Clinical Outcomes of Extended TZD Therapy

Clinical Outcomes	Unique Courses of TZD N = 102
Favorable Outcome (No ADRs requiring discontinuation + clinical cure)	82 (80.4%)
Adverse events requiring discontinuation	8 (8.0%)
Thrombocytopenia	3
GI intolerance	2[a]
Confusion	1[b]
Eosinophilia	1[b]
Thrombocytopenia + lactic acidosis	1
In hospital death/transfer to hospice	5 (4.9%)
Failed therapy/readmission	2 (2.0%)
Ongoing Suppression	1 (1.0%)[c]
Thrombocytopenia	
>50% decrease during treatment course	11 (10.8%)
Total platelets < 50K (Baseline platelet range 16 – 86)	11 (10.8%)
>50% decreased AND total platelets <50K ▪ 83K →40K ▪ 16K →5K ▪ 86K →26K	3 (2.9%)
Baseline Platelets > 100K with >50% decrease	8/85 (9.4%)
Baseline Platelets < 100K with >50% decrease	3/17 (17.6%)

[a] Both cases were the same patient who subsequently tolerated 31 day treatment course
[b] Persisted after TZD discontinuation and later determined to be unrelated to TZD
[c] >350+ days

Conclusion. The safety of prolonged TZD treatment is not well-described. In our experience, TZD was well-tolerated, including among pts who failed alternative therapy. No pt receiving concomitant serotonergic agents developed serotonin syndrome and thrombocytopenia occurred exclusively among pts with low baseline platelets. Treatment courses >14 days were not associated with an increase in the rate of AEs.

Disclosures. **Rachel V. Marini, PharmD**, **Merck** (Research Grant or Support) **Ryan K. Shields, PharmD, MS**, **Allergan** (Advisor or Review Panel member, Research Grant or Support)**Entasis** (Advisor or Review Panel member)**Melinta** (Research Grant or Support)**Menarini** (Consultant)**Merck** (Advisor or Review Panel member, Research Grant or Support)**Shionogi** (Advisor or Review Panel member, Research Grant or Support)**Summit** (Advisor or Review Panel member)**Tetraphase** (Research Grant or Support)**Venatorx** (Advisor or Review Panel member, Research Grant or Support)

1628. Treatment Heterogeneity in *Pseudomonas aeruginosa* Pneumonia

Aisling Caffrey, PhD[1]; Emily C. Bodo, Pham.D[2]; Vrishali Lopes, MS[3]; Laura A. Puzniak, PhD[4]; Kerry LaPlante, PharmD[1]; [1]Rhode Island Infectious Diseases Research Program, Providence, RI; [2]1. Providence Veterans Affairs Medical Center, Providence, RI, United States 2. College of Pharmacy, University of Rhode Island, Kingston, RI, United States, Providence, Rhode Island; [3]PVAMC, Providence, RI; [4]Merck & Co., Inc., Kenilworth, NJ

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. Serious bacterial infections present a unique challenge for studies of real-world evidence. Often, the causative organism is unknown during the initial period of treatment and clinical symptoms change day-to-day, which lead to multiple changes in therapy. While it is assumed approaches to treating specific infectious diseases are mostly similar, we've previously identified substantial treatment heterogeneity, even among organism-specific and site-specific infections.

Methods. Our retrospective cohort study included inpatients with positive *P. aeruginosa* from sputum and bronchoalveolar lavage cultures collected during VA medical center and community living center stays from 01/15-04/18. We included the first positive culture during the admission per patient. Daily antibiotic exposures were mapped from 3 days prior to the culture collection date until discharge or 30 days for longer stays. Heterogeneity was defined as patterns of antibiotic treatment (drug and duration) not shared by any other patient.

Results. Our study included 5,435 patients and 87.4% of patients had different patterns of antibiotic drug and duration. Among patients with changes in therapy (84.0%), 96.9% had different antibiotic treatment patterns, with a median time to first change of 1 day and median of 3 changes. When restricting the analysis to antibiotic classes (rather than drug), Gram-negative antibiotics, and anti-pseudomonal antibiotic classes, heterogeneity was 81.8%, 52.0%, and 48.7%, with median time to first change of 1, 3, and 3 days, and a median of 3, 2, and 2 changes, respectively.

Conclusion. Among inpatients with positive *P. aeruginosa* respiratory cultures, substantial heterogeneity was observed in the national VA Healthcare System. Even at the class level, and restricting the analysis to anti-pseudomonal antibiotic classes, approximately 50% of patients had different treatment patterns during their inpatient stay. Current methods to assess treatment do not adequately account for the extensive heterogeneity observed in infectious diseases and it remains unclear how local or national treatment guidelines affect heterogeneity.

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1629. Vancomycin Resistance in *Enterococcus faecium* Clinical Isolates Responsible for Bloodstream Infections in US Hospitals Over Ten Years (2010-2019) and Activity of Oritavancin

Cecilia G. Carvalhaes, MD, PhD[1]; Helio S. Sader, MD, PhD[2]; Jennifer M. Streit, BS[2]; Mariana Castanheira, PhD[2]; Rodrigo E. Mendes, PhD[2]; [1]JMI Laboratories, Inc., North Liberty, Iowa; [2]JMI Laboratories, North Liberty, Iowa

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. *Enterococcus faecium* (EFM) causes difficult-to-treat infections due to its intrinsic resistance (R) and ability to acquire R to many antimicrobials. This study evaluated the vancomycin (VAN)-R rates over time and the activity of oritavancin (ORI) against a collection of EFM causing bloodstream infections (BSI).

Methods. A total of 1,081 BSI EFM isolates collected from 36 US hospitals in a prevalence mode design during 2010-2019 were evaluated. Bacterial identification was confirmed by MALDI-TOF MS. Susceptibility testing was performed by reference broth microdilution. For comparison, the ORI breakpoint for VAN-susceptible *E. faecalis* was applied to EFM. Isolates were characterized as VanA or VanB phenotypes based on their susceptibility (S) to VAN and teicoplanin (TEC). The VanB phenotype was confirmed by PCR and/or whole genome sequencing.

Results. Overall, 72.3% (782/1,081) of EFM were VAN-R (Table). VanA was the most common phenotype (97.7%; 764/782). The yearly VAN-R rates decreased from 81.8% in 2010 to 58.7% in 2019. A total of 18 (2.3%) isolates exhibited a VanB phenotype (TEC MIC, 0.5-8 mg/L); however, the *vanB* gene only was confirmed in 9 EFM isolates (TEC MIC, 0.5-1 mg/L), which were all collected in 2010-2012. The remaining 9 (50.0%) VanB phenotype EFM isolates carried a *vanA* gene (TEC MIC, 4-8 mg/L). ORI was very active against VAN-susceptible EFM ($MIC_{50/90}$, ≤ 0.008/≤0.008/mg/L), VanA ($MIC_{50/90}$, 0.03/0.12 mg/L; MIC_{100}, 0.5 mg/L), and VanB ($MIC_{50/90}$, ≤ 0.008/0.015 mg/L; MIC_{100}, 0.03 mg/L) subsets. Only linezolid (LZD) and ORI (MIC, ≤ 0.12 mg/L) showed > 95.0%S against EFM and VAN-R subsets. Daptomycin (DAP)-R rarely was observed (0.8%), but it was more frequently found in the last 5 years. However, 49.9% of EFM isolates showed elevated DAP MICs (2 and 4 mg/L). ORI inhibited 77.8%, and 100.0% of DAP-R and LZD-nonsusceptible EFM isolates at ≤ 0.12 mg/L, respectively.

Conclusion. VAN-R rates among EFM causing BSI in the US decreased during 2010-2019. VanA remains the most common phenotype, whereas *vanB*-carrying isolates became rarer in later years. Interestingly, half of VanB-phenotype isolates carried a *vanA* gene. ORI was very active against EFM causing BSI, including isolates R to VAN, DAP, and/or nonsusceptible to LZD.

Table 1

Organism / resistant subset (n)	Occurrence (%) per study year											Oritavancin $MIC_{50/90}$ (mg/L)
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	All years	
E. faecium (1,081)	269*	138*	76*	70*	74*	90*	92*	90*	90*	92*	108**	
Oritavancin $MIC_{50/90}$ (mg/L)	0.03/0.06	0.03/0.12	0.03/0.12	0.03/0.06	0.015/0.06	0.03/0.12	0.015/0.03	0.015/0.06	0.015/0.06	0.015/0.06	0.03/0.06	
Vancomycin-R (782)	81.8	74.6	78.9	75.7	68.9	66.7	65.2	67.8	66.7	58.7	72.3	0.03/0.12
VanA phenotype (764)	79.6	72.5	77.6	75.7	64.9	65.6	65.2	66.7	64.4	57.6	70.7	0.03/0.12
VanB phenotype (18)	2.2	2.2	1.3	0.0	4.1	1.1	0.0	1.1	2.2	1.1	1.7	≤0.008/0.015
vanB genotype (9)	1.9	1.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	≤0.008/-
Daptomycin-R (9)	0.0	1.4	0.0	0.0	0.0	2.2	2.2	0.0	0.0	3.3	0.8	0.015/-
Daptomycin MIC, 2-4 mg/L (S40)	63.9	59.4	64.5	55.7	71.6	28.9	43.5	23.3	35.6	28.3	50.0	0.03/0.12
Linezolid-NS (13)	2.2	0.7	0.0	1.4	1.4	0.0	2.2	0.0	2.2	0.0	1.2	0.015/0.06
Ampicillin-R (944)	93.3	91.3	90.8	90.0	91.9	83.3	77.2	85.6	81.1	77.2	87.3	0.03/0.12

* Number of *E. faecium* isolates
R, resistant; NS, nonsusceptible

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1630. What is Treatment Time Zero Among Hospitalized Patients with Bacteremia?

Aisling Caffrey, PhD[1]; Vrishali Lopes, MS[2]; [1]Rhode Island Infectious Diseases Research Program, Providence, RI; [2]PVAMC, Providence, RI

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. Common operational definitions of antibiotic exposures in infectious diseases research do not accurately reflect actual treatment, as daily changes in clinical presentation (i.e. improvement, worsening) and clinical information (i.e. causative organism, susceptibilities) lead to frequent changes in treatment, both within empiric and definitive treatment periods. Common definitions create periods of 'ignored' exposures, and we've previously shown that antibiotic treatments during 'ignored' periods vary widely. Therefore, we assessed the distribution of important time points for antibiotic treatments for *Staphylococcus aureus* bacteremia.

Methods. Our retrospective cohort study included hospital admissions in the national Veterans Affairs (VA) Healthcare System with *S. aureus* positive blood cultures from 2010 to 2018. Admissions with inappropriate initial antibiotic therapy for *S. aureus* were excluded. We implemented daily exposure mapping to identify antibiotic exposures and changes in treatment on each day of the admission until discharge, or 30 days post-admission for longer stays, and in relation to the culture final report date.

Results. We identified 21,947 admissions meeting our inclusion criteria. Antibiotic initiation most often occurred on the culture collection date (68.7%) or the day after (22.6%). Median time to the culture final report date from the culture collection date was 4 days (interquartile range [IQR] 3 to 5). Among those with changes in therapy (n=19,392, 88.4%), median time to first change in therapy was 2 days prior to the culture final report date (IQR -3 to -1). The first change in therapy occurred before the culture final report date for 76.3% of admissions and on the culture final report date for 11.9% of admissions. Further changes were common on the culture final report date (49.5%) and the day after the final report date (45.3%).

Conclusion. Changes in antibiotic therapy are common prior to finalization of culture reports. While initial culture results and provider knowledge of these initial results are not date/time-stamped, initial change within a reasonable period from culture collection appears to be more accurate in defining empiric and definitive treatment periods than commonly used operational definitions.

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1631. *Mycobacterium septicum*: A 6-year Clinical Experience from a Tertiary Hospital and Reference Laboratory

John Raymond U. Go, MD[1]; Cristina G. Corsini Campioli, MD[2]; Omar Abu Saleh, M.B.B.S[2]; John Wilson, MD[1]; Sharon Deml, MT[1]; Nancy Wengenack, PhD[1]; [1]Mayo Clinic Rochester, Rochester, Minnesota; [2]Mayo Clinic, Rochester, Minnesota

Session: P-72. Tuberculosis and other Mycobacterial Infections

Background. *Mycobacterium septicum* is a rapidly growing non-tuberculous mycobacterium. It is a ubiquitous organism capable of causing infections in both healthy and immunocompromised individuals. Only a few cases have been reported to date, and standard therapeutic regimens, and optimal treatment duration have not been defined.

Methods. We conducted a retrospective chart review of all patients seen at Mayo Clinic in Rochester, MN from July 2014 to March 2020 from whom *Mycobacterium septicum* was isolated in culture by our clinical microbiology laboratory.

Results. There were 12 patients identified with *M. septicum* infection – 7 males and 5 females. The average age was 67 years, with an age range of 48 to 80 years. Seven of 12 isolates obtained were from sputum samples. Only one patient was on immunosuppressive medication. Three cases were considered clinically significant infections for which directed anti-mycobacterial therapy was instituted. In two of these three cases, co-infection with *Mycobacterium avium complex* (MAC) was seen. Underlying structural lung disease was present in the two cases of pulmonary infections. Peritoneal dialysis catheter-related peritonitis was seen in the third case. All the isolates were susceptible to amikacin, ciprofloxacin, imipenem, linezolid, moxifloxacin, and trimethoprim-sulfamethoxazole (TMP-SMX). The isolates were resistant to clarithromycin and doxycycline.

Patient Characteristics, Associated M. septicum Illness, and Therapy Provided

Case	Age/Sex	Source	M. septicum associated disease	Comorbidities	Immunosuppression*	Therapy	Outcome
1	78/M	Sputum	Lung	Rheumatoid arthritis	Yes	None, treated for pulmonary nocardiosis	Survived, Alive
2	76/F	Lymph node tissue	Lymph node	Squamous cell cancer of the tongue	No	None	Survived, Alive
3	48/M	Sputum	Lung	Cystic fibrosis	No	None	Survived, Alive
4	64/M	Peritoneal fluid	Peritonitis	Systemic sclerosis, ESKD	No	Peritoneal dialysis catheter removal, Linezolid + Moxifloxacin (4 months)	Death
5	76/F	Sputum	Lung	Bronchiectasis, Crohn's disease	No	None	Survived, Alive
6	77/F	Sputum	Lung	Bronchiectasis, asthma	No	Moxifloxacin + Rifampin + Clarithromycin + nebulized amikacin (18 months); Moxifloxacin + rifampin + Cefiderocol + nebulized amikacin (3 months); Moxifloxacin + Rifampin + clofazimine, (4 years)	Survived, Alive
7	67/F	Sputum	Lung	Bronchiectasis	No	None	Survived, Alive
8	64/M	Leg tissue	Skin and soft tissue	None	No	Debridement amputation	Survived, Alive
9	67/F	Shoulder tissue	Joint	Bicuspid aortic valve s/p AVR	No	None	Survived, Alive
10	73/M	Sputum	Lung	Bronchiectasis	No	Received 18 months of treatment for MAC with azithromycin + rifampin + ethambutol	Survived, Alive
11	81/M	Calf tissue	Skin and soft tissue	None	No	Irrigation and debridement	Survived, Alive
12	80/M	Sputum	Lung	Rheumatoid arthritis, Bronchiectasis	No	None	Survived, Alive

*Immunosuppression: steroids and/or other immunosuppressive agent use

Antimicrobial Susceptibility Profiles of the Mycobacterium septicum Isolates, MIC (mcg/mL) and Interpretation

Isolate	Amikacin	Cefoxitin	Ciprofloxacin	Clarithromycin	Doxycycline	Imipenem	Linezolid	Minocycline	Moxifloxacin	Tigecycline	Tobramycin	TMP-SMX
1	4 (S)	32 (I)	≤0.12 (S)	16 (R)	8 (R)	≤2 (S)	2 (S)	4 (I)	≤0.25 (S)	0.06 (NI)	>16 (R)	≤0.25/4.75 (S)
2	2 (S)	64 (I)	≤0.12 (S)	8 (R)	16 (R)	4 (S)	4 (S)	2 (I)	≤0.25 (S)	0.06 (NI)	>16 (R)	≤0.25/4.75 (S)
3	≤1 (S)	32 (I)	≤0.12 (S)	>16 (R)	16 (R)	≤2 (S)	8 (S)	ND	≤0.25 (S)	0.06 (NI)	8 (R)	≤0.25/4.75 (S)
4	8 (S)	32 (I)	≤0.12 (S)	>16 (R)	16 (R)	4 (S)	8 (S)	8 (R)	≤0.25 (S)	0.06 (NI)	>16 (R)	≤0.25/4.75 (S)
5	≤1 (S)	128 (R)	≤0.12 (S)	>16 (R)	>16 (R)	≤2 (S)	2 (S)	ND	≤0.25 (S)	0.03 (NI)	2 (S)	0.5/9.5 (S)
6	≤1 (S)	32 (I)	≤0.12 (S)	16 (R)	16 (R)	≤2 (S)	8 (S)	ND	≤0.25 (S)	0.03 (NI)	4 (I)	≤0.25/4.75 (S)
7	≤1 (S)	32 (I)	0.5 (S)	>16 (R)	>16 (R)	≤2 (S)	≤1 (S)	ND	≤0.25 (S)	0.06 (NI)	4 (I)	≤0.25/4.75 (S)
8	2 (S)	64 (I)	≤0.12 (S)	8 (R)	>16 (R)	≤2 (S)	4 (S)	>8 (R)	≤0.25 (S)	0.25 (NI)	4 (I)	0.5/9.5 (S)
9	4 (S)	32 (I)	0.25 (S)	8 (R)	8 (R)	4 (S)	4 (S)	8 (R)	≤0.25 (S)	0.06 (NI)	>16 (R)	≤0.25/4.75 (S)
10	≤1 (S)	32 (I)	≤0.12 (S)	8 (R)	>16 (R)	4 (S)	2 (S)	>8 (R)	≤0.25 (S)	0.06 (NI)	2 (S)	≤0.25/4.75 (S)
11	4 (S)	32 (I)	0.25 (S)	>16 (R)	16 (R)	4 (S)	8 (S)	8 (R)	≤0.25 (S)	0.12 (NI)	>16 (R)	2/38 (S)
12	≤1 (S)	32 (I)	≤0.12 (S)	16 (R)	8 (R)	≤2 (S)	2 (S)	4 (I)	≤0.25 (S)	0.12 (NI)	2 (S)	1/19 (S)

% susceptibility	Amikacin	Cefoxitin	Ciprofloxacin	Clarithromycin	Doxycycline	Imipenem	Linezolid	Minocycline	Moxifloxacin	Tigecycline	Tobramycin	TMP-SMX
Mycobacterium septicum (n=12)	100	0	100	0	0	100	100	0	100	NI	25	100

S: susceptible, R: resistant, NI: no interpretation, ND: not done, minocycline previously not part of the panel

Patient Demographics and Specimen Source of Mycobacerium septicum Isolates

Characteristic	Number (%)
Patient demographics	
Mean age (range), years	66.9 (48-80)
Male	7 (58.3%)
Female	5 (41.7%)
Specimen source	
Sputum	7 (58.3)
Tissue	
Lymph node	1 (8.3)
Leg	1 (8.3)
Shoulder	1 (8.3)
Calf	1 (8.3)
Peritoneal fluid	1 (8.3)

Conclusion. M. *septicum* is an unusual cause of non-tuberculous mycobacterial infection. The presence of a foreign body may increase the risk of infection. Individuals with underlying structural lung disease are also likely to be at increased risk of developing pulmonary infection. Generalized treatment recommendations are limited by the lack of prospective controlled trials; hence, optimal antibiotic regimen and treatment duration have not been firmly established. Susceptibility testing should be performed to guide treatment selection, but the use of combination therapy with potentially empiric agents like amikacin, ciprofloxacin, imipenem, linezolid, moxifloxacin, and TMP-SMX as demonstrated in this small study, can be considered. A high rate of macrolide resistance was noted in our study.

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1632. Comparing the epidemiology and clinical characteristics of childhood tuberculosis through active and passive case finding

Saki Ikeda, MD[1]; Andrea T. Cruz, MD, MPH[2]; Jeffrey R. Starke, MD[3]; [1]Baylor College of Medicine, Houston, TX; [2]Pediatrics, Houston, Texas; [3]Baylor College of Medicine, houston, Texas

Session: P-72. Tuberculosis and other Mycobacterial Infections

Background. Childhood tuberculosis can be found via passive case finding (PCF), diagnosing a symptomatic child, and active case finding (ACF), discovering a child through contact tracing. Most high prevalence areas perform PCF, but as ACF is introduced, the clinical and radiologic findings may differ. We compare clinical, radiographic, microbiologic and epidemiological characteristics of children diagnosed through PCF and ACF.

Methods. A retrospective cohort study of all patients diagnosed with TB from 01/01/2012-12/31/2019 at Texas Children's Hospital. ACF is TB in a child who had not previously sought care before identified via contact tracing, immigration screening, or screening for incarceration. Severity of disease was based on location of illness, imaging and bacteriology/histopathology. Associations between PCF/ACF and demographics, disease severity, and microbiology were analyzed.

Results. Of 178 patients, 80 (45%) were diagnosed via ACF. ACF patients were more likely to be US-born (OR: 2.29, [95% Confidence interval (CI): 1.12-4.67]) and younger (mean 6.18 vs 8.84 years, p= 0.016). Only 2.5% of ACF patients had extrapulmonary disease, compared to 45% of the PCF group (p< 0.0001). All 14 severe extrathoracic cases were in the PCF group (10 central nervous system disease, 3 ocular disease, 1 spondylitis). Fewer patients in the ACF group had severe intrathoracic findings (11% vs 39%, p< 0.001): miliary disease (0% vs 10%, p=0.006), cavity (1% vs 9%, p=0.04), and multilobar involvement (7.5% vs 22.4%, p=0.006). ACF patients had more hilar/mediastinal adenopathy (OR: 2.51, [CI: 1.34-3.72], p=0.004). ACF patients were less often cultured (38% vs 89%, p< 0.0001) and had less microbiological confirmation by cultures or PCR (21% vs 52%, p=< 0.0001).

Conclusion. Patients in the ACF group were younger, had less severe clinical manifestations, and had almost no extrathoracic disease. Clinicians need to be aware that the common clinical and radiographic presentations in children differ between PCF and ACF.

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