further studies to support the clinical development of mecillinam/pivmecillinam for the treatment of UTI in the USA.

Disclosures. Stephen Hawser, PhD, Tetraphase Pharmaceuticals (Scientific Research Study Investigator) Cedric Charrier, PhD, IHMA (Employee)Utility Therapeutics (Independent Contractor) Cyntia De Piano, PhD, IHMA (Employee) Utility Therapeutics (Independent Contractor) Morton Alexander, PhD, Utility Therapeutics (Employee, Shareholder) Anne Santerre Henriksen, MS, Maxel Consulting ApS (Employee)Utility Therapeutics (Independent Contractor)

1618. Meropenem-vaborbactam vs standard of care for multidrug resistant carbapenem-resistant Enterobacteriaceae

Helina Misikir, MPH[1]; Surafel Mulugeta, PharmD, MS, BCPS[2]; Anita Shallal, MD[2]; Marcus Zervos, MD[1]; [1]Henry Ford Health System, Detroit, MI; [2]Henry Ford Hospital, Detroit, MI

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. Antimicrobial resistance to gram negative organisms is an increasing issue worldwide, particularly with regards to extended-spectrum B-lactamase (ESBL) and carbapenem-resistant *Enterobacteriaeceae* (CRE) producing organisms. Meropenem/vaborbactam (M-V) is an approved antimicrobial for treatment of some CRE infections. This study compares the outcomes of patients with CRE who were treated with M-V to standard of care (SoC) therapy.

Table 1. Results

Table 1. Results

	Treated with M-V (N=25)	Treated with SoC (N=25)	P value
Mean age (SD)	63	66	0.526
Female	36%	60%	0.156
Mean length of stay in days (SD)	33	32	0.899
Infection source			
Intraabdominal	56%	56%	
Pneumonia	24%	24%	-
Genitourinary	16%	16%	
Skin/Soft tissue	4%	4%	
Pathogen isolated			
Klebsiella pneumoniae	52%	48%	
Escherichia coli	20%	20%	
Enterobacter sp.	20%	16%	-
Citrobacter freundii	4%	8%	
Serratia marcescens	0	4%	
Other *Klebsiella sp.*	4%	4%	
30 day mortality	48%	32%	0.387
30 day re-admission	20%	16%	1
Clinical outcome			
Cure	52%	28%	0.148
Improved	**0%**	**40%**	**0.001**
Failure	48%	32%	0.098
Non-evaluable	0	0	-
Microbiological outcome			
Eradication	24%	4%	0.098
Presumed eradication	**28%**	**68%**	**0.01**
Persistence	8%	6%	1
Presumed persistence	40%	24%	0.364
	Treated with M-V (N=11)	**Treated with SoC (N=15)**	**P value**
Acute kidney injury*	16%	8%	1

[*AKI was defined as an occurrence of post-baseline Cr >1.5 times the baseline serum creatinine, from 48 hours post-therapy completion. A total of 14 patients were excluded in the M-V group, and 10 patients in the SoC group due to baseline Cr > 2.0.]

Methods: A retrospective chart analysis was performed which analyzed 25 patients in the M-V group and 25 patients in the SoC group at an 800-bed tertiary care hospital in Southeast Michigan. Patients were matched by type of infection. Variables included basic demographics, infection source, bacterial species, as well as 30-day re-admission, ICU admission, and creatinine pre- and post-treatment. The primary outcome of interest was 30-day mortality and clinical outcome (cure/improved/failure). Secondary outcomes included microbiological outcome (eradication/presumed eradication/persistence/presumed persistence) and acute kidney injury (AKI) on therapy. The data was analyzed using SPSS version 14.0.

Results. The most commonly used antibiotics in the SoC group were ceftazidime-avibactam (64%) and cefepime (32%). In both groups, the most common infection source was intra-abdominal (56%). The most commonly isolated pathogen in each group was *Klebsiella pneumoniae* (52% in M-V and 48% in SoC). Mortality and re-admission at 30 days did not differ statistically between the two groups. However, patients who received M-V were found to be more likely to achieve clinical cure, although this did not achieve statistical significance. Patients who were treated with SoC were significantly more likely to achieve an improved clinical outcome and presumed microbiological eradication (p=0.001 and 0.01 respectively). Of the 50 patients, only 26 patients (52%) met criteria to analyze for AKI. Patients who received M-V were more likely to have AKI (16% compared to 8%) but this did not reach statistical significance.

Conclusion. M-V is an important option for care of patients with infections due to MDR gram-negative bacteria. However, further studies are warranted to determine whether its use is associated with reduced mortality and improved clinical outcomes.

Disclosures. Marcus Zervos, MD, Melinta Therapeutics (Grant/Research Support)

1619. Meta-analysis of Randomized Control Trials Evaluating New Beta-Lactamase Combination Antibiotics

Geneva M. Wilson, PhD[1]; Margaret A. Fitzpatrick, MD, MS[2]; Kyle Walding, DO[3]; Beverly Gonzalez, PhD[4]; Katie J. Suda, PhamD, MS[5]; Charlesnika T. Evans, PhD, MPH[6]; [1]Hines VA, Hines, Illinois; [2]Center of Innovation for Complex Chronic Healthcare, Edward Hines Jr. VA Hospital, Hines, IL; [3]Loyola University Medical Center, Hines, Illinois; [4]Department of Veterans Affairs, Hines, IL; [5]Center of Innovation for Complex Chronic Healthcare (CINCCH), Hines VA Hospital and University of Illinois at Chicago College of Pharmacy, Hines, IL; [6]Northwestern University and VA, Hines, Illinois

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. Ceftolozane/ Tazobactam (C/T), Ceftazidime/ Avibactam (C/A), Meropenem/ Vaborbactam (M/V) and Imipenem/ Relebactam (I/R) are new combination beta-lactam/ beta-lactamase inhibitor antibiotics primarily used to treat multidrug-resistant (MDR) Gram-negative infections. This study synthesized outcomes of comparative observational studies and randomized control trials (RCTs) that evaluated clinical success of these antibiotics compared to other therapies.

Methods. PubMed, EMBASE, and Google Scholar were searched from January 1st, 2013 through October 1st, 2019 for comparative observational studies and RCTs of C/T, C/A, M/V and I/R in patients with pneumonia, complicated intra-abdominal and urinary tract infections. Study and patient demographics were collected along with clinical and microbiological success rates. Meta-regression analysis was used to determine the pooled effectiveness of C/T, C/A, M/V, and I/R. Heterogeneity and publication bias were assessed via I^2 values and funnel plots, respectively.

Results. Literature search returned 1,645 results. After exclusion criteria, 21 publications representing 6,246 patients were retained: 16 RCTs (8 C/A, 3 C/T, 3 I/R, 2 M/V) and 5 comparative observational studies (3 C/A, 2 C/T). Pooled risk ratios for clinical success showed that all four antibiotics were non-inferior to comparator antibiotics (0.99 (95% CI (0.97-1.01)). Eleven of the sixteen RCTs evaluated microbiological success; pooled risk ratio was 1.08 (95% CI 1.04-1.13), indicating that older therapies were more successful at microbiological eradication than newer antibiotics. Only 6 of the included studies (3 RCTs and 2 observational studies) focused on patients with MDR infections. Limiting the analysis to MDR RCTs did not change the overall conclusions.

Conclusion. Although older therapies had slightly higher microbiologic clearance, pooled clinical success rates for C/A, C/T, M/V, and I/R were non-inferior to older therapies, including in studies focused on patients with MDR infections. Additional studies are needed to further evaluate these drugs' effectiveness for treatment of MDR infections.

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

1620. Minocycline Activity Against Unusual Clinically Significant Gram-Negative Pathogens

Dee Shorttidge, PhD[1]; S. J. Ryan Arends, PhD[1]; Jennifer M. Streit, BS[1]; Mariana Castanheira, PhD[1]; Robert K. Flamm, PhD[2]; [1]JMI Laboratories, North Liberty, Iowa; [2]United States Committee on Antimicrobial Susceptibility Testing (USCAST), North Liberty, IA

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. Unusual non-glucose fermenting Gram-negative (NFGN) pathogens, including *Burkholderia cepacia* species complex, *Achromobacter spp*, *Alcaligenes spp, Aeromonas spp*, and other genera, can cause serious hospital-acquired infections in immunocompromised patients. Some genera are inherently resistant to common drug classes and can acquire other resistance mechanisms, making them difficult to treat. In this study, we analyzed the susceptibility of NFGN isolates to minocycline (MIN). Isolates were collected as part of the SENTRY Antimicrobial Surveillance Program from 2014-2019.

Methods. From 2014-2019, unusual NFGN isolates were collected from hospitalized patients in 102 hospitals in 35 countries on 4 continents. Hospitals submitted 1 isolate per patient per infection episode that met local criteria for being the likely causative pathogen. Identification was performed by the submitting laboratory and confirmed by JMI Laboratories with matrix-assisted laser desorption ionization-time of flight mass spectrometry or other molecular methods as required. Isolates were tested for MIN susceptibility using the CLSI broth microdilution method at JMI Laboratories. All infection types were included in the susceptibility analysis.

Results. The most common infection from which the NFGN were isolated was pneumonia. The top 5 NFGN species were *Achromobacter xylosoxidans* (n=202), *Burkholderia cepacia* species complex (n=199), unspeciated *Achromobacter* (n=190), *Aeromonas* spp (n=127), including *Aeromonas hydrophila* (n=35), *Chryseobacterium spp* (n=59), and *Alcaligenes faecalis* (n=42). The % susceptible and $MIC_{50/90}$ values of MIN for these species are shown in the table.

Conclusion. MIN had > 85% susceptible for the most frequently isolated unusual NFGN, including 92% susceptible for *Achromobacter* spp. and 85.9% for *B. cepacia*.

These data suggest that MIN remains a useful treatment option for infections caused by unusual NFGN.

Activities of MIN when tested against NFGN isolates

Organism	No. of isolates	MIC_{50}	MIC_{90}	CLSI[a]		
				%S	%I	%R
Achromobacter xylosoxidans	202	1	4	92.1	5.0	3.0
Burkholderia cepacia species complex	199	2	>8	85.9	4.5	7.0
Unspeciated *Achromobacter*	190	1	4	92.6	6.3	1.1
Aeromonas spp [b]	127	0.5	2	99.2	0.0	0.8-
Chryseobacterium spp [c]	59	2	4	94.9	5.1	0.0
Alcaligenes faecalis	42	2	8	88.1	7.1	4.8

[a] CLSI (2020).
[b] Using M45 (CLSI, 2015) tetracycline breakpoints of ≤4/8/≥16mg/L. Organisms include: *Aeromonas caviae* (10), *A. hydrophila* (35), *A. sobria* (1), *A. veronii* (10), unspeciated *Aeromonas* (71).
[c] Organisms include: *Chryseobacterium gleum* (18), *C. hominis* (1), *C. indologenes* (31), unspeciated *Chryseobacterium* (9).

Disclosures. S. J. Ryan Arends, PhD, Allergan (Research Grant or Support) Cipla Ltd. (Research Grant or Support)GlaxoSmithKline (Research Grant or Support) Melinta Therapeutics, Inc. (Research Grant or Support) Jennifer M. Streit, BS, A. Menarini Industrie Farmaceutiche Riunite S.R.L. (Research Grant or Support)A. Menarini Industrie Farmaceutiche Riunite S.R.L. (Research Grant or Support)Allergan (Research Grant or Support)Melinta Therapeutics, Inc. (Research Grant or Support) Melinta Therapeutics, Inc. (Research Grant or Support)Melinta Therapeutics, Inc. (Research Grant or Support)Merck (Research Grant or Support)Paratek Pharma, LLC (Research Grant or Support) Mariana Castanheira, PhD, 1928 Diagnostics (Research Grant or Support)A. Menarini Industrie Farmaceutiche Riunite S.R.L. (Research Grant or Support)Allergan (Research Grant or Support)Allergan (Research Grant or Support)Amplyx Pharmaceuticals (Research Grant or Support)Cidara Therapeutics (Research Grant or Support)Cidara Therapeutics (Research Grant or Support)Cipla Ltd. (Research Grant or Support)Cipla Ltd. (Research Grant or Support)Fox Chase Chemical Diversity Center (Research Grant or Support)GlaxoSmithKline (Research Grant or Support)Melinta Therapeutics, Inc. (Research Grant or Support)Melinta Therapeutics, Inc. (Research Grant or Support)Melinta Therapeutics, Inc. (Research Grant or Support)Merck (Research Grant or Support)Merck (Research Grant or Support)Merck & Co, Inc. (Research Grant or Support)Merck & Co, Inc. (Research Grant or Support)Paratek Pharma, LLC (Research Grant or Support)Pfizer (Research Grant or Support)Qpex Biopharma (Research Grant or Support) Robert K. Flamm, PhD, A. Menarini Industrie Farmaceutiche Riunite S.R.L. (Research Grant or Support)Amplyx Pharmaceuticals (Research Grant or Support)Basilea Pharmaceutica International, Ltd (Research Grant or Support)Department of Health and Human Services (Research Grant or Support)Melinta Therapeutics, Inc. (Research Grant or Support)

1621. Novel Beta-lactam Beta-lactamase Inhibitors Against Alternative Antibiotics for the Treatment of Complicated Urinary Tract Infections and Pyelonephritis Caused by Carbapenem-resistant *Enterobacterales*

Bliss Green, PharmD[1]; Jacqueline Meredith, PharmD, BCPS, BCIDP[2]; Renee Ackley, PharmD, BCPS[3]; Maggie S. McCarter, MSPH[3]; Christopher Polk, MD[3]; [1]Atrium Health's Carolinas Medical Center, Charlotte, North Carolina; [2]Atrium Health, Carolinas Medical Center, Charlotte, North Carolina; [3]Atrium Health, Charlotte, NC

Green, B; Meredith, J; Ackley, R; McCarter, M; Polk, C

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. There is little data on the comparative efficacy or safety of carbapenem-resistant *Enterobacterales* (CRE)-targeted beta-lactam beta-lactamase inhibitors (BL-BLI), including ceftazidime/avibactam (CZA) and meropenem/vaborbactam (MVB), versus alternative antibiotics for the treatment of CRE complicated urinary tract infections/acute pyelonephritis (cUTI/AP). The objective of this study was to evaluate rates of clinical failure in patients with CRE cUTI/AP treated with CRE-targeted BL-BLI vs. alternative regimens.

Methods. This was a multicenter, retrospective cohort study of adults admitted with a CRE cUTI/AP treated with CRE-active antibiotic(s), including combination therapy, for at least 48 hours between January 2012 and June 2019. Exclusion criteria included CRE colonization, non-urinary source co-infection, non-*Enterobacterales* cUTI/AP, or mortality within 48 hours of index culture. The primary outcome was clinical failure, defined as continued symptoms or recurrence at 30 days from index culture. Secondary outcomes included 90-day recurrence and 30-day readmission. Safety outcomes included treatment-limiting adverse effects, non-treatment limiting nephrotoxicity, and *C. difficile* infection.

Results. A total of 47 patients were included (BL-BLI, n=16; alternative, n=31). Alternative regimens contained aminoglycosides, carbapenems, polymyxins, and tigecycline and utilized combination therapy more often (32.3% vs. 6.3%, p=0.046). Clinical failure occurred in 12.5% of patients in the BL-BLI group vs. 38.7% in the alternative group (p=0.063). Higher rates of 90-day recurrence (25.8% vs. 18.8%) and 30-day readmissions (51.6% vs. 31.3%) occurred in the alternative group vs. the BL-BLI group but were not statistically significant (Table 2). There were clinically significant rates of nephrotoxicity in the alternative group (45.2%) compared to the BL-BLI group (18.8%), contributing largely to the difference in treatment-limiting adverse effects (29% vs. 0%, p=0.017).

Table 1: Antibiotic Data

Table 1: Antibiotic Data	Total (N=47)
BL-BLI-based regimen [n (%)]	16 (34.0)
Monotherapy	15 (93.8)
Ceftazidime-avibactam	11 (73.3)
Meropenem-vaborbactam	4 (26.7)
Combination therapy	1 (6.25)
CZA + Aminoglycoside	1 (100.0)
Alternative regimen [n (%)]	31 (83.8)
Monotherapy	21 (67.7)
Aminoglycoside	8 (38.1)
Tigecycline	8 (38.1)
Polymyxins	3 (14.3)
Carbapenems	1 (4.8)
Fluoroquinolones	1 (4.8)
Combination therapy	10 (32.3)
Aminoglycoside + Carbapenem	3 (30.0)
Tigecycline + Carbapenem	3 (30.0)
Tigecycline + Polymyxins	3 (30.0)
Polymyxins + Minocycline	1 (10.0)

Abbreviations: BL-BLI, beta-lactam beta-lactamase inhibitor; CZA, ceftazidime-avibactam

Table 2: Efficacy Outcomes

Table 2: Efficacy Outcomes	BL-BLI (n=16)	Alternative (n=31)	*p*-value
Clinical failure [n (%)]	2 (12.5)	12 (38.7)	0.063
30-day recurrence [n (%)]	1 (50.0)	3 (25.0)	
Persistent symptoms despite therapy [n (%)]	1 (50.0)	9 (75.0)	
90-day recurrence [n (%)]	3 (18.8)	8 (25.8)	0.59
Emergence of prior study drug(s) resistance on repeat urine culture (%)]	0 (0)	1 (12.5)	NS
30-day all-cause readmission [n (%)]	5 (31.3)	16 (51.6)	0.18
Index infection-related [n (%)]	0 (0)	8 (50)	0.055
30-day all-cause mortality [n (%)]	1 (6.3)	2 (6.5)	0.99
Length of hospital stay (days) (median [IQR])	12.5 [7.5,17.0]	11.0 [7.0,19.0]	NS

Abbreviations: BL-BLI, beta-lactam beta-lactamase inhibitor; CZA, ceftazidime-avibactam

Table 3: Safety Outcomes

Table 3: Safety Outcomes	BL-BLI (n=16)	Alternative (n=31)	*p*-value
Treatment-limiting adverse effect [n (%)][a]	0 (0)	9 (29.0)	0.017
Nephrotoxicity	0 (0)	8 (88.9)	0.96
Stage I[b]	0 (0)	6 (75)	
Stage II[c]	0 (0)	1 (12.5)	
Stage III[d]	0 (0)	1 (12.5)	
Ototoxicity	0 (0)	1 (11.1)	
Non-treatment limiting nephrotoxicity [n (%)]	3 (18.8)	6 (19.4)	
C.difficile infection [n (%)][e]	1 (6.3)	2 (6.5)	0.99

[a]Treatment-limiting adverse events: that resulted in a change in therapy while on study-drug
[b]AKIN Stage I: Increase in serum creatinine x 1.5 or at least 0.3 mg/dL
[c]AKIN Stage II: Increase in serum creatinine x 2
[d]AKIN Stage III: Increase in serum creatinine x 3 or at least 4 mg/dL (with acute rise of at least 0.5 mg/dL), or initiation or renal replacement therapy
[e]*Clostridioides* difficile infection: within 90 days of the initiation of antibiotics

Conclusion. In this retrospective study, no difference in clinical failure resulted among groups; however, there was significantly more treatment-limiting adverse effects in the alternative group compared to the BL-BLI-based regimens, driven by nephrotoxicity.

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

1622. Outcomes of Colistin Weight-Based Dosing Versus The Non-Weight-Based Dosing

Zohour Anouassi, R.Ph, MHE[1]; Rania M. El Lababidi, PharmD[1]; Nouran Salem, PharmD[1]; Wasim S. El Nekidy, PharmD[2]; Mohamad Mooty, MD[3]; [1]Cleveland Clinic Abu Dhabi, Abu Dhabi, Abu Dhabi, United Arab Emirates; [2]Cleveland Clinic Abu Dhabi and Cleveland Clinic Lerner College of Medicine, Abu Dhabi, Abu Dhabi, United Arab Emirates; [3]Cleveland Clinic, Abu Dhabi, Abu Dhabi, United Arab Emirates

Session: P-71. Treatment of Antimicrobial Resistant Infections

Background. The use of colistin is currently the mainstay antimicrobial for several multi-drug resistant organisms (MDROs). New guidelines were recently published recommending non-weight-based (NWB) dosing of colistin. There is limited data on