

Supplementary Table 1: Hosmer-Lemeshow p-values for evaluated models.

Antibiotic Model (N=414)	Hosmer-Lemeshow P-value	
	Model Without Epi Predictors	Model With Epi Predictors
CEFTRIAXONE (Tested=396)		
Baseline (Epi predictors Alone)	-	0.98
ST**	1	0.72
<i>Beta-lactamases</i>		
<i>bla</i> _{CTX}	1	0.99
<i>bla</i> _{CTX} + <i>bla</i> _{CMY}	1	0.99
<i>bla</i> _{CTX} + <i>bla</i> _{CMY} + <i>bla</i> _{OXA}	1	NA
<i>bla</i> _{CTX} + <i>bla</i> _{CMY} + <i>bla</i> _{OXA} + <i>bla</i> _{TEM}	1	0.78
<i>bla</i> _{CTX} + <i>bla</i> _{CMY} + <i>bla</i> _{OXA} + <i>bla</i> _{TEM} + <i>bla</i> _{SHV}	1	0.82
CIPROFLOXACIN (Tested=414)		
Baseline (Epi predictors alone)	-	1
ST**	1	0.93
<i>gyrA</i> + <i>parC</i> Mutations	1	1
GENTAMICIN (Tested=414)		
Baseline (Epi predictors Alone)	-	1
ST**	1	0.93
<i>Aminoglycoside Acyl-transferases</i>		
<i>aac(3)</i>	1	1
<i>aac(3)</i> + <i>aac(6)</i>	1	1
<i>aac(3)</i> + <i>aac(6)</i> + <i>aadB</i>	1	1

Interpret HL p-value with caution given limited number of binary/categorical predictors in some models.

Supplementary Table 2: Genetic resistance loci identified by isolate and multilocus sequence type (MLST).

28	S	S	S	0	0	0	0	0	0	0	0	0	0
135	S	S	S	0	0	0	0	0	0	0	0	0	0
131	-	S	I+R	0	0	0	0	1	0	0	0	1	1
73	S	S	S	0	0	0	0	0	0	0	0	0	0
14	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
1086	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	1	1
73	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	0	0	0	0	1	1
131	-	S	I+R	0	0	0	0	1	0	0	0	1	1
404	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
1421	S	S	S	0	0	0	0	0	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	1	1
127	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
NEW	S	S	S	0	0	0	0	1	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
349	S	S	S	0	0	0	0	0	0	0	0	0	0
131	-	I+R	S	0	0	0	0	1	1	0	0	0	0
404	S	S	S	0	0	0	0	1	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
93	S	S	S	0	0	0	0	1	0	0	0	0	0
131	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1
131	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
1284	I+R	S	I+R	0	1	0	1	0	0	1	0	1	1

95	S	S	S	0	0	0	0	1	0	0	0	0	0
95	S	S	S	0	0	0	0	1	0	0	0	0	0
95	-	S	S	0	0	0	0	1	0	0	0	0	0
144	S	S	S	0	0	0	0	1	0	0	0	0	0
363	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	1	0
58	S	S	S	0	0	0	0	0	0	0	0	1	0
73	S	S	S	0	0	0	0	1	0	0	0	0	0
NEW	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
10	-	S	S	0	0	0	0	0	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
69	S	I+R	S	0	0	0	0	1	1	0	0	1	0
131	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	S	0	0	0	1	1	1	1	0	1	0
73	S	S	S	0	0	0	0	1	0	0	0	0	0
7428	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
69	S	S	S	0	0	0	0	0	0	0	0	0	0
12	S	S	S	0	0	1	0	0	0	0	0	1	0
345	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	S	0	0	0	0	0	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1

95	S	S	S	0	0	0	0	1	0	0	0	0	0
929	S	S	S	0	0	0	0	0	0	0	0	0	0
73	-	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
69	S	I+R	S	0	0	0	0	1	1	0	0	1	0
1262	S	S	S	0	0	0	0	0	0	0	0	0	0
10	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
38	S	S	I+R	0	0	0	0	0	0	0	0	1	1
131	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	1	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
95	S	S	S	0	0	0	0	1	0	0	0	1	0
NEW	-	S	S	0	0	0	0	1	0	0	0	0	0
226	S	S	S	0	0	0	0	1	0	0	0	0	0
1057	S	S	S	0	0	0	0	0	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	0	0	0	0	1	1
1623	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	1	1
135	S	S	S	0	0	0	0	0	0	0	0	0	0
46	S	I+R	I+R	0	0	0	0	1	1	0	0	0	0
357	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	S	0	0	0	0	1	1	0	0	1	0
12	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	S	0	0	0	0	1	0	0	0	0	0
68	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	1	0	0	0	1	0
409	S	S	S	0	0	0	0	0	0	0	0	0	0
420	S	S	S	0	0	0	0	0	0	0	0	0	0
46	S	S	S	0	0	0	0	1	0	0	0	0	0
131	I+R	I+R	I+R	0	1	0	0	0	1	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
4260	S	S	S	0	0	0	0	1	0	0	0	0	0

127	S	S	S	0	1	0	0	0	0	1	0	0	0
131	I+R	S	I+R	0	1	0	1	0	0	1	0	1	1
95	S	S	S	0	0	0	0	1	0	0	0	0	0
2013	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	1	0	0	0	1	0
5022	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	S	I+R	0	1	0	0	1	0	0	0	1	1
69	S	S	S	0	0	0	0	1	0	0	0	1	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
131	S	I+R	S	0	0	0	0	1	1	0	0	0	0
420	S	S	S	0	0	0	0	1	0	0	0	0	0
131	S	S	S	0	0	0	0	1	0	0	0	0	0
10	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	1	0	0	0	0	0	0
62	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
393	S	S	I+R	0	0	0	0	1	0	0	0	1	1
131	I+R	S	I+R	0	1	0	0	1	0	0	0	1	1
5022	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	S	I+R	0	1	0	1	1	0	1	0	1	1
12	I+R	S	S	0	1	0	0	0	0	0	0	1	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
12	S	S	S	0	0	0	0	0	0	0	0	0	0
68	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1
131	I+R	S	I+R	0	1	0	1	1	0	1	0	1	1
NEW	S	S	S	0	0	0	0	0	0	0	0	0	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	I+R	I+R	0	1	0	1	1	1	1	0	1	1

602	S	S	S	0	0	0	0	0	0	0	0	0	0
144	S	S	S	0	0	0	0	1	0	0	0	0	0
648	I+R	I+R	I+R	0	1	0	0	0	1	0	0	1	1
69	S	S	S	0	0	0	0	1	0	0	0	1	0
58	I+R	S	S	1	0	0	0	1	0	0	0	0	0
428	S	S	S	0	0	0	0	0	0	0	0	0	0
59	S	S	S	0	0	0	0	1	0	0	0	0	0
144	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	S	I+R	0	1	0	1	1	0	1	0	1	1
73	S	S	S	0	0	0	0	0	0	0	0	0	0
141	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
405	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1
38	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1
59	S	S	S	0	0	0	0	0	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0
405	I+R	I+R	I+R	0	1	0	0	1	1	0	0	1	1
1161	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	S	0	0	0	0	1	1	0	0	1	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
NEW	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	S	0	0	0	0	1	0	0	0	1	0
131	S	S	I+R	0	0	0	0	1	0	0	0	1	1
95	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	1	0	0	0	0	0	0	0
-	I+R	I+R	S	-	-	-	-	-	-	-	-	-	-
491	S	S	S	0	0	0	0	0	0	0	0	0	0
1598	I+R	S	S	0	1	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	0	0	0	0	1	1
73	S	S	S	0	0	1	0	0	0	0	0	0	0
73	S	S	S	0	0	1	0	0	0	0	0	0	0

135	S	S	S	0	0	0	0	0	0	0	0	0	0	0
95	S	I+R	S	0	0	0	0	0	1	0	0	0	1	0
62	S	S	S	0	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
127	S	I+R	S	0	0	0	0	1	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	0	1	1
95	S	S	S	0	0	0	0	1	0	0	0	0	1	0
919	S	S	S	0	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	0	1	1
80	S	S	S	0	0	0	0	0	0	0	0	0	0	0
617	I+R	S	I+R	0	1	0	0	0	0	0	0	0	1	1
90	S	I+R	I+R	0	0	0	0	0	1	0	0	0	1	1
1193	S	I+R	I+R	0	0	0	0	1	1	0	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
93	S	S	S	0	0	0	0	0	0	0	0	0	0	0
297	S	S	S	0	0	0	0	0	0	0	0	0	0	0
131	S	S	S	0	0	0	0	1	0	0	0	0	0	0
648	I+R	S	I+R	0	1	0	1	0	0	1	0	0	1	1
127	S	S	S	0	0	0	0	0	0	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	1	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	1	0
69	S	S	S	0	0	0	0	0	0	0	0	0	0	1
95	S	S	S	0	0	0	0	1	0	0	0	0	0	0
131	I+R	S	I+R	0	1	0	1	0	0	1	0	0	1	1
12	S	S	S	0	0	1	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
648	S	I+R	I+R	0	0	0	0	1	1	0	0	0	1	1
73	S	S	S	0	0	1	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	0	0	0	0	0	1	1
131	S	S	I+R	0	0	0	0	1	0	0	0	0	1	1
1177	S	S	S	0	0	0	0	1	0	0	0	0	1	1

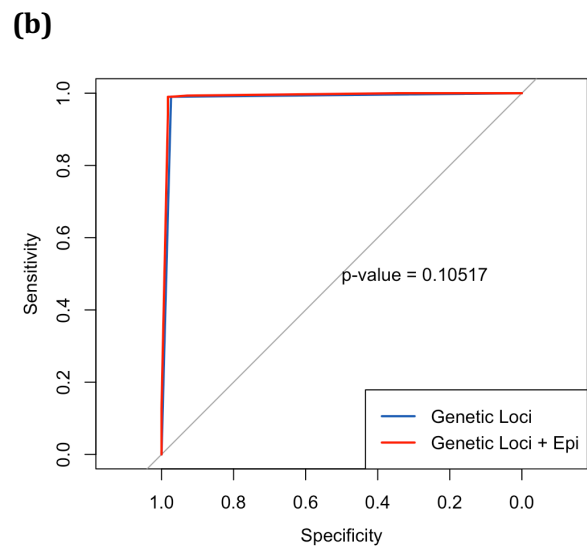
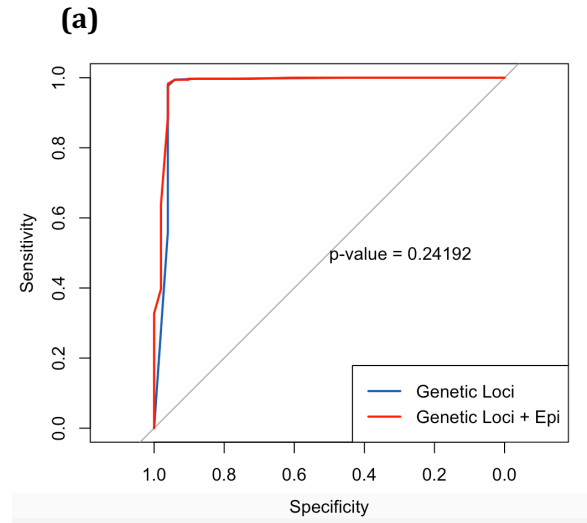
131	S	S	I+R	0	0	0	0	0	0	0	0	0	1	1
131	S	S	I+R	0	0	0	0	0	0	0	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	0	0	0	0	0	1	1
131	S	S	I+R	0	0	0	0	1	0	0	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0	0
62	S	S	S	0	0	0	0	0	0	0	0	0	0	0
1193	S	S	I+R	0	0	0	0	1	0	0	0	0	1	1
69	S	S	S	0	0	0	0	1	0	0	0	0	0	0
1231	S	S	S	0	0	0	0	0	0	0	0	0	0	0
648	S	S	S	0	0	0	0	0	0	0	0	0	0	0
93	S	S	S	0	0	0	0	0	0	0	0	0	0	0
6975	S	S	S	0	0	0	0	0	0	0	0	0	0	0
538	S	S	S	0	0	0	0	0	0	0	0	0	0	0
648	I+R	I+R	I+R	0	1	0	1	1	1	1	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
-	I+R	I+R	I+R	0	0	1	0	0	0	0	0	0	-	-
95	S	S	S	0	0	0	0	1	0	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0	0
1882	S	S	S	0	0	0	0	0	0	0	0	0	0	0
349	S	S	S	0	0	0	0	1	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	0	1	1
547	S	S	S	0	0	0	0	0	0	0	0	0	0	0
59	S	S	S	0	0	0	0	0	0	0	0	0	0	0
NEW	S	S	S	1	0	0	0	0	0	0	0	0	0	0
537	S	S	S	0	0	0	0	0	0	0	0	0	0	0
131	S	I+R	I+R	0	0	0	0	1	1	0	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0	0
10	S	S	S	0	0	0	0	1	0	0	0	0	0	0

405	S	S	I+R	0	0	0	0	1	0	0	0	1	1
127	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	I+R	I+R	0	1	0	1	0	1	1	0	1	1
3045	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	S	0	0	0	0	1	0	0	0	1	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
1193	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
421	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	1	0	0	0	1	1
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
537	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	0	0	0	0	1	1
393	S	S	I+R	0	0	0	0	0	0	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
1844	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
127	S	S	S	0	0	0	0	0	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0
NEW	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
NEW	I+R	S	S	0	1	0	0	0	0	0	0	0	0
491	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	I+R	0	0	0	0	1	1	0	0	1	1
73	S	S	S	0	0	0	0	1	0	0	0	0	0
69	S	S	S	0	0	0	0	1	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	1	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
10	S	S	I+R	0	0	0	0	1	0	0	0	1	1
95	S	S	S	0	0	0	0	1	0	0	0	0	0

131	S	S	I+R	0	0	0	0	1	0	0	0	1	1
131	S	S	S	0	0	0	0	1	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
131	S	S	S	0	0	0	0	1	0	0	0	0	0
410	I+R	S	I+R	1	0	0	1	1	0	0	0	1	1
95	I+R	S	S	1	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	1	0	0	0	0	0
416	-	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
1415	S	S	S	0	0	0	0	0	0	0	0	0	0
393	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
3672	S	S	S	0	0	0	0	0	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1
998	I+R	S	S	0	1	0	1	1	0	1	1	1	0
405	I+R	I+R	I+R	1	0	0	0	1	0	0	1	1	1
69	S	S	S	0	0	0	0	1	0	0	0	0	0
127	-	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
405	I+R	I+R	I+R	1	0	0	0	1	0	0	1	1	1
131	I+R	S	I+R	0	1	0	1	0	0	1	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	1	0
405	I+R	I+R	I+R	1	0	0	0	1	0	0	1	1	1
131	S	S	S	0	0	0	0	1	0	0	0	1	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
127	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	S	0	0	0	0	1	1	0	0	1	0
93	I+R	I+R	S	1	0	0	0	0	1	0	0	0	0
59	-	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	S	0	0	0	0	1	1	0	0	1	0
38	I+R	S	I+R	0	1	0	0	0	0	0	0	1	1

10	S	S	S	0	0	0	0	0	0	0	0	0	0
95	S	S	S	0	0	0	0	0	0	0	0	0	0
131	I+R	S	S	1	0	0	0	1	0	0	0	0	0
405	S	I+R	I+R	0	0	0	1	0	1	1	0	1	1
73	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	S	I+R	0	0	0	0	0	0	0	0	1	1
349	S	S	S	0	0	0	0	0	0	0	0	0	0
12	S	S	S	0	0	0	0	0	0	0	0	0	0
131	-	S	I+R	0	0	0	0	1	0	0	0	1	1
1193	S	S	I+R	0	0	0	0	1	0	0	0	1	1
95	I+R	S	S	1	0	0	0	0	0	0	0	0	0
131	S	S	S	0	0	0	0	1	0	0	0	1	0
1284	I+R	S	I+R	0	1	0	1	0	0	1	0	1	1
144	S	S	S	0	0	0	0	0	0	0	0	0	0
648	I+R	I+R	I+R	0	1	0	0	1	1	0	0	1	1
95	S	S	S	0	0	0	0	0	0	0	0	0	0
73	S	S	S	0	0	0	0	0	0	0	0	0	0
131	S	I+R	I+R	0	0	0	0	1	1	0	0	1	1
404	S	S	S	0	0	0	0	1	0	0	0	1	0

Supplementary Figure 1: Receiver operating characteristic curves (ROC) for complete antibiotic resistance loci models with and without epidemiologic predictors for (a) 3rd generation cephalosporins (ceftriaxone), (b) fluoroquinolones (ciprofloxacin), and (c) aminoglycosides (gentamicin).



(c)

