

**TITLE:** LABORATORY DIAGNOSIS AND IMMUNIZATION COVERAGE OF PERTUSSIS IN YOUNG INFANTS

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Pertussis is an infectious disease caused by *Bordetella pertussis* of high prevalence among newborns and children with incomplete immunization. In São Paulo State, the laboratory diagnosis of pertussis is based on culture, highly specific method, but with a variable sensitivity and by Real Time Polymerase Chain Reaction (qPCR), a faster and sensitive technique. The aim of this study was to describe the results obtained by these two techniques collected from patients with suspected pertussis (age range, 20 days to 12 years) notified in the Western region of the Sao Paulo State and to compare with the vaccination coverage DTP (diphtheria, tetanus and pertussis). 189 nasopharyngeal swabs were tested from January/2010 to December/2015 by culture and qPCR. The samples were cultured in the Regional Laboratory Center Institute Adolfo Lutz of President Prudente-V using charcoal agar with 10% sterile defibrinated sheep blood and cephalixin (40µg/mL), and incubated at 36 ±1°C for ten days. Species were identified using biochemical methods. The qPCR was performed in the National Reference Laboratory for Pertussis, Instituto Adolfo Lutz, São Paulo using LightCycler®480 Software Release1.5.0 sp3 - Roche ® including specific primers and probes for the detection of the toxin gene *ptxS1* and the insertion element *IS481*. According to the results, 29/189 (15.3%) were confirmed by qPCR and/or culture tests. The most affected age group was children less than one year old, 25/189 (13.2%) of the cases. Regarding gender of patients, the positivity was higher for males (16/189, 8.5%) than females (13/189, 6.9%). The immunization coverage of the DTP was above 95% being 99.1% in 2010, 101.6% in 2011, 97.9% in 2012, 97.6% in 2013, 99.1% in 2014 and 106.0% in 2015. Despite high immunization coverage, the pertussis still an important public health problem. The rate of higher positivity of the disease by the criterion laboratorial was detected in children younger than a year, not vaccinated or with the incomplete vaccination. These results represent only a fraction of the actual number of pertussis cases that occur in Brazil. Continuous monitoring of disease and information of prevalence by age group are fundamental to improve immunization strategies as a way to control this important re-emerging disease.

**Keywords:** *Bordetella pertussis*, culture, diagnosis, real time PCR.

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