Background. Ceftolozane/tazobactam (TOL-TAZ) is a novel cephalosporin antibiotic combined with a known β-lactamase inhibitor. It has activity against some extended-spectrum β-lactamase (ESBL)-producing Enterobacteriaceae and multidrug-resistant *Pseudomonas aeruginosa* (MDRPA). To date, little experience has been published on outcomes with TOL-TAZ for MDRPA infections in immunocompromised patients.

Methods. This was a retrospective study of adult patients (≥18 years) with an immunocompromising condition (solid-organ transplant; hematologic malignancy; solid tumors; metastatic cancer) at 20 academic medical centers who had microbiologically confirmed MDRPA isolated in culture and received TOL-TAZ for at least 24 hours. 30-day survival, in-hospital mortality, and the rates of microbiologic and clinical cure were assessed.

Results.

Characteristic	Result (*N* = 65)
Immunocompromising condition:	*n*(%)
Solid-organ transplant	35 (53.8)
Solid tumor	20 (30.7)
Leukemia	4 (6.1)
Lymphoma/multiple myeloma	3 (4.6)
Metastatic cancer	3 (4.6)
Male, n(%)	38 (58.4)
Age (median, IQR)	64 (20–87)
Charlson Comorbidity Index (median, IQR)	6 (1–12)
APACHE II score (median, IQR)	20 (4–41)
ICU, n(%)	37(56.9)
Hospital day index infection diagnosed (median, IQR)	17 (0–265)
Hospital day TOL-TAZ started (median, IQR)	19 (0–284)
3grs q8hrs, *n*(%)	23 (35.3)
1.5grs q8hrs, *n*(%)	23 (35.3)
Concomitant IV antibiotics, *n*(%)	15 (23.0)
Aminoglycoside, *n/N*(%)	7/15 (46.7)
Fluoroquinolone, *n/N*(%)	4/15 (26.7)
Polymyxin, *n/N*(%)	3/15 (20)
B-lactam, *n/N*(%)	1/15 (6.6)
TOL-TAZ susceptible isolates, *n/N* (%)	35/37 (94.6)

Outcomes by primary infection

Primary infection	n (%)	30-day survival n/N(%)	Microbiologic cure n/N(%)	Clinical cure n/N(%)
Pneumonia	33 (50.7)	30/33 (90.9)	24/33 (72.7)	28/33 (84.8)
Wound/Bone/Joint	12 (18.4)	8/12 (66.6)	7/12 (58.3)	7/12 (58.3)
UTI	9 (13.8)	7/9 (77.7)	7/9 (77.7)	8/9 (88.8)
Intra-abdominal	7 (10.7)	7/7 (100)	7/7 (100)	4/7 (57.1)
Bloodstream	4 (6.1)	4/4 (100)	4/4 (100)	4/4 (100)

Overall outcomes, n(%)

30-day survival	56 (86.1)
In-hospital mortality	17 (26.1)
Microbiologic cure	49 (75.3)
Clinical cure	51(78.4)

Conclusion. In this study of 65 critically-ill immunocompromised patients, the 30-day survival was 86.1%; clinical cure was78.4% and microbiologic cure 75.3%. TOL-TAZ is a viable option for immunocompromised patients with MDRPA infections.

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2383. *In Vitro* Activity of Ceftolozane–Tazobactam in Comparison With Ceftazidime–Avibactam vs. Antimicrobial Non-Susceptible *Pseudomonas aeruginosa* Clinical Isolates, Including Multidrug-Resistant and Extensively Drug-Resistant Subsets: CANWARD, 2007–2017

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Session: 250. Treatment of AMR Infections
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Background. *Pseudomonas aeruginosa* (PA) is an important nosocomial pathogen. Treatment options for infections caused by multidrug-resistant (MDR) and extensively drug-resistant (XDR) isolates remain limited. Ceftolozane-tazobactam (C/T) and ceftazidime–avibactam (CZA) are two newer antimicrobials with antipseudomonal activity. The purpose of this study was to directly compare the *in vitro* activity of C/T and CZA vs. antimicrobial non-susceptible (NS) PA clinical isolates obtained as part of the CANWARD study.

Methods. Annually from 2007 to 2017, sentinel hospitals across Canada submitted blood, respiratory, urine, and wound isolates (consecutive, one per patient/infection site) from patients attending ERs, medical and surgical wards, hospital clinics, and ICUs (CANWARD). Susceptibility testing was performed using broth microdilution (and breakpoints) as described by CLSI. MDR PA were defined as isolates that tested NS to at least one antimicrobial from ≥3 classes. XDR PA were defined as isolates that tested NS to at least one antimicrobial from ≥5 classes.

Results. 4224 PA isolates were obtained as a part of CANWARD. 628 (14.9%) were MDR, and 129 (3.1%) were XDR. The *in vitro* activity of C/T and CZA (plus relevant comparators) is presented below.

	C/T		CZA		Meropenem		Piperacillin–tazobactam	
	MIC_{50}/MIC_{90}	%S	MIC_{50}/MIC_{90}	%S	MIC_{50}/MIC_{90}	%S	MIC_{50}/MIC_{90}	%S
All Isolates (*n* = 4,224)	0.5/2	98.2	2/8	94.1	0.5/8	81.2	4/64	83.3
Amikacin NS (*n* = 330)	1/8	86.4	4/16	84.8	1/32	61.5	8/256	63.9
Ceftazidime NS (*n* = 755)	1/4	90.5	8/16	68.9	4/32	48.2	64/512	21.6
CZA NS (*n* = 248)	2/16	77.8	16/>16	0.0	8/>32	29.4	64/512	17.3
C/T NS (*n* = 78)	16/>64	0.0	16/>16	29.5	8/>32	38.5	256/>512	23.1
Ciprofloxacin NS (*n* = 1,010)	1/4	94.8	4/16	85.3	2/32	56.9	16/256	64.8
Gentamicin NS (n = 823)	1/4	94.3	4/16	88.7	1/16	62.1	8/128	70.5
Meropenem NS (n = 793)	1/4	93.9	4/16	77.9	8/16	0.0	16/256	52.6
Piperacillin–tazobactam NS (*n* = 686)	1/4	91.3	8/16	70.1	4/32	45.2	64/512	0.0
Tobramycin NS (*n* = 283)	1/8	88.0	4/16	83.7	4/32	38.9	16/256	58.0
MDR (*n* = 628)	1/8	89.8	8/>16	69.4	8/32	22.6	64/512	22.0
XDR (*n* = 129)	2/16	78.3	8/>16	55.0	16/>32	0.0	128/512	0.0

Conclusion. The *in vitro* activity of C/T was superior to CZA vs. antimicrobial NS PA clinical isolates (including MDR and XDR isolates) recovered from patients across Canada.

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2384. Multidrug-Resistant Gram-Negative Infections Treated With Ceftolozane–Tazobactam: Impact of Delayed Initiation

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Background. Delayed appropriate antibiotic therapy for multidrug-resistant (MDR) Gram-negative bacterial (GNB) infections has been associated with increased mortality. Ceftolozane-tazobactam (C/T) is a novel antipseudomonal cephalosporin and β-lactamase inhibitor combination with excellent *in vitro* activity against MDR