

Title: Pertussis emergence in the northern region of Brazil

Authors: Ferreira, R.L.¹; Lobato, M.B²; Pequeno, M. J³; Pranchevicius, M.C.S.⁴

Institutions: ¹UFT - Universidade Federal do Tocantins. Mestrado em Ciências da Saúde. (Quadra 109 Norte, Avenida NS 15 Alameda CNO 14, Bloco: BALA 01 - Palmas - TO - BR - CEP: 77001-090). ²LACEN-TO - Laboratório Central de Saúde Pública do Tocantins. (Qd 601 Sul Av.LO 15 CONJ. 02 Lt 01, Palmas-TO – BR - CEP: 77016-336). ³SESAU –TO. Coordenadoria de Imunização. (Qd 601 Sul Av.LO 15 CONJ. 02 Lt 01, Palmas-TO – BR - CEP: 77016-336). ⁴UFSCar-DGE - Universidade Federal de São Carlos. Departamento de Genética e Evolução (Rod. Washington Luis, km 235 - São Carlos - SP - BR - CEP: 13565-905).

Abstract:

Pertussis is a highly contagious, respiratory disease marked by severe and protracted coughing and caused by *Bordetella pertussis*. A descriptive study of whooping cough epidemiological situation and a survey on vaccination coverage were conducted between 2007 and 2014 in Tocantins, Brazil. The data were collected from Information System for Notifiable Diseases (SINAN) after authorization from Health Department of the State of Tocantins (SESAU). In our study, 428 (100%) cases of pertussis were reported, of these, 119 (28%) were confirmed. Pertussis cases were confirmed by laboratory testing (leukocytosis and lymphocytosis), by epidemiologic linkage (suggestive clinical profile and contact with confirmed case), and by clinical criteria (suggestive clinical profile associated with leukocytosis and lymphocytosis). Culture and PCR test were not available during the study period. The incidence of pertussis (from 0.16 to 5.70) and of reported cases (from 1.12 to 15.8) increased more than thirty-five-fold and fourteen-fold respectively in seven years. The period 2011-2014 was characterized by a higher number of confirmed cases, with an incidence of pertussis of 3-84 cases per million. The average of vaccine coverage was 98.25%. There was significant difference in gender of confirmed pertussis cases, of which 72 (60.50%) were female and 47 (39.50%) male. The most frequently confirmed cases overall were in infants younger than 3 months of age (n = 52; 43.70%), followed by young infants till 6 months (n = 22; 18.50%), groups with the highest risk of complications, hospitalization and death. The infections was also observed in five the age groups (7–11 months; n = 4, 3.36%; 1–4 years; n = 15, 12.60%; 5–9 years; n = 13, 10.92%; 10–14 years; n = 8, 6.72% and older than 20 years; n = 5, 4.20%). There were no pertussis cases among adolescents (15–19 years). Despite older children, adolescents and adults did not show a significant rise in pertussis incidence rates, due to a large proportion of these cases may be atypical and undiagnosed, there is an upward trend in incidence of pertussis in these age groups. Our study suggests that due to the limitation of laboratory diagnostics many pertussis cases were not diagnosed and therefore not reported. However, a resurgence of pertussis has been well reported from 2011 till present and our data are similar to those from other Brazilian regions, indicating that this infection is emerging with increasing frequency in Brazil.

Keywords: *Bordetella pertussis*, vaccination coverage, pertussis incidence