

Description of Additional Supplementary files

File name: Supplementary Data 1

Description: Minimum inhibitory concentration for 20 antimicrobial agents of the 59 *Enterobacter* isolates collected at Dartmouth-Hitchcock Medical Center (DHMC), USA.

File name: Supplementary Data 2

Description: Bacterial species, year of collection, sequence types (STs) and plasmid replicon types detected in the 59 *Enterobacter* isolates collected at Dartmouth-Hitchcock Medical Center (DHMC), USA.

File name: Supplementary Data 3

Description: Metadata, sequence quality, multi-locus sequence types (MLST), and antimicrobial resistance genes present in nine bloodstream isolates of *Enterobacter* species that harbor *mcr-9* and *mcr-10*. The isolates were collected from Dartmouth-Hitchcock Medical Center. For each isolate, accession numbers for both short-read (sequenced with Illumina) and long-read (sequenced with Oxford Nanopore Technologies) data are shown.

File name: Supplementary Data 4

Description: Replicon types and sizes of the 14 plasmid assemblies from bloodstream *Enterobacter* spp. in DHMC and sequenced in this study. Those plasmids carrying *mcr-9* and *mcr-10* are indicated and their GenBank accession are shown.

File name: Supplementary Data 5

Description: . Metadata, accession numbers, replicon types, source, bacterial host species, and genome length of the 326 globally distributed plasmids (319 from PLSDB database and seven sequenced in this study). Only plasmids carrying *mcr-9* and *mcr-10* are included here. The presence or absence of antimicrobial resistance (AMR) genes in the plasmids are also shown.

File name: Supplementary Data 6

Description: Characteristics of the different plasmid replicon groups from the global collection (n=326). Only replicon groups represented by 3 or more plasmid genome assemblies are included in this analysis. (A) Size of plasmid genome assemblies. (B) Grouping of plasmids replicon groups by their mcr gene content and containing species. (C) Antimicrobial resistance gene content. For A and C, comparisons were made using Kruskal-Wallis test with p-value, mean, standard error and confidence intervals (ci) shown.

File name: Supplementary Data 7

Description: Presence of mobile genetic elements in the global dataset of plasmid assemblies (n = 326) bearing mcr-9 or mcr-10.

File name: Supplementary Data 8

Description: Co-occurrence of pairs of antimicrobial resistance (AMR) genes in plasmids carrying mcr-9 and mcr-10. For every gene pair (gene A and gene B), the conditional probability and relative risk are calculated using ReGAIN. SD = standard deviation, CI = confidence interval.