STREPTOCOCCUS PNEUMONIAE NASOPHARYNGEAL CARRIAGE IN CHILDREN UNDER 3 YEARS OLD ATTENDING DAY CARE CENTERS. CHANGES AFTER UNIVERSAL INTRODUCTION OF 13-VALENT CONJUGATED PNEUMOCOCCAL VACCINE IN ARGENTINA

A. Gentile¹, A. Rearte¹, D. Napoli², C. Sorhouet², P. Gagettti², M. Von Spetcht³, C. Laban³, S. Lopez Papucci⁴, A. Badano⁴, C. Ferrario⁵, R. Pereda⁵, D. Flores⁶, D. Berry⁶, A. Aguilera⁶, N. Sponton⁶, M. Regueira², A. Corso², C. Vizzotti¹, C. Biscayart¹

¹ Ministerio de Salud de la Nación, ² INEI-ANLIS "Dr. Carlos Malbrán", ³ Hospital de niños de Posadas Dr. Fernando Barreyro. Posadas, ⁴ Hospital de niños Víctor J. Vilela de Rosario, ⁵ Hospital General de niños Pedro de Elizalde. Ciudad de Buenos Aires, ⁶ Hospital Zonal de Trelew, ⁷ Hospital Público Materno Infantil de Salta,

Background

Streptococcus pneumoniae (Spn) remains a major world-wide cause of morbidity and mortality. The main reservoir of pneumococci is the nasopharynx. Nasopharyngeal carriage is related to development of invasive disease and is a major factor in transmission of pneumococcal disease, especially in children attending day care centers. In 2007-8 a first A first pre-vaccinal carriage study was performed. In 2012 the 13-valent conjugated pneumococcal vaccine (PCV-13) was introduced in the National Immunization Program.

Objectives

- Describe SPN nasopharyngeal carriage (NC) prevalence and antimicrobial susceptibility
- Compare these results with the ones of a previous-vaccinal carriage study.

Methods:

Between June-September 2015 a cross-sectional study among children <3 years old attending day-care centers in 5 cities of Argentina was performed. Nasopharyngeal samples were collected, from children at public health centers and maternal gardens of 5 cities of Argentina (Salta, Trelew, Rosario, Buenos Aires and Posadas). Samples were analyzed at reference hospitals and isolates were submitted to the Infectious Diseases National Institute "Dr. Carlos G. Malbrán" for confirmation and serotyping, SPN isolates were serotyped by means of the Quellung reaction, and antimicrobial susceptibility was determined by agar dilution method (CLSI). Results were compared with the previous study

Results

- A total of **359** toddlers were included.
- The global rate of NC was: **61.6% (IC95% 56,3-66,6)**
- NC rate was higher when compared with previous study: **61,6% vs. 51,5%; (p< 0,05)**
- Non-PCV13 serotypes accounted for **90,9% (IC95% 86,3-94,3)** of isolations
- Most frequent serotypes found were 15B, 23B and 11A rather than 6A, 15B and 19F found in the previous study. (Graphic 1)

Graphic 1: Frequent Serotypes in 2007-8 compared with 2015 (%)

- Antimicrobial non-susceptibility was similar to previous study (Grafic2).
- Main serotypes associated with penicillin non-susceptibility were non-PCV13: 23B(25%), 16F(13.6%), 15B(10.2%), 35B(4.5%) and 11A, 15C, 19A and 24F, 3.4% each

Graphic 2: SPN isolates antimicrobial susceptibility, 2007-8 vs 2015.

Table 1: Variables associated with carriage in multivariate analysis, independently of age, sex and socioeconomic level. OR (IC95%)

Variable	OR	IC 95%
City: Taking Salta as reference (less carriage prevalence)	Rosario	3,1 1,3-7,1
	Posadas	2,8 1,2-6,3
Public day care centers (compared to private centers)	1,9	1,06-3,4
Sharing bedroom with ≥3 persons	1,7	1,03-2,7

Conclusions: NC of SPN was higher than previous study. Most isolates were non-PCV13 serotypes. Independent predictors for higher prevalence rates were: 1- Children living in Rosario and Posadas. 2- Children attending public day care centers and 3- overcrowding. Almost 40% of SPN isolates were resistant to penicillin, a similar result to the pre-vaccine era and most of them associated to non-PCV13 serotypes. The serotype distribution in NC and its associated antibiotic resistance pattern, highlights the importance of surveillance in the post vaccine era.