



# PERTUSSIS IN VENEZUELA IN THE 21ST CENTURY: THE NEW HERODES?

José Levy \*, Luis Echezuria \*\*, Alejandro Rísquez \*\*, José Vicente Franco \*\*\*

\*Centro Medico Docente La Trinidad, Caracas, \*\*Escuela de Medicina Luis Razetti, Universidad Central de Venezuela, \*\*\* Facultad de Medicina. San Cristóbal, Estado Tachira Universidad de los Andes  
levyped@gmail.com



## Introduction

Pertussis is endemic around the world, estimated annually 50 million cases and 300,000 deaths; even in countries with high coverage of sustained vaccination, cases continue to appear. The incidence in affected countries varies widely; in America has had a major rebound, reason why is considered as a public health problem. Pertussis has shown a significant upturn in some countries of the Americas, where cases increased more than 90% between 2006 and 2008. In United States, WHO registered 7.400 cases in 1998; 10 years later, cases were 13.200; more than 4.200 people have been reported in the state of California, and 9 deaths in children under 3 months, cataloging this outbreak as the most important in the last 50 years in US. In Argentina, cases increased from 677 to over 3,000 in the same period. In Venezuela, although the official statistics of recent years have not been published, it is known that cases tripled between 2007 and 2012, as the number of infected went from 555 to more than 1,500 in that period.

The resurgence of pertussis has been reported in many countries around the world, including Finland, France, Netherlands, Spain, United Kingdom and Canada, this resurgence is independent of the DTP vaccination schedule applied and the primary coverage achieved. Among the possible causes of this resurgence are the non-optimal levels of vaccine coverage and accumulation of susceptibles, loss of immunity conferred by the vaccine over time (immune waning), better epidemiological surveillance systems and greater availability of diagnostic methods. Although it has become more common in adolescents and adults, pertussis is still relevant in infants up to 6 months, specially in premature infants, unvaccinated or with incomplete immunization. In children under one year old this disease has a fatality rate of 50%. Between birth and 2 months infants have not yet developed their immune system, at this stage, pertussis is usually more severe and hospitalization is mandatory, usually requiring respiratory assistance.

Statistics globally show that largest number of hospitalizations occur in infants under 1 year. They acquire the disease from their adult relatives and adolescents. Data from the US Centers for Disease Control show that 32% of the infections in infants originate in the mother, 20% in the siblings and 15% in the father. Adults constitute an important reservoir of the bacteria, so they become potential transmitters of the disease.

## Method

The objective of this secular study is to know the distribution and frequency of Pertussis in Venezuela during the period (1995-2013). Epidemiological chronological, retrospective study of official data of the nation published by the Ministry of Health, in various instruments: Bulletins, Yearbooks of Morbidity and Mortality. Ministry of health registered as diagnosis of pertussis any case and death based on clinical, radiological, epidemiological and bacteriological tests, these results show that the criteria may correspond to the objective studied

	Deaths < 2 months	Deaths 2 - 6 months	Deaths 7 - 11 months	Total < 1 year
1995	8	15	2	25
1996	11	13	2	26
1997	9	17	9	35
1998	9	21	2	32
1999	12	24	2	38
2000	10	38	1	49
2001	10	28	2	40
2002	9	14	1	24
2003	8	22	0	30
2004	15	38	4	57
2005	4	28	2	34
2006	11	18	2	31
2007	3	4	1	8
2008	21	12	1	34
2009	16	28	3	47
2010	6	15	1	22
2011	5	10	2	17
2012	8	25	4	37
2013	9	12	2	23
<b>Total</b>	<b>184</b>	<b>382</b>	<b>43</b>	<b>609</b>

## Results

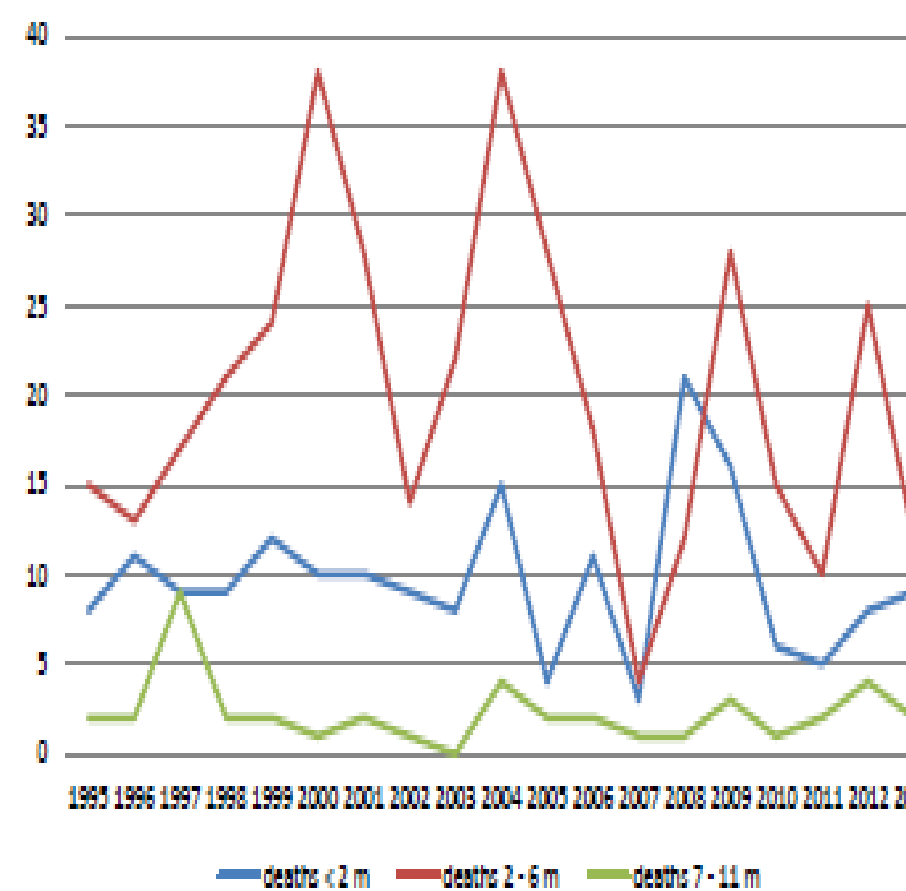
During the period (1995-2013) Pertussis was endemic, characterized by low frequency (n: 6886), with a clear predominance in infants <1 year old, (n: 4624) 67.15%. There were a total of 636 deaths, 609 (97.75%) among infants <1 year old..

In the last 11 years (2003-2013), The burden of disease is more evident in mortality, n: 347, of those 340 in infants <1 year old, 97.98%; 106 in infants <2 months (31.17%), before vaccination occurs, 2 to 6 months n: 212 (62.35%) recommended lapse for dpt doses on the national immunization program, and finally, 7-11 months n: 12 (3.52%).

The average lethality rate in infants <1 year old is 7,32



Pertussis: Deaths infants <1 year Vzla 1995-2013



## Conclusions

This epidemiological review of data broad many reflections and learning notes, but above all is the importance of disease prevention in children, considering the relevance to implement a strategy directed to immunize pregnant at 3rd trimester, and newborn close contacts, ( cocoon strategy) that could reduce disease and mortality in infants <1 year. Based on Herodes legend who ordered to kill any child under 2 years old, the estimated natality for that period of time was 40 births during this lapse. Finally Pertussis in Venezuela was responsible for 609 deaths between 1995-2013, it is 15 times higher than Herodes deaths mentioned in his legend.

## Reference

Center for Disease Control and Prevention. Preventing Tetanus, Diphtheria, and Pertussis Among Adults: Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine. MMWR, December 15, 2006/55(RR17);1-33.

FORSYTH K, Prevention of Pertussis: Recommendations derived from the second global Pertussis Initiative, Vaccine, 2007;25: 2634-2642.

BAMBERGER E, Whats New in Pertussis? European JOURNAL OF PEDIATRICS 2008 :167;133-139.

PICHICHERO M, An adolescent and adult formulation combined tetanus, diphtheria and five component pertussis vaccine, Future drugs, Vaccines 2006: 5; 175-187.

Organización Mundial de la Salud. Weekly epidemiological record No. 40, 2010: 85; 385-400 <http://www.who.int/wer>

Manual de Vacunas de Latinoamerica, Sociedad Latinoamericana de Infectología Pediátrica 2005.

REAGAN AK, A prospective cohort study assessing the reactogenicity of pertussis and influenza vaccines administered Vaccine, 2016: 03-84.



