

Table S1. Relevant genotypically-defined characteristics and broth microdilution carbapenem minimum inhibitory concentrations for bacterial isolates tested in study stages 1 and 2

Isolate Number	Isolate Source	Organism	NCBI GenBank Sequence Accession Number	Key Known Resistance Determinants	Carbapenem MIC ($\mu\text{g/ml}$)				Study Stage(s) in which Isolate was Included
					ETP	IPM	MEM	DOR	
Isolates with carbapenemases									
Ambler class A carbapenemases									
0116	AR Bank	<i>C. freundii</i>	SAMN04014957	KPC-2	> 8	16	> 8	> 8	1, 2
0032	AR Bank	<i>E. cloacae</i>	SAMN04014873	KPC-3; TEM-1	8	4	4	2	1, 2
0050	AR Bank	<i>E. cloacae</i>	SAMN04014891	KPC-4	0.5	1	0.5	0.5	1
0053	AR Bank	<i>E. cloacae</i>	SAMN04014894	KPC-3; TEM-1	> 8	8	8	4	1
0093	AR Bank	<i>E. cloacae</i>	SAMN04014934	KPC-6	4	4	4	2	1
0136	AR Bank	<i>E. cloacae</i>	SAMN04014977	KPC-3	> 8	8	> 8	8	1
0163	AR Bank	<i>E. cloacae</i>	SAMN04015004	KPC-2; CTX-M-15; ACT-7	> 8	8	8	4	1, 2
0061	AR Bank	<i>E. coli</i>	SAMN04014902	KPC-3; TEM-1	8	4	4	4	1, 2
0104	AR Bank	<i>E. coli</i>	SAMN04014945	KPC-4	1	4	1	1	1, 2
0114	AR Bank	<i>E. coli</i>	SAMN04014955	KPC-3	8	4	4	4	1

0147	AR Bank	<i>K. oxytoca</i>	SAMN04014988	KPC-3	0.5	4	1	0.5	1
0096	AR Bank	<i>K. ozaenae</i>	SAMN04014937	KPC-3	> 8	> 64	> 8	> 8	1
0097	AR Bank	<i>K. pneumoniae</i>	SAMN04014938	KPC-3	> 8	64	> 8	> 8	1
0098	AR Bank	<i>K. pneumoniae</i>	SAMN04014939	KPC-2	> 8	16	> 8	8	1
0112	AR Bank	<i>K. pneumoniae</i>	NA	KPC-3	> 8	16	> 8	> 8	1
0113	AR Bank	<i>K. pneumoniae</i>	SAMN04014954	KPC-3	> 8	> 64	> 8	> 8	1
0115	AR Bank	<i>K. pneumoniae</i>	SAMN04014956	KPC-3	> 8	8	> 8	> 8	1
0117	AR Bank	<i>K. pneumoniae</i>	SAMN04014958	KPC-3	> 8	16	> 8	> 8	1
0120	AR Bank	<i>K. pneumoniae</i>	SAMN04014961	KPC-2	> 16	16	> 16	NA	1
0125	AR Bank	<i>K. pneumoniae</i>	SAMN04014966	KPC-3	> 16	16	> 16	NA	1
0126	AR Bank	<i>K. pneumoniae</i>	SAMN04014967	KPC-2	8	8	16	NA	1
0129	AR Bank	<i>K. pneumoniae</i>	SAMN04014970	KPC-3	> 16	8	16	NA	1
1315075	UCLA	<i>K. pneumoniae</i>	NA	KPC	> 4	> 8	> 16	NA	1
143671	UCLA	<i>K. pneumoniae</i>	NA	KPC	> 2	8	8	NA	1
143681*	UCLA	<i>K. pneumoniae</i>	NA	KPC-3	> 2	> 8	> 16	NA	1
143682*	UCLA	<i>K. pneumoniae</i>	NA	KPC-3	> 2	8	8	NA	1
0144	AR Bank	<i>K. ascorbata</i>	SAMN04014985	KPC-3	8	4	8	4	1
0133	AR Bank	<i>M.morganii</i>	SAMN04014974	KPC-2	8	8	4	4	1, 2
0155	AR Bank	<i>P. mirabilis</i>	SAMN04014996	KPC-6	2	16	2	2	1, 2

0156	AR Bank	<i>P. mirabilis</i>	SAMN04014997	KPC-2	1	16	0.5	4	1
0134	AR Bank	<i>R. ornithinolytica</i>	SAMN04014975	KPC-3	1	4	1	2	1, 2
0132	AR Bank	<i>E. cloacae</i> complex	SAMN04014973	NMC-A	16	> 32	16	NA	1
0164	AR Bank	<i>E. cloacae</i> complex	SAMN04015005	NMC-A	> 8	32	> 8	> 8	1, 2
0091	AR Bank	<i>S. marcescens</i>	SAMN04014932	SME-3	> 8	> 64	> 8	> 8	1, 2
0099	AR Bank	<i>S. marcescens</i>	SAMN04014940	SME-3	> 8	> 64	> 8	> 8	1, 2
0121	AR Bank	<i>S. marcescens</i>	SAMN04014962	SME-3	> 16	> 32	> 16	NA	1
0122	AR Bank	<i>S. marcescens</i>	SAMN04014963	SME-3	> 16	> 32	> 16	NA	1
0123	AR Bank	<i>S. marcescens</i>	SAMN04014964	SME-3	> 16	> 32	> 16	NA	1
0124	AR Bank	<i>S. marcescens</i>	SAMN04014965	SME-3	> 16	> 32	> 16	NA	1
0130	AR Bank	<i>S. marcescens</i>	SAMN04014971	SME-3	> 8	> 32	> 16	NA	1
0131	AR Bank	<i>S. marcescens</i>	SAMN04014972	SME-3	> 16	> 32	> 16	NA	1
Ambler class B carbapenemases									
0157	AR Bank	<i>Citrobacter</i> sp.	SAMN04014998	NDM-1	> 8	16	> 8	> 8	1, 2
0038	AR Bank	<i>E. cloacae</i>	SAMN04014879	NDM-1 --> None ^a	4	32	> 8	> 8	1
0048	AR Bank	<i>E. coli</i>	SAMN04014889	NDM-1	> 16	16	> 16	> 8	1
0055	AR Bank	<i>E. coli</i>	SAMN04014896	NDM-1	> 8	8	> 8	> 8	1
0069	AR Bank	<i>E. coli</i>	SAMN04014910	NDM-1	4	8	8	8	1

0118	AR Bank	<i>E. coli</i>	SAMN04014959	NDM-1	> 16	8	> 16	NA	1
0119	AR Bank	<i>E. coli</i>	SAMN04014960	NDM-1	> 16	8	> 16	NA	1
0128	AR Bank	<i>E. coli</i>	SAMN04014969	NDM-1	> 16	32	> 16	NA	1
0137	AR Bank	<i>E. coli</i>	SAMN04014978	NDM-6	> 8	16	> 8	> 8	1, 2
0149	AR Bank	<i>E. coli</i>	SAMN04014990	NDM-7	8	8	8	> 8	1
0150	AR Bank	<i>E. coli</i>	SAMN04014991	NDM-5	> 8	16	> 8	> 8	1
0151	AR Bank	<i>E. coli</i>	SAMN04014992	NDM-5	> 8	16	> 8	> 8	1
0162	AR Bank	<i>E. coli</i>	SAMN04015003	NDM-7; CTX-M-15	> 8	8	> 8	> 8	1, 2
1315335	UCLA	<i>E. coli</i>	NA	NDM-1	> 2	> 8	> 16	NA	1
0041	AR Bank	<i>K. pneumoniae</i>	SAMN04014882	NDM-1	4	8	> 8	> 8	1
0049	AR Bank	<i>K. pneumoniae</i>	SAMN04014890	NDM-1	4	32	> 8	> 8	1
0068	AR Bank	<i>K. pneumoniae</i>	SAMN04014909	NDM-1; OXA-232 ^b	> 8	64	> 8	> 8	1
0153	AR Bank	<i>K. pneumoniae</i>	SAMN04014994	NDM-1; OXA-232 ^b	> 8	64	> 8	> 8	1
0106	AR Bank	<i>K. pneumoniae</i>	SAMN04014947	NDM-1	> 8	> 64	> 8	> 8	1
0138	AR Bank	<i>K. pneumoniae</i>	SAMN04014979	NDM-7	> 8	> 64	> 8	> 8	1
0139	AR Bank	<i>K. pneumoniae</i>	SAMN04014980	NDM-1 --> None ^a	> 8	≤ 0.5	> 8	> 8	1
0143	AR Bank	<i>K. pneumoniae</i>	SAMN04014984	NDM-1	> 8	32	> 8	> 8	1
0145	AR Bank	<i>K. pneumoniae</i>	SAMN04014986	NDM-1	> 8	16	> 8	> 8	1
0146	AR Bank	<i>K. pneumoniae</i>	SAMN04014987	NDM-1	> 8	8	> 8	> 8	1

0148	AR Bank	<i>K. pneumoniae</i>	SAMN04014989	NDM-1	> 8	16	> 8	> 8	1
0152	AR Bank	<i>K. pneumoniae</i>	SAMN04014993	NDM-1	> 8	4	> 8	> 8	1
0158	AR Bank	<i>K. pneumoniae</i>	SAMN04014999	NDM-1	> 8	16	> 8	> 8	1
143615	UCLA	<i>K. pneumoniae</i>	NA	NDM-1	> 2	> 8	> 16	NA	1
0057	AR Bank	<i>M. morgani</i>	SAMN04014898	NDM-1	2	8	4	8	1, 2
0159	AR Bank	<i>P. mirabilis</i>	SAMN04015000	NDM-1	4	32	4	> 8	1, 2
0082	AR Bank	<i>P. rettgeri</i>	SAMN04014923	NDM-1	8	32	8	> 8	1, 2
0127	AR Bank	<i>Salmonella enterica</i> serotype Senftenberg	SAMN04014968	NDM-1	> 8	4	8	8	1, 2
0154	AR Bank	<i>E. cloacae</i>	SAMN04014995	VIM-1	2	4	2	4	1, 2
0040	AR Bank	<i>K. pneumoniae</i>	SAMN04014881	VIM-27	4	32	> 8	> 8	1
0046	AR Bank	<i>K. pneumoniae</i>	SAMN04014887	VIM-27	> 8	64	> 8	> 8	1
0076	AR Bank	<i>K. pneumoniae</i>	SAMN04014917	VIM-1	1	4	4	4	1, 2
0135	AR Bank	<i>K. pneumoniae</i>	SAMN04014976	VIM-1	> 4	8	8	> 8	1
0161	AR Bank	<i>E. aerogenes</i>	SAMN04015002	IMP-4	2	2	2	2	1
1315298	UCLA	<i>K. pneumoniae</i>	NA	IMP	> 2	2	2	NA	1
0034	AR Bank	<i>K. pneumoniae</i>	SAMN04014875	IMP-4	2	1	2	4	1
0080	AR Bank	<i>K. pneumoniae</i>	SAMN04014921	IMP-4	4	4	4	8	1, 2
143661	UCLA	<i>K. pneumoniae</i>	NA	IMP	> 2	> 8	16	NA	1

Ambler class D carbapenemases									
0074	AR Bank	<i>E. aerogenes</i>	SAMN04014915	OXA-48	2	4	2	2	1, 2
0051	AR Bank	<i>K. ozaenae</i>	SAMN04014892	OXA-181	> 8	4	4	4	1, 2
0039	AR Bank	<i>K. pneumoniae</i>	SAMN04014880	OXA-181	4	4	4	4	1, 2
0066	AR Bank	<i>K. pneumoniae</i>	SAMN04014907	OXA-232	> 8	4	> 8	> 8	1, 2
0075	AR Bank	<i>K. pneumoniae</i>	SAMN04014916	OXA-232	> 8	8	> 8	> 8	1, 2
0140	AR Bank	<i>K. pneumoniae</i>	SAMN04014981	OXA-181	> 8	2	4	4	1
0141	AR Bank	<i>K. pneumoniae</i>	SAMN04014982	OXA-181	> 8	2	4	4	1
0142	AR Bank	<i>K. pneumoniae</i>	SAMN04014983	OXA-181	8	4	2	2	1
0160	AR Bank	<i>K. pneumoniae</i>	SAMN04015001	OXA-48	> 8	4	8	8	1, 2
143628	UCLA	<i>K. pneumoniae</i>	NA	OXA-232	> 2	4	16	NA	1
143658	UCLA	<i>K. pneumoniae</i>	NA	OXA-232	> 2	2	16	NA	1
Isolates without carbapenemases									
Isolates that meet the 2015 CDC surveillance definition for CRE									
0007	AR Bank	<i>E. aerogenes</i>	SAMN04014848	None identified	2	≤ 0.5	1	1	2
0008	AR Bank	<i>E. cloacae</i>	SAMN04014849	ACT-15; OmpF2 ^c ; OmpC2	> 8	1	2	2	2
0009	AR Bank	<i>E. aerogenes</i>	SAMN04014850	Omp35; Omp36	> 8	1	2	2	2
0006	AR Bank	<i>E. coli</i>	SAMN04014847	TEM-1; CMY-2;	> 8	16	8	4	2

				CTX-M-14; OmpC; OmpF					
0085	AR Bank	<i>E. coli</i>	SAMN04014926	CMY-2; OmpF	2	≤ 0.5	1	≤ 0.12	1, 2
0071	AR Bank	<i>K. oxytoca</i>	SAMN04014912	OXY-2-8; OmpK36	8	1	8	2	1, 2
0042	AR Bank	<i>K. pneumoniae</i>	SAMN04014883	CTX-M-15; SHV-1; TEM-1	> 8	1	2	2	1, 2
0043	AR Bank	<i>K. pneumoniae</i>	SAMN04014884	SHV-12	> 8	≤ 0.5	2	1	1, 2
0044	AR Bank	<i>K. pneumoniae</i>	SAMN04014885	TEM-1; SHV-12; CTX-M-15; OmpK35	> 8	1	4	2	1, 2
0047	AR Bank	<i>K. pneumoniae</i>	SAMN04014888	OmpK35; TEM-1	> 16	2	4	4	1, 2
0079	AR Bank	<i>K. pneumoniae</i>	SAMN04014920	CTX-M-14; DHA-1; TEM-1; SHV-11; OmpK35; OmpK36	> 8	16	8	8	1, 2
0107	AR Bank	<i>K. pneumoniae</i>	SAMN04014948	CTX-M-2; TEM-1; SHV-83; OmpK35; OmpK36	> 8	8	> 8	> 8	1, 2
0109	AR Bank	<i>K. pneumoniae</i>	SAMN04014950	TEM-1; SHV-11; CTX-M-15; OmpK36	> 8	2	> 8	8	1, 2
0010	AR Bank	<i>K. pneumoniae</i>	SAMN04014851	CMY-94; SHV-1;	> 8	4	1	1	2

				OmpK35					
Isolates that do not meet the 2015 CDC surveillance definition for CRE									
0062	AR Bank	<i>E. aerogenes</i>	SAMN04014903	None identified	1	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0060	AR Bank	<i>E. cloacae</i>	SAMN04014901	ACT-7	0.25	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0065	AR Bank	<i>E. cloacae</i>	SAMN04014906	ACT-15	1	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0072	AR Bank	<i>E. cloacae</i>	SAMN04014913	TEM-1	1	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0073	AR Bank	<i>E. cloacae</i>	SAMN04014914	None identified	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0018	AR Bank	<i>E. aerogenes</i>	SAMN04014859	None identified	≤ 0.12	1	≤ 0.12	≤ 0.12	2
0015	AR Bank	<i>E. coli</i>	SAMN04014856	TEM-1; CTX-M-15	0.5	≤ 0.5	≤ 0.12	≤ 0.12	2
0017	AR Bank	<i>E. coli</i>	SAMN04014858	None identified	≤ 0.12	≤ 0.5	≤ 0.12	0.25	2
0019	AR Bank	<i>E. coli</i>	SAMN04014860	TEM-1	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	2
0058	AR Bank	<i>E. coli</i>	SAMN04014899	TEM-52	1	≤ 0.5	0.25	0.25	1, 2
0067	AR Bank	<i>E. coli</i>	SAMN04014908	TEM-1	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0077	AR Bank	<i>E. coli</i>	SAMN04014918	None identified	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0081	AR Bank	<i>E. coli</i>	SAMN04014922	CMY-2; TEM-1	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0084	AR Bank	<i>E. coli</i>	SAMN04014925	TEM-1	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0086	AR Bank	<i>E. coli</i>	SAMN04014927	CTX-M-14; TEM-1	1	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0089	AR Bank	<i>E. coli</i>	SAMN04014930	CMY-2	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	1, 2
0087	AR Bank	<i>K. pneumoniae</i>	SAMN04014928	SHV-12	0.25	≤ 0.5	≤ 0.12	≤ 0.12	1, 2

0016	AR Bank	<i>K. pneumoniae</i>	SAMN04014857	LEN-16	≤ 0.12	≤ 0.5	≤ 0.12	≤ 0.12	2
0012	AR Bank	<i>K. pneumoniae</i>	SAMN04014853	SHV-12	0.5	≤ 0.5	0.25	≤ 0.12	2
0059	AR Bank	<i>P. mirabilis</i>	SAMN04014900	TEM-1	0.5	4	1	0.5	1, 2

AR Bank, FDA-CDC Antimicrobial Resistance Isolate Bank; UCLA, UCLA Clinical Microbiology Laboratory; NCBI, National Center for Biotechnology Information, U.S. National Library of Medicine; MIC (minimum inhibitory concentration); ETP, ertapenem; IPM, imipenem; MEM, meropenem; DOR, doripenem; NA, not applicable; neg, negative; CRE, carbapenem-resistant *Enterobacteriaceae*

^aIsolates were initially characterized as carrying *bla*_{NDM}, but were found to be negative upon repeat *bla*_{NDM} real-time PCR testing at the CDC, suggesting loss of the plasmid carrying the resistance gene.

^bThese two isolates carried both *bla*_{NDM-1} (Ambler class B carbapenemase) and *bla*_{OXA-232} (Ambler class D carbapenemase) genes.

^cReported truncated outer membrane porin genes (OMPs), due to the presence of premature stop codons, had a ≥ 80% sequence identity and 100% coverage threshold.