Supplemental Table 1. Phenotypic antibiotic resistances of infectious isolates

Patient	Infectious Organism	AMK	ATM	FER	P CAZ	CIP	CST	IPM	MEM	TZP	TIM	тов	CRO	MXF	PEN	TET	TGC	VAN	AMC	ETP S	SXT	CU EI	RY GE	N LV	X LZD	NIT	OXA	RIF	AMP	SAM	стх	CPD	CEF	DAP	Q-D	STR	CZA	MIN	C/T	CPT
B001	Pseudomonas aeruginosa	s	s	I.	s	R	s	R	R	s	R	s	-	-	-	-										-					-		-	-						-
B002	Streptococcus mitis	l.	1.	Ľ.	1	Ľ.	Ľ.	2		1	Ľ.	Ū.	s	R	s	R	s	s								1.	1					1			2					
8003	Escherichia coli	s		s	-	R		s	s	c	1	5		8			s		1	c 1						1				_			1				-			
B004	Staphylococcus epidermidis		L.								i.					R	s	s				S R	s	R	s	s	R	1	. 1			1								
B005	Streptococcus oralis						1						5	R	1	R	s	s	-							-					2		1							
8006	Stanbylococcus enidermidis		Ū.	1	1	ĺ.				Ĉ.	Ê.			n		8	c	s				p p	P	P		c	P	c					Ē.	Č.	2		1			Č.
B007	Pseudomonas aeruainosa	s	s	s	1	s	1	s	2	s	s	s													1						2		Ē.					È l		-
8008	Streptococcus mitis	3	3	3		3		3		3	3	3	c	D		P	c	c																						
8009	Escherichia coli	e	1	•	-		-				P		3	0		n	5	3	P				- 6	- 6	-	-	6					-	1	-	1	-				-
B010	Escherichia coli	5		5			-	5		5	n	6		•	-	-	5	-	n	5 I				-	-		-	-	-				-	-	-	-	-		-	-
B010	Stanbulococcus guraus (MRSA)	3	3	2	2	ĸ	-	2	2	2	-	2	2	ĸ	-	-	5		-	5 3			5	R		5	-	-	R	R	2	3	ĸ	-		-			-	Ē
8011	Enterocoscus fracium VRE	-	-	-	-	-	-					-	•	•	•	2	5	2			>	SK	5	R	5	5	ĸ	2	-		•	-	-	2	-	-	-	-	1	-
B012	Streptosoccus prelian, VAE			-			-				•	-	-		-	ĸ		R					R	R	-	5	-		ĸ		•	-	-		2	5	-	-	-	-
B015	Desudementes assusiones	-	-	•	-	-	-				-	-	ĸ	5	ĸ	ĸ	5	5					-		5		-		•	•	•	-	-	5		•	*	•	-	-
B014	Stanbulosossus anidarmidis	2	5	2	2	5	-	5	2	2	2	5		•	•								-	-	-		-		•	•		•	-	-		-	•	-	-	
BOIS	Straphylococcus epidermiais	-		-	-	-	-	-	•	•	-		-	-	-	5	S	S	•			RR	R	R	R	5	R	S	-	•	-	•	-	*	-	-	-	-	-	-
8010	Streptococcus sanguinis	-	-	-	-	-	-	-	-	-	-	-	5	ĸ	5	R	5	5	-				-	-	-	-	-	-	-		-	-	-	-	-	-	-	i i	-	-
8017	Staphylococcus epidermiais		-	•	-	•	-		•		•	•	•	•	•	S	S	S	•			RR	R	R		S	R	S	•		•	•		-	•	•	-	-	-	•
8018	Enterococcus faecalis	-	-	•	•	•	-	*	*		-		•	•	-	R	•	S	•				R	R	S	S	-	•	S	•	•	•	-	S	R	•	-	-	-	•
8019	Escherichia coli	S	R	1	R	R	-	S	S	S	-	S	R	R	-	-	S	•	•	S F	R	• •	S	R	•	1	-	•	R	R	R	R	R	*	-	•	-	-	-	-
8021	Streptococcus mitis	•	-	•	-	-	-	-	•	*	•	-	S	S	R	S	S	S	-				-	-	-	•	-	-	-	•	•	-	-	-	*	•	-	-		-
8022	rseuaomonas aeruginosa	S	S	S	S	S	-	S	S	S	1	S	-	•	•	•	-	•	•			• •	-	-	•	•	-	-	-	•	•	-	-	-	-	•	•	-	-	•
8023	Escherichia coli	S	S	S	S	R	-	S	S	S	-	S	S	R	-	•	5	•	-	5 F	R		R	R	-	S	-	-	R	1	S	•	R	-	-	-	-	•	-	-
8024	Streptococcus mitis	-	-	•	-	-	-	-	-	*	-	-	S	R	S	S	S	S	•				-	-	-	-		-	-		-	-	•	-	-	-	-	-	-	-
B025	Pseudomonas aeruginosa	R	1	R	S	R	S	R	R	R	•	R	•	•	•	•	•	•	•	• •			-	•	•	•	-	•	•	•	•	•	-	•	-	•	-	-		•
B026	Enterococcus faecium	•		-	-	-	-	•	•	•	-	-	•		•	R	-	R	•				R	R	R		-	•	R	•	-	-	-	S	R	-	-			•
B027	Staphylococcus aureus (MRSA)		-	•	-	•	-	-	•	-	-	•	•	•	-	S	S	S	-	- 5	5	R T	S	R	S	•	R	S	•	•	•	•	*	S	-	•	-	-	-	•
B028	Streptococcus mitis	-	-	-	-	-	-	-	-		-	•	S	S	s	R	S	S	-				-	-	-	•	-	-	-	•	•	•	-		*	-	*	-	-	-
B029	Escherichia coli	S	S	S	S	R	-	s	S	S	-	S	S	R	-	-	S	-	-	5 5	5.	2 2	S	R	-	-	-	-	R	1	S	R	R	-	2	-	-	-	-	-
B030	Escherichia coli	S	S	S	S	R	-	•	S	S	•	S	S	•	•	•	S	*	•	S F	R	• •	S	R	•	S	-	-	R	1	S	S	1	•	-	. .	-	-	•	•
B032	Staphylococcus epidermids		-	-	-	-	-	•	•	-	•	-	-	-	-	R	S	S	-			RR	R	R	-		R	S	-		-	-	-	-	-	-	-	-	-	•
B034	Staphylococcus epidermids	-	-	•	-	-	-	-	-	•	•	•	•	•	•	R	S	S	-			S R	S	R	S	•	R	1	•		•	•	-	-	-	-	-	-	-	-
B035	Enterococcus faecalis	•	-	-	-	-	-	-	•	-	-	•	•	•	•2	R	-	S	-				-		S	-	-	-	S	-	•	•	•)	S	+	- 1	-	-	· ·	•
B036	Pseudomonas aeruginosa	S	1	S	S	S	-	S	S	S	-	S	-	•	-	-	-	-	-			• •	-	-	-		-	-	-	-	-	•	-	-	-	-	-	-	-	•
B037B	Streptoccoccus salivarius	-	-	•	-	-	-	-	-	- 1	•	•	S	5	F.	S	S	S	-				-	-	•		*	÷	-	•	-	- 1	-	-	-	•	-	•	· ·	•
B038	Streptococcus parasanguinis		-	-	-	-	-	-	-	-	-		S	1	I.	R	S	S	-				-	-	-		-	-	•	-	•	•		-	4	-	÷	-		-
B039	Streptococcus mitis	-	-	-	-	-	-	-	-		•	-	S	R	1	R	-	S	•				-		•		-	•	•	•	•		•	•	•	•	-			-
B041	Escherichia coli	S	R	S	R	R	*	S	S	S		1	R	R	•	•	•	•	S	S F	R		R	R	•	•	-	•	R	S	R	R	-	•	-	•	-		•	•
B042	Staphylococcus epidermidis	-		-	-	-	-	-	-	-	-		-	•	-	-	-	S	•				-	-	R	-	R	-	-		-	•	-	S	-	-	-	-		-
B043	Enterococcus faecium, VRE	•			-	-	-	-	-		•		•	•	•	•	-	R					•	-	s		-	-	S	•	-	•	•	S		-	-			•
B044	Escherichia coli	5	R	R	R	R	-	-	S	S	-	R	R	•	•	-	-	-	-	s -			R	-		-	-	-	-	R		•	-	-	-	•	-	-	-	-
B045	Klebsiella pneumoniae	S	R	R	R	R	-	s	R	R	-	R	R	•	•	•	R	•	-	R -			-	R	•	•			-	R	•	•	•	π.)		•	s	R		• ;
B047	Pseudmonas aeruginosa	1	-	I.	S	R	-		S	1		S					-						R	-			-	-					-		-	-	-	-		•
B048	Escherichia coli	S	S	s	s	R	-	-	S	s	-	S	s	•	•	•	-	•	•	s -			S	-	•	-	-	•	-	R	•	•	•	-	-	-	-	•	•	•
B049	Staphylococcus aureus	-	-	-	-	-	-	-		-	- 1	-	•	•	-	•	-	S	-	- 5	s -		-	-	s	•	S		-	-	-	•	-	S	-	-	-	•	-	• 1
B050	Escherichia coli	S	S	R	R	R	-	-	S	R	-	R	R	-	•	•	-	-	-	s -			R	-	-	-	-	-	-	R	-	-	-	-	-	•	-	-		-
B052	Staphylococcus aureus	•	-	•	- 1	-	-	-	-	•	•	-	-	-	•	•		S	-	- 5	s .		-	-	s		S	-	-		•	-0	•	S	•	•	•	•		•
B053	Klebsiella pneumonaie	S	S	s	-	s	-	-	S	s	-	S	s	-	-	-	-	-	-	s -			s	-	-	-	-	-	-	S	S	-	-	-	2	•		-		
B054	Enterococcus faecalis		-	•	-	-	•	•.	•	•	•	•	•	•	•	•	•	S	•				-	+			-	•	S		•	•	*	S	-	•	•	•		•)
B055	Escherichia coli	S	S	S	S	S	-	S	S	S	•	S	S	R	•	-	•	-	1	S F	R ·		S	R	-	-	-	-	R	R	S	-		-				-		•
B056	Staphylocccus epidermidis	•	-	•	-		-	-	-	-	-	-	•	•	-	•	-	S	-						R	•	R	•	•	•	•	•	-	S	-	-	-	-	-	•
B059	Streptococcus oralis	- 1	-	R	-	-	-	-	-	-	-	- 1	•	•	1	-	-	S	-				-	R			-	4	- 1	-	S	• 5	-)	S	-	- 5	-	-	-	-
B061	Staphylococcus epidermidis	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	S	-				-	-	S	-	R	-	-		-	•	-	S	-	-	-	-	-	-
B065	Staphylococcus epidermidis	•	•	•	-	-	-	•	•	• 1	•	•	•	•	•	•	•	S	-				-		S	•	R	•	•	•	•	•	•	S	+	•	+	•		•
B066	Pseudomonas aeruginosa	s	-	I.	R	s	-	-	R	R		s			-		-		-				s	-			-	2			-		4	2	2	-	-	-	s	-
B067	Klebsiella pneumoniae	s	s	s	s	s	-	•	s	s	•	S	s	•	-	•		•		s -			s				-	-	S		•	-	•	•	-			-		•
B068	Pseudomonas aeruginosa	s		I	s	s	-	S	S	s	•	s	-	•	-	-	•	•					-	s			-	-	-		•	-		-	-			-	-	•
B069	Staphylococcus epidermidis (B069)	-	-		-	-	-	-	-	-	-		-	-	•	-		s					-		R		R	-	-		-	-	-	s	-			-		•
B069A	Streptococcus parasanguinis (B069A)		-	R	-	-	-	-	-	-3	-	-	R	-	R	-	-	s					-	R	-	-	-	-	-	-	-	-	-	-	£	-	-			
B070	Streptococcus oralis			s	-		-	-	-	-	-		s		I.	-		s					-	R			-	-					-					-		
B072	Staphylococcus epidermidis	-		-	-	-	-	-	-	-		-	-	-	•	R		s	-				-	-	R	-	R	-				-		s	-	•	-	R		s
B075	Pseudomonas aeruginosa	s	-	R	R	s		-	R	1	-	s				-	-						s	-				4							2		-		s	
B077	Klebsiella pneumoniae	s	R	R	R	R	-	-	s	1	-				-	-				s -			R	-				-	-	R	-	•	-	-	-	-	s			
B078	Methicillin resistant Staphylococcus aureus	-	-	-	-	-	-	-	-	-	-	-	-	-		-3	-	s	-		5		-	-	s	-	R	-	-	-	-2	-		s	-		-	-		-
B079	Escherichia coli	s	s	s	1	R		-	s	s	-	s	s		-	-				s -			s	-			-		-	R	-	-	-					-	. 1	
	D C · · · · · · · · · · · · · · · · · ·	•							1 0	0					-											0								•						

R for resistant, I for intermediate, and S for susceptible. Antibiotic abbreviations follow AAC abbreviation standards.

Supplemental Table 2: ddPCR Primers and Probes to Confirm of Infectious Agents in Patient Stool Samples.

	Forward	GAGAAATTCCAAACGAACTTG	Tm: 50°C
Enterococcus	Reverse	CAGTGCTCTACCTCCATCATT	Tm: 54.2°C
spp.	Probe, Dye and	TGGTTCTCTCCGAAATAGCTTTAGGGCTA	Tm: 60.3°C
	Quencher	6-FAM; BHQ-1	
	Forward	TCACGCCGTATGTTATTG	Tm: 49.4°C
Escherichia	Reverse	GTCGGTAATCACCATTCC	Tm: 49.8°C
coli	Probe, Dye and	TGCCAGTTCAGTTCGTTGTTCAC	Tm: 58°C
	Quencher	6-FAM; BHQ-1	
	Forward	GGGCGAGGTTTACGTCTCAA	Tm: 57.8°C
Klebsiella	Reverse	GCGTGTGGATAAGAGGTGCG	Tm: 58.2°C
pneumoniae	Probe, Dye and	CCACCACGAGCGGCTGCC	Tm: 64.7°C
	Quencher	6-FAM; BHQ-1	
	Forward	TTCAACGAGAACCTGCTCTG	Tm: 55.5°C
Pseudomonas	Reverse	CGGCCTCGATGTAGTTGTT	Tm: 54.9°C
aeruginosa	Probe, Dye and	CTTCACCAACAACATCCCGCAGC	Tm: 59°C
	Quencher	6-FAM; BHQ-1	
	Forward	GAGTTTGGTGCCTTTACAGATAG	Tm: 53.4°C
Staphylococcus	Reverse	AGCAAGCTTTAACTCATAGTGG	Tm: 52.8°C
aureus	Probe, Dye and	TGCCATACAGTCATTTCACGCAAACTG	Tm: 59.8°C
	Quencher	6-FAM; BHQ-1	
	Forward	ATCAAAAAGTTGGCGAACCTTTTCA	Tm: 56.9°C
	Reverse	CAAAAGAGCGTGGAGAAAAGTATC	Tm: 54.1°C

Staphylococcus	Probe, Dye and	CCATTTGCATAGTCTGATTGCTCAAAGTCT	Tm: 59.0°C
epidermidis	Quencher	6-FAM; BHQ-1	
	Forward	TGCCCTTTCCACTCAATTAGAC	Tm: 54.9°C
Streptococcus	Reverse	GAACCGTTGTTCCAGTCCTATC	Tm: 55.3°C
mitis	Probe, Dye and	TACCGTCGTGGTCATGTTGTTGCT	Tm: 56.2°C
	Quencher	6-FAM; BHQ-1	
	Forward	GATTACCTTTGCGGAACGTTTG	Tm: 54.8°C
Streptococcus	Reverse	GGCTAGAAGAGAGAGGAGTTGA	Tm: 55.3°C
oralis	Probe, Dye and	CGATCAATCTGGTGCCCTTCGTGA	Tm: 61.1°C
	Quencher	6-FAM; BHQ-1	

Supplemental Table 3: ddPCR Primers and Probes to Confirm Antibiotic Resistance Gene Presence in Patient Stool Samples.

	Forward	GACTGGGTGTGGCATTGATTAAC	Tm: 64°C
	Reverse	CAGATTCGGTTCGCTTTCACTTT	Tm: 64°C
СТХ-М-15	Probe, Dye and	ATGAGCGCTTTGCGATGTGCAGCA	Tm: 71°C
	Quencher	6-FAM; BHQ-1	
	Forward	TGACGTGGCTCAAAGGCAATA	Tm: 64°C
CTX-M-14	Reverse	TATCATTGGTGGTGCCGTAGTC	Tm: 64°C
	Probe, Dye and	TGGACTGTGGGTGATAAGACCGGCA	Tm: 71°C
	Quencher	6-FAM; BHQ-1	
	Forward	GATTATATCATGTTGCCTGGTGTAAATG	Tm: 63°C
	Reverse	CCATACATCTCAGGTGCACTTATTG	Tm: 63°C
CfrA	Probe, Dye and	TCTTGAGCATGCAAACGAGTTGTTAGCCT	Tm: 70°C
	Quencher	6-FAM; BHQ-1	
	Forward	TCCTGACCAGTCTACGACCAATAC	Tm: 65°C
VanA	Reverse	CGGTAATCAAGCAGACTATGCGATAC	Tm: 65°C
	Probe, Dye and	ACAATCCGGGTGTACTTGTTTCCTTTGCA	Tm: 70°C
	Quencher	6-FAM; BHQ-1	



Enterococcus spp. Oral Samples



Enterococcus spp. Stool Samples

Supplemental Figure 1. LEfSe analysis of *Enterococcus spp.* **infections.** Linear discriminant analysis of effect size was done on oral (A) and stool (B) samples to compare the microbiomes of patients with an *Enterococcus spp.* infection to those without. Organisms with a red bar show enrichment in patients without an *Enterococcus spp.* infection while those with a green bar show enrichment in patients with an *Enterococcus spp.* infection.



Klebsiella pneumoniae Stool Samples

Supplemental Figure 2. LEfSe analysis of *Klebsiella pneumoniae* infections. Linear discriminant analysis of effect size was done on oral (A) and stool (B) samples to compare the microbiomes of patients with a *Klebsiella pneumoniae* infection to those without. Organisms with a red bar show enrichment in patients without a *K. pneumoniae* infection while those with a green bar show enrichment in patients with a *K. pneumoniae* infection.



Staphylococcus aureus Oral Samples

в





Supplemental Figure 3. LEfSe analysis of *Staphylococcus aureus* **infections.** Linear discriminant analysis of effect size was done on oral (A) and stool (B) samples to compare the microbiomes of patients with a *Staphylococcus aureus* infection to those without. Organisms with a red bar show enrichment in patients without a *S. aureus* infection while those with a green bar show enrichment in patients with a *S. aureus* infection.

Infected with Staphylococcus epidermidis Infected by other agent Lactobacillus rhamnosus Zotu0011 Lactobacillus casei Zotu0059 Neisseria bacilliformis Zotu0143 Fusobacteriaceae Fusobacterium Enterobacteriaceae Enterobacteriales Enterobacter Enterobacter soli Zotu0015 Burkholderia Paraburkholderia Burkholderia pseudomultivorans Zotu0088 ÷ 1 i .3 -2 $^{-1}$ 0 1 2 3 5 4 LDA SCORE (log 10)

Staphylococcus epidermis Oral Samples

в

A



Staphylococcus epidermis Stool Samples

Supplemental Figure 4. LEfSe analysis of *Staphylococcus epidermidis* **infections.** Linear discriminant analysis of effect size was done on oral (A) and stool (B) samples to compare the microbiomes of patients with a *Staphylococcus epidermidis* infection to those without. Organisms with a red bar show enrichment in patients without a *S. epidermidis* infection while those with a green bar show enrichment in patients with a *S. epidermidis* infection.



Supplemental Figure 5. Distribution of infectious taxa between patients with and without respective bacteremias. Mann-Whitney testing demonstrates that patients with *E. coli* and *P. aeruginosa* bacteremia had higher abundance of the infectious taxa in their stool. Additionally, patients with *P. aeruginosa* and VGS bacteremia had increased abundance of the infectious taxa in the oral samples.



Supplemental Figure 6. Demonstration of differences in abundance based on site and species specificity. Demonstration of differences in abundance based on site specificity per species. Mann-Whitney testing was performed using the relative abundance of each genera compared between stool and oral samples of patients infected with A) *Enterococcus spp.*, B) *Klebsiella pneumoniae*, C) *Pseudomonas aeruginosa*, D) *Staphylococcus aureus*, E) *Staphylococcus epidermidis* and F) *Streptococcus spp.*



Antibiotics

Supplemental Figure 7. Graphical representation of phenotypic antibiotic resistance. The percentage of isolates resistant to various antibiotics for A) *Enterococcus spp.*, B) *Escherichia coli*, C) *Klebsiella pneumoniae*, D) *Pseudomonas aeruginosa*, E) *Staphylococcus aureus*, F) *Staphylococcus epidermidis* and G) Viridians Group Streptococci (VGS). Each graph was made by looking at what antibiotics were tested for sensitivity for each species of interest, and determining what percentage of isolates were resistant to each antibiotic.