

Background:

Bloodstream infection (BSI) due to carbapenem-resistant Enterobacterales (CRE) is emerging as an urgent public health threat worldwide, often leading to limited treatment options and poor outcomes. CRE bloodstream infections are an escalating global public health concern that demands urgent attention from healthcare systems worldwide. This study aimed to compare the clinical features and outcomes between patients with CRE and non-CRE BSI.

Methods:

A retrospective study was conducted in adult patients (aged ≥18 years) admitted to a tertiary hospital in Thailand from July 2024 to March 2025. All patients were bloodstream infection with microbiological confirmed by Enterobacterales. Patients were divided into CRE and non-CRE groups. Demographics; comorbidities; infection sources; microbial resistance patterns; treatment; and clinical outcomes were reviewed. Factors associated with 14-day all-cause mortality were assessed with univariate and multivariate logistic regression.

Results:

A total of 147 patients were included, with 37.41% in the CRE group. Compared to the non-CRE group, CRE patients had significantly longer hospitalization (median 28 vs. 10 days, p<0.001) and higher hospital costs (median 8,179.21 vs. 1,608.10 USD, p<0.001). ICU admission was more frequent in CRE group (45.5% vs. 14.1%, p<0.001). The 14-day mortality in CRE was 20% versus 2% in non-CRE. On multivariate analysis, prolonged hospitalization [OR=0.95, 0.87-1.03] and ceftazidime-avibactam resistance [OR=1.2, 0.2-7.02] were found to be independently associated with mortality, although without statistical significance.

Conclusion:

Patients with CRE bloodstream infections are more likely to require ICU care, have longer hospital stays, and incur higher treatment costs. These findings highlight the urgent need for diagnostic stewardship strategies to improve clinical outcomes.

Table: Baseline characteristic

Baseline characteristic (%)		CRE group	non CRE group
Patients (N)		55	92
Male		61.8	51.1
Age (mean, IQR)		60 (52.5-71.0)	63.5 (56.0-74.0)
Comorbidity			
	Cardiovascular disease	38.2	32.6
	Diabetes mellitus	27.3	31.5
	Renal disease	18.2	29.3
	Solid malignancy	10.9	17.4
	Hematologic malignancy	16.4	5.4
Pathogens			
	<i>Escherichia coli</i>	41.8	77.2
	<i>Klebsiella pneumoniae</i>	58.2	22.8
Source of infection			
	Primary Bacteremia	58.2	31.5
	Catheter related infection	18.2	1.1
	Urinary tract infection	14.5	41.3
	Pneumonia	5.5	6.5
	Intraabdominal infection	1.8	16.3
Appropriate empirical therapy		20	75
Appropriate document therapy		52.7	97.8
ICU admission		45.5	14.1
Ventilator use		47.3	38.0
Inotropic drug use		27.3	14.1
Last admission in 3 month ago		45.5	34.8
Receive IV antibiotic in 3 month ago		41.8	25
14 day all cause mortality		20	2.2
Hospital cost [USD] (median, IQR)		8,179.21 (3,523.59 - 16,574.97)	1,608.10 (962.74 - 3,045.18)