

# ROTAVIRUS

## INTRODUCTION

Rotavirus is a viral infection transmitted via the fecal-oral route, and via respiratory secretions. It is the single leading cause of diarrhea among infants and young children in the world. In developing countries, over half a million children die from rotavirus every year, making it the most common cause of diarrheal deaths among young children. Another two million children are severely sickened and hospitalized by the disease.

Research suggests that rotavirus is transmitted via the fecal-oral route as well as through respiratory secretions. Consequently, improvements in sanitation and hygiene that stop many bacteria and parasites has not prevented the transmission of rotavirus.

Almost all children will contract the disease before the age of three years, with most developing multiple infections of lessening severity throughout early childhood. Complications from rotavirus, such as dehydration, can be deadly if effective supportive care (hydration with water, oral rehydration salts, and/or IV therapy) is not promptly and correctly administered.

Infection appears to provide partial immunity, as repeat infections tend to be less severe. This disease pattern makes researchers believe that a vaccine can protect against the severe disease and death caused by rotavirus.

There are two live oral vaccines to prevent rotavirus available today, Rotarix™, by GlaxoSmithKline; and RotaTeq®, by Merck & Co. Both vaccines have undergone large clinical trials in North America, South America, and Europe and have demonstrated good efficacy and safety.

## DISEASE OVERVIEW

### Risks

- Children six months to two years of age
- Premature infants
- The elderly
- Those with weakened immune systems

### Symptoms

- Rotavirus can be mild or severe. Its incubation period is about two days
- The disease causes vomiting and watery diarrhea for 3 to 8 days
- Frequently includes fever and abdominal pain

## Transmission

- A person with rotavirus diarrhea often excretes large amounts of virus, which can spread readily through contaminated hands
- Rotavirus survives easily in the environment and can also be transmitted through contaminated objects, water, or food
- Scientists suspect that rotavirus may be transmitted through the air as well, since the virus has been detected in respiratory tract secretions of sick children

## Treatment

- Antibiotics and other drugs can not cure rotavirus
- Prevention of dehydration by providing fluids and salts until the disease runs its course is the only available treatment
- In some cases, zinc supplementation can help lessen the severity and duration of diarrhea
- In the most serious cases, frequent vomiting makes oral rehydration ineffective. Children who cannot keep down fluids urgently need intravenous fluids, or they risk dying from dehydration
- While illness is usually mild enough that parents can care for their children at home, about one in 65 cases requires hospitalization for intravenous fluids
- Prevention of serious disease is the best way to protect children in poor countries

## DISEASE BURDEN

### Prevalence

- Rotavirus causes severe diarrhea and vomiting in all countries
- It is the most common cause of severe diarrhea and diarrheal deaths in children under 5 years old
- By the age of 3 years, virtually every child will have had a rotavirus infection
- Rotavirus causes about 25 million clinic visits while an additional 111 million cases are treated at home each year
- About 1 in 65 rotavirus cases are severe enough to require hospitalization
- Up to 45% of children hospitalized for diarrhea in Asia have rotavirus infections

### Disease Impact

- Rotavirus is the most common cause of diarrhea and diarrheal deaths in children in the world, killing over 500,000 children under the age of 5 years each year

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- Rotavirus is responsible for about nearly 2 million hospitalizations each year
- Approximately 85% of rotavirus deaths occur in developing countries

## EFFORTS AT CONTROL

Efforts to improve water and sanitation have had no impact on rotavirus infections. While improved access to appropriate medical care has helped reduce rotavirus deaths, the burden of the disease remains high, even in industrialized countries. Prevention is the best way to control rotavirus and reduce its burden. The current vaccines for rotavirus are considered safe and effective. In fact, the United States has seen a dramatic decline in rotavirus activity that corresponds to increased vaccine use. The Sabin Vaccine Institute works with strategic partners to help educate policymakers and health officials about the impact of rotavirus and its vaccines so they are equipped to make well-informed decisions. Other organizations, such as the PATH Rotavirus Vaccine Program help support the development and introduction of rotavirus vaccines.

## FACTS AT A GLANCE

- By the age of 3 years, virtually every child will have had a rotavirus infection
- Rotavirus is the most common cause of diarrhea and diarrheal deaths in children in the world, killing over 500,000 children under the age of 5 years each year
- Rotavirus is responsible for about nearly 2 million hospitalizations and 25 million clinic visits each year
- Approximately 80% of rotavirus deaths occur in developing countries
- Rotavirus cannot be controlled by improved water and sanitation
- Antibiotics and other drugs are ineffective against rotavirus infections
- Rotavirus vaccines have been shown to be safe and effective

## SOURCES

US Centers for Disease Control and Prevention

World Health Organization

PATH (RVP Program)