

1 **Background**

2 *Neisseria meningitidis* cause a deadly outbreak in South Vietnam in the 1979s,
3 affecting around 3000 cases, with the incidence rate reaching up to 20 per 100,000
4 individuals. Serogroup C played the main role in this severe epidemic, accounting for
5 90% of the cases. Subsequently, the bacteria had caused sporadic cases in the country.
6 It is worth noting to update the epidemiology of the disease, as well as molecular
7 characteristics of the pathogen.

8 **Objectives/methods**

9 Our aim to describe epidemiological and molecular characteristics, alonged with
10 antimicrobial resistance (AMR) and serogroup prevalent of invasive meningococcal
11 disease (IMD) cases in south Vietnam during 2012-2021.

12 We used all data of mandatory notification to characterize IMD cases. Sequencing of
13 isolates and clinical specimens was performed at Pasteur Institute of Ho Chi Minh City
14 (PIHCMC) for analyzing of multilocus sequence typing (MLST) and phylogeny, as well
15 as typing of *porA*, *fetA*, and AMR genes.

16 **Results**

17 The annual incidence rate of IMD was 0.016 per 100,000 individuals, with the highest
18 rate at 0.04 in 2012. Serogroup B was dominant, accounting for more than 90% of
19 cases (50/54). MLST analysis revealed that meningococci in Vietnam belonged to five
20 different clonal-complexes. Of those, the lineage of ST-1576 showed most common
21 accounting 20 per 31 MLST profiles, and these was associated with chloramphenicol
22 resistance. *PorA* subtype of P1.19,15 and *fetA* variant of F4-6 both accounted for more
23 than one-third. The ST-1576 seemingly a distinct clade and they had closed genetically
24 relationship to those in Bangladesh when compared to other ST of serogroup B in Asia.
25 Fourteen of 20 isolates were intermediated susceptibility to penicillin (MIC ranging
26 0.064 to 0.38mg/L). Six of these additionally resisted to ciprofloxacin, with MIC value
27 ranging from 0.094 to 0.5 mg/L. These resistances correlated to the alternations of

28 *penA* or *gyrA* in the effective sites. Two isolates were non-susceptible to ceftriaxone,
29 MIC at 0.125 and 0.16 mg/L, and these also resisted to ciprofloxacin and penicillin.

30 **Conclusion**

31 Ours results raised a great concern about the status of antimicrobial resistance and
32 the widely spread across the community. ST-1576 was seemingly the local strain rather
33 than an immigrant strain.