



# Epidemiological Alert:

## Update on Rotavirus Diarrheal Syndrome

(7 April 2010)

Over the past month, we have been detecting the appearance of confirmed outbreaks of acute diarrheal disease caused by rotavirus in several countries of the Region. In view of this situation, which is occurring in the period of greatest viral circulation, the Pan American Health Organization (PAHO) recommends strengthening surveillance and implementing recommendations that contribute to controlling the spread of the disease.

### Current Situation

Rotavirus infection has universal distribution among children from 3 and 5 years old, although in general, all children are exposed to the virus. It can also occur in adults, although it is less common and less severe. Rotavirus infection is responsible for approximately 40% of all hospitalizations due to diarrheal diseases in children under five, which turns it into the main cause of diarrhea in this age group. Incidence in developed and developing countries is similar. There is scant probability of environmental improvement in water and food quality changing the incidence of infection. There are currently two vaccines available for use among children under one year of age: one monovalent and the other, pentavalent. These vaccines began to be incorporated into the national vaccination series of the countries of the Americas in 2006, and 12 countries of Latin America currently use this vaccine in routine vaccination series.

Rotavirus follows a seasonal pattern and peaks occur mostly during the winter months.

In the Americas, sentinel hospital surveillance of this disease has been implemented in several countries. Data show that, for the Central American countries, the seasonal peak is registered between December and March; and for the South American countries, between May and September.

### Outbreak Characteristics

The countries that have reported outbreaks are the Dominican Republic, Guatemala, and Mexico.

#### Rotavirus

Rotavirus can cause illness ranking from asymptomatic infection in children under the age of 3 months, to severe diarrhea with dehydration that can result in death.

Rotavirus is a ribonucleic acid (RNA) virus, of which seven main groups have been identified, designated from A to G. However, only groups A, B, and C infect humans, with group A being the most important.

The classification of rotavirus into serotypes is based on the antigenic specification of two proteins: VP4 (type G) and VP7 (type P). The most important mode of transmission is fecal-oral.

The virus is highly infectious and very stable in the environment. Person-to-person contagion through contact with the hands is responsible for most spread of the virus in confined settings. The incubation period is generally from 24–48 hours.

## Dominican Republic

From Epidemiological Weeks (EW) 1 to 6, and comparing the 2009 and 2010 periods, the cumulative number of cases of acute diarrheal diseases (A09) show a 25% increase in 9 provinces, with the most affected being La Altagracia, where there has been a 150% increase.

Cases have occurred in all age groups, with 44% of all cases being concentrated in children under five.

The circulation of rotavirus has been confirmed in samples obtained during the months of January and February. In the first month, out of a total of 89 samples processed, 6% tested positive to this agent. In February, the positivity rate was 5.4% (out of the 147 samples processed).

### Actions and Response Taken by the Country

- a. A technical note was sent to the epidemiological services to initiate actions to verify alarms, characterize cases, and determine sources and modes of transmission.
- b. Implementation of six sentinel rotavirus surveillance sites was started in health facilities located in the following provinces: Santiago, Puerto Plata, Azua, San Pedro, Distrito Nacional, and Santo Domingo.
- c. Resources are being mobilized for the purchase of laboratory supplies used to diagnose rotavirus.

## Guatemala

From Epidemiological Weeks (EW) 1 through 11, Guatemala reported a total of 5,195 cases (859 more cases than reported in the last alert of 23 March), out of which 1,159 were laboratory confirmed, with 3 deaths (in Izabal, Jutiapa, and Petén Norte). The most affected age group continues to be children from 1 to 4 years of age, followed by infants less than a year old and then by children from 5 to 9. The departments with the greatest number of cases are Chiquimula, Santa Rosa, Escuintla, Huehuetenango, Izabal, and Retalhuleu.

## Mexico

According to the National Epidemiological Surveillance System (*Sistema Nacional de Vigilancia Epidemiológica / SINAVE*), the number of suspected cases of acute enteritis from rotavirus reported up to the month of February 2010 exceeds the number of cases reported during the same period from previous years. Although the cases are distributed throughout 23 states, the greatest percentage has been reported in Chiapas (30%), Baja California (13%), Oaxaca (12%), Tamaulipas (8%), San Luis de Potosí (5%), and Sinaloa (5%).

In the state of Chiapas, 1,319 suspected cases of rotavirus were reported between EW 1 and 9. Of the 897 samples analyzed, the presence of rotavirus was confirmed in 393 of them. Eight sanitary districts in Chiapas have reported suspected cases, and rotavirus has been confirmed in five of them. The first case was reported in Tapachula on 2 January 2010; and since 21 January, a rising trend has been reported, reaching the maximum number of cases on 9 February. Since 15 February, the trend has fallen both in the number of suspected cases and in those confirmed. However, the outbreak continues to be active; and suspected cases are still being reported and are in the process of being diagnosed.

Although rotavirus cases have been found of different genotypes, the Epidemiological Diagnostics and Reference Institute (*Instituto de Diagnóstico y Referencia Epidemiológicos / InDRE*) has identified a high predominance of the genotype G9 e-type short, an emerging genotype not included in the composition of the vaccine. A complete vaccination series background was corroborated in 51 (13%) of the confirmed cases.

Based on the temporal and geographical distribution, it is considered that this outbreak could have started from a common source, although its origin has not been specified. In 224 cases, the consumption of non-chlorinated water has been identified as a risk behavior.

The Mexican health authorities issued an alert for this event on 22 February, strongly recommending reinforced vaccination activities.

## 1. Recommendations

### a) Epidemiological Surveillance Measures and Outbreak Investigation

- Implement and/or reinforce sentinel hospital surveillance of rotavirus diarrheal syndrome in children under 5.
- Immediately notify health authorities of any outbreak detected.
- Investigate suspected rotavirus cases and collect fecal samples to confirm infection through Enzyme-Linked ImmunoSorbent Assay (ELISA) testing and subsequent identification of the viral genotype.
- Once the outbreak has been identified and confirmed in a specific locality, it is no longer necessary to collect a sample of each suspected case, and remaining cases will be confirmed by epidemiological link. However, at least 10 to 20 fecal samples from cases in each area should be kept for confirmation of viral spread and circulating genotype.
- Send 10% of all samples positive for rotavirus to reference laboratories for ELISA testing to determine genotype.
- Analyze the information by time, place, and person.
- Disseminate the information on viral circulation so that it reaches both health workers and the general public, alerting them as to the severity of diarrhea from rotavirus in children.

### b) Preventive Measures

- Organize services to capture, diagnose, and manage cases.
- The countries that have introduced the oral rotavirus vaccine should continue their routine vaccination among children less than a year old.
- Advise parents on the need to take their child to a health facility for care and hydration, given the risk of severe dehydration and death.
- Because the virus is often spreads through contaminated hands, encourage constant hand-washing, especially after handling a sick child.
- It is important that families and healthcare and daycare personnel quickly gather up any waste from sick children and flush it down the toilet.
- Drinking water should be taken from the cleanest available source and should be boiled.
- It is highly recommended that mothers exclusively breastfeed their babies in order to reduce their being exposed to the virus.
- For healthcare personnel, aseptic and antiseptic guidelines should be closely followed:

- Always use gloves and gowns with patients and follow personal protective measures.
- Wash your hands after caring for a person with diarrhea.
- Disinfect furniture and medical equipment to avoid contaminating other patients and/or staff.

### c) Patient Care Measures

- Treatment consists of restoring lost liquids. When vomiting and diarrhea are severe, oral rehydration therapy becomes necessary; and in more severe cases, intravenous rehydration often becomes necessary. The use of antibiotics is inappropriate.
- Establish the level of dehydration based on the signs present to choose the most appropriate treatment. The child should be evaluated and treated according to the rules and plans for prevention and management of diarrhea that are available in the IMCI (Integrated Management of Childhood Illness) manuals.
- It is not necessary to isolate any person presenting rotavirus diarrheal syndrome, nor to bar children from their healthcare facilities. However, as long as excretion and spread of the virus persists, generally up to the eighth day of infection, one should avoid children having direct contact with persons who are ill.