

**TITLE:** IMPACT OF 10-VALENT PNEUMOCOCCAL CONJUGATE VACCINE ON PNEUMOCOCCAL MENINGITIS CASES IN SALVADOR BETWEEN 2011 AND 2016

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**ABSTRACT:**

Introduction of pneumococcal conjugate vaccines (PCVs) have dramatically reduced the burden of pneumococcal invasive disease in the last 15 years. PCVs have an efficacy of 90 to 100% in preventing invasive disease. Furthermore, PCVs has been highly effective, even in populations where the coverage is not complete, due to its ability to reduce nasopharyngeal carriage in immunized individuals and induce herd immunity. The long-term impact of 10-valent pneumococcal conjugate vaccine (PCV10), introduced into the Brazilian National Immunization Program (NIP) in 2010, has not been evaluated in Salvador. The aim of this study was to evaluate the impact of the PCV10 immunization program six years after its initiation and determine whether serotype replacement phenomenon had arisen. Prospective surveillance for pneumococcal meningitis was performed from 2008 to 2016 in Salvador, Brazil. Incidence was compared for the 2 (2008-09) and 6 (2011-16) year period preceding and following pneumococcal vaccination, respectively. The year 2010 was considered as a transitional period. Capsular serotype was determined by multiplex PCR and/or Quellung reaction. Between January 2008 to December 2016, 207 cases of pneumococcal meningitis were identified. Among those, 86 (39.6%) were from pre-vaccine period, 37 (17.1%) from transition period and 94 (43.3%) from post-vaccine period. Incidence of pneumococcal meningitis cases decreased 69%, from 0.71 cases/100,000 in 2008-2009 to 0.22/100,000 in 2011-2016. Among children aged 0-2 years-old, the incidence decreased 87% from 4.58 to 0.59 per 100,000/inhabitants ( $p<0.05$ ). Among individuals aged 60 years or older, the incidence decreased 67% from 2.65 to 0.88 per 100,000/inhabitants. The most frequent pneumococcal vaccine related serotypes in the post-PCV10 period were 23F ( $n=8$ ) and 14 ( $n=3$ ). The incidence of PCV10 serotypes among children aged 0-2 years-old reduced from 2.46 to 0.23 per 100,000/inhabitants in the post-PCV10 period. The predominant non-PCV10 serotypes causing pneumococcal meningitis in the period following vaccine implementation were: 12F, 10A, 21, 22F, 15A, 35B. Our findings highlights the PCV10 vaccine impact and show progressive changes in pneumococcal serotypes distribution among meningitis cases following PCV10 implementation, especially among the target group for vaccination, but without evidence of serotype replacement.

**Keywords:** PCV10, pneumococcal meningitis; *Streptococcus pneumoniae*.

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