Response to, and epidemiology of, escalating detections of antimicrobial resistant *Neisseria gonorrhoeae* of public health significance, NSW, 2022 to 2024

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Background:
Antimicrobial resistant (AMR) *Neisseria gonorrhoeae* poses a public health problem and threatens the effectiveness of current first-line dual treatment in Australia. In NSW, gonococcal isolates of public health significance (PHS) include those with minimum inhibitory concentration (MIC) values to ceftriaxone ≥0.125 mg/L (denoted decreased susceptibility (DS)) and/or azithromycin high-level resistance (HLR) MIC ≥256mg/L. In 2022-2024 an increase of gonococcal isolates of PHS were detected. We report on epidemiological and genomic investigations, and use of the NSW Health Standard Operating Procedure (SOP) to support Public Health Units (PHUs) managing notifications of PHS.

Methods:
All gonococcal isolates in NSW are referred for MIC testing at NSW Health Pathology (NSWHP) Neisseria Reference Laboratory. PHUs are notified of isolates of PHS for enhanced case follow-up. NSWHP-RPA conduct sequencing and analyses, reporting Multilocus Sequence Typing (MLST) and clustering (<20 single nucleotide polymorphism).

Results:
Ninety-four notifications were reported (54 cases DS ceftriaxone, 40 cases HLR azithromycin), a significant increase from the previous period (2017-2021; n=12). DS ceftriaxone cases had a greater proportion of females compared to HLR azithromycin (31.5% vs 2.5%, P<0.001) and individuals who identified as heterosexual (72.2% vs 5.0%, P<0.001). Sequencing grouped 36 DS ceftriaxone isolates into five distinct clusters, the largest ST-7827 consisting of 17 cases. In contrast, 25 HLR azithromycin isolates clustered into two groups, including ST-11200 with 23 cases. Overseas travel was infrequently reported but was linked with early cluster isolates suggestive of introduction events with local expansion. No treatment failures were reported in the 87.2% cases (n=82) that presented for a test of cure (ToC).

Conclusion:
Notifications of gonococcal isolates of PHS have substantially increased in 2022-2024 and coincide with increasing reports in the region. The high proportion with ToC indicates effective implementation of the SOP, which supports prevention of further spread of these strains through appropriate management and public health follow-up.

Disclosure of Interest Statement:
Nil