

## **SUPPLEMENTALS**

**Table S1.** Sampling Site descriptions and coordinates

Mississippi Coast town location	Site ID	X	Y
Pass Christian	1	30.3041	89.2793
Pass Christian	2	30.3151	89.2409
Long Beach	3	30.3403	89.1596
Long Beach	4	30.3449	89.1471
Gulfport	5	30.3758	89.0557
Gulfport	6	30.3774	89.0435
Gulfport	7	30.3815	89.0262
Biloxi	8	30.3894	88.9856
Biloxi	9	30.393	88.9388
Biloxi	10	30.3939	88.9009

**Table S2.** Antibiotics used in this study, their classes, and their clinical significance

Antibiotic	Abbreviation	Drug Class	Clinical Significance
Erythromycin	E15	Macrolides	A common broad-spectrum antibiotic that has been in use since the 1950s.
Tetracycline	TE30	Tetracyclines	A broad-spectrum drug used in the treatment of many bacterial infections.
Imipenem	IPM10	Carbapenems	A broad-spectrum antibiotic often used against multiresistant strains.
Cephalothin	CF30	Cephalosporin	Widely used against resistant microorganisms.
Ampicillin	AM10	Penicillin	A broad-spectrum drug used against a wide variety of bacteria.
Sulfamethoxazole	SXT	Sulfonamide	Used in treatment of a variety of infections, usually in conjugation with the drug Bactrim.
Ciprofloxacin	CIP5	Fluoroquinolones	A broad-spectrum drug used against a wide variety of infections.
Amoxicillin	AMC30	$\beta$ -Lactam	Prescribed in high levels to treat bacterial infections.

**Table S3.** Number of *E. coli* isolates expressing resistance to antibiotics, by sampling month. Percentages are shown in parentheses. Antibiotic disc IDs are as follows: Erythromycin (E15), Amoxicillin (AMC30), Sulfamethoxazole (SXT), Cephalothin (CF30), Imipenem (IPM10), Tetracycline (TE30), Ciprofloxacin (CIP15), Ampicillin (AM10).

Sampling months	Total <i>E. coli</i>	E15	AMC30	SXT	CF30	IPM10	TE30	CIP5	AM10
Sep-20	44	44 (100%)	19 (43.2%)	3 (6.8%)	43 (97.7%)	4 (9.1%)	14 (31.8%)	3 (6.8%)	35 (79.5%)
Oct-20	39	39 (100%)	19 (48.7%)	1 (2.6%)	36 (92.3%)	2 (5.1%)	19 (48.7%)	1 (2.6%)	32 (82.2%)
Nov-20	11	11 (100%)	4 (36.4%)	1 (9.1%)	8 (72.7%)	0 (0%)	1 (9.1%)	1 (9.1%)	5 (45.5%)
Dec-20	41	31 (76.5%)	10 (24.4%)	2 (4.9%)	22 (53.7%)	1 (2.4%)	2 (4.9%)	0 (0%)	14 (34.1%)
Jan-21	14	13 (92.9%)	0 (0%)	1 (7.1%)	12 (85.7%)	0 (0%)	0 (0%)	0 (0%)	4 (28.6%)
Mar-21	44	44 (100%)	5 (11.4%)	3 (6.8%)	44 (100%)	0 (0%)	7 (15.9%)	2 (4.5%)	19 (43.2%)
Apr-21	50	50 (100%)	17 (34%)	1 (2%)	47 (94%)	0 (0%)	14 (28%)	2 (4%)	25 (50%)
May-21	49	49 (100%)	24 (49%)	3 (6.1%)	48 (98%)	1 (2%)	21 (42.9%)	8 (16.3%)	28 (57.1%)
Jun-21	41	41 (100%)	20 (48.8%)	7 (17.1%)	40 (97.6%)	1 (2.4%)	13 (31.7%)	6 (14.6%)	27 (65.9%)
Jul-21	47	38 (80.9%)	25 (53.2%)	3 (6.4%)	17 (36.2%)	30 (63.8%)	6 (12.8%)	5 (10.6%)	27 (57.4%)
Mean		94.9%	34.9%	6.9%	82.8%	8.5%	22.6%	6.9%	54.3%

**Table S4.** Number of *E. coli* isolates expressing resistance to antibiotics, by sampling site across all sampling events. Percentages are shown in parentheses. Antibiotic disc IDs are as follows: Erythromycin (E15), Amoxicillin (AMC30), Sulfamethoxazole (SXT), Cephalothin (CF30), Imipenem (IPM10), Tetracycline (TE30), Ciprofloxacin (CIP15), Ampicillin (AM10).

Antibiotics (disc IDs)	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Erythromycin (E15)	36 (97.3%)	35 (100%)	41 (100%)	43 (93.5%)	28 (84.8%)	37 (92.5%)	32 (97%)	36 (87.8%)	33 (97.1%)	39 (97.5%)
Amoxicillin (AMC30)	16 (43.3%)	14 (40%)	15 (36.6%)	18 (39.1%)	20 (60.6%)	12 (35%)	15 (45.5%)	13 (31.7%)	9 (26.5%)	9 (22.5%)
Sulfamethoxazole (SXT)	1 (2.7%)	4 (11.4%)	4 (9.8%)	2 (4.3%)	3 (9.1%)	2 (5%)	3 (9%)	0 (0%)	2 (5.9%)	4 (10%)
Cephalothin (CF30)	34 (91.9%)	30 (85.7%)	33 (80.5%)	40 (87%)	24 (72.7%)	33 (82.5%)	29 (87.9%)	32 (78%)	28 (82.4%)	34 (85%)
Imipenem (IPM10)	0 (0%)	4 (11.4%)	5 (12.2%)	3 (6.5%)	6 (18.2%)	5 (12.5%)	4 (12.1%)	4 (9.8%)	4 (11.8%)	4 (10%)
Tetracycline (TE30)	11 (29.7%)	8 (22.9%)	15 (36.6%)	10 (21.7%)	7 (21.2%)	6 (15%)	14 (42.4%)	6 (14.6%)	9 (26.5%)	1 (27.5%)
Ciprofloxacin (CIP5)	3 (8.1%)	5 (14.3%)	5 (12.2%)	1 (2.2%)	2 (6.1%)	1 (2.5%)	4 (12.1%)	1 (2.4%)	1 (2.9%)	5 (12.5%)
Ampicillin (AM10)	20 (54.1%)	19 (54.3%)	27 (65.9%)	22 (47.8%)	23 (69.7%)	20 (50%)	20 (60.6%)	25 (61%)	18 (52.9%)	22 (55%)

**Table S5.** Number of **Enterococcus** isolates expressing resistance to antibiotics, by sampling month. Percentages are shown in parentheses.

Antibiotic disc IDs are as follows: Erythromycin (E15), Amoxicillin (AMC30), Sulfamethoxazole (SXT), Cephalothin (CF30), Imipenem (IPM10), Tetracycline (TE30), Ciprofloxacin (CIP15), Ampicillin (AM10).

Sampling months	Total Enterococcus	E15	AMC30	SXT	CF30	IPM10	TE30	CIP5	AM10
Sep-20	19	15 (78.9%)	0 (0%)	13 (68.4%)	6 (31.6%)	1 (5.3%)	4 (21.1%)	11 (57.9%)	0 (0%)
Oct-20	19	11 (57.9%)	0 (0%)	0 (0%)	12 (63.1%)	1 (5.3%)	3 (15.8%)	15 (78.9%)	0 (0%)
Nov-20	4	2 (50%)	0 (0%)	2 (50%)	2 (50%)	0 (0%)	1 (25%)	3 (75%)	0 (0%)
Dec-20	23	15 (65.2%)	1 (4.3%)	6 (26.1%)	7 (30.4%)	0 (0%)	7 (30.4%)	20 (87%)	2 (8.7%)
Jan-21	3	3 (100%)	0 (0%)	0 (0%)	3 (100%)	0 (0%)	1 (33.3%)	2 (66.6%)	0 (0%)
Mar-21	42	31 (73.8%)	3 (7.1%)	6 (14.3%)	17 (40.5%)	0 (0%)	19 (45.2%)	31 (73.8%)	2 (4.8%)
Apr-21	38	30 (78.9%)	2 (5.3%)	18 (47.4%)	29 (76.3%)	0 (0%)	15 (39.5%)	30 (78.9%)	4 (10.5%)
May-21	46	33 (71.7%)	8 (17.4%)	29 (63%)	37 (80.4%)	0 (0%)	32 (69.6%)	35 (76.1%)	8 (17.4%)
Jun-21	32	30 (93.8%)	10 (31.3%)	15 (46.9%)	30 (93.8%)	4 (12.5%)	21 (65.6%)	26 (81.3%)	9 (28.1%)
Jul-21	40	32 (80%)	5 (12.5%)	6 (15%)	19 (47.5%)	1 (2.5%)	16 (40%)	33 (82.5%)	2 (5%)
Mean		75%	7.8%	33%	61.4%	2.6%	38.6%	75.8%	7.5%

**Table S6.** Number of **Enterococcus** isolates expressing resistance to antibiotics, by sampling site. Percentages are shown in parentheses.

Antibiotic disc IDs are as follows: Erythromycin (E15), Amoxicillin (AMC30), Sulfamethoxazole (SXT), Cephalothin (CF30), Imipenem (IPM10), Tetracycline (TE30), Ciprofloxacin (CIP15), Ampicillin (AM10).

Antibiotics (disc IDs)	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Erythromycin (E15)	24 (66.7%)	15 (60%)	22 (71%)	28 (77.8%)	18 (72%)	18 (75%)	16 (94%)	19 (90.5%)	18 (88.5%)	19 (76%)
Amoxicillin (AMC30)	1 (2.8%)	1 (4%)	5 (12.9%)	6 (16.7%)	4 (16%)	1 (4.2%)	0 (0%)	9 (9.5%)	6 (23.1%)	4 (16%)
Sulfamethoxazole (SXT)	3 (8.3%)	7 (28%)	18 (58.1%)	10 (27.8%)	7 (28%)	5 (20.8%)	7 (41.2%)	10 (47.6%)	13 (53.8%)	14 (56%)
Cephalothin (CF30)	23 (63.9%)	14 (56%)	17 (58.1%)	26 (72.2%)	11 (44%)	17 (70.8%)	7 (41.2%)	8 (57.1%)	18 (69.2%)	16 (64%)
Imipenem (IPM10)	0 (0%)	0 (0%)	3 (9.7%)	2 (5.6%)	0 (0%)	1 (4.2%)	0 (0%)	0 (0%)	1 (3.8%)	0 (0%)
Tetracycline (TE30)	14 (38.9%)	16 (60%)	16 (51.6%)	20 (55.6%)	12 (48%)	7 (25%)	5 (29.4%)	9 (42.9%)	13 (50%)	9 (36%)
Ciprofloxacin (CIP5)	33 (91.7)	18 (72%)	22 (71%)	24 (66.7%)	18 (72%)	23 (95.8%)	14 (82.4%)	17 (81%)	21 (80.8%)	16 (64%)
Ampicillin (AM10)	3 (8.3%)	2 (8%)	4 (12.9%)	3 (8.3%)	1 (4%)	2 (8.3%)	0 (0%)	17 (14.3%)	7 (26.9%)	2 (8%)

