

Descriptions of Additional Supplementary Files

Supplementary Data 1.

Description: Multiple regression results for log-transformed antibiotic MICs comparing models with and without MtrC LOF.

Supplementary Data 2.

Description: Annotated significant unitigs from *N. gonorrhoeae* GWAS conducted on logtransformed antibiotic MICs.

Supplementary Data 3.

Description: SRA accession numbers, genotypes, antimicrobial phenotypes, and patient metadata for all isolates in the *N. gonorrhoeae* global collection.

Supplementary Data 4.

Description: SRA accession numbers, genotypes, antimicrobial phenotypes, and patient metadata for all isolates in the *N. gonorrhoeae* Australia validation collection.

Supplementary Data 5.

Description: PubMLST accession numbers, urogenital clade membership, and MtrC LOF status for all isolates in the ST-11 *N. meningitidis* collection.