Table 1: *t-test.

Strain	ST	CrrB Background	Colistin MIC (E Test) µg/mL	Polymyxin B MIC (BMD) µg/mL	phoP	phoQ	pmrA	pmrC	pmrK	
			Isolate Data		qRT-PCR Results					
NR 5083	258	L87V	4.0	>128	3	2.3	0.8	0.8	0.9	
NR 5083 ^crrb	258	160 bp deletion	0.38	1	2.9	2.03	0.83	0.6	0.9	
					0.29	0.04	0.42	0.3	0.99	P* Value
NR 5337	258	WT	0.125							
NR 5337 ^crrb	258	160 bp deletion	0.125							

Disclosures. **A. C. Uhlemann**, Merck: Investigator, Grant recipient.

708. Incidence and Relatedness of Carbapenemase-Producing Carbapenem-Resistant Enterobacteriaceae Infections in Previously Colonized or Infected Patients

Sarah Si Lin Tang, BSc (Pharm) (Hons)[1]; Jocelyn Teo, Masters in Infectious Diseases[1]; Piotr Chlebicki, MBBS[2] and Andrea L. Kwa, PharmD[1]; [1]Pharmacy, Singapore General Hospital, Singapore, Singapore, [2]Infectious Diseases, Singapore General Hospital, Singapore, Singapore

Session: 67. Resistance Mechanisms: Gram-Negative
Thursday, October 4, 2018: 12:30 PM

Background. In patients with history of carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CPCRE), the need for CPCRE targeted treatment in subsequent sepsis episodes is unclear. We determine the likelihood of CPCRE infection (CI) in patients previously colonized (PC) or infected (PI) with CPCRE and relatedness of both episodes.

Methods. Adult inpatients with CPCRE isolated from any site in June 2012–May 2014 at a tertiary-care hospital were prospectively followed for 2 years to assess for subsequent CI. Bacteria isolates from paired episodes were subjected to Illumina HiSeq2500 and multilocus sequence typing.

Results. Six of 25 (24%) PI and 11 of 152 (7%) PC patients had subsequent CI—overall incidence was 9.6%. KP was most commonly implicated. While bacteria species differed in four cases, the carbapenemase type was conserved in all but one. Those with initial bacteremia, intra-abdominal (IA) or lung infection ($n = 6$) were five times more likely to develop CI. Only 33% of PI vs. 62% of PC patients had subsequent infections of the same clonal group. For PC, KP (OR 9.3) and OXA carbapenemase (OR 12.8) significantly predicted for subsequent CI. In PI, chronic renal failure requiring dialysis (OR 70.2) and KPC enzyme (OR 14) were predisposing factors. In-hospital mortality was observed in six cases.

Initial Site	Bacteria	Gene	Subsequent Site	Bacteria	Gene	Time (Days)
U	KP	**OXA-48**	B	KP	**OXA-48**	26
IA	EC	**KPC-2**	L	KP	OXA-1; **KPC-2**	17
B	KP	**KPC-2**, ;**OXA-1**	B	KP	**KPC-2**; **OXA-1**	8
S	KP	**OXA-48**	S	KP	**OXA-48**	146
L	KP	**KPC-2**	B	KP	**KPC-2**; OXA-1	91
U	KP	**KPC-2**	S	KP	**KPC-2**	45
				ECO	**KPC-2**	
R	KP	**OXA-1**	IA	KP	**OXA-1**	6
L	KP	**KPC-2**	B	KP	**KPC-2**	82
L	KP	OXA-1; **KPC-2**	U	KP	**KPC-2**	23
R	ECO	**KPC-2**	IA	ECO	**KPC**	16
R	KP	**NDM-1**; OXA-1; **OXA-181**;	S	KP	**NDM-1**; **OXA-181**;	13
S	EC	**OXA-1**; **OXA-48**	S	ECO	**OXA-1**; **OXA-181**	93
IA	KP	KPC-2	B	ECO	OXA-181	311
R	KP	**KPC-2**	U	KP	**KPC-2**; OXA-181	250
R	KP	**KPC-2**; OXA-1; OXA-9	L	KP	**KPC**	6
R	KP	OXA-1; **OXA-181**	B	ECO	**OXA-181**	5
R	KP	**KPC-2**; OXA-1	S	KP	**KPC**	367

B, blood; IA, intra-abdominal; L, lung; R, rectal; S, skin soft tissue; U, urine; EC, *Enterobacter cloacae*; ECO, *Escherichia coli*; KP, *Klebsiella pneumoniae*

Conclusion. Incidence of CI in carriers is low. Patients with IA and respiratory CI in the preceding 93 days are candidates for CPCRE treatment; empiric therapy should be active against the carbapenemase identified in the index episode.

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

709. Activity of Key β-Lactam Agents Against Gram-Negative Bacilli From ICU Patients with Lower Respiratory Tract Infections, SMART United States 2015–2017

Sibylle Lob, PhD[1]; Krystyna Kazmierczak, PhD[1]; Daryl Hoban, PhD[1]; Meredith Hackel, PhD[1]; Katherine Young, MS[2]; Mary Motyl, PhD[2] and Dan Sahm, PhD[3]; [1]IHMA, Inc., Schaumburg, Illinois, [2]Merck & Co., Inc., Kenilworth, New Jersey, [3]International Health Management Associates, Inc., Schaumburg, Illinois

Session: 67. Resistance Mechanisms: Gram-Negative
Thursday, October 4, 2018: 12:30 PM

Background. Relebactam (REL), formerly MK-7655, is a β-lactamase inhibitor of class A and C β-lactamases that is in clinical development in combination with imipenem (IMI). In this study, we evaluated the activity of IMI/REL against Gram-negative bacilli and resistant phenotypes collected in the United States as part of the SMART surveillance program from patients with lower respiratory tract infections (RTI) in ICUs, where antimicrobial resistance is typically higher than in non-ICU wards.

Methods. In 2015–2017, 26 hospitals in the United States each collected up to 100 consecutive Gram-negative pathogens from RTI per year. Antimicrobial susceptibility was determined for 1,298 non-Proteeae *Enterobacteriaceae* (NPE) and 638 *P. aeruginosa*isolates collected in ICUs, using CLSI broth microdilution and breakpoints; for comparison purposes, the IMI susceptible breakpoint was applied to IMI/REL. Proteeae were excluded due to intrinsic nonsusceptibility to IMI. Susceptibility was calculated for the 4 United States census regions and overall.

Results. Susceptibility of NPE was lowest in the Midwest to ceftazidime (81%) and cefepime (87%) and highest in the Northeast (88% and 94%, respectively); susceptibility to imipenem (89–93%) and piperacillin–tazobactam (86–90%) showed less variability across regions. Susceptibility of *P. aeruginosa* to the four agents was lowest in the West region (57–65%) and highest in the Northeast (68–76%). Susceptibilities to IMI/REL of NPE and *P. aeruginosa* as well as of phenotypes nonsusceptible (NS) to β-lactams are shown below.

Organism/phenotype	% IMI/REL-susceptible (total n) Midwest	Northeast	South	West	United States
NPE	96.2 (475)	98.3 (119)	96.4 (279)	97.9 (425)	97.0 (1298)
Cefepime-NS	98.4 (61)	7 of 7[a]	97.1 (35)	98.0 (50)	98.0 (153)
Ceftazidime-NS	98.9 (88)	100 (14)	97.8 (46)	98.6 (70)	98.6 (218)
Imipenem-NS[b]	48.6 (35)	83.3 (12)	71.0 (31)	76.9 (39)	67.5 (117)
Piperacillin-tazobactam-NS	98.5 (67)	100 (12)	96.4 (28)	98.0 (51)	98.1 (158)
P. aeruginosa	94.6 (224)	93.7 (63)	90.7 (161)	90.0 (190)	92.2 (638)
Cefepime-NS	82.8 (58)	81.3 (16)	73.3 (45)	75.8 (66)	77.8 (185)
Ceftazidime-NS	87.7 (57)	86.7 (15)	79.6 (49)	79.1 (67)	82.4 (188)
Imipenem-NS	82.6 (69)	79.0 (19)	74.1 (58)	74.0 (73)	77.2 (219)
Piperacillin-tazobactam-NS	83.6 (73)	85.0 (20)	77.4 (53)	78.1 (82)	80.3 (228)

[a] % susceptible not shown if n<10
[b] Includes *Serratia* spp. (72%, 84/117), *Klebsiella* spp. (12%, 14/117), *Enterobacter* spp. (9%, 11/117), other species (7%, 8/117)

Conclusion. The studied β-lactams showed some variability in activity against pathogens from RTI patients in ICUs across census regions, whereas IMI/REL maintained activity in all regions against NPE (>96%) and *P. aeruginosa* (90–95%). IMI/REL remained active against ≥98% of resistant phenotypes of NPE, except the imipenem-NS subset (67.5% susceptible), which was composed mainly of *Serratia* spp., and remained active against 77–82% of resistant phenotypes of *P. aeruginosa*, including 77.2% of imipenem-NS isolates. IMI/REL may provide a valuable therapeutic option for the treatment of ICU patients with respiratory tract infections caused by organisms resistant to commonly used β-lactams.

Disclosures. **S. Lob**, IHMA, Inc.: Employee, Salary. Merck: Consultant, Consulting fee. **K. Kazmierczak**, Merck: Consultant, Consulting fee. IHMA, Inc.: Employee, Salary. **D. Hoban**, IHMA, Inc.: Employee, Salary. Merck: Consultant, Consulting fee. **M. Hackel**, IHMA, Inc.: Employee, Salary. Merck: Consultant, Consulting fee. **K. Young**, Merck: Employee and Shareholder, Dividends and Salary. **M. Motyl**, Merck: Employee and Shareholder, Dividends and Salary. **D. Sahm**, IHMA, Inc.: Employee, Salary. Merck: Consultant, Consulting fee.

710. Increased Clinical Failure Rates Associated with Reduced Metronidazole Susceptibility in *Clostridioides difficile*

AnneGonzales-Luna, PharmD[1]; Wan-Jou Shen, MS[2]; Kierra Dotson, PharmD, BCPS[1]; Chris Lancaster, MS[1]; Bradley Endres, PhD[1]; Feroz Hossain, MD[1]; Khurshida Begum, PhD[1]; Patricia Cernoch, RM[3]; Katherine Perez, PharmD, BCPS-AQ ID[3]; Naradah Tisdel, MT[4]; Miriam Barrett, RM[4]; Kenneth L. Muldrew, MD, MPH[5]; M. Jahangir Alam, PhD[1]; Kevin Garey, PharmD, MS[1] and Julian Hurdle, PhD[2]; [1]University of Houston Coll. of Pharmacy, Houston, Texas, [2]Texas A&M Health Sci. Center, Houston, Texas, [3]Houston Methodist Hospital, Houston, Texas, [4]CHI Baylor St. Luke's Medical Center, Houston, Texas, [5]Baylor Coll. of Medicine, Houston, Texas

Session: 68. Resistance Mechanisms: Gram-Positive
Thursday, October 4, 2018: 12:30 PM

Background. Current national guidelines suggest limiting metronidazole (MTZ) use due to increased treatment failures in patients with *Clostridioides difficile* infections (CDI). However, the reason for these increased failure rates is unclear. We hypothesized an increase in the minimum inhibitory concentration (MIC) of MTZ to *C. difficile* may contribute to these poor response rates. The objective of this study was to examine clinical response rates in patients with CDI who received MTZ monotherapy vs. other therapies stratified by MTZ susceptibility.

Methods. Stool samples that tested positive for *C. difficile* (2017–2018) were collected from two large academic hospital systems in Texas. *C. difficile* was isolated from stool and visually screened for growth on heme-containing agar plates with MTZ at 2 mg/L (defined as reduced susceptibility). Blinded investigators reviewed electronic medical records to identify the treatment received and determine clinical success or failure for each patient. Treatment failure rates were assessed in patients that received MTZ monotherapy vs. other therapies stratified by MTZ susceptibility. Results were analyzed using multivariate logistic regression analysis.

Results. A total of 172 *C. difficile* isolates were included of which 55.8% displayed reduced susceptibility to MTZ. Clinical success rates with MTZ varied based on disease severity (mild-moderate: 80.4%; severe/severe-complicated: 64%). Treatment success rates were higher in patients infected with MTZ susceptible isolates (88.4%)