

Appendix 3. Bivariate Correlations and Regressions of Outcome Metrics with Core Elements Scores

2018 (N=48 DoD Hospitals)								2021 (N=47 DoD Hospitals)							
Core Element Score		Outcome Variable						Core Element Score		Outcome Variable					
		SAAR (n=41)								SAAR (n=32)					
		Spearman Correlation		Linear Regression						Spearman Correlation		Linear Regression			
		rho	p-value	coefficient	p-value	95% CI				rho	p-value	coefficient	p-value	95% CI	
Leadership		0.201	0.208	0.365	0.168	-0.161	0.891	Leadership		0.297	0.098	0.293	0.072	-0.028	0.614
Accountability			--		--			Accountability		0.126	0.493	0.052	0.587	-0.142	0.246
Pharmacy Expertise			--		--			Pharmacy Expertise		0.165	0.366	0.156*	0.010	0.041	0.272
Action		0.225	0.157	0.505*	0.026	0.064	0.946	Action		-0.029	0.874	0.056	0.800	-0.393	0.505
Tracking		-0.015	0.924	0.304	0.284	-0.261	0.868	Tracking		0.056	0.760	0.100	0.712	-0.450	0.650
Reporting		0.184	0.250	0.293	0.115	-0.075	0.661	Reporting		0.139	0.448	0.190	0.585	-0.513	0.893
Education		0.189	0.236	0.086	0.422	-0.129	0.302	Education		-0.265	0.144	-0.301	0.179	-0.748	0.146
Overall Score		0.239	0.133	0.119	0.052	-0.001	0.238	Overall Score		0.040	0.827	0.022	0.682	-0.085	0.128
CDI Incidence (n=46)								CDI Incidence (n=33)							
		Spearman Correlation		Negative Binomial Regression						Spearman Correlation		Negative Binomial Regression			
		rho	p-value	IRR	p-value	95% CI				rho	p-value	IRR	p-value	95% CI	
Leadership		0.173	0.251	15.791*	0.017	1.647	151.365	Leadership		0.032	0.862	2.591	0.374	0.317	21.156
Accountability			--		--			Accountability		0.055	0.763	11.245*	0.000	4.129	30.624
Pharmacy Expertise			--		--			Pharmacy Expertise		0.019	0.916	7.637*	0.000	3.429	17.009
Action		0.221	0.140	4.367	0.118	0.689	27.665	Action		0.176	0.327	2.576	0.593	0.080	82.544
Tracking		0.317*	0.032	6.534	0.169	0.451	94.579	Tracking		0.420*	0.015	368.917*	0.001	11.156	12,199.330
Reporting		0.222	0.139	5.918*	0.001	2.065	16.959	Reporting		-0.028	0.878	23.224	0.164	0.276	1,957.212
Education		0.216	0.150	2.654	0.072	0.917	7.684	Education		-0.262	0.141	2.246	0.421	0.314	16.077
Overall Score		0.362*	0.013	2.084*	0.000	1.428	3.041	Overall Score		0.060	0.741	1.973*	0.022	1.102	3.534
ESKAPEE Incidence (n=46)								ESKAPEE Incidence (n=33)							
		Spearman Correlation		Negative Binomial Regression						Spearman Correlation		Negative Binomial Regression			
		rho	p-value	IRR	p-value	95% CI				rho	p-value	IRR	p-value	95% CI	
Leadership		0.071	0.641	12.224*	0.030	1.272	117.433	Leadership		-0.098	0.588	2.970	0.180	0.605	14.573
Accountability			--		--			Accountability		0.067	0.712	3.207	0.110	0.768	13.393
Pharmacy Expertise			--		--			Pharmacy Expertise		-0.093	0.606	1.651	0.164	0.815	3.342
Action		0.213	0.155	3.315	0.299	0.346	31.778	Action		0.090	0.617	1.096	0.935	0.120	9.971
Tracking		0.270	0.070	1.803	0.691	0.099	32.991	Tracking		0.286	0.106	19.301*	0.038	1.182	315.240
Reporting		0.363*	0.013	5.307*	0.009	1.514	18.604	Reporting		-0.194	0.279	2.643	0.530	0.128	54.765
Education		0.086	0.572	3.957*	0.004	1.546	10.129	Education		-0.417*	0.016	1.814	0.487	0.338	9.726
Overall Score		0.298*	0.045	1.979*	0.001	1.339	2.927	Overall Score		-0.034	0.851	1.379	0.134	0.906	2.099
ESBLEc Incidence (n=46)								ESBLEc Incidence (n=33)							
		Spearman Correlation		Negative Binomial Regression						Spearman Correlation		Negative Binomial Regression			
		rho	p-value	IRR	p-value	95% CI				rho	p-value	IRR	p-value	95% CI	
Leadership		0.049	0.748	23.729	0.083	0.658	856.368	Leadership		0.098	0.589	2.065	0.278	0.556	7.668
Accountability			--		--			Accountability		0.219	0.222	7,604,453.000*	0.000	1,540,877.000	37,500,000.000
Pharmacy Expertise			--		--			Pharmacy Expertise		0.152	0.398	Unable to run model, convergence not achieved			
Action		0.192	0.201	9.062	0.190	0.335	244.799	Action		-0.016	0.930	1.588	0.625	0.248	10.147
Tracking		0.211	0.160	4.231	0.489	0.071	252.730	Tracking		0.195	0.278	13.455	0.166	0.341	531.284
Reporting		-0.011	0.943	7.490*	0.046	1.035	54.206	Reporting		0.014	0.941	3.140	0.484	0.127	77.442
Education		-0.009	0.951	2.879	0.230	0.513	16.172	Education		-0.166	0.356	1.910	0.554	0.224	16.286
Overall Score		0.112	0.457	2.558*	0.009	1.260	5.196	Overall Score		0.048	0.793	1.693	0.188	0.773	3.710
DTR Incidence (n=46)								DTR Incidence (n=33)							
		Spearman Correlation		Negative Binomial Regression						Spearman Correlation		Negative Binomial Regression			
		rho	p-value	IRR	p-value	95% CI				rho	p-value	IRR	p-value	95% CI	

Leadership	0.229	0.125	21.345*	0.006	2.381	191.358	Leadership	-0.098	0.590	1.984	0.330	0.500	7.866
Accountability	--			--			Accountability	0.080	0.657	2.340	0.278	0.504	10.857
Pharmacy Expertise	--			--			Pharmacy Expertise	-0.131	0.469	1.133	0.690	0.613	2.097
Action	0.167	0.268	4.449	0.144	0.601	32.943	Action	0.110	0.544	1.017	0.985	0.173	5.986
Tracking	0.255	0.087	2.838	0.427	0.217	37.134	Tracking	0.298	0.092	13.274*	0.027	1.348	130.676
Reporting	0.349*	0.018	5.957*	0.002	1.926	18.427	Reporting	-0.242	0.175	1.908	0.604	0.166	21.931
Education	0.130	0.389	3.581*	0.010	1.355	9.464	Education	-0.372*	0.033	1.603	0.554	0.336	7.646
Overall Score	0.296*	0.046	2.174*	0.000	1.443	3.275	Overall Score	0.051	0.779	1.270	0.212	0.873	1.848

Abbreviations: CDI= Clostridioides difficile (C. difficile) infections; CI= confidence interval; DoD= Department of Defense; DTR= difficult to treat resistant infections; ESBLec= Resistant Extended-spectrum Beta-lactamase (ESBL)-producing Escherichia coli (E. coli) infections; ESKAPEE= Resistant infections caused by ESKAPEE pathogens: Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, Enterobacter species, and Escherichia coli; IRR= incidence rate ratio; SAAR= Standardized Antimicrobial Administration Ratio

* Indicates statistical significance for that measure of effect ($p < 0.05$)

-- Unable to run model, all facilities met all Core Elements variables and had same scores