

Table S1. Risk factors associated with 30 day mortality in patients with CnSPA BSIs

	Univariate analysis			Multivariate analysis			
	Survivors	Non-survivors	<i>P</i> values	Sig.	Exp(B)	95% CI for EXP(B)	
	(N=63)	(N=38)				Lower	Upper
Demographics							
Male, n (%)	40 (63.5)	28 (73.7)	0.290				
Age, mean $\pm$ SD	58.0 $\pm$ 18.1	64.2 $\pm$ 17.4	0.097				
Department							
ICU	23 (36.5)	26 (68.4)	0.002				
Hematology Department	8 (12.7)	1 (2.6)	0.174				
Hepatobiliary and Pancreatic	15 (23.8)	7 (18.4)	0.525				
Comorbidities and underlying disease							
Diabetes mellitus	4 (6.3)	7 (18.4)	0.119				
Hypertension	12 (19.0)	15 (39.5)	0.025				
Respiratory disease	11 (17.5)	19 (50.0)	0.001				
Solid tumor	12 (19.0)	6 (15.8)	0.679				
Hematological disease	9 (14.3)	1 (2.6)	0.120				
Leukocythemia	3 (4.8)	0 (0)	0.447				
CCI, median [IQR]	1.0 [2.0]	1.5 [1.0]	0.700				
APACHE II score on admission, mean $\pm$ SD	11.9 $\pm$ 5.5	15.1 $\pm$ 6.2	0.009				
Before BSI (within 90 days)							
Past hospitalization	5 (7.9)	2 (5.3)	0.914				
ICU stay	34 (54)	28 (73.7)	0.049				
Surgery	24 (38.1)	13 (34.2)	0.695				
Blood transfusion	26 (41.3)	20 (52.6)	0.267				
Corticosteroids	8 (38.1)	13 (68.8)	0.010	0.028	8.055	1.246	52.091
Immunosuppressive drugs	5 (7.9)	2 (5.3)	0.914				
Invasive therapy							
Central venous catheterization	31 (49.2)	30 (78.9)	0.003				
Arterial catheterization	24 (38.1)	26 (68.4)	0.003				
Mechanical ventilation	33 (52.4)	28 (73.7)	0.034				
Endotracheal intubation or incision	17 (27)	18 (47.4)	0.037				
Urinary catheterization	31 (49.2)	26 (68.4)	0.059				
Indwelling gastrointestinal tube	25 (39.7)	26 (68.4)	0.005				
Hemodialysis	4 (6.3)	9 (23.7)	0.027				
Antibiotic exposure							
Third/fourth generation							
Cephalosporin	7 (11.1)	7 (18.4)	0.303				
Carbapenem	30 (47.6)	19 (50)	0.817				
BLBLI	23 (36.5)	26 (68.4)	0.002				
Aminoglycoside	1 (1.6)	2 (5.3)	0.292				
Polymyxin	0 (0)	1 (2.6)	0.196				

Fosfomycin	2 (3.2)	3 (7.9)	0.289
Fluoroquinolone	7 (11.1)	8 (21.1)	0.173
Likely source of bacteremia			
Respiratory tract	27 (42.9)	26 (68.4)	0.013
Biliary tract	15 (23.8)	7 (18.4)	0.525
Intra-abdominal	9 (14.3)	4 (10.5)	0.810
Urinary tract	1 (1.6)	0	0.330
Unknown source	6 (9.5)	2 (5.3)	0.698
Infection status			
Neutropenia	9 (14.3)	4 (10.5)	0.810
Hypoalbuminemia	11 (18.6)	15 (45.5)	0.006
APACHE II score, mean± SD	13.9±4.8	16.2±5.9	0.036
Pitt score, mean± SD	1.8±1.7	2.6±2.3	0.085
After BSI			
Corticosteroids	34 (54.0)	20 (52.6)	0.063
Antibiotic within 30 days after BSI			
Third/fourth generation			
Cephalosporin	15 (23.8)	5 (13.2)	0.193
BLBLI	39 (61.9)	21 (55.3)	0.510
Aminoglycoside	4 (6.3)	3 (7.9)	1.000
Carbapenem	40 (63.5)	20 (52.6)	0.282
Polymyxin	1 (1.6)	1 (2.6)	1.000
Fosfomycin	6 (9.5)	2 (5.3)	0.698
Fluoroquinolone	27 (42.9)	12 (31.6)	0.259
Empirical therapy	54 (85.7)	27 (71.1)	0.073
Monotherapy	45 (71.4)	20 (52.6)	0.324
Combination therapy	9 (14.3)	7 (18.4)	0.324
Containing carbapenem	2 (3.2)	3 (7.9)	0.558
Containing BLBLI	4 (6.3)	4 (10.5)	0.709
Appropriate therapy	18 (28.6)	12 (31.6)	0.749
Active drug against PA			
0	42 (66.7)	27 (71.1)	0.646
1	16 (25.4)	10 (26.3)	0.918
2	4 (6.3)	1 (2.6)	0.718
≥3	1 (1.6)	0	0.330
Definitive therapy	57 (90.5)	23 (60.5)	<0.001
Third/fourth generation			
Cephalosporin	15 (23.8)	5 (13.2)	0.193
Ceftazidime	2 (3.2)	1 (2.6)	0.875
Cefepime	9 (14.3)	3 (7.9)	0.519
BLBLI	23 (36.5)	9 (23.7)	0.180
Aminoglycoside	6 (9.5)	1 (2.6)	0.359
Carbapenem	26 (41.3)	11 (28.9)	0.213

Polymyxin	2 (3.2)	0	0.167					
Fosfomycin	3 (4.8)	3 (7.9)	0.833					
Fluoroquinolone	23 (36.5)	9 (23.7)	0.180					
Antifungal agent	29 (46.0)	11 (28.9)	0.089					
Definitive monotherapy	39 (61.9)	16 (42.1)	0.920					
Definitive Combination therapy	18 (28.6)	7 (18.4)	0.920					
Containing carbapenem	6 (9.5)	3 (7.9)	1.000					
Containing BLBLI	6 (9.5)	2 (5.3)	0.698					
Definitive inappropriate therapy	27 (42.9)	23 (60.5)	0.085					
Definitive appropriate therapy	36 (57.1)	15 (39.5)	0.085					
Active drug against PA								
1	29 (46.0)	12 (31.6)	0.152					
BLBLI	13 (20.6)	6 (15.8)	0.546					
Carbapenem	11 (17.5)	5 (13.2)	0.566					
2	5 (7.9)	3 (7.9)	1.000					
3	2 (3.2)	0	0.167					
Delay time from blood culture results to appropriate therapy								
≤24 h	27 (42.9)	7 (18.4)	0.012	0.022	0.108	0.016	0.723	
24–48 h	2 (3.2)	3 (7.9)	0.558					
>48 h	8 (12.7)	5 (13.2)	1.000					

Data are expressed as numbers (%) unless otherwise stated; Abbreviations: PA: *Pseudomonas aeruginosa*; CnSPA: carbapenem-non-susceptible PA; BSI: bloodstream infection; LOS: length of stay; ICU: intensive care unit; CCI, Charlson comorbidity index; BLBLI: Beta-lactam/beta-lactam inhibitor combination

Table S2. Risk factors associated with 30 day mortality in patients with CSPA BSIs

		Univariate analysis			Multivariate analysis			
		Survivors (N=186)	Non-survivors (N=53)	<i>P</i> values	Sig.	Exp(B)	95% CI for EXP(B)	
							Lower	Upper
Empirical therapy								
	Monotherapy	142 (87.1)	37 (92.5)	0.502				
	Combination therapy	21 (12.9)	3 (7.5)	0.502				
	Appropriate therapy	163 (87.6)	40 (75.5)	0.029				
	Active drug against PA							
	0	23 (12.4)	13 (24.5)	0.029				
	1	146 (78.5)	37 (69.8)	0.188				
	≥2	17 (9.1)	3 (5.7)	0.599				
Definitive therapy								
	Third/fourth generation							
	Cephalosporin	25 (13.4)	4 (7.5)	0.246				
	Ceftazidime	2 (1.1)	1 (1.9)	0.656				
	Cefepime	10 (5.4)	1 (1.9)	0.485				
	BLBLI	81 (43.5)	14 (26.4)	0.025				
	Aminoglycoside	10 (5.4)	3 (5.7)	1.000				
	Carbapenem	80 (43.0)	20 (37.7)	0.492				
	Polymyxin	0	1 (1.9)	0.082				
	Fosfomycin	6 (3.2)	2 (3.8)	1.000				
	Fluoroquinolone	43 (23.1)	10 (18.9)	0.511				
	Antifungal agent	45 (24.2)	24 (45.3)	0.003	<0.001	3.664	1.799	7.462
Definitive therapy								
	Monotherapy	138 (83.6)	28 (84.8)	0.863				
	BLBLI	63 (33.9)	12 (22.6)	0.120				
	Carbapenem	67 (36.0)	16 (30.2)	0.431				
	Combination therapy	27 (16.4)	5 (15.2)	0.863				
	Appropriate therapy	161 (86.6)	32 (42.8)	<0.001	<0.001	0.168	0.080	0.352
	Active drug against PA							
	0	25 (13.4)	21 (39.6)	<0.001				
	1	133 (71.5)	26 (49.1)	0.002				
	≥2	28 (15.1)	6 (11.3)	0.493				

Data are expressed as numbers (%) unless otherwise stated; Abbreviations: CSPA: carbapenem-non-susceptible *Pseudomonas aeruginosa*; BSI: bloodstream infection; BLBLI: Beta-lactam/beta-lactam inhibitor combination

Table S3. Clinical characteristics, infection status, and outcomes of patients with PA BSI who received definitive therapy

Parameters	Monotherapy (N=221)	Combination therapy (N=57)	<i>P</i>
APACHE II scores at admission, mean± SD	12.0±5.3	11.8±5.1	0.814
CCI, median [IQR]	2.0 [1.0]	2.0 [1.5]	0.309
Infection status			
Neutropenia	49 (22.2)	10 (17.5)	0.446
Hypoalbuminemia	71 (32.1)	19 (33.3)	0.862
APACHE II scores, mean± SD	15.2±4.7	14.6±5.1	0.420
PITT scores, median [IQR]	1.0 [1.0]	1.0 [1.0]	0.784
Infectious source: respiratory tract	61 (27.6)	18 (31.6)	0.553
Non-survivors	44 (19.9)	12 (21.5)	0.848

Data are expressed as numbers (%) unless otherwise stated; Abbreviations: PA: *Pseudomonas aeruginosa*; BSI: bloodstream infection; CCI, Charlson comorbidity index

Table S4. Microbial susceptibility to piperacillin/tazobactam

	PA (N=340)	CSPA (N=239)	CnSPA (N=101)
Susceptible, n (%)	268 (78.8)	216 (90.4)	52 (51.5)
Intermediate, n (%)	23 (6.7)	11 (4.6)	12 (11.9)
Resistance, n (%)	49 (14.4)	12 (5.0)	37 (36.6)

Abbreviations: PA: *Pseudomonas aeruginosa*; CSPA: carbapenem-susceptible PA; CnSPA: carbapenem-non-susceptible PA