

1 **Table S1. Demographics of patients with Gram-negative bloodstream infections at Duke University Medical Center from**
 2 **2002-2015, stratified by bacterial group.**

	Enterobacteriaceae	Non-lactose fermenting ^a	<i>P. aeruginosa</i>	Anaerobes	Pasteurellaceae	Other Gram negative	P-value ^b
	N = 1343	N = 262	N = 158	N = 33	N = 16	N = 6	
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
Age (mean)	61.7	58.2	61.9	62.1	57.1	59.0	0.89
Race/Ethnicity							0.05
White	882 (66)	190 (73)	121 (77)	19 (58)	10 (63)	4 (67)	
Black	396 (29)	58 (22)	29 (18)	13 (39)	6 (38)	1 (17)	
Hispanic	9 (<1)	1 (<1)	0 (0)	0 (0)	0 (0)	0 (0)	
Native American	9 (<1)	2 (1)	0 (0)	1 (3)	0 (0)	0 (0)	
Asian	19 (1)	3 (1)	1 (1)	0 (0)	0 (0)	0 (0)	
Other/unknown	28 (2)	8 (3)	7 (4)	0 (0)	0 (0)	1 (17)	
Female gender	611 (45)	115 (44)	64 (41)	17 (52)	8 (50)	1 (17)	
Past Medical History							
Recent glucocorticoid use	300 (22)	96 (37)	59 (37)	7 (21)	5 (31)	1 (17)	<0.0001
Neoplasm	517 (38)	101 (39)	64 (41)	14 (42)	6 (38)	1 (17)	0.02
Diabetes mellitus	460 (34)	83 (32)	53 (34)	15 (45)	9 (56)	1 (17)	0.14

Transplant	162 (12)	58 (22)	39 (25)	2 (6)	2 (13)	2 (33)	<0.0001
Surgery in past 30 days	336 (25)	77 (29)	48 (30)	18 (55)	1 (6)	0 (0)	0.004
Hemodialysis dependence	129 (10)	25 (10)	13 (8)	4 (12)	1 (6)	1 (17)	0.88
Rheumatologic disorder	31 (2)	8 (3)	6 (4)	0 (0)	0 (0)	0 (0)	0.13
Site of acquisition							0.04
Community-acquired	968 (72)	141 (54)	78 (49)	20 (61)	12 (75)	6 (100)	
Hospital-acquired	375 (28)	121 (46)	80 (51)	13 (39)	4 (25)	0 (0)	
Source of infection							<0.0001
Pneumonia	58 (4)	56 (21)	39 (25)	1 (3)	7 (44)	0 (0)	
Urine/pyelonephritis	486 (36)	33 (13)	30 (19)	2 (6)	1 (6)	0 (0)	
Abscess	58 (4)	9 (3)	6 (4)	12 (36)	1 (6)	0 (0)	
Line-associated	142 (11)	43 (16)	14 (9)	1 (3)	0 (0)	1 (17)	
Skin/soft tissue	66 (5)	19 (7)	10 (6)	7 (21)	2 (13)	1 (17)	
Biliary tract	116 (9)	7 (3)	4 (3)	0 (0)	0 (0)	0 (0)	
Other	124 (9)	6 (2)	21 (13)	7 (21)	5 (31)	3 (50)	
Source not identified	293 (22)	69 (26)	34 (22)	3 (9)	0 (0)	1 (17)	
Total APACHE-II score (mean)	14.7	15.3	16.3	15.5	14.3	13.8	0.002
Chronic APACHE-II score (mean)	3.5	4.2	4.2	3.6	3.4	3.3	0.0002

^a Patients with *P. aeruginosa* BSI are included

^b P-values compare Enterobacteriaceae vs. *P. aeruginosa*

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4 **Table S2. Multivariable Cox regression analysis of clinical and bacterial factors influencing *Staphylococcus aureus* and Gram-negative**
5 **bloodstream infection mortality in inpatients at Duke University Medical Center from 2005-2015.**

Parameter	Hazard ratio	95% CI	P-value
Age	1.423	1.338-1.515	<0.0001
Female gender	1.127	0.952-1.332	0.164
Race^a			
Black	1.225	1.012-1.477	0.036
Other	0.716	0.452-1.078	0.130
<i>Pseudomonas aeruginosa</i> BSI	1.364	1.030-1.779	0.026
APACHE-II chronic health score	1.189	1.125-1.262	<0.0001
MDR	0.929	0.784-1.100	0.394
Appropriate antibiotic therapy^b	1.025	0.853-1.240	0.792
Days to line removal^c			
1	0.724	0.272-1.768	0.492
2	0.710	0.266-1.735	0.465
≥3	1.263	0.405-3.354	0.658
No line-associated infection	1.863	1.071-3.518	0.039
BSI source^d			
Biliary	0.657	0.371-1.092	0.125
Pneumonia	2.351	1.750-3.169	<0.0001
Skin/soft tissue	0.501	0.318-0.766	0.002
Abscess	0.720	0.411-1.188	0.221
Other	0.956	0.693-1.317	0.782

Source not identified	2.139	1.657-2.786	<0.0001
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^a Reference group is white patients

^b Time-dependent variable in which *no appropriate antibiotic therapy* is the reference

^c Reference group is patients with line-associated infections and line removal on day 0

^d Reference group is BSI from a urine/pyelonephritis source. The line BSI source data is not included due to collinearity between this covariate and other covariates included in the model.

Abbreviations: BSI, Bloodstream infection; CI, Confidence interval; MDR, multidrug resistant

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8 **Table S3. Multivariable Cox regression analysis of clinical and bacterial factors influencing *Staphylococcus aureus* and Gram-negative**
9 **bloodstream infection (BSI) mortality in inpatients at Duke University Medical Center from 2002-2015.** The covariate 'Days to BSI' was
10 added to this model, and represents days from hospital admission to BSI.

Parameter	Hazard ratio	95% CI	P-value
Age	1.377	1.286-1.475	<0.0001
Female gender	1.109	0.919-1.336	0.280
Race^a			
Black	1.248	1.012-1.533	0.036
Other	0.854	0.515-1.333	0.514
<i>Pseudomonas aeruginosa</i> BSI	1.335	0.969-1.803	0.067
APACHE-II chronic health score	1.163	1.097-1.238	<0.0001
MDR	1.021	0.843-1.234	0.834
Appropriate antibiotic therapy^b	1.496	1.008-2.297	0.054
Days to line removal^c			
1	0.538	0.193-1.310	0.122
2	0.548	0.209-1.295	0.189
≥3	0.832	0.238-2.277	0.743
No line-associated infection	5.156	0.278-27.509	0.122
BSI source^d			
Biliary	0.615	0.307-1.119	0.137
Pneumonia	2.190	1.574-3.067	<0.0001
Skin/soft tissue	0.536	0.324-0.854	0.011
Abscess	0.725	0.389-1.262	0.282

Other	1.018	0.714-1.453	0.920
Source not identified	2.021	1.509-2.740	<0.0001
Days to BSI	1.005	1.002-1.008	0.001

^a Reference group is white patients

^b Time-dependent variable in which *no appropriate antibiotic therapy* is the reference

^c Reference group is patients with line-associated infections and line removal on day 0

^d Reference group is BSI from a urine/pyelonephritis source. The line BSI source data is not included due to collinearity between this covariate and other covariates included in the model.

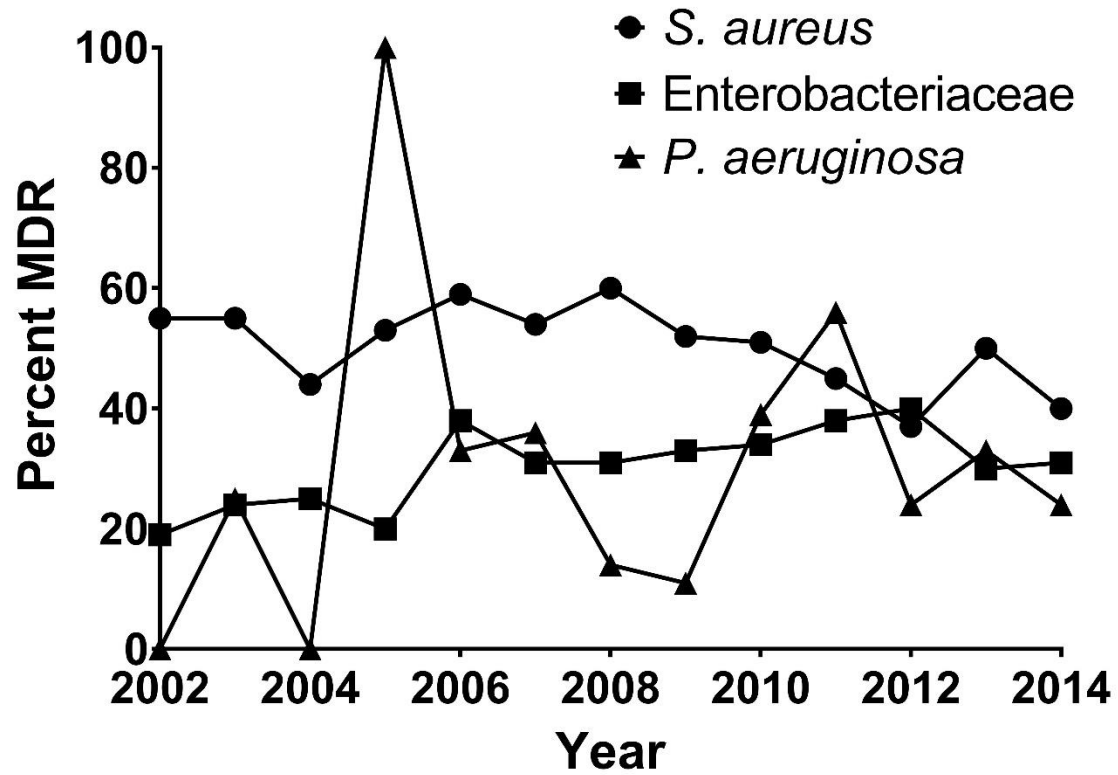
Abbreviations: BSI, Bloodstream infection; CI, Confidence interval; MDR, multidrug resistant

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14 **Figure S1.** Trends in the multidrug resistant (MDR) phenotype among bloodstream isolates of *S. aureus*, Enterobacteriaceae, and *P. aeruginosa*
15 at Duke University Medical Center.



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