

Supplementary Table S1 Categories of drugs and resistance mechanisms.

ARO name	Drug Class	Resistance Mechanism	AMR Gene Family
aph3-Ib	aminoglycoside antibiotic	antibiotic inactivation	aph3
sul2	sulfonamide antibiotic; sulfone antibiotic	antibiotic target replacement	sulfonamide resistant sul
ermB	macrolide antibiotic; lincosamide antibiotic; streptogramin antibiotic	antibiotic target alteration	erm 23S ribosomal RNA methyltransferase
tetQ	tetracycline antibiotic	antibiotic target protection	tetracycline-resistant ribosomal protection protein
ermG	macrolide antibiotic; lincosamide antibiotic; streptogramin antibiotic	antibiotic target alteration	erm 23S ribosomal RNA methyltransferase
ermF	macrolide antibiotic; lincosamide antibiotic; streptogramin antibiotic	antibiotic target alteration	erm 23S ribosomal RNA methyltransferase
cfxA3	cephamycin	antibiotic inactivation	cfxA beta-lactamase
adeF	fluoroquinolone antibiotic; tetracycline antibiotic	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
cfxA6	cephamycin	antibiotic inactivation	cfxA beta-lactamase
oxa-85	cephalosporin; penam	antibiotic inactivation	oxa beta-lactamase
ermX	macrolide antibiotic; lincosamide antibiotic; streptogramin antibiotic	antibiotic target alteration	erm 23S ribosomal RNA methyltransferase
tem-1	monobactam; cephalosporin; penam; penem	antibiotic inactivation	tem beta-lactamase
tetW	tetracycline antibiotic	antibiotic target protection	tetracycline-resistant ribosomal protection protein
aac6-Ie- aph2-Ia	aminoglycoside antibiotic	antibiotic inactivation	aph2; aac6
tetW/N/ W	tetracycline antibiotic	antibiotic target protection	tetracycline-resistant ribosomal protection protein
efrB	macrolide antibiotic; fluoroquinolone antibiotic; rifamycin antibiotic	antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump
dfrF	diaminopyrimidine antibiotic	antibiotic target replacement	trimethoprim resistant dihydrofolate reductase dfr

mdtO	nucleoside antibiotic; acridine dye	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
tetX	glycylcycline; tetracycline antibiotic	antibiotic inactivation	tetracycline inactivation enzyme
mdtP	nucleoside antibiotic; acridine dye	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
escheric hia coli soxR	fluoroquinolone antibiotic; cephalosporin; glycylcycline; penam; tetracycline antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan	antibiotic target alteration; antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump; major facilitator superfamily MFS antibiotic efflux pump; resistance-nodulation-cell division RND antibiotic efflux pump
tet40	tetracycline antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
gadW	macrolide antibiotic; fluoroquinolone antibiotic; penam	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
emrD		antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
escheric hia coli ampC	cephalosporin; penam	antibiotic inactivation	ampC-type beta-lactamase
aadA5	aminoglycoside antibiotic	antibiotic inactivation	ant3
cpxA	aminoglycoside antibiotic; aminocoumarin antibiotic fluoroquinolone antibiotic; monobactam; carbapenem;	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
escheric hia coli soxS	cephalosporin; glycylcycline; cephamycin; penam; tetracycline antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan; penem	antibiotic target alteration; antibiotic efflux; reduced permeability to antibiotic	ATP-binding cassette ABC antibiotic efflux pump; major facilitator superfamily MFS antibiotic efflux pump; resistance-nodulation-cell division RND antibiotic efflux pump; General Bacterial Porin with reduced permeability to beta-lactams
tetO	tetracycline antibiotic	antibiotic target protection	tetracycline-resistant ribosomal protection protein
aph6-Id	aminoglycoside antibiotic	antibiotic inactivation	aph6
acrB	fluoroquinolone antibiotic; cephalosporin; glycylcycline; penam; tetracycline antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump

mdtA	aminocoumarin antibiotic	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
escheric hia coli CyaA	fosfomycin	antibiotic target alteration	cya adenylate cyclase
mdtN	nucleoside antibiotic; acridine dye	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
acrD	aminoglycoside antibiotic	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
cat	phenicol antibiotic	antibiotic inactivation	chloramphenicol acetyltransferase CAT
sul1	sulfonamide antibiotic; sulfone antibiotic	antibiotic target replacement	sulfonamide resistant sul
mdtE	macrolide antibiotic; fluoroquinolone antibiotic; penam	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
acrF	fluoroquinolone antibiotic; cephalosporin; cephamycin; penam	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
lnuC	lincosamide antibiotic	antibiotic inactivation	lincosamide nucleotidyltransferase LNU
aac3-IIa	aminoglycoside antibiotic	antibiotic inactivation	aac3
pmrC	peptide antibiotic	antibiotic target alteration	pmr phosphoethanolamine transferase
acrE	fluoroquinolone antibiotic; cephalosporin; cephamycin; penam	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
gadX	macrolide antibiotic; fluoroquinolone antibiotic; penam	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
bacA	peptide antibiotic	antibiotic target alteration	undecaprenyl pyrophosphate related proteins
dfrA17	diaminopyrimidine antibiotic	antibiotic target replacement	trimethoprim resistant dihydrofolate reductase dfr
aph3-III a	aminoglycoside antibiotic	antibiotic inactivation	aph3
haemop hilus influenz ae PBP3	monobactam; carbapenem; cephalosporin; cephamycin; penam	antibiotic target alteration	Penicillin-binding protein mutations conferring resistance to beta-lactam antibiotics

patA	fluoroquinolone antibiotic	antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump
mdtF	macrolide antibiotic; fluoroquinolone antibiotic; penam	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
emrR	fluoroquinolone antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
acrS	fluoroquinolone antibiotic; cephalosporin; glycylcycline; cephamycin; penam; tetracycline antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
escherichia coli acrA	fluoroquinolone antibiotic; cephalosporin; glycylcycline; penam; tetracycline antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
mdtM	fluoroquinolone antibiotic; lincosamide antibiotic; nucleoside antibiotic; acridine dye; phenicol antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
escherichia coli acrR	fluoroquinolone antibiotic; cephalosporin; glycylcycline; penam; tetracycline antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan	antibiotic target alteration; antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
dfrA14	diaminopyrimidine antibiotic	antibiotic target replacement	trimethoprim resistant dihydrofolate reductase dfr
mphA	macrolide antibiotic	antibiotic inactivation	macrolide phosphotransferase MPH
imp-18	carbapenem; cephalosporin; cephamycin; penam; penem macrolide antibiotic; fluoroquinolone antibiotic;	antibiotic inactivation	imp beta-lactamase
tolC	cephalosporin; glycylcycline; cephamycin; penam; tetracycline antibiotic; aminocoumarin antibiotic; rifamycin antibiotic; phenicol antibiotic; triclosan	antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump; major facilitator superfamily MFS antibiotic efflux pump; resistance-nodulation-cell division RND antibiotic efflux pump
norB	fluoroquinolone antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux

			pump
escheric			
hia coli	fosfomycin	antibiotic target alteration	uhpT
UhpT			
tetBP	tetracycline antibiotic	antibiotic target protection	tetracycline-resistant ribosomal protection protein
mrx	macrolide antibiotic	antibiotic inactivation	macrolide phosphotransferase MPH
emrA	fluoroquinolone antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
emrB	fluoroquinolone antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
kdpE	aminoglycoside antibiotic	antibiotic efflux	kdpDE
aph3-II	aminoglycoside antibiotic	antibiotic inactivation	aph3
c	macrolide antibiotic;		major facilitator superfamily MFS antibiotic efflux
evgA	fluoroquinolone antibiotic;	antibiotic efflux	pump; resistance-nodulation-cell division RND
	penam; tetracycline antibiotic		antibiotic efflux pump
emrK	tetracycline antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
mdtG	fosfomycin	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
tet41	tetracycline antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
oxa-347	cephalosporin; penam	antibiotic inactivation	oxa beta-lactamase
qacH	fluoroquinolone antibiotic	antibiotic efflux	small multidrug resistance SMR antibiotic efflux pump
pmrF	peptide antibiotic	antibiotic target alteration	pmr phosphoethanolamine transferase
baeR	aminoglycoside antibiotic;	antibiotic efflux	resistance-nodulation-cell division RND antibiotic
	aminocoumarin antibiotic		efflux pump
vgaC	streptogramin antibiotic;	antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump
	pleuromutilin antibiotic		
mel	macrolide antibiotic;	antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump
	streptogramin antibiotic		
arnA	peptide antibiotic	antibiotic target alteration	pmr phosphoethanolamine transferase
mdtC	aminocoumarin antibiotic	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
dfrA12	diaminopyrimidine antibiotic	antibiotic target replacement	trimethoprim resistant dihydrofolate reductase dfr

escheric			
hia coli	fosfomycin	antibiotic target alteration	glpT
GlpT			
escheric	tetracycline antibiotic;		
hia coli	benzalkonium chloride;	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
mdfA	rhodamine		
	macrolide antibiotic;		major facilitator superfamily MFS antibiotic efflux pump; resistance-nodulation-cell division RND
evgS	fluoroquinolone antibiotic;	antibiotic efflux	antibiotic efflux pump
	penam; tetracycline antibiotic		
cmy-19	cephamycin	antibiotic inactivation	cmy beta-lactamase
emrY	tetracycline antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
	macrolide antibiotic;		major facilitator superfamily MFS antibiotic efflux pump; resistance-nodulation-cell division RND
h-NS	fluoroquinolone antibiotic;	antibiotic efflux	antibiotic efflux pump
	cephalosporin; cephamycin;		
	penam; tetracycline antibiotic		
yojI	peptide antibiotic	antibiotic efflux	ATP-binding cassette ABC antibiotic efflux pump
floR	phenicol antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
baeS	aminoglycoside antibiotic;	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
	aminocoumarin antibiotic		
mdtH	fluoroquinolone antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
aadA3	aminoglycoside antibiotic	antibiotic inactivation	ant3
mdtB	aminocoumarin antibiotic	antibiotic efflux	resistance-nodulation-cell division RND antibiotic efflux pump
ant4-IIa	aminoglycoside antibiotic	antibiotic inactivation	ant4
pedo-1	carbapenem	antibiotic inactivation	subclass B3 PEDO beta-lactamase
	fluoroquinolone antibiotic;		
escheric	cephalosporin; glycylcycline;		
hia coli	penam; tetracycline	antibiotic target alteration;	resistance-nodulation-cell division RND antibiotic
marR	antibiotic; rifamycin	antibiotic efflux	efflux pump
	antibiotic; phenicol		
	antibiotic; triclosan		
cmlA6	phenicol antibiotic	antibiotic efflux	major facilitator superfamily MFS antibiotic efflux pump
sul3	sulfonamide antibiotic;	antibiotic target	sulfonamide resistant sul
	sulfone antibiotic	replacement	

escheric hia coli gyrA	fluoroquinolone antibiotic; nybomycin	antibiotic target alteration	fluoroquinolone resistant gyrA
qnrS1	fluoroquinolone antibiotic	antibiotic target protection	quinolone resistance protein qnr
lra-3	cephalosporin; penam	antibiotic inactivation	subclass B3 LRA beta-lactamase

Supplementary Table S2 Abbreviations of antibiotic types.

Abbreviations	Full name
aminoglycoside	aminoglycoside
MLS	macrolide;lincosamide;streptogramin
tetracycline	tetracycline
SS	sulfonamide;sulfone
FCGPTRPT	fluoroquinolone;cephalosporin;glycylcycline;penam;tetracycline;rifamycin;p henicol;triclosan
peptide	peptide
fluoroquinolone	fluoroquinolone
MFP	macrolide;fluoroquinolone;penam
cephamycin	cephamycin
NA	nucleoside;acridine_dye
fosfomycin	fosfomycin
FT	fluoroquinolone;tetracycline
CP	cephalosporin;penam
AA	aminoglycoside;aminocoumarin
aminocoumarin	aminocoumarin
FCCP	fluoroquinolone;cephalosporin;cephamycin;penam
macrolide	macrolide
MCCP	monobactam;cephalosporin;penam;penem
diaminopyrimidine	diaminopyrimidine
FMCCGCPTRPTP	fluoroquinolone;monobactam;carbapenem;cephalosporin;glycylcycline;ceph amycin;penam;tetracycline;rifamycin;phenicol;triclosan;penem