

## **National Surveillance Program of invasive *Streptococcus pneumoniae* (Spn) in Argentina 1994-2007: serotype distribution, coverage of conjugate vaccines and antibiotic resistance**

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**Background and aims:** Spn is a prevalent cause of invasive diseases in children, justifying continuous surveillance program. Aim: to determine serotype distribution of Spn causing invasive disease in < 6 y.o., serotype coverage of 7-valent(PCV7), 10-valent(PCV10) and 13-valent(PCV13) conjugate vaccines, and antibiotic resistance.

**Methodology:** Spn isolated from sterile fluids (37 hospitals, 17 provinces and Bs.As.city) during 1994-2007 were serotyped by Neufeld-Quellung. MIC was performed by agar dilution (CLSI).

**Results:** 2205 Spn (56.7% males, 66.8% < 2y.o.) were evaluated. Diagnoses: pneumonia(56.7%), meningitis(26.2%), sepsis(8.3%), others(8.8%). Forty-nine serotypes were identified: 14(31.7%), 5(13.1%), 1(10.5%), 6B(6.5%), 7F(4.3%), 19A(3.5%), 18C(3.3%), 9V(3.2%), 23F(2.9%), 19F(2.6%), 6A(2.5%), others(15.9%). Serotypes 14 and 6B were more prevalent in < 2 y.o., while 1 and 5 were less prevalent ( $p < 0.0001$ ). There were not significant changes in serotypes during 1994-1999. Comparing 2000-2003 and 2004-2007 changes were observed in serotypes 14(35.3% to 25.8%,  $p=0.0004$ ), 1(7.5% to 13.8%,  $p=0.0005$ ) and 19A(2.6% to 5.3%,  $p < 0.01$ ). Serotype coverage of PCV7/PCV10/PCV13 during 2004-2007 for < 2 y.o. was: 51.7%/72.4%/84.5%(all diagnosis); 49.8%/74.2%/87.6%(pneumonia), 53.3%/74.3%/80.2%(meningitis). Penicillin nonsusceptible (PNS:  $MIC \geq 0.12 \mu\text{g/ml}$ ) was 33.2% (20.7%  $MIC=0.12-1 \text{mg/L}$ ; 12.5%  $MIC > 2 \text{mg/L}$ ). PNS increased from 17.0%(1994) to 43.2%(1996), remaining constant for years and declining to 25.6%(2006-07). Main serotypes associated with PNS were: 14(75.3%), 6B(54.9%), 19A(48.7%), 23F(30.1%), 9V(28.2%), 19F(22.4%), 9N(10.3%), 6A(7.3%). No susceptibility to cefotaxime was: 13.2% for meningeal isolates, 3.4% for non-meningeal isolates. Erythromycin resistance was 8.7%, increasing from 0%(1994) to 13.8%(2007); trimethoprim-sulfamethoxazole 53.1%, decreasing from 58.7%(1994-99) to 54.6%(2000-03) and 47.1%(2004-07); tetracycline 9.0%, chloramphenicol 0.9%; ofloxacin and vancomycin 0%.

**Discussion:** This study demonstrates the reduction of serotype 14, PNS and trimethoprim-sulfamethoxazole resistance and the increase of serotypes 1, 19A and erythromycin resistance during the last years. The National Surveillance Program is necessary to monitor the changes in vaccines coverage and antibiotic resistance.