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In Vitro Activity of Aztreonam-avibactam Against Enterobacterales Isolates Collected from Patients in the Asia/Pacific Region, by Infection Source, ATLAS Surveillance Study, 2020-2024

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Introduction

Aztreonam (ATM) is a monobactam stable against hydrolysis by class B metallo-β-lactamases (MBLs), and avibactam (AVI) inhibits class A, class C, and some class D serine β-lactamases. The combination of aztreonam-avibactam shows high *in vitro* activity against drug-resistant isolates of Enterobacterales, especially those harboring β-lactamases from different classes. This study evaluated the *in vitro* activity of ATM-AVI and comparators against Enterobacterales collected in 2020-2024 from patients in the Asia/Pacific region, by infection source, as part of the ATLAS global surveillance program [1].

Materials & Methods

- A total of 26,310 isolates from patients were collected from 66 medical centers and 11 countries in the Asia/Pacific region. Sites submitted a pre-defined number of each species of isolates, per protocol.
- Antimicrobial susceptibility testing was performed by broth microdilution according to CLSI methodology and interpreted using CLSI 2026 breakpoints [2-3]. Cefiderocol was only tested on isolates collected in 2024 (n=4639).

Results Summary

- In this study, *E. coli* comprised the majority of organisms among isolates in blood, intra-abdominal (IA), skin/skin structure (SSS), and urinary tract (UT) infection sources (Figure 1). *K. pneumoniae* comprised the majority in lower respiratory tract (LRT) infection sources.
- Aztreonam-avibactam showed potent *in vitro* activity against Enterobacterales isolates collected from the Asia/Pacific region in all infection sources (98.8% susceptible [S]; MIC_{90}=0.25 µg/mL) (Table 1).
- Fewer isolates collected from India were susceptible to ATM-AVI compared to other countries (95.3% vs 99.8%-S). In all countries, at least as many isolates were susceptible to ATM-AVI compared to other agents, except for cefiderocol (FDC) in India (95.3% vs 95.6%-S).
- In all infection sources, more isolates were susceptible to ATM-AVI when compared to comparator agents, except for FDC in intra-abdominal infections (98.8% vs 99.8%-S; note lower number of isolates tested for cefiderocol) (Figure 2, Table 2).

Conclusion

Across all major infection sources, aztreonam-avibactam demonstrated consistently high *in vitro* activity against Enterobacterales isolates from the Asia/Pacific region, supporting its potential clinical utility in settings with diverse resistance mechanisms and high MBL prevalence.

References

1. Pfizer. *ATLAS (Antimicrobial Testing Leadership and Surveillance).* https://atlas-surveillance.com [Registration required]. Accessed 01May2026.
2. Clinical and Laboratory Standards Institute (CLSI), 2024. *Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria That Grow Aerobically*, 12th ed. CLSI Standard M07. Wayne, Pennsylvania 19087-1898 USA.
3. Clinical and Laboratory Standards Institute (CLSI), 2026. *Performance Standards for Antimicrobial Susceptibility Testing.* 36th Ed. CLSI Supplement M100. Wayne, Pennsylvania 19087-1898 USA.

Acknowledgments

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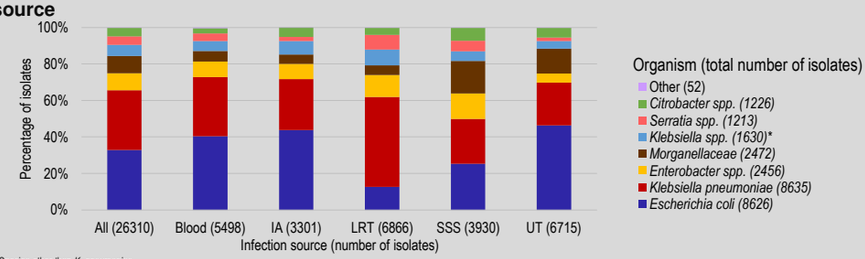
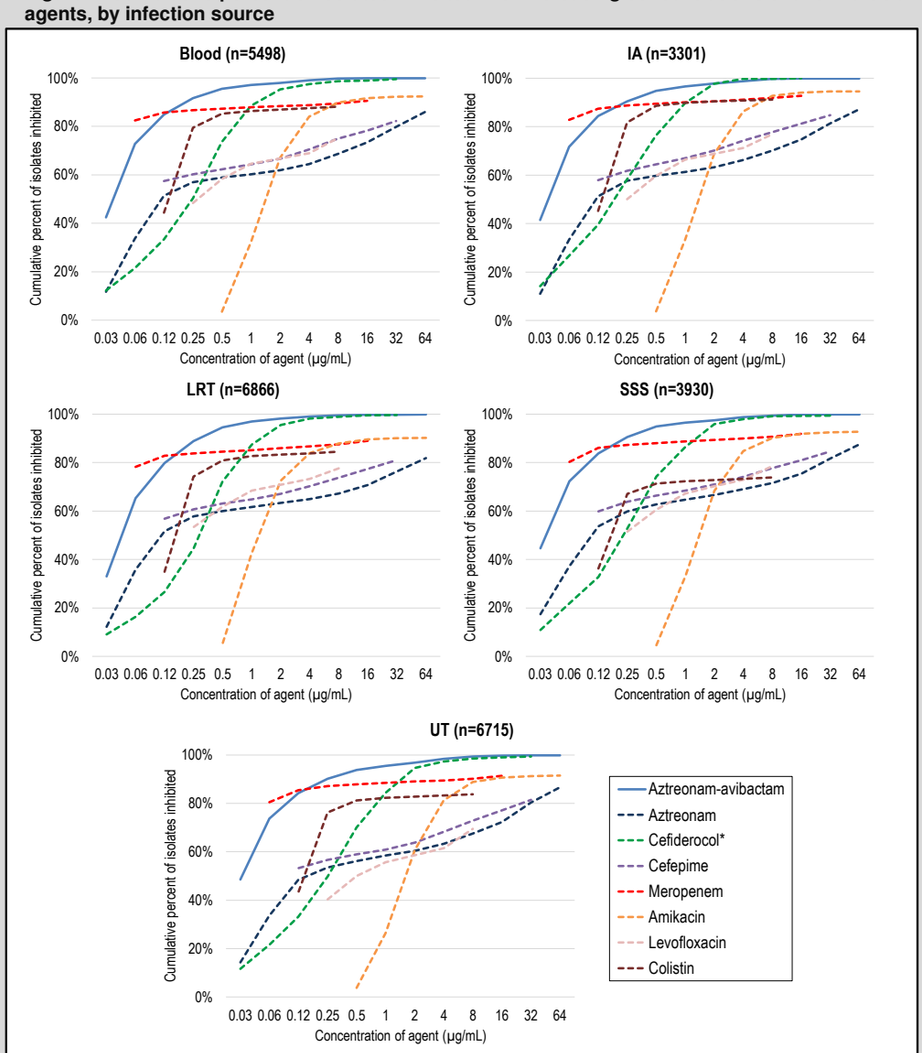
Results

Figure 1. Taxonomic grouping of Enterobacterales isolates collected in this study by infection source



*Species other than *K. pneumoniae*

Figure 2. Cumulative percent of isolates inhibited with increasing concentrations of antimicrobial agents, by infection source



*Cefiderocol was tested only on isolates collected in 2024 (n=4693).

Table 1. *In vitro* activity of aztreonam-avibactam and comparator agents against isolates collected in 2020-2024, by country

Region/Country	N	Agent [MIC_{90} (µg/mL), percentage susceptible[a]]															
		ATM-AVI		ATM		FDC[b]		FEP		MEM		AMK		LVX		CST	
		MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%I[c]
APAC	26310	0.25	**98.8**	>64	65.2	2	**98.0**	>32	67.1	16	87.8	16	83.7	>8	57.6	>8	83.3
ex-India	20471	0.25	**99.8**	64	72.7	2	**98.7**	>32	75.1	0.12	**94.2**	8	89.9	>8	64.7	>8	82.8
India	5839	2	**95.3**	>64	38.9	2	**95.6**	>32	39.3	>16	65.1	>64	62.2	>8	32.6	>8	84.8
Australia	2101	0.12	**100**	8	89.8	0.5	**100**	1	**92.9**	≤0.06	**99.7**	1	**97.1**	>8	**90.8**	>8	82.2
China	6766	0.25	**99.6**	>64	67.6	1	**98.7**	>32	68.3	0.12	**92.0**	8	82.8	>8	53.3	>8	84.0
Hong Kong	522	0.06	**100**	16	84.9	N/A	N/A	8	85.1	≤0.06	**99.8**	4	**94.8**	>8	68.0	>8	87.0
Japan	1210	0.12	**100**	16	84.0	0.5	**100**	2	**90.4**	≤0.06	**99.3**	4	**96.6**	>8	80.9	>8	82.4
Korea, South	2248	0.12	**100**	64	70.0	1	**98.9**	>32	72.6	0.12	**97.6**	4	**91.2**	>8	60.8	>8	86.3
Malaysia	1220	0.12	**99.8**	64	84.2	2	**98.8**	>32	76.1	0.12	**93.5**	4	**96.3**	8	74.1	>8	83.1
New Zealand	911	0.12	**100**	8	87.3	0.5	**100**	1	**92.3**	≤0.06	**100**	4	**96.0**	0.5	**90.5**	>8	81.6
Philippines	1372	0.12	**99.7**	>64	73.6	2	**96.1**	>32	73.3	1	**90.2**	4	**91.7**	>8	63.3	>8	81.6
Taiwan	2189	0.5	**99.8**	>64	66.4	2	**97.5**	>32	72.6	0.5	**92.2**	4	**91.5**	>8	62.7	>8	79.9
Thailand	1932	0.25	**99.7**	>64	63.6	1	**99.1**	>32	65.6	1	**90.4**	8	89.4	>8	54.9	>8	79.5

Abbreviations: ATM-AVI, aztreonam-avibactam; ATM, aztreonam; FDC, cefiderocol; FEP, cefepime; MEM, meropenem; LVX, levofloxacin; CST, colistin; %S, percent susceptible; MIC_{90} in µg/mL; ex-India, countries other than India.
[a] Percent susceptible using 2026 CLSI breakpoints.
[b] Cefiderocol was tested only on isolates collected in 2024 (n=4693). By country, the number of isolates tested for cefiderocol susceptibility were: Australia (n=360); China (n=1239); Hong Kong (n=0); India (n=1089); Japan (n=176); South Korea (n=357); Malaysia (n=259); New Zealand (n=184); Philippines (n=282); Taiwan (n=359); Thailand (n=334).
[c] Intermediate breakpoint used for colistin.

Table 2. *In vitro* activity of aztreonam-avibactam and comparator agents against isolates collected in 2020-2024, by infection source

Infection Source	N	Agent [MIC_{90} (µg/mL), percentage susceptible[a]]															
		ATM-AVI		ATM		FDC[b]		FEP		MEM		AMK		LVX		CST	
		MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%S	MIC_{90}	%I[c]
Blood	5498	0.25	**99.0**	>64	64.5	2	**97.5**	>32	66.6	16	87.9	16	84.0	>8	58.2	>8	86.9
IA	3301	0.25	**98.8**	>64	66.3	2	**99.8**	>32	70.2	1	**90.1**	8	86.3	>8	59.7	2	**90.5**
LRT	6866	0.5	**99.1**	>64	65.0	2	**98.2**	>32	67.1	>16	85.2	32	84.0	>8	61.7	>8	83.3
SSS	3930	0.25	**98.8**	>64	69.0	2	**97.9**	>32	71.0	8	88.8	8	84.8	>8	60.5	>8	72.8
UT	6715	0.25	**98.4**	>64	63.3	2	**97.3**	>32	63.8	8	88.5	16	81.3	>8	49.9	>8	82.8

Abbreviations: ATM-AVI, aztreonam-avibactam; ATM, aztreonam; FDC, cefiderocol; FEP, cefepime; MEM, meropenem; LVX, levofloxacin; CST, colistin; %S, percent susceptible; MIC_{90} in µg/mL; IA, intra-abdominal; LRT, lower respiratory tract; SSS, skin/skin structure; UT, urinary tract
[a] Percent susceptible using 2026 CLSI breakpoints.
[b] Cefiderocol was tested only on isolates collected in 2024 (n=4693). By infection source, the number of isolates tested for cefiderocol susceptibility were: Blood (n=999); IA (n=564); LRT (n=1167); SSS (n=680); UT (n=1229)
[c] Intermediate breakpoint used for colistin

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