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Activity of Eravacycline and Comparators against 3,174 Pathogens Isolated from Canadian Hospitals: CANWARD 2014

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ABSTRACT

Background: Eravacycline (ERV) is a synthetic, broad-spectrum intravenous and oral fluorocycline antibiotic under development for the treatment of multidrug-resistant infections.[1] ERV has completed enrollment in Phase 3 clinical trials for the treatment of complicated urinary tract infections (cUTI) and complicated intra-abdominal infections (cIAI).[1,2] The activity of ERV was compared to comparators including meropenem (MER) and piperacillin-tazobactam (PTZ) against Gram-negative and Gram-positive pathogens causing infections in Canadian hospitals.

Methods: From Jan-Oct 2014, inclusive, 13 sentinel hospitals submitted pathogens from patients attending hospital clinics, emergency rooms, medical and surgical wards, and intensive care units as part of an ongoing national surveillance program in Canadian hospitals. 3,174 total isolates were collected for 2014. Susceptibility testing was performed using CLSI broth microdilution methods.

Results: The activity (µg/ml) of ERV, MER and PTZ against select pathogens is described below:

Organism (# isolates)	ERV MIC_{50}/MIC_{90}/Range	MER MIC_{50}/MIC_{90}	PTZ MIC_{50}/MIC_{90}
S. agalactiae (61)	0.03/**0.06**/0.008-0.06	≤0.06/≤0.06	≤1/≤1
S. pneumoniae (148)	0.015/**0.015**/≤0.0004-0.03	≤0.06/0.12	≤1/≤1
S. pyogenes (36)	0.03/**0.03**/≤0.0004-0.03	≤0.06/≤0.06	≤1/≤1
SPN - PenR (7)	0.008/**0.015**/0.008-0.015	1/1	4/4
MSSA (618)	0.06/**0.12**/≤0.015-0.5	0.12/0.25	≤1/≤1
MRSA[a] (157)	0.06/**0.25**/≤0.015-1	4/32	32/128
CA-MRSA (58)	0.06/**0.12**/≤0.015-0.12	2/4	16/32
HA-MRSA (88)	0.12/**0.5**/≤0.015-1	16/32	64/128
S. epidermidis (51)	0.06/**0.25**/≤0.015-0.5	1/32	≤1/32
E. faecalis (111)	0.06/**0.12**/≤0.015-0.12	4/8	4/4
E. faecium (42)	0.06/**0.12**/≤0.015-0.12	>32/>32	>512/>512
VRE (11)	0.06/**0.12**/≤0.015-0.12	>32/>32	>512/>512
C. freundii (8)	0.5/**2**/0.12-2	≤0.03/0.06	4/512
E. aerogenes (15)	0.5/**0.5**/0.25-1	0.06/0.06	4/64
E. cloacae (86)	0.5/**1**/0.06-8	≤0.03/0.12	2/64
E. coli (618)	0.25/**0.5**/0.06-1	≤0.03/≤0.03	≤1/4
E. coli-ESBL (72)	0.25/**0.5**/0.06-1	≤0.03/≤0.03	2/16
K. oxytoca (43)	0.25/**0.5**/0.06-1	≤0.03/≤0.03	2/128
K. pneumoniae (184)	0.5/**1**/0.06-4	≤0.03/≤0.03	2/8
M. morganii (10)	1/**2**/1-2	0.06/0.06	≤1/≤1
P. mirabilis (41)	1/**2**/0.5-4	0.06/0.06	≤1/≤1
P. aeruginosa (343)	8/**16**/0.06->16	0.5/8	4/64
S. marcescens (50)	1/**2**/0.5-8	0.06/0.06	≤1/4
S. maltophilia (49)	1/**4**/0.25-16	>32/>32	256/>512
A. baumannii (17)	0.06/**0.5**/0.03-1	0.5/2	2/64

PenR-penicillin-resistant, MSSA-methicillin-susceptible *Staphylococcus aureus*, MR-methicillin resistant, CA-community-associated, HA-healthcare-associated, VRE-vancomycin-resistant enterococci, SPN-*Streptococcus pneumoniae,* ESBL-extended spectrum beta lactamase producing.

[a]Based upon oxacillin susceptibility.

Conclusions: Eravacycline displays broad-spectrum activity and is more active than MER and PTZ versus MRSA, *E. faecalis*, *E. faecium*, VRE, *S. maltophilia* and *A. baumannii*.

PURPOSE

To determine the in vitro activity of eravacycline along with comparators versus Gram-negative and Gram-positive pathogens isolated from patients in Canadian hospitals from January 2014 to October 2014.

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MATERIALS & METHODS

Study Background and Bacterial Isolates: The isolates tested in this study were obtained from January-October 2014, inclusive, from an ongoing cross-Canada surveillance study (CANWARD; www.can-r.ca) organized by the investigators.[3] The goal of the CANWARD study was to assess pathogens and antimicrobial resistance patterns associated with lower respiratory tract, skin/skin structure, urinary, and bacteremic infection in Canadian patients on medical/surgical wards, intensive care units, and presenting to emergency rooms and hospital clinics.[3] All isolates of MRSA were typed using staphylococcal protein A (*spa*) typing to assess whether the isolates were community-associated or healthcare-associated.[3] Isolates with a *spa* type associated with CMRSA7 or CMRSA10 were considered CA-MRSA. Isolates with a *spa* type associated with CMRSA1, CMRSA2, CMRSA4, CMRSA5, CMRSA3/6, CMRSA8 or CMRSA9 were considered HA-MRSA.[3] Potential *E. coli* or *Klebsiella* spp. ESBL-producers were identified as isolates with a ceftriaxone and/or ceftazidime MIC of 1 mg/L or greater and confirmed using the CLSI double disk diffusion method, as previously described.[3]

Antimicrobial Susceptibility Testing Methodology: Isolates were tested for antimicrobial susceptibilities using in-house prepared (Department of Clinical Microbiology, Health Sciences Centre, Winnipeg, Canada) 96-well broth microdilution panels according to CLSI (2012) guidelines.[3,4] The antimicrobial agents tested were obtained as laboratory grade powders from their respective manufacturers.

Stock solutions were prepared and dilutions made, as described by the CLSI in cation-adjusted Mueller-Hinton broth (MHB).[4] Following 2 subcultures from frozen stock, the MICs of the antimicrobial agents for the isolates were determined by the CLSI broth microdilution method. Colony counts were performed periodically to confirm inocula. Quality control was performed using ATCC organisms including: *S. aureus* ATCC 29213, *E. faecalis* ATCC29212, *E. coli* ATCC 25922, and *P. aeruginosa* ATCC 27853.

CONCLUSIONS

- Eravacycline demonstrated in vitro activity versus Gram-negative bacilli.
- Eravacycline demonstrated potent in vitro activity against Enterobacteriaceae including ESBL-producing *E. coli* and *K. pneumoniae* and its activity was unaffected by the presence of ESBL phenotype.
- Compared to tigecycline, eravacycline was 4 fold more active versus *P. mirabilis* and 8 fold more active versus *Acinetobacter baumannii*.
- Eravacycline demonstrated potent in vitro activity against *Stenotrophomonas maltophilia*.
- Eravacycline was the most potent versus Gram-positive cocci.
- Eravacycline demonstrated potent in vitro activity against MSSA, MRSA including both CA-MRSA and HA-MRSA.
- Eravacycline demonstrated potent in vitro activity against all streptococci.
- Eravacycline demonstrated potent in vitro activity against *E. faecalis* and *E. faecium* including VRE.

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RESULTS

3,174 clinical isolates were collected for CANWARD 2014.

- 1276 (40.2%) were from blood, 1265 (39.9%) from respiratory sources, 322 (10.1%) were from urine, and 311 (9.8%) were from wounds.
- 1387 (43.7%) collected from male patients, 1787 (56.3%) female patients.
- 437 (13.8%) from patients ≤ 17 years of age, 1340 (42.2%) 18-64 years, and 1397 (44.0%) ≥ 65 years.
- 1014 (31.9%) were from patients on medical wards, 741 (23.3%) from emergency rooms, 586 (18.5%) from intensive care units, 587 (18.5%) from hospital clinics, and 246 (7.8%) from surgical wards.
- 2,637 Gram-negative and Gram-positive pathogens were tested with eravacycline and the results are listed below:

Table 1. In vitro activities of eravacycline and comparators versus Gram-negative bacilli

Organism (n tested)/ antimicrobial agent	MIC (µg/mL) 50%	90%	Range	% S	% I	% R
Escherichia coli ALL (618)						
Eravacycline	0.25	0.5	0.06 - 1	NA[a]	NA	NA
Ceftazidime	≤ 0.25	4	≤ 0.25 - > 32	91.3	1.5	7.3
Meropenem	≤ 0.03	≤ 0.03	≤ 0.03 - 0.5	100		
Piperacillin-Tazobactam	≤ 1	4	≤ 1 - > 512	97.6	1.1	1.3
Ceftriaxone	≤ 0.25	16	≤ 0.25 - > 64	87.9	0.3	11.8
Ciprofloxacin	≤ 0.06	> 16	≤ 0.06 - > 16	75.7	0.2	24.1
Tigecycline[b]	0.25	0.5	0.12 - 2	100		
Escherichia coli ESBL pos (72)						
Eravacycline	0.25	0.5	0.06 - 1	NA[a]	NA	NA
Ceftazidime	16	> 32	1 - > 32	36.1	9.7	54.2
Meropenem	≤ 0.03	≤ 0.03	≤ 0.03 - 0.5	100		
Piperacillin-Tazobactam	2	16	≤ 1 - > 512	90.3	4.2	5.6
Ceftriaxone	> 64	> 64	0.5 - > 64	5.6		94.4
Ciprofloxacin	> 16	> 16	≤ 0.06 - > 16	18.1		81.9
Tigecycline[b]	0.25	1	0.12 - 1	100		
Escherichia coli ESBL neg (546)						
Eravacycline	0.25	0.5	0.06 - 1	NA[a]	NA	NA
Ceftazidime	≤ 0.25	0.5	≤ 0.25 - 32	98.5	0.4	1.1
Meropenem	≤ 0.03	≤ 0.03	≤ 0.03 - 0.12	100		
Piperacillin-Tazobactam	≤ 1	2	≤ 1 - 512	98.5	0.7	0.7
Ceftriaxone	≤ 0.25	≤ 0.25	≤ 0.25 - > 64	98.7	0.4	0.9
Ciprofloxacin	≤ 0.06	> 16	≤ 0.06 - > 16	83.3	0.2	16.5
Tigecycline[b]	0.25	0.5	0.12 - 2	100		
Klebsiella pneumoniae ALL (184)						
Eravacycline	0.5	1	0.06 - 4	NA[a]	NA	NA
Ceftazidime	≤ 0.25	1	≤ 0.25 - > 32	94	0.5	5.4
Meropenem	≤ 0.03	≤ 0.03	≤ 0.03 - 16	99.5		0.5
Piperacillin-Tazobactam	2	8	≤ 1 - > 512	97.3	1.1	1.6
Ceftriaxone	≤ 0.25	≤ 0.25	≤ 0.25 - > 64	92.4		7.6
Ciprofloxacin	≤ 0.06	0.5	≤ 0.06 - > 16	92.9	1.1	6
Tigecycline[b]	0.5	1	0.12 - 4	94.6	5.4	
Klebsiella pneumoniae ESBL pos (12)						
Eravacycline	0.5	1	0.5 - 2	NA[a]	NA	NA
Ceftazidime	16	> 32	2 - > 32	25	8.3	66.7
Meropenem	≤ 0.03	0.25	≤ 0.03 - 16	91.7		8.3
Piperacillin-Tazobactam	16	> 512	4 - > 512	58.3	16.7	25
Ceftriaxone	> 64	> 64	16 - > 64			100
Ciprofloxacin	4	> 16	≤ 0.06 - > 16	25	8.3	66.7
Tigecycline[b]	1	2	0.5 - 2	100		
Enterobacter cloacae (86)						
Eravacycline	0.5	1	0.06 - 8	NA[a]	NA	NA
Ceftazidime	0.5	> 32	≤ 0.25 - > 32	74.4		25.6
Meropenem	≤ 0.03	0.12	≤ 0.03 - 0.25	100		
Piperacillin-Tazobactam	2	64	≤ 1 - 256	84.9	9.3	5.8
Ceftriaxone	≤ 0.25	> 64	≤ 0.25 - > 64	73.3	2.3	24.4
Ciprofloxacin	≤ 0.06	0.12	≤ 0.06 - > 16	94.2	1.2	4.7
Tigecycline[b]	0.5	1	0.25 - 8	93	2.3	4.7
Serratia marcescens (50)						
Eravacycline	1	2	0.5 - 8	NA[a]	NA	NA
Ceftazidime	≤ 0.25	1	≤ 0.25 - 2	100		
Meropenem	0.06	0.06	≤ 0.03 - 8	98		2
Piperacillin-Tazobactam	≤ 1	4	≤ 1 - 32	98	2	
Ceftriaxone	≤ 0.25	0.5	≤ 0.25 - 4	98		2
Ciprofloxacin	≤ 0.06	0.5	≤ 0.06 - 1	100		
Tigecycline[b]	2	2	1 - 4	92	8	
Klebsiella oxytoca (43)						
Eravacycline	0.25	0.5	0.06 - 1	NA[a]	NA	NA
Ceftazidime	≤ 0.25	0.5	≤ 0.25 - 8	97.7	2.3	
Meropenem	≤ 0.03	≤ 0.03	≤ 0.03 - 0.5	100		
Piperacillin-Tazobactam	2	128	≤ 1 - > 512	86	2.3	11.6
Ceftriaxone	≤ 0.25	2	≤ 0.25 - 32	83.7	7	9.3
Ciprofloxacin	≤ 0.06	≤ 0.06	≤ 0.06 - 0.5	100		
Tigecycline[b]	0.5	1	0.25 - 2	100		
Stenotrophomonas maltophilia (49)						
Eravacycline	1	4	0.25 - 16	NA[a]	NA	NA
Ceftazidime	> 32	> 32	2 - > 32	12.2	6.1	81.6
Meropenem	> 32	> 32	1 - > 32	NA	NA	NA
Piperacillin-Tazobactam	256	> 512	16 - > 512	NA	NA	NA
Ceftriaxone	> 64	> 64	4 - > 64	NA	NA	NA
Ciprofloxacin	2	16	0.5 - > 16	NA	NA	NA
Tigecycline[b]	1	8	0.25 - 16	NA	NA	NA
Proteus mirabilis (41)						
Eravacycline	1	2	0.5 - 4	NA[a]	NA	NA
Ceftazidime	≤ 0.25	≤ 0.25	≤ 0.25 - 4	100		
Meropenem	0.06	0.06	≤ 0.03 - 0.12	100		
Piperacillin-Tazobactam	≤ 1	≤ 1	≤ 1 - 2	100		
Ceftriaxone	≤ 0.25	≤ 0.25	≤ 0.25 - 1	100		
Ciprofloxacin	≤ 0.06	0.12	≤ 0.06 - 16	95.1	2.4	2.4
Tigecycline[b]	4	8	0.5 - 8	7.3	56.1	36.6
Acinetobacter baumannii (17)						
Eravacycline	0.06	0.5	0.03 - 1	NA[a]	NA	NA
Ceftazidime	8	16	2 - > 32	76.5	17.6	5.9
Meropenem	0.5	2	0.25 - 2	100		
Piperacillin-Tazobactam	2	64	≤ 1 - 64	88.2	11.8	0
Ceftriaxone	16	32	4 - > 64	35.3	58.8	5.9
Ciprofloxacin	0.25	0.25	≤ 0.06 - 1	100		
Tigecycline[b]	0.25	4	0.12 - 4	NA	NA	NA
Enterobacter aerogenes (15)						
Eravacycline	0.5	0.5	0.25 - 1	NA[a]	NA	NA
Ceftazidime	0.5	> 32	≤ 0.25 - > 32	73.3		26.7
Meropenem	0.06	0.06	≤ 0.03 - 0.25	100		
Piperacillin-Tazobactam	4	64	2 - 64	73.3	26.7	
Ceftriaxone	≤ 0.25	64	≤ 0.25 - 64	73.3		26.7
Ciprofloxacin	≤ 0.06	1	≤ 0.06 - 2	93.3	6.7	
Tigecycline[b]	0.5	1	0.25 - 1	100		
Citrobacter freundii (10)						
Eravacycline	0.5	2	0.12 - 2	NA[a]	NA	NA
Ceftazidime	1	> 32	≤ 0.25 - > 32	62.5		37.5
Meropenem	≤ 0.03	0.06	≤ 0.03 - 0.06	100		
Piperacillin-Tazobactam	4	512	≤ 1 - 512	87.5		12.5
Ceftriaxone	≤ 0.25	64	≤ 0.25 - 64	62.5		37.5
Ciprofloxacin	≤ 0.06	> 16	≤ 0.06 - > 16	87.5		12.5
Tigecycline[b]	0.5	4	0.25 - 4	87.5	12.5	
Morganella morganii (10)						
Eravacycline	1	2	1 - 2	NA[a]	NA	NA
Ceftazidime	≤ 0.25	2	≤ 0.25 - 8	90	10	
Meropenem	0.06	0.06	0.06 - 0.12	100		
Piperacillin-Tazobactam	≤ 1	≤ 1	≤ 1 - ≤ 1	100		
Ceftriaxone	≤ 0.25	≤ 0.25	≤ 0.25 - ≤ 0.25	100		
Ciprofloxacin	≤ 0.06	> 16	≤ 0.06 - > 16	80		20
Tigecycline[b]	1	2	1 - 4	90	10	

[a] NA – not available. [b] Interpretive breakpoints defined by FDA (tigecycline) where applicable

Table 2. In vitro activities of eravacycline and comparators versus Gram-positive cocci

Organism (n tested)/ antimicrobial agent	MIC (µg/mL) 50%	90%	Range	% S	% I	% R
Staphylococcus aureus MSSA (618)						
Eravacycline	0.06	0.12	≤ 0.015 - 0.5	NA[a]	NA	NA
Ceftazidime	16	16	2 - 32	NA	NA	NA
Meropenem	0.12	0.25	≤ 0.03 - 0.5	NA	NA	NA
Piperacillin-Tazobactam	≤ 1	≤ 1	≤ 1 - 4	NA	NA	NA
Ceftriaxone	4	4	1 - 16	NA	NA	NA
Ciprofloxacin	0.5	4	≤ 0.06 - > 16	87.2	2.8	10
Tigecycline[b]	0.12	0.25	≤ 0.03 - 1	99.8	-	-
Staphylococcus aureus MRSA (156)						
Eravacycline	0.06	0.25	≤ 0.015 - 1	NA[a]	NA	NA
Ceftazidime	> 32	> 32	16 - > 32	NA	NA	NA
Meropenem	4	32	0.25 - > 32	NA	NA	NA
Piperacillin-Tazobactam	32	128	2 - 256	NA	NA	NA
Ceftriaxone	> 64	> 64	16 - > 64	NA	NA	NA
Ciprofloxacin	> 16	> 16	0.25 - > 16	19.9		80.1
Tigecycline[b]	0.25	0.5	≤ 0.03 - 1	95.5	-	-
CA-MRSA (57)						
Eravacycline	0.06	0.12	≤ 0.015 - 0.12	NA[a]	NA	NA
Ceftazidime	> 32	> 32	16 - > 32	NA	NA	NA
Meropenem	2	4	0.25 - 32	NA	NA	NA
Piperacillin-Tazobactam	16	32	2 - 256	NA	NA	NA
Ceftriaxone	64	> 64	16 - > 64	NA	NA	NA
Ciprofloxacin	16	16	0.25 - > 16	19.3		80.7
Tigecycline[b]	0.25	0.25	≤ 0.03 - 0.25	100	-	-
HA-MRSA (88)						
Eravacycline	0.12	0.5	≤ 0.015 - 1	NA[a]	NA	NA
Ceftazidime	> 32	> 32	16 - > 32	NA	NA	NA
Meropenem	16	32	0.5 - > 32	NA	NA	NA
Piperacillin-Tazobactam	64	128	2 - 256	NA	NA	NA
Ceftriaxone	> 64	> 64	16 - > 64	NA	NA	NA
Ciprofloxacin	> 16	> 16	0.25 - > 16	11.4		88.6
Tigecycline[b]	0.25	0.5	0.06 - 1	92	-	-
Staphylococcus epidermidis (51)						
Eravacycline	0.06	0.25	≤ 0.015 - 0.5	NA[a]	NA	NA
Ceftazidime	16	> 32	2 - > 32	NA	NA	NA
Meropenem	1	32	≤ 0.03 - > 32	NA	NA	NA
Piperacillin-Tazobactam	≤ 1	32	≤ 1 - 64	NA	NA	NA
Ceftriaxone	8	> 64	≤ 0.25 - > 64	NA	NA	NA
Ciprofloxacin	0.25	> 16	≤ 0.06 - > 16	62.7		37.3
Tigecycline[b]	0.12	0.25	≤ 0.03 - 1	NA	NA	NA
Enterococcus faecalis (111)						
Eravacycline	0.06	0.12	≤ 0.015 - 0.12	NA[a]	NA	NA
Ceftazidime	> 32	> 32	16 - > 32	NA	NA	NA
Meropenem	4	8	0.5 - 16	NA	NA	NA
Piperacillin-Tazobactam	4	4	≤ 1 - 16	NA	NA	NA
Ceftriaxone	> 64	> 64	4 - > 64	NA	NA	NA
Ciprofloxacin	1	> 16	0.25 - > 16	77.5	7.2	15.3
Tigecycline[b]	0.12	0.25	≤ 0.03 - 1	99.1	-	-
Enterococcus faecium (42)						
Eravacycline	0.06	0.12	≤ 0.015 - 0.12	NA[a]	NA	NA
Ceftazidime	> 32	> 32	16 - > 32	NA	NA	NA
Meropenem	> 32	> 32	1 - > 32	NA	NA	NA
Piperacillin-Tazobactam	> 512	> 512	2 - > 512	NA	NA	NA
Ceftriaxone	> 64	> 64	0.5 - > 64	NA	NA	NA
Ciprofloxacin	> 16	> 16	1 - > 16	4.8	95.2	
Tigecycline[b]	0.12	0.12	≤ 0.03 - 0.25	NA	NA	NA
VRE (11)						
Eravacycline	0.06	0.12	≤ 0.015 - 0.12	NA[a]	NA	NA
Ceftazidime	> 32	> 32	> 32 - > 32	NA	NA	NA
Meropenem	> 32	> 32	> 32 - > 32	NA	NA	NA
Piperacillin-Tazobactam	> 512	> 512	> 512 - > 512	NA	NA	NA
Ceftriaxone	> 64	> 64	> 64 - > 64	NA	NA	NA
Ciprofloxacin	> 16	> 16	> 16 - > 16			100
Tigecycline[b]	0.12	0.12	0.06 - 0.25	NA	NA	NA
Streptococcus agalactiae (61)						
Eravacycline	0.03	0.06	0.008 - 0.06	NA[a]	NA	NA
Meropenem	≤ 0.06	≤ 0.06	≤ 0.06 - 0.12	100	-	-
Piperacillin-Tazobactam	≤ 1	≤ 1	≤ 1 - ≤ 1	NA	NA	NA
Ceftriaxone	≤ 0.12	≤ 0.12	≤ 0.12 - ≤ 0.12	100	-	-
Ciprofloxacin	0.5	1	0.25 - > 16	NA	NA	NA
Tigecycline[b]	0.06	0.12	0.06 - 0.12	100	-	-
Streptococcus pneumoniae (148)						
Eravacycline	0.015	0.015	≤ 0.004 - 0.03	NA[a]	NA	NA
Meropenem	≤ 0.06	0.12	≤ 0.06 - 1	91.9	4.7	3.4
Piperacillin-Tazobactam	≤ 1	≤ 1	≤ 1 - 4	NA	NA	NA
Ceftriaxone	≤ 0.12	0.25	≤ 0.12 - 1	100		
Ciprofloxacin	1	2	0.12 - 4	98.6	-	1.4
Tigecycline[b]	≤ 0.015	0.03	≤ 0.015 - 0.06	100	-	-
Streptococcus pneumoniae PenR (7)						
Eravacycline	0.008	0.015	0.008 - 0.015	NA[a]	NA	NA
Meropenem	1	1	0.5 - 1		42.9	57.1
Piperacillin-Tazobactam	4	4	2 - 4	NA	NA	NA
Ceftriaxone	1	1	0.5 - 1	100		
Ciprofloxacin	2	4	1 - 4	85.7	-	14.3
Tigecycline[b]	0.03	0.03	≤ 0.015 - 0.03	100	-	-
Streptococcus pyogenes (36)						
Eravacycline	0.03	0.03	≤ 0.004 - 0.03	NA[a]	NA	NA
Meropenem	≤ 0.06	≤ 0.06	≤ 0.06 - ≤ 0.06	100	-	-
Piperacillin-Tazobactam	≤ 1	≤ 1	≤ 1 - ≤ 1	NA	NA	NA
Ceftriaxone	≤ 0.12	≤ 0.12	≤ 0.12 - ≤ 0.12	100	-	-
Ciprofloxacin	0.5	1	0.25 - 2	NA	NA	NA
Tigecycline[b]	≤ 0.015	0.06	≤ 0.015 - 0.06	100	-	-

CA-MRSA – community associated MRSA; HA-MRSA – healthcare associated MRSA; VRE - vancomycin resistant enterococcus. [a] NA – not available. [b] Interpretive breakpoints defined by FDA (tigecycline) where applicable.

Table 3. Distribution of eravacycline MICs versus Gram-negative organisms

Organism agent	Number of isolates for which the eravacycline MIC (µg/ml) was: ≤0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	≥64
E. coli ALL			143	120	239	108	8						
E. coli ESBL pos			10	7	20	33	2						
E. coli ESBL neg			133	113	219	75	6						
K. pneumoniae ALL			4	2	58	99	12	5	4				
K. pneumoniae ESBL						10	1	1					
E. cloacae				1	1	16	44	18	1	3	2		
S. marcescens						1	29	17	2	1			
K. oxytoca			5		31	6	1						
S. maltophilia					3	7	25	7	3	3	1		
P. mirabilis						1	25	13	2				
A. baumannii		1	8	3	2	2	1						
C. freundii				1	2	3		2					
M. morganii							6	4					

Table 4. Distribution of eravacycline MICs versus Gram-positive organisms

Organism agent	Number of isolates for which the eravacycline MIC (µg/ml) was: ≤0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32 ≥64
S. aureus MSSA	5	98	351	144	16	4						
S. aureus MRSA	2	10	67	55	10	6	6					
CA-MRSA	1	8	26	22								
HA-MRSA	1	2	39	27	7	6	6					
S. epidermidis	8	9	18	8	5	3						
E. faecalis	3	32	52	24								
E. faecium	2	16	18	6								
VRE	1	3	4	3								
S. agalactiae	5	29	27									
S. pneumoniae	144	4										
S. pneumoniae PenR	7											
S. pyogenes	15	21										