



Epidemiological Alert

Pertussis (Whooping Cough) 16 November 2012

Given the significant increase of pertussis cases in several areas of the Region, the Pan American Health Organization / World Health Organization (PAHO/WHO) encourages Member States to increase their level of surveillance, to continuously monitor the level of vaccination coverage in one year old infants and children under 5 years old, with particular emphasis on identifying susceptible group.

Current Situation

Pertussis, commonly referred to as whooping cough, is a major cause of morbidity and mortality in children. An estimated 50 million cases and 300,000 deaths occur worldwide. The case fatality rate in developing countries can be as high as 4% in infants younger than 12 months.ⁱ

Pertussis continues to be a public health problem in several countries in the region of the Americas. During the past 10 years, the annual total of cases reported ranged between 15,000 to 34,000.^{ii,iii} Vaccination coverage with DPT3 in the Region is higher than 90%, however, outbreaks continue to be detected in several countries.

So far in 2012, there has been an increase in the number of pertussis cases in Argentina,^{iv} Brazil, Colombia,^v Chile,^{vi} Guatemala,^{vii} Mexico,^{viii} Paraguay,^{ix} Venezuela,^x and the United States of America.^{xi}

In March 2012, in a meeting convened by PAHO, experts from 12 countries concluded that the disease continues to occur in children under 5 years of age without complete immunization schedules for their age. In September 2012, the WHO convened an informal meeting of experts to discuss the current pertussis situation in Australia, Canada, the United Kingdom and the United States. The experts concluded that the acellular pertussis (aP) vaccine has limitations and the problem needs better characterization.

In light of this situation, PAHO/WHO highlights the need to continue implementing measures to increase the level of protection of populations and reiterates the recommendations of the Technical Advisory Group (TAG) on Vaccine Preventable Diseases in its Twentieth Meeting.

Laboratorial diagnosis

Bacterial cultivation, polymerase chain reaction (PCR) and serological diagnosis are the laboratory diagnostic tests used to detect infection caused by the bacterium *B. pertussis*.

Etiological diagnosis is based on recovering *B. pertussis* from nasopharyngeal samples obtained during the catarrhal stage and early paroxysmal stage. This test is very specific but not very sensitive (less than 60%) and it requires selective media.

Polymerase chain reaction (PCR) for *Bordetella* is a more sensitive test and can be carried out on the same biological samples used for cultures.

Serological diagnosis is based on detecting a significant increase in the concentration of specific antibodies against pertussis toxin (PT) in paired serum samples collected (catarrhal stage and convalescent stage). This test cannot be used for diagnosis during the first year following vaccination.

Recommendations

Faced with an increase of whooping cough cases in several countries of the Region, PAHO/WHO makes the following recommendations:

1. Strengthen surveillance in order to monitor the disease burden, to evaluate the impact of immunization through vaccination and to identify outbreaks. Every pertussis outbreak should be thoroughly investigated to improve the understanding of the current epidemiology of the disease in the Region of the Americas.
2. Analyze the vaccination coverage of one year old infants and children under five years old, special emphasis on identifying groups without vaccination coverage.
3. Countries should ensure vaccination coverage $\geq 95\%$ with 3 doses of pertussis-containing vaccines in children aged <1 year; and encourage timely vaccination and completion of the schedule. The 4th dose of the DPT vaccine should be incorporated into the regular vaccination program in every country, and the coverage attained with this dose (as with all vaccine doses) should be the object of careful recording, monitoring, reporting and evaluation.
4. Vaccinate health workers to prevent hospital transmission to infants under six months old and to people with compromised immune systems.
5. Immunize pregnant women in the case of an outbreak, for optimal protection of newborns.

Pertussis (ICD-10 A37.0, A37.9)

Whooping cough is an acute bacterial infection of the respiratory tracts caused by the bacterium *Bordetella pertussis* that is transmitted from an infected individual to another by means of droplets expelled by the respiratory tracts.

The incubation period is between 7 to 10 days, after which patients develop catarrhal symptoms, including the cough. The different phases of the disease (catarrhal, convulsive and of convalescence) can last from one to several months.

In its catarrhal initial phase, pertussis is easily communicable with a secondary case at a rate of up to 90% in non-immune people who are in contact with the patient.

Patients who are not treated can be contagious for three weeks or more starting for the time of the characteristic cough. Chronic carriers of *B. pertussis* are not frequent.

Most of the cases are in children of one to 5 years old. Between 5 to 6% of pertussis patients suffer complications, with more frequency in infants under 6 months old.

Adolescents and adults are frequent carriers of transmission of *B. pertussis*.

References

ⁱ Final report of the XIX and XX Technical Advisory Group (TAG) Meeting on Vaccine-preventable Diseases of the Pan American Health Organization. Buenos Aires, Argentina, July 2011 and Washington DC, October 2012. Available at:

http://new.paho.org/hq/index.php?option=com_content&view=article&id=1862&Itemid=1674

ⁱⁱ Number of Vaccine Preventable Disease (VPV) cases in the Americas. Immunization Unit. Pan American Health Organization (PAHO). Data updated as of January 30th 2012. Available at:

http://ais.paho.org/phil/viz/im_vaccinepreventablediseases.asp

ⁱⁱⁱ Review of the current whooping cough situation in the Americas, 22 March 2012. Published by the World Health Organization Global Immunization News. Available at:

http://www.who.int/immunization/GIN_March_2012.pdf

^{iv} Argentina. Integrated Surveillance Bulletin. Sanitary and Promotion Secretary. Available at:

<http://www.msal.gov.ar/index.php/home/boletin-integrado-de-vigilancia>

^v Colombia Epidemiological Bulletin of the National Institute of Health. Available at:

<http://www.ins.gov.co/boletin-epidemiologico/boletn%20epidemiologico/forms/public.aspx>

^{vi} Report on the epidemiological situation of whooping cough. Epidemiology department. Chile Ministry of Health. Available at: <http://epi.minsal.cl/vigilancia-epidemiologica/enfermedades-de-notificacion-obligatoria/coqueluche/>

^{vii} Guatemala National Epidemiology Center. Ministry of Public Health. Available at:

<http://epidemiologia.mspas.gob.gt/>

^{viii} National Center for Disease Surveillance and Control of Mexico. Epidemiological Bulletin 2012.

Available at: http://www.dgepi.salud.gob.mx/2010/plantilla/intd_boletin.html

^{ix} Paraguay General Directorate of Health Surveillance. Epidemiological Bulletin. Available at:

http://www.vigisalud.gov.py/index.php?option=com_phocadownload&view=section&id=8&Itemid=128

^x Epidemiological Alert 2012. 10. Ministerio del Poder Popular para la Salud de Venezuela. Available at:

http://www.mpps.gob.ve/index.php?option=com_content&view=article&id=927&Itemid=915

^{xi} US Centers for Disease Control and Prevention. Pertussis Outbreaks. Available at:

<http://www.cdc.gov/pertussis/outbreaks.html>