TAWHIDIC EPISTEMOLOGY LEADING THE WAY
KHALĪFAH · AMĀNAH · IQRA' · RAHMATAN LIL-'ĀLAMĪN
UMMATIC EXCELLENCE LEADING THE WORLD
APCCMI2025 BANGKOK
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA — Garden of Knowledge and Virtue

Epidemiology and Antibiogram of *Burkholderia pseudomallei*: An 8-Year Laboratory-Based Study

Norhidayah Kamarudin[1], Wan Husna Barakah Meor Jamaludin[2], Nurdiyana Mohamed[1]

[1]Department of Pathology and Laboratory Medicine, Kulliyyah of Medicine, International Islamic University Malaysia, Kuantan, Pahang, Malaysia; [2]Department of Pathology and Laboratory Medicine, Sultan Ahmad Shah Medical Centre@International Islamic University Malaysia, Kuantan, Pahang, Malaysia

BACKGROUND

- Melioidosis is a significant public health concern in Southeast Asia.
- This study aims to describe the distribution and antimicrobial susceptibility patterns of its causative bacteria, *Burkholderia pseudomallei*, isolated from clinical specimens received by a diagnostic microbiology laboratory located in Pahang state of Malaysia.

METHOD

- A retrospective analysis was conducted on 127 index *B. pseudomallei* isolated from early 2017 until mid-2025.
- The patients' demographic data and the isolates' microbiological data were extracted from the laboratory information system.
- Chi-square tests were used to assess associations between specimen type, gender, and age groups of patients.

RESULTS

Isolates distribution

- 76.4% isolates were obtained from male patients' clinical specimens (male-to-female ratio 3.23:1). Adult patients (>18 years) constituted 98% of cases, with peak incidence observed in the 40-69 age group (69%). The mean patient's age was 53.7 years.
- Across the study period, a seasonal clustering was observed in July and August.
- Blood was the predominant specimen type (59%).

Chi-square analysis

- No significant association was found between specimen type and gender or age group (p=0.9 and p=0.644, respectively).

Antimicrobial susceptibility

- High antimicrobial susceptibility rate was observed for ceftazidime (99%), doxycycline (98%), meropenem (96%), and amoxicillin clavulanate (94%).
- The lowest susceptibility rate was seen for trimethoprim-sulfamethoxazole (SXT, 81%), followed by imipenem (IPM, 86%).
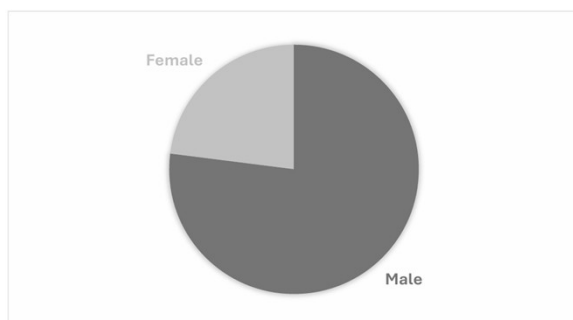

Figure 1: Gender distribution of the index B. pseudomallei isolated.

Type of specimen	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Total
Respiratory	0	0	0	2	1	0	1	0	4
Blood	1	0	10	19	13	18	9	5	75
Body fluid	0	0	1	2	1	2	0	0	6
Pus aspirate	2	0	2	4	5	4	1	0	16
Swab	0	0	0	1	0	1	0	0	2
Tissue	1	1	3	1	7	2	1	0	16
Urine	0	0	0	4	0	0	2	0	6
Total	4	1	16	33	27	27	14	5	127

Table 2: Distribution of specimen type according to the patients' age group.

		Type of specimen									
		Tissue	Blood	Fluid	Pus	Swab	Urine	Aspirate	BAL	Sputum	Total
Gender	Male	11	57	4	15	2	4	2	1	1	97
	Female	5	18	2	3	0	2	0	0	0	30
	Total	16	75	6	18	2	6	2	1	1	127

Table 1: Distribution of specimen type according to gender.
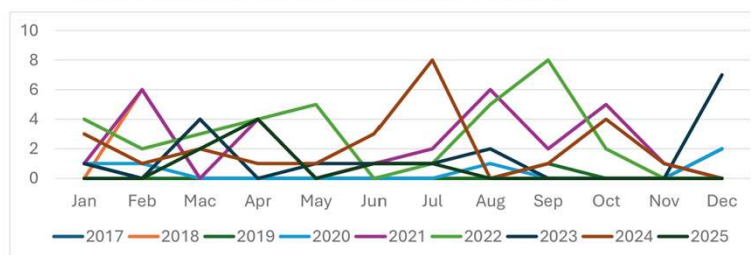

Figure 2: Distribution of the patients' hospital admissions across the 8-year study period.

DISCUSSION

Melioidosis predominantly affects middle-aged males and frequently presents as bacteremia. The observed seasonal trend involving the inter-monsoon period (July and August) requires further investigation to elucidate the disease transmission risk in guiding the targeted public health interventions. Despite high susceptibility to key antibiotics, a relatively low susceptibility to SXT and IPM reinforces the need for continued antimicrobial resistance surveillance and monitoring in endemic settings.

REFERENCES
1. Wang, B., Zhang, Y., & Li, X. (2025). *Burkholderia phages and control of Burkholderia-associated human, animal, and plant diseases*. Microorganisms, 13(2), 377. https://doi.org/10.3390/microorganisms13020377
2. Zhang, Q.-Y., Li, Y., & Chen, H. (2021). *Antimicrobial resistance patterns of Burkholderia pseudomallei in endemic regions*. Military Medical Research, 8(1), 45. https://doi.org/10.1186/s40779-021-00342-6