outcomes of TB depending on Mtb strains' genotypes among different age groups of TB patients.

Methods. In 2015–2016, 115 clinical cases of severe first diagnosed TB were studied. Identification of Mtb strains was made by using VNTR-genotyping by ETR A-E loci. Resistance of Mtb to drugs was done according to WHO recommendations. There was found out the large cluster of identical strains among Beijing’s family with VNTR-profile 42435 – 53 (46%). All the cases were divided into 4 groups: group 1 – young adults, Mtb Beijing profile 42435, n = 29, group 2 – elderly adults, Mtb Beijing profile 42435, n = 24, group 3 – young adults, non-42435 profile, n = 29, group 4 – elderly adults, non-42435 profile, n = 33. The outcomes were analyzed after continuation phase of treatment.

Results. Beijing strains with VNTR profile 42435 were primary resistant in 37.7 %, and they become secondary resistant after at least 6 month treatment in 50.9 %. In cases of Beijing 42435 profile, the clinical courses of TB were very severe, with episodes of hemoptysis/pulmonary bleeding, the outcomes were unfavorable – treatment success was just in 35.7 %, of cases, fail – 33.9 %, lost to follow-up – 15.2 % and 15.2% of patients died, with no difference depend on the patient’s age, P > 0.05. Another Mtb strains were primary resistant in 30.6%, and they become secondary resistant after at least 6 month treatment in 32.3%. (group 3 – 46.6%, group 4 – 18.8%, P < 0.01). The clinical courses of TB in cases of non-42435 VNTR profile were severe, but without episodes of hemoptysis/pulmonary bleeding, the outcomes were much more favorable – treatment success was in 58.1 % of cases (group 3 – 40%, group 4 – 75.6%, P < 0.05). fail – 22.5 %, lost to follow-up – 11.3% (group 3 – 20%, group 4 – 3.1%, P < 0.05), 8.1% of patients died, with no difference depend on the patient’s age, P > 0.05.

Conclusion. Beijing strains with VNTR-profile 42435 are spread very fast in Ukraine and compose the cluster of virulent primary resistant strains, with severe clinical course and worst outcomes.

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Background. Early diagnosis of BSI and appropriate antimicrobials are crucial; additionally avoidance of overly broad antibiotics is important to cure the development of resistance. Rapid molecular approaches are costly and have spectrum limitations. In our prior pilot study simple phenotypic RDDDT provided accurate susceptibility data for GNB over 24 hours earlier than conventional methods. This follow up pilot study evaluated RDDDT plus prompt stewardship intervention to decrease the time to optimal antimicrobial therapy.

Methods. GNB positive blood cultures (BACTEC) were inoculated by expressed swabs to MH agar plates. 12 antibiotic discs were applied. At least 8 hr incubation, results in conjunction with MALDI-TOF speciation, were reported to EMR at 9am or 3pm. After review the ID Fellow contacted the primary MD to escalate, deescalate, or continue current antibiotics. Results of the RDDDT were compared with routine VITEK and assessed as complete agreement (CA) or as very major (VM), major (M), minor (MI) discrepancies. Times to susceptibility, RDDDT based antibiotic optimiza
tion, and VITEK reports were assessed. Time to VITEK based optimization was obtained from the prior baseline pilot study.

Results. 164 patients with GNB were evaluated. 1688 individual RDDDT read
ing, including 297 ESBL and 66 CRE were compared with VITEK. RDDDT had 85% CA and 0.4% VM, 2.3% M, 13% MI discrepancies. The median time from BC positivity to RDDDT report was 17.5 hrs vs. 46 hrs for VITEK. Of 164 patients, 162 were assessed clinically. Of those, 72 (44%) required antibiotic change with median time to optimization 21 hours based on RDDDT vs. 71 hours based on prior baseline VITEK.

Conclusion. RDDDT coupled with prompt stewardship intervention provided a safe and reliable strategy to improve time to antibiotic optimization with savings of 2 days compared with standard VITEK reporting. Furthermore, RDDDT is simple and applicable worldwide, especially in resource limited areas.

Accuracy: RDDDT vs. VITEK

| Discrepancies | Total N (%) | Excluding Cefazolin N (%) |
|---------------|-------------|--------------------------|
| VM            | 6 (0.4)     | 6 (0.4)                  |
| M             | 39 (2.3)    | 31 (2)                   |
| MI            | 217 (13)    | 152 (10)                 |
| CA            | 1426 (85)   | 1349 (88)                |
| Total         | 1688        | 1538                     |

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2119. Clinical Impact of Expedited Pathogen Identification and Susceptibility Testing for Gram-negative Bacteria and Candidemia Using the Accelerate Phenom® System

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Background. Inappropriate initial antibiotic therapy (IAT) for sepsis increases mortality. The clinical tests of drug identification (ID) of pathogen and antimicrobial susceptibility testing (AST) have the potential to improve mortality and antimicrobial stewardship. The Accelerate Phenom® system (AXDX) is a newly FDA cleared fast diagnostic testing system that provides ID and AST for Gram-positive and Gram-negative bacteria (GNB) and ID for Candida bloodstream isolates.

| Reports | Time to Test Result | Time to Test Result in EDTT | Time to Test Result in VITEK |
|---------|---------------------|-----------------------------|-----------------------------|
| EDTT    | 25 (25)             | 16 (25)                     | 47 (75)                     |
| VITEK   | 72 (100)            | 63 (100)                    | 72 (100)                    |

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2120. Validation of an Antimicrobial Stewardship Driven Verigene® Blood-Culture Gram-Negative Treatment Algorithm to Improve Appropriateness of Antimicrobials

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Background. Gram-negative bacteremia (GNB) is associated with significant morbidity and mortality, emphasizing the need for timely, effective antimicrobial therapy. Rapid diagnostic testing (RDT) can influence antimicrobial de-escalation, 5.3% appropriate escalation, and 16.0% unnecessary escalation. Clinical outcomes included appropriateness of initial empiric antimicrobial therapy, potential for early antimicrobial de-escalation with AXDX, and mortality.

Results. Of 341 screened blood cultures, 123 met inclusion criteria; 101 had organisms that were on-panel for AXDX, 88 GNB and 13 C. glabrata or C. albicans. For GNB, mean time from blood culture positivity to ID and AST between SOC was 19.8 and 53.5 hours, respectively, and 1.4 and 6.7 hours using AXDX (from time AXDX started). For Candida spp., mean time to ID was 33.1 hours for SOC, 1.4 hours for AXDX. Antimicrobial de-escalation was possible based on AXDX testing in 52.9% of patients with GNB infections. A total of 27 (27.3%) patients received IIA. In-hospital mortality was higher (48.1%) in the IIA group than in those receiving appropriate initial antimicrobials (12.5%), P < 0.001. AXDX could have improved antimicrobial therapy in 89.8% of GNB and 92.3% of Candida spp. cases.

Conclusion. The Accelerate Pheno™ system is a novel fast diagnostic that significantly reduces the time to ID and AST for GNB and ID of Candida spp. bloodstream infections, with the potential to impact clinical outcomes. Prospective clinical trials are needed to evaluate the impact of this new system on clinical outcomes and antimicrobial stewardship.

Disclosures. C. A. D. Burnham, Accelerate Diagnostics: Investigator, Research support; M. Kollef, Accelerate Diagnostics: Consultant, Research support

2121. Rapid Identification of Gram-Negative Bacteria and Impact on Anti-Pseudomonal Antibiotic Consumption in Combination with Antibiotic Stewardship at a Community-Based Hospital System

Maggie Box, PharmD, BCSp, AQ-ID; Jennifer Lee, PharmD; Kristine Ortwine, MS, MPh; Caitlin Richardson, PharmD, BCSp; Eva Sullivan, PharmD; Samantha Wong, PharmD and Scrpps Antimicrobial Stewardship Program; Scrpps Memorial Hospital La Jolla, La Jolla, California, 3Scrpps Mercy Hospital, San Diego, California, 4Scrpps Healthare, and AST between SOC and AXDX were determined.

Clinical outcomes included appropriateness of initial empiric antimicrobial therapy, potential for early antimicrobial de-escalation with AXDX, and mortality.

Results. Of 341 screened blood cultures, 123 met inclusion criteria; 101 had organisms that were on-panel for AXDX, 88 GNB and 13 C. glabrata or C. albicans. For GNB, mean time from blood culture positivity to ID and AST between SOC was 19.8 and 53.5 hours, respectively, and 1.4 and 6.7 hours using AXDX (from time AXDX started). For Candida spp., mean time to ID was 33.1 hours for SOC, 1.4 hours for AXDX. Antimicrobial de-escalation was possible based on AXDX testing in 52.9% of patients with GNB infections. A total of 27 (27.3%) patients received IIA. In-hospital mortality was higher (48.1%) in the IIA group than in those receiving appropriate initial antimicrobials (12.5%), P < 0.001. AXDX could have improved antimicrobial therapy in 89.8% of GNB and 92.3% of Candida spp. cases.

Conclusion. The Accelerate Pheno™ system is a novel fast diagnostic that significantly reduces the time to ID and AST for GNB and ID of Candida spp. bloodstream infections, with the potential to impact clinical outcomes. Prospective clinical trials are needed to evaluate the impact of this new system on clinical outcomes and antimicrobial stewardship.

Disclosures. C. A. D. Burnham, Accelerate Diagnostics: Investigator, Research support; M. Kollef, Accelerate Diagnostics: Consultant, Research support

2122. Rapid Multiplex Gastrointestinal Pathogen Panel Testing Improves Antibiotic Stewardship in Patients with Suspected Infectious Diarrhea Compared with Conventional Methods

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Background. The BioFire FilmArray™ Gastrointestinal (GI) Panel is a 1 hour multiplex real-time PCR test that can detect the presence of 22 GI pathogens (viral, bacterial, and parasitic) known to cause infectious diarrhea. Our tertiary-care academic medical center implemented the GI Panel for all cases of suspected infectious diarrhea replacing the previous conventional testing once utilized to detect GI pathogens.

Methods. The aim of this IRB approved, retrospective investigation was to determine the utility of the GI panel versus the conventional testing to guide patient management. Cases were randomly selected, stratified by age group and result (specific pathogens or negative result) in the pre-implementation period (n = 119 of 1550 samples) from May 2014 through April 2015 and in the post-implementation period (n = 233 of 1387 samples) from May 2015 through April 2016.

Results. The rate of a positive test for any stool pathogen per patient was 34.2% (n = 342 of 999) for the GI panel and 11.6% (n = 162 of 1391) for conventional testing, P < 0.0001. Mean time to test result from collection was 3.3 hours for the GI panel vs 45.4 hours for culture (P < 0.0001). Among patients started on antibiotics prior to result, discontinuation rate was 33% (n = 30/90) after GI panel results vs 5.4% (n = 2/37) after stool culture results, P = 0.0014. Antibiotics were initiated or adjusted after the result in 28.5% of patients (95/333) in the GI panel cohort compared with 60.5% (72/119) in the culture cohort. In cases where the method for selecting antibiotics and the higher yield of viral pathogens in the GI Panel cohort. Mean time to antibiotic adjustment was 2.1 hours with the GI panel vs 22.0 hours in the culture cohort (P = 0.0155). Appropriateness of antibiotic use, adjudicated after the test result became available was significantly higher in the GI panel group (91%), compared with the culture group (81%), P = 0.0039.

Conclusion. After implementation of a rapid multiplex GI panel to evaluate stool samples from patients with suspected infectious diarrhea, our institution saw benefits in antibiotic stewardship, including: higher diagnostic yield, faster results, a higher rate of antibiotic discontinuation, shorter time to antibiotic adjustment and a lower rate of inappropriate antibiotic adjustment.

Disclosures. All authors: No reported disclosures.

2123. Implementation of Matrix-Assisted Laser Desorption/Ionization Time-of-Flight (MALDI-TOF) and Antimicrobial Stewardship Intervention at an Academic Medical Center

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