

TITLE: EPIDEMIOLOGY AND THE VACCINE IMPACT OF MENINGITIS IN THE PARANÁ STATE, BRAZIL

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ABSTRACT:

Bacterial meningitis remains a serious public health problem, with an estimated 170,000 deaths per year worldwide. Approximately 20% of survivors may have permanent sequelae, such as mental retardation, deafness and epilepsy, which vary according to age, geographic location and etiological agent. Control and prevention is mainly due to vaccines made available to the population, which provide specific serogroup protection for each etiological agent. This research aimed to analyze the frequency and epidemiological indicators of meningitis in the Paraná state, Brazil, and assess the impact of two conjugate vaccines in the immunization schedule of the period pre-(2007-2009) and post-vaccine introduction (2010-2015). A retrospective epidemiological study was carried out with confirmed cases of meningitis in the state of Parana reported to SINAN from January 2007 to December 2015. The cases of meningitis were analyzed using BioEstat 5.0 software, adopting 5% level of significance for finding statistical difference. This research was approved by the Ethics Committee of the State University of Maringá, Paraná, Brazil (n. 1.113.915). In Paraná, there were 15,763 confirmed cases of meningitis, from 2007-2015, and 3,489 of them were recorded in 2007, the year with the highest number of cases. Most of these cases occurred in men (58.5%) and the most affected age range was zero to nine years old. The viral meningitis was the most frequently reported, followed by *Neisseria meningitidis*, *Streptococcus pneumoniae* and *Haemophilus influenzae*. *N. meningitidis* serogroup C was the most common in all age groups, followed by serogroup B. After the vaccine implementation (2010), there was decreased frequency in children up to 4 years to *N. meningitidis* and *S. pneumoniae*. The vaccine impact on the number of cases of meningitis caused by *S. pneumoniae* in children under 4 year old was significant ($p = 0.01$). The bacterial meningitis has declined in the state of Parana, especially with the advent of conjugate vaccines. Knowledge of the etiology of meningitis is important to work out measures to prevent and control the epidemiological surveillance and thus promote improvements in public health.

Keywords: meningitis, epidemiological surveillance, vaccine, Paraná.