**1197. Frequency of Antimicrobial Resistance in Shiga Toxin-Producing *Escherichia coli* (STEC) and Non-Typhoidal *Salmonella* (NTS) Clinical Infections and Association with Epidemiological Factors**

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**Session:** 146. Enteric Infections and Diagnostics
*Friday, October 6, 2017: 12:30 PM*

***Background.*** STEC and NTS are leading causes of foodborne infections in the US. Monitoring resistance in these pathogens is essential to understand the distribution of resistance profiles and because of the high likelihood of horizontal transfer of resistance genes to other pathogens. Data involving resistance in clinical STEC and NTS isolates from Michigan is lacking.

***Methods.*** Clinical STEC ($n$ = 353) and NTS ($n$ = 148) isolates from the MDHHS (2010–2014) were examined for resistance using disk diffusion, E-test or broth microdilution. Case information and epidemiological data for STEC isolates was extracted and associations with resistant infections were determined using chi square tests in SAS 9.3 and EpiInfo™ 7.

***Results.*** Overall, 31 (8.8%, $n$ = 353) STEC isolates were resistant to at least one antibiotic; high frequencies of resistance were observed for ampicillin (7.4%) and trimethoprim-sulfamethoxazole (4.0%). Resistance to ciprofloxacin (0.28%) and all three drug classes (0.28%) was less common. Preliminary results indicate that O157 resistance to ampicillin (4.8%) and trimethoprim-sulfamethoxazole (3.4%) was higher in Michigan compared with national frequencies (ampicilli$n$ = 2.7%, trimethoprim-sulfamethoxazole= 1.5%). Higher resistance frequencies were also observed in counties with high (11.3%) vs. low (7.7%) antibiotic prescription rates. For NTS, 23 (15.5%) isolates were resistant to ≥1 antibiotic. Resistance varied by serotype with high frequencies in Typhimurium (20%, $n$ = 20), Newport (17.6%, $n$ = 17) and Enteritidis (4.8%, $n$ = 42); 11 (7.4%) NTS isolates were resistant to ≥3 antimicrobial classes.

***Conclusion.*** Continuous monitoring of resistance in clinical STEC and NTS is warranted due to their importance as food pathogens. The identification of risk factors for resistance is crucial to develop alternative prevention practices to reduce the health burden of resistant infections in Michigan, which is not part of the FoodNet surveillance network.

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

**1198. Antimicrobial Activity of Ceftolozane–Tazobactam Tested against Contemporary (2012–2016) *Enterobacteriaceae* and *Pseudomonas aeruginosa* from ICU vs. non-ICU Isolates Collected in US Medical Centers**

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**Session:** 147. Expanded Spectrum – New Antimicrobial Susceptibility Testing
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***Background.*** Ceftolozane-tazobactam (C-T) is a combination of a novel antipseudomonal cephalosporin and a well-described β-lactamase inhibitor. C-T was approved by the United States (US) Food and Drug Administration in 2014 for complicated urinary tract infections, including acute pyelonephritis and complicated intra-abdominal infections. C-T is currently in clinical trials for the treatment of hospital-acquired pneumonia. The Program to Assess Ceftolozane-Tazobactam Susceptibility (PACTS) monitors C-T resistance to gram-negative (GN) isolates worldwide. This study compares the activities of C-T and comparators against GN isolates from ICU patients and non-ICU patients.

***Methods.*** A total of 3,100 GN ICU isolates and 3,271 isolates from non-ICU patients were collected from 30 US hospitals in 2012–2016. Isolates were tested for susceptibility (S) to C-T and comparators by CLSI broth microdilution methodology in a central monitoring laboratory. Other antibiotics tested included amikacin (AMK), cefepime (FEP), ceftazidime (CAZ), colistin (COL), meropenem (MER), and piperacillin-tazobactam (TZP). CLSI (2017) interpretive criteria were used for all except COL with *Enterobacteriaceae* (ENT), for which EUCAST (2017) criteria were used.

***Results.*** The most common ENT species from ICU and non-ICU patients were similar. The 3 most common ENT for ICU and non-ICU isolates were *Klebsiella pneumoniae*, 24.1% and 25.8%; *Escherichia coli*, 19.4% and 18.2%; and *Serratia marcescens*, 14.7% and 14.3%, respectively. The most common non-enteric species was *Pseudomonas aeruginosa* (PSA) for ICU and non-ICU (72.7% and 78.2%). ICU ENT isolates generally had a lower %S than non-ICU (Table). ENT showed more variability than PSA for %S between ICU and non-ICU.

| | | % susceptible† | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Organism | Number | C-T | AMK | FEP | CAZ | COL | MER | TZP |
| ENT ICU | 1,802 | 91.1 | 98.5 | 89.7 | 84.7 | 75.8‡ | 96.6 | 86.9 |
| ENT non-ICU | 1,578 | 94.0 | 98.7 | 91.8 | 87.8 | 73.7‡ | 98.4 | 89.5 |
| PSA ICU | 944 | 97.4 | 98.2 | 84.9 | 83.4 | 99.3 | 78.6 | 78.8 |
| PSA non-ICU | 1,324 | 97.3 | 95.2 | 84.6 | 84.0 | 99.5 | 80.9 | 78.5 |

† CLSI 2017

‡ EUCAST 2017

***Conclusion.*** For ENT overall, MER and AMK were the most active, followed by C-T. Comparing ICU and non-ICU, MER and C-T were slightly more active vs. non-ICU ENT, while AMK %S was similar for both. For PSA, COL was the most active; C-T and AMK were similar. Activities between ICU and non-ICU isolates were similar for C-T and COL while AMK was more active vs. ICU isolates, and MER was more active vs. non-ICU. C-T showed potent activity against ICU and non-ICU isolates for ENT and PSA.

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**1199. *In vitro* Activity of Cefiderocol against Globally Collected Carbapenem-Resistant Gram-Negative Bacteria Isolated from Urinary Track Source: SIDERO-CR-2014/2016**

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**Session:** 147. Expanded Spectrum – New Antimicrobial Susceptibility Testing
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***Background.*** Cefiderocol (S-649266) is a novel siderophore cephalosporin active against a wide variety of Gram-negative bacteria, not only *Enterobacteriaceae* but also non-fermenting bacteria such as *Pseudomonas aeruginosa* and *Acinetobacter* spp., including carbapenem-resistant strains. This potent activity is due to its efficient penetration through the outer membrane via active iron transporter systems and its high stability to both serine- and metallo-carbapenemases.This study evaluated the *in vitro* activity of cefiderocol and comparator agents against carbapenem-resistant clinical isolates collected from urinary track source in 2014–2016 from global countries.

**Methods /*Methods.*** Carbapenem-resistant *Enterobacteriaceae* (CRE) and multidrug-resistant (MDR) non-fermenters (defined as resistant to imipenem, ciprofloxacin and amikacin) were collected globally from 2014 to 2016 by IHMA Inc. A total of 226 *Enterobacteriaceae*, 44 *Acinetobacter baumannii*, 45 *P. aeruginosa*, 7 *Stenotrophomonas maltophilia* and 1 *Burkholderia cepacia* isolated from a urinary track source were tested. MICs were determined for cefiderocol, cefepime (FEP), ceftazidime-avibactam (CZA), ceftolozane-tazobactam (C/T), ciprofloxacin (CIP), colistin (CST), and meropenem (MEM) by broth microdilution and interpreted according to CLSI 2016 guidelines. As recommended by CLSI, cefiderocol was tested in iron-depleted cation-adjusted Mueller Hinton broth. Quality control testing was performed on each day of testing by using *E. coli* ATCC25922 and *P. aeruginosa* ATCC27853.

***Results.*** $MIC_{90}$ of cefiderocol against carbapenem-resistant *Enterobacteriaceae,* MDR *P. aeruginosa*, MDR *A. baumannii*, and *S. maltophilia* were 4 μg/mL or less. However, MEM, C/T and CZA had $MIC_{90}$s of >64μg/mL. Cefiderocol demonstrated potent *in vitro* activity against carbapenem-resistant *Enterobacteriaceae*, *A. baumannii*, and *P. aeruginosa* isolates collected from a UTI source. At 4 μg/mL or less, cefiderocol inhibited the growth of 95.8% of the isolates.

***Conclusion.*** These results strongly indicated that cefiderocol is a promising candidate for the treatment of the serious infections caused by cUTI isolated Gram-negative bacteria including carbapenem-resistant strains.

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**1200. Activity of the Novel Extended-spectrum β-Lactamase Inhibitor AAI101 in Combination with Cefepime Towards a Challenge Panel of *Acinetobacter baumannii***

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**Session:** 147. Expanded Spectrum – New Antimicrobial Susceptibility Testing
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***Background.*** AAI101 is a novel extended-spectrum β-lactamase inhibitor (BLI), active against ESBLs and a broad array of other BLs. AAI101 in combination with cefepime (FEP) is in Phase 2 development. Infections caused by *A. baumannii*, a pathogen endemic to the southern US and other global regions, are very challenging to treat, and often require combination therapy. This study examined the activity of FEP/AAI101 against a challenge set of *A. baumannii* clinical isolates enriched with OXA carbapenemase producers.