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Invasive Pneumococcal Pneumonia in Adults: Serotype Distribution and Antimicrobial trends over a 10-Year Period in Argentina (2013-2022)

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Background: Pneumococcal pneumonia is a significant cause of morbidity and mortality among adults worldwide. In Argentina, a sequential scheme has been implemented since 2017 (for adults older 64 years and patients with comorbidities older 5 years old) to prevent pneumococcal infections with the polysaccharide vaccine (PPSV23) and the conjugate vaccine (PCV13). As part of the National Surveillance Program in IPD we investigate the serotype distribution and antimicrobial profile of invasive pneumococcal pneumonia in adults over a 10-year period (2013-2022).

Methods: A retrospective analysis was conducted on data from adult patients (≥18y) with pneumonia between 2013 and 2022. Serotyping was performed by Quellung and antimicrobial susceptibility by agar dilution method (CLSI 2023).

Results: From 1356 IPD cases, 832 (61.3%) corresponded to pneumonia. 54.6 % from patients aged 18–64 and 45.4 % ≥65 years. Isolate sources: 94.8% blood culture and 5.2% pleural fluid. The distribution of serotypes was: 8 (12.64%), 3 (12.64%), 7F (8.66%), 1 and 12F (7.10%) (Figure 1). Figure 2 showed PCV13-serotypes distribution by year. Antimicrobial resistance by year is shown in Table. All the isolates were susceptible to vancomycin, levofloxacin, chloramphenicol, ceftaroline and ceftobiprole. Penicillin MICs ≥0.12 µg/ml were associated with serotypes 19A (19%), 14 and 24 (11.5%), and NS to erythromycin/tetracycline/MDR with 19A and 24.

Conclusion: The results of the study offers insights into pneumococcal serotypes, underscoring the importance of continuous surveillance to inform preventive measures, vaccination strategies, and public health interventions. Serotypes most frequently associated with MDR were 19A and 24. In Argentina, penicillin and amoxicillin remain the best treatment option for pneumonia.

Year	n	% Resistance (I + R)								
		Penicillin	Cefotaxime	Meropenem	Amoxicillin	Cotrimoxazol	Erythromycin	Clindamycin	Tetracycline	Doxycycline
2013	163	0,0	0,0	2,5	0,0	33,1	8,6	4,9	14,7	14,7
2014	92	0,0	1,1	5,4	0,0	15,2	15,2	9,8	13,0	13,0
2015	99	0,0	0,0	1,0	0,0	31,3	13,1	8,1	17,2	17,2
2016	100	1,0	1,0	1,0	6,3	33,0	14,0	7,0	19,0	19,0
2017	88	0,0	0,0	4,5	0,0	29,5	11,4	6,8	18,2	18,2
2018	71	1,4	0,0	1,4	7,1	32,4	5,6	5,6	15,5	15,5
2019	53	1,9	1,9	9,4	4,1	26,4	13,2	5,7	26,4	26,4
2022	114	0,0	0,0	6,1	2,0	21,9	7,9	1,8	21,1	21,1

*2020 and 2021 not evaluated (n<30 isolates)

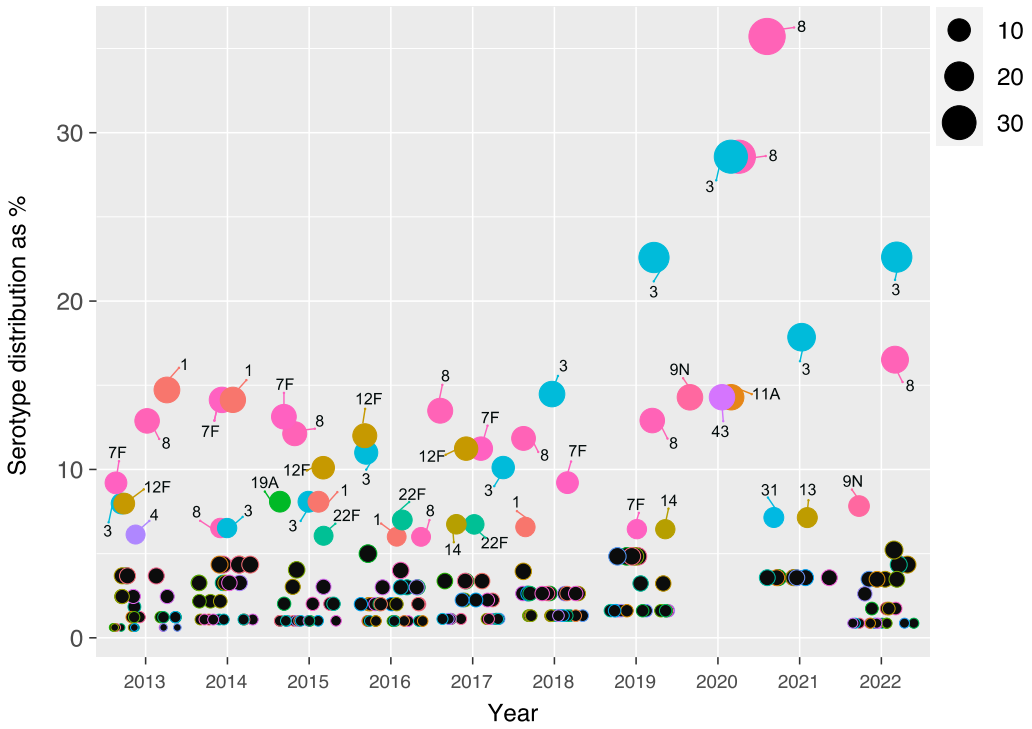

Figure 1. Serotype distribution by year.

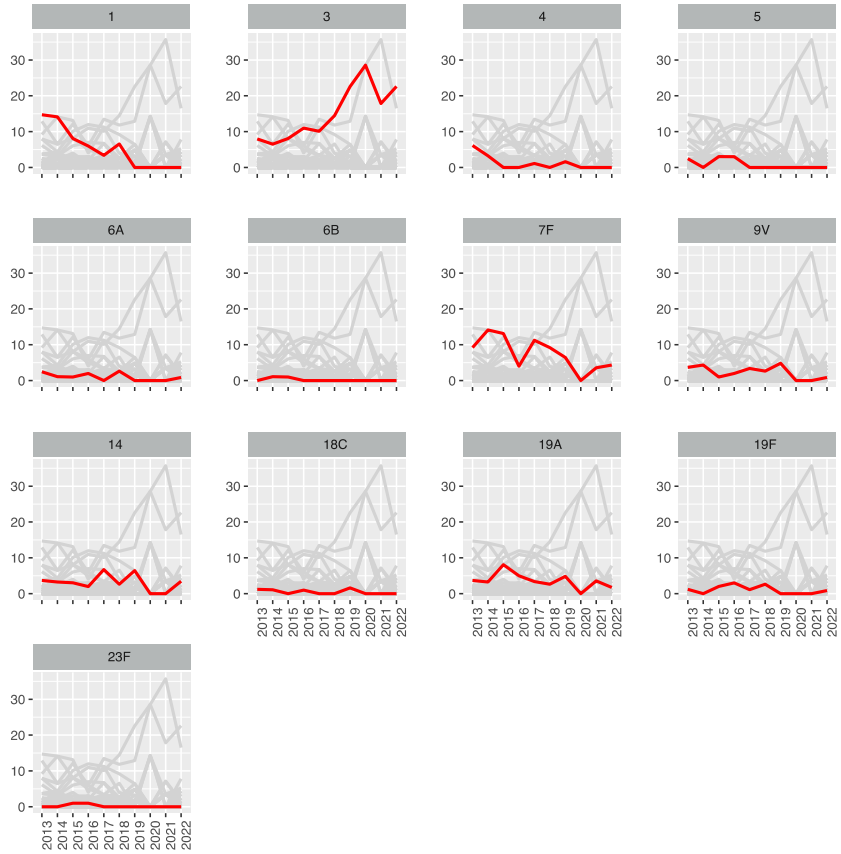

Figure 2. PCV13 serotypes distribution by year.