

SEROTYPE, GENOTYPE AND ANTIBIOTIC RESISTANCE OF NON-VACCINE TYPE INVASIVE PNEUMOCOCCAL ISOLATES FROM PRE-VACCINE ERA (BEFORE 2018) - AN INDIAN STUDY

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BACKGROUND AND AIMS

- Pneumococcal Conjugate Vaccine (PCV) use has resulted in decrease of vaccine serotypes (VTs) and emergence of non-vaccine types (NVTs).
- We applied whole genome sequence (WGS) to predict serotype, sequence type (ST) and antibiotic resistance of NVT invasive pneumococcal isolates collected during the pre-vaccine era from Indian population.

METHODS

- 96 NVT invasive isolates (2009-2017) collected across the country were sequenced on Illumina platform
- MLST analysis was performed using seven housekeeping genes.
- Sequence types were analysed for clonality with eBURST algorithm.
- Resistance genes were analysed using Resfinder.

RESULTS

- Serotypes 15B (n=11), 24 (n=9) were dominant NVT types followed by 8 (n=8) and 34, 10A, 11A, 16F (n=5).
- Strains clustered in 45 clonal complexes and 16 singletons. The dominant clonal complex CC230 (n=12) was from serotypes 15B, 15C, 24, 10A and 11A. 78(81%) of isolates were multidrug-resistant.
- Resistance genes for tetracycline (n=44), cotrimoxazole (n=41), erythromycin (n=34), penicillin (n=13) and chloramphenicol (n=2) were identified.

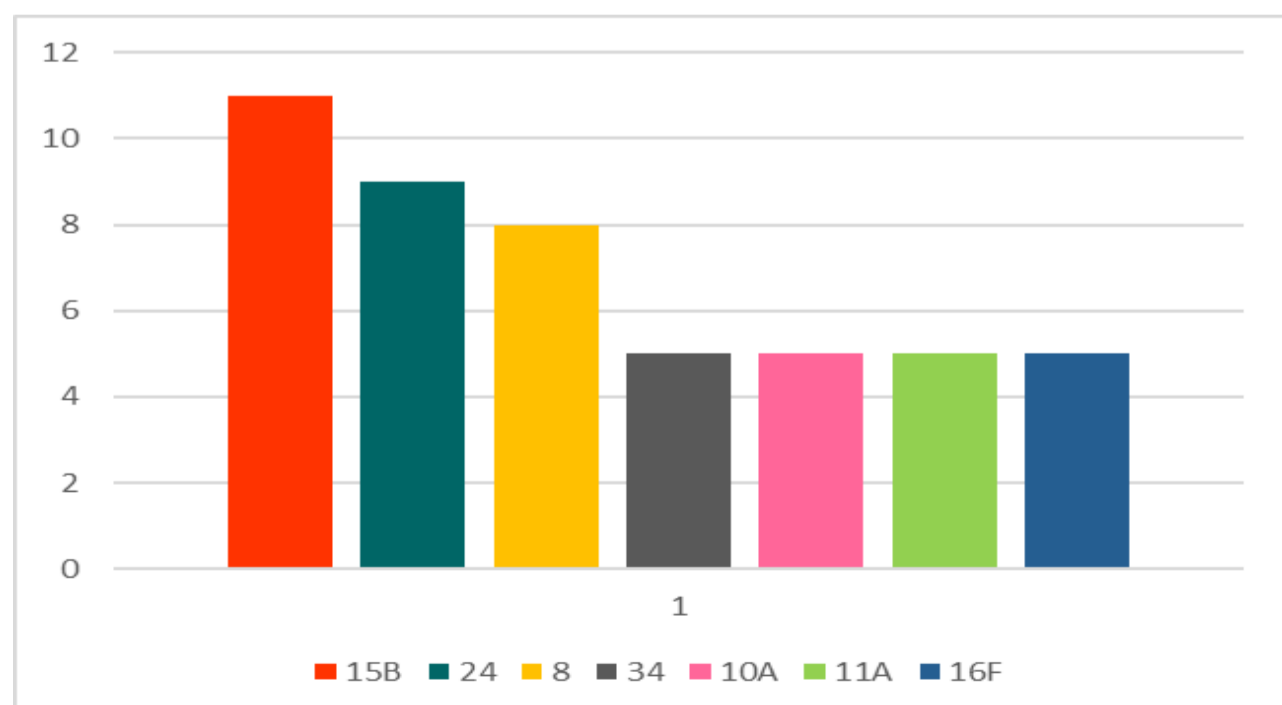


Fig 1: Serotype distribution

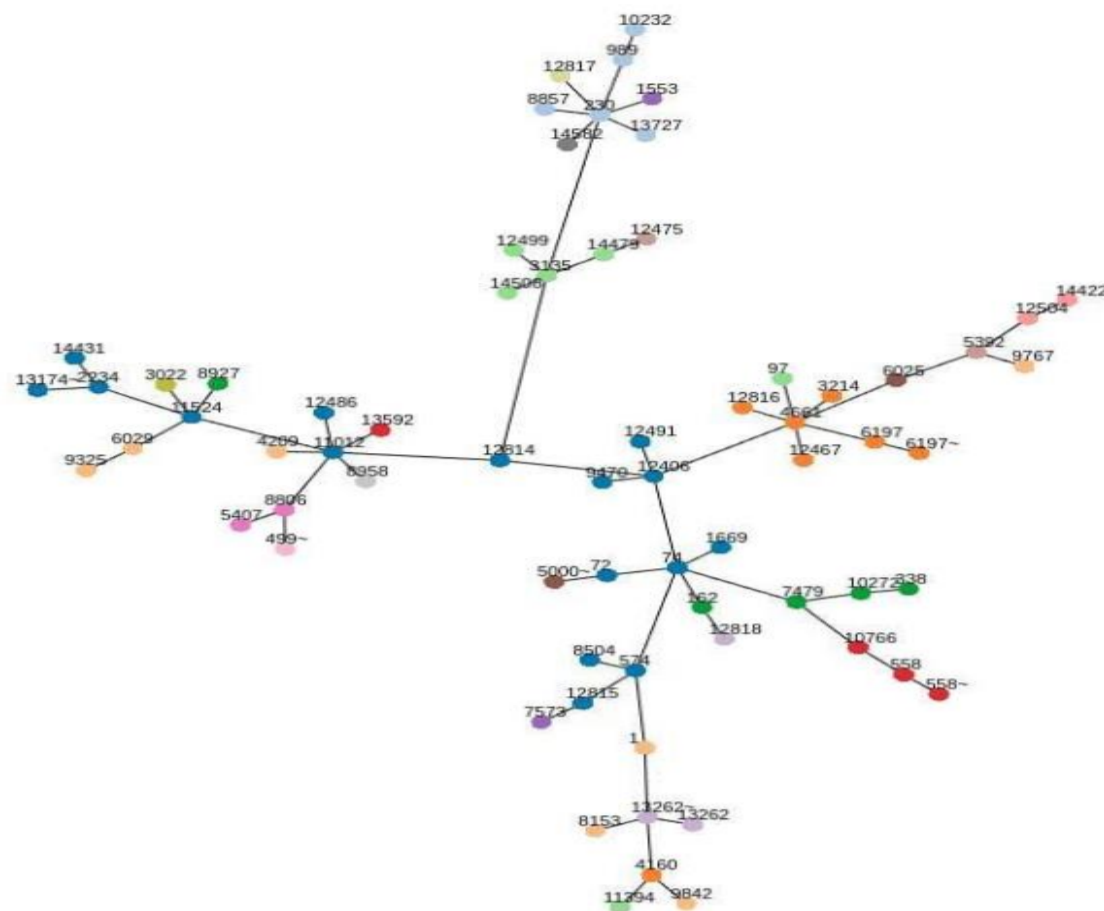


Fig 2 : eBURST analysis

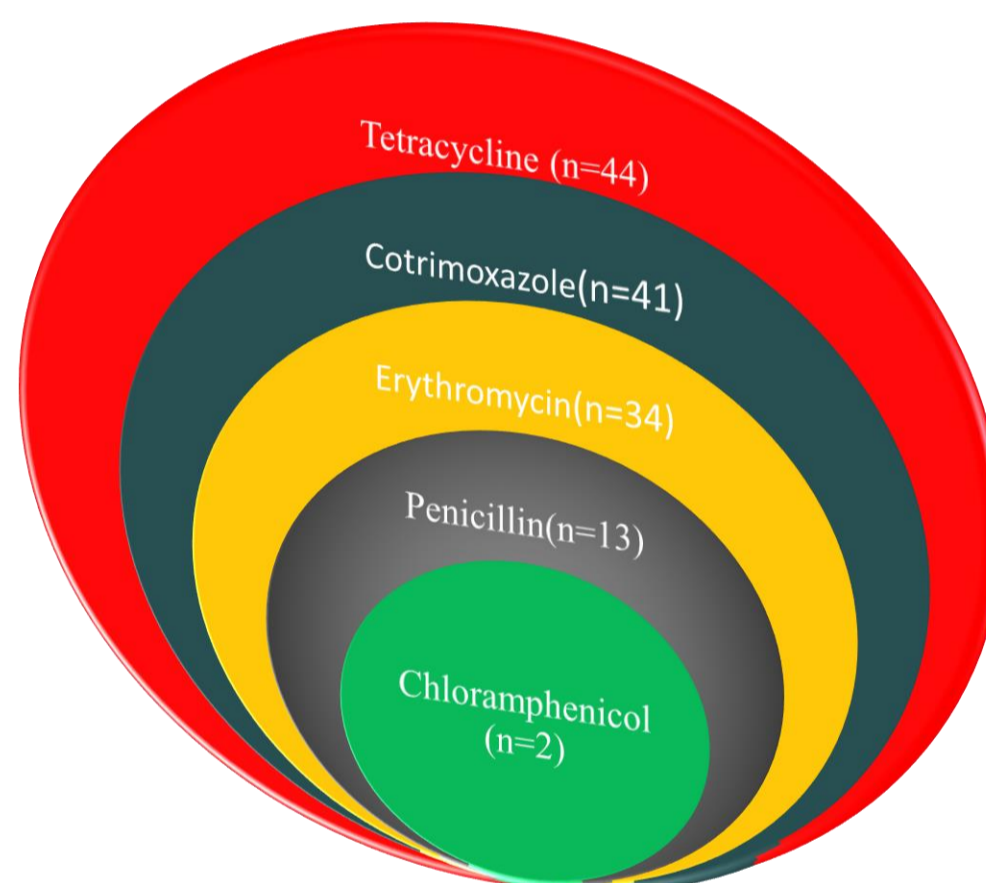


Fig 3 : Distribution of Resistance genes

CONCLUSION

- With the introduction of PCV in 2018 in national immunization program our data provides information for post-vaccination assessments.
- With higher valency vaccines coming to market by Indian manufacturers, knowledge of PCV13 NVT disease is important to identify serotypes to expand vaccine coverage in India.

REFERENCE

1. Carmen *et al*, Emergence of Invasive Pneumococcal Disease Caused by Nonvaccine Serotypes in the Era of 7-Valent Conjugate Vaccine, Clinical Infectious Diseases, 15 January 2008.
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