Supplementary Materials:

Supplementary Table 1: Antibiotic Disk Diffusion Assay (DDA) results for 4 commensal *Neisseria* species and 4 *N. gonorrhoeae* strains. Average (± SEM) diameter (mm) of the zones of inhibition from 3 biological replicates, of 3 independent experiments, were measured using AntibiogramJ [1] and ImageJ [2].

	Neisseria species							
ZoI (mm)	*Nla*	*Nci*	*Nmu*	*Nel*	*Ngo* FA19[a]	*Ngo* MS11[b]	*Ngo F89*[c]	*Ngo H041*[d]
Penicillin -10 UI	28.3 (±3.4)	21.2 (±0.8)	31.0 (±0.1)	20.3 (±1.9)	41.7 (±1.5)	25.3 (±1.5)	31.6 (±0.4)	24.3 (±0.4)
Ampicillin -10ug	28.5 (±1.7)	26.7 (±2.4)	24.2 (±1.9)	21.8 (±2.4)	38.5 (±0.5)	27.5 (±0.1)	34.2 (±0.1)	24.8 (±0.3)
Ceftriaxone -30ug	36.7 (±1.2)	21.3 (±2.1)	28.5 (±1.8)	23.3 (±3.9)	43.0 (±0.1)	34.2 (±2.6)	31.5 (±0.4)	30.8 (±0.5)
Azithromycin -15ug	21.2 (±1.0)	14.7 (±0.3)	19.3 (±0.2)	18.9 (±0.4)	34.0 (±1.0)	29.2 (±0.6)	34.0 (±0.8)	34.1 (±0.5)
Erythromycin -15ug	19.0 (±0.9)	13.5 (±0.1)	14.9 (±0.8)	15.0 (±1.0)	30.5 (±0.5)	23.8 (±0.3)	27.2 (±0.5)	28.4 (±0.4)
Chloramphenicol -30ug	31.3 (±1.2)	24.5 (±0.6)	23.8 (±1.3)	21.3 (±0.6)	38.7 (±0.3)	22.5 (±1.4)	29.6 (±0.6)	26.3 (±0.3)
Kanamycin -30ug	29.0 (±0.9)	20.5 (±0.9)	28.7 (±0.8)	21.3 (±0.8)	31.3 (±0.6)	26.2 (±1.2)	31.9 (±0.5)	32.2 (±0.4)
Streptomycin -10ug	17.0 (±1.0)	12.5 (±0.1)	17.7 (±0.4)	13.0 (±0.1)	14.9 (±0.8)	6.0 (±0.1)	15.2 (±0.6)	16.1 (±0.5)
Tetracycline -30ug	28.7 (±1.5)	23.5 (±1.5)	21.2 (±1.5)	21.8 (±1.2)	34.8 (±0.8)	25.5 (±0.1)	30.8 (±0.2)	29.7 (±0.3)
Gentamicin -10ug	19.9 (±0.2)	17.8 (±0.3)	21.8 (±0.2)	17.9 (±0.2)	20.2 (±0.1)	17.5 (±0.3)	18.2 (±0.4)	18.9 (±0.2)

Zones of inhibition (ZoI) of and similar to *N. gonorrhoeae* FA19 are highlighted in grey. ZoI highlighted in pink are smaller than 14 mm those of *N. gonorrhoeae* FA19, and denote high resistance levels. Intermediate resistant species display ZoI between 8 - 13.9 mm smaller than those of *N. gonorrhoeae* FA19 and are highlighted in yellow. Six mm is the size of the disk, and the minimum ZoI measurable. Species: Nla, *N. lactamica*; Nci, *N. cinerea*; Nmu, *N. mucosa*; Nel, *N. elongata*; Ngo, *N. gonorrhoeae*

[a] *N. gonorrhoeae* FA19 is considered susceptible to most antibiotics presented, used as reference [3].

[b] *N. gonorrhoeae* MS11 is considered highly resistant to streptomycin [4].

[c] *N. gonorrhoeae* F89 is considered highly resistant to cefixime and ceftriaxone [5].

[d] *N. gonorrhoeae* H041 is considered highly resistant to ceftriaxone [6].

Supplementary Table 2: Commensal *Neisseria* minimal inhibitory concentrations (MIC, µg/mL) to antibiotics (penicillin, azithromycin, ceftriaxone, erythromycin, chloramphenicol, gentamicin).

MIC (µg/mL)	Penicillin	Ceftriaxone	Azithromycin	Erythromycin	Chloramphenicol	Gentamicin
N. lactamica	0.25	0.008	0.25	2	0.5	2
N. cinerea	0.125-0.25	0.128	0.25-0.5	2	0.5	2
N. mucosa	2	0.064	0.5	8	4	2
N. elongata	0.5-1	0.064	0.5	4	1	8
N. gonorrhoeae Su	≤ 0.06	≤ 0.015	≤ 0.5	NA	NA	4
N. gonorrhoeae Re[a]	≥ 2	≥ 0.25[b]	≥ 2[b]	NA	NA	8

MIC values 16-fold or higher compared to susceptible *N. gonorrhoeae*'s values are highlighted in pink, while values 4-8 fold higher are highlighted in yellow.

[a] *N. gonorrhoeae*'s MIC breakpoint (µg/mL) values according to CLSI [7].

[b] *N. gonorrhoeae*'s MIC values of wild-type distribution according to Kirkcaldy *et al.* [8].

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